TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Eclipse IRU600V2, 5.8GHz (Low Band)

FCC ID: VK6-IRU600LB2

IC Certification Number: 4469A-IRU600LB2

To: FCC Part 15.247: 2011 Subpart C, RSS-210 Issue 8 December 2010
& RSS-Gen Issue 3 December 2010

Test Report Serial No:
RFI-RPT-RP81852JD03A V4.0

Version 4.0 supersedes all previous versions

This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals:	
Checked By:	Steven White
Signature:	
Date of Issue:	25 November 2011

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Registered in England and Wales. Company number:2117901

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1. Customer Information

Company Name:	Aviat Networks
Address:	4 Bell Drive, Hamilton Intl Tech Park Blantyre Glasgow Lanarkshire G72 0FB United Kingdom

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.247
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart C (Intentional Radiators) - Section 15.247
Specification Reference:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart B (Unintentional Radiators) - Sections 15.107 and 15.109
Specification Reference:	47CFR15.207 and 47CFR15.209
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209
Specification Reference:	RSS-Gen Issue 3 December 2010
Specification Title:	General Requirements and Information for the Certification of Radio Apparatus
Specification Reference:	RSS-210 Issue 8 December 2010
Specification Title:	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment.
Site Registration:	FCC: 209735; Industry Canada: 3245B-2
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	12 July 2011 to 28 October 2011

2.2. Summary of Test Results

FCC Reference (47CFR)	IC Reference	Measurement	Result
Part 15.207	RSS-Gen 7.2.4	Transmitter AC Conducted Emissions	✓
Part 15.247(a)(2)	RSS-Gen 4.6.2 RSS-210 A8.2(a)	Transmitter 6 dB Bandwidth	✓
Part 2.1049	RSS-Gen 4.6.1/4.6.3	Transmitter 20 dB Bandwidth	✓
Part 15.247(e)	RSS-210 A8.2(b)	Transmitter Power Spectral Density	✓
Part 15.247(b)(3)	RSS-Gen 4.8 RSS-210 A8.4(4)	Transmitter Maximum Average Output Power	✓
Part 15.247(d)/ 15.209(a)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Radiated Emissions	✓
Part 15.247(d)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Band Edge Conducted Emissions	✓

Key to Results

✓ = Complied ✗ = Did not comply

Notes:

1. The customer declared that there is no idle mode and that the EUT goes into Transcieve mode as soon as it is powered up.

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2009)
Title:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Reference:	ANSI C63.10 (2009)
Title:	American National Standard for Testing Unlicensed Wireless Devices

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Aviat Networks
Model Name or Number:	Eclipse IRU600V2, 5.8GHz (low band) ERH-U51-101
Serial Number:	ZLS11200102
Hardware Version Number:	001
Software Version Number:	06.02.07
FCC ID:	VK6-IRU600LB2
IC Certification Number:	4469A-IRU600LB2

3.2. Description of EUT

The equipment under test was a 5.8GHz microwave radio unit.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	*Microwave Fixed Link System*	
Type of Unit:	Transceiver	
Channel Spacing	5 MHz, 10 MHz, 20 MHz and 30 MHz	
Modulation:	QPSK,16QAM,32QAM,64QAM,128QAM,256QAM	
Power Supply Requirement(s):	Nominal	48.0V
Maximum Conducted Output Power:	29.9 dBm	
Antenna Gain:		
Parabolic Antenna: (4ft Tested)	35 dBi	
(15 ft End product)	45.9 dBi	
2ft flat panel antenna	28 dBi	
Channel Spacing	5 MHz	
Transmit Frequency Range:	5728.0 MHz to 5782.0 MHz	
Transmit Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5728.0
	Middle	5755.0
	Top	5782.0
Receive Frequency Range:	5793.0 MHz to 5847.0 MHz	
Receive Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5793.0
	Middle	5820.0
	Top	5847.0
Channel Spacing	10 MHz	
Transmit Frequency Range:	5730.5 MHz to 5779.5MHz	
Transmit Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5730.5
	Middle	5755.0
	Top	5779.5
Receive Frequency Range:	5795.5 MHz to 5844.5 MHz	
Receive Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5795.5
	Middle	5820.0
	Top	5844.5

Additional Information Related to Testing (continued)

Channel Spacing	20 MHz	
Transmit Frequency Range:	5735.5 MHz to 5774.5 MHz	
Transmit Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5735.5
	Middle	5755.0
	Top	5774.5
Receive Frequency Range:	5800.5 MHz to 5839.5 MHz	
Receive Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5800.5
	Middle	5820.0
	Top	5839.5
Channel Spacing	30 MHz	
Transmit Frequency Range:	5740.5 MHz to 5769.5 MHz	
Transmit Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5740.5
	Middle	5755.0
	Top	5769.5
Receive Frequency Range:	5805.5 MHz to 5834.5 MHz	
Receive Channels Tested:	**Channel ID**	**Channel Frequency (MHz)**
	Bottom	5805.5
	Middle	5820.0
	Top	5834.5

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	4ft parabolic antenna, 35dBi gain
Brand Name:	Andrew Antennas
Model Name or Number:	HP4-57W-P3A/A
Serial Number:	10ACZ10602232

Description:	8 port network switch
Brand Name:	Belkin
Model Name or Number:	#F5D5131-8
Serial Number:	V3000uk

Description:	2ft flat panel antenna, 28dBi
Brand Name:	Radio Frequency Systems
Model Name or Number:	MA0528-28AN
Serial Number:	02205

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	Latitude D600
Serial Number:	RFI Asset Number (PC 343NT)

Description:	DC Power Supply
Brand Name:	Hewlett Packard
Model Name or Number:	E4356A
Serial Number:	RFI Asset number G0565

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Transcieve mode.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- The EUT was placed into a continuous transmit mode, with the appropriate modulation scheme enabled, using a bespoke software application which was supplied by the customer.
- For radiated emissions test a smaller 4 foot parabolic antenna of the same type as the 15 foot parabolic dish that would be used in the field was tested. This was done in accordance with FCC OET guidance: 450912 which states a smaller antenna can be used of the same type installed with data being extrapolated up the specification of the actual antenna.

  The antenna gain for the antenna tested was 35 dBi, the antenna gain for the 15 foot end product is 45.9 dBi, as such, the difference being 10.9 dB. There were no radiated emissions found from the EUT above 1GHz either from the cabinet or the antenna and as such there was no need to add the 10.9 dB correction.

  The radiated emission test was additionally performed on a 2 foot flat panel antenna which had an antenna gain of 28dBi.
- The EUT cannot be aligned over the frequency band of operation directly. In order to achieve the required channel the device is tuned through software and by replacing a filter section. The client advised that the FCC have agreed that the client may select channels by switching the filters and tuning of the EUT.
  - Filter serial number: ELB10070588 was used for all Bottom channel tests.
  - Filter serial number: ELB11341747 was used for all Middle channel tests.
  - Filter serial number: ELB10460738 was used for all Top channel tests.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

5.2. Test Results

5.2.1. Transmitter AC Conducted Spurious Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	26 July 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.207
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	30
Relative Humidity (%):	27

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.280	Live	34.5	60.8	26.3	Complied
0.928	Live	25.7	56.0	30.3	Complied
1.392	Live	29.0	56.0	27.0	Complied
2.319	Live	27.4	56.0	28.6	Complied
21.070	Live	35.5	60.0	24.5	Complied
24.832	Live	32.0	60.0	28.0	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.280	Live	31.6	50.8	19.2	Complied
1.392	Live	29.6	46.0	16.4	Complied
21.070	Live	28.2	50.0	21.8	Complied
24.832	Live	27.3	50.0	22.7	Complied
25.071	Live	32.1	50.0	17.9	Complied
25.566	Live	30.9	50.0	19.1	Complied

Transmitter AC Conducted Spurious Emissions (continued)

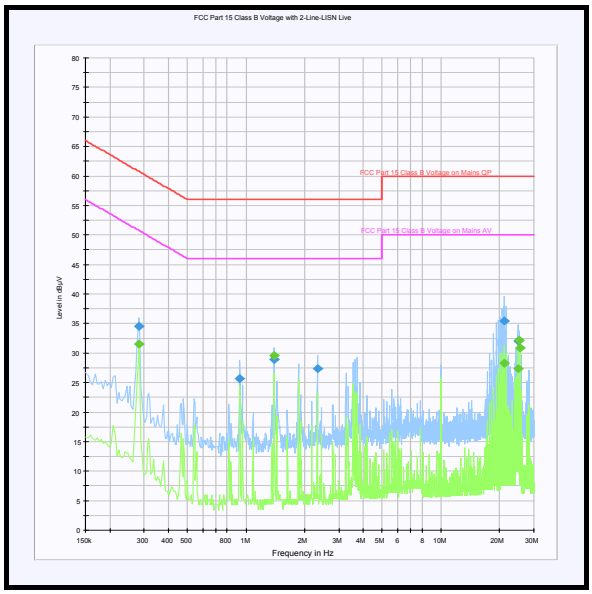
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.280	Neutral	34.4	60.8	26.4	Complied
1.387	Neutral	28.3	56.0	27.7	Complied
1.851	Neutral	28.0	56.0	28.0	Complied
3.624	Neutral	25.8	56.0	30.2	Complied
10.000	Neutral	25.3	60.0	34.7	Complied
20.845	Neutral	27.5	60.0	32.5	Complied

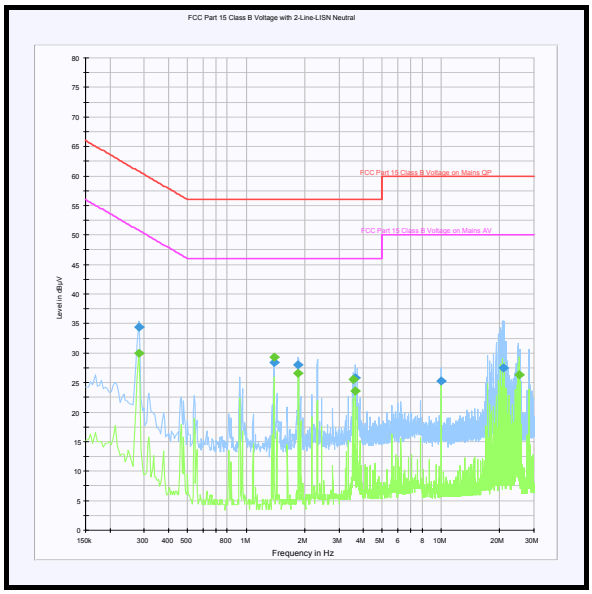
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.280	Neutral	30.0	50.8	20.8	Complied
1.387	Neutral	29.3	46.0	16.7	Complied
1.851	Neutral	26.6	46.0	19.4	Complied
3.525	Neutral	25.6	46.0	20.4	Complied
3.624	Neutral	23.6	46.0	22.4	Complied
25.071	Neutral	26.3	50.0	23.7	Complied

Transmitter AC Conducted Spurious Emissions (continued)



Live



Neutral

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

5.2.2. Transmitter 6 dB Bandwidth

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	12 October 2011, 13 October 2011 & 17 October 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247(a)(2)
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.1

Environmental Conditions:

Temperature (°C):	25 to 26
Relative Humidity (%):	34 to 38

Results: 5 MHz 128QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	4.178	≥0.5	3.678	Complied
Middle	4.178	≥0.5	3.678	Complied
Top	4.235	≥0.5	3.735	Complied

Results: 10 MHz QPSK

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	8.537	≥0.5	8.037	Complied
Middle	8.597	≥0.5	8.097	Complied
Top	8.297	≥0.5	7.797	Complied

Results: 10 MHz 16QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	8.236	≥0.5	7.736	Complied
Middle	8.417	≥0.5	7.917	Complied
Top	8.297	≥0.5	7.797	Complied

Results: 10 MHz 64QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	8.657	≥0.5	8.157	Complied
Middle	8.717	≥0.5	8.217	Complied
Top	8.717	≥0.5	8.217	Complied

Transmitter 6 dB Bandwidth (continued)

Results: 10 MHz 128QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	8.297	≥0.5	7.797	Complied
Middle	8.417	≥0.5	7.917	Complied
Top	8.236	≥0.5	7.736	Complied

Results: 10 MHz 256QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	8.597	≥0.5	8.097	Complied
Middle	8.597	≥0.5	8.097	Complied
Top	8.597	≥0.5	8.097	Complied

Results: 20 MHz QPSK

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	17.315	≥0.5	16.815	Complied
Middle	17.074	≥0.5	16.574	Complied
Top	17.555	≥0.5	17.055	Complied

Results: 20 MHz 16QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	17.315	≥0.5	16.815	Complied
Middle	17.194	≥0.5	16.694	Complied
Top	17.315	≥0.5	16.815	Complied

Results: 20 MHz 64QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	17.555	≥0.5	17.055	Complied
Middle	17.435	≥0.5	16.935	Complied
Top	17.315	≥0.5	16.815	Complied

Results: 20 MHz 256QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	17.555	≥0.5	17.055	Complied
Middle	17.796	≥0.5	17.296	Complied
Top	17.796	≥0.5	17.296	Complied

Transmitter 6 dB Bandwidth (continued)

Results: 30 MHz QPSK

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	26.874	≥0.5	26.374	Complied
Middle	26.693	≥0.5	26.193	Complied
Top	27.415	≥0.5	26.915	Complied

Results: 30 MHz 16QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	25.431	≥0.5	24.931	Complied
Middle	26.693	≥0.5	26.193	Complied
Top	26.693	≥0.5	26.193	Complied

Results: 30 MHz 64QAM

Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	25.431	≥0.5	24.931	Complied
Middle	25.431	≥0.5	24.931	Complied
Top	26.693	≥0.5	26.193	Complied

Results: 30 MHz 128QAM

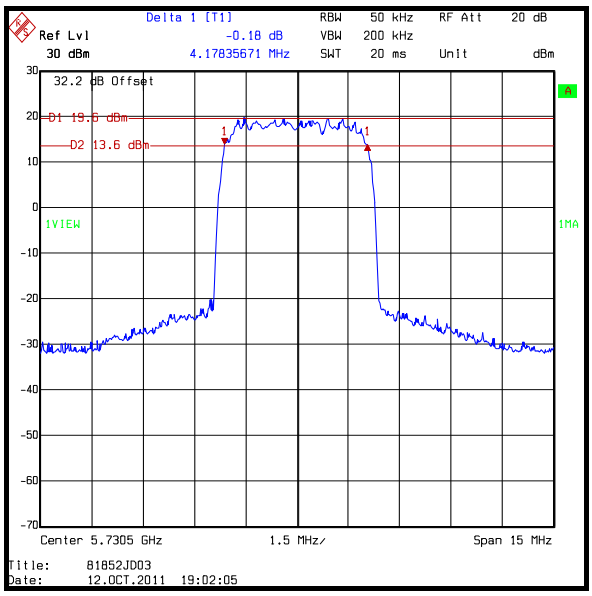
Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	26.513	≥0.5	26.013	Complied
Middle	26.513	≥0.5	26.013	Complied
Top	26.513	≥0.5	26.013	Complied

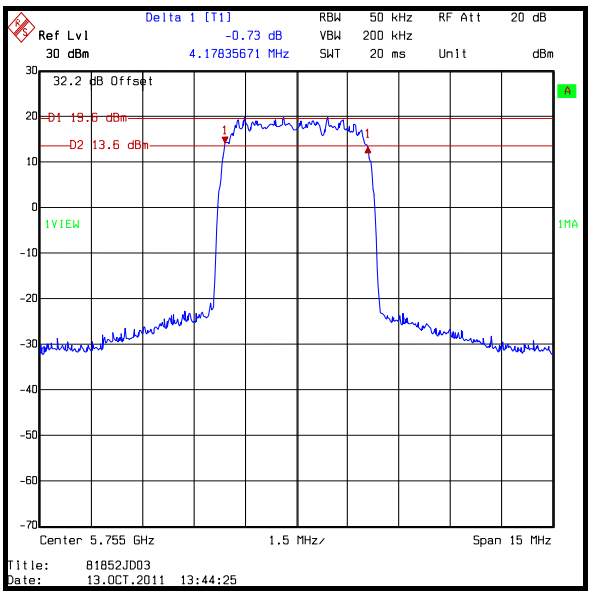
Results: 30 MHz 256QAM

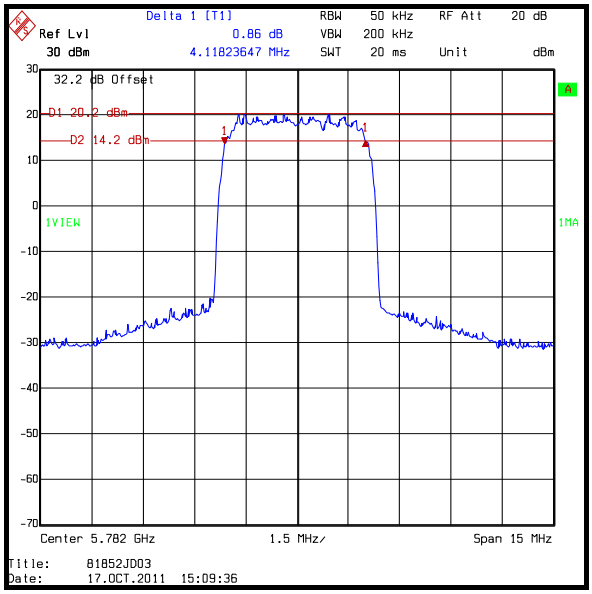
Channel	6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	27.234	≥0.5	26.734	Complied
Middle	27.234	≥0.5	26.734	Complied
Top	27.234	≥0.5	26.734	Complied

Transmitter 6 dB Bandwidth (continued)

Results: 5 MHz 128QAM

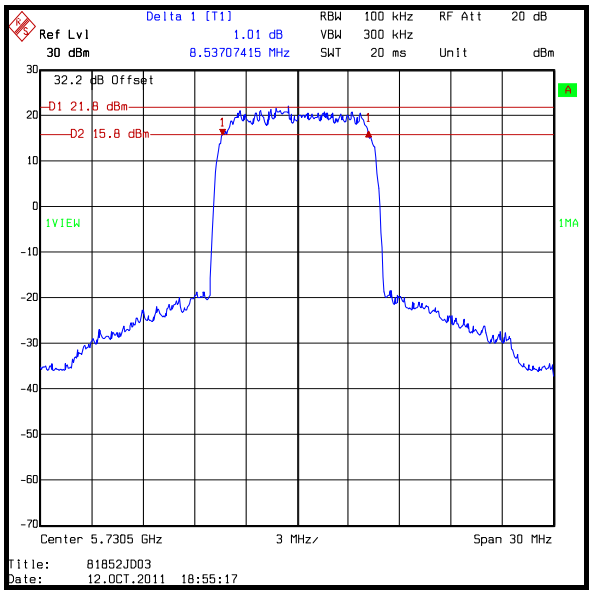


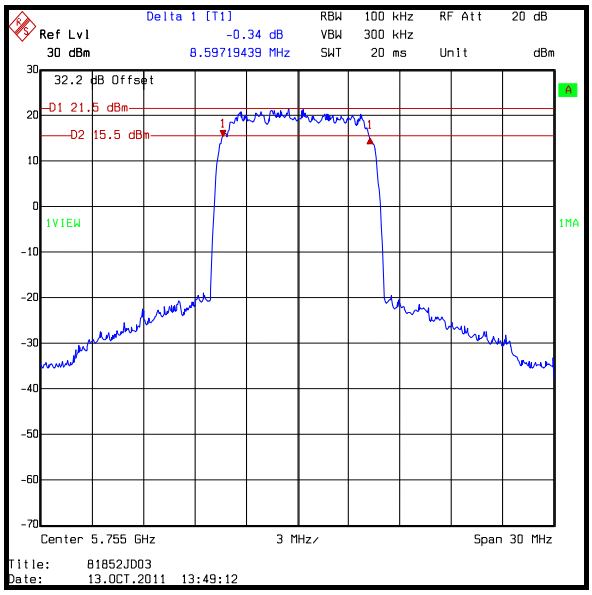


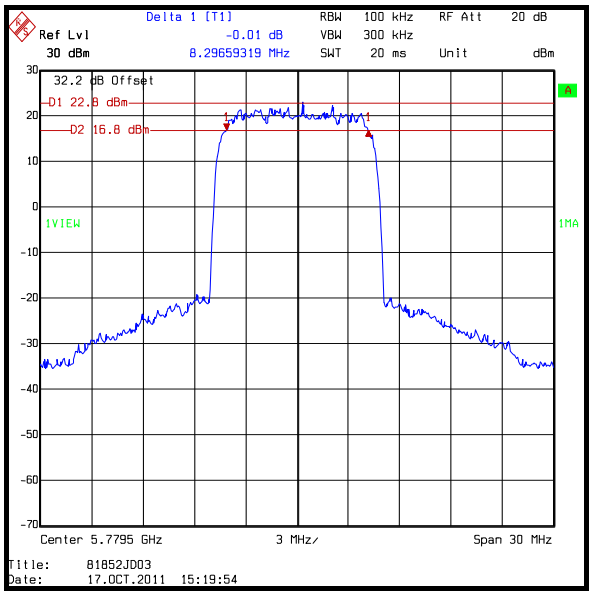


Transmitter 6 dB Bandwidth (continued)

Results: 10 MHz QPSK

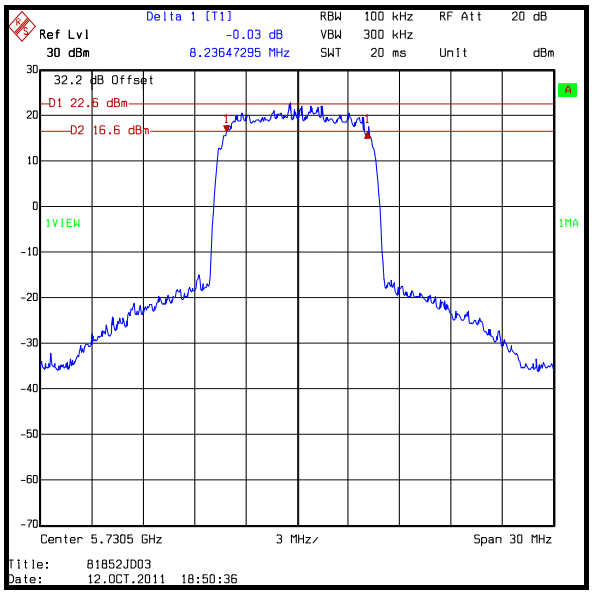


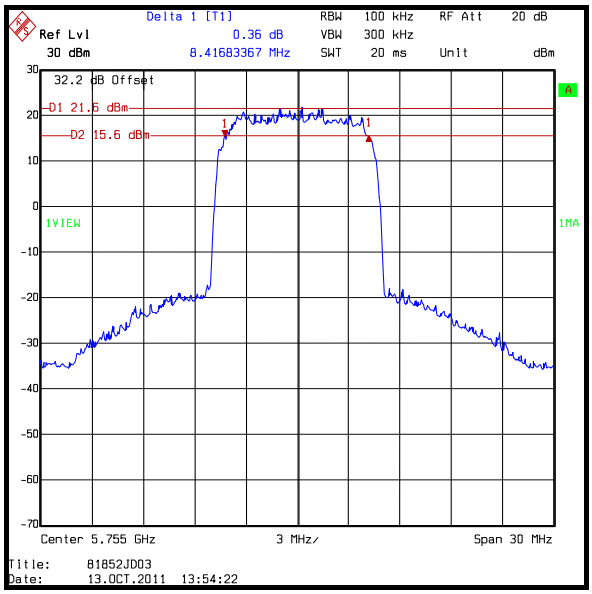


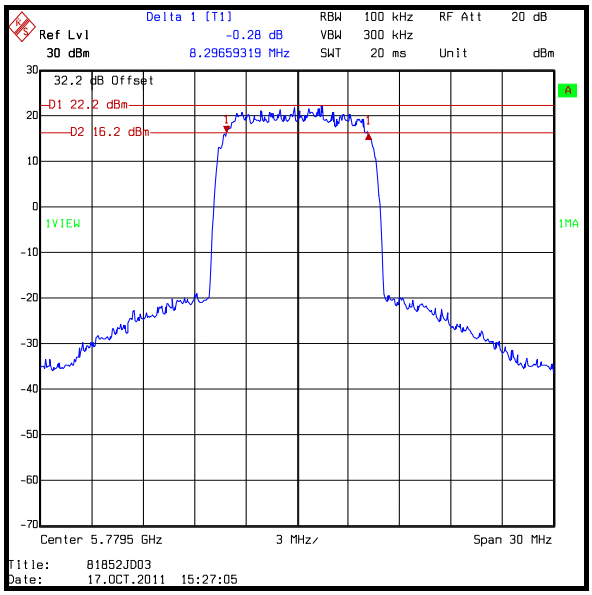


Transmitter 6 dB Bandwidth (continued)

Results: 10 MHz 16QAM

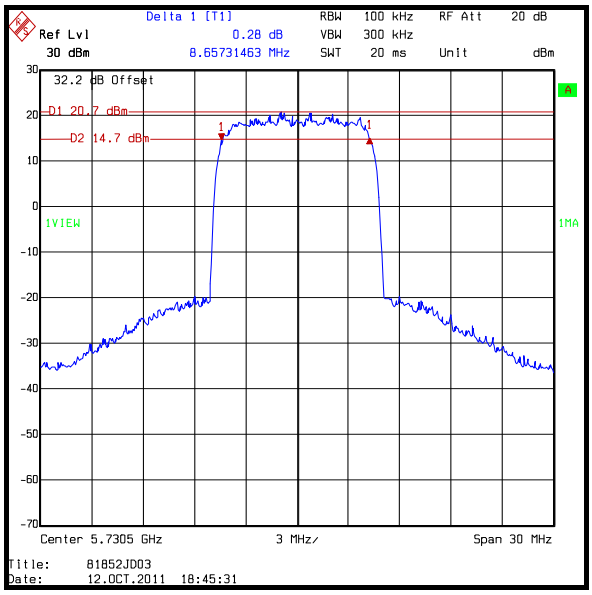


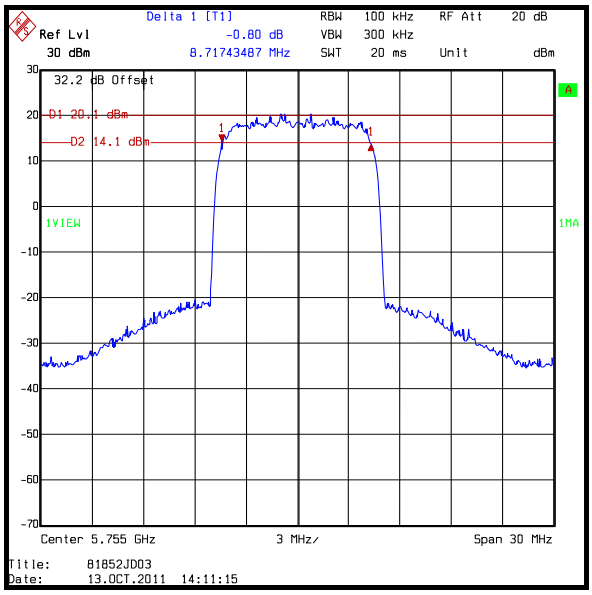


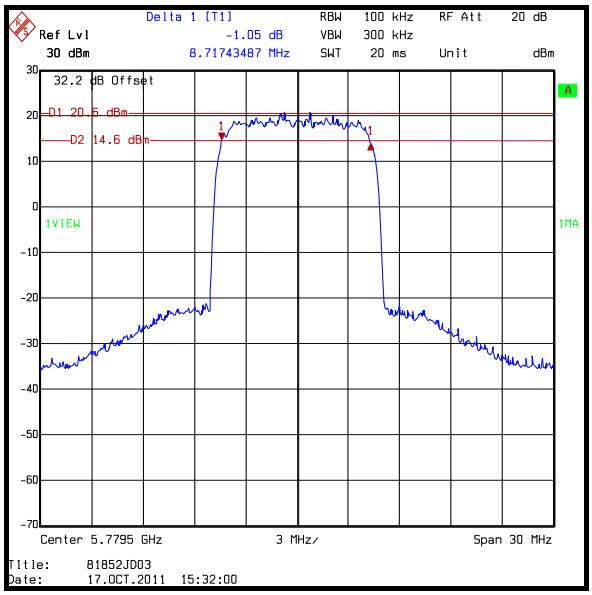


Transmitter 6 dB Bandwidth (continued)

Results: 10 MHz 64QAM

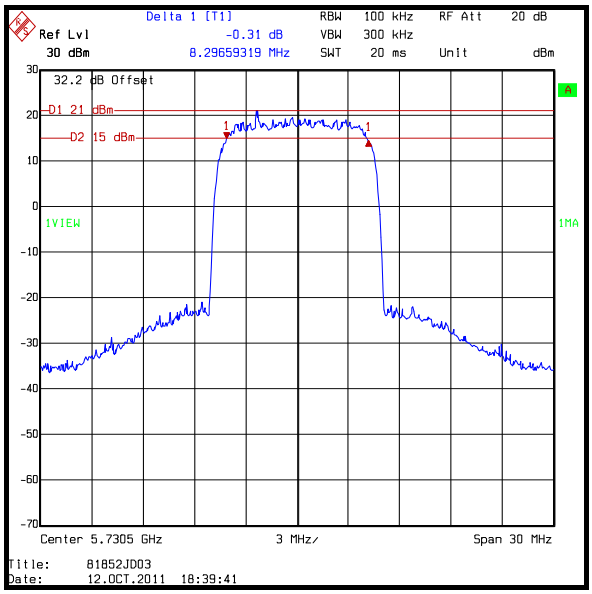


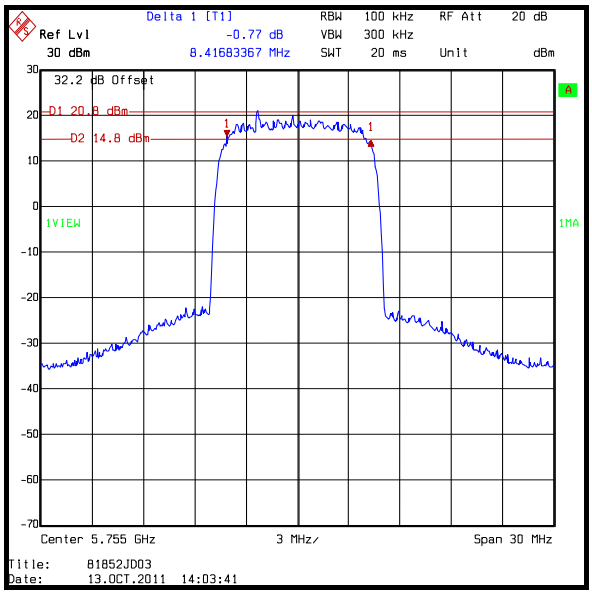


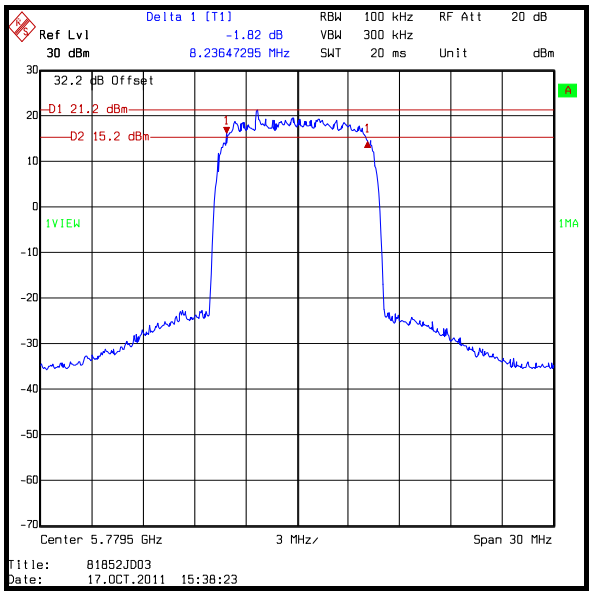


Transmitter 6 dB Bandwidth (continued)

Results: 10 MHz 128QAM

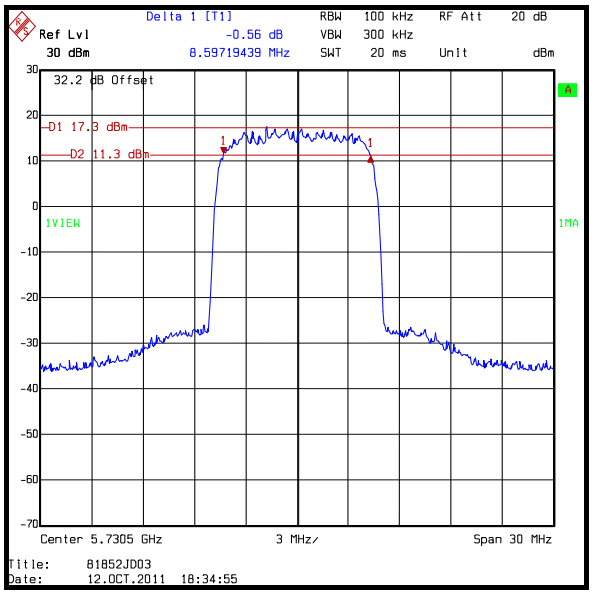


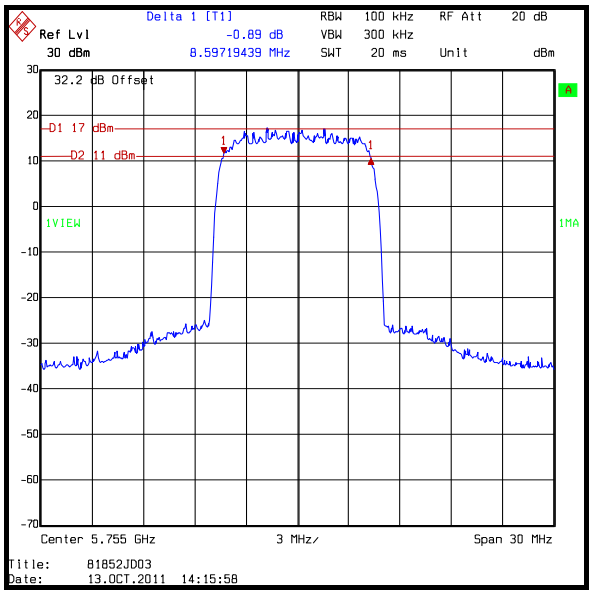


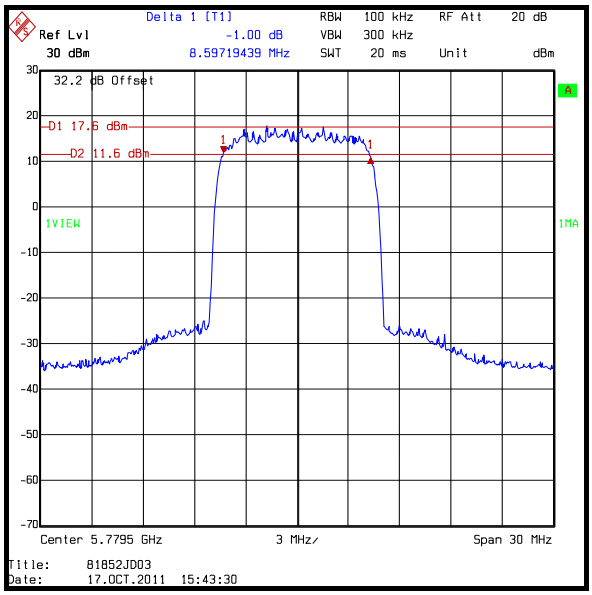


Transmitter 6 dB Bandwidth (continued)

Results: 10 MHz 256QAM

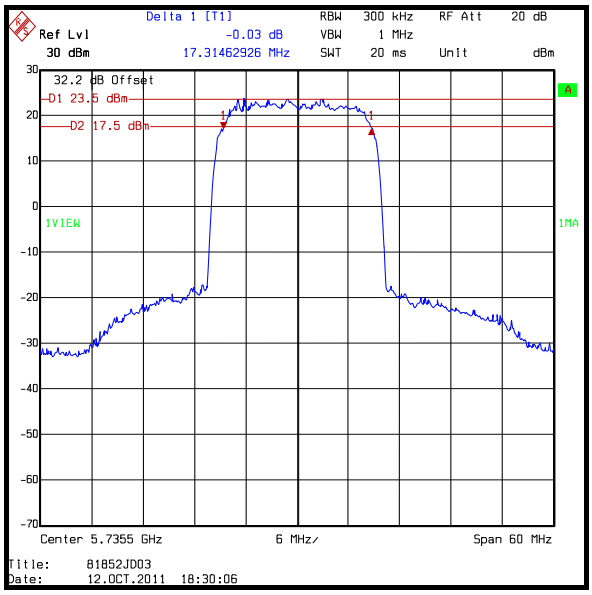


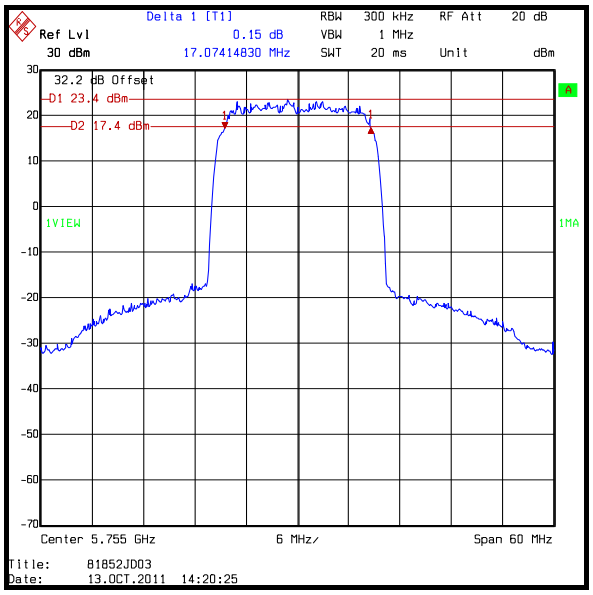


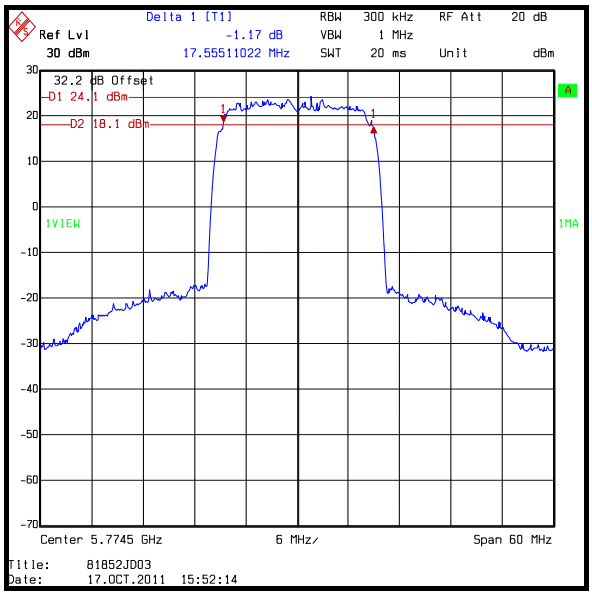


Transmitter 6 dB Bandwidth (continued)

Results: 20 MHz QPSK

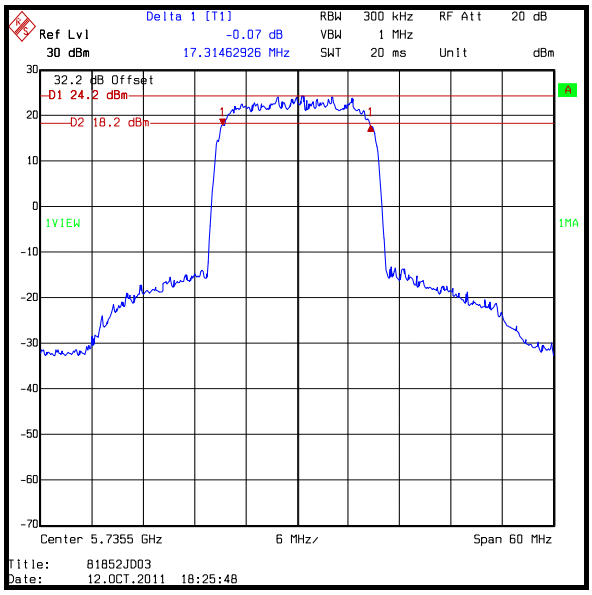


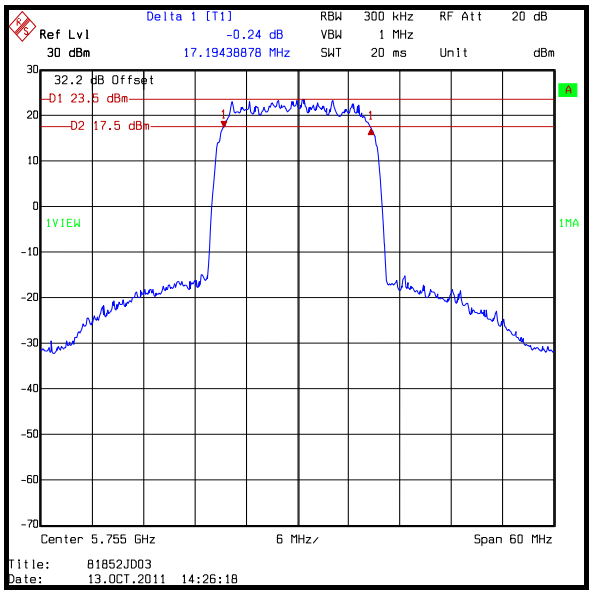


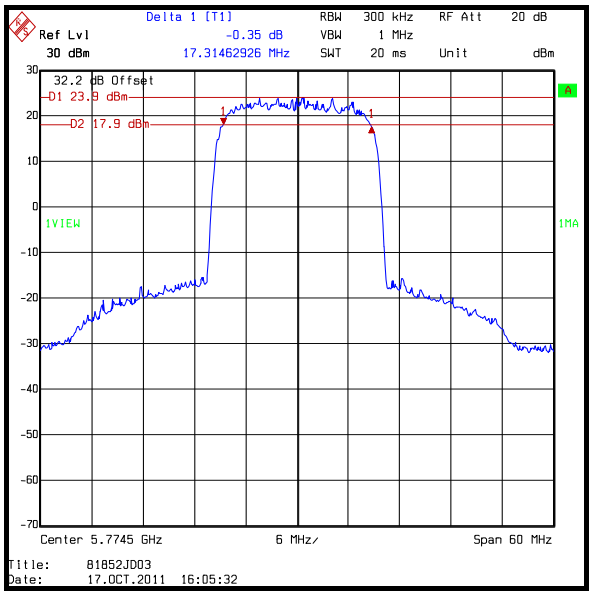


Transmitter 6 dB Bandwidth (continued)

Results: 20 MHz 16QAM

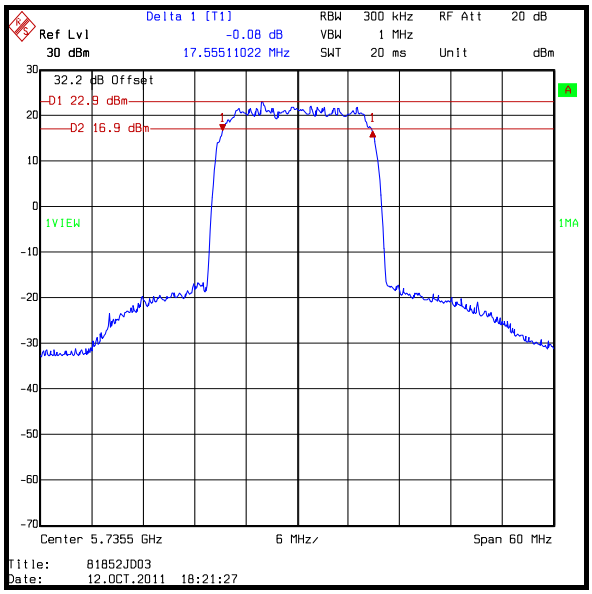


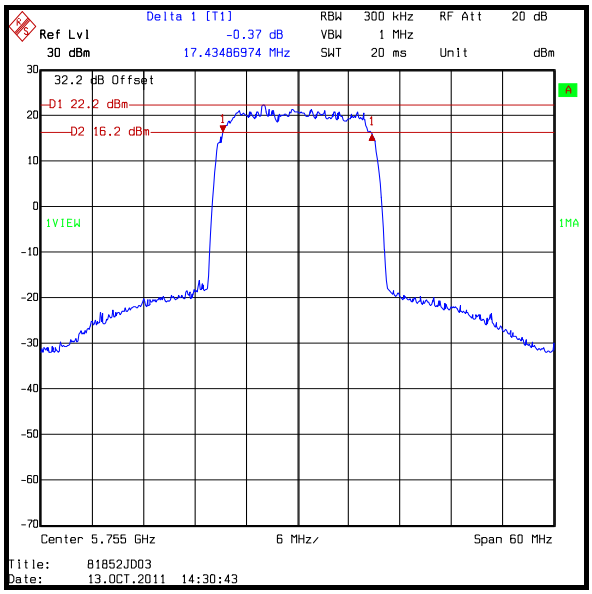


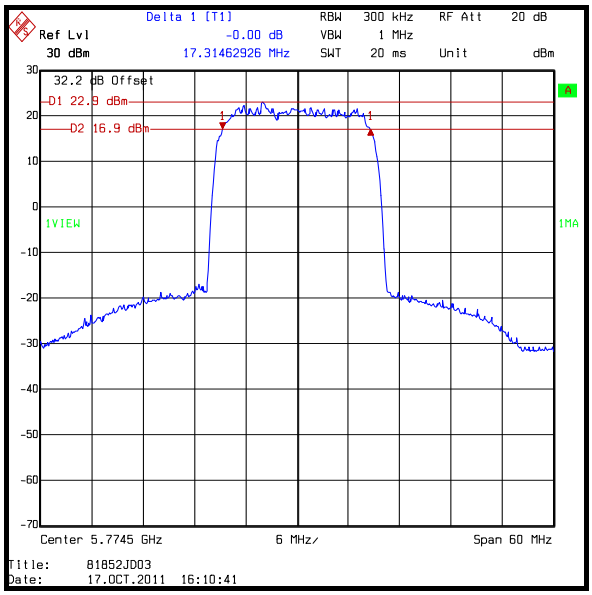


Transmitter 6 dB Bandwidth (continued)

Results: 20 MHz 64QAM

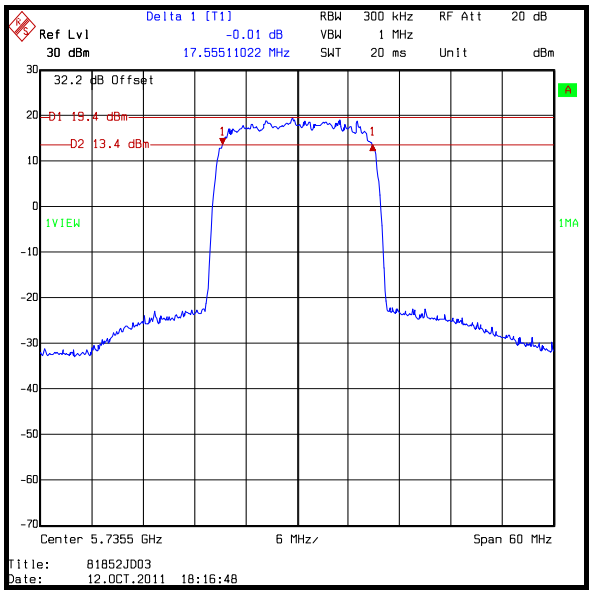


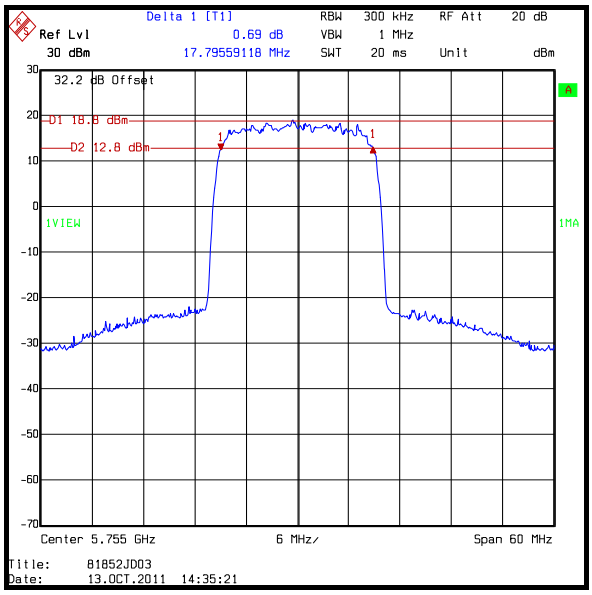


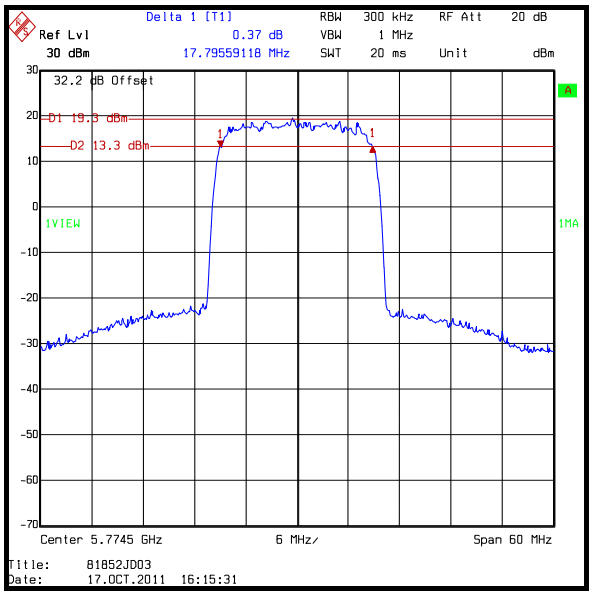


Transmitter 6 dB Bandwidth (continued)

Results: 20 MHz 256QAM

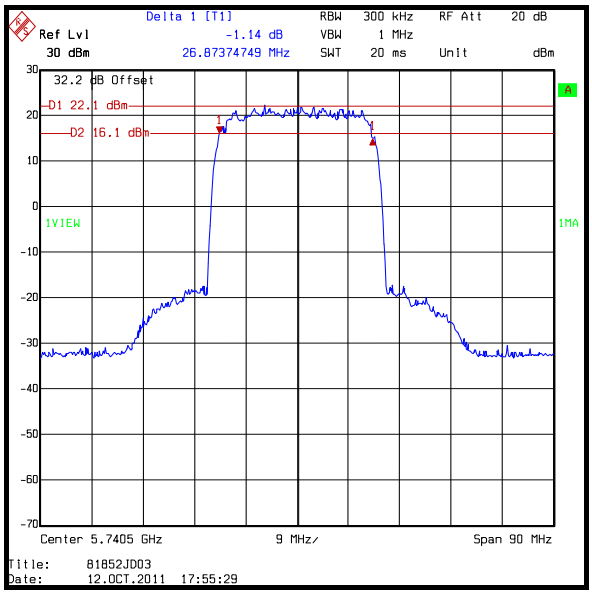


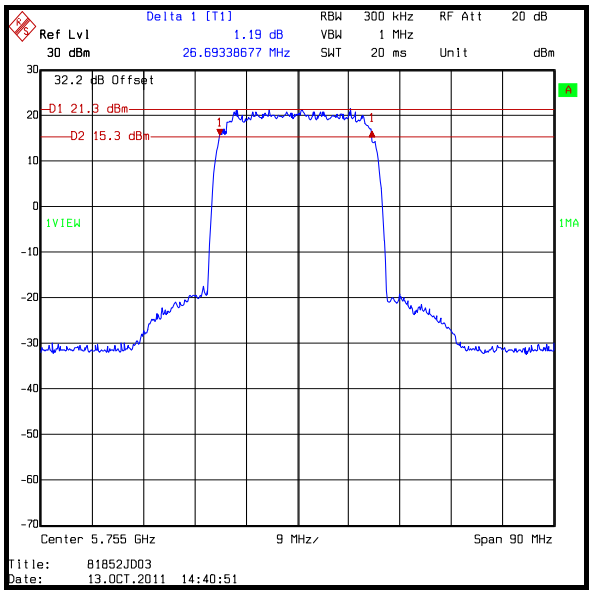


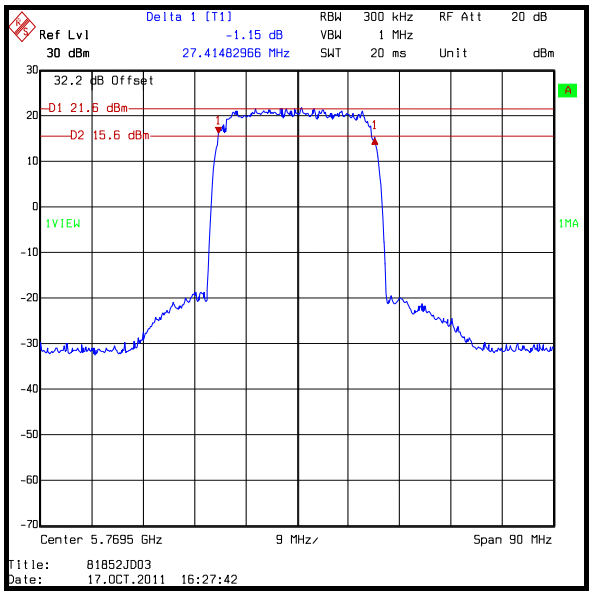


Transmitter 6 dB Bandwidth (continued)

Results: 30 MHz QPSK

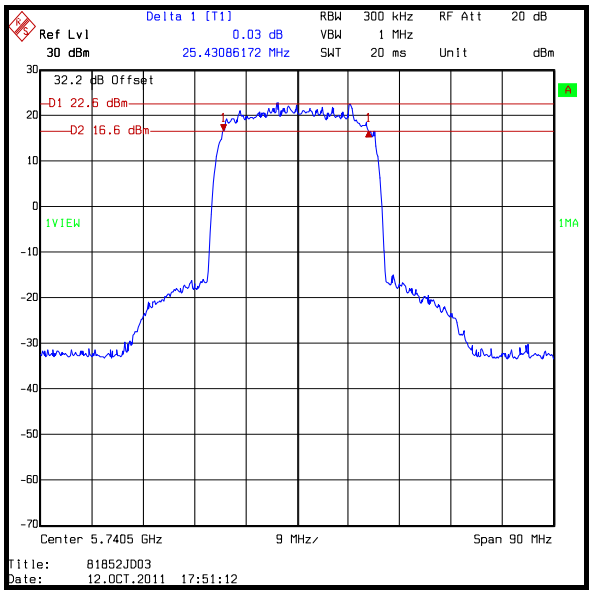


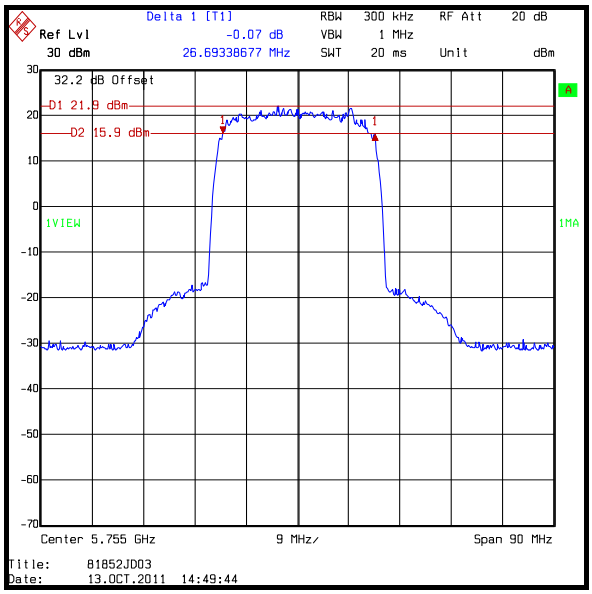


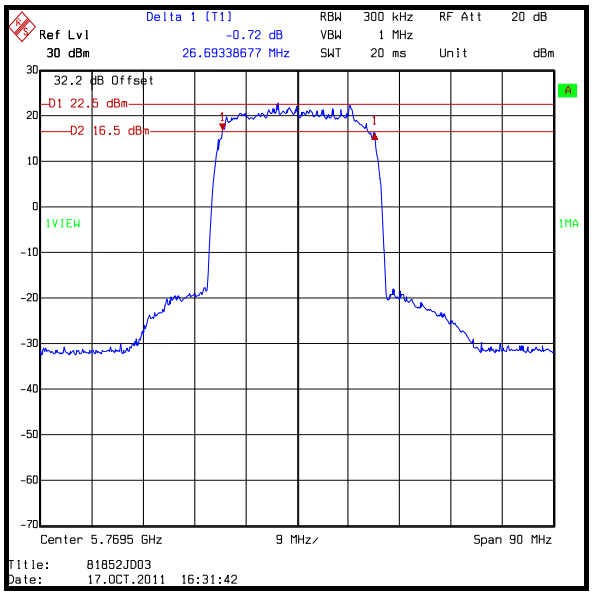


Transmitter 6 dB Bandwidth (continued)

Results: 30 MHz 16QAM

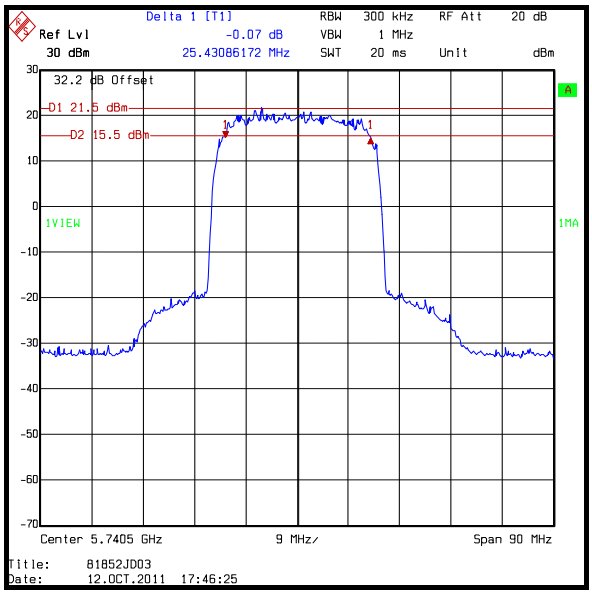


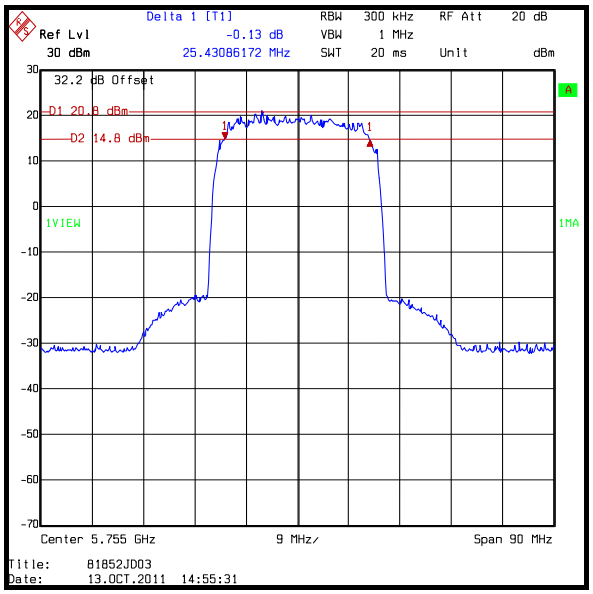


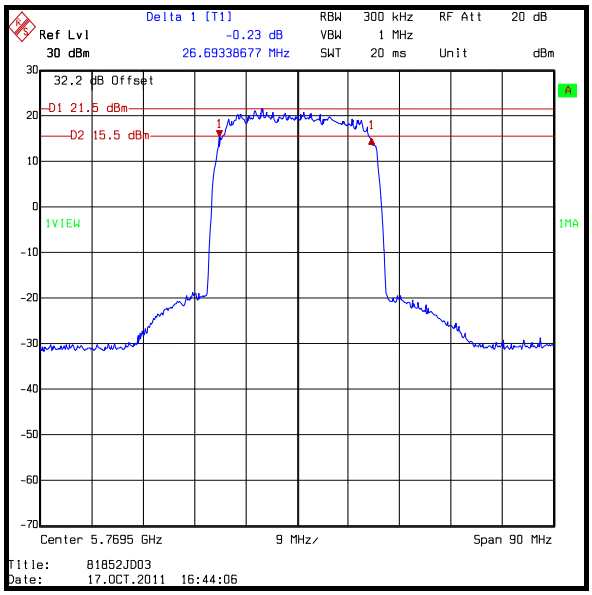


Transmitter 6 dB Bandwidth (continued)

Results: 30 MHz 64QAM

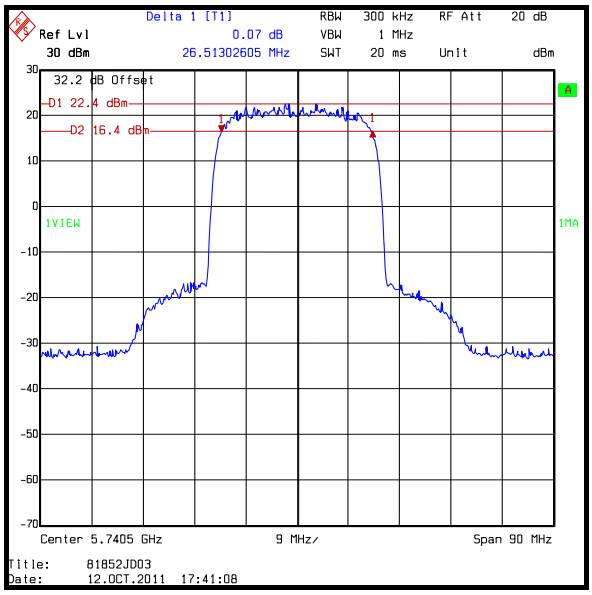


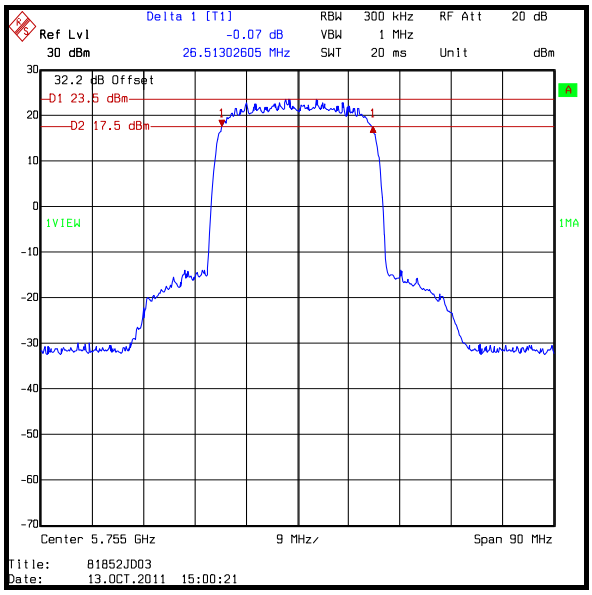


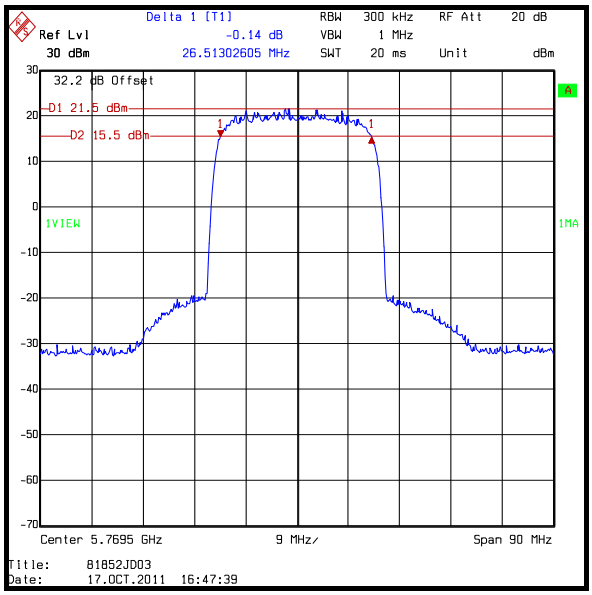


Transmitter 6 dB Bandwidth (continued)

Results: 30 MHz 128QAM

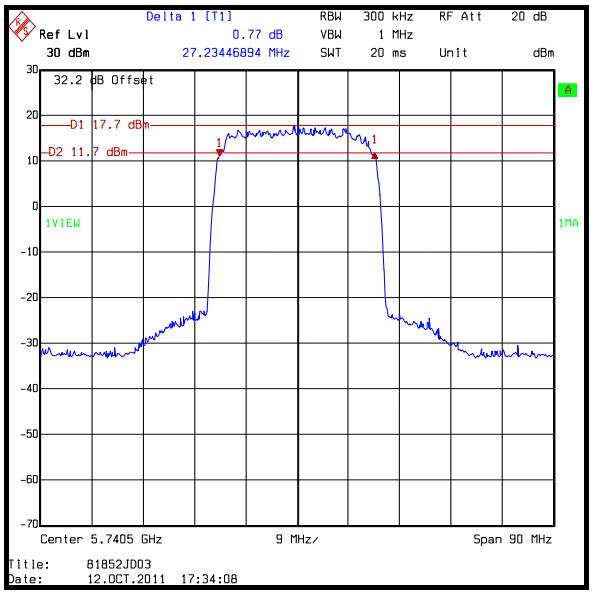


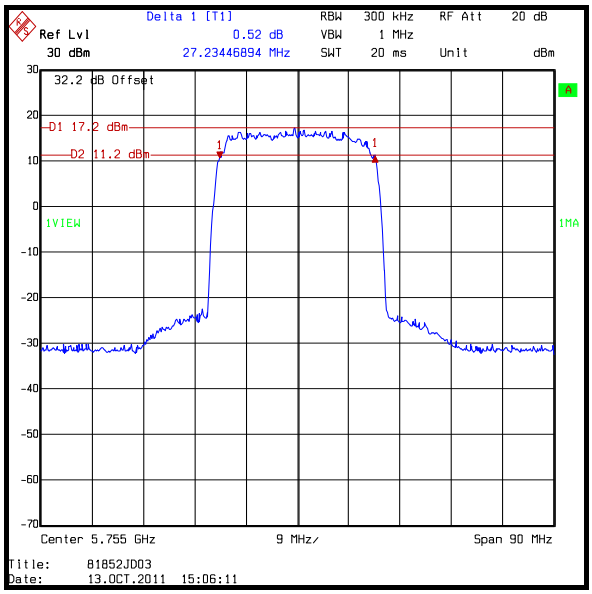


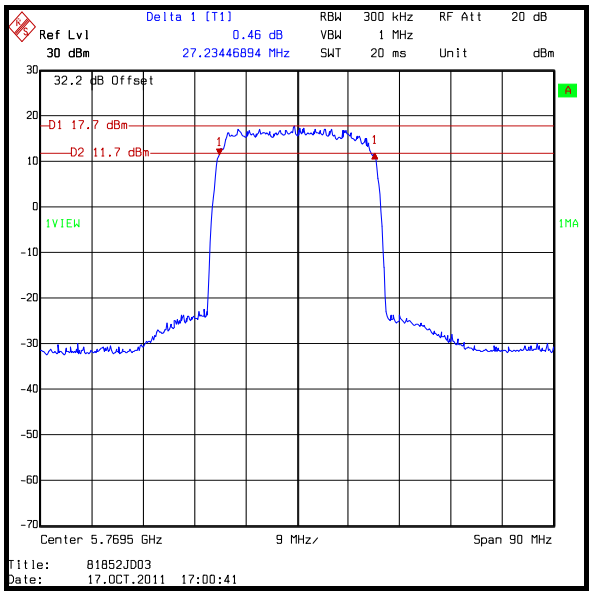


Transmitter 6 dB Bandwidth (continued)

Results: 30 MHz 256QAM







5.2.3. Transmitter 20 dB Bandwidth

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	12 October 2011, 13 October 2011 & 17 October 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.1

Environmental Conditions:

Temperature (°C):	25 to 26
Relative Humidity (%):	34 to 38

Results: 5 MHz 128QAM

Channel	20 dB Bandwidth (MHz)
Bottom	4.629
Middle	4.629
Top	4.629

Results: 10 MHz QPSK

Channel	20 dB Bandwidth (MHz)
Bottom	9.679
Middle	9.679
Top	9.679

Results: 10 MHz 16QAM

Channel	20 dB Bandwidth (MHz)
Bottom	9.739
Middle	9.679
Top	9.679

Results: 10 MHz 64QAM

Channel	20 dB Bandwidth (MHz)
Bottom	9.739
Middle	9.679
Top	9.739

Transmitter 20 dB Bandwidth (continued)

Results: 10 MHz 128QAM

Channel	20 dB Bandwidth (MHz)
Bottom	9.679
Middle	9.679
Top	9.679

Results: 10 MHz 256QAM

Channel	20 dB Bandwidth (MHz)
Bottom	9.679
Middle	9.679
Top	9.679

Results: 20 MHz QPSK

Channel	20 dB Bandwidth (MHz)
Bottom	19.840
Middle	19.840
Top	19.840

Results: 20 MHz 16QAM

Channel	20 dB Bandwidth (MHz)
Bottom	19.719
Middle	19.840
Top	19.719

Results: 20 MHz 64QAM

Channel	20 dB Bandwidth (MHz)
Bottom	19.840
Middle	19.840
Top	19.840

Results: 20 MHz 256QAM

Channel	20 dB Bandwidth (MHz)
Bottom	19.840
Middle	19.840
Top	19.840

Transmitter 20 dB Bandwidth (continued)

Results: 30 MHz QPSK

Channel	20 dB Bandwidth (MHz)
Bottom	29.940
Middle	30.120
Top	30.120

Results: 30 MHz 16QAM

Channel	20 dB Bandwidth (MHz)
Bottom	29.760
Middle	29.760
Top	29.760

Results: 30 MHz 64QAM

Channel	20 dB Bandwidth (MHz)
Bottom	29.760
Middle	29.760
Top	29.760

Results: 30 MHz 128QAM

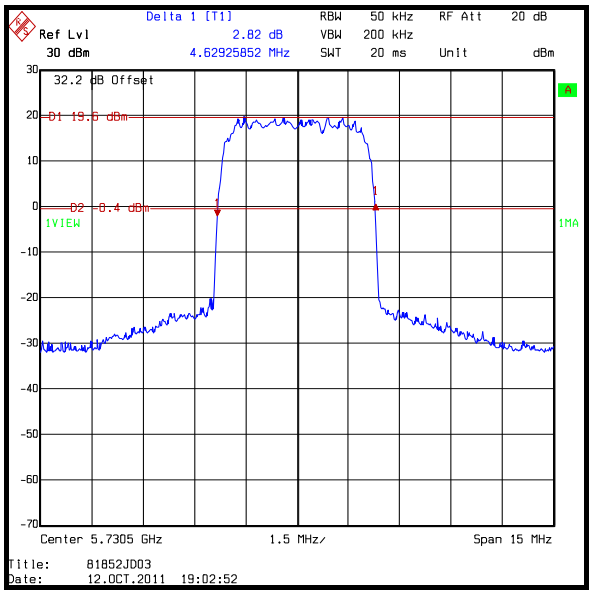
Channel	20 dB Bandwidth (MHz)
Bottom	29.760
Middle	29.940
Top	29.940

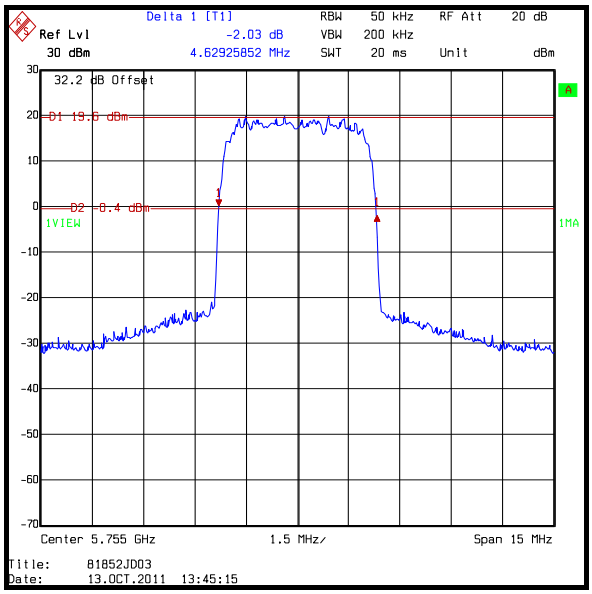
Results: 30 MHz 256QAM

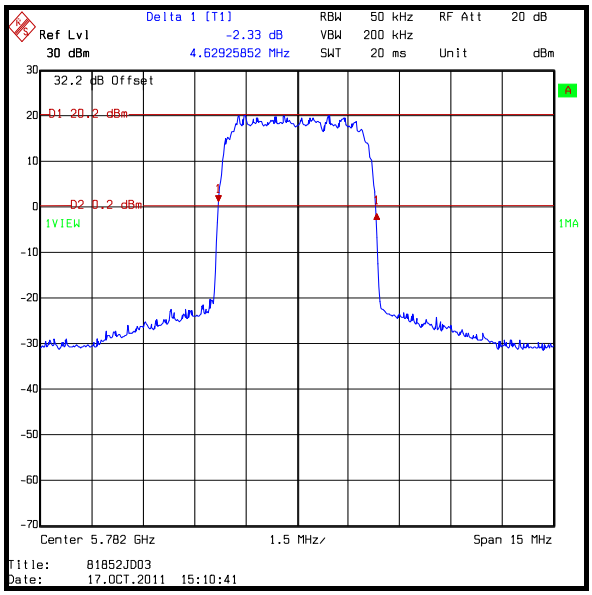
Channel	20 dB Bandwidth (MHz)
Bottom	29.760
Middle	29.940
Top	29.940

Transmitter 20 dB Bandwidth (continued)

Results: 5 MHz 128QAM

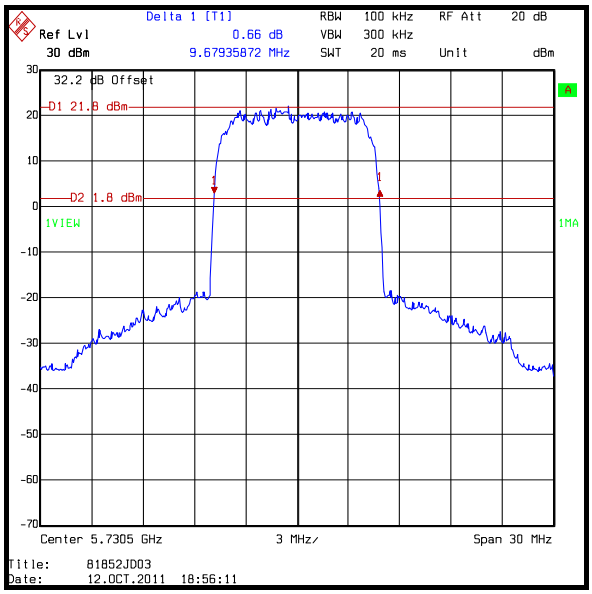


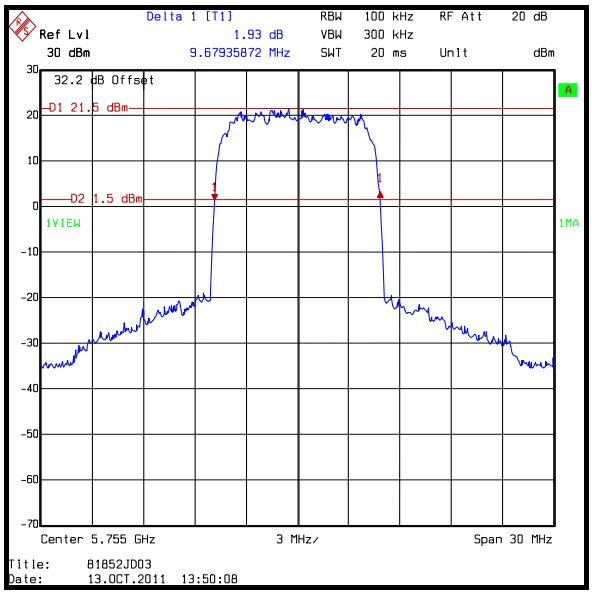


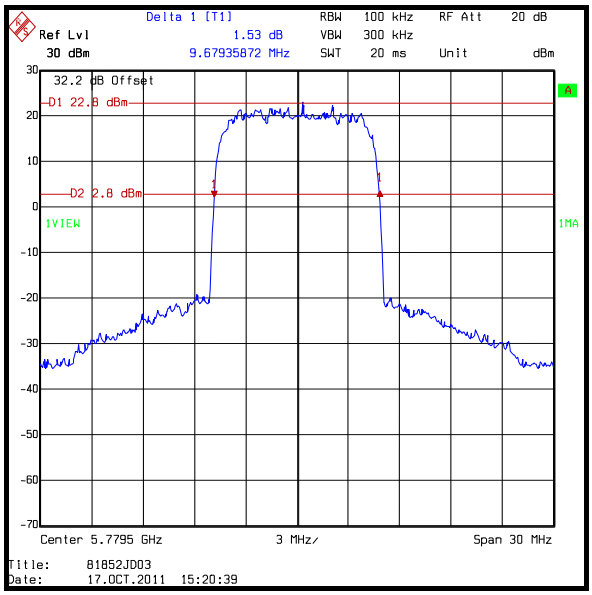


Transmitter 20 dB Bandwidth (continued)

Results: 10 MHz QPSK

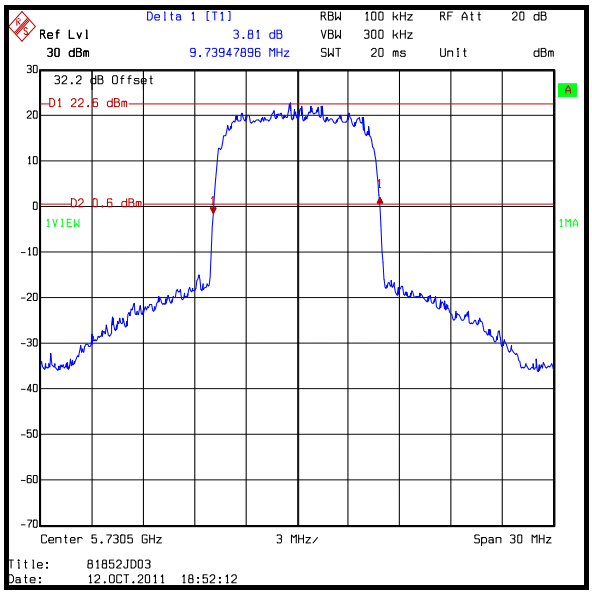


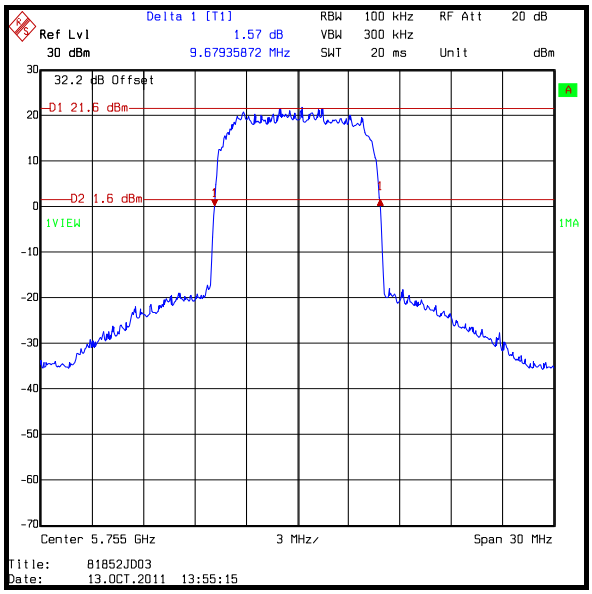


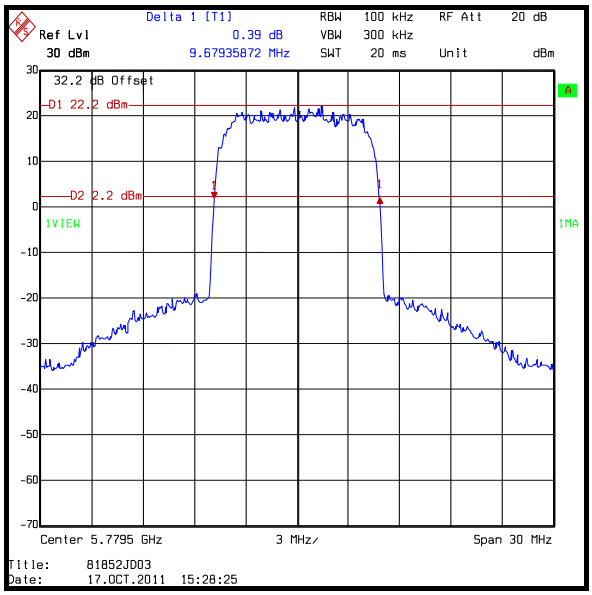


Transmitter 20 dB Bandwidth (continued)

Results: 10 MHz 16QAM

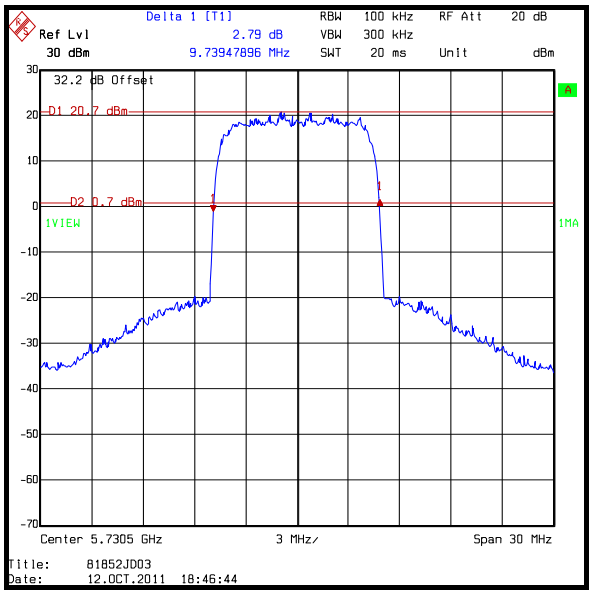


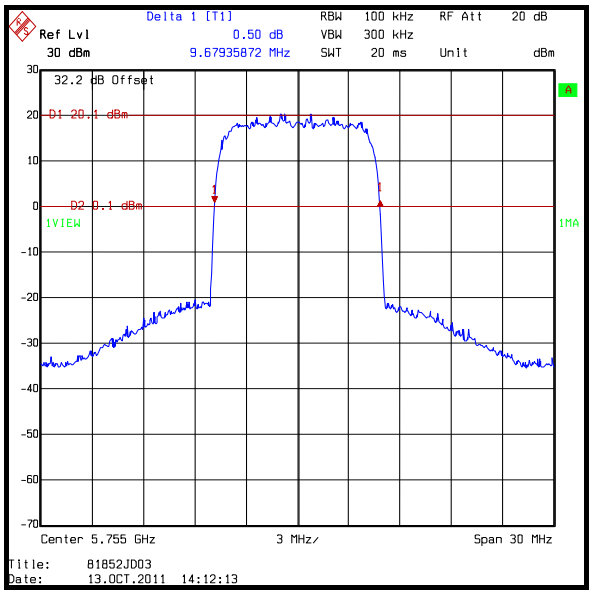


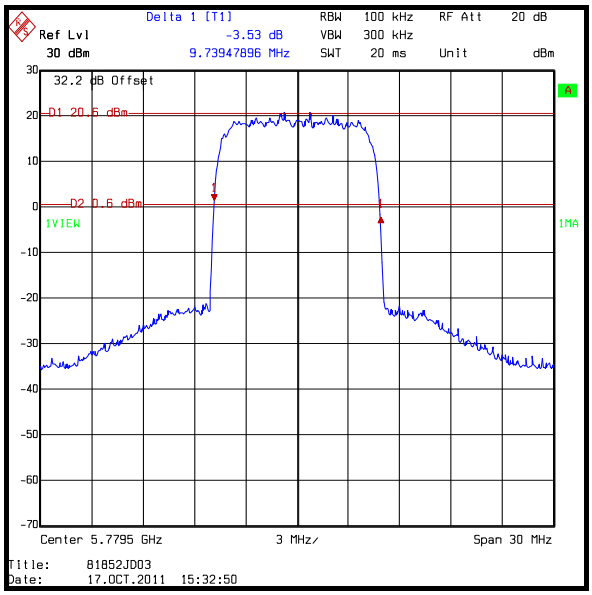


Transmitter 20 dB Bandwidth (continued)

Results: 10 MHz 64QAM

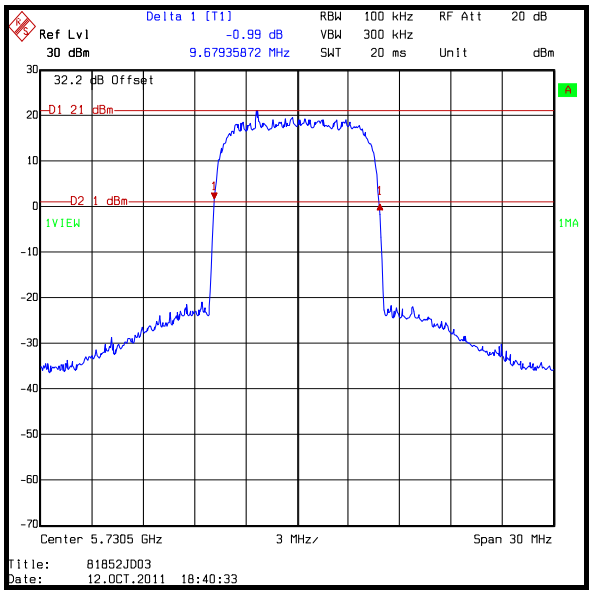


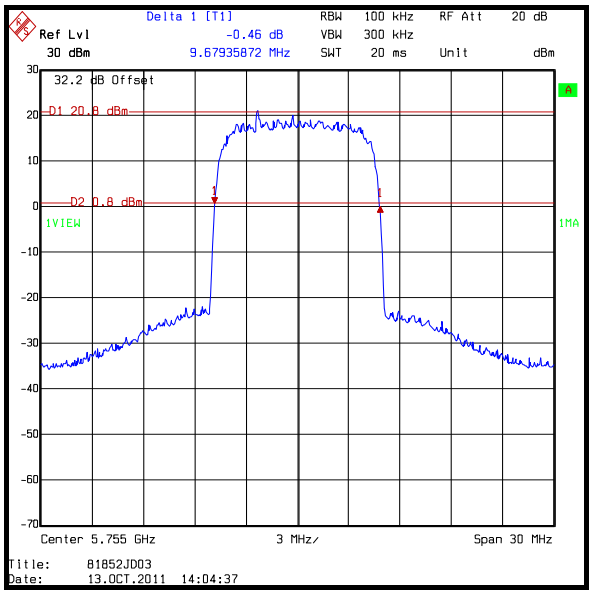


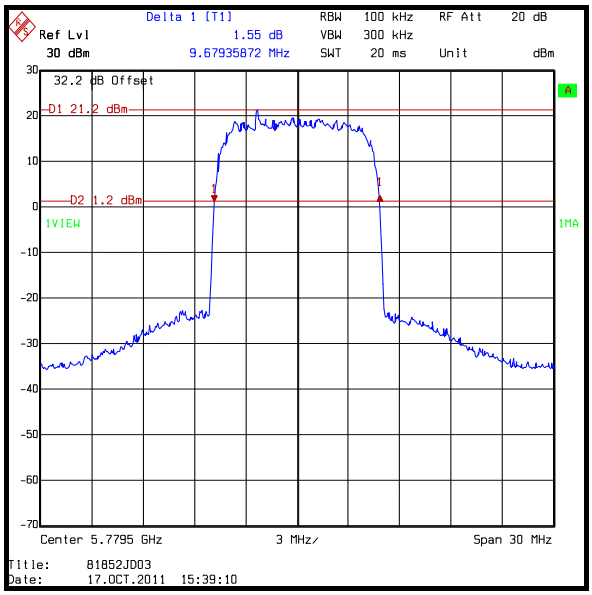


Transmitter 20 dB Bandwidth (continued)

Results: 10 MHz 128QAM

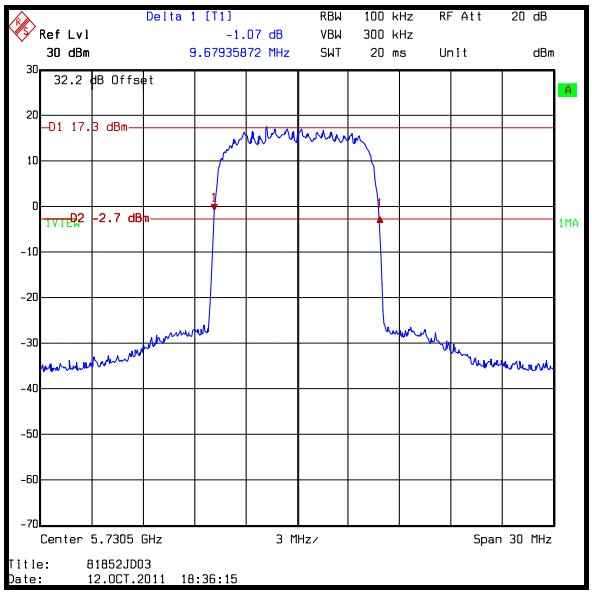


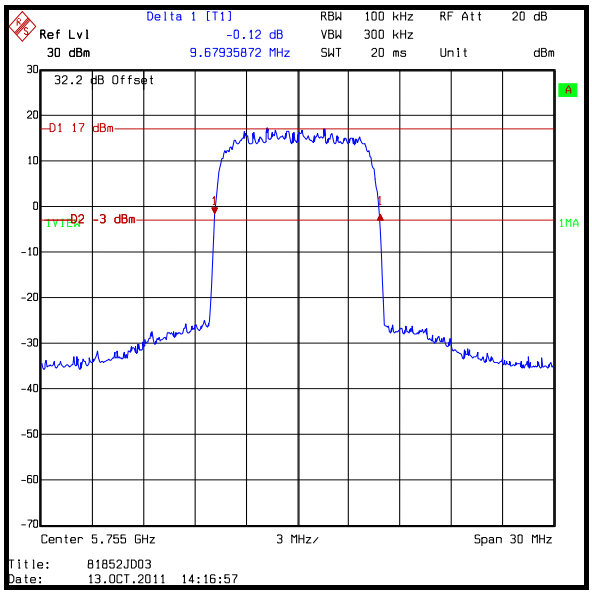


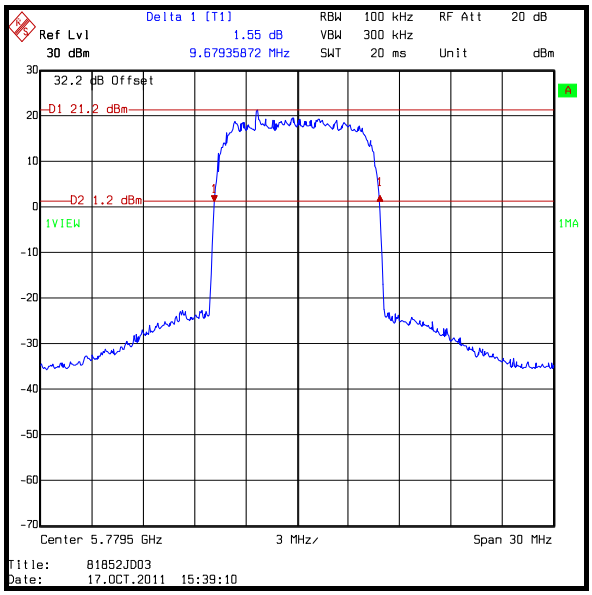


Transmitter 20 dB Bandwidth (continued)

Results: 10 MHz 256QAM

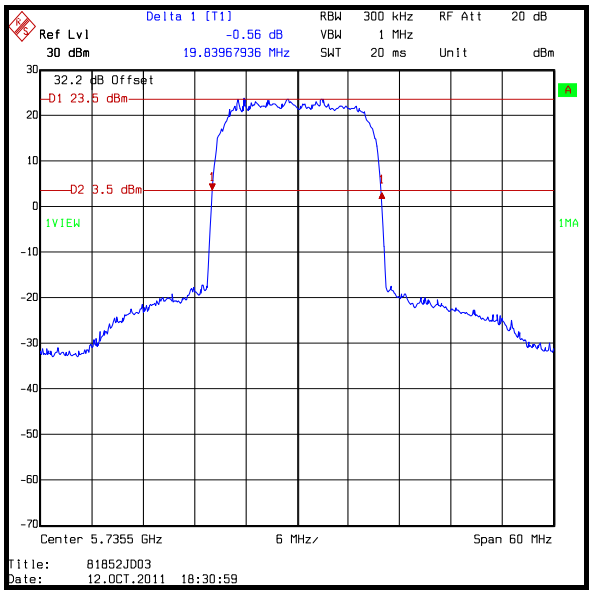


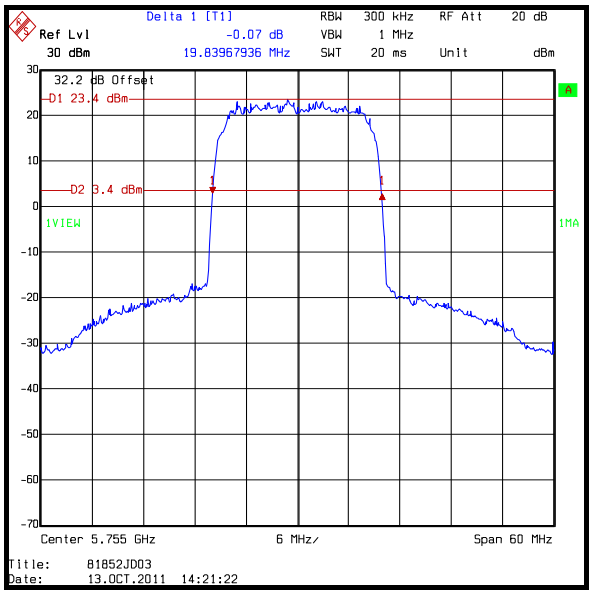


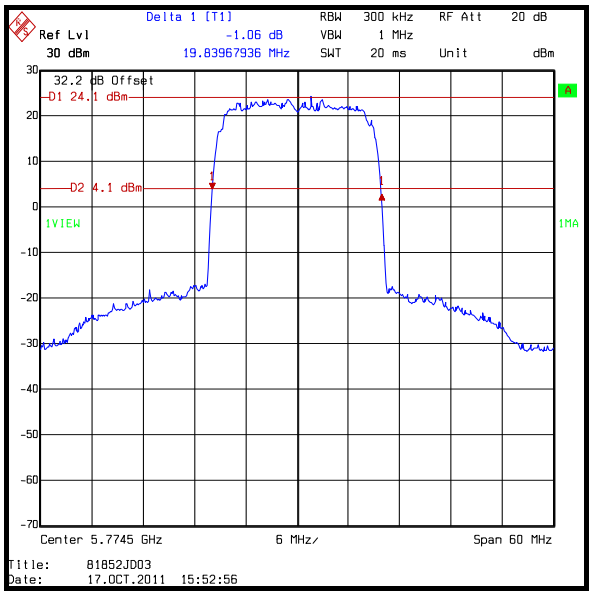


Transmitter 20 dB Bandwidth (continued)

Results: 20 MHz QPSK

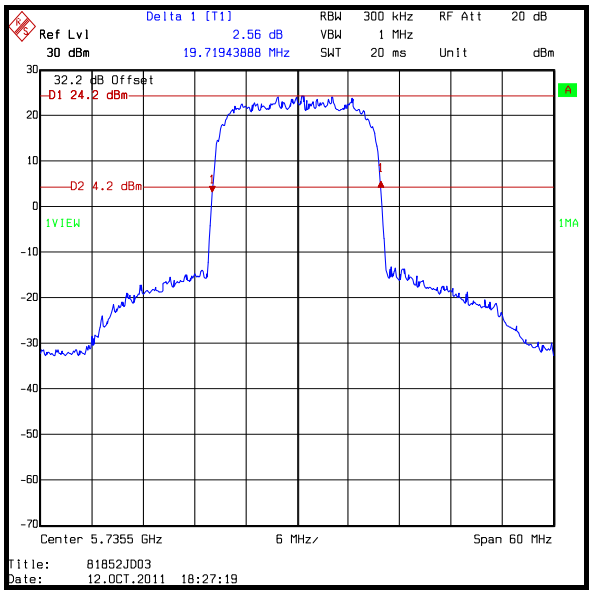


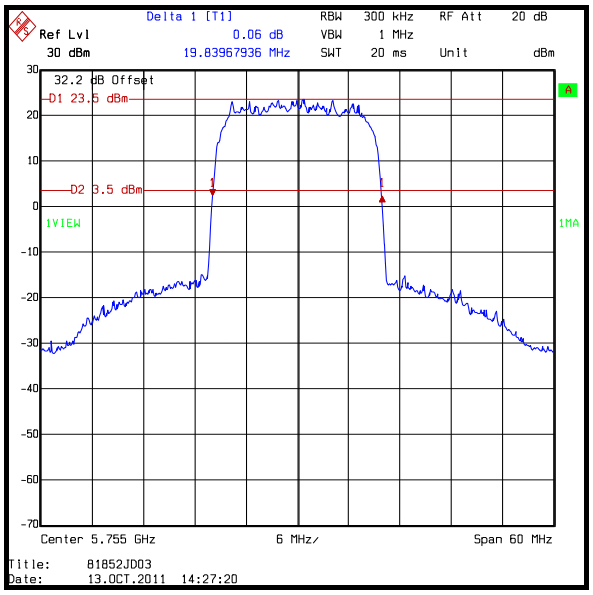


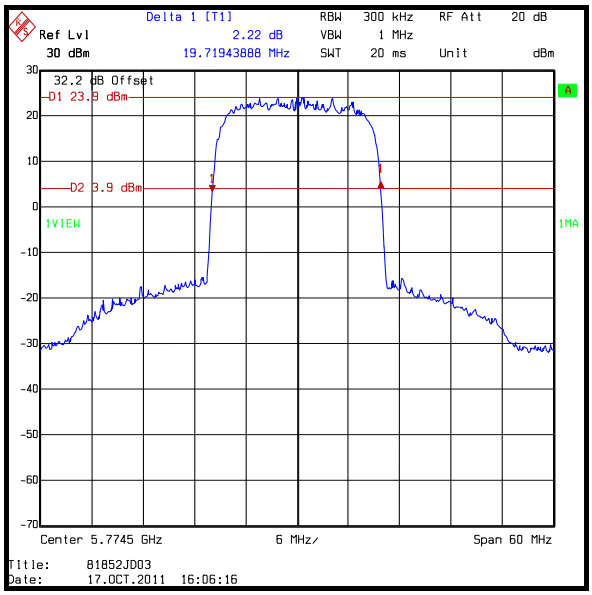


Transmitter 20 dB Bandwidth (continued)

Results: 20 MHz 16QAM

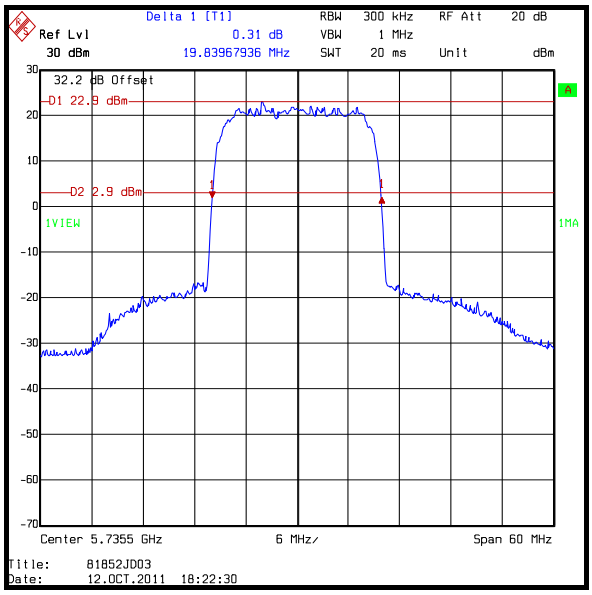


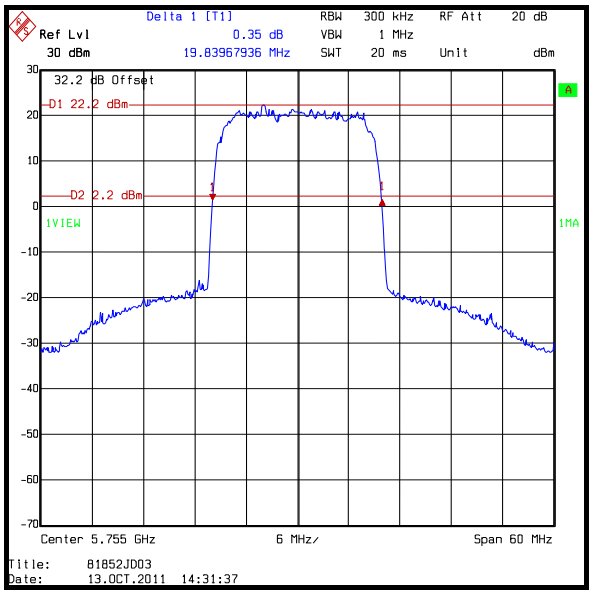


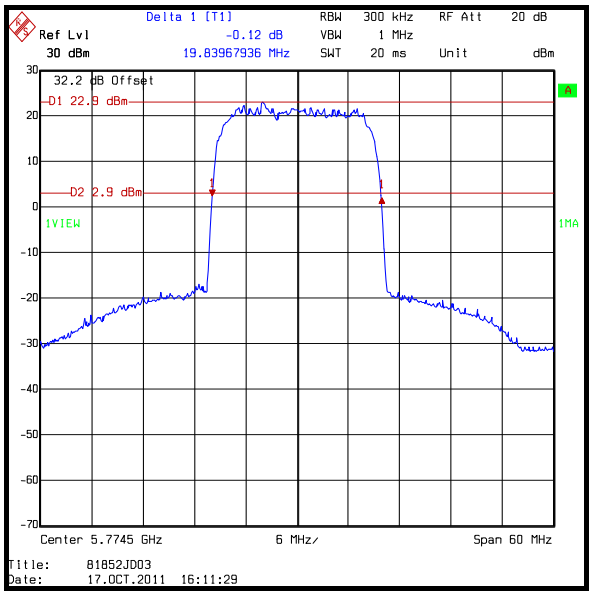


Transmitter 20 dB Bandwidth (continued)

Results: 20 MHz 64QAM

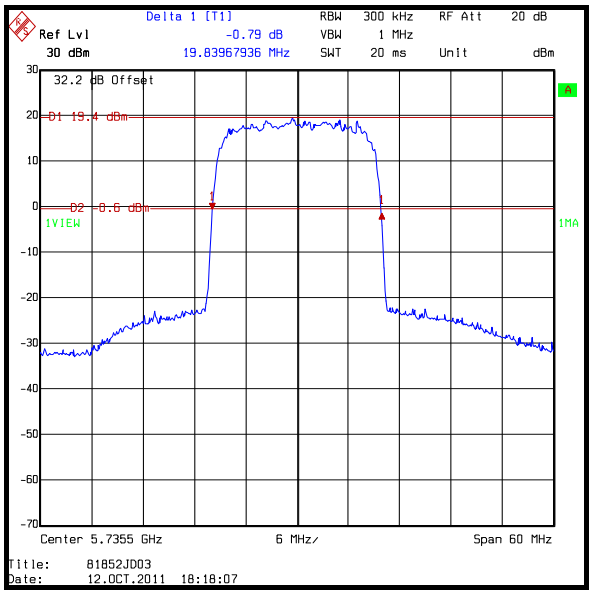


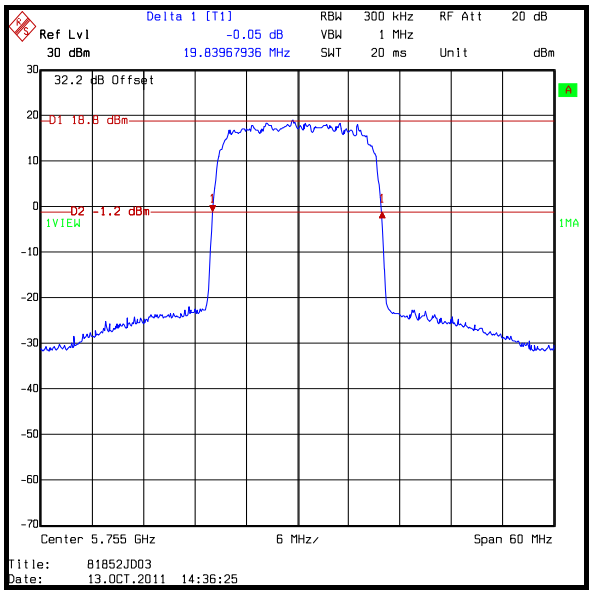


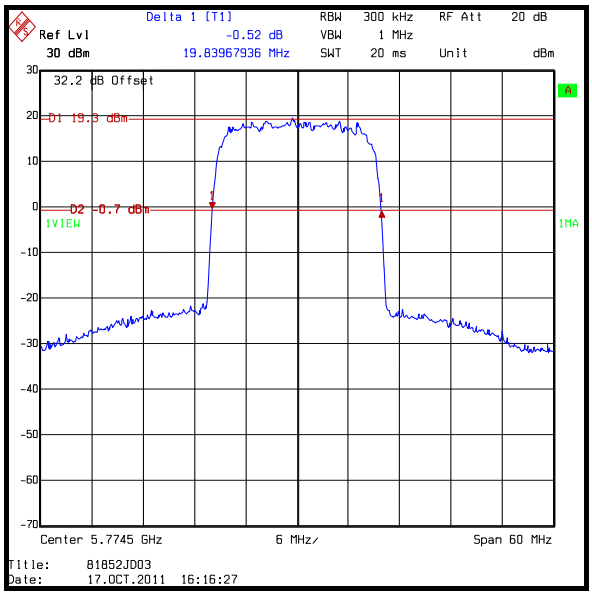


Transmitter 20 dB Bandwidth (continued)

Results: 20 MHz 256QAM

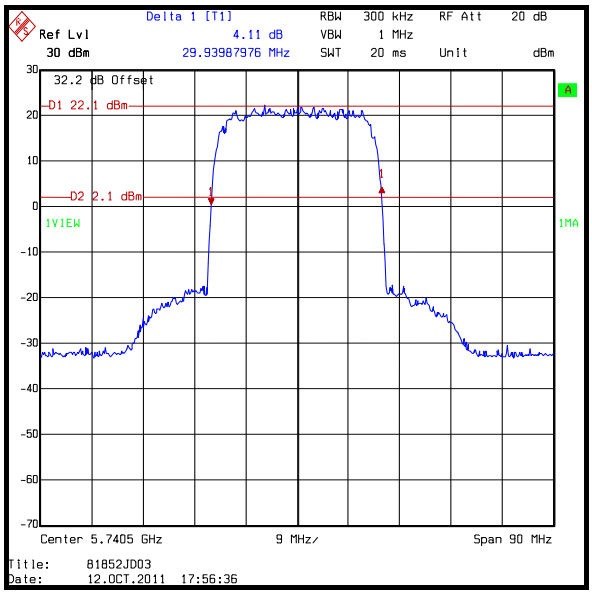


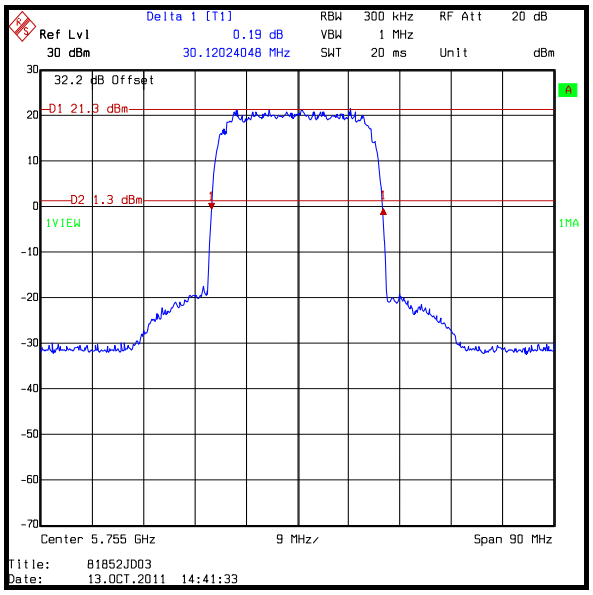


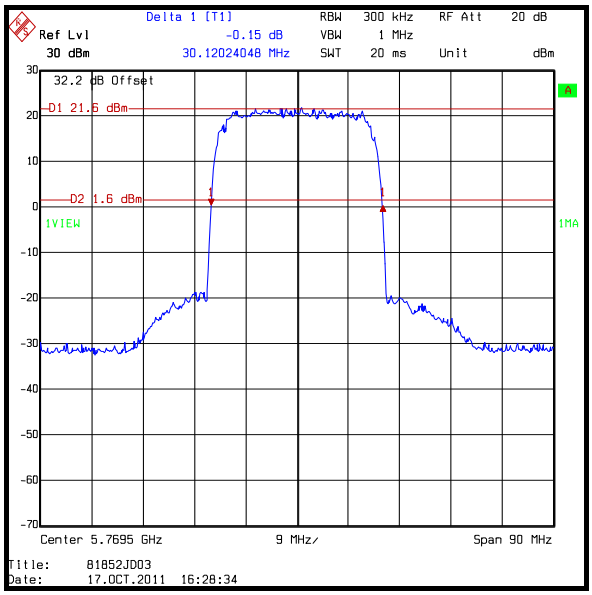


Transmitter 20 dB Bandwidth (continued)

Results: 30 MHz QPSK

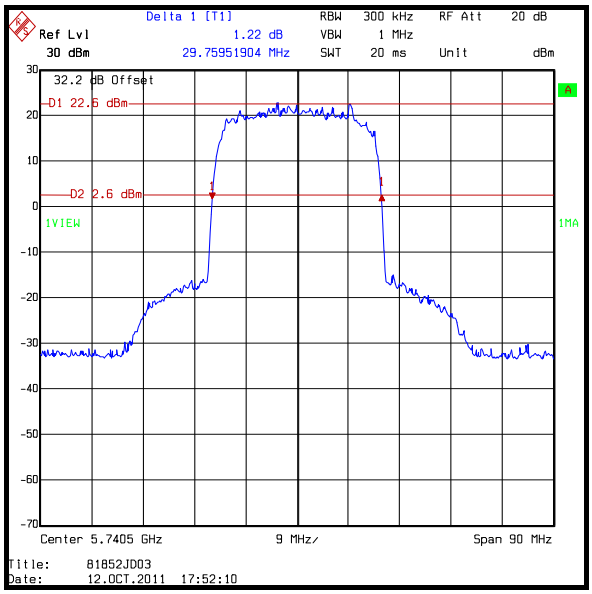


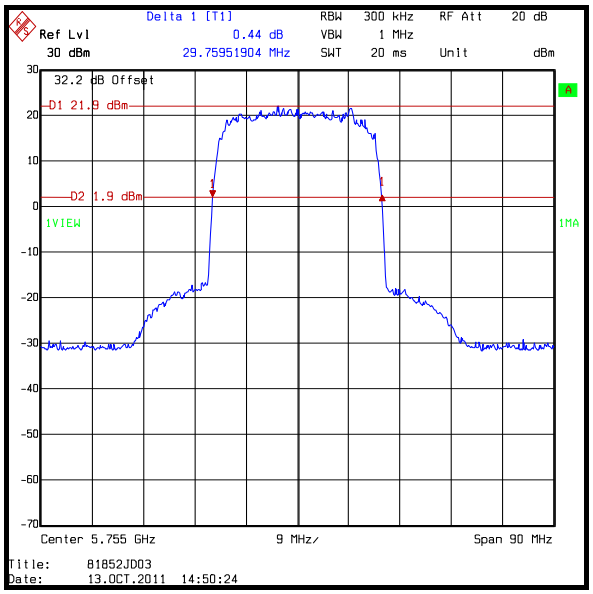


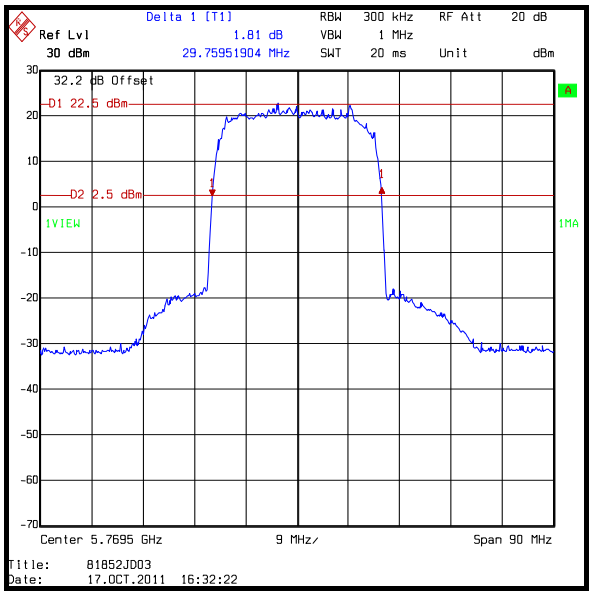


Transmitter 20 dB Bandwidth (continued)

Results: 30 MHz 16QAM

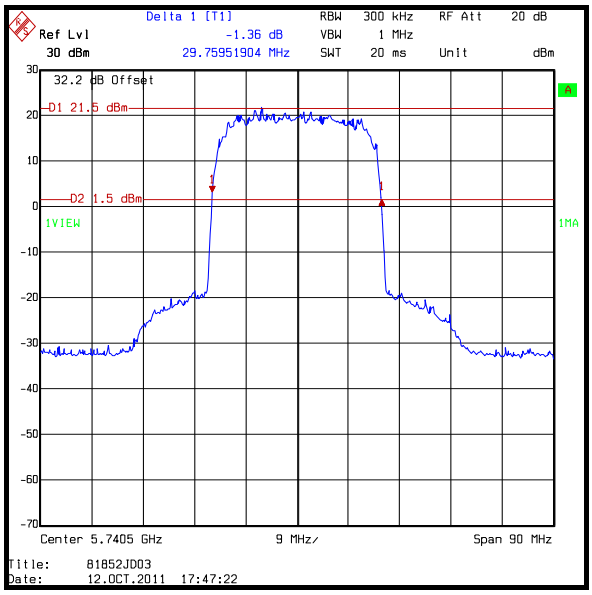


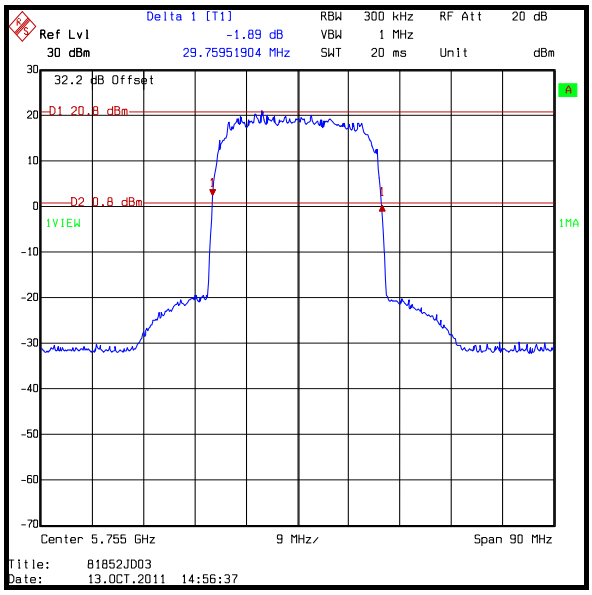


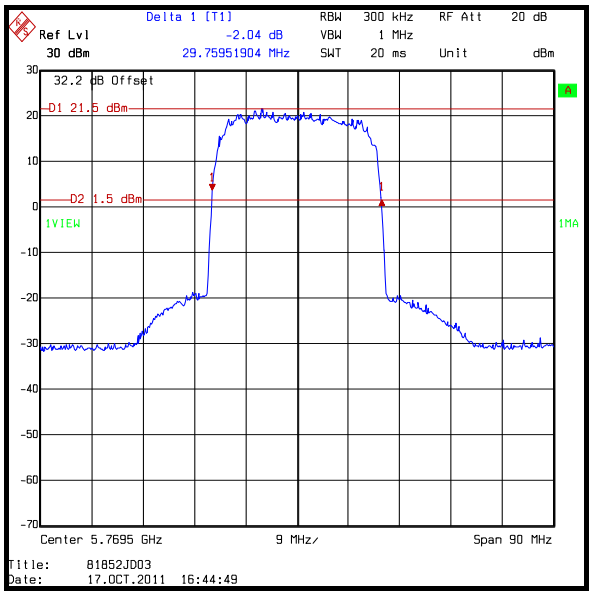


Transmitter 20 dB Bandwidth (continued)

Results: 30 MHz 64QAM

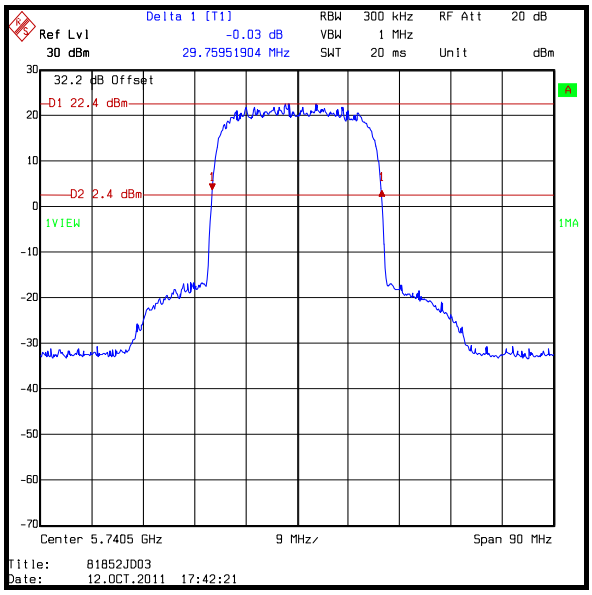


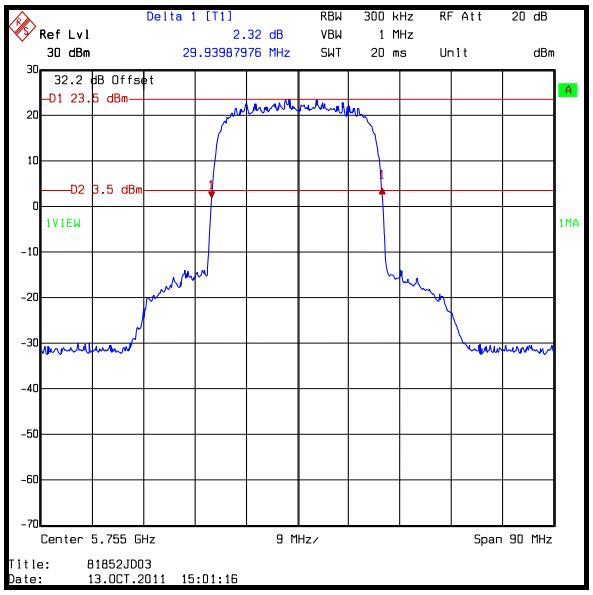


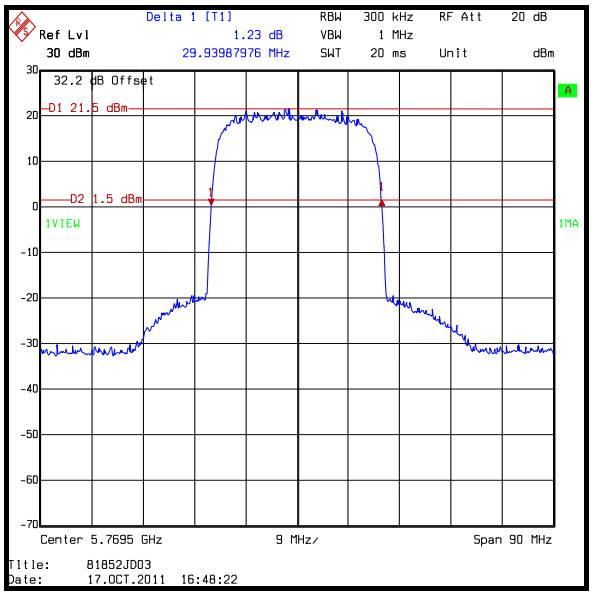


Transmitter 20 dB Bandwidth (continued)

Results: 30 MHz 128QAM

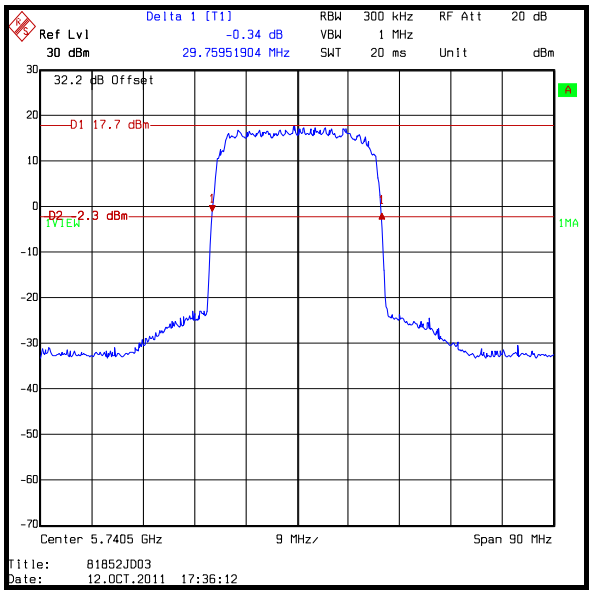


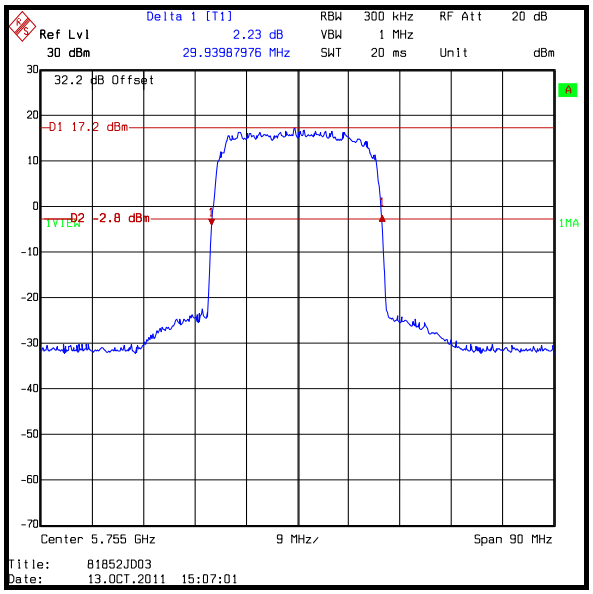


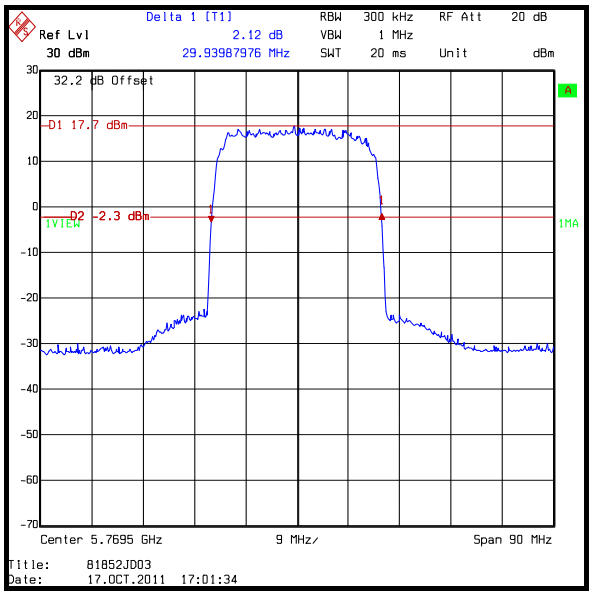


Transmitter 20 dB Bandwidth (continued)

Results: 30 MHz 256QAM







5.2.4. Transmitter Power Spectral Density

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	28 October 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247 (In line with KDB 558074, Measurement of Digital Transmission Systems)
Test Method Used:	The Power Spectral Density was measured by using a spectrum analyzer channel power integration function. This integrated the channel power over the specified 3kHz resulting in PSD dBm/3kHz.

Environmental Conditions:

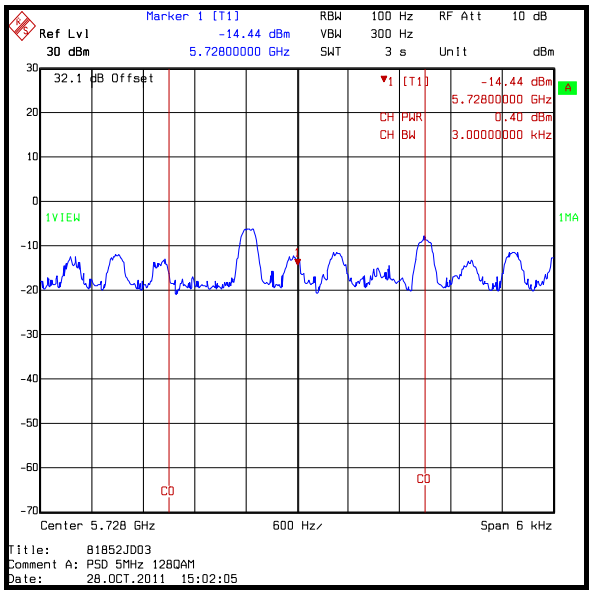
Temperature (°C):	24
Relative Humidity (%):	33

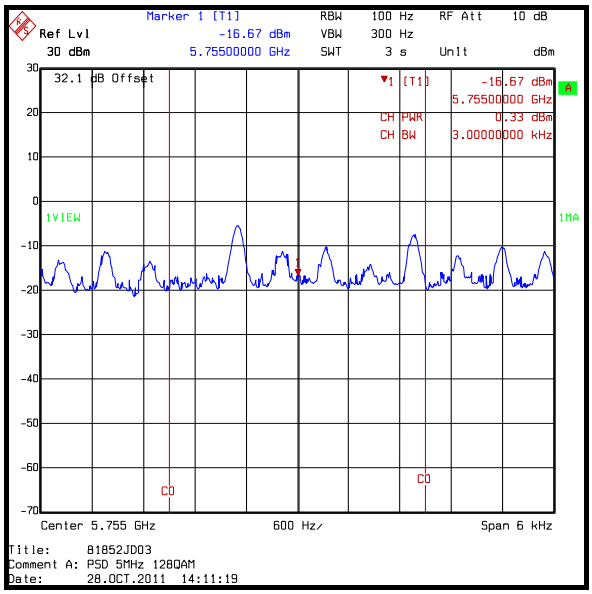
Results:

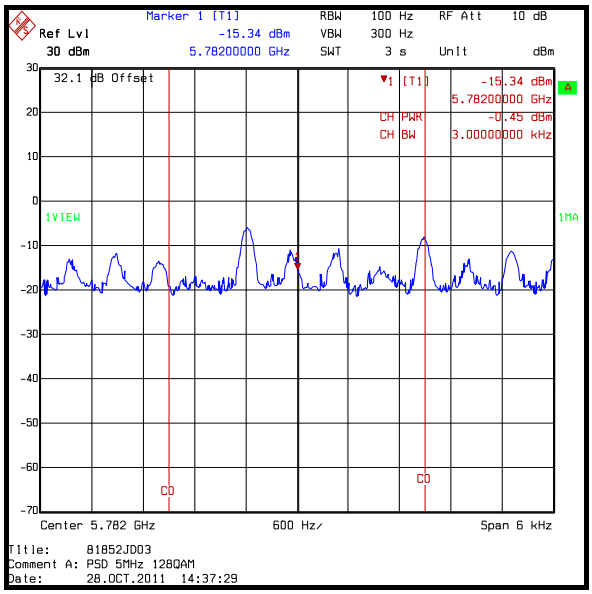
Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	0.4	8.0	7.6	Complied
Middle	0.3	8.0	7.7	Complied
Top	-0.5	8.0	8.5	Complied

Transmitter Power Spectral Density (continued)

Results: 5 MHz 128QAM







5.2.5. Transmitter Maximum Average Output Power

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	20 October 2011 & 21 October 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247(b)(3)
Test Method Used:	The Maximum Average Power was measured by using a spectrum analyzer channel power integration function. This integrated the power over the EUT's channel bandwidth resulting in the maximum power for the tested bandwidth. Note the EUT was transmitting on a 100% duty cycle and thus no duty cycle correction factor was applied.

Environmental Conditions:

Temperature (°C):	22 to 23
Relative Humidity (%):	32 to 33

Results: 5 MHz 128QAM

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	27.3	30.0	2.7	Complied
Middle	28.3	30.0	1.7	Complied
Top	27.5	30.0	2.5	Complied

Results: 10 MHz QPSK

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	28.8	30.0	1.2	Complied
Middle	29.7	30.0	0.3	Complied
Top	29.0	30.0	1.0	Complied

Results: 10 MHz 16QAM

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	28.7	30.0	1.3	Complied
Middle	29.6	30.0	0.4	Complied
Top	28.9	30.0	1.1	Complied

Results: 10 MHz 64QAM

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	28.6	30.0	1.4	Complied
Middle	29.5	30.0	0.5	Complied
Top	28.7	30.0	1.3	Complied

Transmitter Maximum Average Output Power (continued)

Results: 10 MHz 128QAM

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	27.4	30.0	2.6	Complied
Middle	28.4	30.0	1.6	Complied
Top	27.5	30.0	2.5	Complied

Results: 10 MHz 256QAM

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	28.3	30.0	1.7	Complied
Middle	29.2	30.0	0.8	Complied
Top	28.4	30.0	1.6	Complied

Results: 20 MHz QPSK

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	29.1	30.0	0.9	Complied
Middle	29.9	30.0	0.1	Complied
Top	29.1	30.0	0.9	Complied

Results: 20 MHz 16QAM

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	29.0	30.0	1.0	Complied
Middle	29.7	30.0	0.3	Complied
Top	29.0	30.0	1.0	Complied

Results: 20 MHz 64QAM

Channel	Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	28.8	30.0	1.2	Complied
Middle	29.6	30.0	0.4	Complied
Top	28.8	30.0	1.2	Complied

Transmitter Maximum Average Output Power (continued)

Results: 20 MHz 256QAM

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	28.5	30.0	1.5	Complied
Middle	29.3	30.0	0.7	Complied
Top	28.5	30.0	1.5	Complied

Results: 30 MHz QPSK

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	29.2	30.0	0.8	Complied
Middle	29.8	30.0	0.2	Complied
Top	29.1	30.0	0.9	Complied

Results: 30 MHz 16QAM

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	29.0	30.0	1.0	Complied
Middle	29.7	30.0	0.3	Complied
Top	29.0	30.0	1.0	Complied

Results: 30 MHz 64QAM

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	28.9	30.0	1.1	Complied
Middle	29.6	30.0	0.4	Complied
Top	28.9	30.0	1.1	Complied

Results: 30 MHz 128QAM

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	29.2	30.0	0.9	Complied
Middle	29.8	30.0	0.2	Complied
Top	29.1	30.0	0.9	Complied

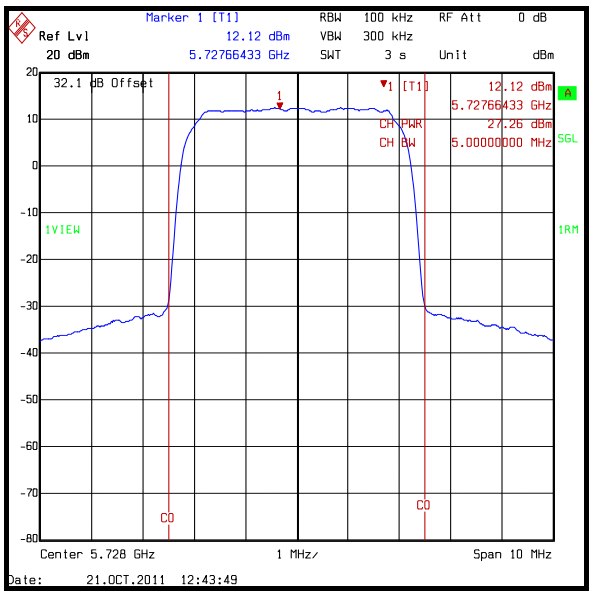
Transmitter Maximum Average Output Power (continued)

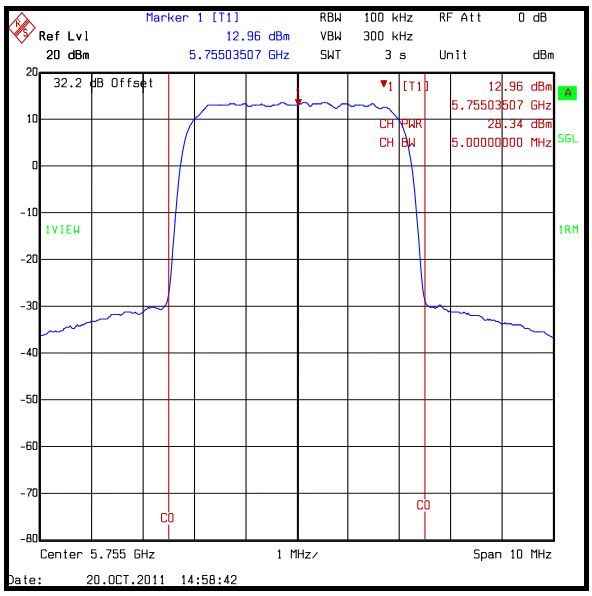
Results: 30 MHz 256QAM

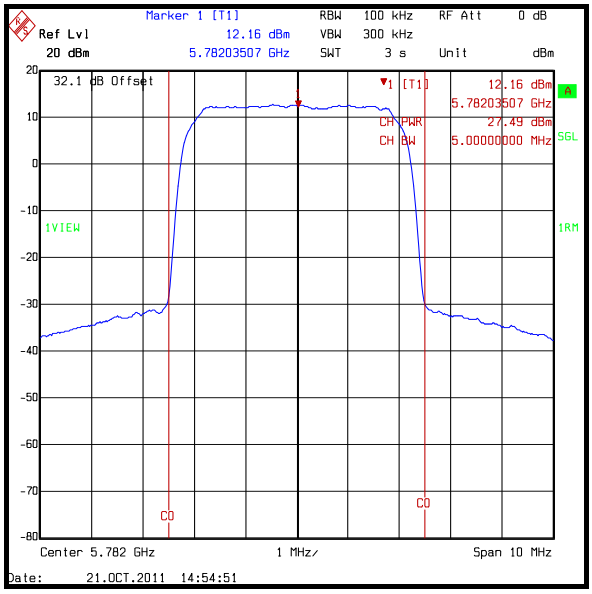
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	28.5	30.0	1.5	Complied
Middle	29.2	30.0	0.8	Complied
Top	28.5	30.0	1.5	Complied

Transmitter Maximum Average Output Power (continued)

Results: 5 MHz 128QAM

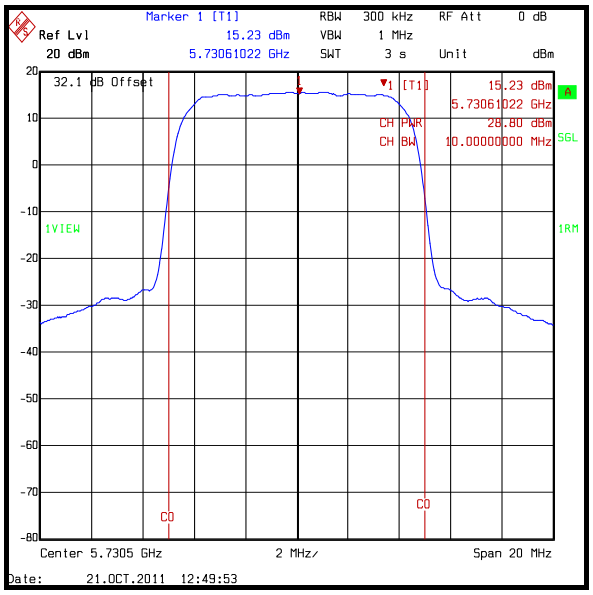


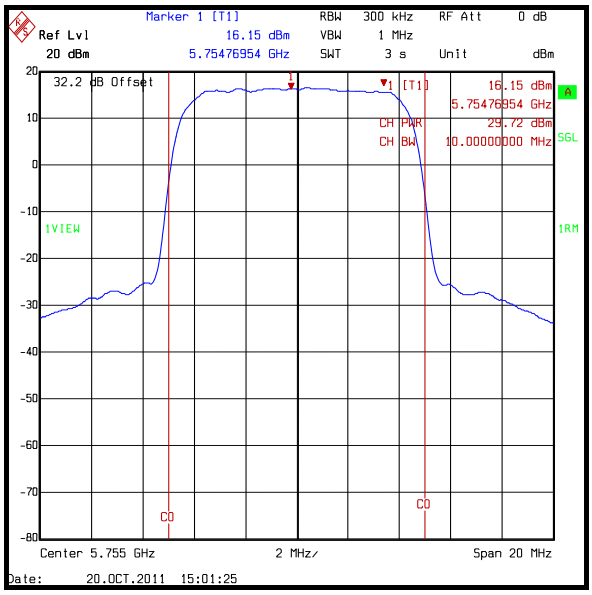


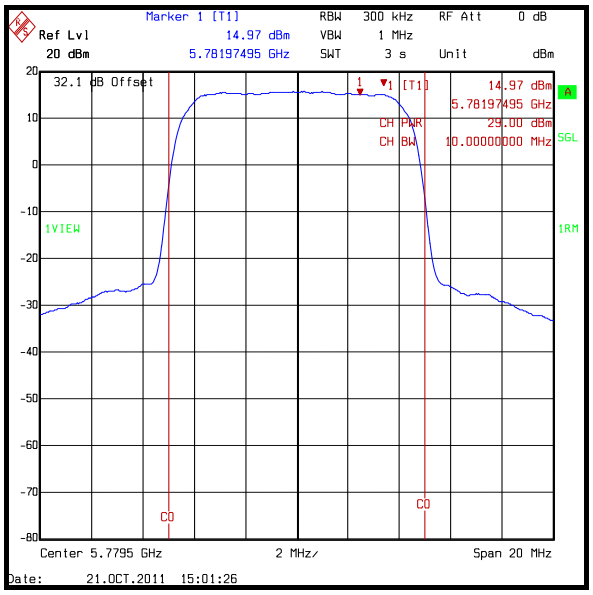


Transmitter Maximum Average Output Power (continued)

Results: 10 MHz QPSK

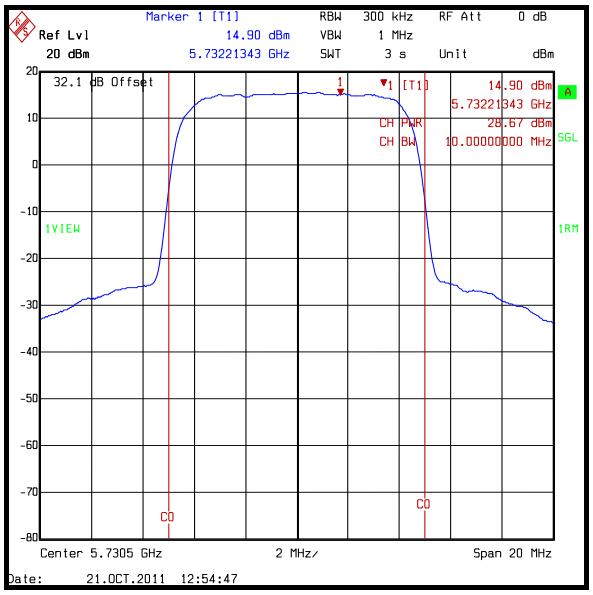


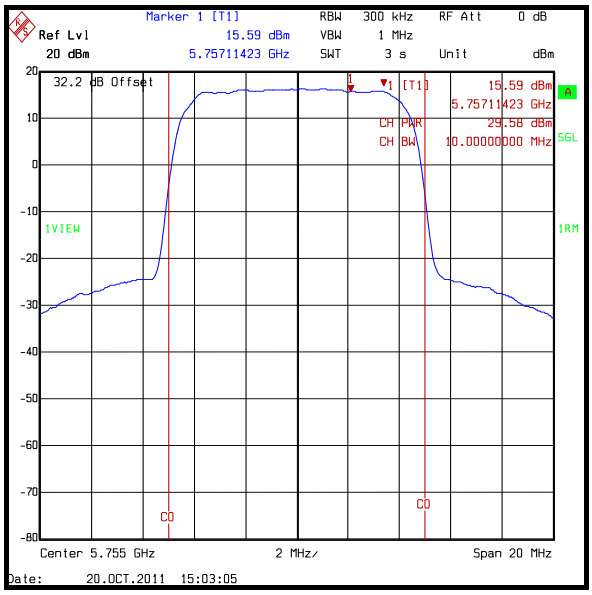


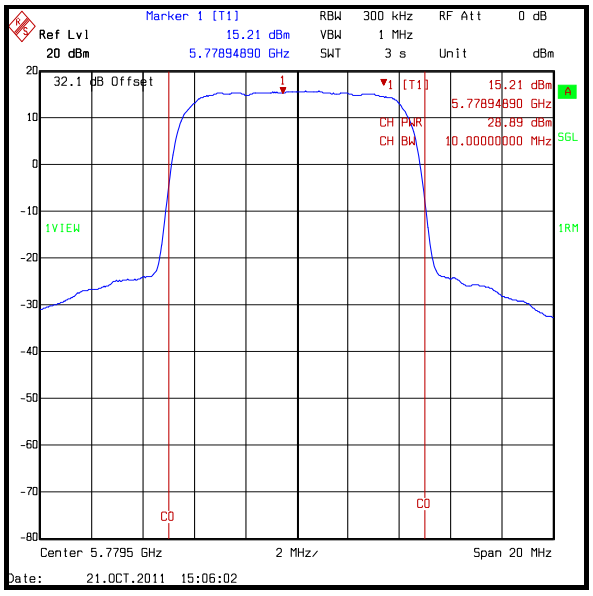


Transmitter Maximum Average Output Power (continued)

Results: 10 MHz 16QAM

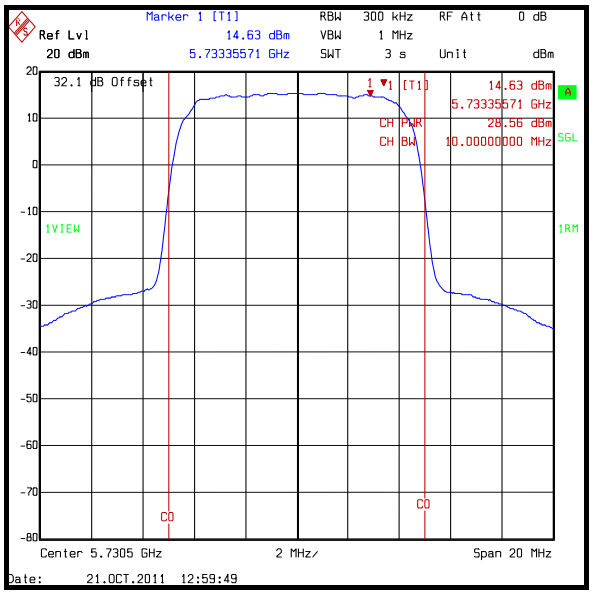


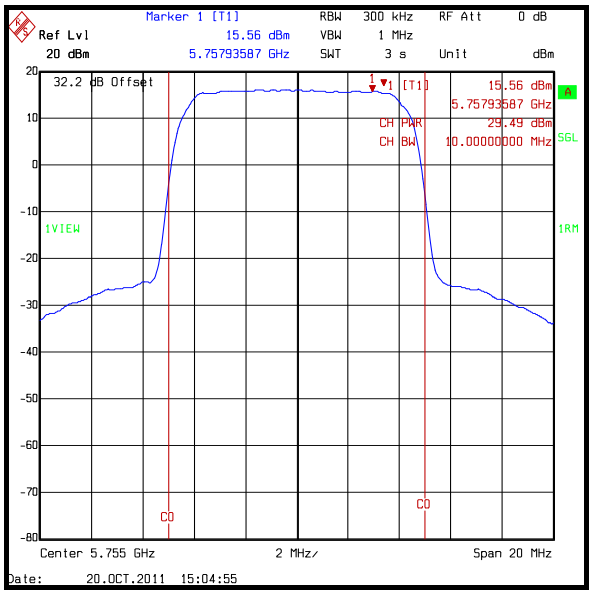


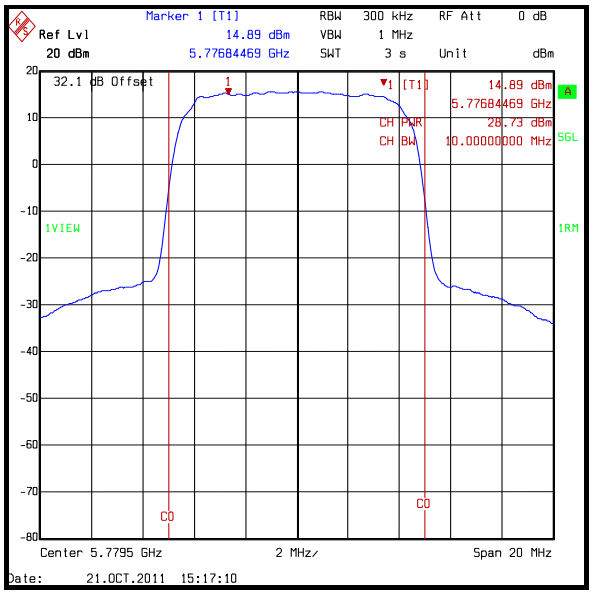


Transmitter Maximum Average Output Power (continued)

Results: 10 MHz 64QAM

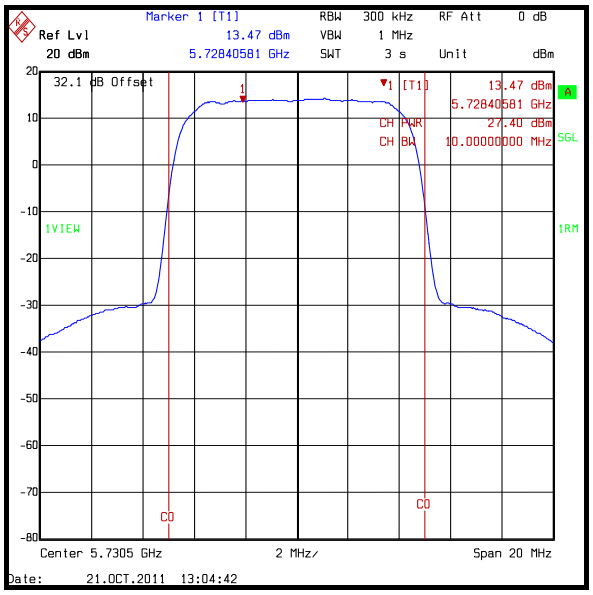


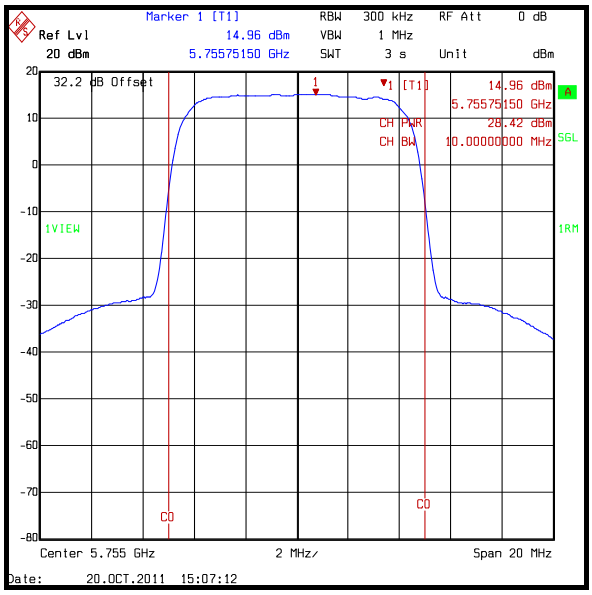


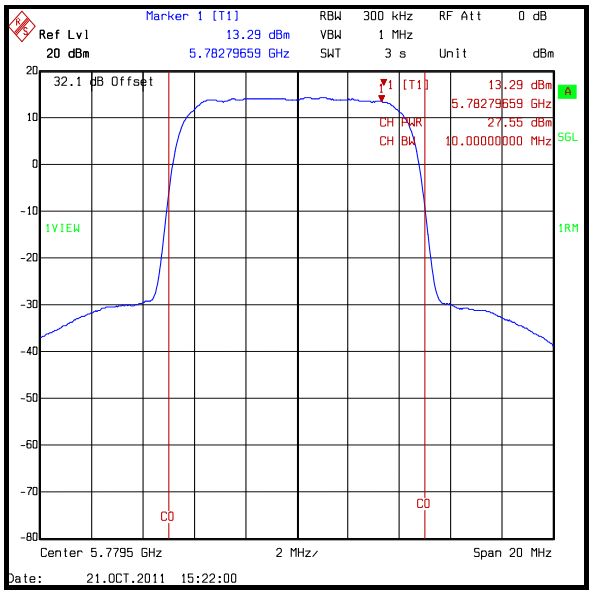


Transmitter Maximum Average Output Power (continued)

Results: 10 MHz 128QAM

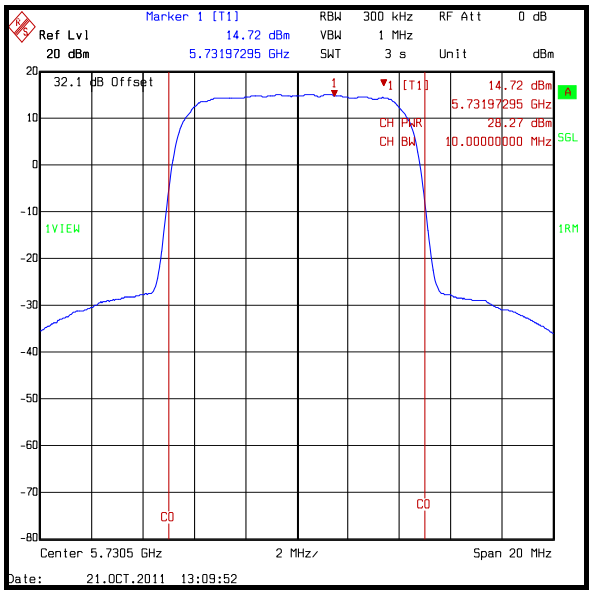


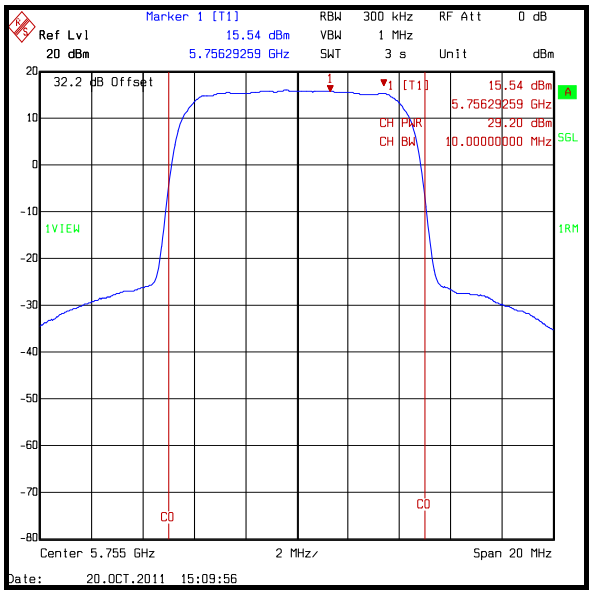


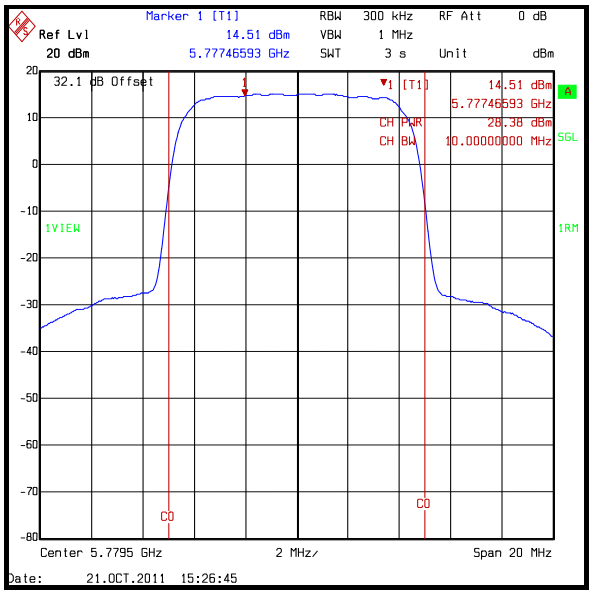


Transmitter Maximum Average Output Power (continued)

Results: 10 MHz 256QAM

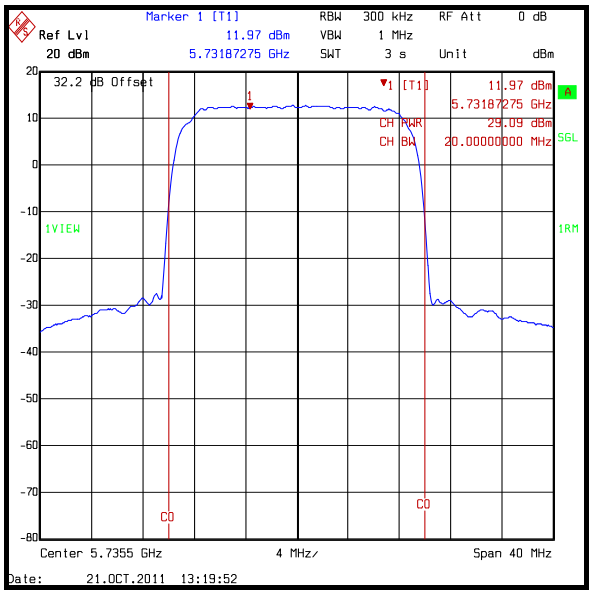


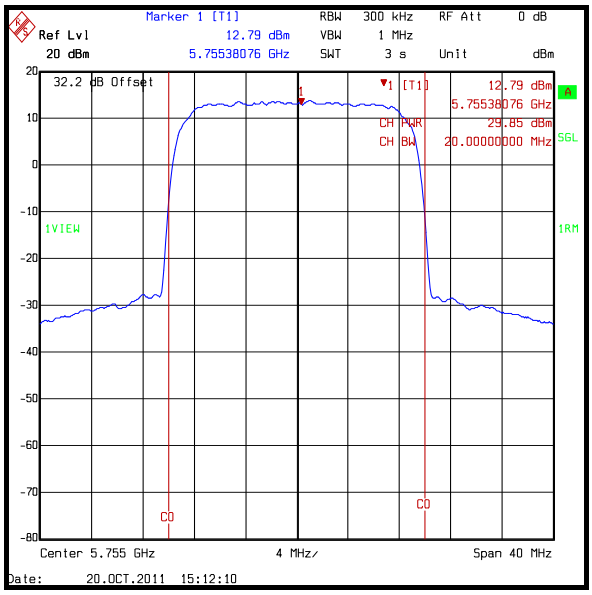


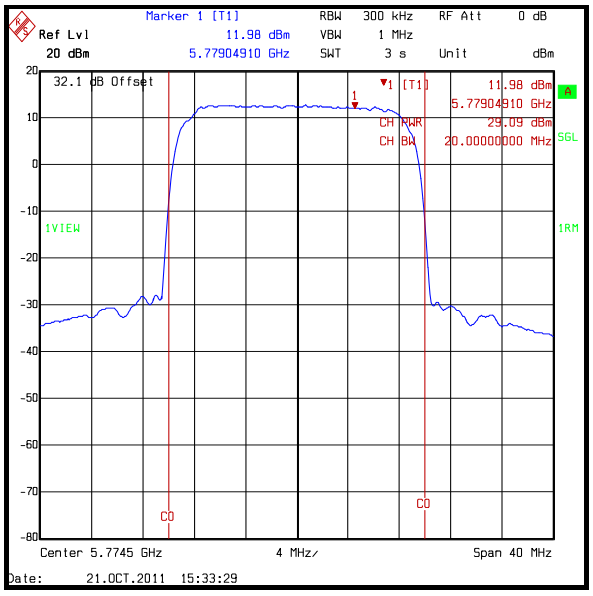


Transmitter Maximum Average Output Power (continued)

Results: 20 MHz QPSK

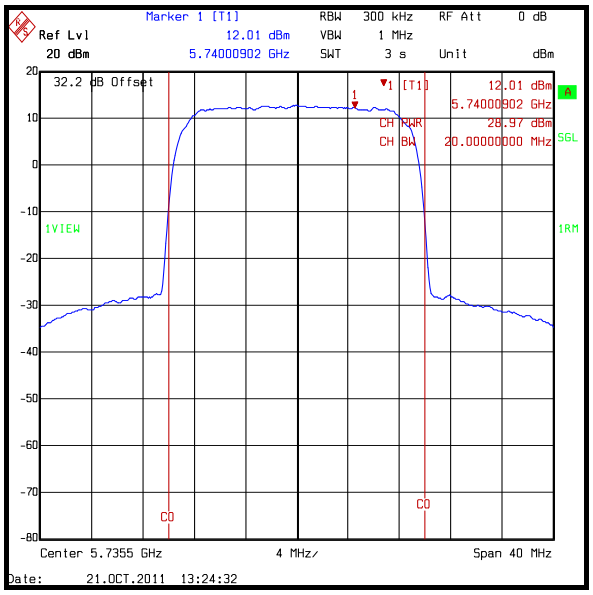


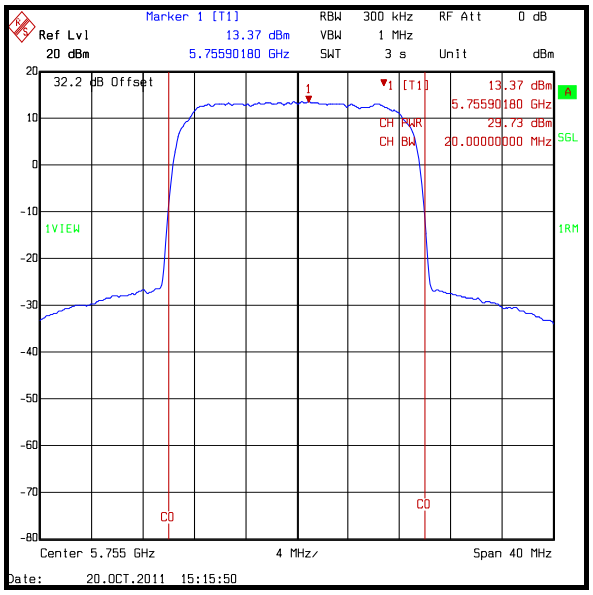


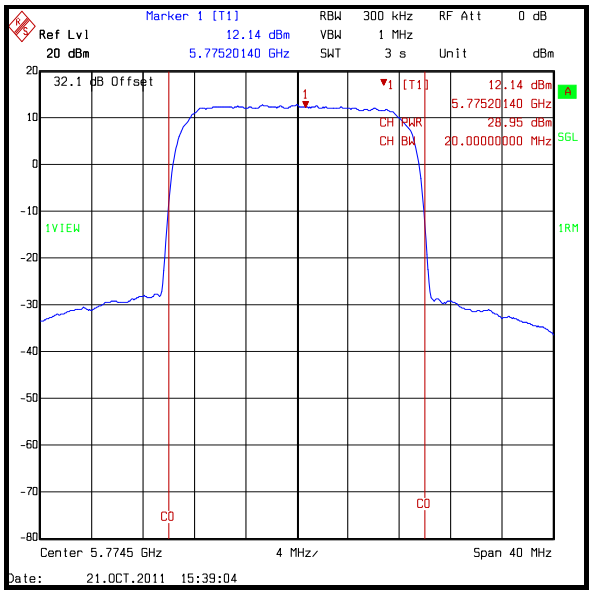


Transmitter Maximum Average Output Power (continued)

Results: 20 MHz 16QAM

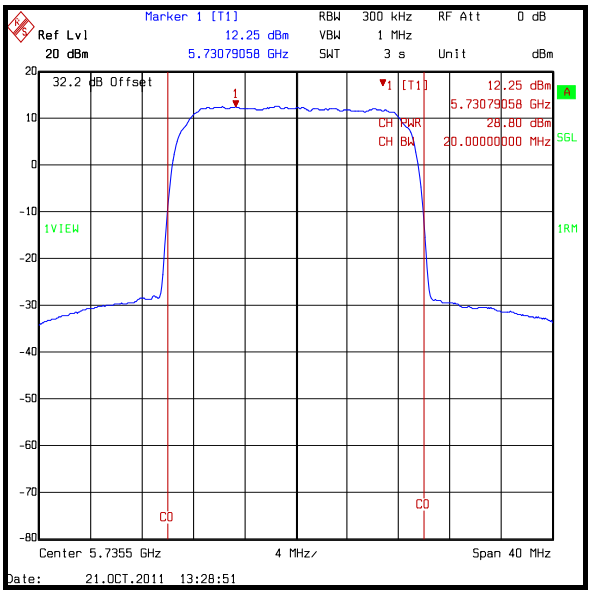


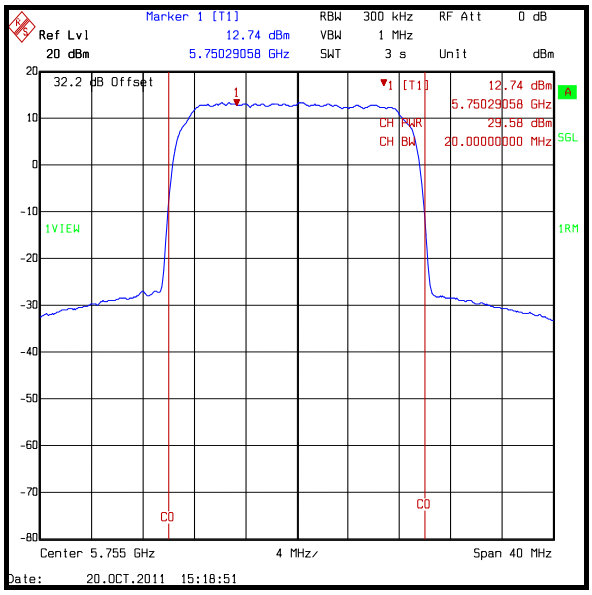


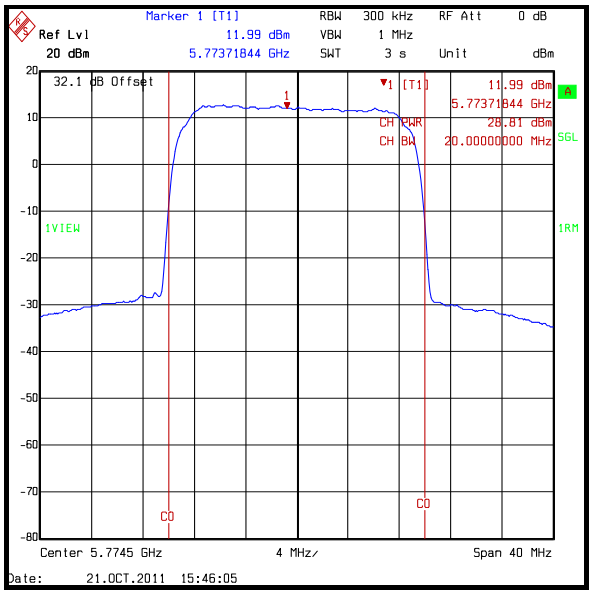


Transmitter Maximum Average Output Power (continued)

Results: 20 MHz 64QAM

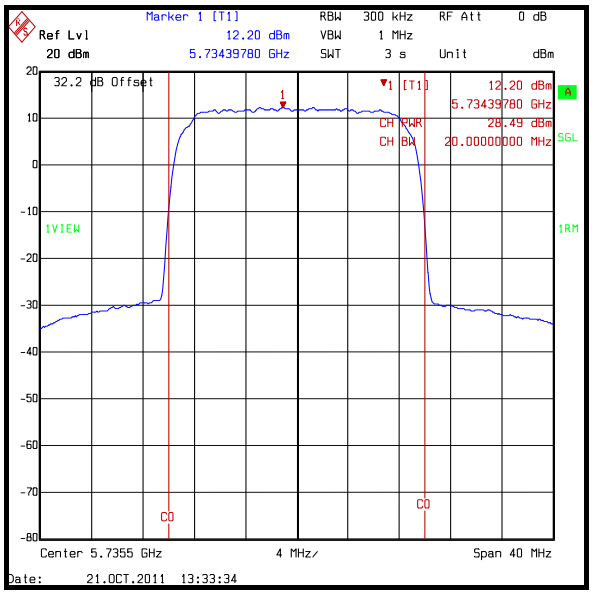


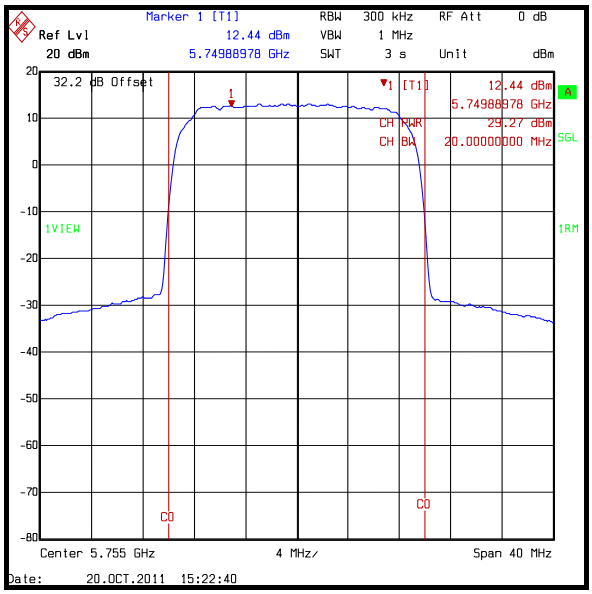


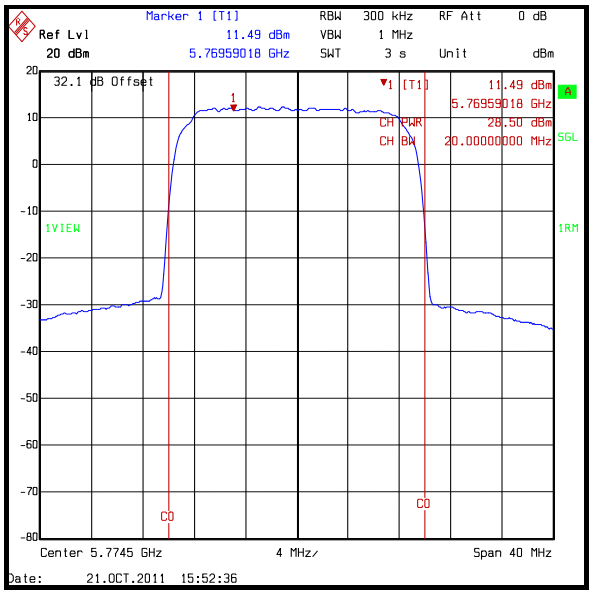


Transmitter Maximum Average Output Power (continued)

Results: 20 MHz 256QAM

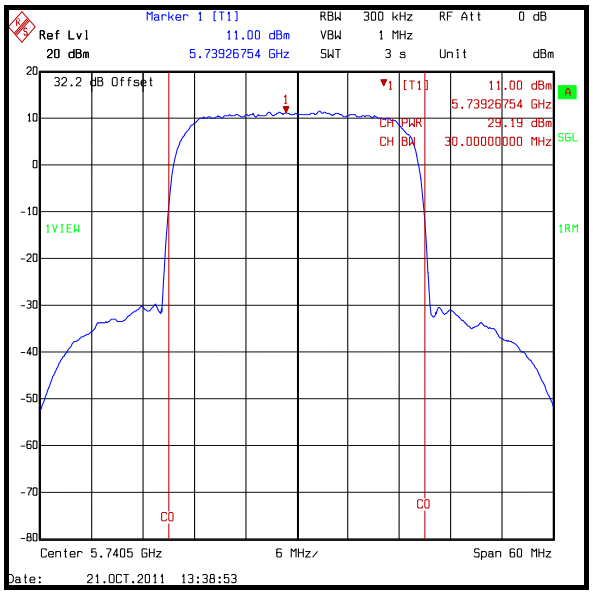


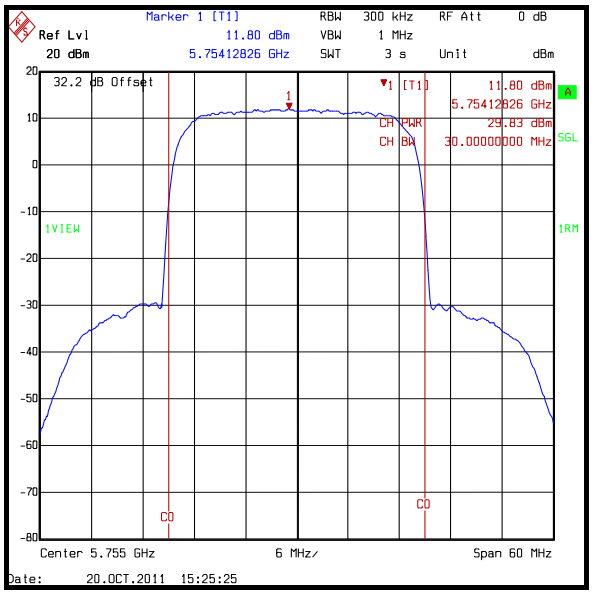


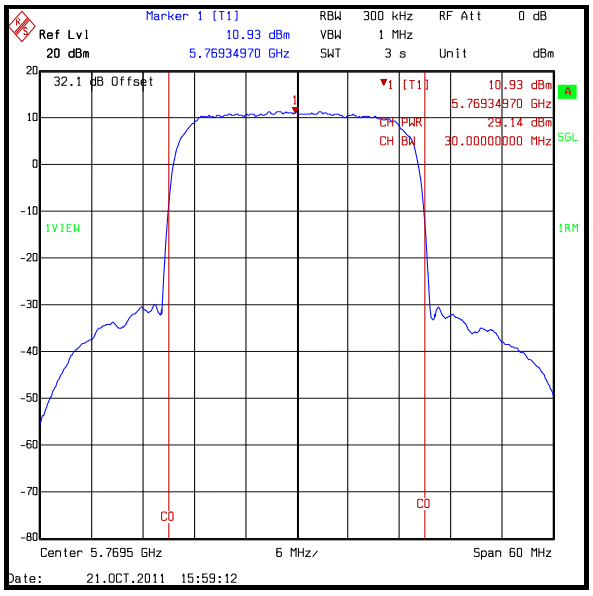


Transmitter Maximum Average Output Power (continued)

Results: 30 MHz QPSK

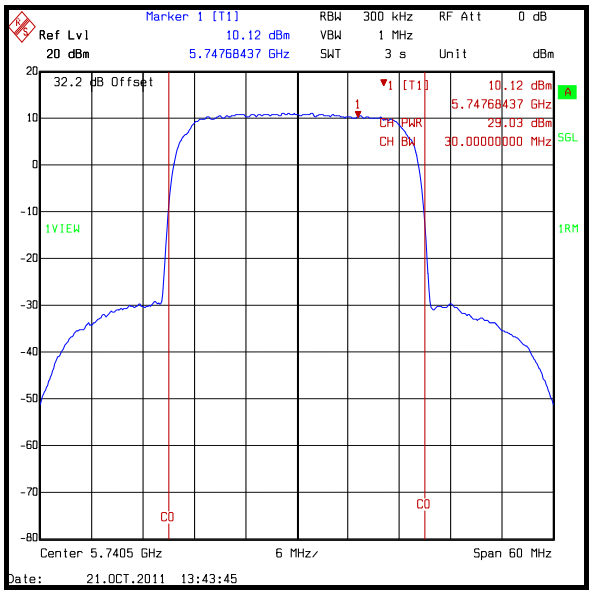


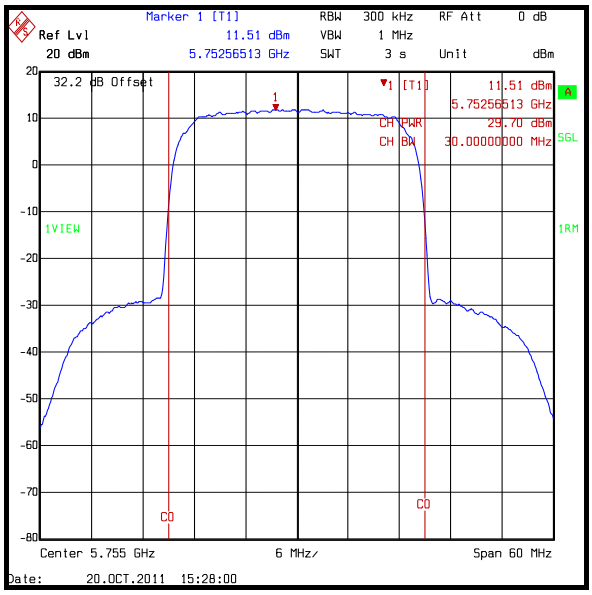


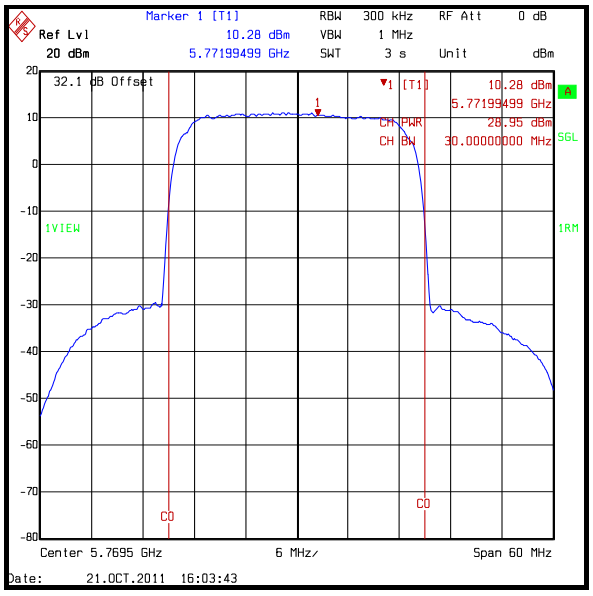


Transmitter Maximum Average Output Power (continued)

Results: 30 MHz 16QAM

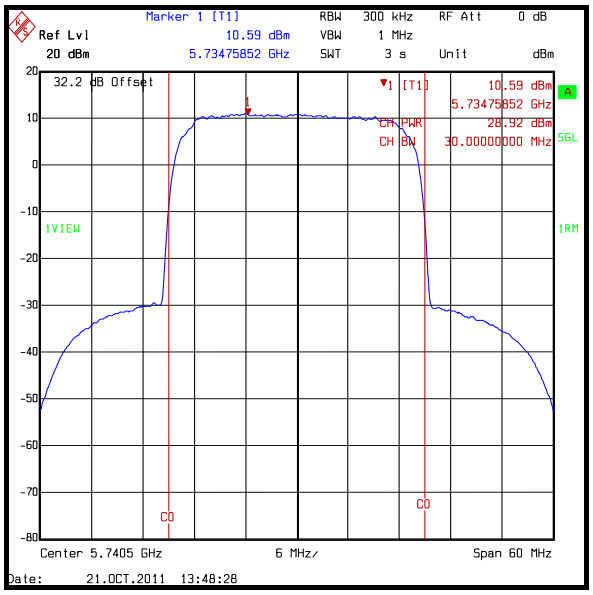


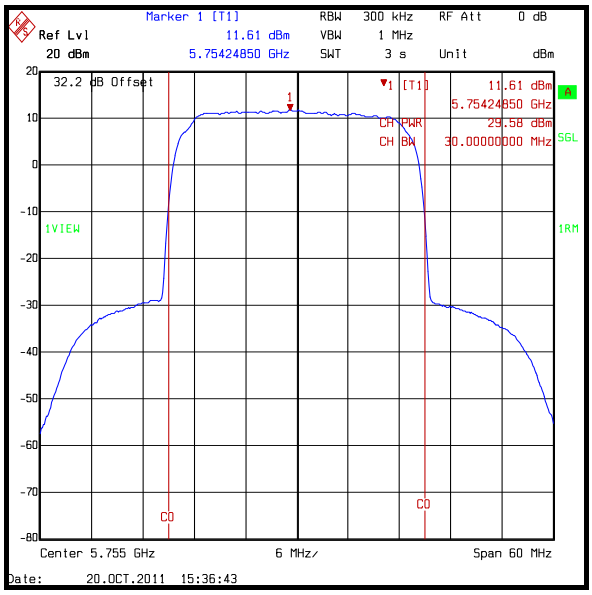


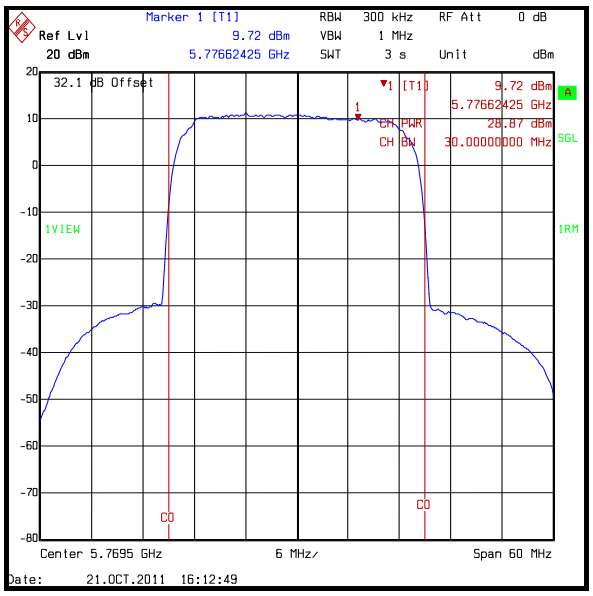


Transmitter Maximum Average Output Power (continued)

Results: 30 MHz 64QAM

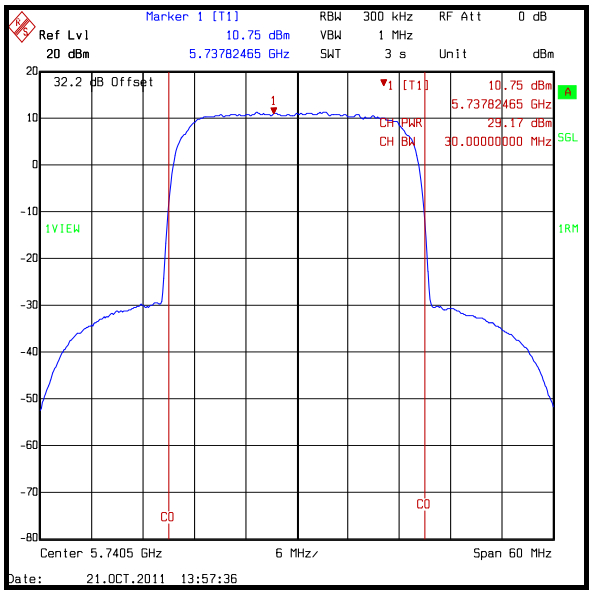


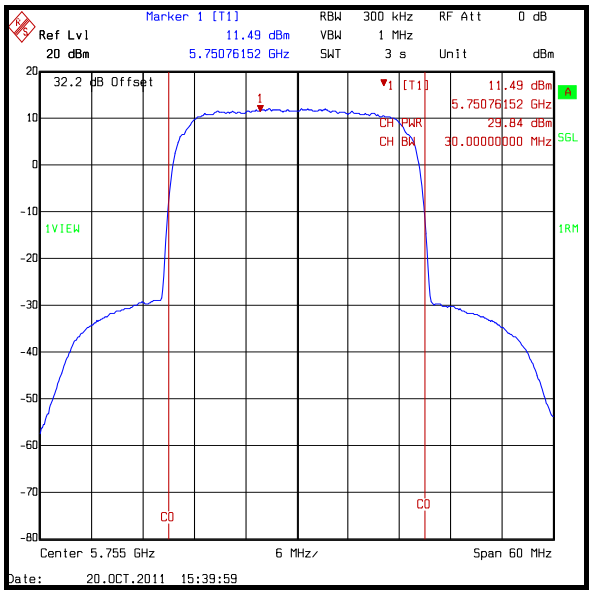


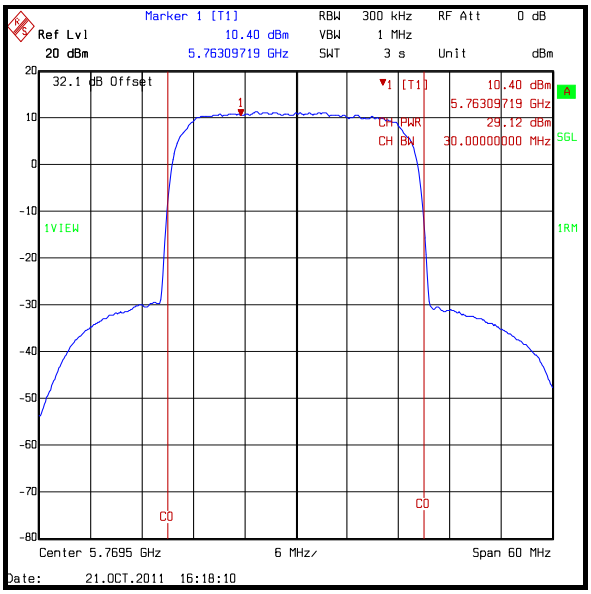


Transmitter Maximum Average Output Power (continued)

Results: 30 MHz 128QAM

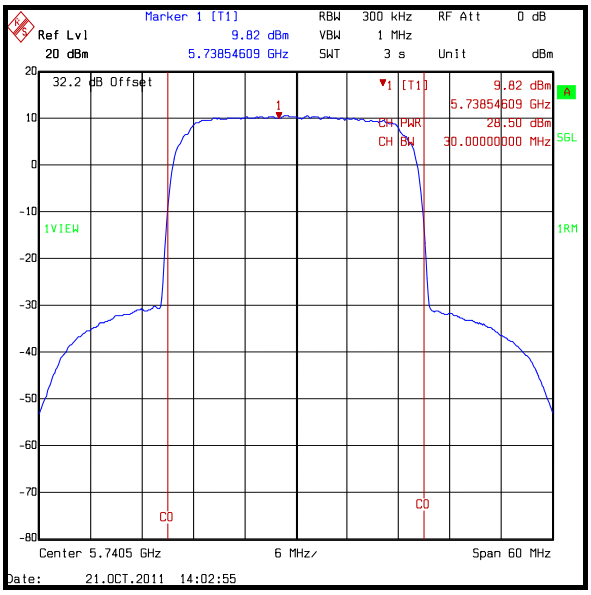


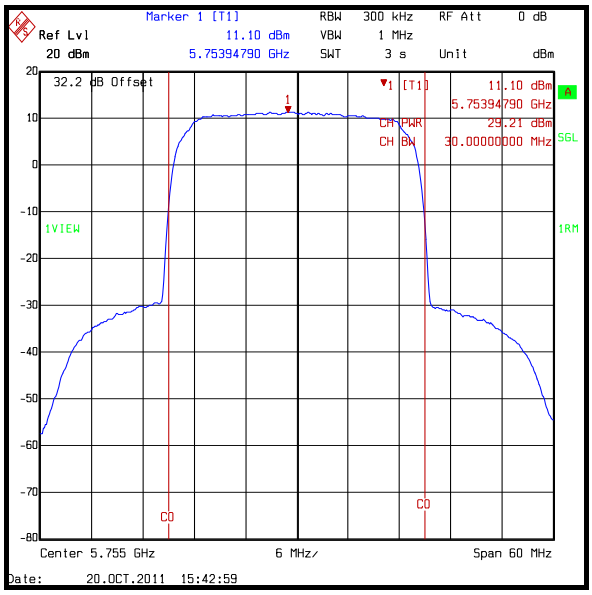


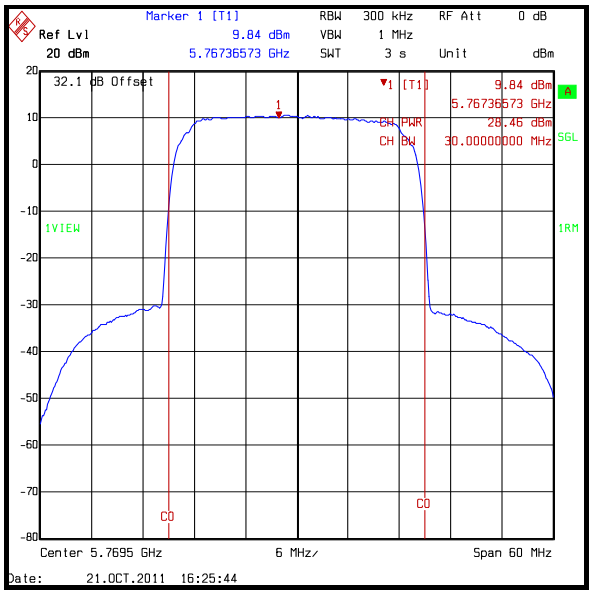


Transmitter Maximum Average Output Power (continued)

Results: 30 MHz 256QAM







5.2.6. Transmitter Radiated Emissions- 4 foot parabolic antenna

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	13 July 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	31
Relative Humidity (%):	29

Results :

Frequency (MHz)	Antenna Polarity	Raw Level (dBμV/m)	Correction Factor (dB)	Corrected Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
109.198	Horizontal	45.4	-16.4	29.0	43.5	14.5	Complied
147.568	Horizontal	57.4	-15.7	41.7	43.5	1.8	Complied
254.790	Horizontal	55.3	-14.0	41.3	46.0	4.7	Complied
249.991	Horizontal	63.0	-14.2	48.8	56.0	7.2	Complied[6]
409.091	Horizontal	54.4	-9.2	45.2	46.0	0.8	Complied
655.179	Horizontal	48.5	-3.8	44.7	46.0	1.3	Complied

- The Correction factor shown includes the culmination of the antenna factor, cable loss and pre-amplification with the test system

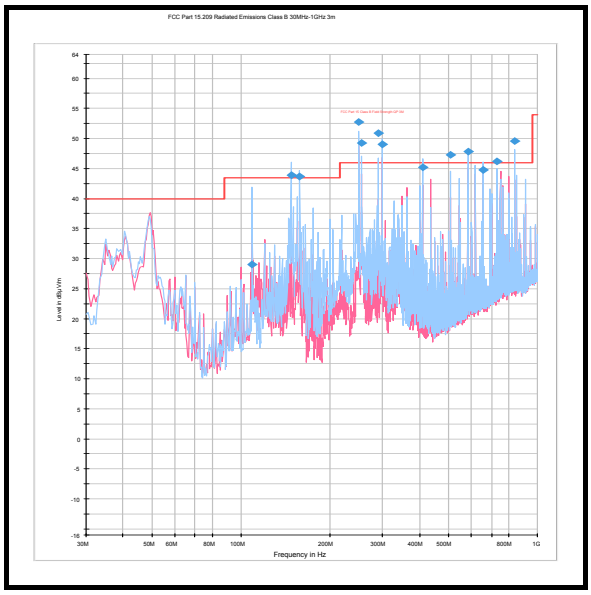
Transmitter Radiated Emissions- 4 foot parabolic antenna (continued)

Note(s):

1. Spurious emissions were performed with the EUT operating at 20 MHz QPSK, as this was observed to give the highest output power and therefore deemed to be worst case.
2. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
3. The preliminary scans showed similar emission levels below 1 GHz for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
4. All other emissions were at least 20 dB below the appropriate limit or below the noise floor of the measurement system.
5. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
6. The following emissions were investigated using a peak detector and found to be in the non restricted band, therefore the -20dBc was applied instead of 15.209 limits. All emissions in the non restricted band were at least 20dB from the dBc limit, and were therefore not included with the final measurements.

   199.998 MHz, 291.197 MHz, 300.002 MHz, 349.985 MHz and 582.420 MHz.
7. The emission at 249.991 MHz was identified as being independent of the transmitter, being able to be observed even when the transmitter was disabled. The general Class A limits identified in Part 15.109 have therefore been applied to this emission.

Transmitter Radiated Emissions (continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Transmitter Radiated Emissions (continued)

Test Summary:

Test Engineer:	Andrew Edwards & Nick Steele	**Test Date:**	12 July 2011 & 13 July 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	29
Relative Humidity (%):	31

Results: 4 foot parabolic antenna – peak

Frequency (MHz)	Antenna Polarity	Raw Level (dBμV/m)	Correction Factor (dB)	Corrected Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
17861.400	Horizontal	37.02	21.88	58.9	74	15.1	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Raw Level (dBμV/m)	Correction Factor (dB)	Corrected Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
6997.600	Horizontal	39.15	11.05	50.2	54.0	3.8	Complied

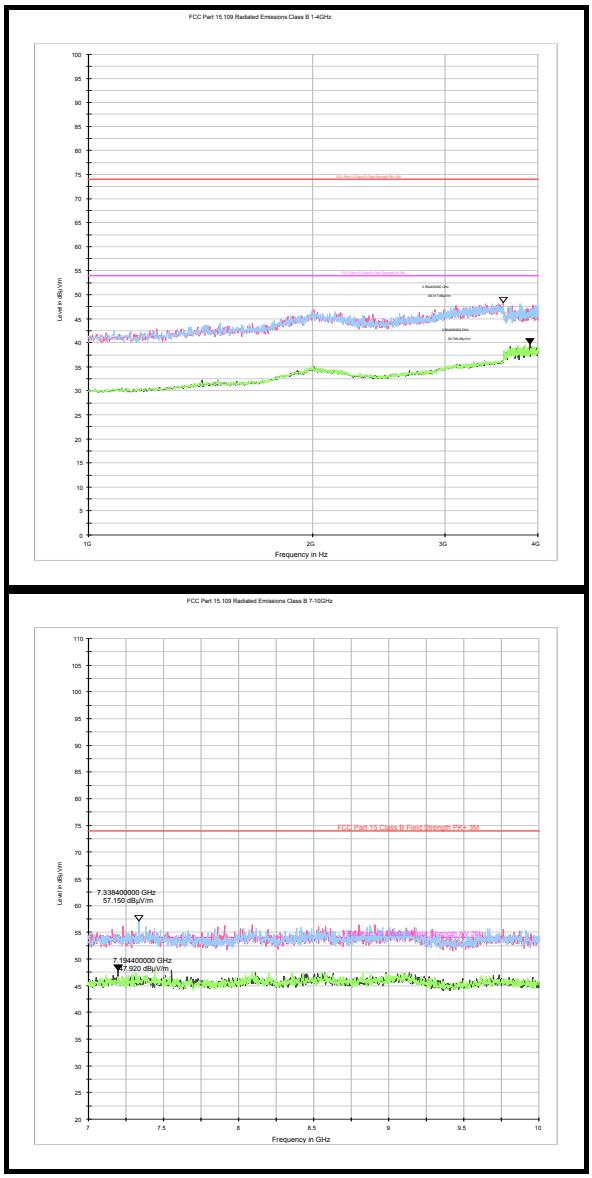
- The Correction factor shown includes the culmination of the antenna factor, cable loss and pre-amplification with the test system

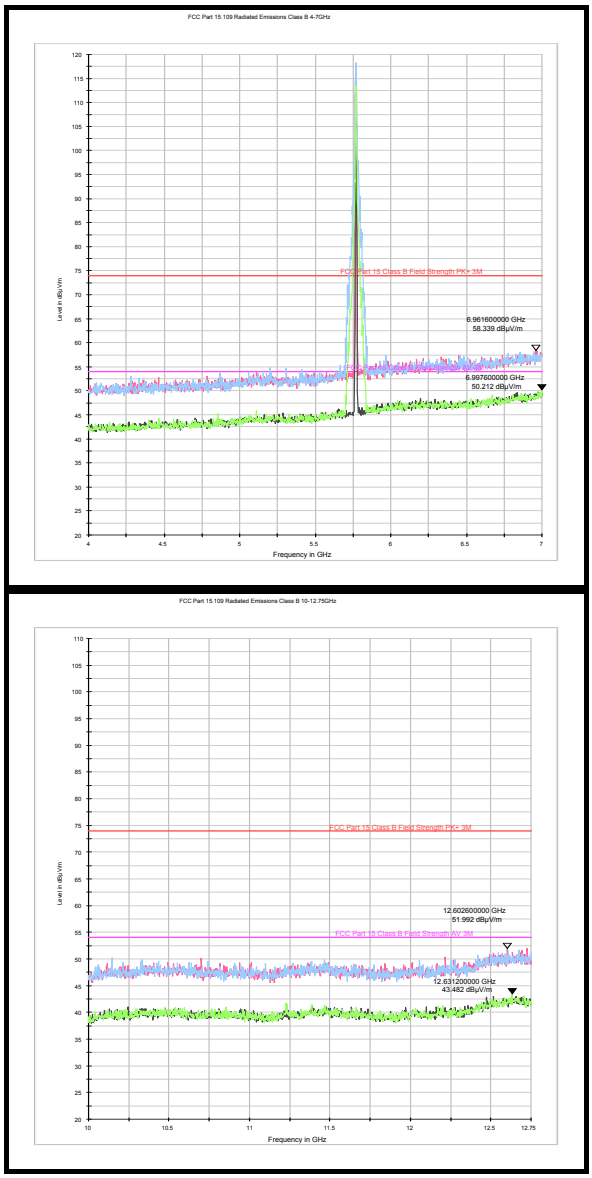
Transmitter Radiated Emissions (continued)

Note(s):

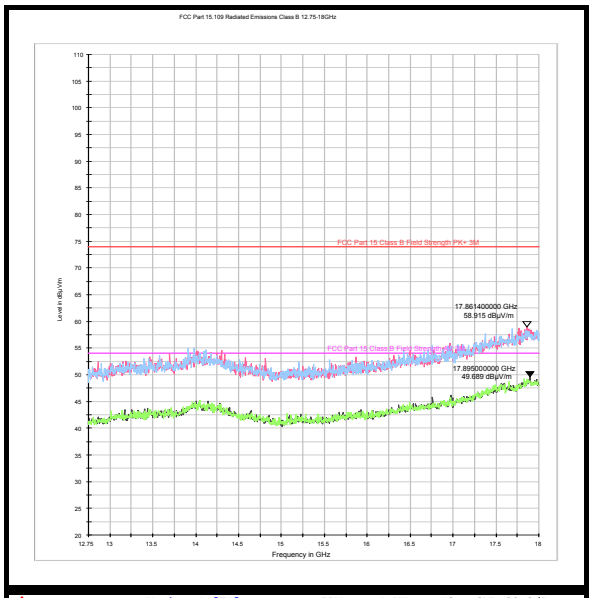
1. Spurious emissions were performed with the EUT operating at 20 MHz QPSK, as this was observed to give the highest output power and therefore deemed to be worst case.
2. No spurious emissions were detected above the noise floor of the measuring receiver, therefore the highest peak and Average noise floor reading of the measuring receiver was recorded as shown in the table above. The peak and average levels was compared to their appropriate limits.
3. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
4. The emission shown *5770 MHz on the 1 GHz to 4 GHz plot is the EUT fundamental.*
5. *All measurements were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.*
6. *Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.*

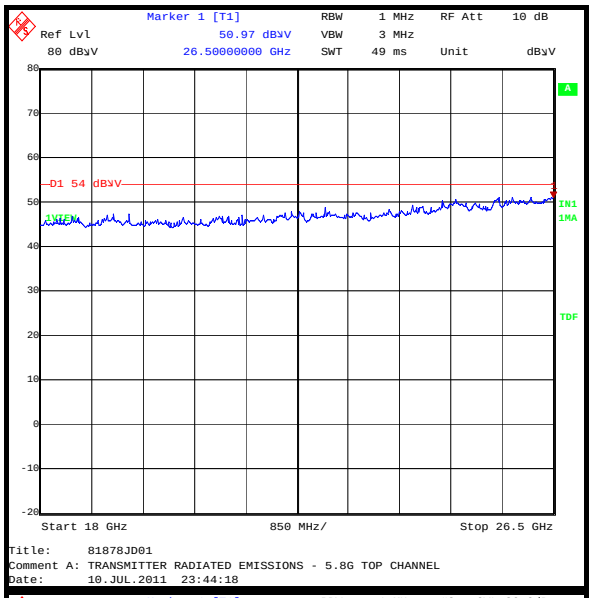
Transmitter Radiated Emissions (continued)

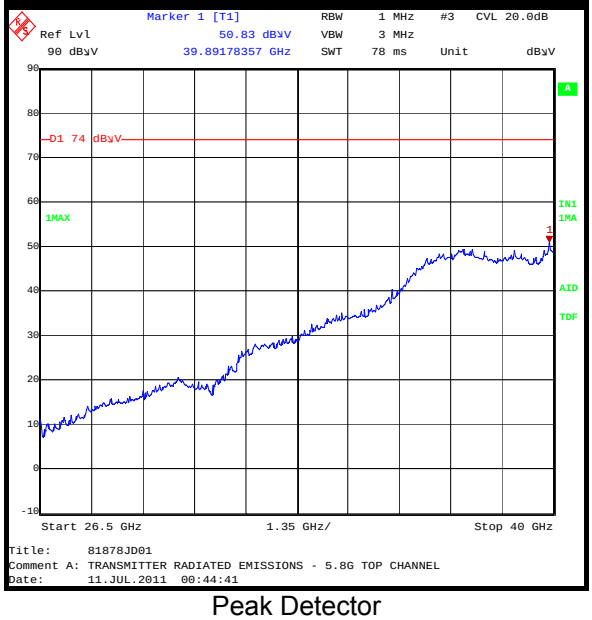




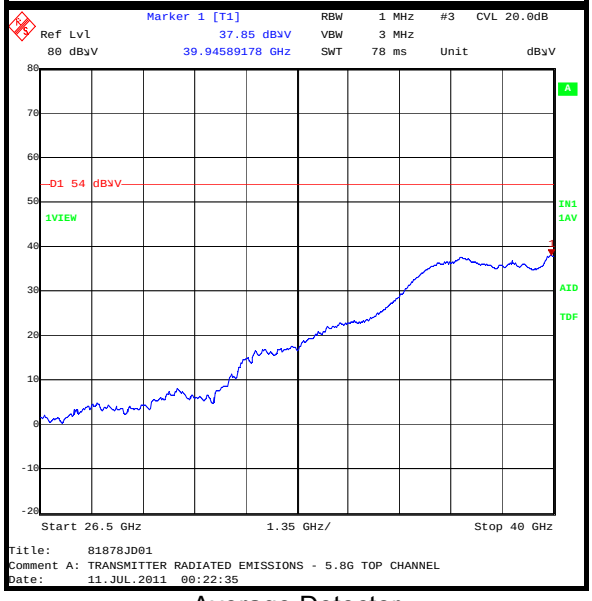
Transmitter Radiated Emissions (continued)







Peak Detector



Average Detector

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

5.2.7. Transmitter Radiated Emissions - 2 foot flat panel antenna

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	03 August 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	31
Relative Humidity (%):	28

Results:

Frequency (MHz)	Antenna Polarity	Raw Level (dBµV/m)	Correction Factor (dB)	Corrected Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
35.393	Vertical	25.4	-10.7	14.7	40.0	25.3	Complied
200.027	Horizontal	52.3	-16.9	35.4	43.5	8.1	Complied
249.991	Horizontal	63.1	-14.3	48.8	56.0	7.2	Complied[6]
278.014	Horizontal	63.1	-13.3	49.8	56.0	6.2	Complied[6]
399.968	Vertical	59.0	-9.5	49.5	56.0	6.5	Complied[6]

- The Correction factor shown includes the culmination of the antenna factor, cable loss and pre-amplification with the test system

Transmitter Radiated Emissions - 2 foot flat panel antenna (continued)

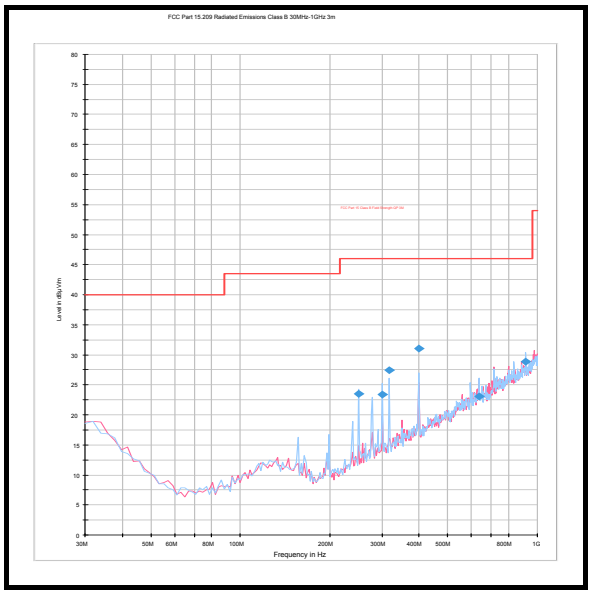
Note(s):

1. Spurious emissions were performed with the EUT operating at 20 MHz QPSK, as this was observed to give the highest output power and therefore deemed to be worst case.
2. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
3. All other emissions were at least 20 dB below the appropriate limit or below the noise floor of the measurement system.
4. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
5. The following emissions were investigated and found to be in the non restricted band therefore the limit was -20 dBc and were greater than 20 dBs below the specification limit

   317.729 MHz, 556.057 MHz, 595.762 MHz, 635.487 MHz, 714.917 MHz, 754.622 MHz and 834.091 MHz.

6. The emissions at 249.991 MHz, 278.014 MHz and 399.968 MHz were identified as being independent of the transmitter, being able to be observed even when the transmitter was disabled. The general Class A limits identified in Part 15.109 have therefore been applied to these emissions.

Transmitter Radiated Emissions (continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Transmitter Radiated Emissions (continued)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	09 September 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	34
Relative Humidity (%):	40

Results:

Results: Peak

Frequency (MHz)	Antenna Polarity	Raw Level (dBµV/m)	Correction Factor (dB)	Corrected Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
17694.890	Vertical	40.1	21.0	61.1	74.0	12.9	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Raw Level (dBµV/m)	Correction Factor (dB)	Corrected Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
17852.708	Vertical	28.9	21.8	50.7	54.0	3.7	Complied

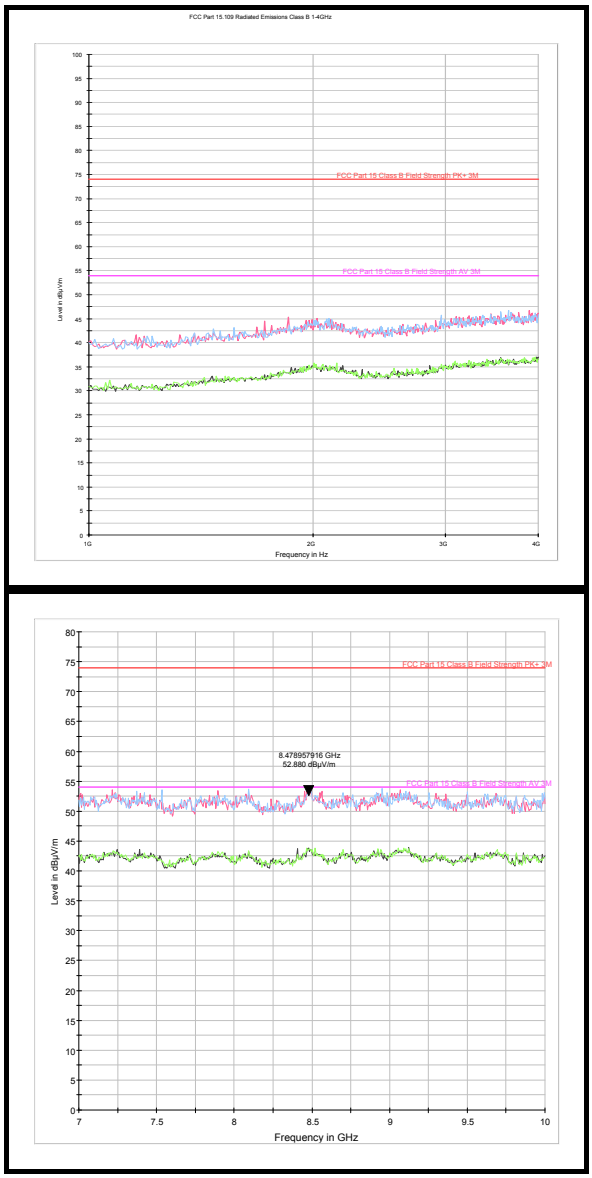
- The Correction factor shown includes the culmination of the antenna factor, cable loss and pre-amplification with the test system.

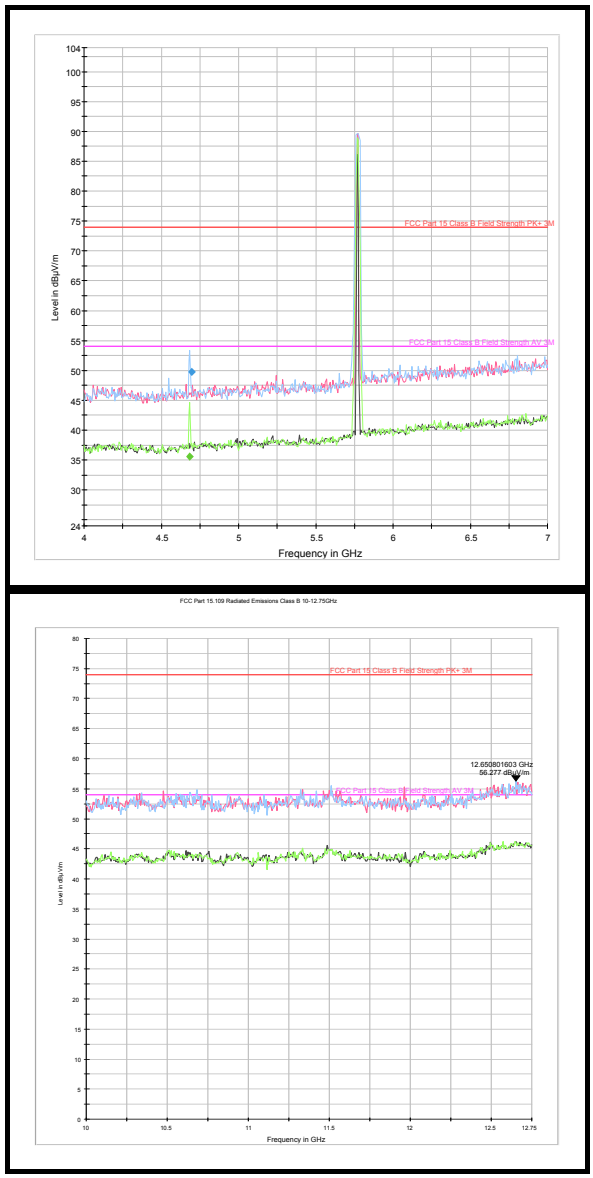
Transmitter Radiated Emissions (continued)

Note(s):

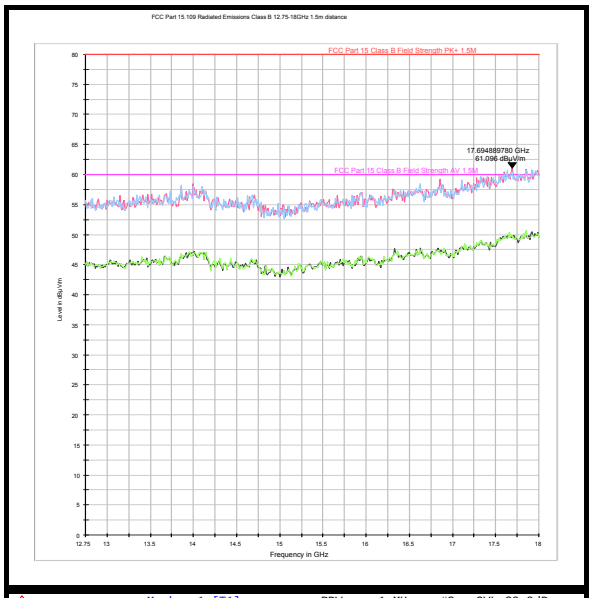
1. Spurious emissions were performed with the EUT operating at 20 MHz QPSK, as this was observed to give the highest output power and therefore deemed to be worst case.
2. No spurious emissions were detected above the noise floor of the measuring receiver, therefore the highest peak and Average noise floor reading of the measuring receiver was recorded as shown in the table above. The peak and average levels was compared to their appropriate limits.
3. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
4. The emission shown *5770 MHz on the 1 GHz to 4 GHz plot is the EUT fundamental.*
5. *All measurements were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.*
6. *The emission at 4683 MHz was investigated on both bottom and top channels, it was found to be an ambient signal. The measurement noise floor was reduced and it could still not be seen.*
7. *Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.*

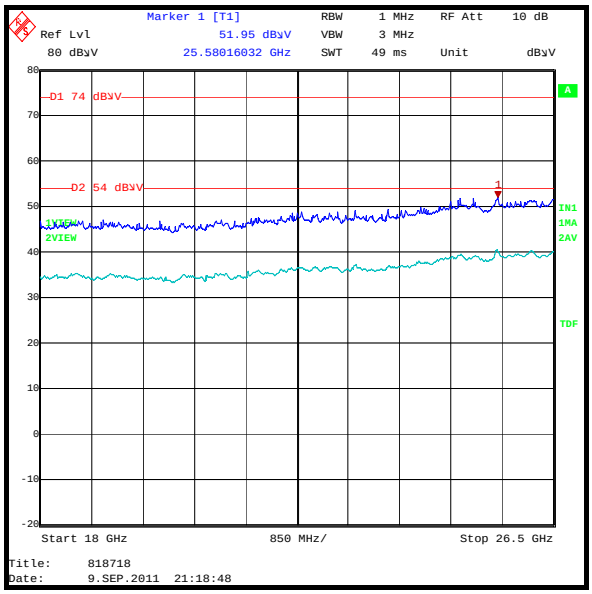
Transmitter Radiated Emissions (continued)

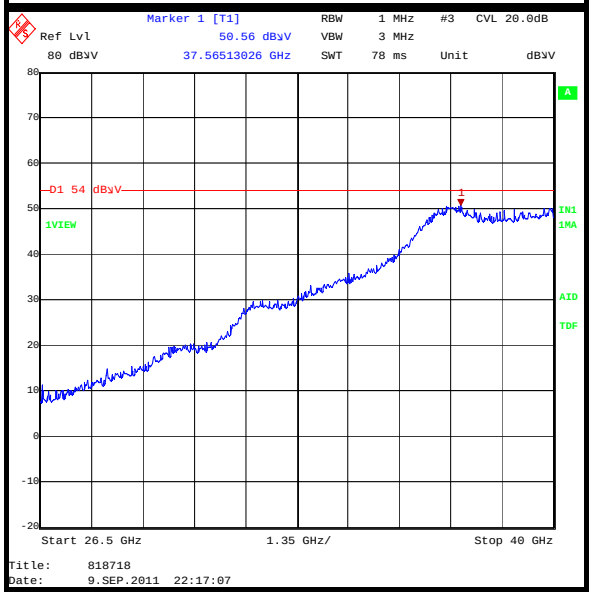




Transmitter Radiated Emissions (continued)







Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

5.2.8. Transmitter Band Edge Conducted Emissions

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	21 October 2011
Test Sample Serial No:	ZLS11200102		

FCC Part:	15.247(d)
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	32

Results: 5 MHz 128QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-33.4	-18.2*	15.2	Complied
5850.0	-66.0	-17.3*	48.7	Complied

Results: 10 MHz QPSK

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-32.3	-19.5*	12.8	Complied
5850.0	-66.0	-18.9*	47.1	Complied

Results: 10 MHz 16QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-31.5	-19.5*	12.0	Complied
5850.0	-66.0	-19.0*	47.0	Complied

Results: 10 MHz 64QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-32.2	-19.7*	12.5	Complied
5850.0	-66.0	-19.0*	47.0	Complied

Results: 10MHz 128QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-35.1	-21.1*	14.0	Complied
5850.0	-66.0	-20.4*	45.6	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: 10 MHz 256QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-33.6	-20.1*	13.5	Complied
5850.0	-66.0	-19.5*	46.5	Complied

Results: 20 MHz QPSK

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-36.7	-22.2*	14.5	Complied
5850.0	-66.0	-22.1*	43.9	Complied

Results: 20 MHz 16QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-34.1	-22.3*	11.8	Complied
5850.0	-66.0	-22.0*	44.0	Complied

Results: 20 MHz 64QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-34.4	-22.4*	12.0	Complied
5850.0	-66.0	-22.1*	43.9	Complied

Results: 20 MHz 256QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-34.7	-22.7*	12.0	Complied
5850.0	-66.0	-22.4*	43.6	Complied

Results: 30 MHz QPSK

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-31.5	-23.7*	7.8	Complied
5850.0	-66.0	-23.5*	42.5	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: 30 MHz 16QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-32.2	-24.4*	7.8	Complied
5850.0	-66.0	-23.7*	42.3	Complied

Results: 30 MHz 64QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-31.5	-23.4*	8.1	Complied
5850.0	-66.0	-23.5*	42.5	Complied

Results: 30MHz 128QAM

Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-30.7	-23.2*	7.5	Complied
5850.0	-66.0	-23.4*	42.6	Complied

Results: 30 MHz 256QAM

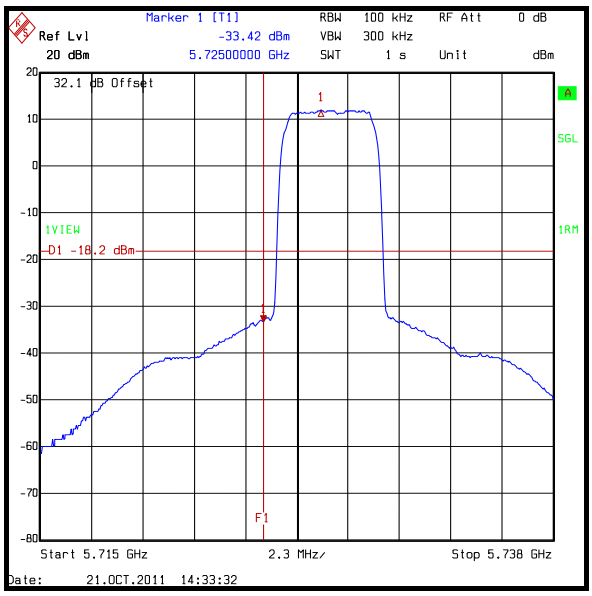
Frequency (MHz)	Level (dBc)	Limit (dBc)	Margin (dB)	Result
5725.0	-32.2	-24.1*	8.1	Complied
5850.0	-66.0	-24.2*	41.8	Complied

Note(s)

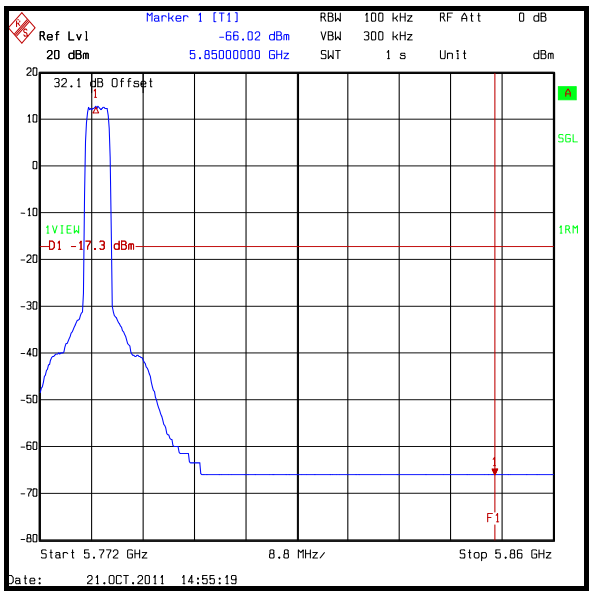
1. *- 30 dBc limit

Transmitter Band Edge Conducted Emissions (continued)

Results: 5 MHz 128QAM

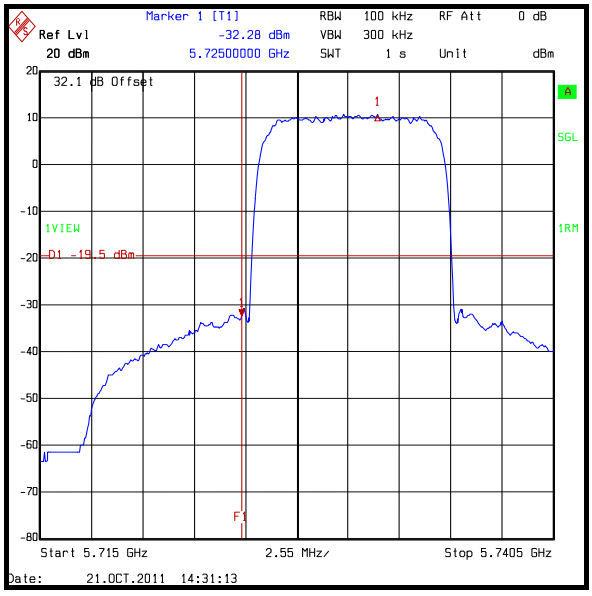


Lower Band Edge Peak Measurement

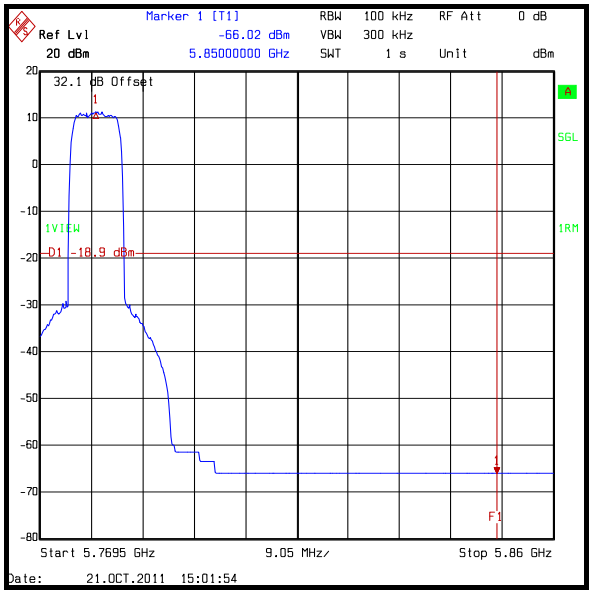


Upper Band Edge Peak Measurement

Results: 10 MHz QPSK



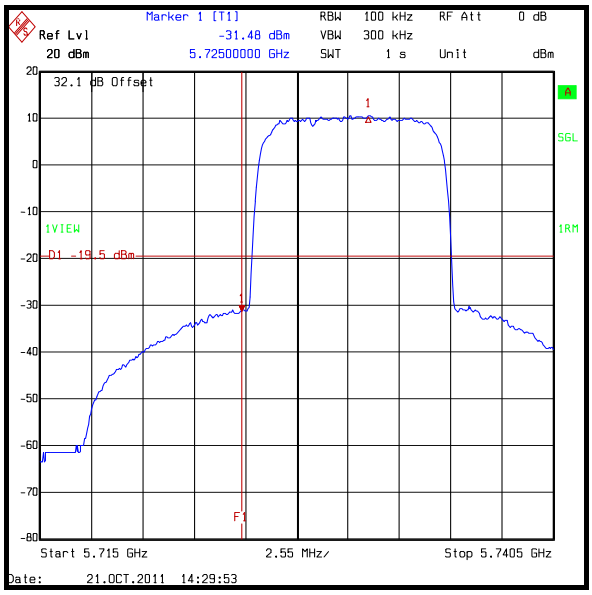
Lower Band Edge Peak Measurement



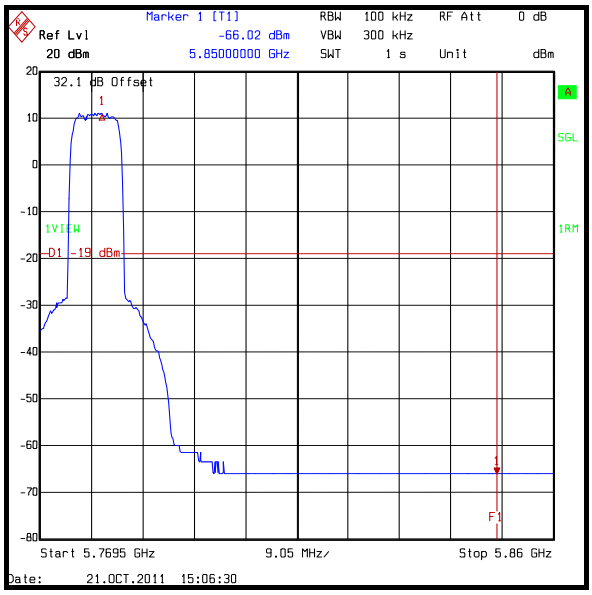
Upper Band Edge Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: 10 MHz 16QAM

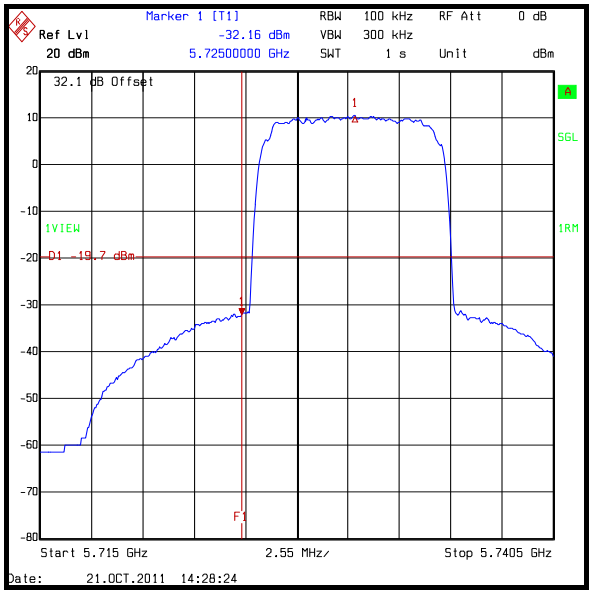


Lower Band Edge Peak Measurement

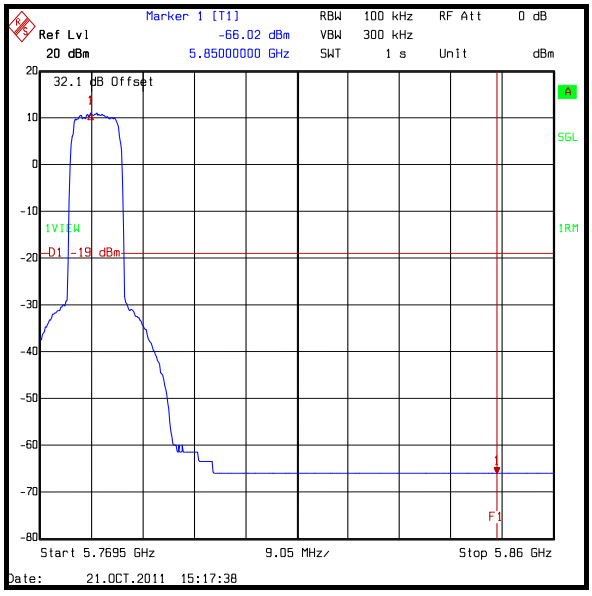


Upper Band Edge Peak Measurement

Results: 10 MHz 64QAM



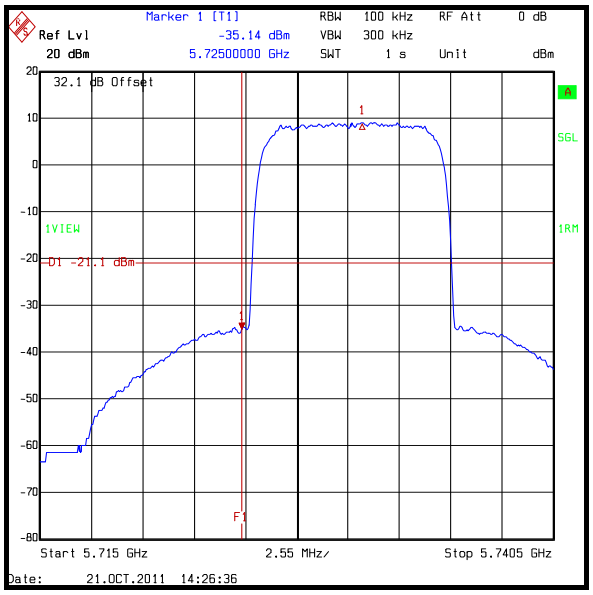
Lower Band Edge Peak Measurement



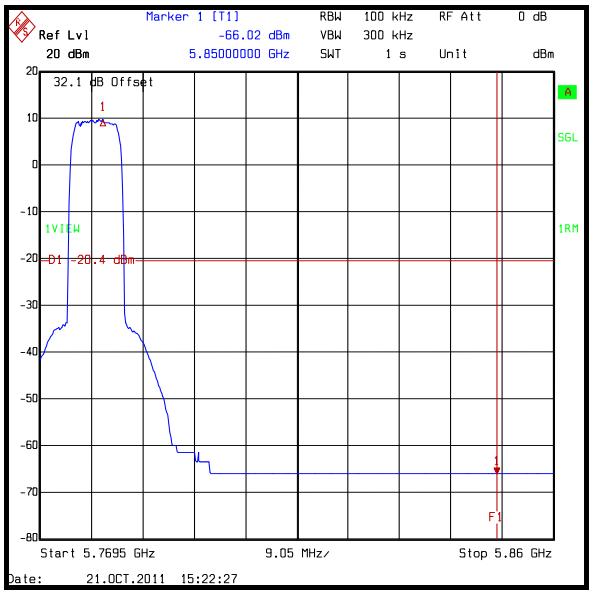
Upper Band Edge Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: 10MHz 128QAM

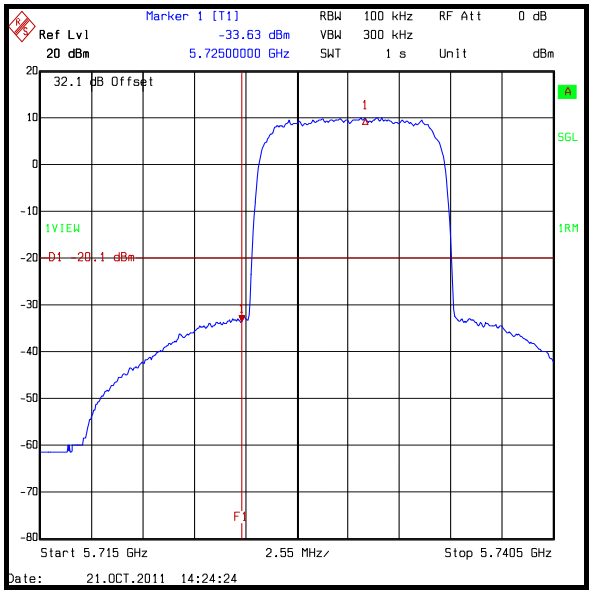


Lower Band Edge Peak Measurement

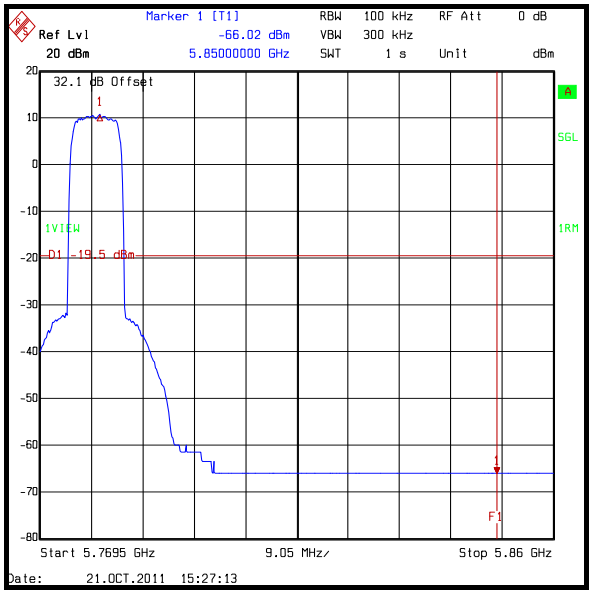


Upper Band Edge Peak Measurement

Results: 10 MHz 256QAM



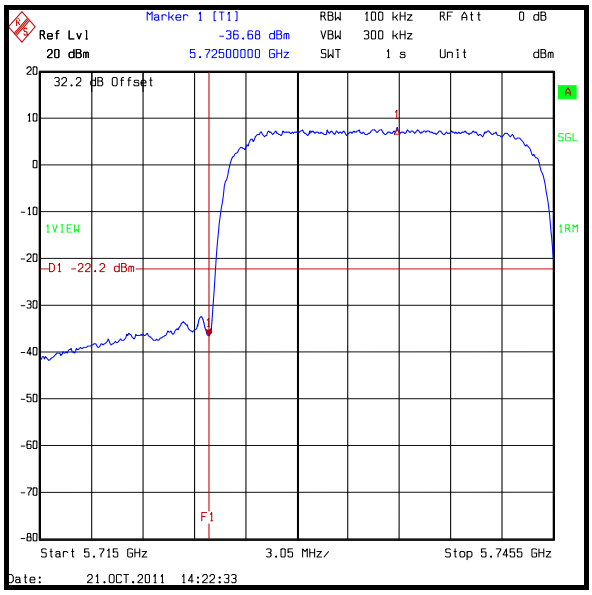
Lower Band Edge Peak Measurement



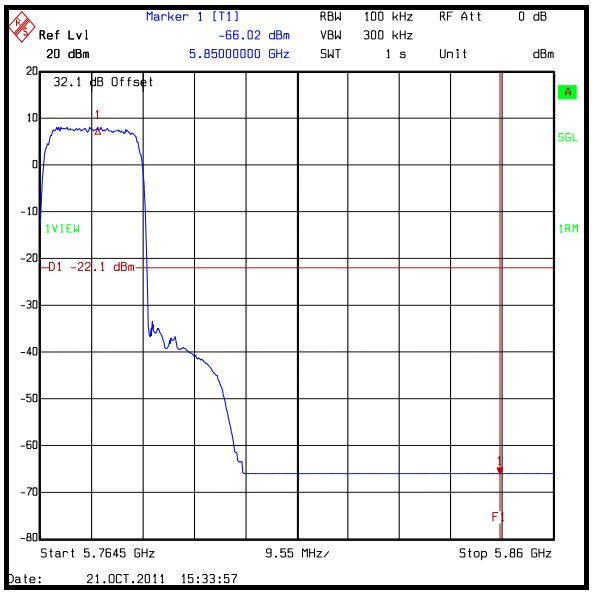
Upper Band Edge Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: 20 MHz QPSK

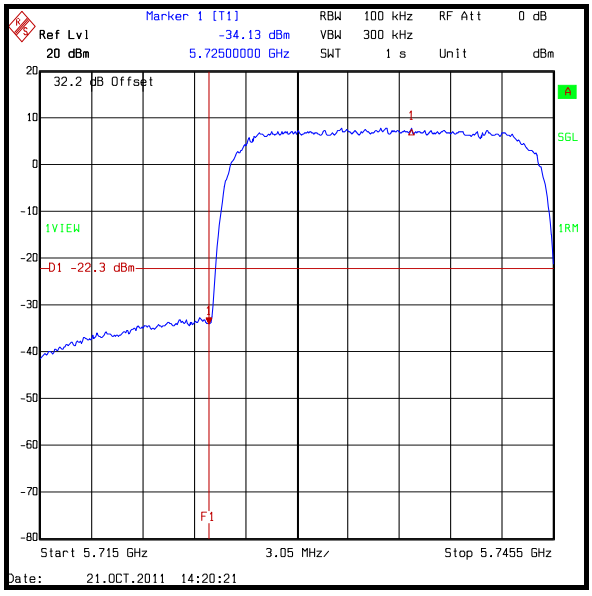


Lower Band Edge Peak Measurement

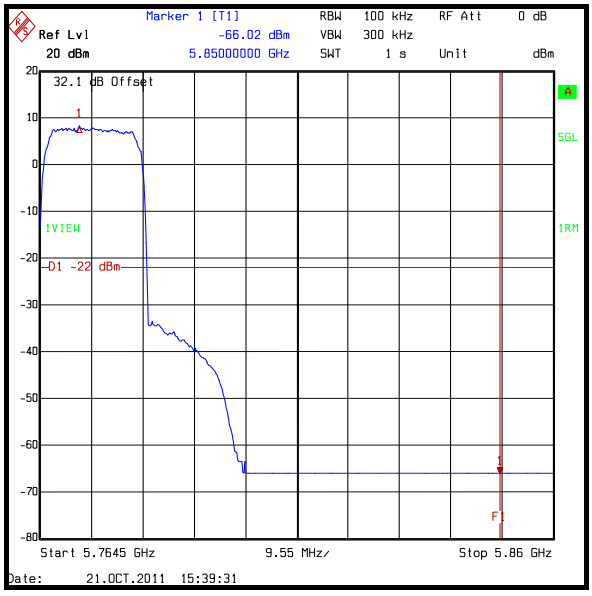


Upper Band Edge Peak Measurement

Results: 20 MHz 16QAM



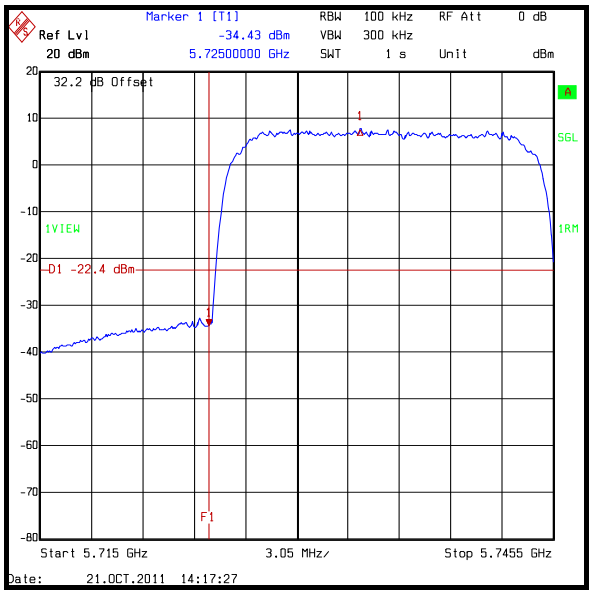
Lower Band Edge Peak Measurement



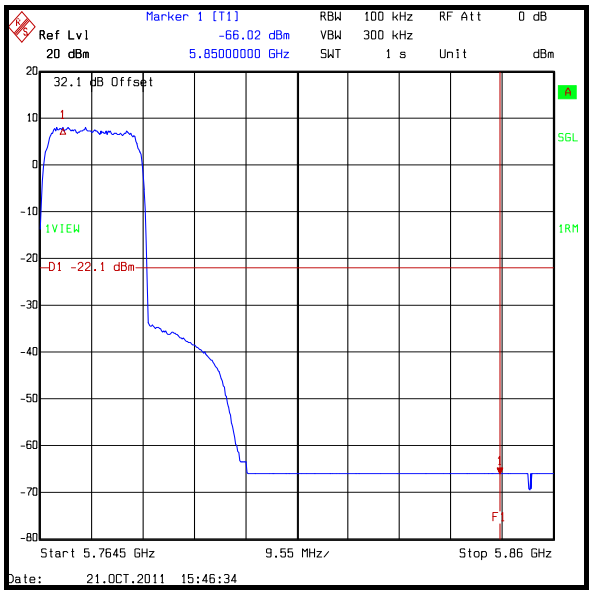
Upper Band Edge Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: 20 MHz 64QAM

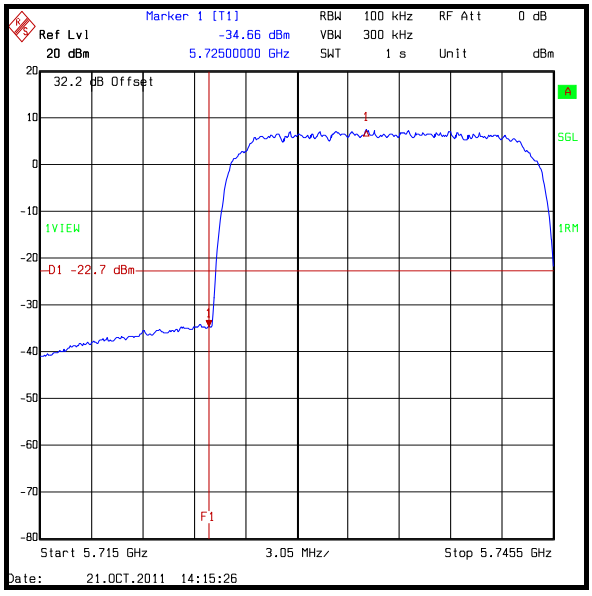


Lower Band Edge Peak Measurement

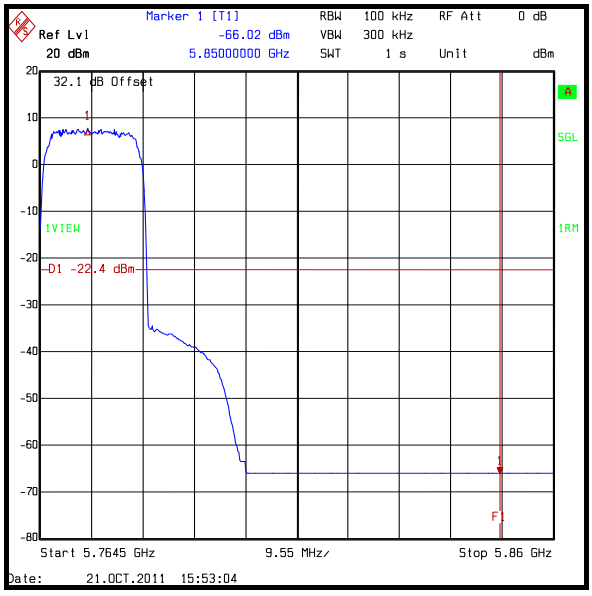


Upper Band Edge Peak Measurement

Results: 20 MHz 256QAM



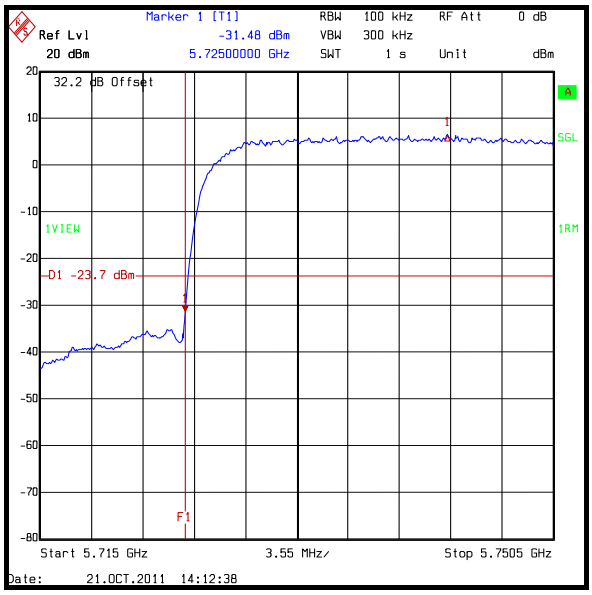
Lower Band Edge Peak Measurement



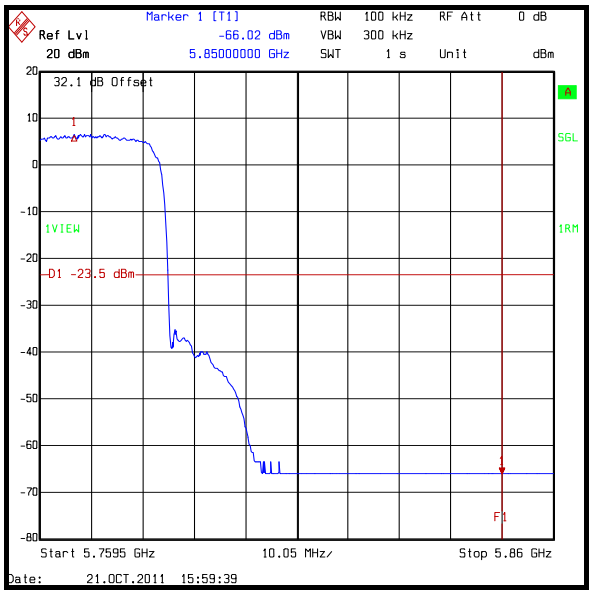
Upper Band Edge Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: 30 MHz QPSK

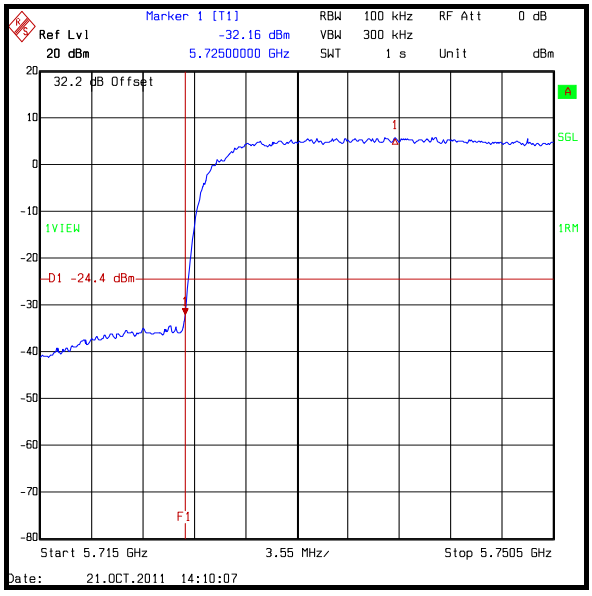


Lower Band Edge Peak Measurement

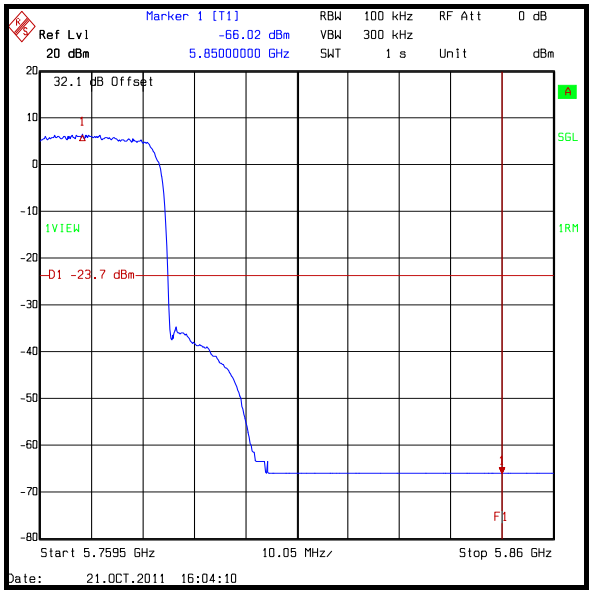


Upper Band Edge Peak Measurement

Results: 30 MHz 16QAM



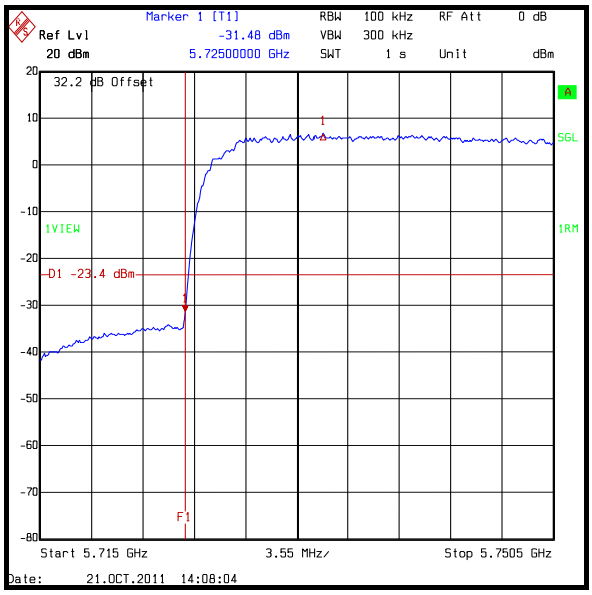
Lower Band Edge Peak Measurement



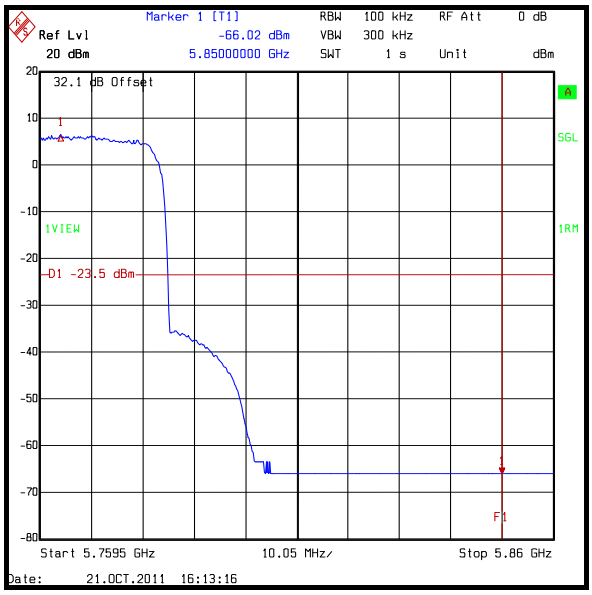
Upper Band Edge Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: 30 MHz 64QAM

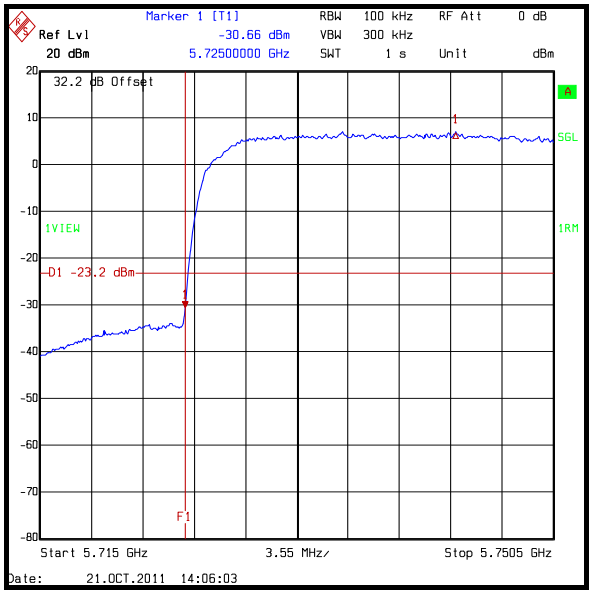


Lower Band Edge Peak Measurement

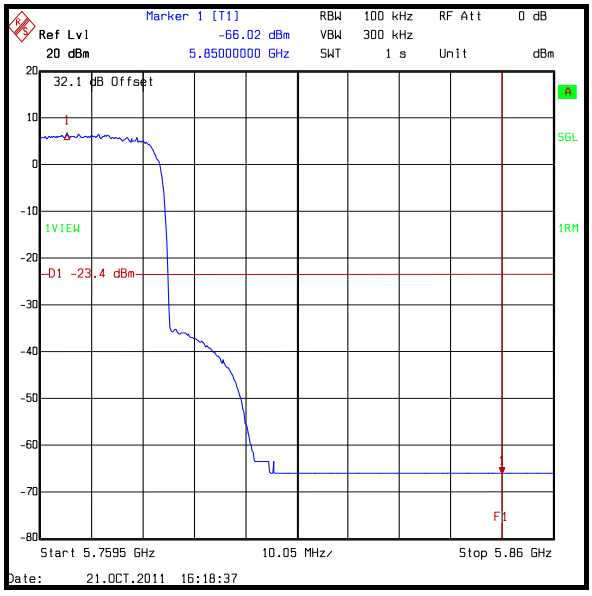


Upper Band Edge Peak Measurement

Results: 30MHz 128QAM



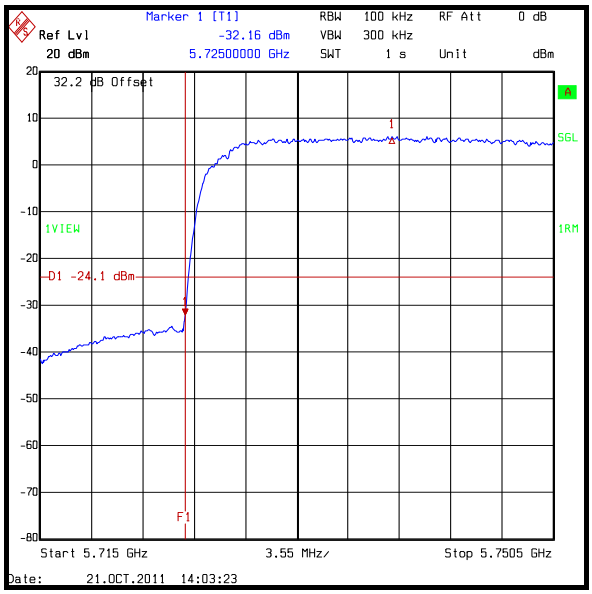
Lower Band Edge Peak Measurement



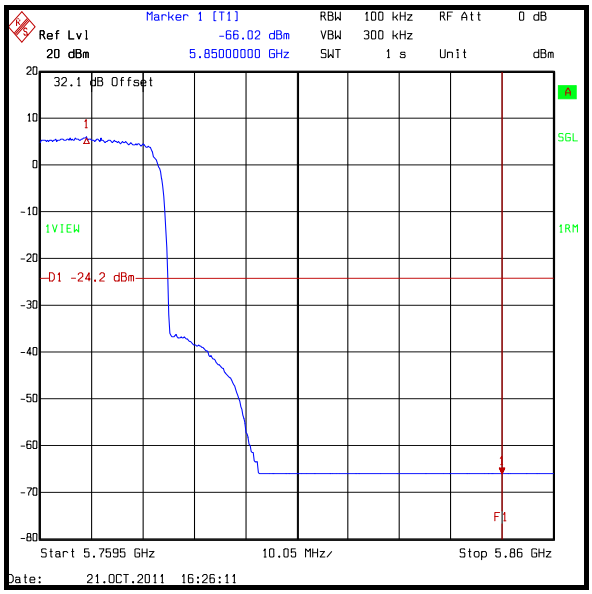
Upper Band Edge Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: 30 MHz 256QAM



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement

6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
Conducted Maximum Peak Output Power	5.8 GHz to 5.85 GHz	95%	±0.27 dB
Spectral Power Density	5.8 GHz to 5.85 GHz	95%	±2.94 dB
6 dB Bandwidth	5.8 GHz to 5.85 GHz	95%	±0.92 ppm
20 dB Bandwidth	5.8 GHz to 5.85 GHz	95%	±0.92 ppm
Conducted Spurious Emissions	1 MHz to 25 GHz	95%	±2.62 dB
Radiated Spurious Emissions	30 MHz to 40 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (months)
A067	Line Impedance Stabilization Network	Rohde & Schwarz	ESH3-Z5	890603/002	02 Jun 2012	12
A1393	Attenuator	Huber & Suhner	757456	6820.17.B	08 Jul 2012	12
A1490	Attenuator	Weinschel Corp	23-30-34	BH9156	09 Feb 2012	12
A1764	Waveguide Transition	Advanced Microtek	-	-	Calibrated before use	-
A1817	Antenna	EMCO	3115	00075694	03 Feb 2012	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Mar 2012	12
A1834	Attenuator	Hewlett Packard	8491B	10444	26 Jul 2012	12
A203	Antenna	Flann Microwave	22240-20	343	09 Oct 2012	36
A255	Antenna	Flann Microwave	16240-20	519	09 Oct 2012	12
A256	Antenna	Flann Microwave	18240-20	400	09 Oct 2012	12
A366	Isolator	MRI	FRR-400	169	Calibration not required	-
A436	Antenna	Flann Microwave	20240-20	330	09 Oct 2012	12
A553	Antenna	Chase	CBL6111A	1593	26 Mar 2012	12
C363	Cable	Rosenberger	RG142	None	05 Mar 2012	12
G0565	Telecom DC Power Supply	Hewlett Packard	E4356A	US39290102	Calibrated before use	-
K0001	5m Semi-Anechoic Chamber	Rainford EMC	N/A	N/A	29 May 2012	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	05 Sep 2011	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	29 Jun 2012	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	03 Dec 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	13 Jul 2012	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	04 Feb 2012	12
M1390	Harmonic Mixer	Farran Technology	WHMP 28	FTL1677B	Calibrated before use	12
M1590	ESU 26	Rohde & Schwarz	ESU26	100239	15 Jun 2012	12

NB In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.

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