

Compliance test report

167135-2TRFWL

Part 1/3

Date of issue
September 20, 2011

FCC Part 90, Boosters

Private Land Mobile Radio Service

Applicant **Bird Technologies – TX RX Systems**
Product **Channelized Signal Booster**
Model **613-8**
FCC ID **EZZ6138**

Nemko Canada Inc., a testing
laboratory, is accredited by the
Standards Council of Canada. The
tests included in this report are within
the scope of this accreditation



Test location

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Test site IC number 176392 (3 m Semi anechoic chamber)

Tested by Andrey Adelberg, Senior Wireless/EMC Specialist

Reviewed by 
David Duchesne, Wireless/EMC Specialist

September 20, 2011

Date:

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Section 1: Report summary

1.1 Applicant

Bird Technologies - TX RX Systems
30303 Aurora Road
Solon, United States
OH 44139

1.2 Manufacturer

Bird Technologies - TX RX Systems
30303 Aurora Road
Solon, United States
OH 44139

1.3 Test specification

FCC Part 90, Boosters
Private Land Mobile Radio Services

1.4 Statement of compliance

In the configuration tested the EUT was found compliant.

This report contains an assessment of apparatus against specifications based upon tests carried out on samples submitted at Nemko Canada Inc. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 90. Conducted measurements were performed in accordance with ANSI TIA-603-B-2002. Radiated tests were conducted in accordance with ANSI C63.4-2003.

1.5 Exclusions

None

1.6 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued

Section 2: Summary of test results

2.1 FCC Part 90 tests result summary

Part	Test description	Verdict
90.205	Output power	Pass
90.210	Conducted and radiated spurious emissions	Pass ³
90.213	Frequency stability	N/A ¹
90.219	Use of boosters	Pass ²
2-11-04/EAB/RF	Occupied bandwidth	Pass
2-11-04/EAB/RF	Out of band rejection	Pass ²

Notes: ¹The tested booster uses the same LO for down- and up-frequency conversion in the signal-processing chain; therefore the transmitted signal is identical in frequency to the received signal. This was verified by measuring the transmitted (output) signal frequency with a frequency counter that was phase-locked to a signal generator used to generate input RF signal. Measured frequency deviation was 0 Hz and the EUT was deemed to comply with frequency stability requirement.

²Please refer to 167135-2TRFWL Part 2 test report.

³Please refer to 167135-2TRFWL Part 2 and Part 3 test reports.

Section 3: Equipment under test (EUT) details

3.1 Product details

Model	613-8
Type of product	Channelized Broadband signal booster

3.2 Product description

The EUT is a broadband channelized booster that operates in 763–869 MHz frequency range and has internal filter that can be set to fixed channels 12.5, 25 and 50 kHz and tunable channel bandwidths from 1 to 15 MHz.

3.3 Sub-assemblies

Item #	Type	Frequency range	Serial/Part number	Notes
1	Low power filter module	700 MHz	3-23350-1	Combination with Power amplifier
2	Low power filter module	800 MHz	3-23368-1	Combination with Power amplifier
3	Fiber Optic filter module	700 MHz	3-23919	Combination with Power amplifier
4	Fiber Optic filter module	800 MHz	3-23920	Combination with Power amplifier
5	High power filter module	700 MHz	3-23921	None
6	High power filter module	800 MHz	3-23922	None
7	High power Fiber Optic filter module	700 MHz	3-23923	None
8	High power Fiber Optic filter module	800 MHz	3-23924	None
9	Power amplifier	700–800 MHz	3-23365	None
10	Triplexer	700–800 MHz	3-23088	None
11	Controller	N/A	3-23360-1	None

3.4 Sample information

Receipt date	May 16, 2011
Nemko sample ID number	1

3.5 EUT technical specifications

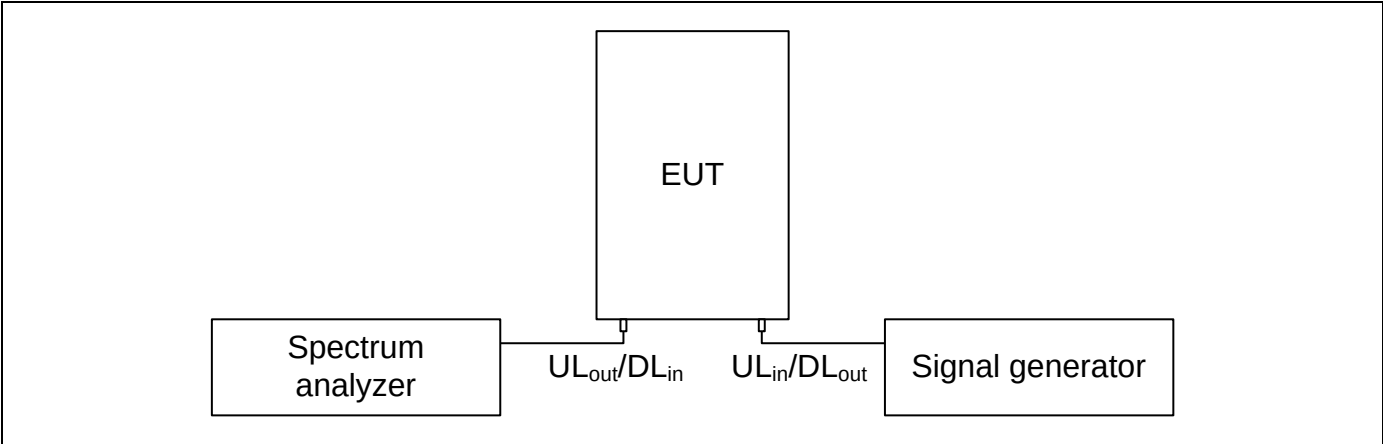
Operating bands	Downlink: 763–775 MHz 851–854 MHz 854–869 MHz	Uplink: 793–805 MHz 806–809 MHz 809–824 MHz
Power source	120 V _{AC} , 60 Hz	

Emission designator	Type of transmission	Modulation
F1D	Data	RD-LAP [9.6, 19.2] (4-L FSK)
		Dataradio 50 kHz (16FSK)
		P25 Phase 1 (C4FM) Control/Data
F1E	Voice	4-L FSK (Voice)
		P25 Phase 1 (C4FM)
		Tyco-M/A-Com EDACS (GFSK)
		Securenet (Encrypted Quantized Voice)
F3E	Voice Analog	
FXE	Voice	MotoTrbo, Kenwood, ICOM DMR
FXD	Data	ETSI DMR 2-slot TDMA
G1E	Voice	F4FM (Phase 2 P25 TDMA, Tetrapol)
G1D	Data	F4FM (Phase 2 P25 TDMA, Tetrapol)
D7W		TETRA, P25 Phase 2 (pi/4 [W]CQPSK)
D7D		Motorola HPD
D1E		CQPSK
D1W		LSM (Motorola Linear Simulcast)
F9W		Tyco-M/A-Com OpenSky (F4FGSK)
D1E	Voice	WCQPSK (Simulcast)

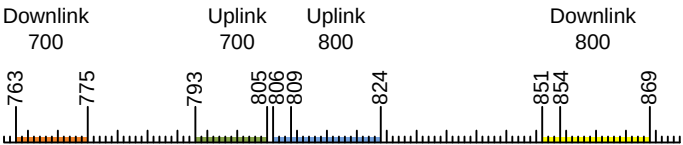
3.6 Operation of the EUT during testing

The EUT was controlled from laptop to tune to desired channel.

3.7 EUT setup diagram



3.8 Allocation bands



Section 4: Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment

4.2 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures

4.3 Technical judgment

None

Section 5: Test conditions

5.1 Atmospheric conditions

Temperature: 15–30 °C
Relative humidity: 20–75 %
Air pressure: 86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 6: Measurement uncertainty

6.1 Measurement uncertainty

Nemko Canada Inc. has calculated measurement uncertainty and is documented in EMC/MUC/001 "Uncertainty in EMC measurements." Measurement uncertainty was calculated using the methods described in CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements; as well as described in UKAS LAB34: The expression of Uncertainty in EMC Testing. Measurement uncertainty calculations assume a coverage factor of $K=2$ with 95 % certainty.

Section 7: Test equipment

7.1 Test equipment list

Equipment	Manufacturer	Model No.	Asset/Serial No.	Cal. cycle	Next cal.
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	Mar. 09/12
Flush mount turntable	Sunol	FM2022	FA002082	—	NCR
Controller	Sunol	SC104V	FA002060	—	NCR
Antenna mast	Sunol	TLT2	FA002061	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	April 27/12
Spectrum analyzer	Rohde & Schwarz	FSU	FA001877	1 year	Dec.06/11
Bilog antenna	Sunol	JB3	FA002108	1 year	Jan. 31/12
Horn antenna #2	EMCO	3115	FA000825	1 year	Feb. 04/12
1–18 GHz pre-amplifier	JCA	JCA118-503	FA002091	1 year	Sept. 23/11
Signal generator	Rohde & Schwarz	SMIQ03E	FA001269	1 year	Dec. 07/11
Signal generator	Rohde & Schwarz	SMIQ06B	FA001878	1 year	Dec. 07/11
Note: NCR = No Calibrate Required					

Section 8: Testing data

8.1 Clause 2-11-04/EAB/RF Occupied bandwidth

The spectral shape of the output should look similar to the input for all modulations.

8.1.1 Test summary

Test date	May 18–20 and 31, 2011	Test engineer	Andrey Adelberg	Verdict	Pass
Temperature	23 °C	Air pressure	1002 mbar	Relative humidity	40 %

8.1.2 Special notes

The test was performed using peak detector with RBW of 5 kHz for 12.5 kHz, 25 kHz, 50 kHz and 1 MHz channels and 20 kHz for 12 or 15 MHz channels.

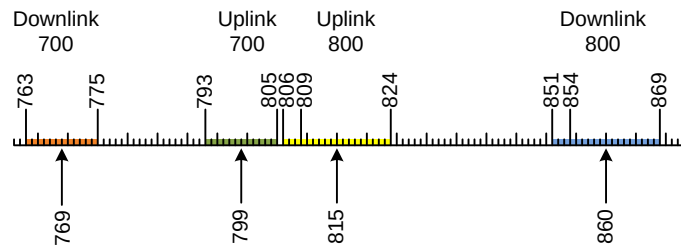
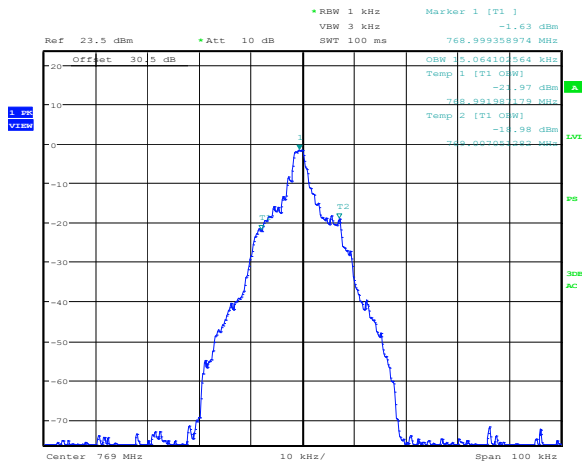


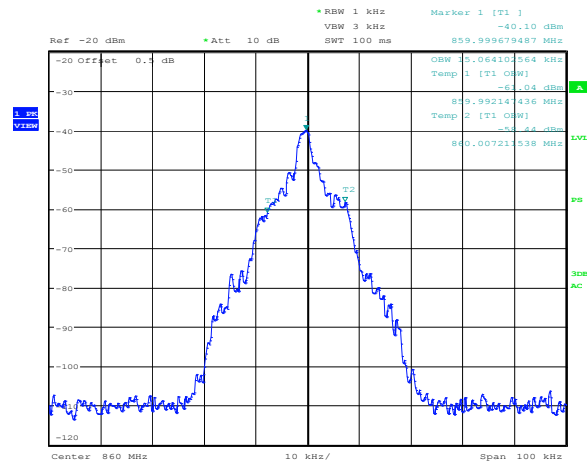
Diagram 8.1-1: Bandwidth test frequencies

8.1.3 Test data



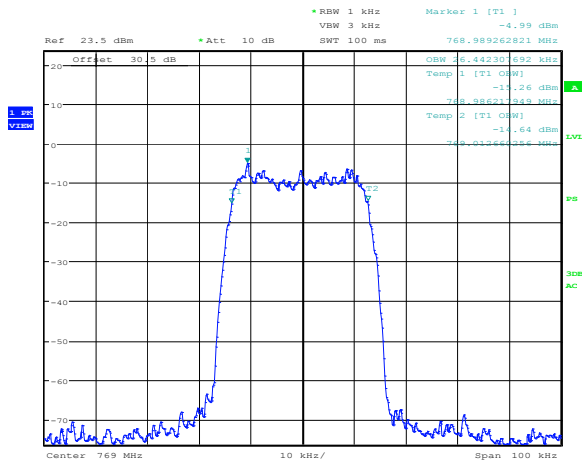
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Plot 8.1-1: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 700 MHz
 C4FM modulation



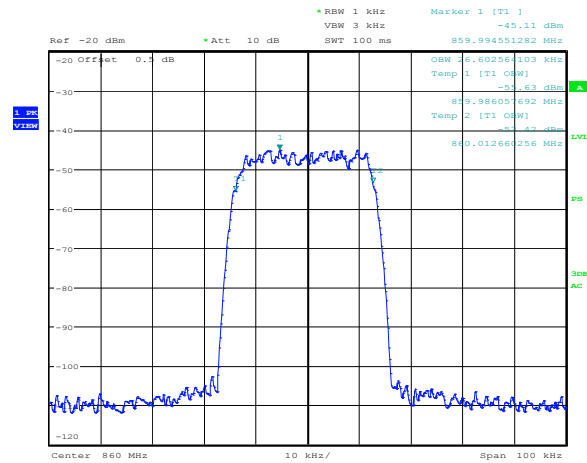
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Plot 8.1-2: Occupied bandwidth at the input
 C4FM modulation



Date: 20.MAY.2011 09:19:21

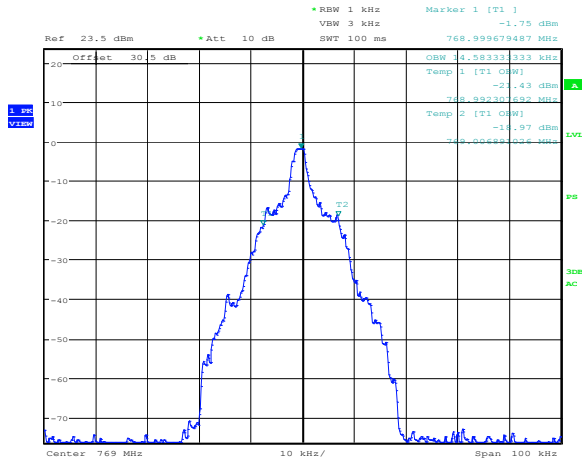
Plot 8.1-3: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 700 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

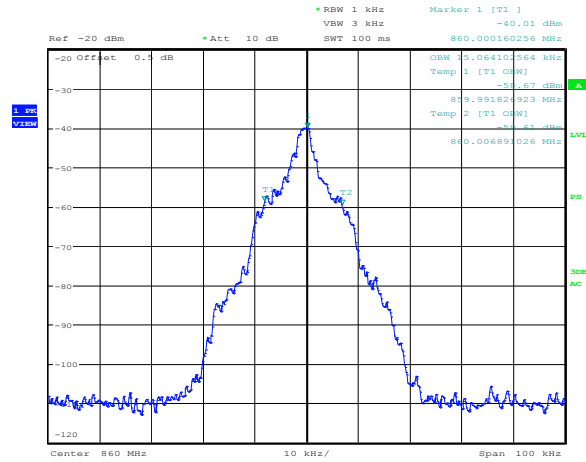
Plot 8.1-4: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



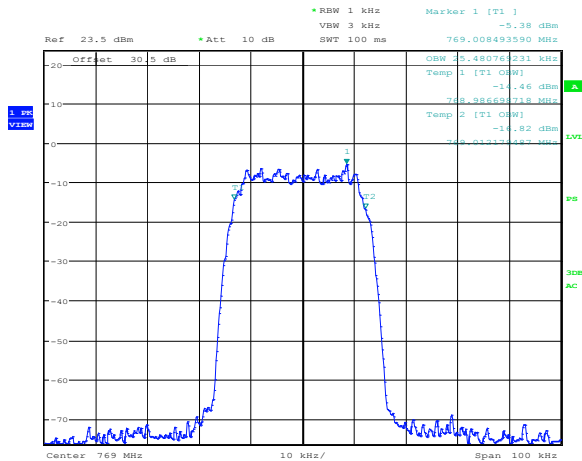
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Plot 8.1-5: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 700 MHz
 CQPSK modulation



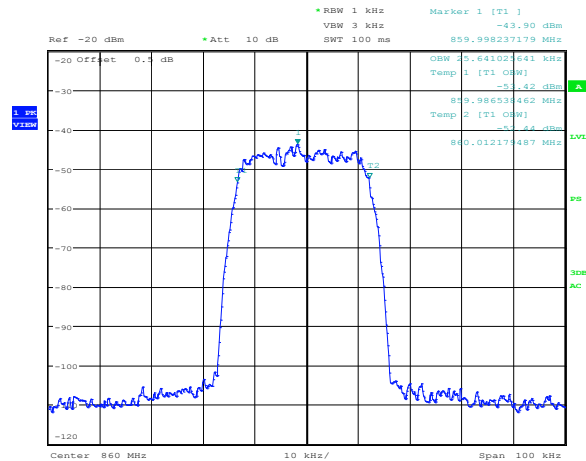
Date: 20.MAY.2011 14:31:50

Plot 8.1-6: Occupied bandwidth at the input
 CQPSK modulation



Date: 20.MAY.2011 09:20:44

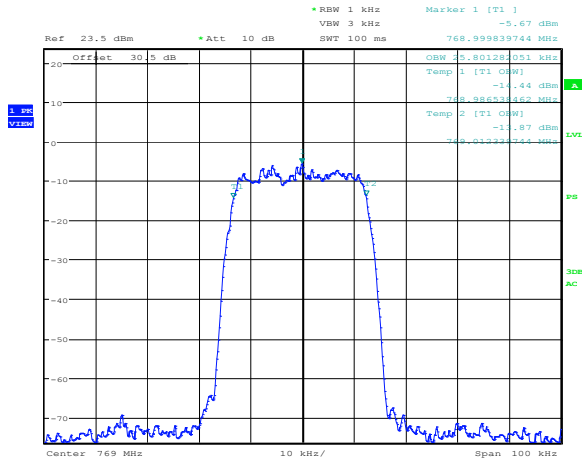
Plot 8.1-7: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 700 MHz
 LSM modulation



Date: 20.MAY.2011 14:32:36

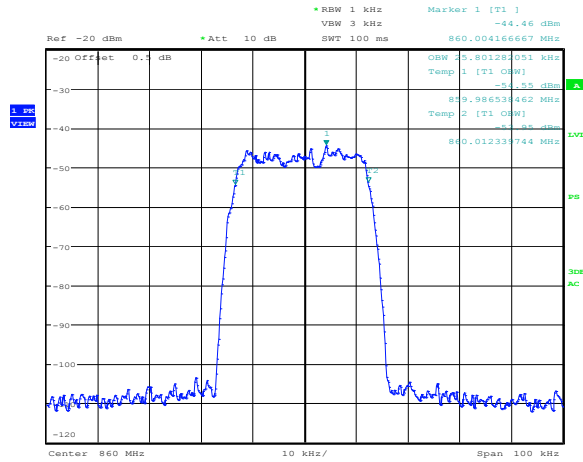
Plot 8.1-8: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



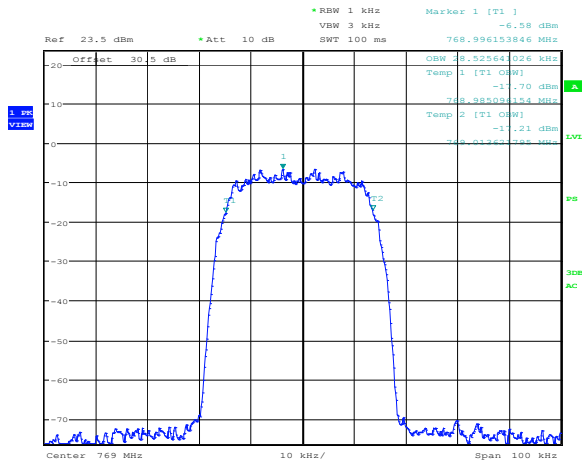
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Plot 8.1-9: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 700 MHz
 OpenSky modulation



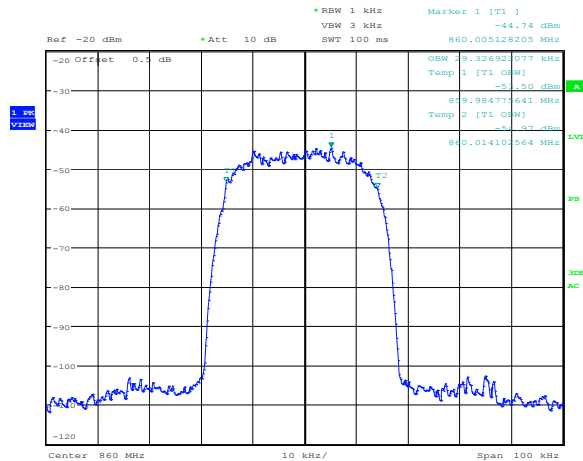
Date: 20.MAY.2011 14:36:53

Plot 8.1-10: Occupied bandwidth at the input
 OpenSky modulation



Date: 20.MAY.2011 09:19:54

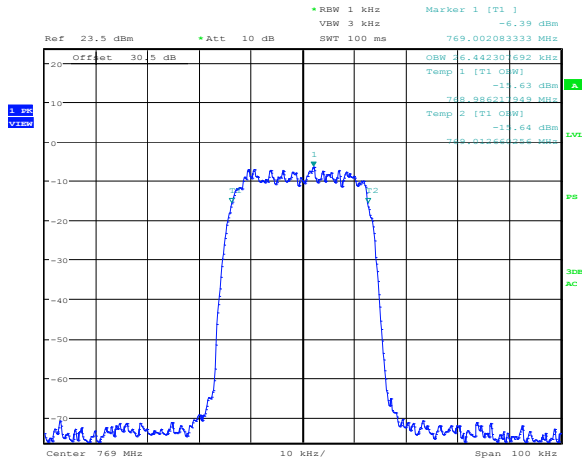
Plot 8.1-11: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 700 MHz
 TETRA modulation



Date: 20.MAY.2011 14:37:38

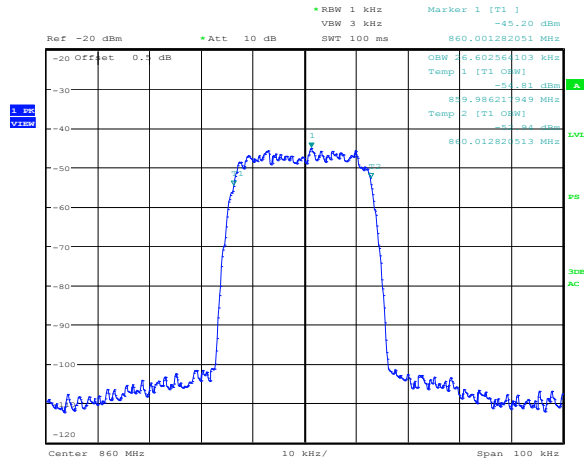
Plot 8.1-12: Occupied bandwidth at the input
 TETRA modulation

8.1.3 Test data, continued



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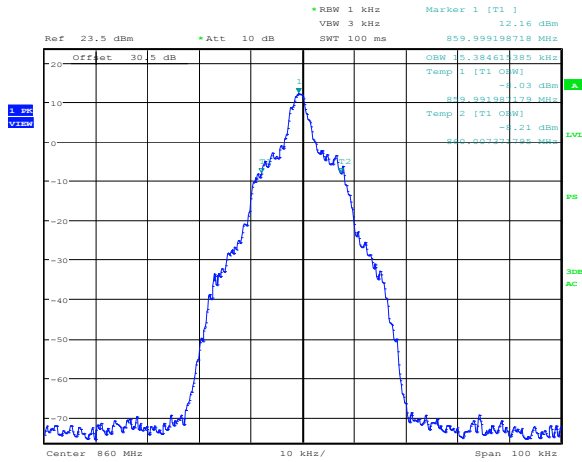
Plot 8.1-13: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 700 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

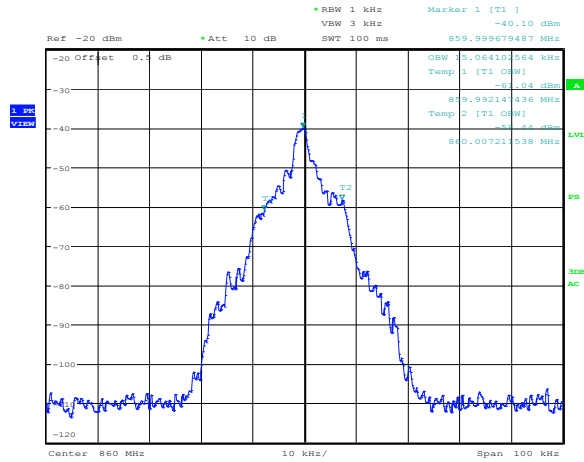
Plot 8.1-14: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



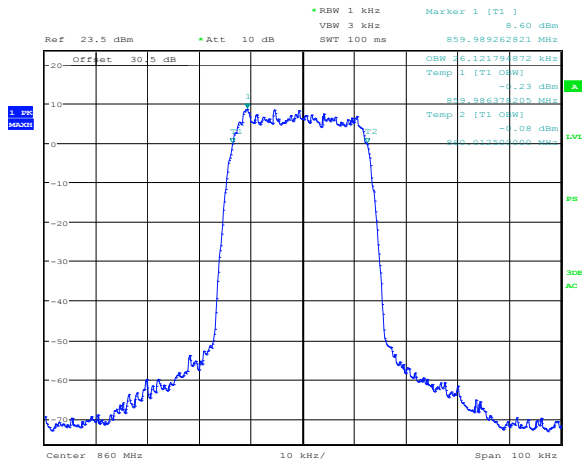
Date: 20.MAY.2011 11:31:54

Plot 8.1-15: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 800 MHz
 C4FM modulation



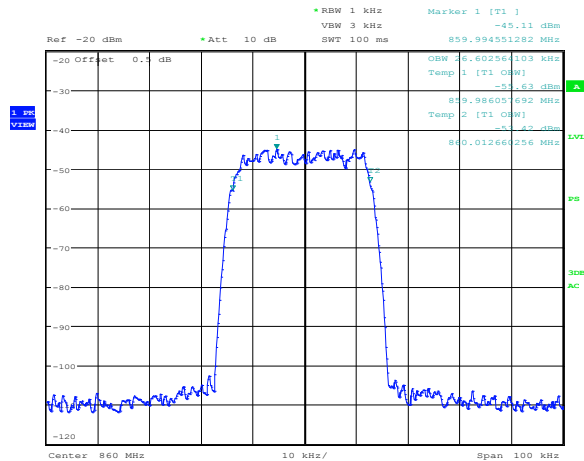
Date: 20.MAY.2011 14:31:33

Plot 8.1-16: Occupied bandwidth at the input
 C4FM modulation



Date: 20.MAY.2011 11:33:53

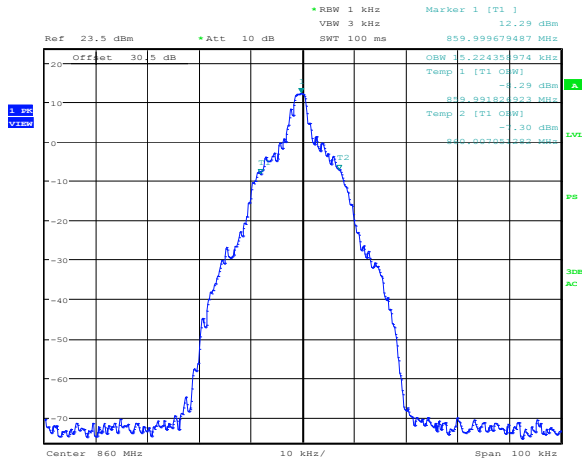
Plot 8.1-17: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 800 MHz
 HPD modulation



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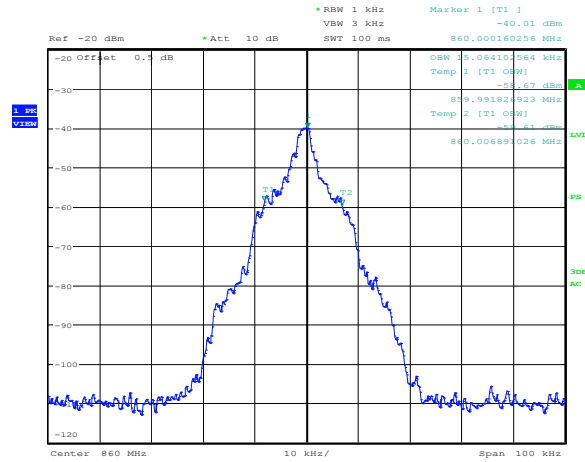
Plot 8.1-18: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



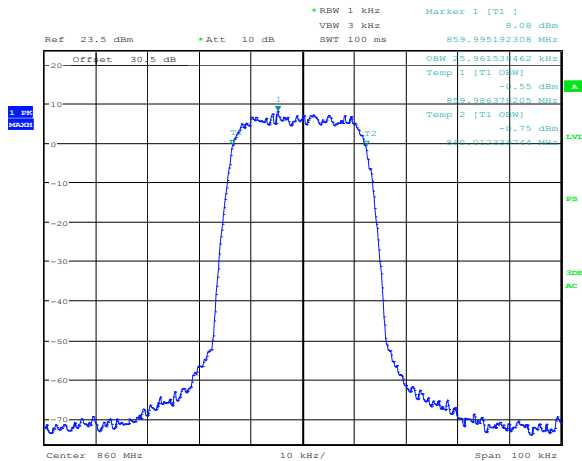
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Plot 8.1-19: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 800 MHz
 CQPSK modulation



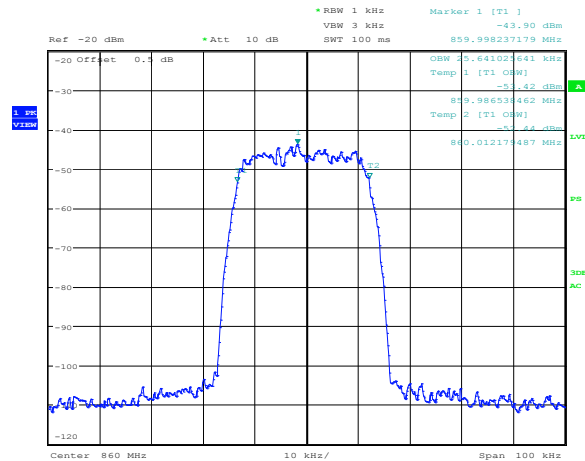
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Plot 8.1-20: Occupied bandwidth at the input
 CQPSK modulation



Date: 20.MAY.2011 11:32:40

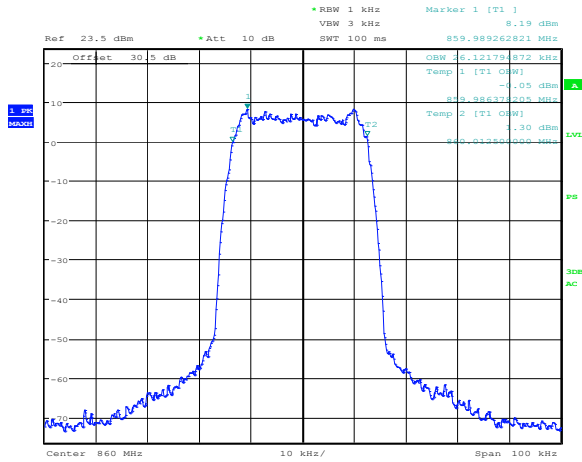
Plot 8.1-21: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 800 MHz
 LSM modulation



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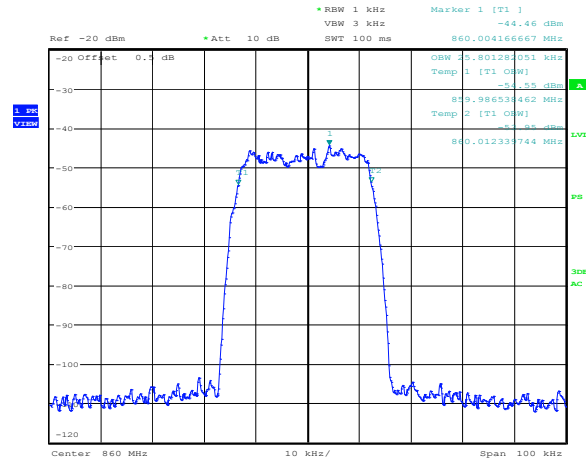
Plot 8.1-22: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



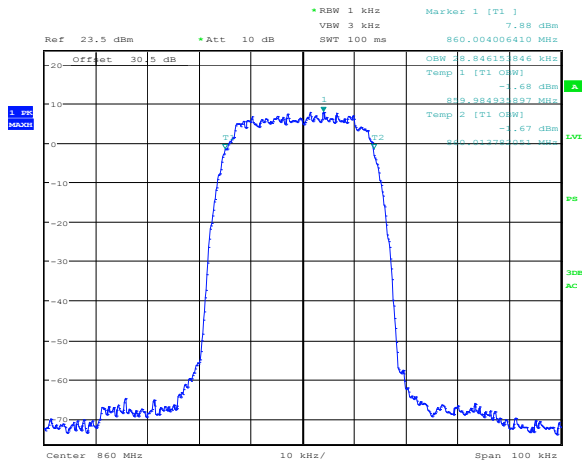
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Plot 8.1-23: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 800 MHz
 OpenSky modulation



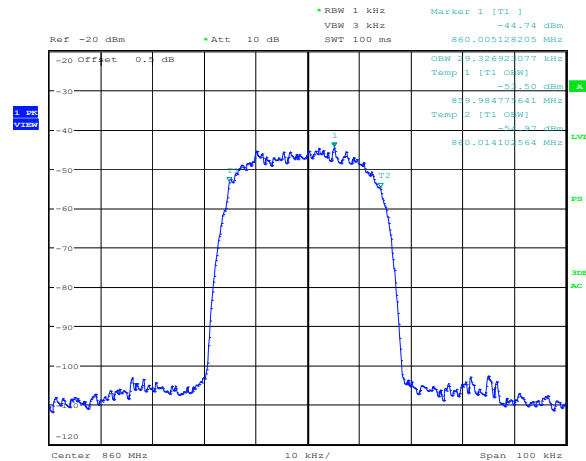
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Plot 8.1-24: Occupied bandwidth at the input
 OpenSky modulation



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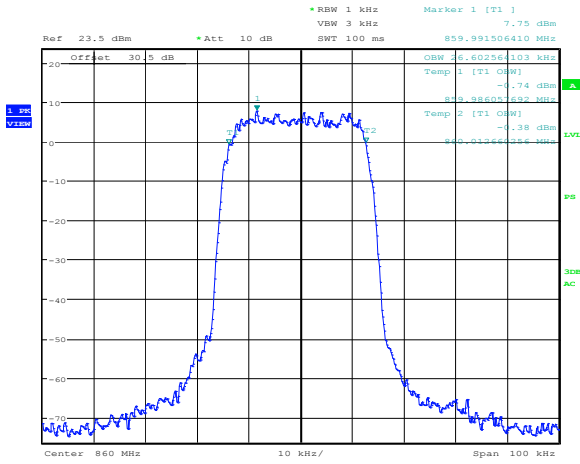
Plot 8.1-25: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 800 MHz
 TETRA modulation



Date: 20.MAY.2011 14:37:38

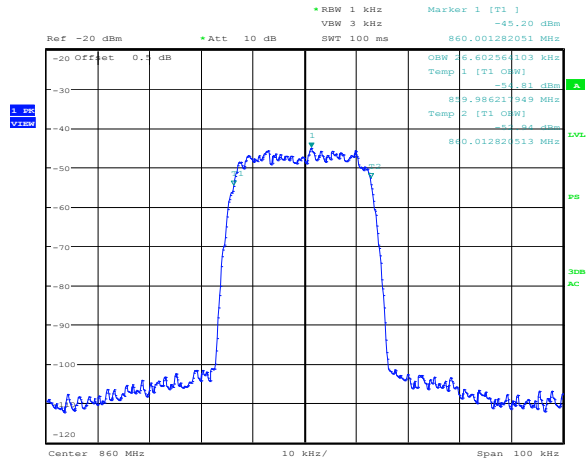
Plot 8.1-26: Occupied bandwidth at the input
 TETRA modulation

8.1.3 Test data, continued



Date: 20.MAY.2011 11:34:36

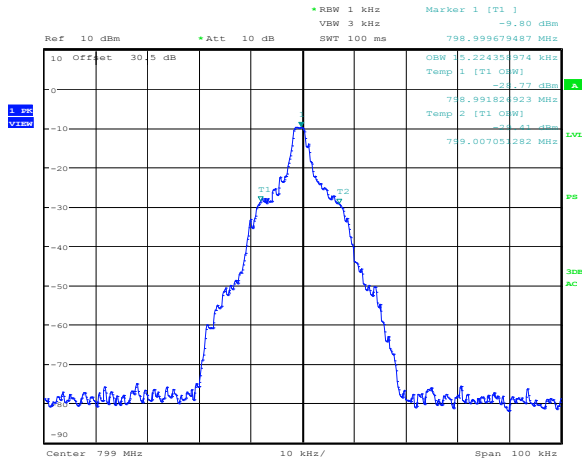
Plot 8.1-27: Occupied bandwidth at the output
 Fiber optic high power
 Downlink 800 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

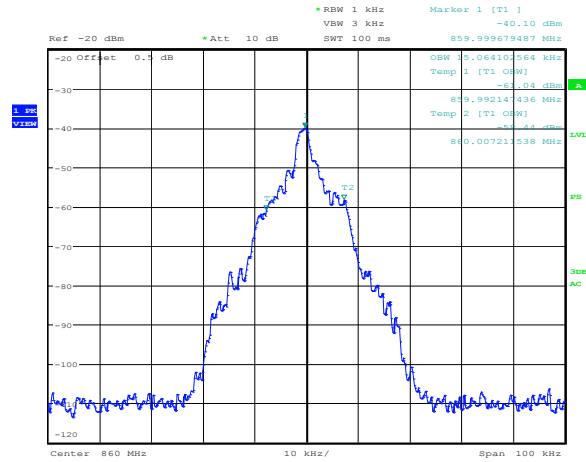
Plot 8.1-28: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



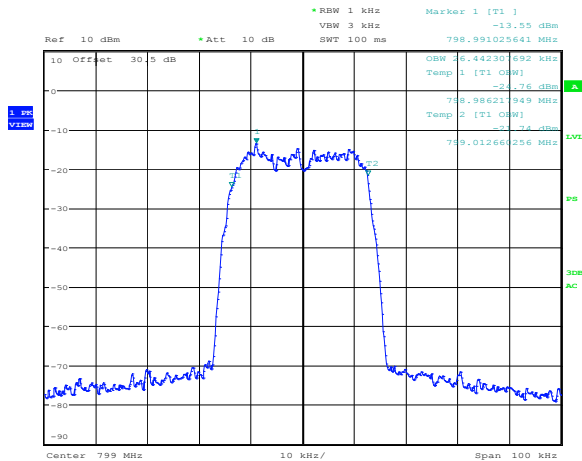
Date: 20.MAY.2011 08:32:37

Plot 8.1-29: Occupied bandwidth at the output
 Fiber optic high power
 Uplink 700 MHz
 C4FM modulation



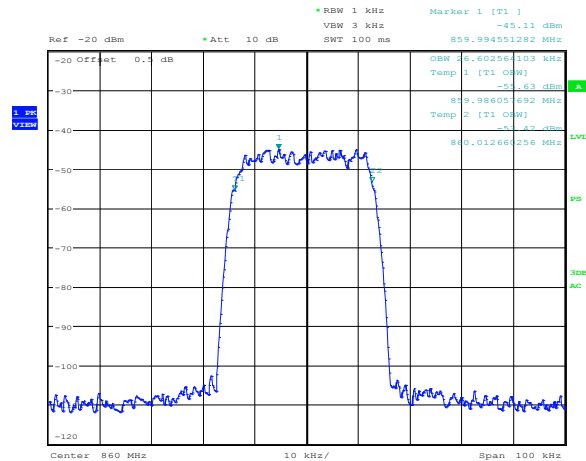
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Plot 8.1-30: Occupied bandwidth at the input
 C4FM modulation



Date: 20.MAY.2011 08:33:15

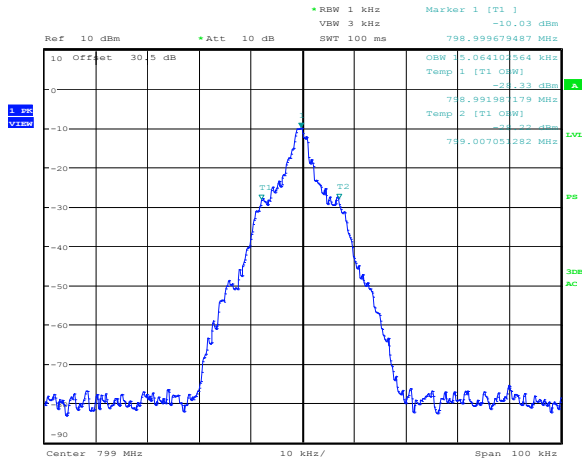
Plot 8.1-31: Occupied bandwidth at the output
 Fiber optic high power
 Uplink 700 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

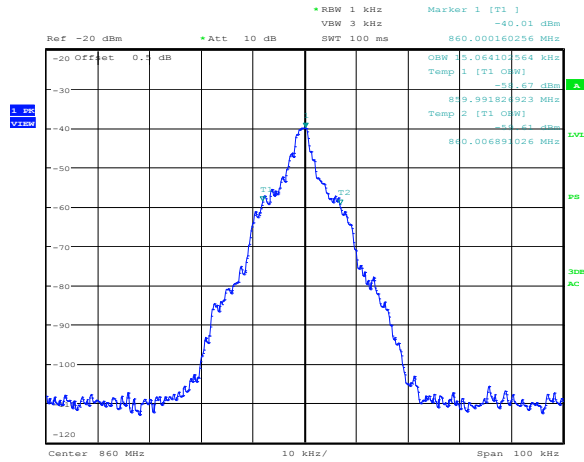
Plot 8.1-32: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



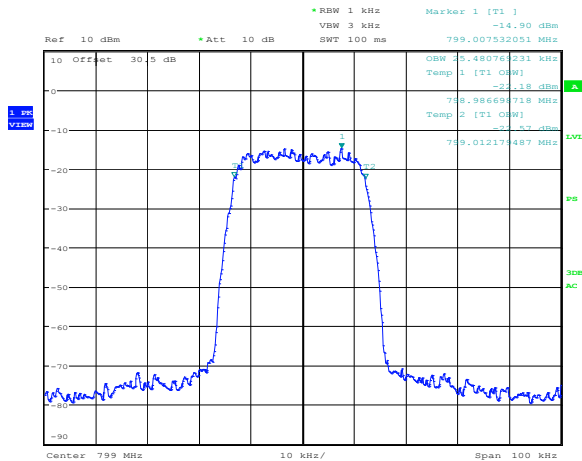
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Plot 8.1-33: Occupied bandwidth at the output
Fiber optic high power
Uplink 700 MHz
CQPSK modulation



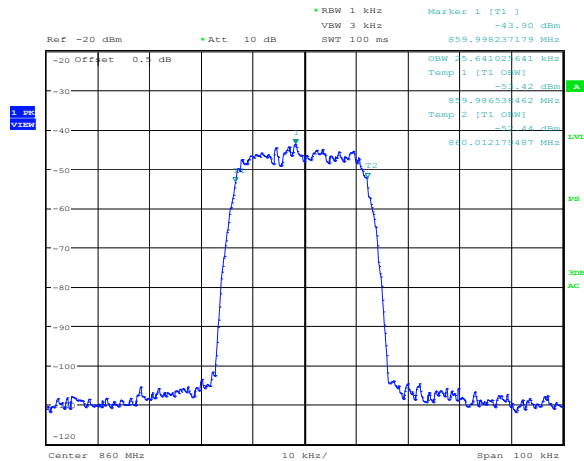
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Plot 8.1-34: Occupied bandwidth at the input
CQPSK modulation



Date: 20.MAY.2011 08:33:55

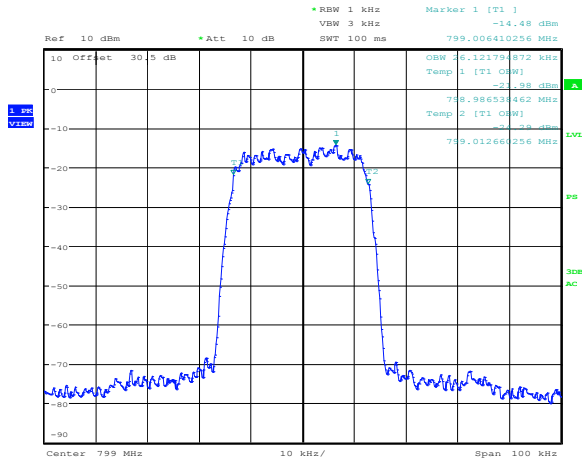
Plot 8.1-35: Occupied bandwidth at the output
Fiber optic high power
Uplink 700 MHz
LSM modulation



Date: 20.MAY.2011 14:32:36

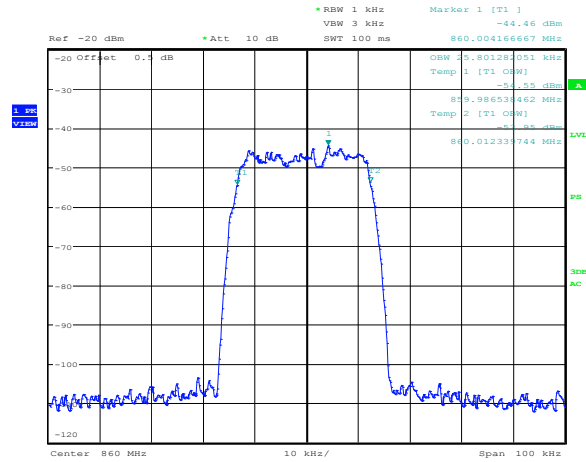
Plot 8.1-36: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



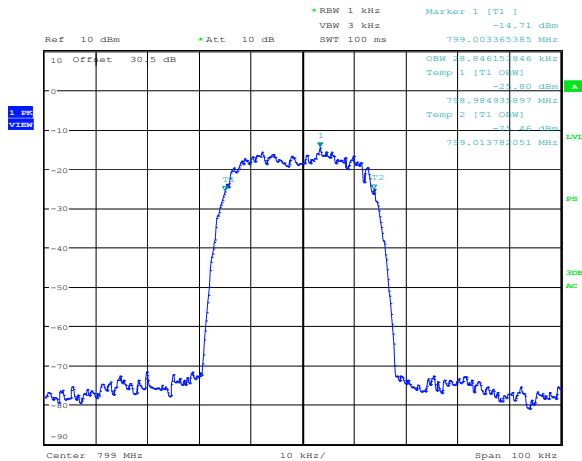
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Plot 8.1-37: Occupied bandwidth at the output
Fiber optic high power
Uplink 700 MHz
OpenSky modulation



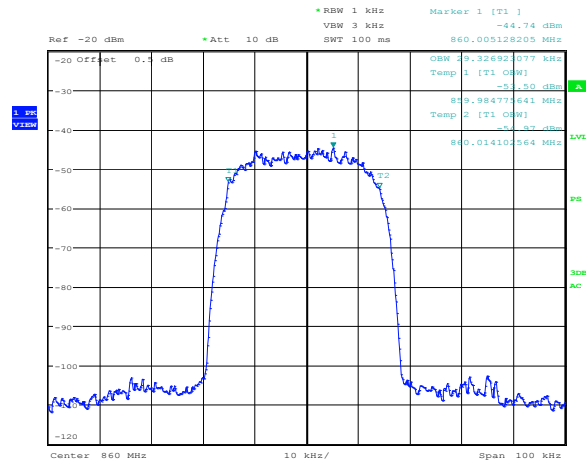
Date: 20.MAY.2011 14:36:53

Plot 8.1-38: Occupied bandwidth at the input
OpenSky modulation



Date: 20.MAY.2011 08:31:40

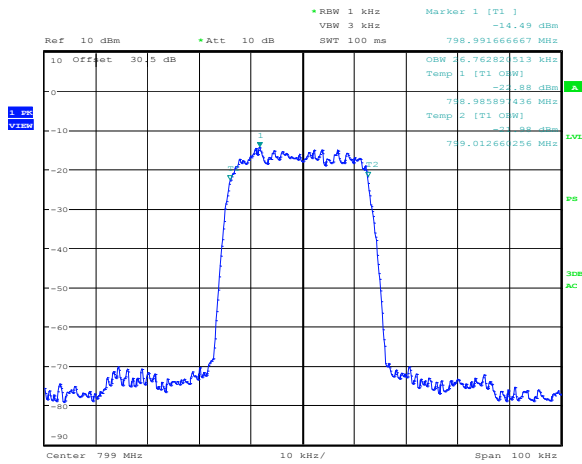
Plot 8.1-39: Occupied bandwidth at the output
Fiber optic high power
Uplink 700 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

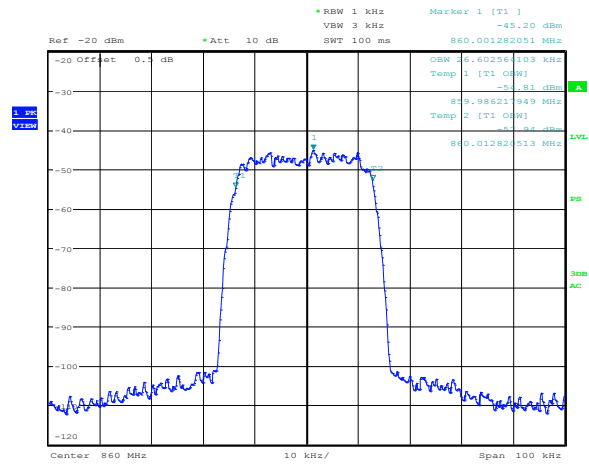
Plot 8.1-40: Occupied bandwidth at the input
TETRA modulation

8.1.3 Test data, continued



Date: 20.MAY.2011 08:35:30

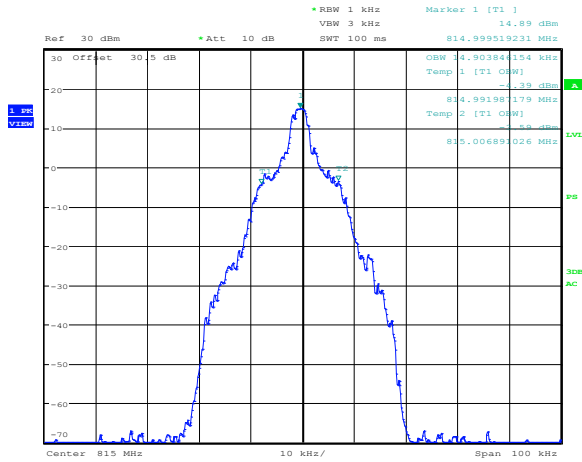
Plot 8.1-41: Occupied bandwidth at the output
Fiber optic high power
Uplink 700 MHz
WCQPSK modulation



Date: 20.MAY.2011 14:36:12

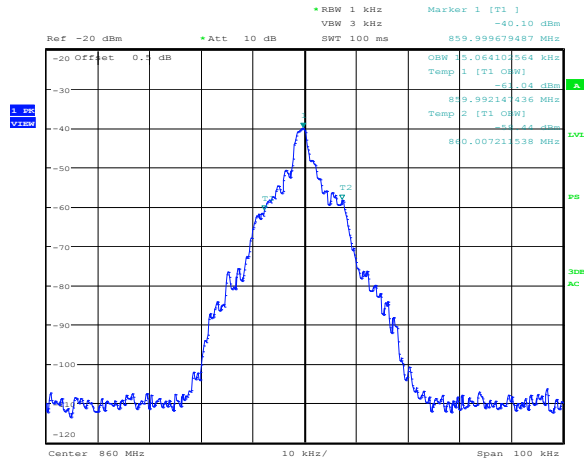
Plot 8.1-42: Occupied bandwidth at the input
WCQPSK modulation

8.1.3 Test data, continued



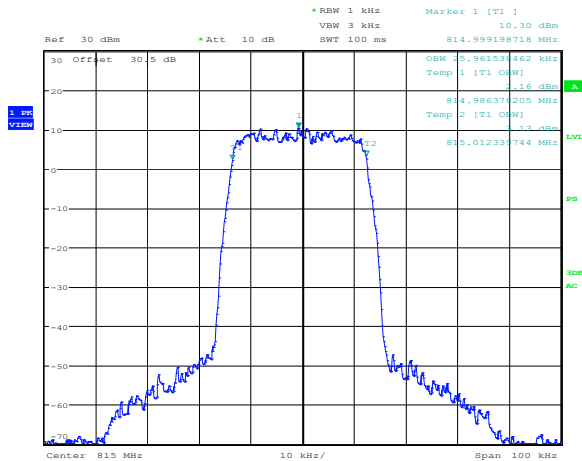
Date: 20.MAY.2011 10:22:18

Plot 8.1-43: Occupied bandwidth at the output
Fiber optic high power
Uplink 800 MHz
C4FM modulation



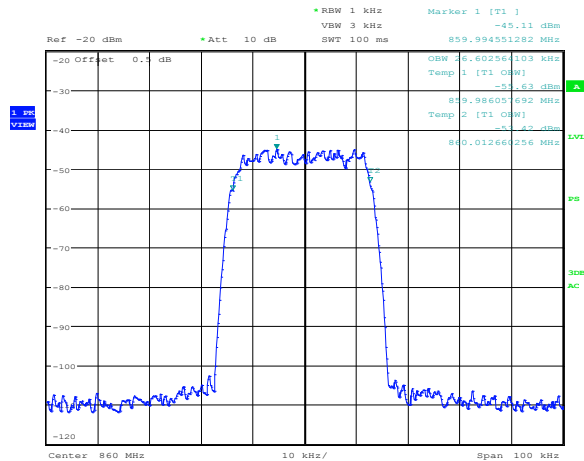
Date: 20.MAY.2011 14:31:33

Plot 8.1-44: Occupied bandwidth at the input
C4FM modulation



Date: 20.MAY.2011 10:24:10

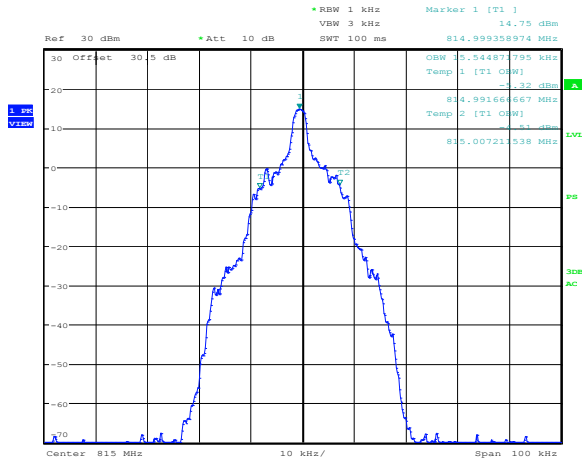
Plot 8.1-45: Occupied bandwidth at the output
Fiber optic high power
Uplink 800 MHz
HPD modulation



Date: 20.MAY.2011 14:31:10

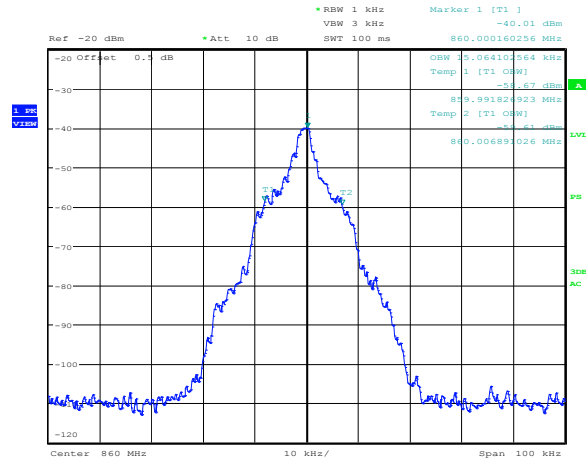
Plot 8.1-46: Occupied bandwidth at the input
HPD modulation

8.1.3 Test data, continued



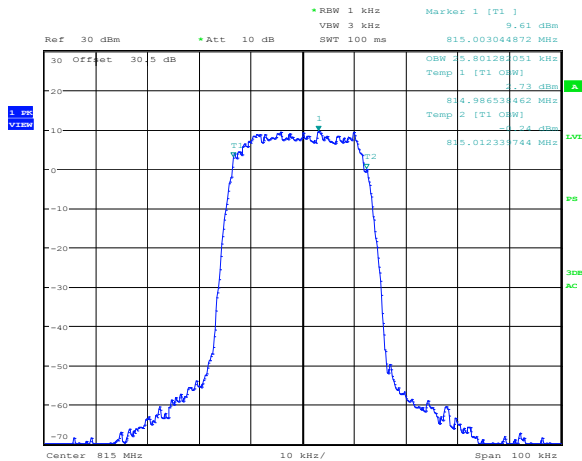
Date: 20.MAY.2011 10:22:34

Plot 8.1-47: Occupied bandwidth at the output
Fiber optic high power
Uplink 800 MHz
CQPSK modulation



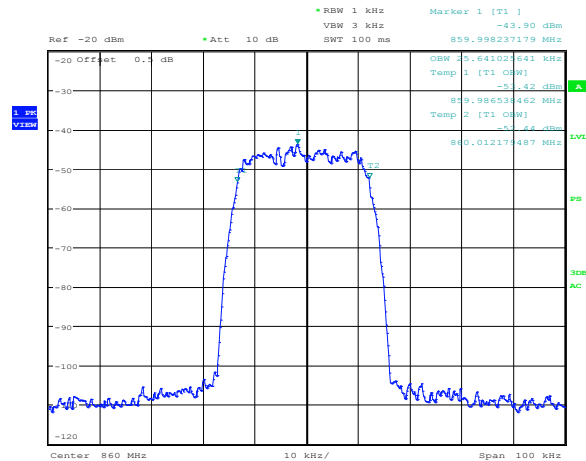
Date: 20.MAY.2011 14:31:50

Plot 8.1-48: Occupied bandwidth at the input
CQPSK modulation



Date: 20.MAY.2011 10:23:01

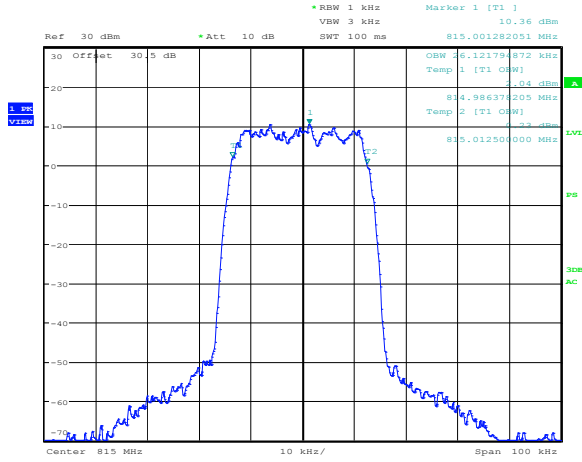
Plot 8.1-49: Occupied bandwidth at the output
Fiber optic high power
Uplink 800 MHz
LSM modulation



Date: 20.MAY.2011 14:32:36

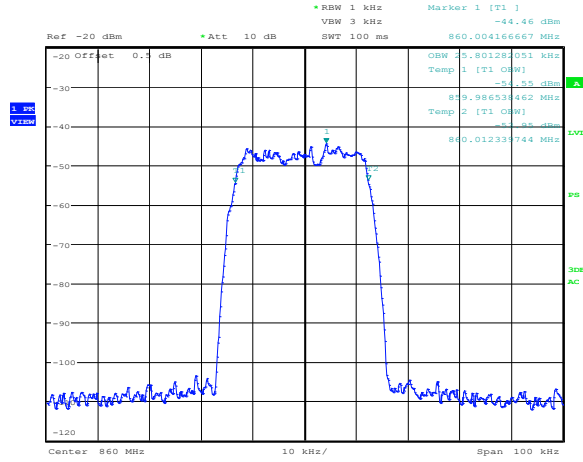
Plot 8.1-50: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



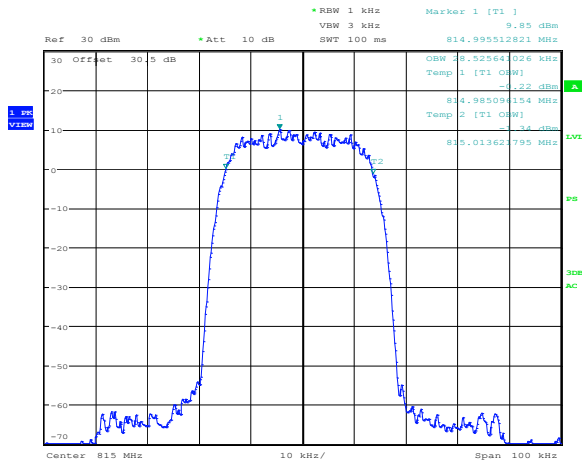
Date: 20.MAY.2011 10:23:36

Plot 8.1-51: Occupied bandwidth at the output
Fiber optic high power
Uplink 800 MHz
OpenSky modulation



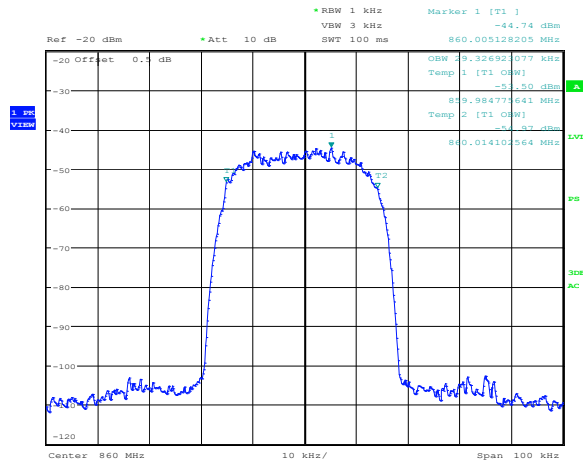
Date: 20.MAY.2011 14:36:53

Plot 8.1-52: Occupied bandwidth at the input
OpenSky modulation



Date: 20.MAY.2011 10:21:45

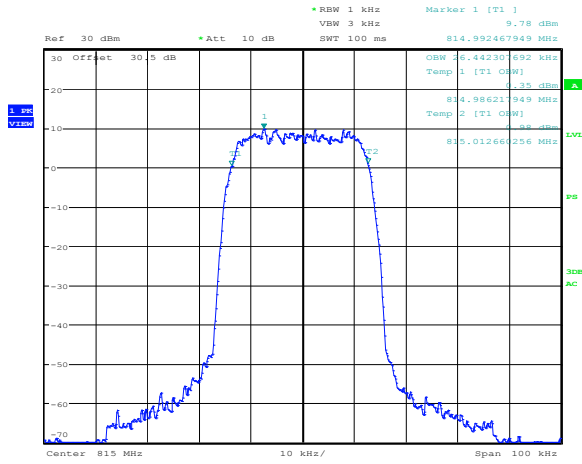
Plot 8.1-53: Occupied bandwidth at the output
Fiber optic high power
Uplink 800 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

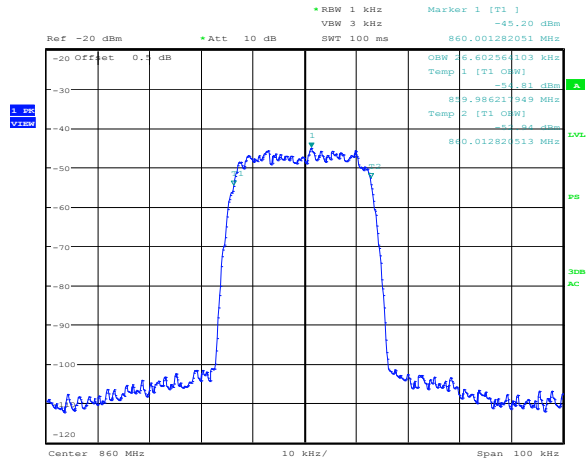
Plot 8.1-54: Occupied bandwidth at the input
TETRA modulation

8.1.3 Test data, continued



Date: 20.MAY.2011 10:24:40

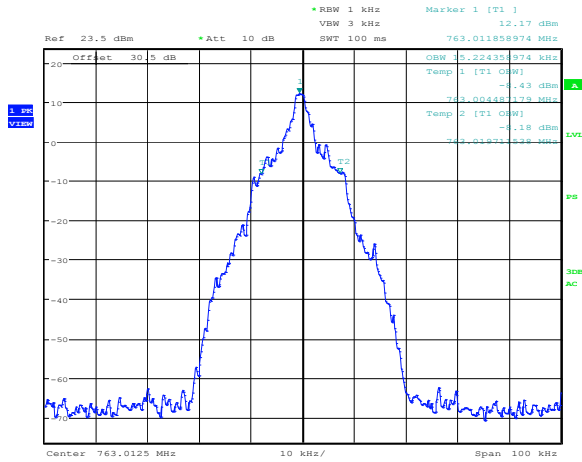
Plot 8.1-55: Occupied bandwidth at the output
 Fiber optic high power
 Uplink 800 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

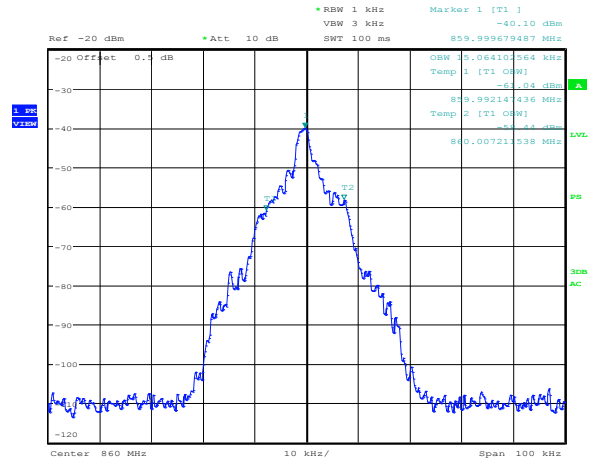
Plot 8.1-56: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



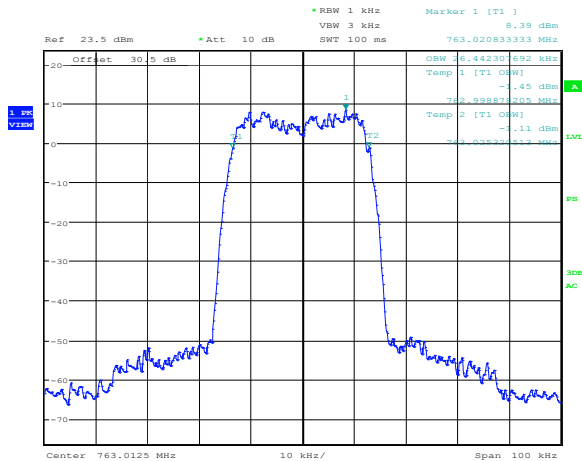
Date: 19.MAY.2011 10:27:38

Plot 8.1-57: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 700 MHz
 C4FM modulation



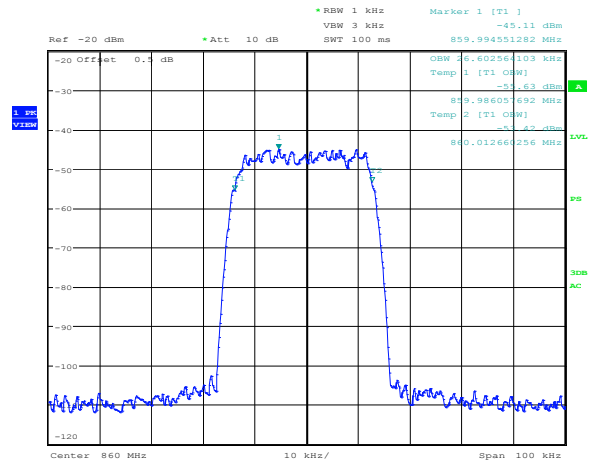
Date: 20.MAY.2011 14:31:33

Plot 8.1-58: Occupied bandwidth at the input
 C4FM modulation



Date: 19.MAY.2011 10:28:15

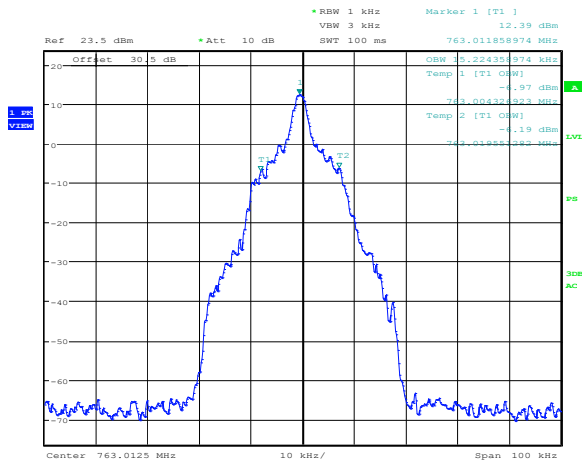
Plot 8.1-59: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 700 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

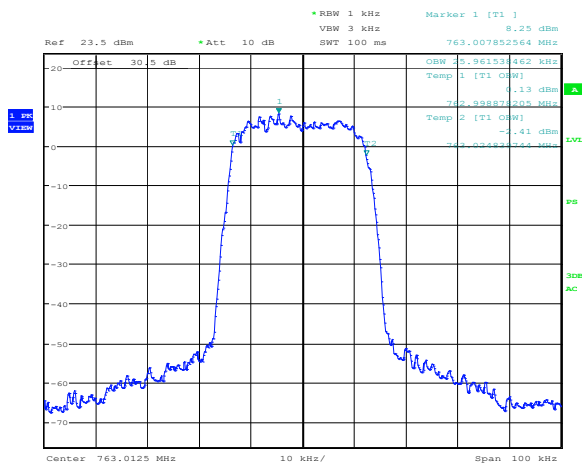
Plot 8.1-60: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



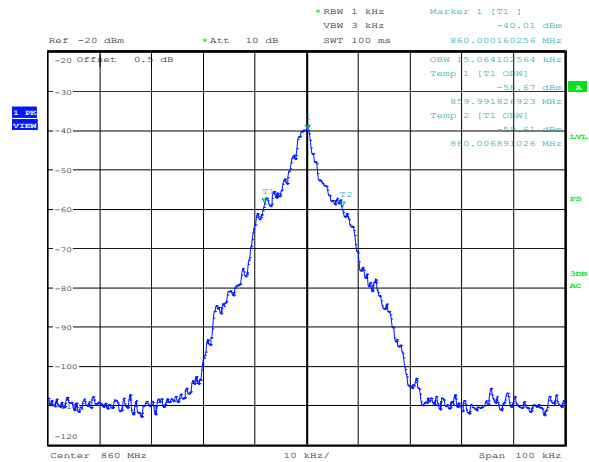
Date: 19.MAY.2011 10:29:49

Plot 8.1-61: Occupied bandwidth at the output
Fiber optic + power amplifier
Downlink 700 MHz
QPSK modulation



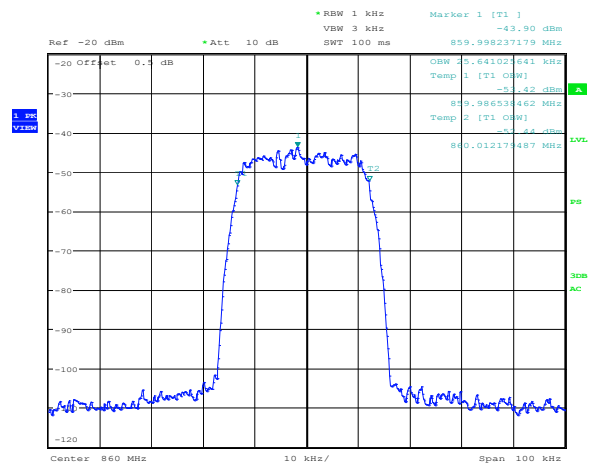
Date: 19.MAY.2011 10:28:53

Plot 8.1-63: Occupied bandwidth at the output
Fiber optic + power amplifier
Downlink 700 MHz
LSM modulation



Date: 20.MAY.2011 14:31:50

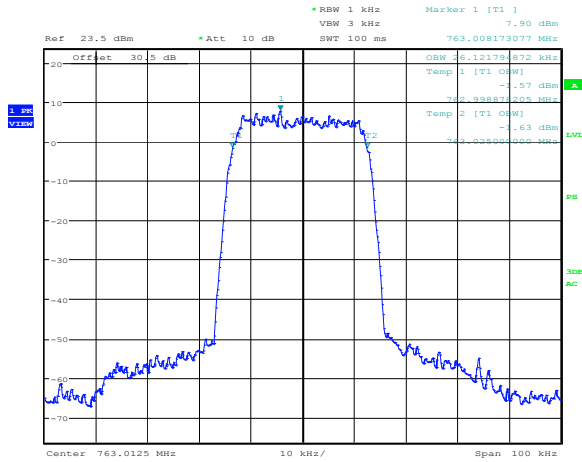
Plot 8.1-62: Occupied bandwidth at the input
CQPSK modulation



Date: 20.MAY.2011 14:32:36

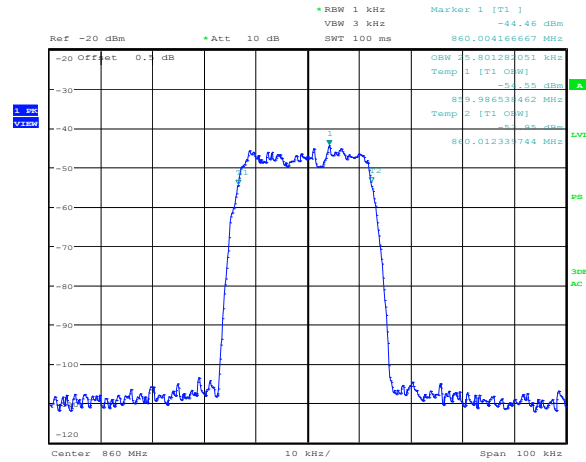
Plot 8.1-64: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



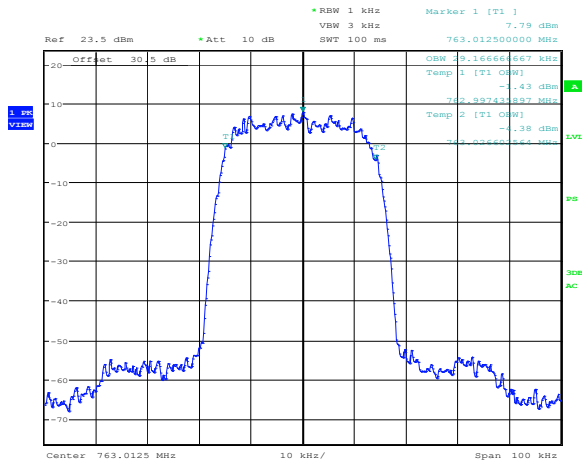
Date: 19.MAY.2011 10:29:20

Plot 8.1-65: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 700 MHz
 OpenSky modulation



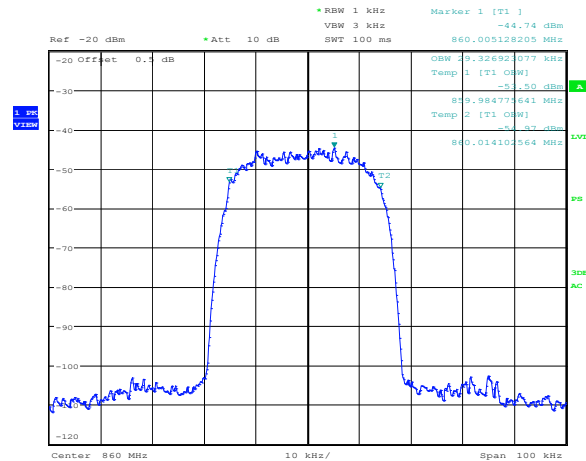
Date: 20.MAY.2011 14:36:53

Plot 8.1-66: Occupied bandwidth at the input
 OpenSky modulation



Date: 19.MAY.2011 10:26:55

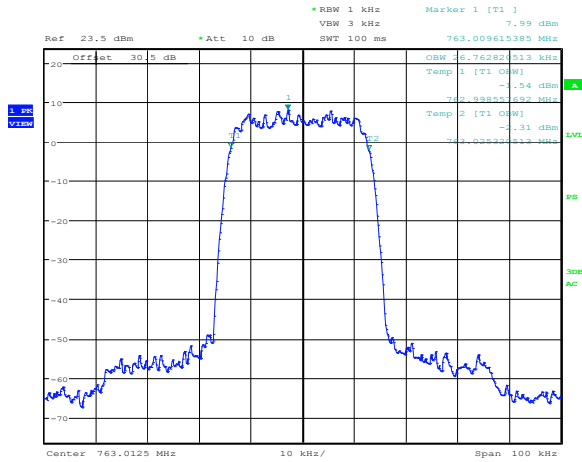
Plot 8.1-67: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 700 MHz
 TETRA modulation



Date: 20.MAY.2011 14:37:38

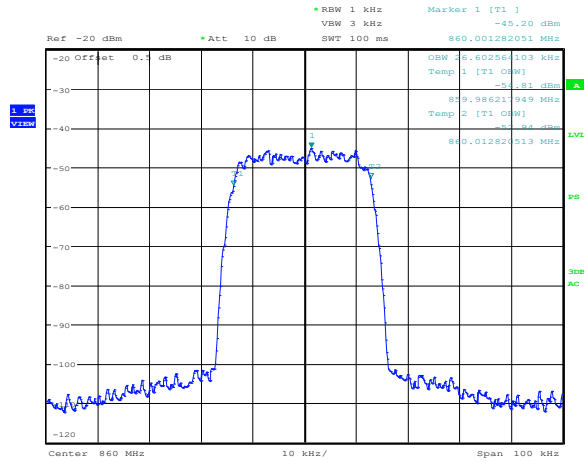
Plot 8.1-68: Occupied bandwidth at the input
 TETRA modulation

8.1.3 Test data, continued



Date: 19.MAY.2011 10:30:31

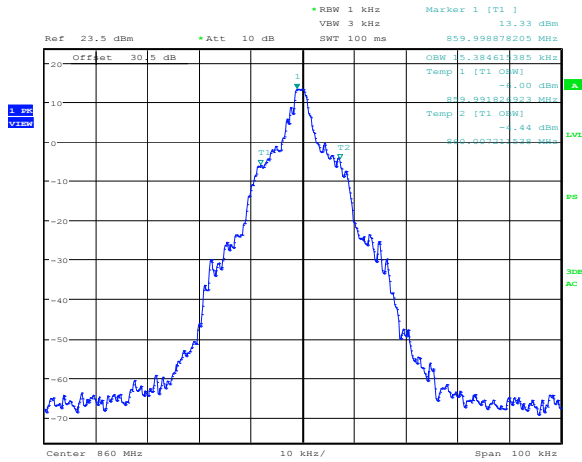
Plot 8.1-69: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 700 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

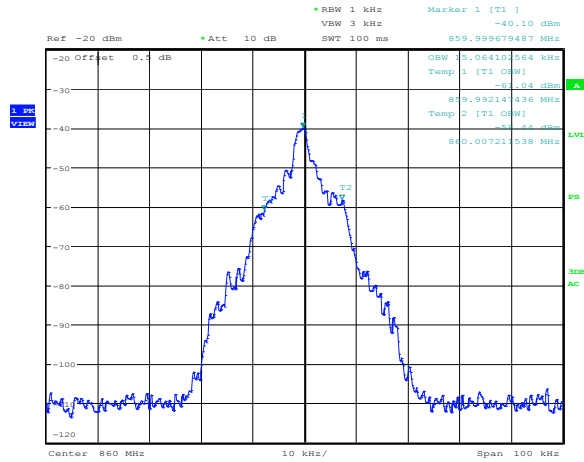
Plot 8.1-70: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



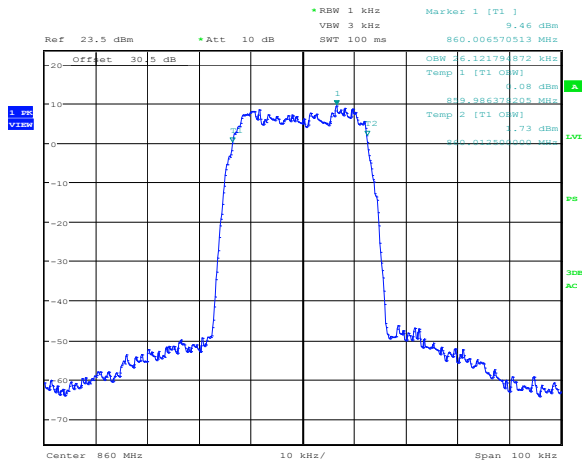
Date: 18.MAY.2011 14:53:17

Plot 8.1-71: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 800 MHz
 C4FM modulation



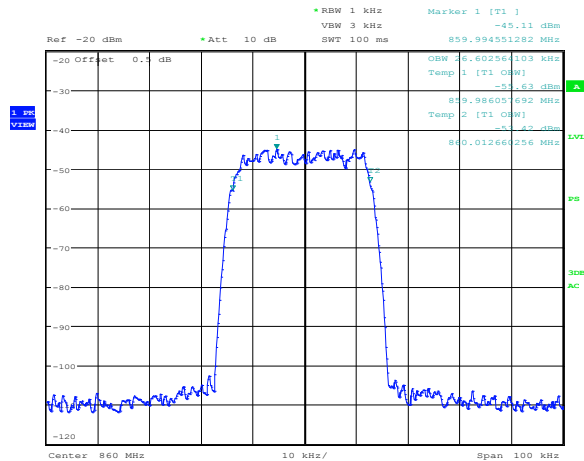
Date: 20.MAY.2011 14:31:33

Plot 8.1-72: Occupied bandwidth at the input
 C4FM modulation



Date: 18.MAY.2011 14:52:42

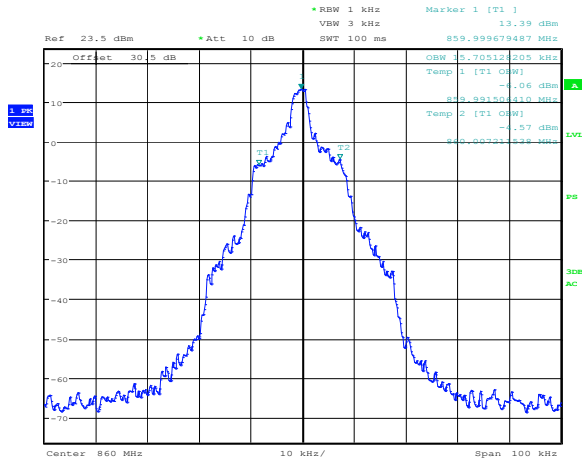
Plot 8.1-73: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 800 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

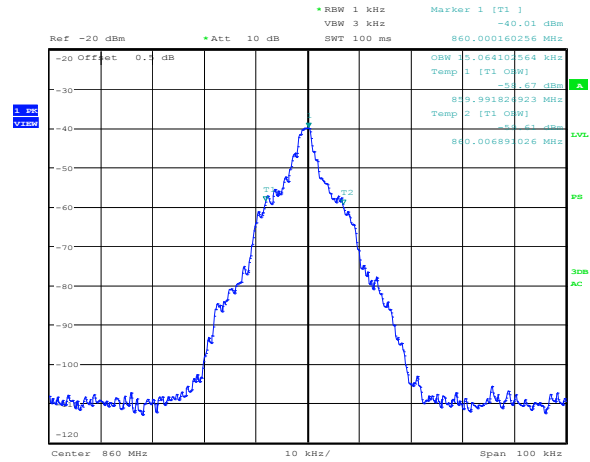
Plot 8.1-74: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



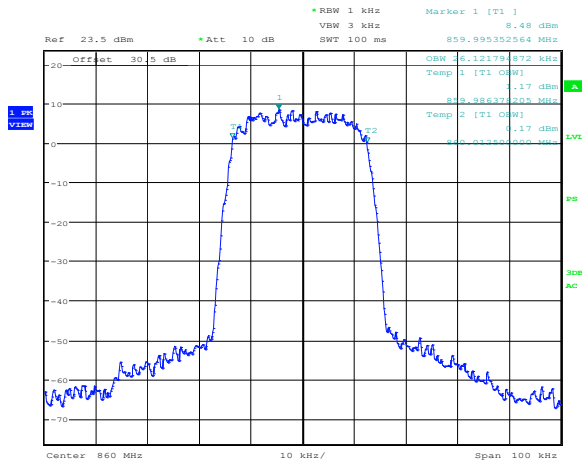
Date: 18.MAY.2011 14:52:04

Plot 8.1-75: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 800 MHz
 CQPSK modulation



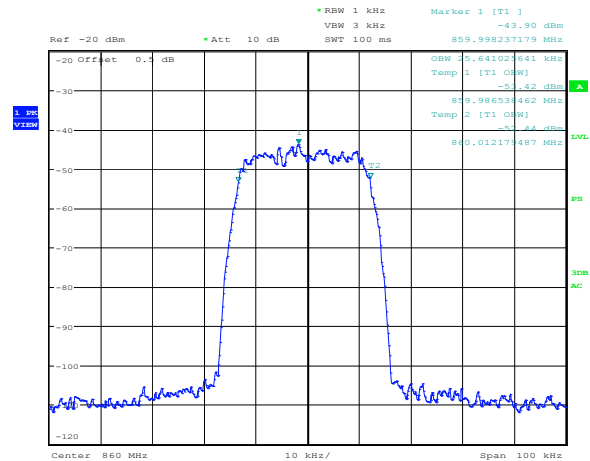
Date: 20.MAY.2011 14:31:50

Plot 8.1-76: Occupied bandwidth at the input
 CQPSK modulation



Date: 18.MAY.2011 14:55:13

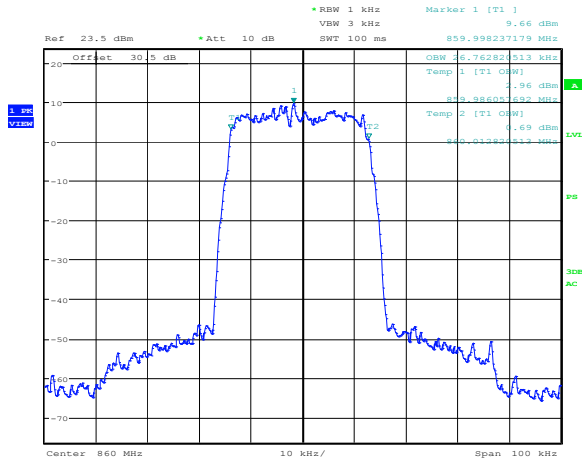
Plot 8.1-77: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 800 MHz
 LSM modulation



Date: 20.MAY.2011 14:32:36

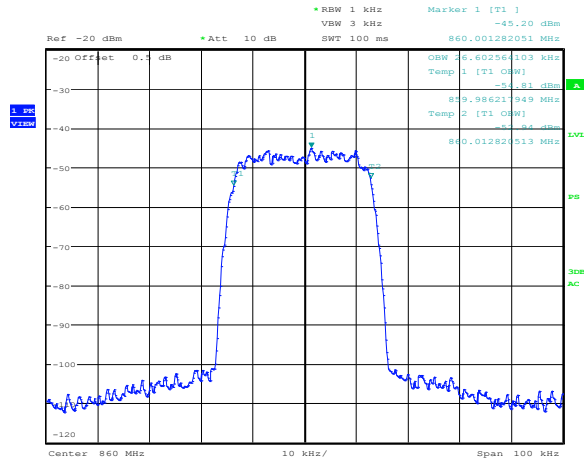
Plot 8.1-78: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



Date: 18.MAY.2011 14:54:39

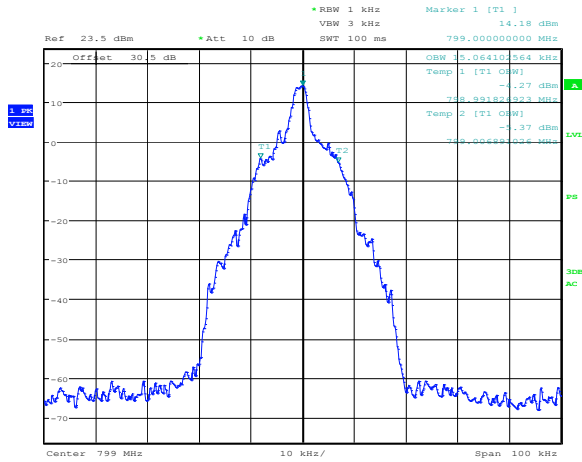
Plot 8.1-83: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Downlink 800 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

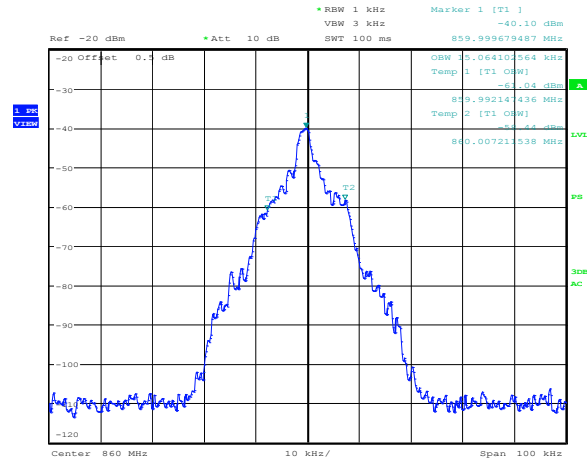
Plot 8.1-84: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



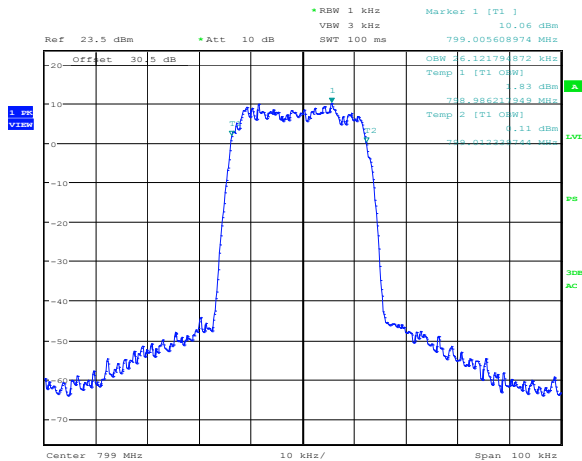
Date: 19.MAY.2011 09:45:04

Plot 8.1-85: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 700 MHz
 C4FM modulation



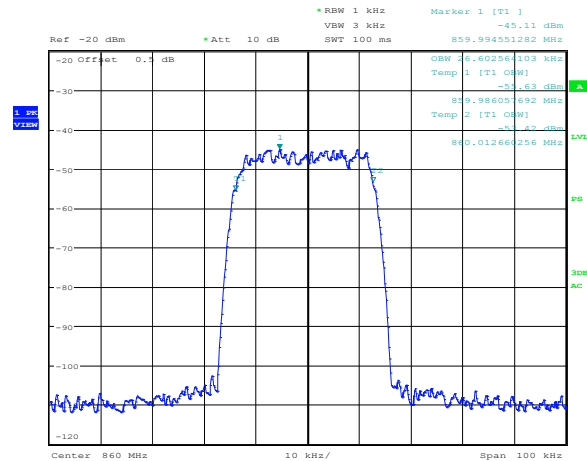
Date: 20.MAY.2011 14:31:33

Plot 8.1-86: Occupied bandwidth at the input
 C4FM modulation



Date: 19.MAY.2011 09:47:33

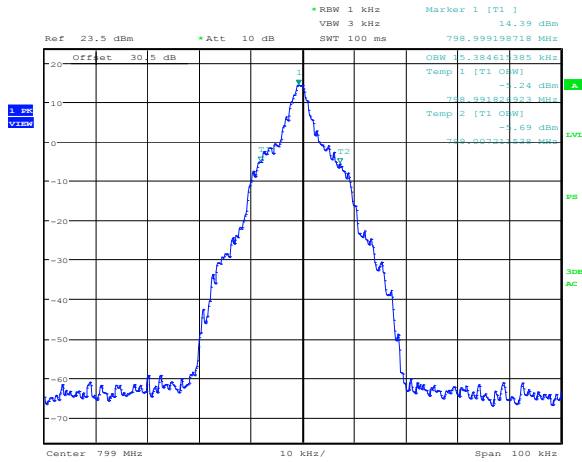
Plot 8.1-87: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 700 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

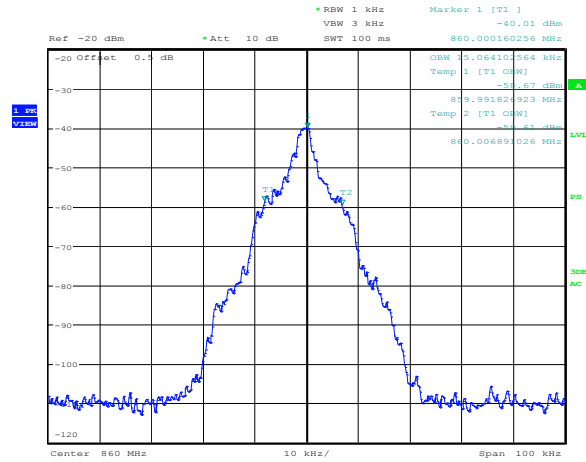
Plot 8.1-88: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



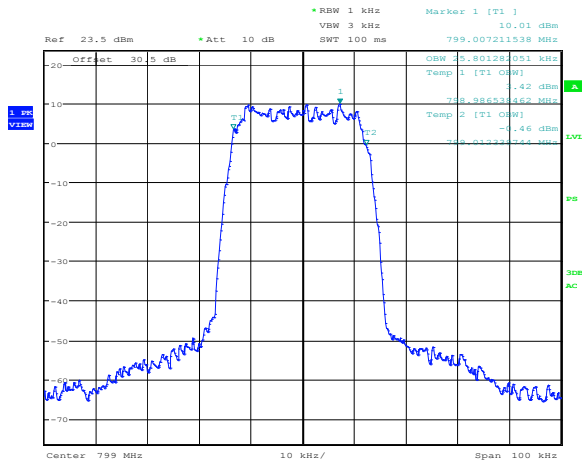
Date: 19.MAY.2011 09:49:06

Plot 8.1-89: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 700 MHz
 CQPSK modulation



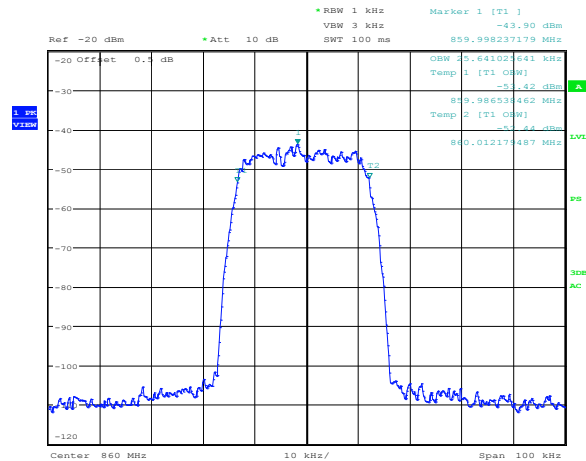
Date: 20.MAY.2011 14:31:50

Plot 8.1-90: Occupied bandwidth at the input
 CQPSK modulation



Date: 19.MAY.2011 09:50:17

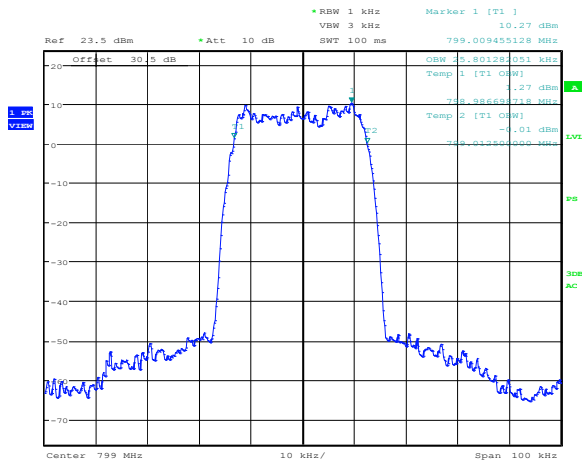
Plot 8.1-91: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 700 MHz
 LSM modulation



Date: 20.MAY.2011 14:32:36

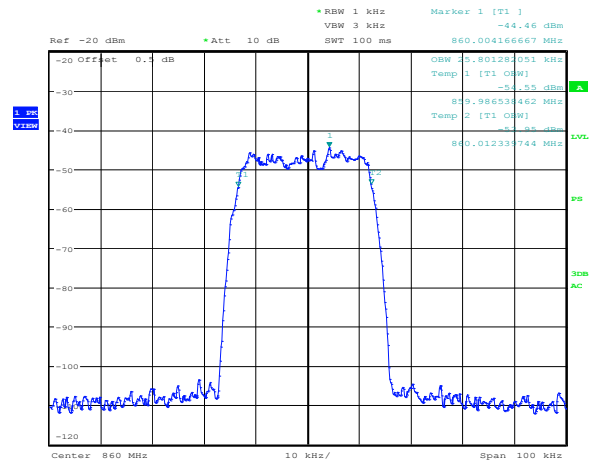
Plot 8.1-92: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



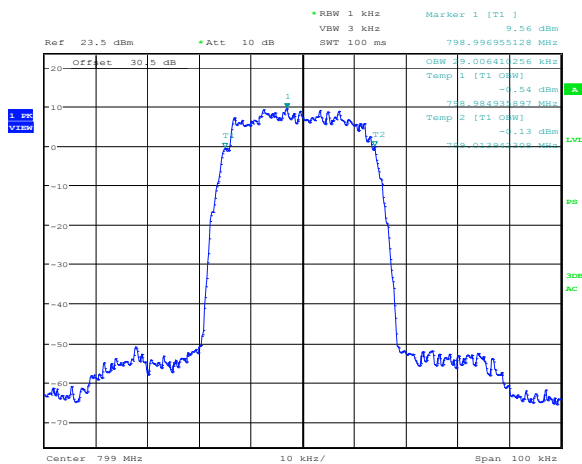
Date: 19.MAY.2011 09:52:35

Plot 8.1-93: Occupied bandwidth at the output
Fiber optic + power amplifier
Uplink 700 MHz
OpenSky modulation



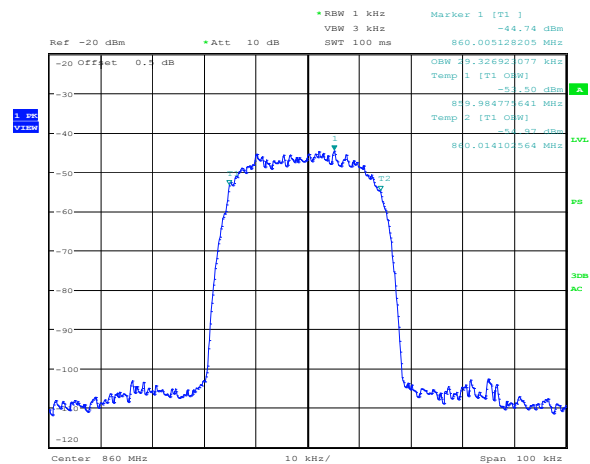
Date: 20.MAY.2011 14:36:53

Plot 8.1-94: Occupied bandwidth at the input
OpenSky modulation



Date: 19.MAY.2011 09:46:29

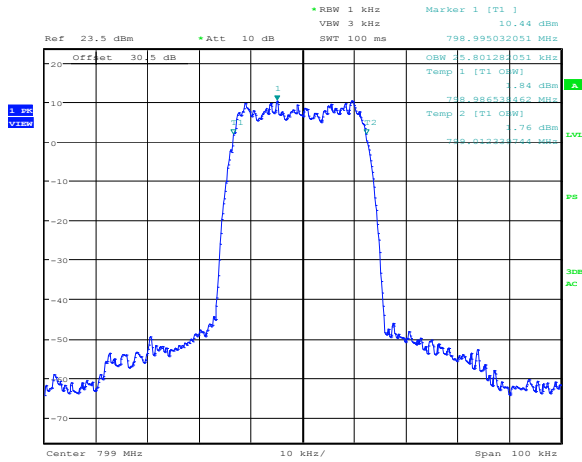
Plot 8.1-95: Occupied bandwidth at the output
Fiber optic + power amplifier
Uplink 700 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

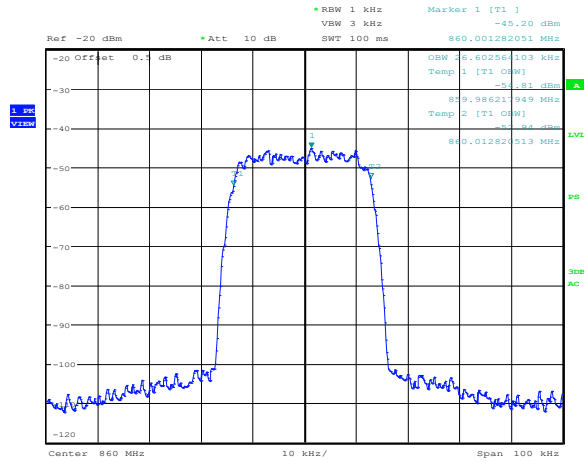
Plot 8.1-96: Occupied bandwidth at the input
TETRA modulation

8.1.3 Test data, continued



Date: 19.MAY.2011 09:47:06

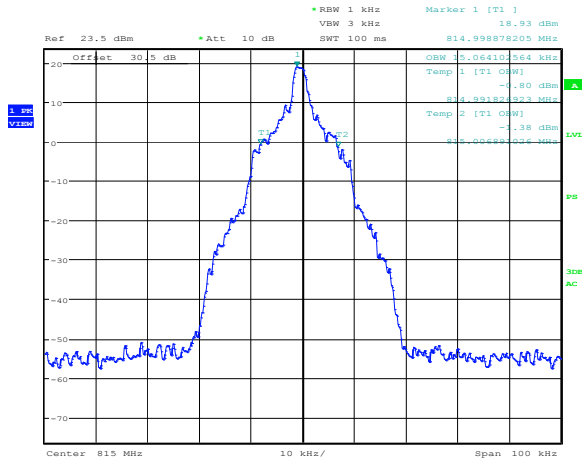
Plot 8.1-97: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 700 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

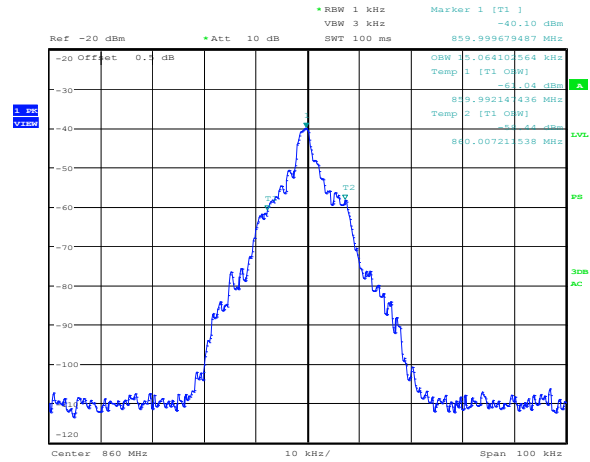
Plot 8.1-98: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



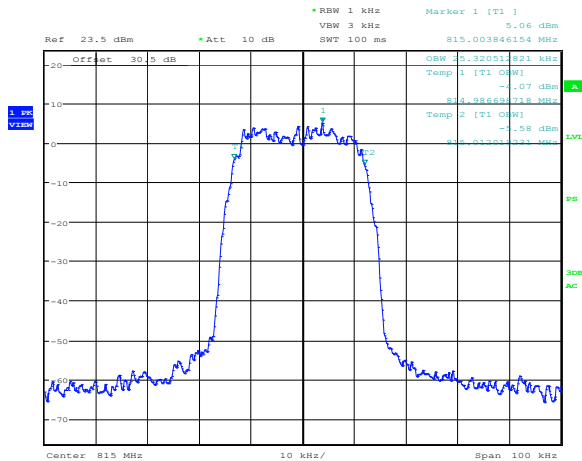
Date: 18.MAY.2011 15:58:47

Plot 8.1-99: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 800 MHz
 C4FM modulation



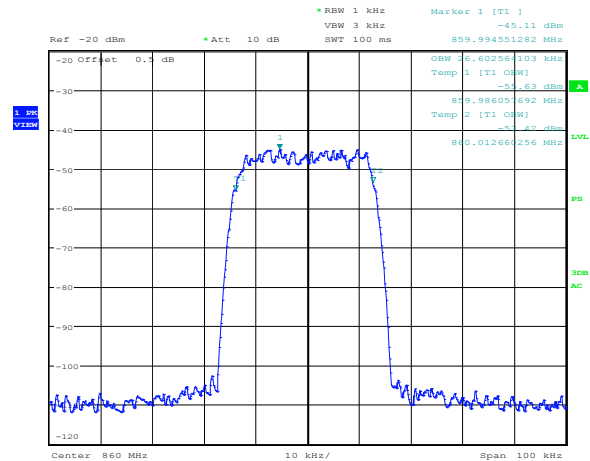
Date: 20.MAY.2011 14:31:33

Plot 8.1-100: Occupied bandwidth at the input
 C4FM modulation



Date: 18.MAY.2011 16:00:17

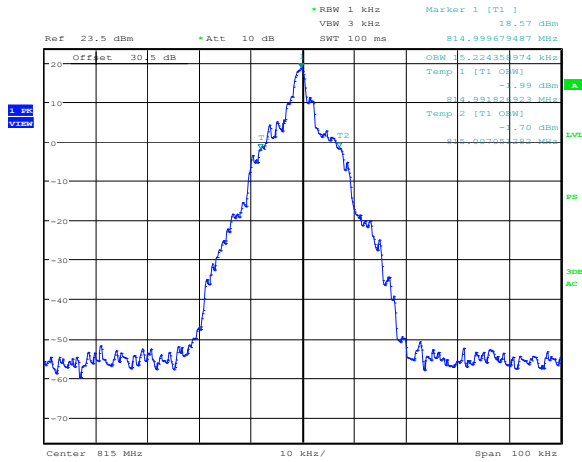
Plot 8.1-101: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 800 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

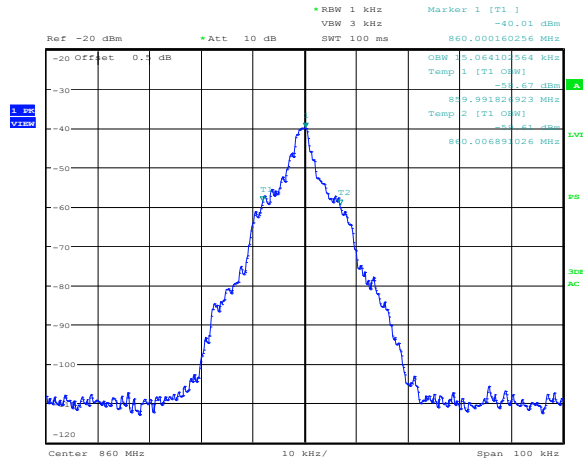
Plot 8.1-102: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



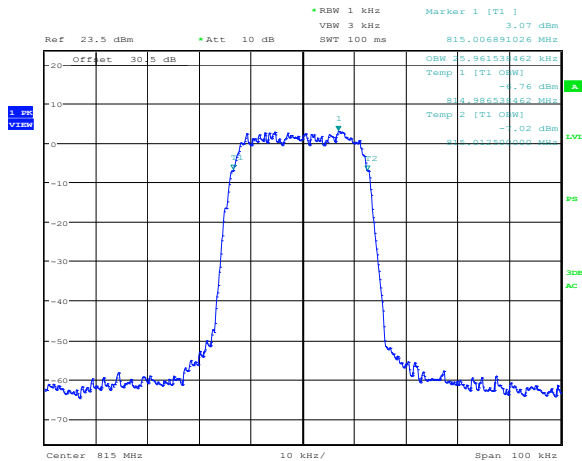
Date: 18.MAY.2011 16:04:36

Plot 8.1-103: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 800 MHz
 CQPSK modulation



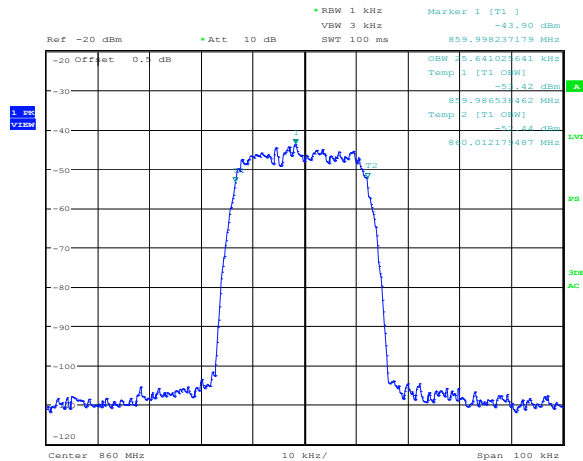
Date: 20.MAY.2011 14:31:50

Plot 8.1-104: Occupied bandwidth at the input
 CQPSK modulation



Date: 18.MAY.2011 16:02:41

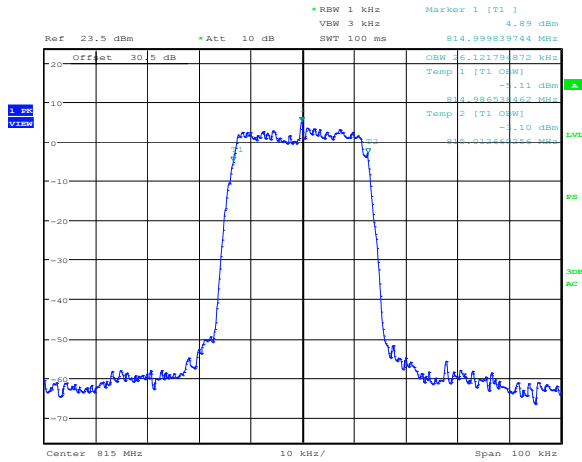
Plot 8.1-105: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 800 MHz
 LSM modulation



Date: 20.MAY.2011 14:32:36

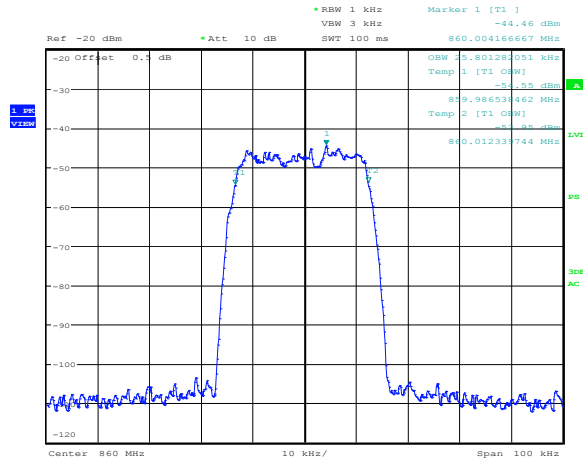
Plot 8.1-106: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



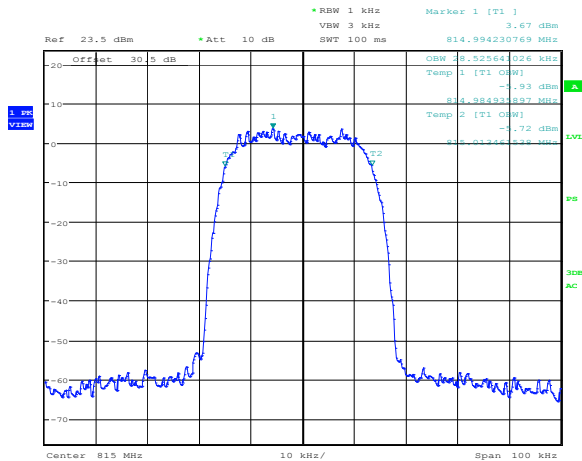
Date: 18.MAY.2011 16:01:31

Plot 8.1-107: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 800 MHz
 OpenSky modulation



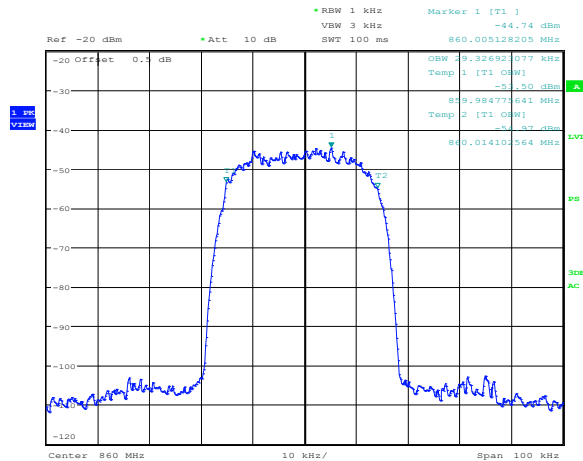
Date: 20.MAY.2011 14:36:53

Plot 8.1-108: Occupied bandwidth at the input
 OpenSky modulation



Date: 18.MAY.2011 16:00:55

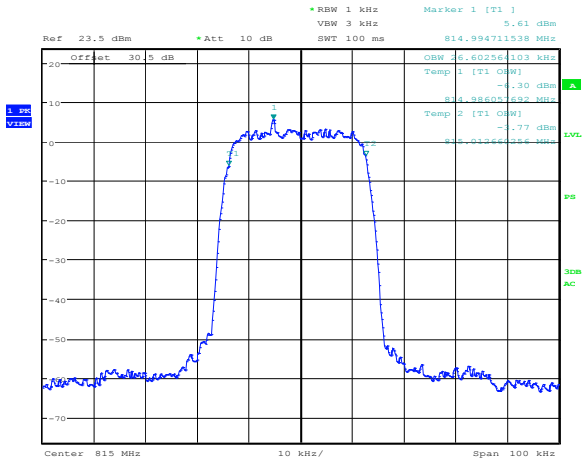
Plot 8.1-109: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 800 MHz
 TETRA modulation



Date: 20.MAY.2011 14:37:38

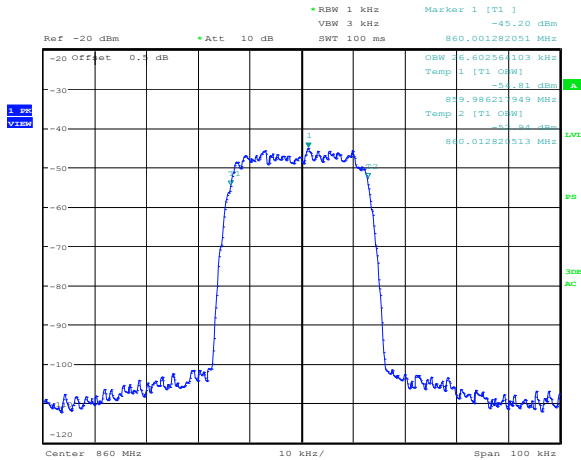
Plot 8.1-110: Occupied bandwidth at the input
 TETRA modulation

8.1.3 Test data, continued



Date: 18.MAY.2011 15:57:57

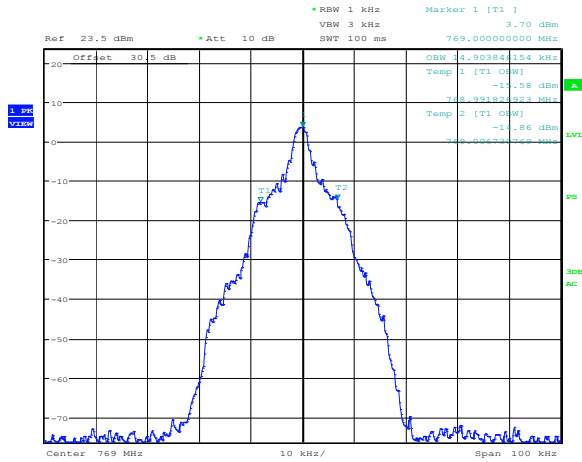
Plot 8.1-111: Occupied bandwidth at the output
 Fiber optic + power amplifier
 Uplink 800 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

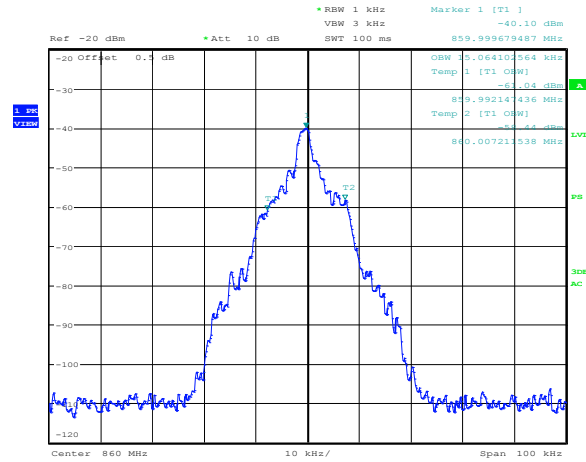
Plot 8.1-112: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



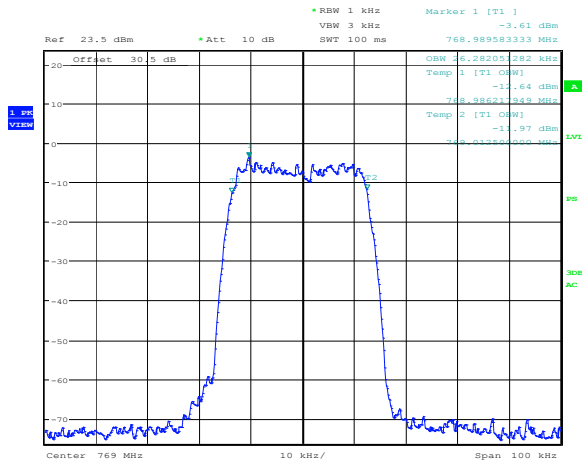
Date: 20.MAY.2011 13:35:09

Plot 8.1-113: Occupied bandwidth at the output
 Regular high power
 Downlink 700 MHz
 C4FM modulation



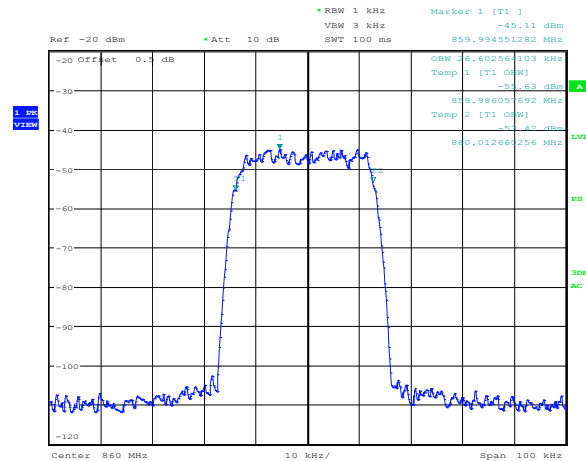
Date: 20.MAY.2011 14:31:33

Plot 8.1-114: Occupied bandwidth at the input
 C4FM modulation



Date: 20.MAY.2011 13:36:49

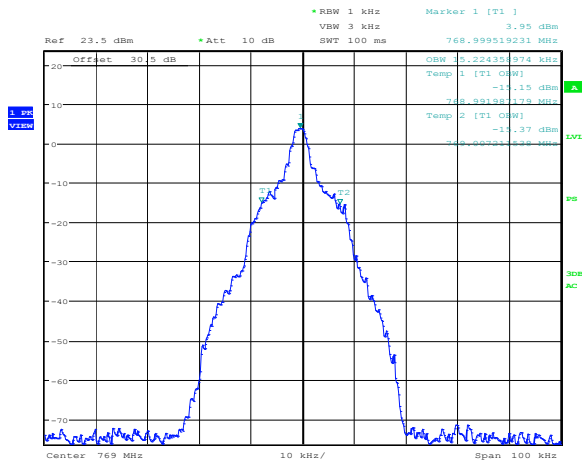
Plot 8.1-115: Occupied bandwidth at the output
 Regular high power
 Downlink 700 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

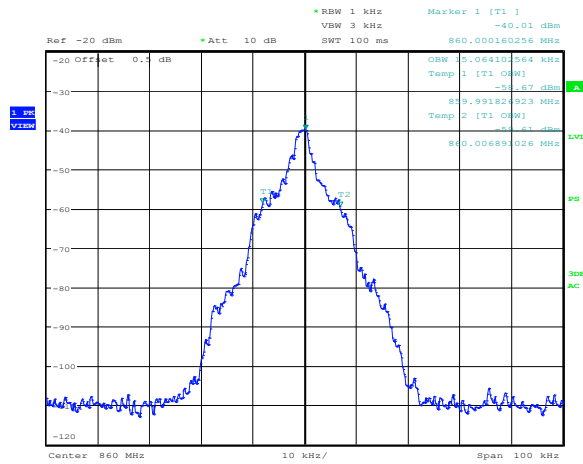
Plot 8.1-116: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



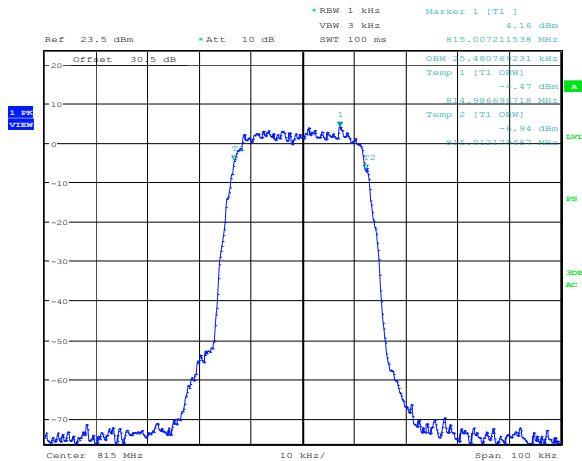
Date: 20.MAY.2011 13:35:27

Plot 8.1-117: Occupied bandwidth at the output
Regular high power
Downlink 700 MHz
CQPSK modulation



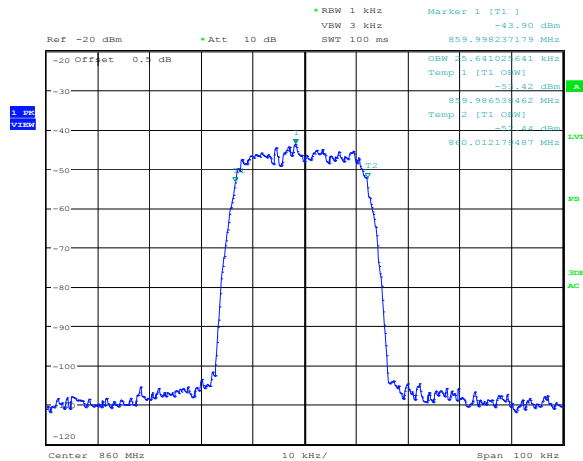
Date: 20.MAY.2011 14:31:50

Plot 8.1-118: Occupied bandwidth at the input
CQPSK modulation



Date: 31.MAY.2011 10:17:08

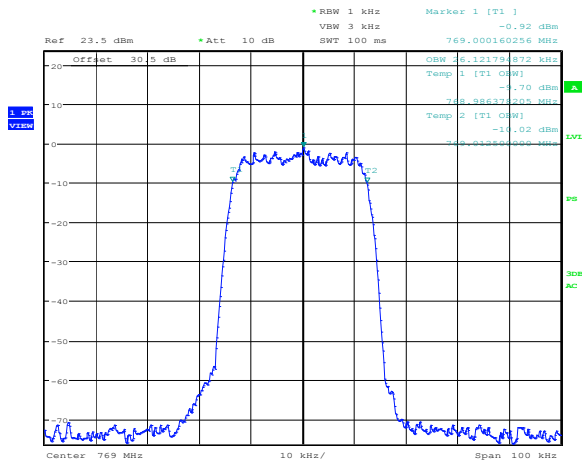
Plot 8.1-119: Occupied bandwidth at the output
Regular high power
Downlink 700 MHz
LSM modulation



Date: 20.MAY.2011 14:32:36

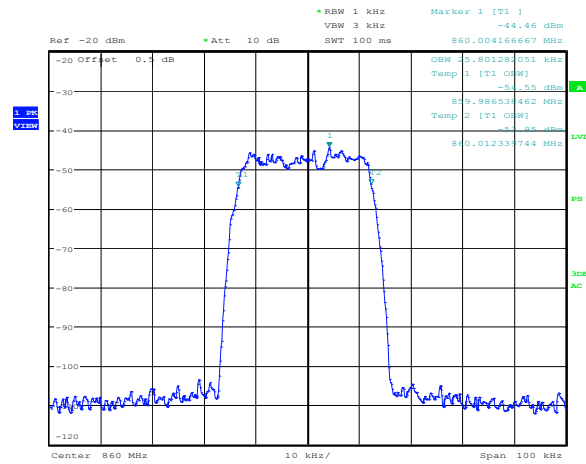
Plot 8.1-120: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



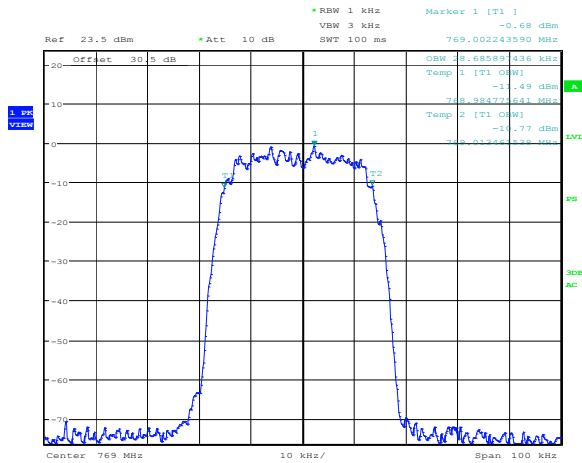
Date: 20.MAY.2011 13:38:18

Plot 8.1-121: Occupied bandwidth at the output
Regular high power
Downlink 700 MHz
OpenSky modulation



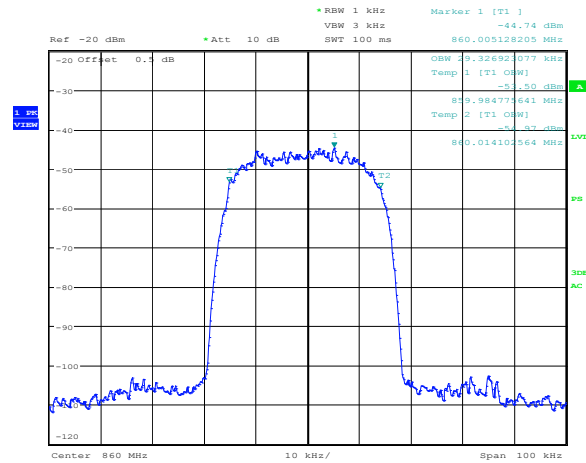
Date: 20.MAY.2011 14:36:53

Plot 8.1-122: Occupied bandwidth at the input
Regular high power
Downlink 700 MHz
OpenSky modulation



Date: 20.MAY.2011 13:34:41

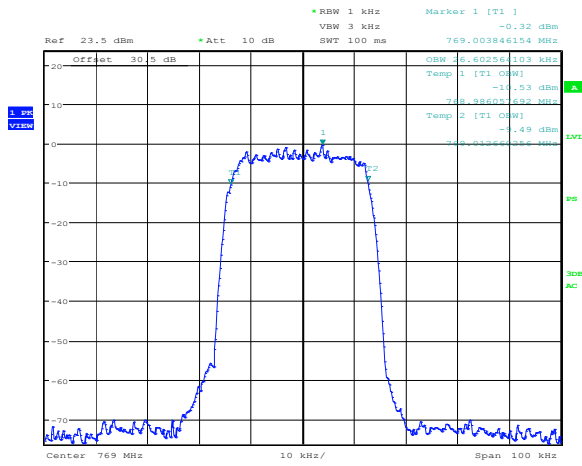
Plot 8.1-123: Occupied bandwidth at the output
Regular high power
Downlink 700 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

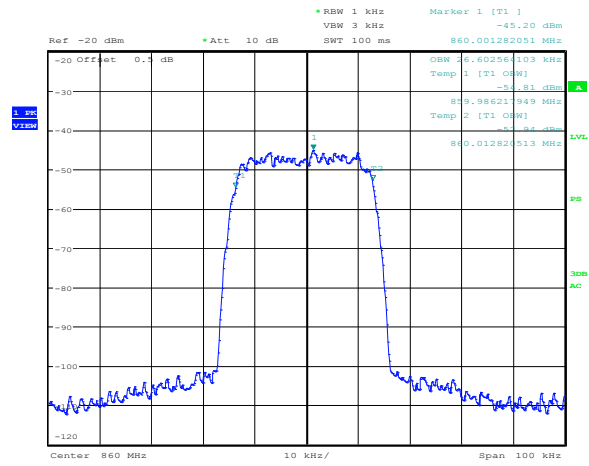
Plot 8.1-124: Occupied bandwidth at the input
Regular high power
Downlink 700 MHz
TETRA modulation

8.1.3 Test data, continued



Date: 20.MAY.2011 13:38:51

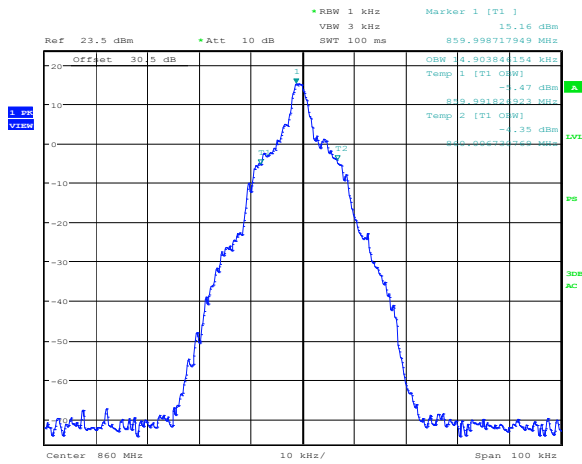
Plot 8.1-125: Occupied bandwidth at the output
 Regular high power
 Downlink 700 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

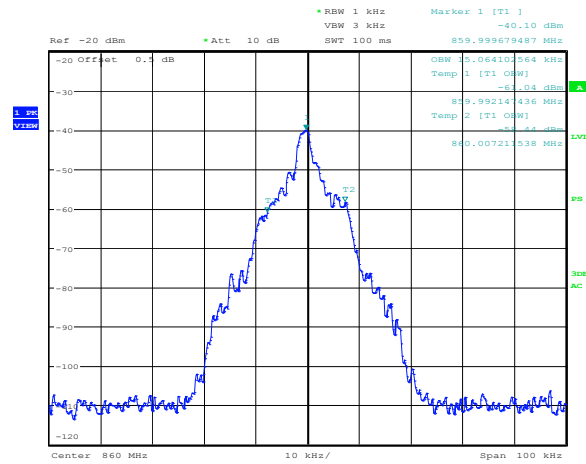
Plot 8.1-126: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



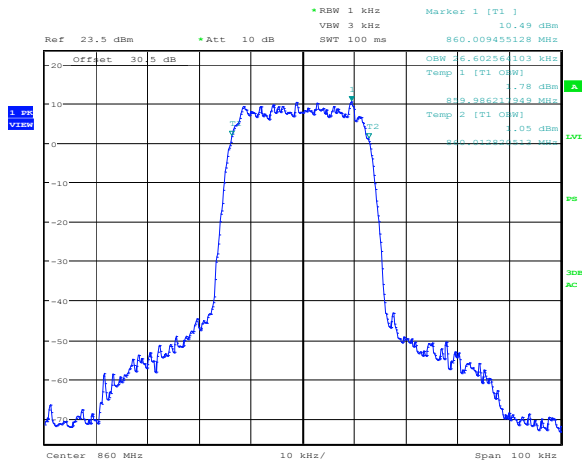
Date: 31.MAY.2011 11:46:06

Plot 8.1-127: Occupied bandwidth at the output
 Regular high power
 Downlink 800 MHz
 C4FM modulation



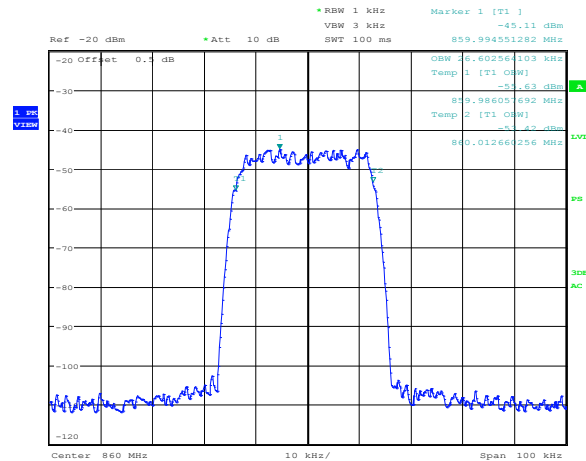
Date: 20.MAY.2011 14:31:33

Plot 8.1-128: Occupied bandwidth at the input
 C4FM modulation



Date: 31.MAY.2011 11:47:31

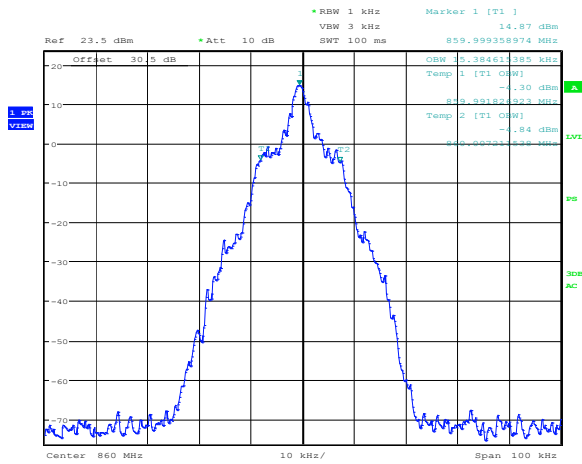
Plot 8.1-129: Occupied bandwidth at the output
 Regular high power
 Downlink 800 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

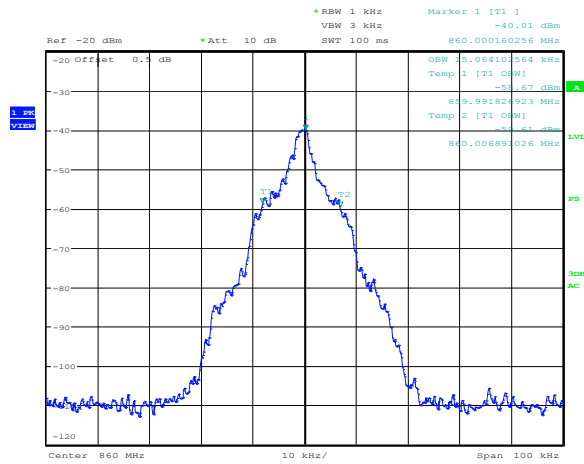
Plot 8.1-130: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



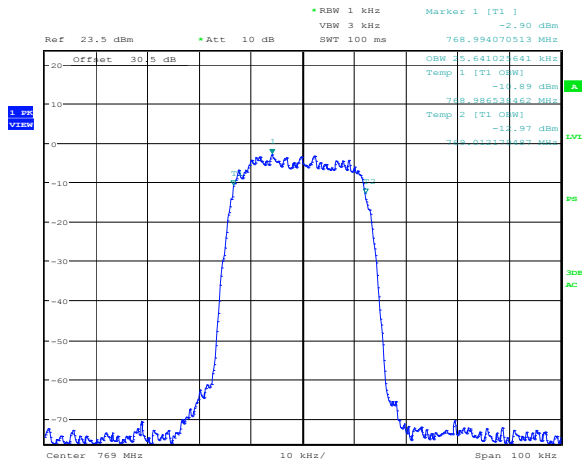
Date: 31.MAY.2011 11:48:21

Plot 8.1-131: Occupied bandwidth at the output
 Regular high power
 Downlink 800 MHz
 CQPSK modulation



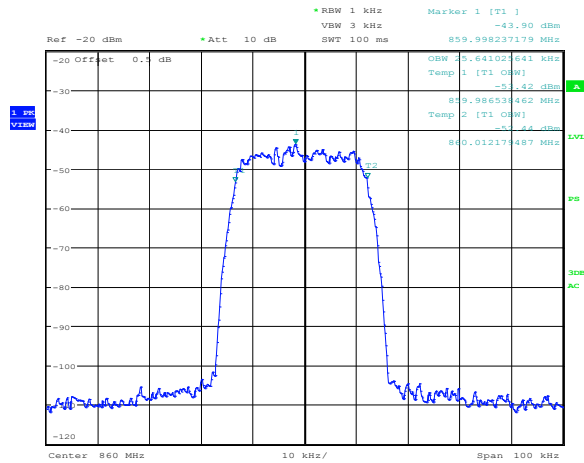
Date: 20.MAY.2011 14:31:50

Plot 8.1-132: Occupied bandwidth at the input
 CQPSK modulation



Date: 20.MAY.2011 13:37:23

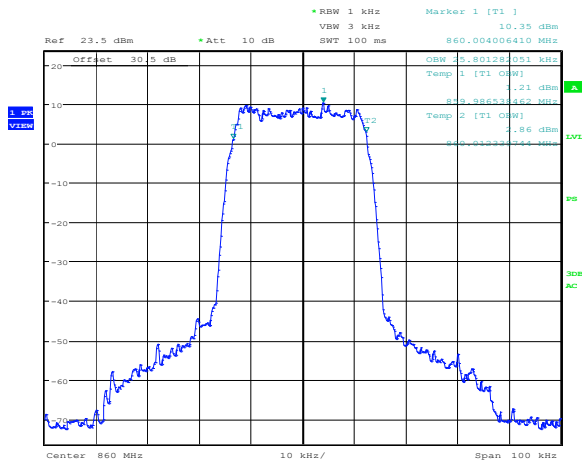
Plot 8.1-133: Occupied bandwidth at the output
 Regular high power
 Downlink 800 MHz
 LSM modulation



Date: 20.MAY.2011 14:32:36

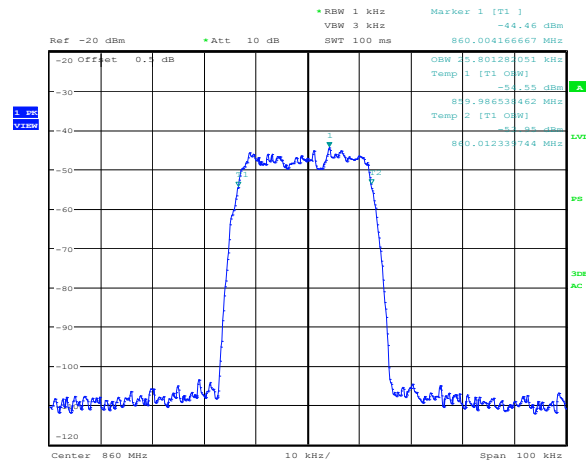
Plot 8.1-134: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



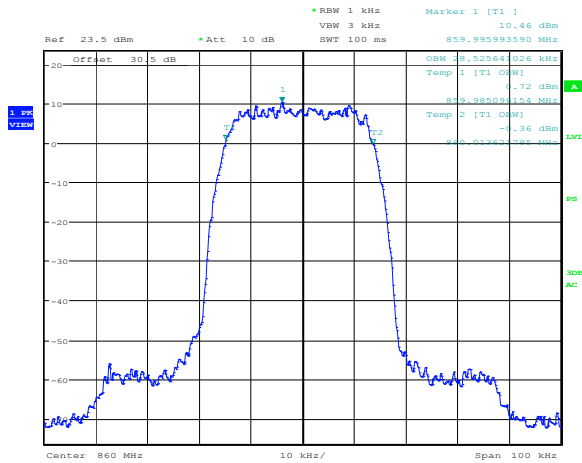
Date: 31.MAY.2011 11:48:03

Plot 8.1-135: Occupied bandwidth at the output
 Regular high power
 Downlink 800 MHz
 OpenSky modulation



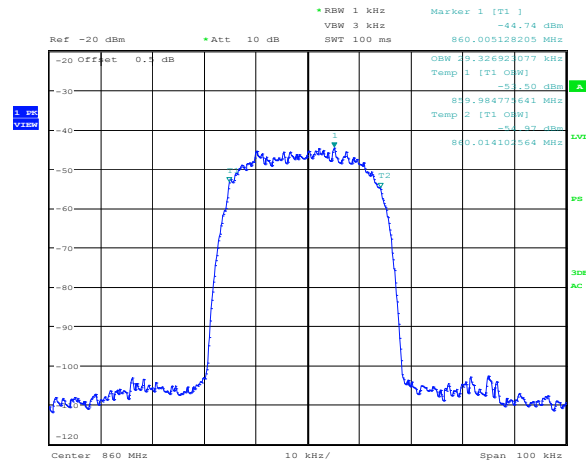
Date: 20.MAY.2011 14:36:53

Plot 8.1-136: Occupied bandwidth at the input
 OpenSky modulation



Date: 31.MAY.2011 11:45:30

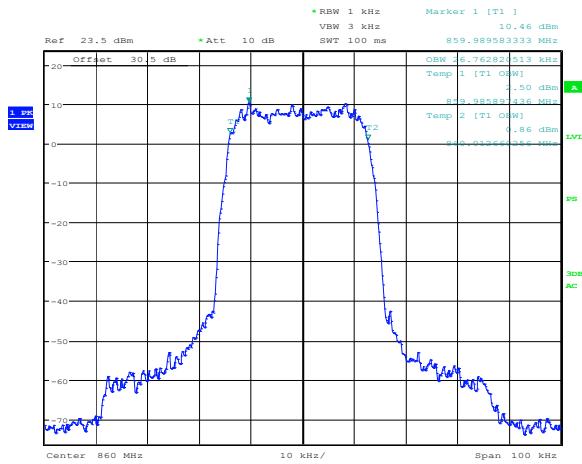
Plot 8.1-137: Occupied bandwidth at the output
 Regular high power
 Downlink 800 MHz
 TETRA modulation



Date: 20.MAY.2011 14:37:38

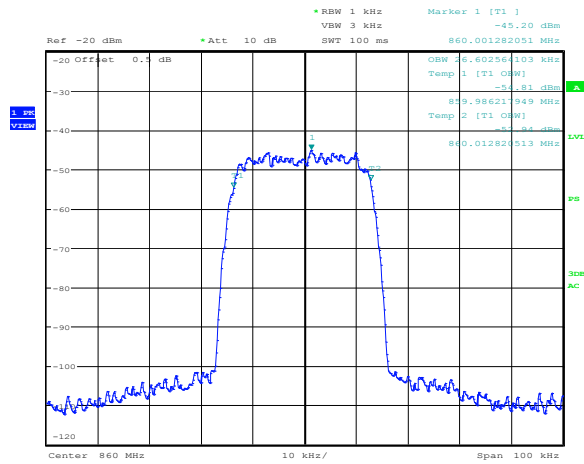
Plot 8.1-138: Occupied bandwidth at the input
 TETRA modulation

8.1.3 Test data, continued



Date: 31.MAY.2011 11:47:09

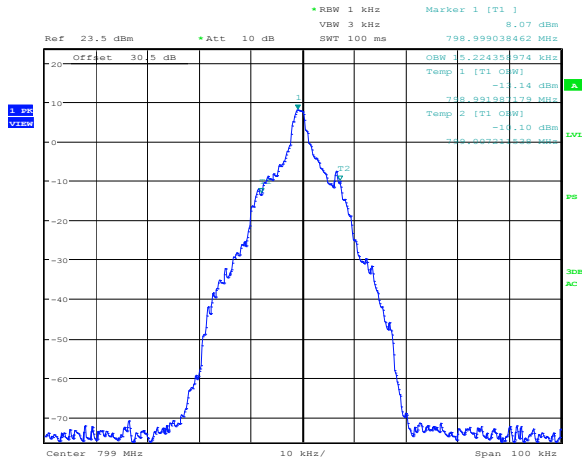
Plot 8.1-139: Occupied bandwidth at the output
 Regular high power
 Downlink 800 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

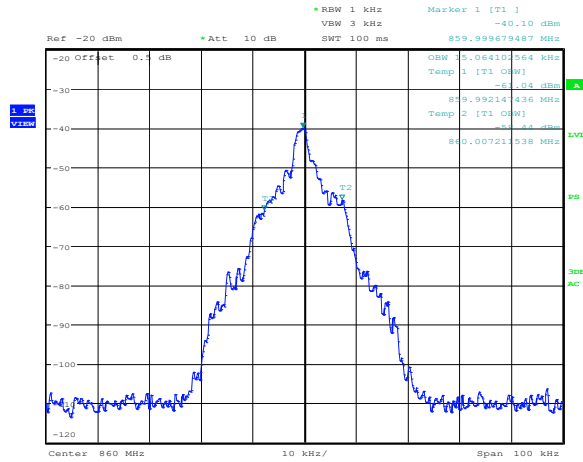
Plot 8.1-140: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



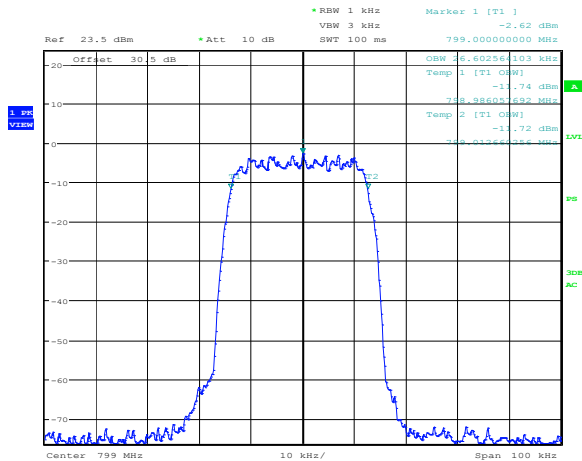
Date: 20.MAY.2011 14:02:03

Plot 8.1-141: Occupied bandwidth at the output
 Regular high power
 Uplink 700 MHz
 C4FM modulation



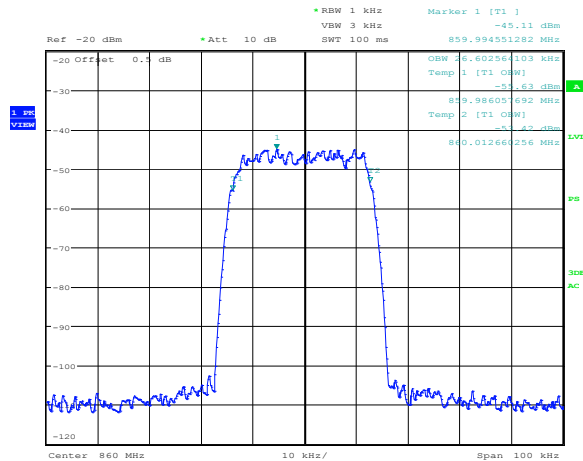
Date: 20.MAY.2011 14:31:33

Plot 8.1-142: Occupied bandwidth at the input
 C4FM modulation



Date: 20.MAY.2011 13:58:57

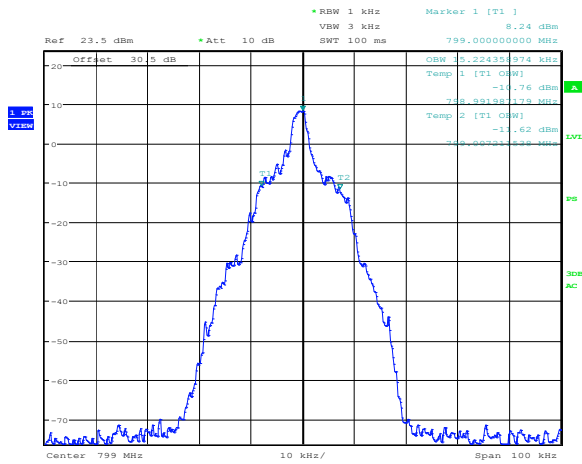
Plot 8.1-143: Occupied bandwidth at the output
 Regular high power
 Uplink 700 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

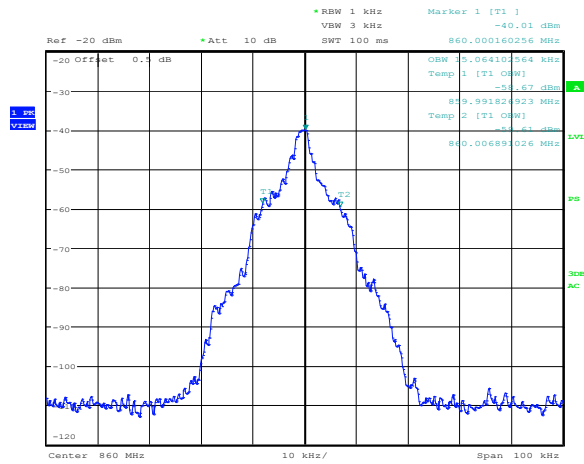
Plot 8.1-144: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



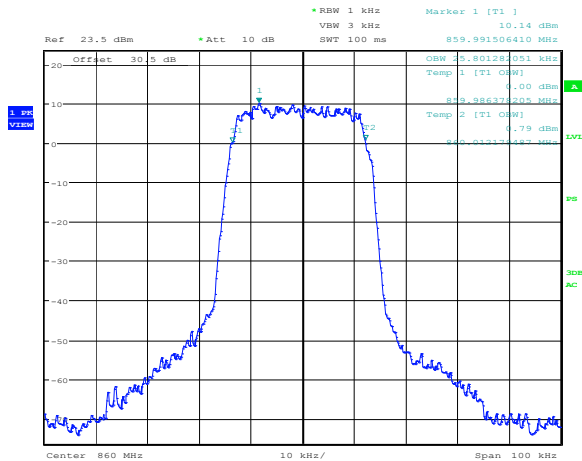
Date: 20.MAY.2011 14:02:32

Plot 8.1-145: Occupied bandwidth at the output
 Regular high power
 Uplink 700 MHz
 CQPSK modulation



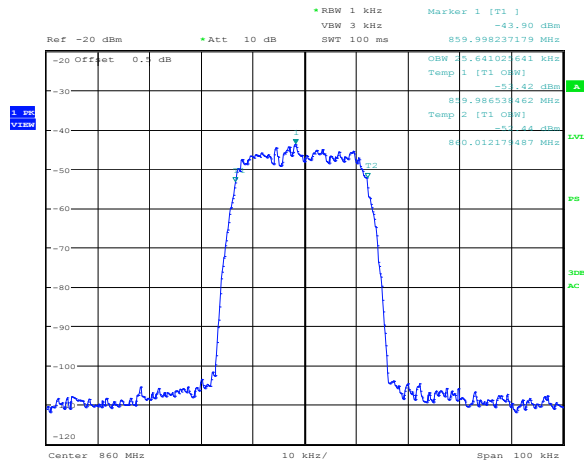
Date: 20.MAY.2011 14:31:50

Plot 8.1-146: Occupied bandwidth at the input
 CQPSK modulation



Date: 31.MAY.2011 11:46:36

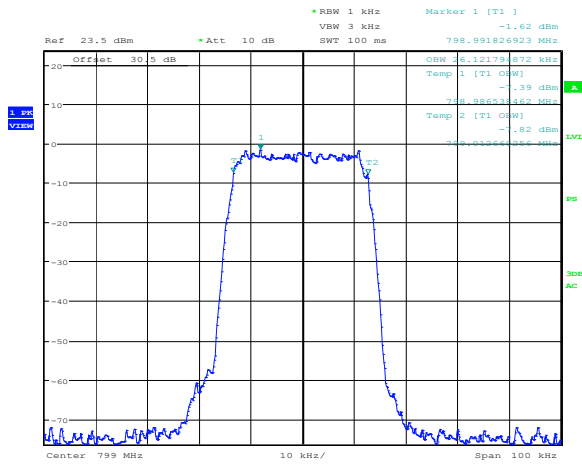
Plot 8.1-147: Occupied bandwidth at the output
 Regular high power
 Uplink 700 MHz
 LSM modulation



Date: 20.MAY.2011 14:32:36

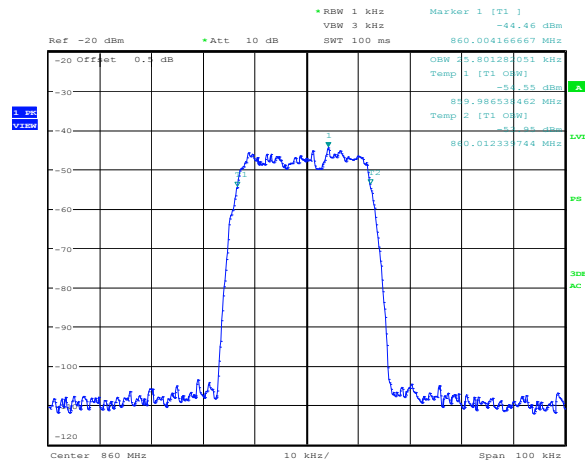
Plot 8.1-148: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



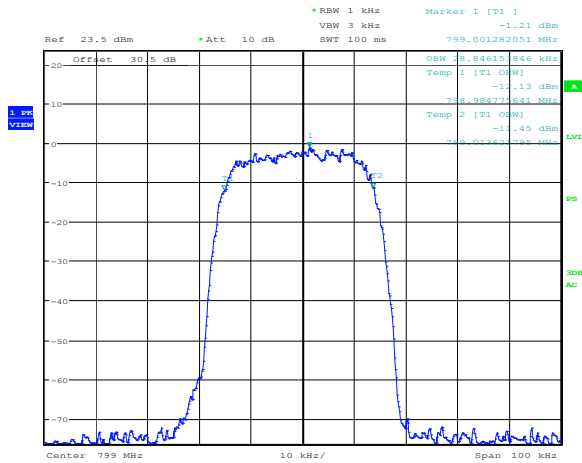
Date: 20.MAY.2011 14:04:56

Plot 8.1-149: Occupied bandwidth at the output
Regular high power
Uplink 700 MHz
OpenSky modulation



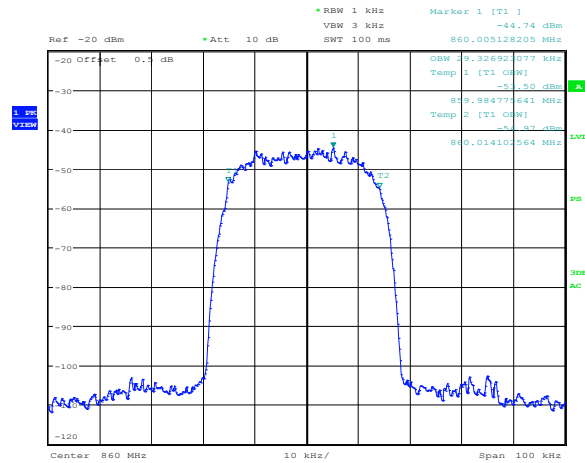
Date: 20.MAY.2011 14:36:53

Plot 8.1-150: Occupied bandwidth at the input
Regular high power
Uplink 700 MHz
OpenSky modulation



Date: 20.MAY.2011 14:04:12

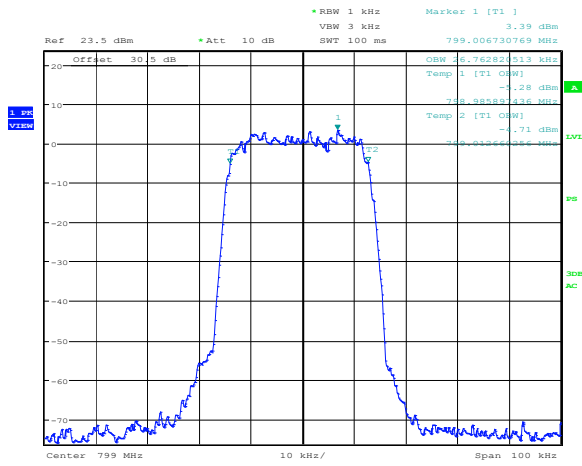
Plot 8.1-151: Occupied bandwidth at the output
Regular high power
Uplink 700 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

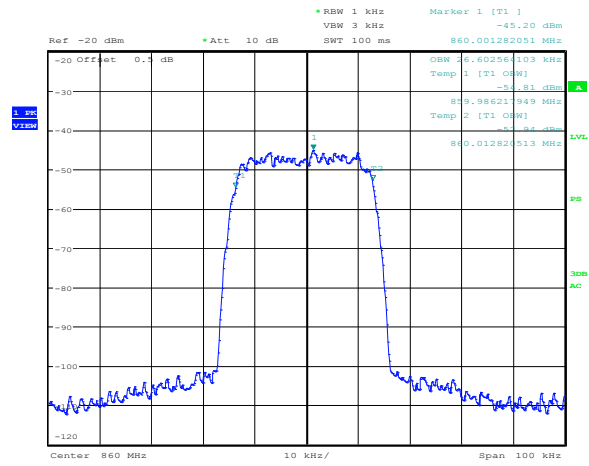
Plot 8.1-152: Occupied bandwidth at the input
Regular high power
Uplink 700 MHz
TETRA modulation

8.1.3 Test data, continued



Date: 20.MAY.2011 13:58:25

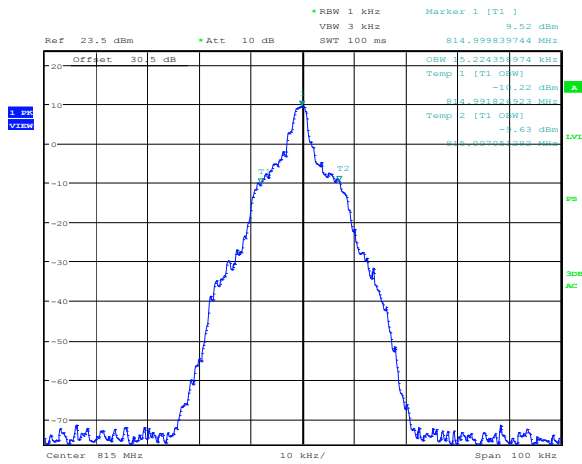
Plot 8.1-153: Occupied bandwidth at the output
 Regular high power
 Uplink 700 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

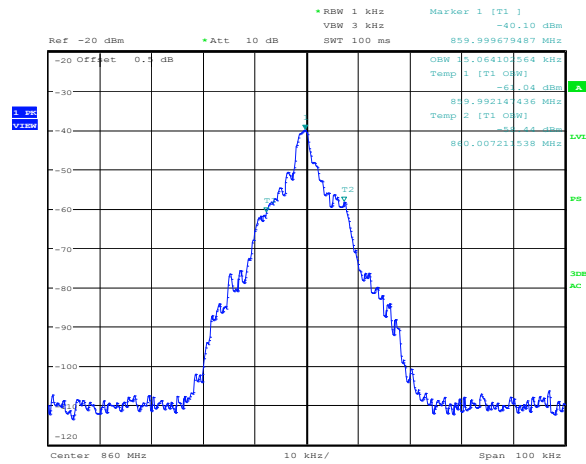
Plot 8.1-154: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



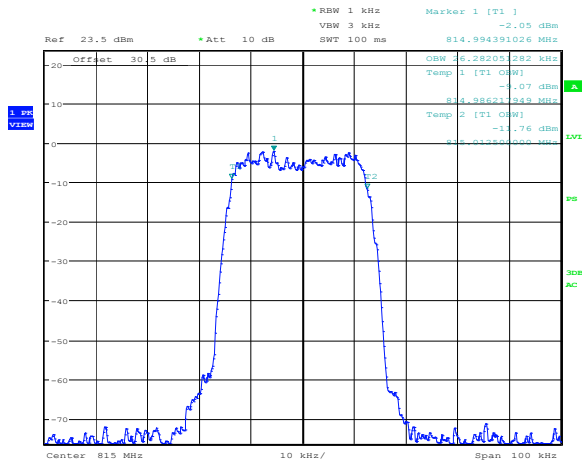
Date: 31.MAY.2011 10:15:20

Plot 8.1-155: Occupied bandwidth at the output
Regular high power
Uplink 800 MHz
C4FM modulation



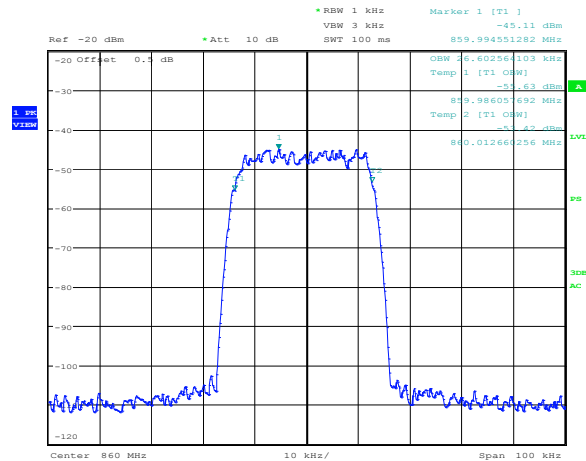
Date: 20.MAY.2011 14:31:33

Plot 8.1-156: Occupied bandwidth at the input
C4FM modulation



Date: 31.MAY.2011 10:16:42

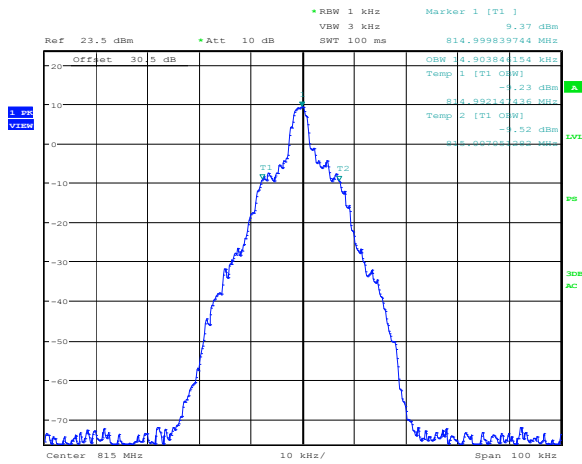
Plot 8.1-157: Occupied bandwidth at the output
Regular high power
Uplink 800 MHz
HPD modulation



Date: 20.MAY.2011 14:31:10

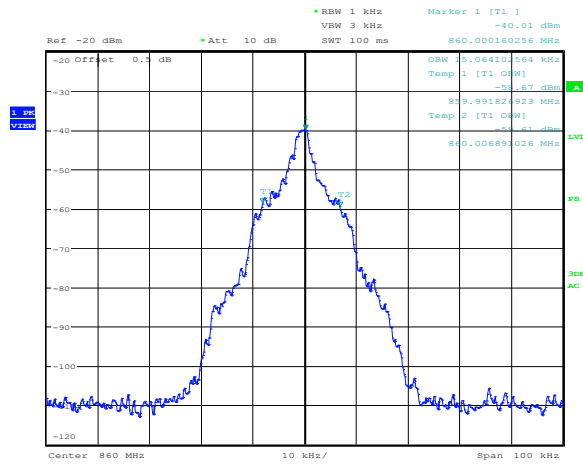
Plot 8.1-158: Occupied bandwidth at the input
HPD modulation

8.1.3 Test data, continued



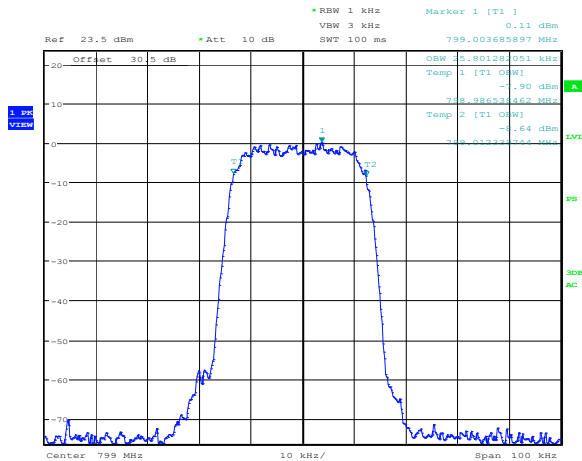
Date: 31.MAY.2011 10:15:51

Plot 8.1-159: Occupied bandwidth at the output
Regular high power
Uplink 800 MHz
CQPSK modulation



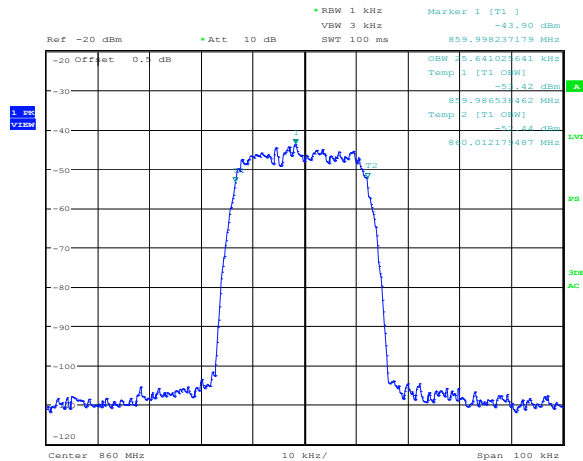
Date: 20.MAY.2011 14:31:50

Plot 8.1-160: Occupied bandwidth at the input
CQPSK modulation



Date: 20.MAY.2011 14:03:12

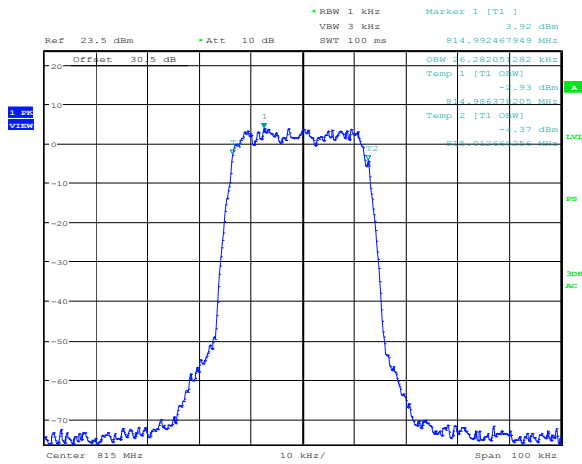
Plot 8.1-161: Occupied bandwidth at the output
Regular high power
Uplink 800 MHz
LSM modulation



Date: 20.MAY.2011 14:32:36

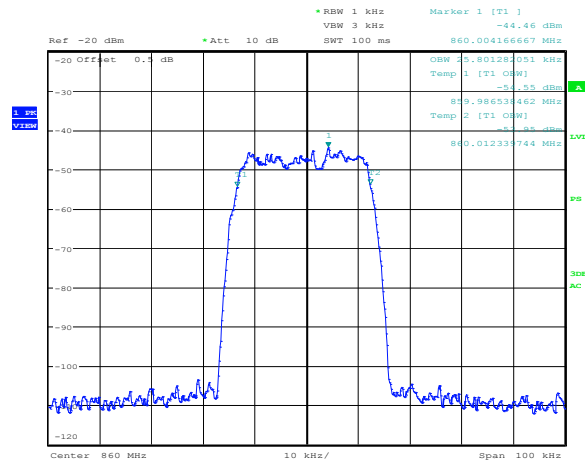
Plot 8.1-162: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



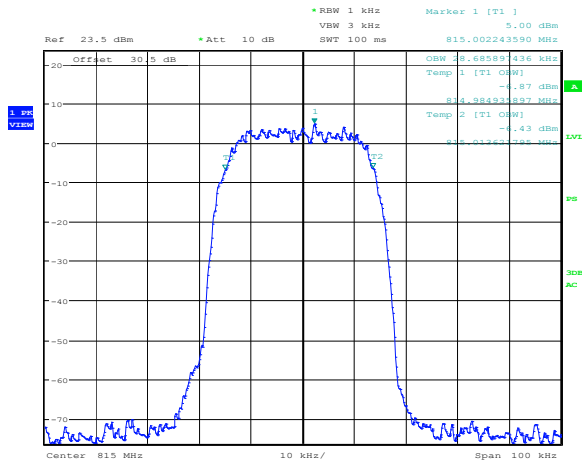
Date: 31.MAY.2011 10:18:13

Plot 8.1-163: Occupied bandwidth at the output
Regular high power
Uplink 800 MHz
OpenSky modulation



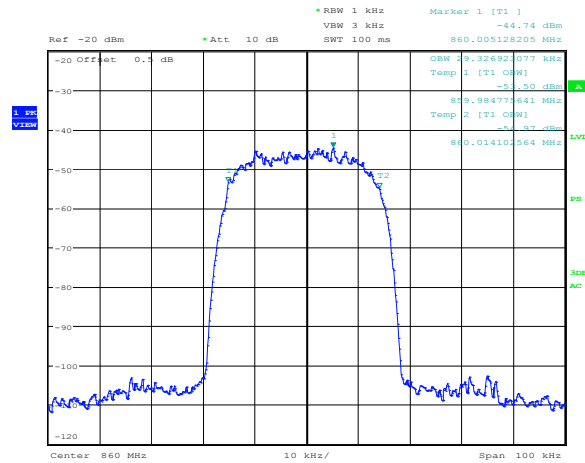
Date: 20.MAY.2011 14:36:53

Plot 8.1-164: Occupied bandwidth at the input
Regular high power
Uplink 800 MHz
OpenSky modulation



Date: 31.MAY.2011 10:14:46

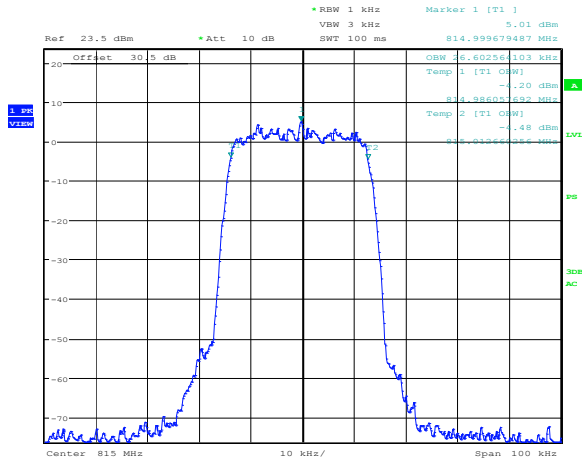
Plot 8.1-165: Occupied bandwidth at the output
Regular high power
Uplink 800 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

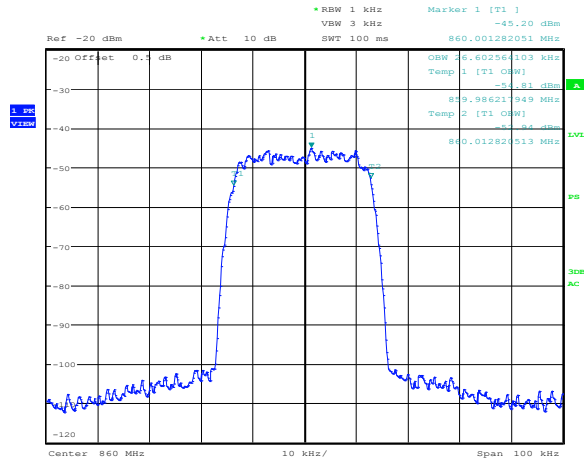
Plot 8.1-166: Occupied bandwidth at the input
Regular high power
Uplink 800 MHz
TETRA modulation

8.1.3 Test data, continued



Date: 31.MAY.2011 10:17:37

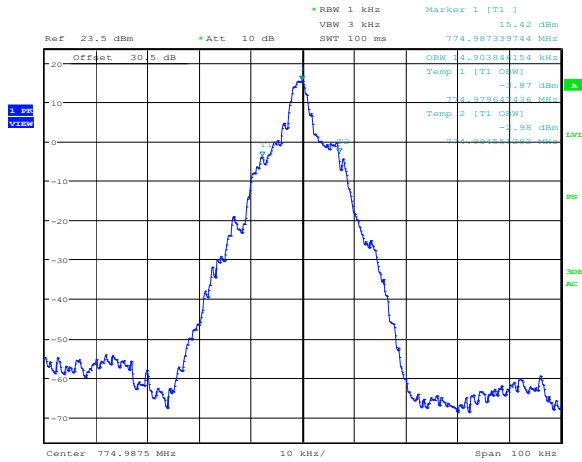
Plot 8.1-167: Occupied bandwidth at the output
Regular high power
Uplink 800 MHz
WCQPSK modulation



Date: 20.MAY.2011 14:36:12

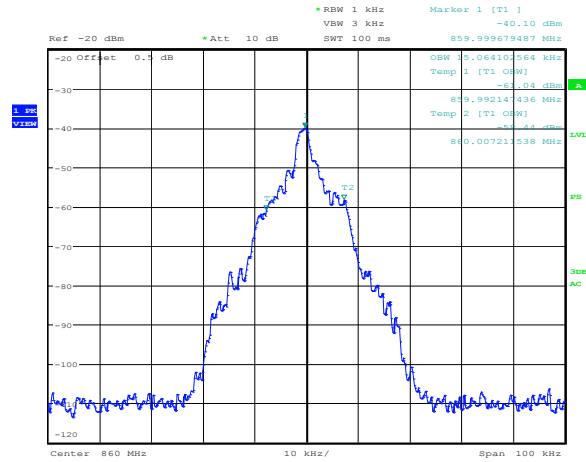
Plot 8.1-168: Occupied bandwidth at the input
WCQPSK modulation

8.1.3 Test data, continued



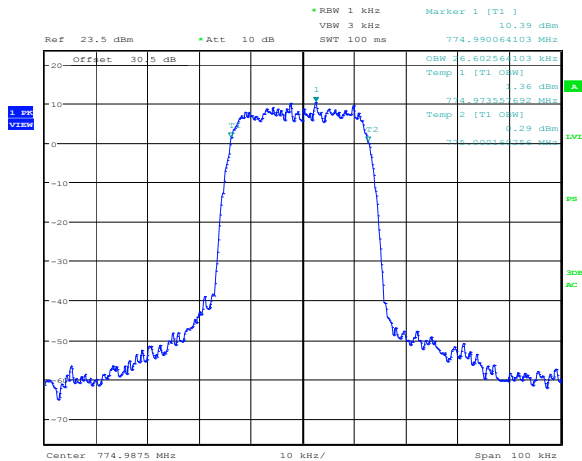
Date: 19.MAY.2011 11:07:14

Plot 8.1-169: Occupied bandwidth at the output
Regular + power amplifier
Downlink 700 MHz
C4FM modulation



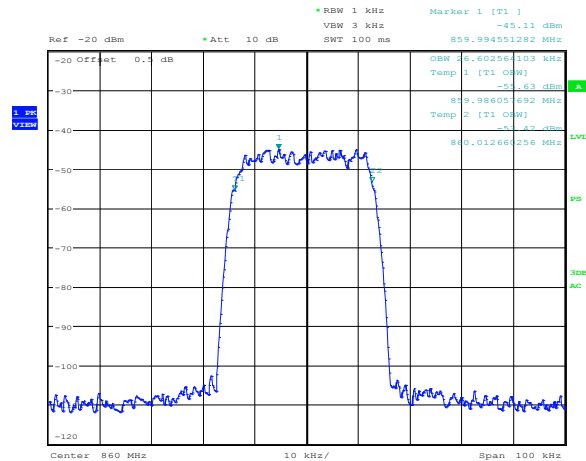
Date: 20.MAY.2011 14:31:33

Plot 8.1-170: Occupied bandwidth at the input
C4FM modulation



Date: 19.MAY.2011 11:10:41

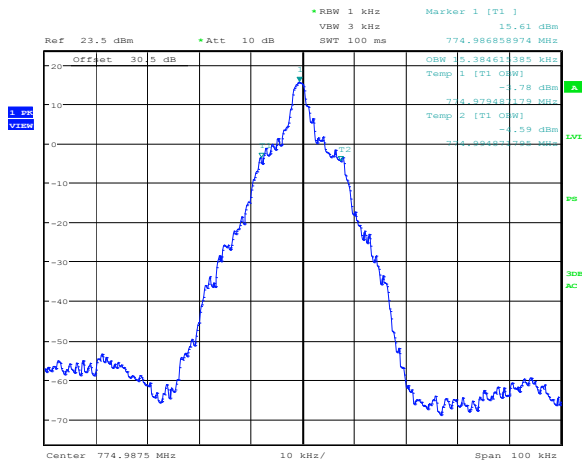
Plot 8.1-171: Occupied bandwidth at the output
Regular + power amplifier
Downlink 700 MHz
HPD modulation



Date: 20.MAY.2011 14:31:10

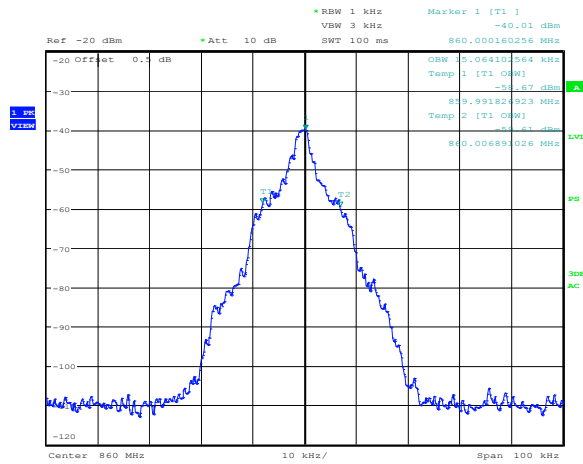
Plot 8.1-172: Occupied bandwidth at the input
HPD modulation

8.1.3 Test data, continued



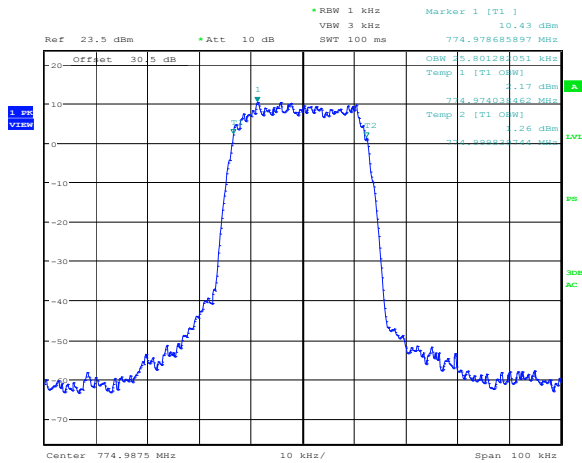
Date: 19.MAY.2011 11:07:41

Plot 8.1-173: Occupied bandwidth at the output
Regular + power amplifier
Downlink 700 MHz
CQPSK modulation



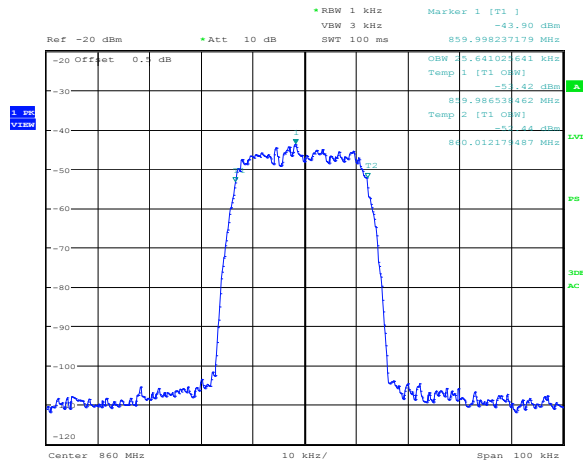
Date: 20.MAY.2011 14:31:50

Plot 8.1-174: Occupied bandwidth at the input
CQPSK modulation



Date: 19.MAY.2011 11:08:09

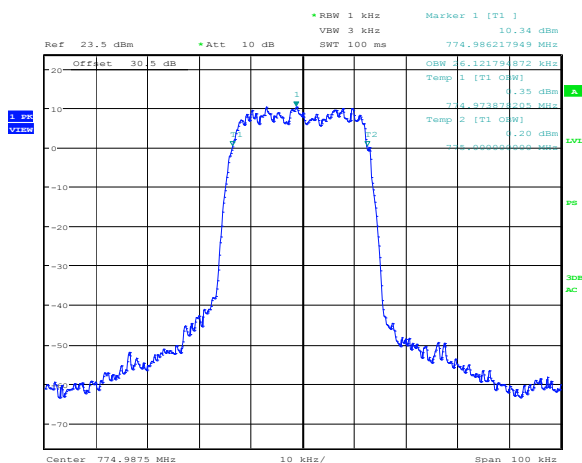
Plot 8.1-175: Occupied bandwidth at the output
Regular + power amplifier
Downlink 700 MHz
LSM modulation



Date: 20.MAY.2011 14:32:36

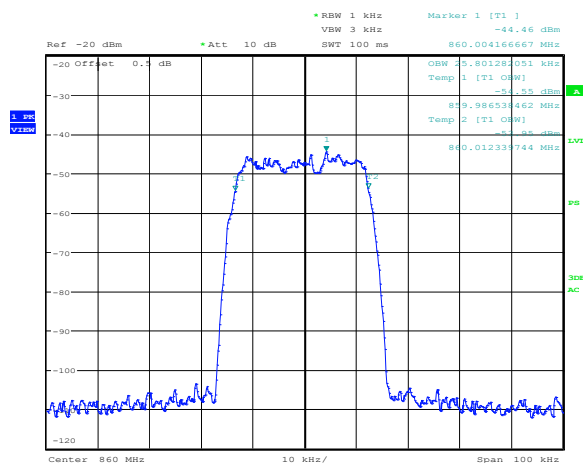
Plot 8.1-176: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



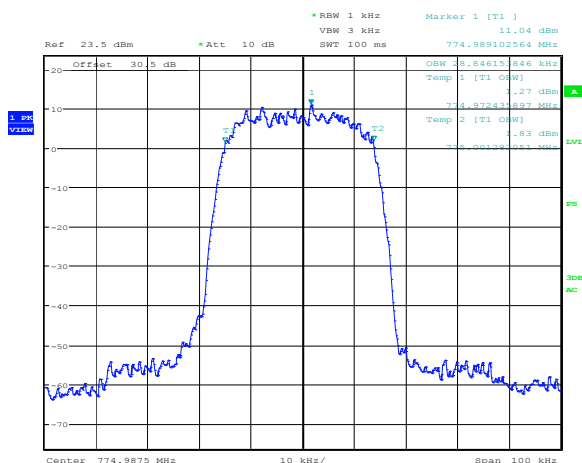
Date: 19.MAY.2011 11:06:32

Plot 8.1-177: Occupied bandwidth at the output
Regular + power amplifier
Downlink 700 MHz
OpenSky modulation



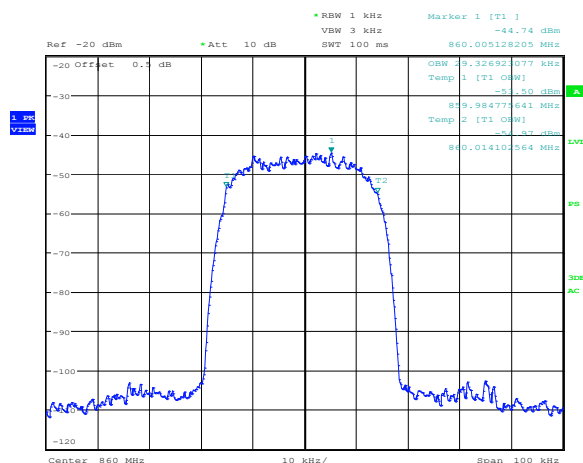
Date: 20.MAY.2011 14:36:53

Plot 8.1-178: Occupied bandwidth at the input
OpenSky modulation



Date: 19.MAY.2011 11:08:40

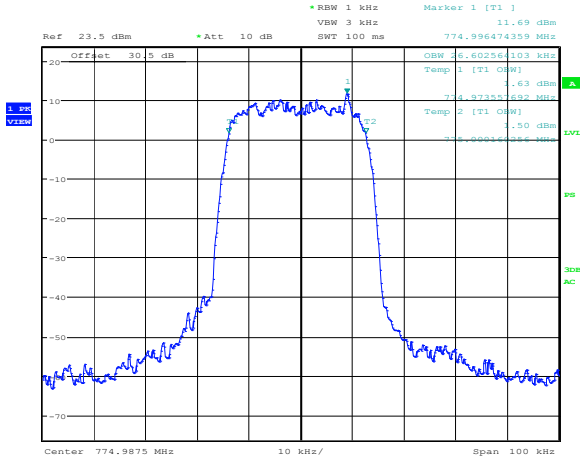
Plot 8.1-179: Occupied bandwidth at the output
Regular + power amplifier
Downlink 700 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

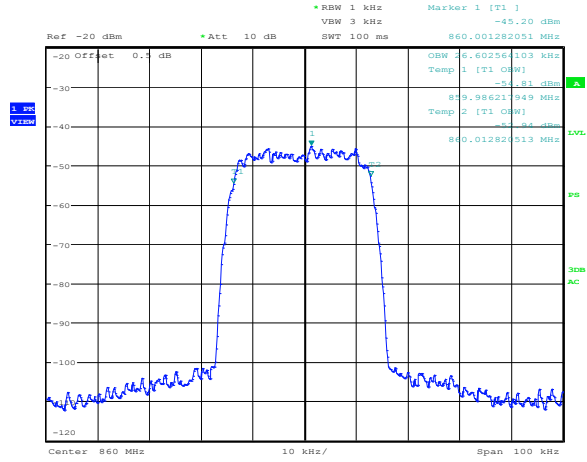
Plot 8.1-180: Occupied bandwidth at the input
TETRA modulation

8.1.3 Test data, continued



Date: 19.MAY.2011 11:10:11

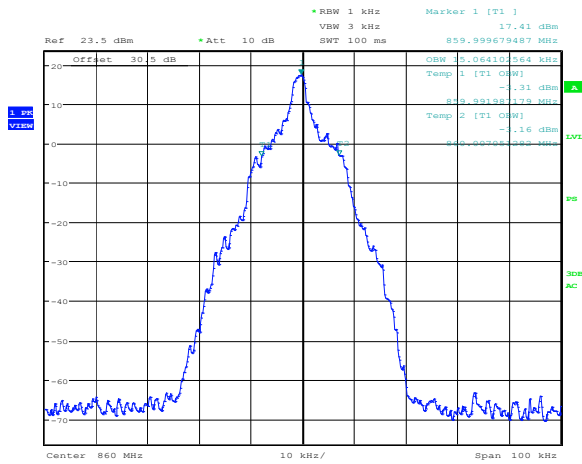
Plot 8.1-181: Occupied bandwidth at the output
 Regular + power amplifier
 Downlink 700 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

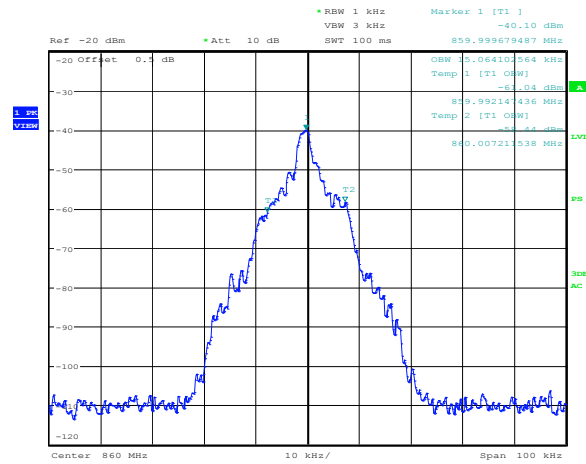
Plot 8.1-182: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



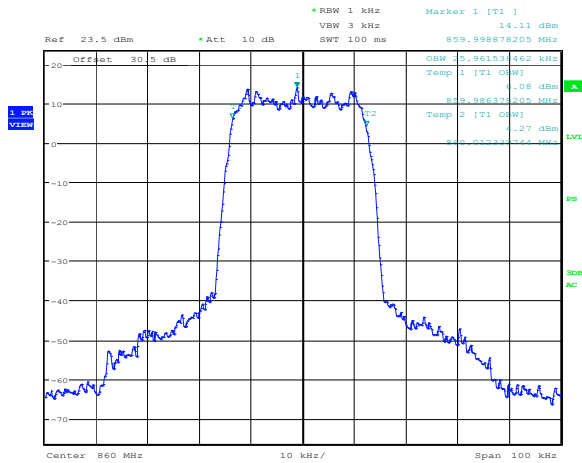
Date: 20.MAY.2011 07:05:21

Plot 8.1-183: Occupied bandwidth at the output
 Regular + power amplifier
 Downlink 800 MHz
 C4FM modulation



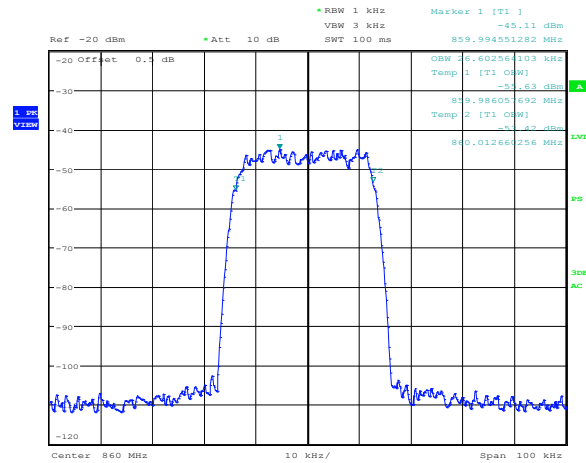
Date: 20.MAY.2011 14:31:33

Plot 8.1-184: Occupied bandwidth at the input
 C4FM modulation



Date: 20.MAY.2011 07:04:57

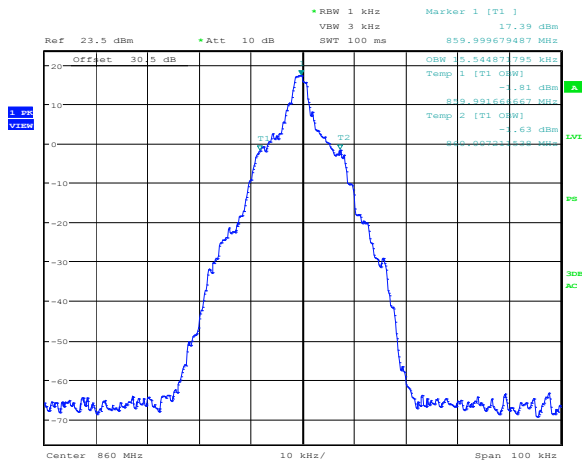
Plot 8.1-185: Occupied bandwidth at the output
 Regular + power amplifier
 Downlink 800 MHz
 HPD modulation



Date: 20.MAY.2011 14:31:10

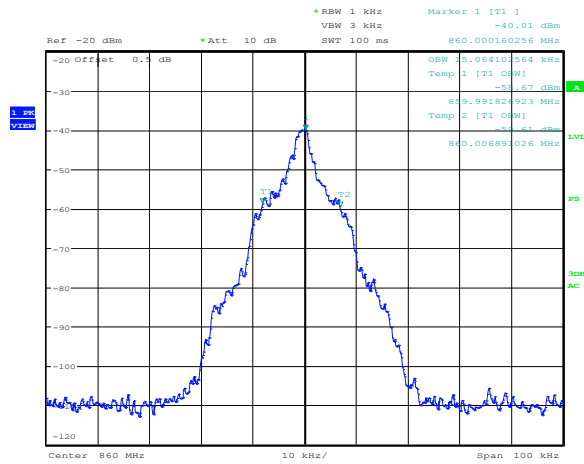
Plot 8.1-186: Occupied bandwidth at the input
 HPD modulation

8.1.3 Test data, continued



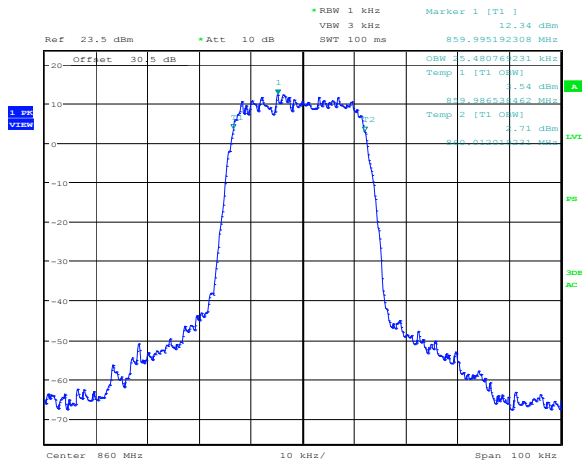
Date: 20.MAY.2011 07:05:42

Plot 8.1-187: Occupied bandwidth at the output
 Regular + power amplifier
 Downlink 800 MHz
 CQPSK modulation



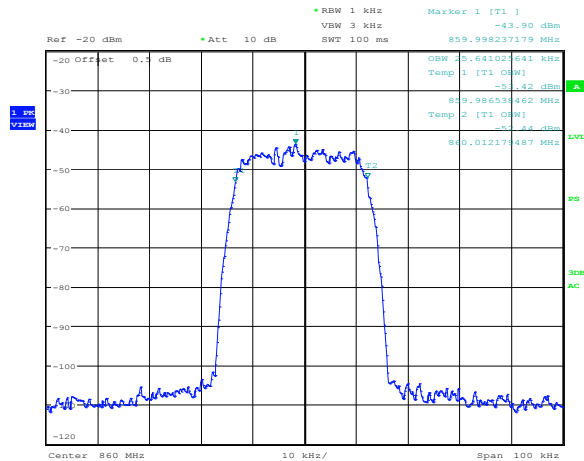
Date: 20.MAY.2011 14:31:50

Plot 8.1-188: Occupied bandwidth at the input
 CQPSK modulation



Date: 20.MAY.2011 07:06:18

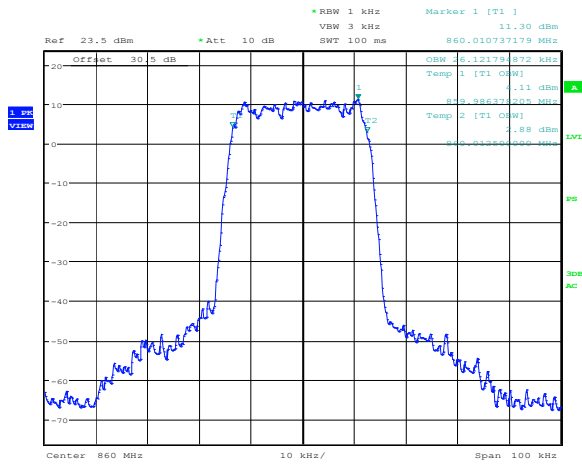
Plot 8.1-189: Occupied bandwidth at the output
 Regular + power amplifier
 Downlink 800 MHz
 LSM modulation



Date: 20.MAY.2011 14:32:36

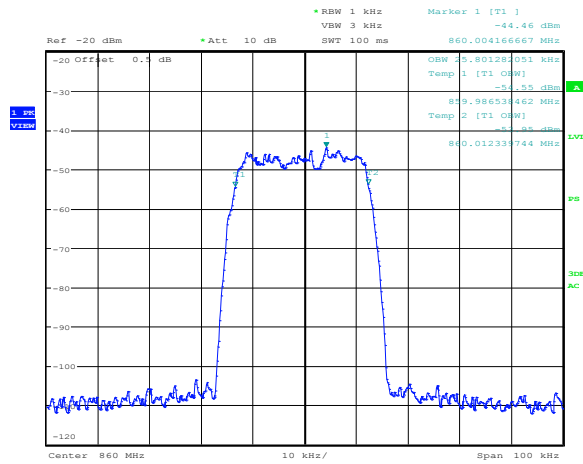
Plot 8.1-190: Occupied bandwidth at the input
 LSM modulation

8.1.3 Test data, continued



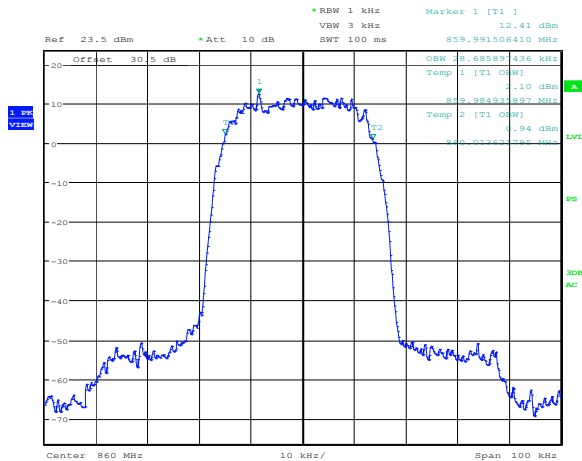
Date: 20.MAY.2011 07:03:51

Plot 8.1-191: Occupied bandwidth at the output
Regular + power amplifier
Downlink 800 MHz
OpenSky modulation



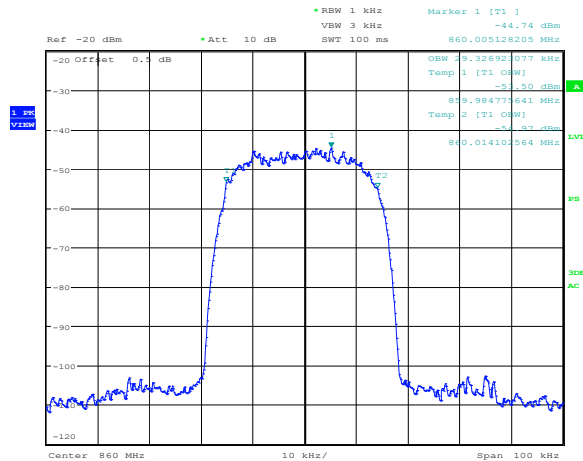
Date: 20.MAY.2011 14:36:53

Plot 8.1-192: Occupied bandwidth at the input
OpenSky modulation



Date: 20.MAY.2011 07:07:23

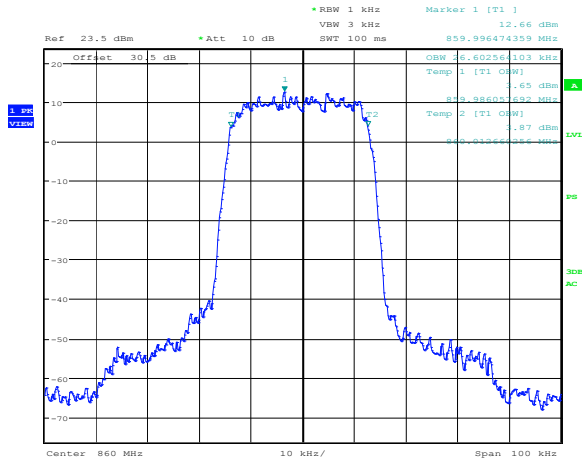
Plot 8.1-193: Occupied bandwidth at the output
Regular + power amplifier
Downlink 800 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

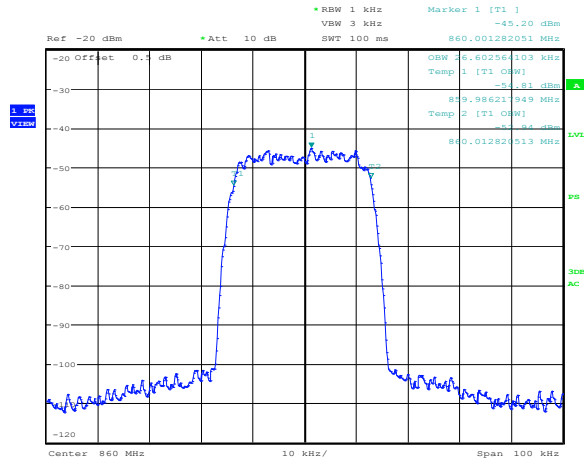
Plot 8.1-194: Occupied bandwidth at the input
TETRA modulation

8.1.3 Test data, continued



Date: 20.MAY.2011 07:06:52

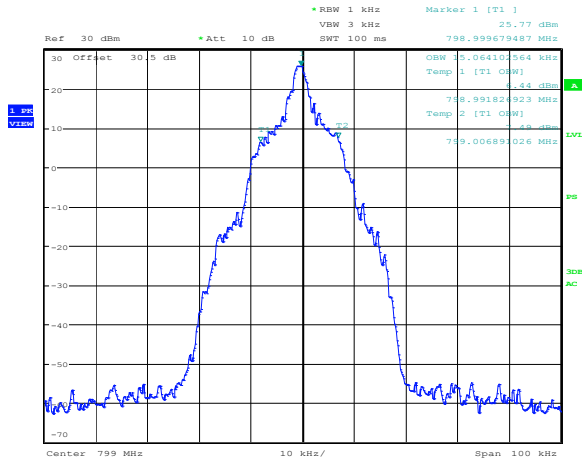
Plot 8.1-195: Occupied bandwidth at the output
 Regular + power amplifier
 Downlink 800 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

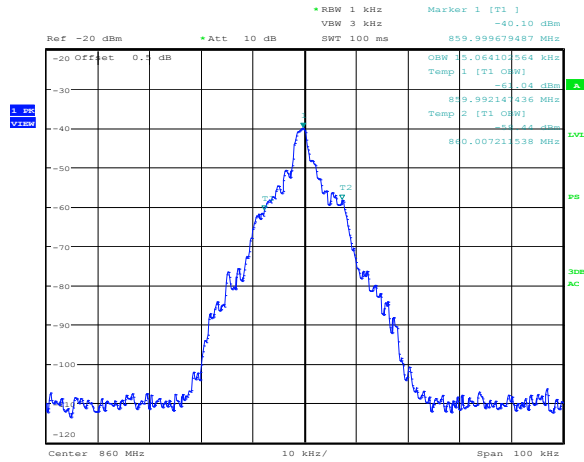
Plot 8.1-196: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



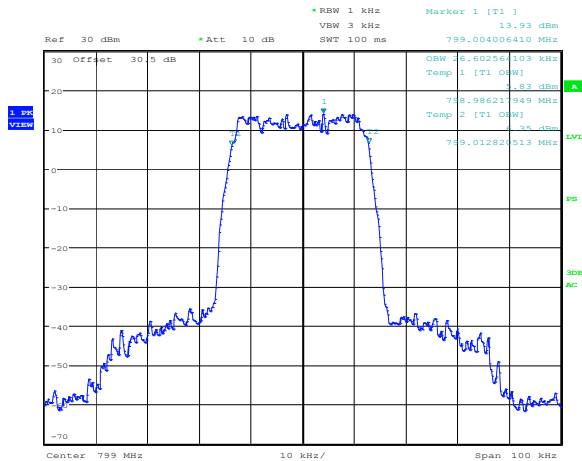
Date: 19.MAY.2011 12:11:38

Plot 8.1-197: Occupied bandwidth at the output
Regular + power amplifier
Uplink 700 MHz
C4FM modulation



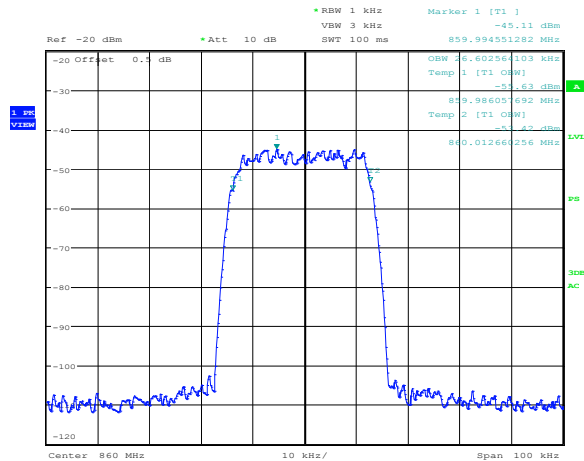
Date: 20.MAY.2011 14:31:33

Plot 8.1-198: Occupied bandwidth at the input
C4FM modulation



Date: 19.MAY.2011 12:12:44

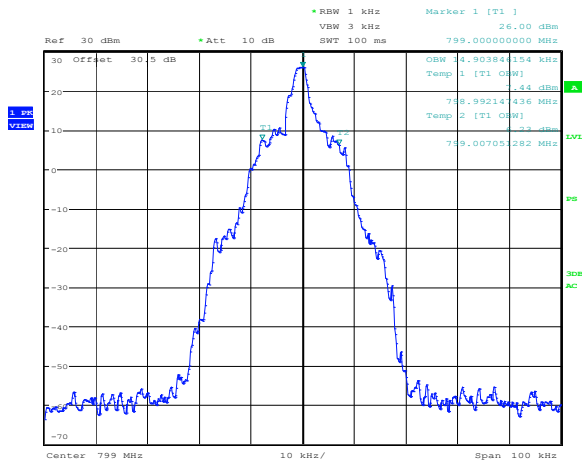
Plot 8.1-199: Occupied bandwidth at the output
Regular + power amplifier
Uplink 700 MHz
HPD modulation



Date: 20.MAY.2011 14:31:10

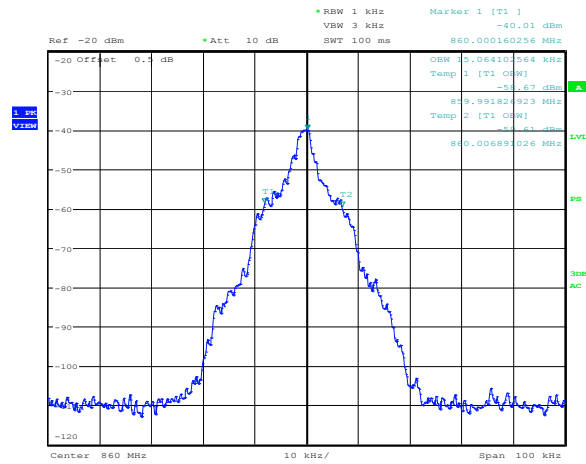
Plot 8.1-200: Occupied bandwidth at the input
HPD modulation

8.1.3 Test data, continued



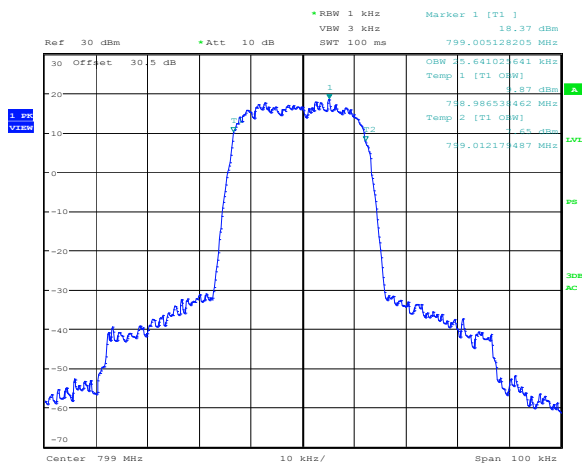
Date: 19.MAY.2011 12:12:03

Plot 8.1-201: Occupied bandwidth at the output
Regular + power amplifier
Uplink 700 MHz
CQPSK modulation



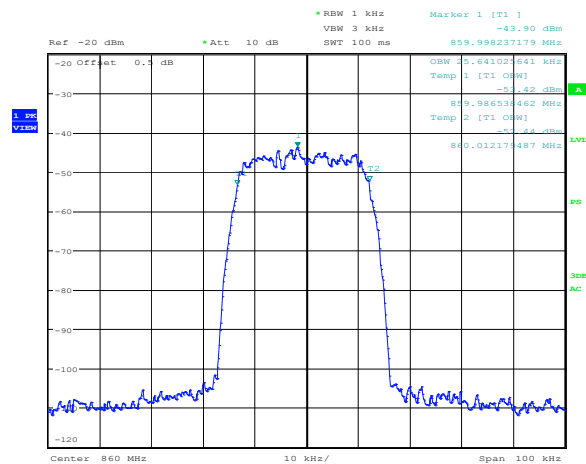
Date: 20.MAY.2011 14:31:50

Plot 8.1-202: Occupied bandwidth at the input
CQPSK modulation



Date: 19.MAY.2011 12:11:01

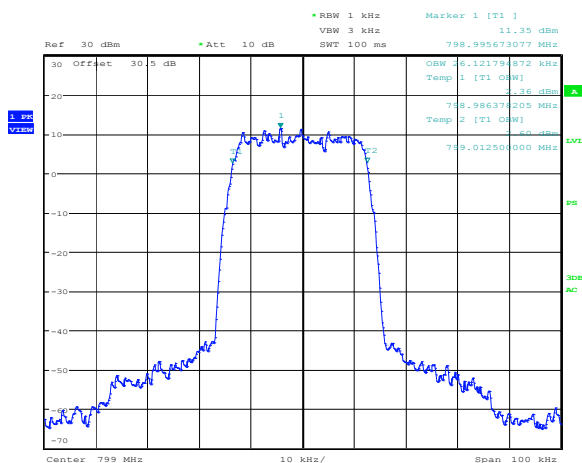
Plot 8.1-203: Occupied bandwidth at the output
Regular + power amplifier
Uplink 700 MHz
LSM modulation



Date: 20.MAY.2011 14:32:36

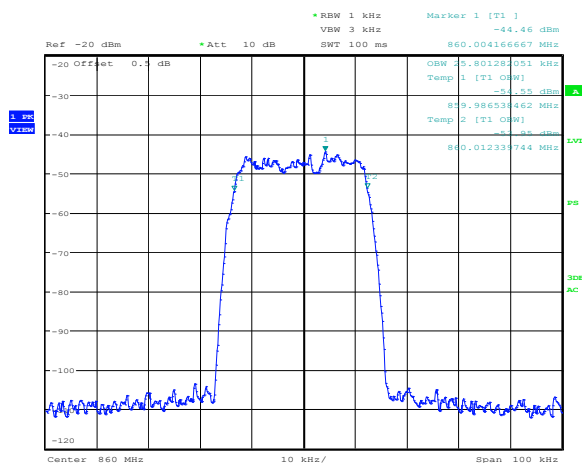
Plot 8.1-204: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



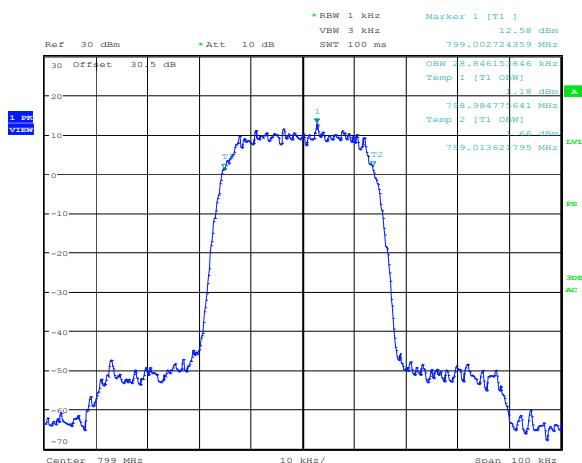
Date: 19.MAY.2011 12:14:59

Plot 8.1-205: Occupied bandwidth at the output
Regular + power amplifier
Uplink 700 MHz
OpenSky modulation



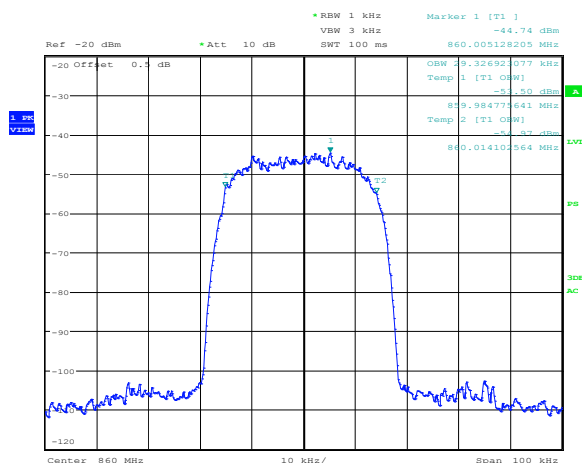
Date: 20.MAY.2011 14:36:53

Plot 8.1-206: Occupied bandwidth at the input
OpenSky modulation



Date: 19.MAY.2011 12:13:59

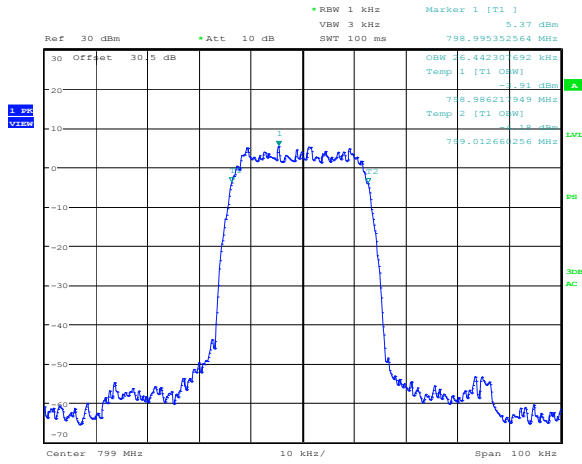
Plot 8.1-207: Occupied bandwidth at the output
Regular + power amplifier
Uplink 700 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

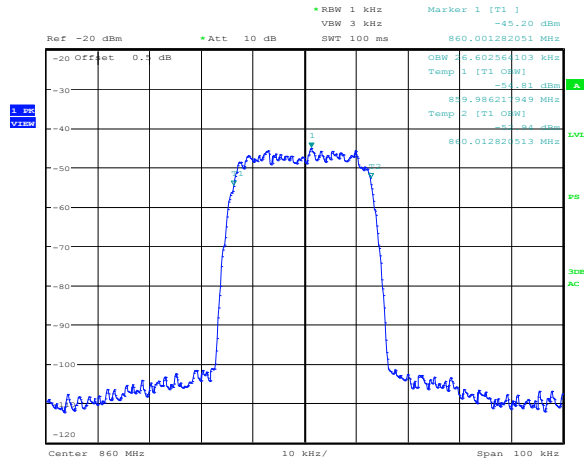
Plot 8.1-208: Occupied bandwidth at the input
TETRA modulation

8.1.3 Test data, continued



Date: 19.MAY.2011 12:13:32

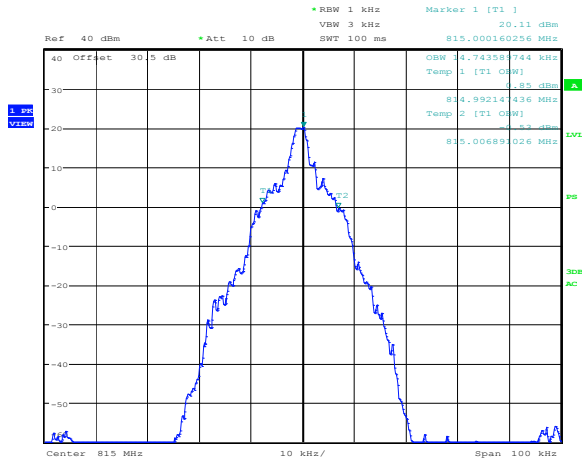
Plot 8.1-209: Occupied bandwidth at the output
 Regular + power amplifier
 Uplink 700 MHz
 WCQPSK modulation



Date: 20.MAY.2011 14:36:12

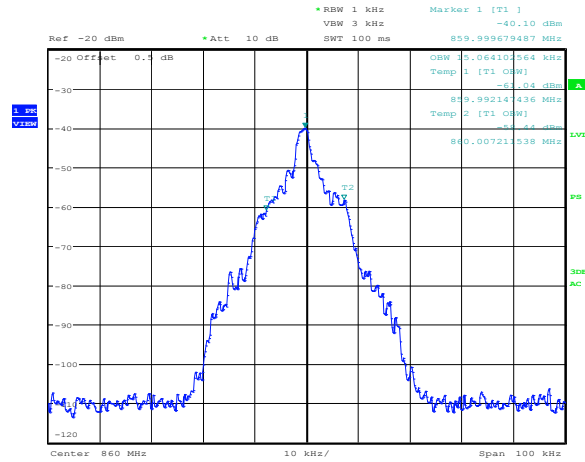
Plot 8.1-210: Occupied bandwidth at the input
 WCQPSK modulation

8.1.3 Test data, continued



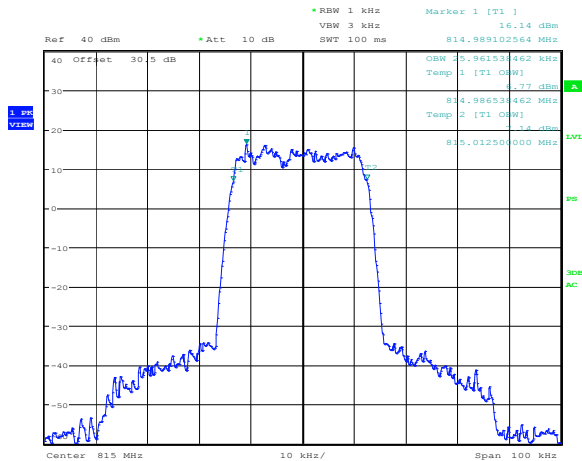
Date: 19.MAY.2011 16:24:48

Plot 8.1-211: Occupied bandwidth at the output
Regular + power amplifier
Uplink 800 MHz
C4FM modulation



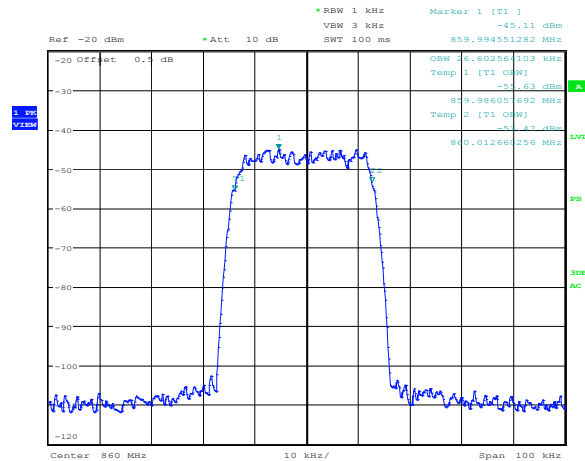
Date: 20.MAY.2011 14:31:33

Plot 8.1-212: Occupied bandwidth at the input
C4FM modulation



Date: 19.MAY.2011 16:24:17

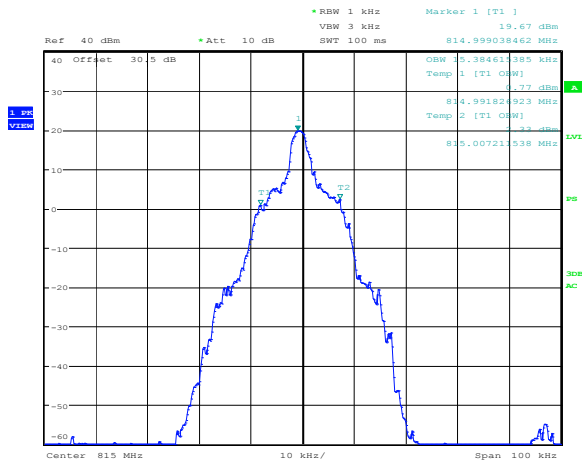
Plot 8.1-213: Occupied bandwidth at the output
Regular + power amplifier
Uplink 800 MHz
HPD modulation



Date: 20.MAY.2011 14:31:10

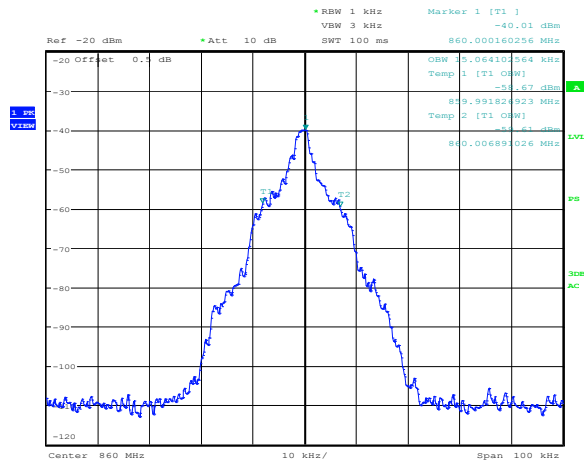
Plot 8.1-214: Occupied bandwidth at the input
HPD modulation

8.1.3 Test data, continued



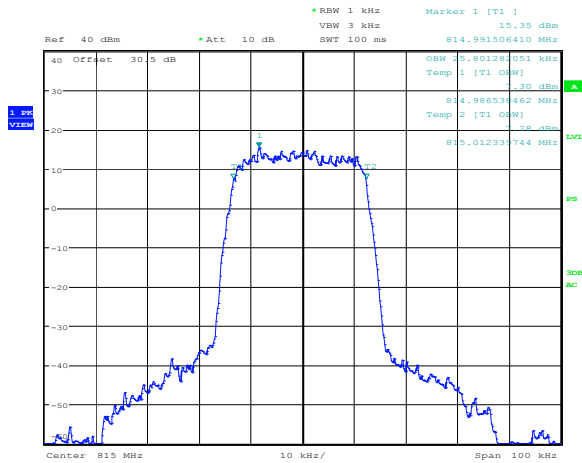
Date: 19.MAY.2011 16:25:10

Plot 8.1-215: Occupied bandwidth at the output
Regular + power amplifier
Uplink 800 MHz
CQPSK modulation



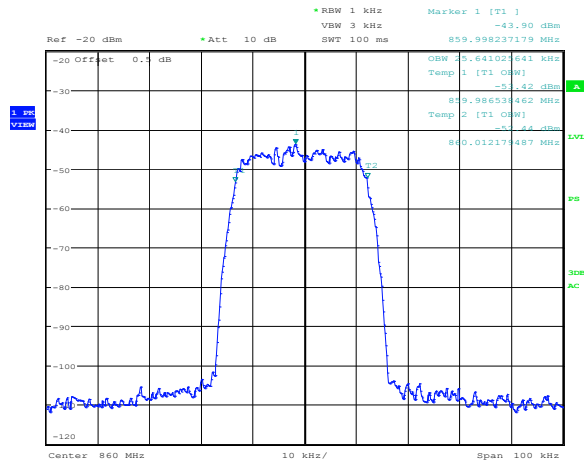
Date: 20.MAY.2011 14:31:50

Plot 8.1-216: Occupied bandwidth at the input
CQPSK modulation



Date: 19.MAY.2011 16:25:50

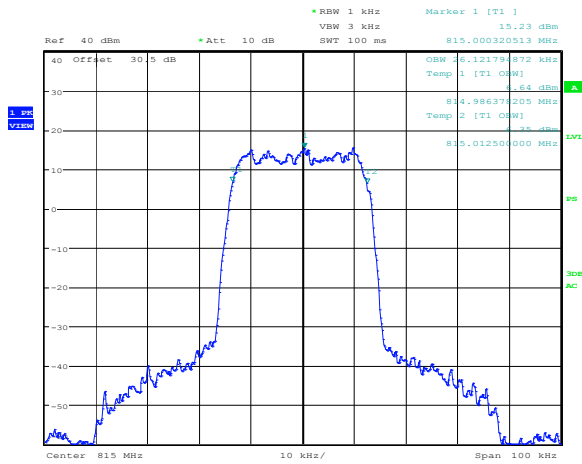
Plot 8.1-217: Occupied bandwidth at the output
Regular + power amplifier
Uplink 800 MHz
LSM modulation



Date: 20.MAY.2011 14:32:36

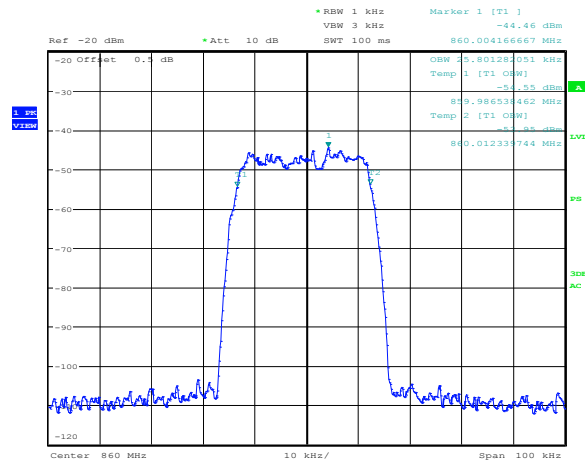
Plot 8.1-218: Occupied bandwidth at the input
LSM modulation

8.1.3 Test data, continued



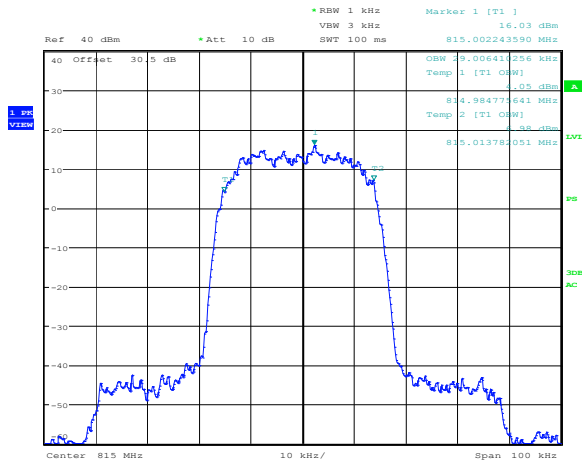
Date: 19.MAY.2011 16:23:45

Plot 8.1-219: Occupied bandwidth at the output
Regular + power amplifier
Uplink 800 MHz
OpenSky modulation



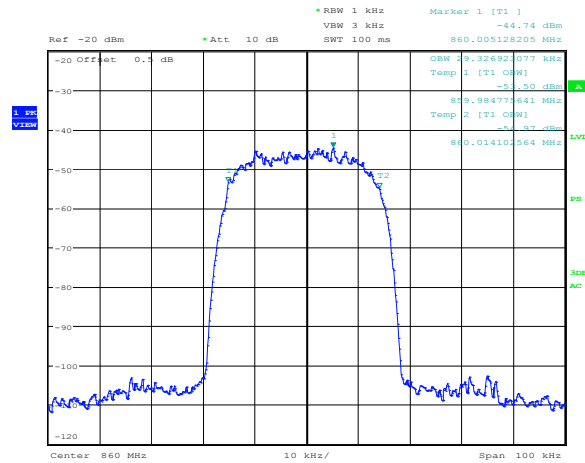
Date: 20.MAY.2011 14:36:53

Plot 8.1-220: Occupied bandwidth at the input
OpenSky modulation



Date: 19.MAY.2011 16:26:24

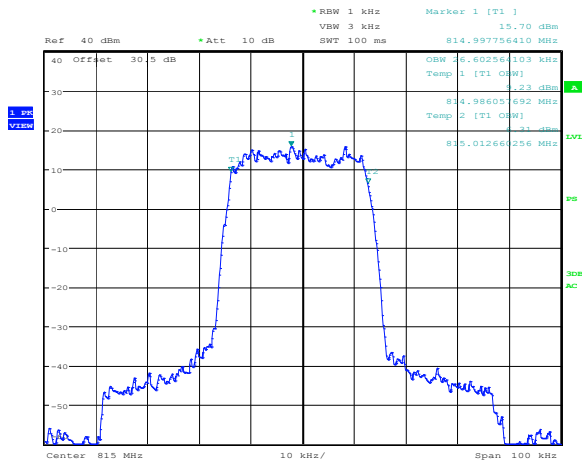
Plot 8.1-221: Occupied bandwidth at the output
Regular + power amplifier
Uplink 800 MHz
TETRA modulation



Date: 20.MAY.2011 14:37:38

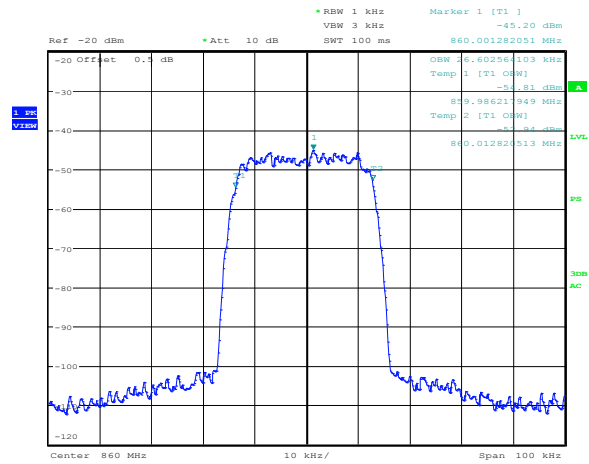
Plot 8.1-222: Occupied bandwidth at the input
TETRA modulation

8.1.3 Test data, continued



Date: 19.MAY.2011 16:26:55

Plot 8.1-223: Occupied bandwidth at the output
Regular + power amplifier
Uplink 800 MHz
WCQPSK modulation



Date: 20.MAY.2011 14:36:12

Plot 8.1-224: Occupied bandwidth at the input
WCQPSK modulation

8.2 Clause 90.205 Output power

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation. Except where otherwise specifically provided for, the maximum power that will be authorized for new stations authorized after August 16, 1995 is as follows in FCC Part 90.205(a) through (r).

8.2.1 Test summary

Test date	May 18–20 and 31, 2011	Test engineer	Andrey Adelberg	Verdict	Pass
Temperature	23 °C	Air pressure	1002 mbar	Relative humidity	40 %

8.2.2 Special notes

The output power was measured by using a calibrated power meter.
 Test was performed with input single carrier set to the 1 dB compression point.
 The EUT output power was measured at the worst case when output filter was set to 12.5 kHz.

Downlink antenna (DAS) typical gain is –4 dBi: DAS usually have a gain of 0 dBi or less, with only 2 antennas and a splitter and cable the gain adds up to roughly –4 dBi (–6.15 dBd). If higher gain antenna is used (higher than 2.72 dBi), the power will be reduced to meet the ERP limitation.

Uplink antenna (Donor): the gain of 2 antennas and a splitter and cable adds up to roughly –1.28 dBi (–3.43 dBd). If higher gain antenna is used the power will be reduced to meet the ERP limitation.

Manufacturer declaration:

Caution: The ERP (effective radiated power) from the booster system must not exceed +37 dBm (5 Watts) in order to remain compliant with FCC regulations. The maximum power output from the booster is approximately +40 dBm. Depending on cable loss and antenna gain, the output power of the booster may be reduced accordingly.

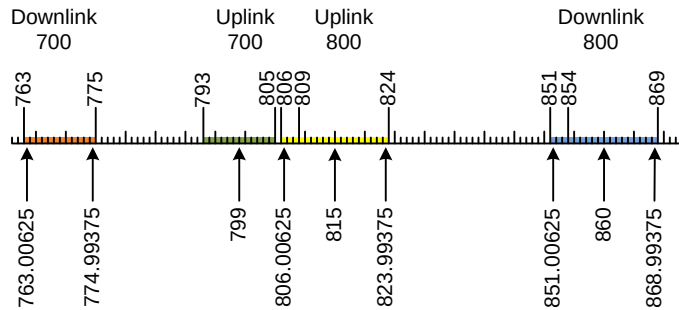


Diagram 8.2-1: Output power test frequencies

8.2.3 Test data

Table 8.2-1: Output power results for CW

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	38.70
		774.99375	36.79
	Uplink 700	799.00000	39.34
		806.00625	39.83
	Uplink 800	815.00000	40.43
		823.99375	39.37
		851.00625	38.83
		860.00000	36.81
		868.99375	37.04
Fiber Optic + Power Amplifier	Downlink 700	763.00625	38.10
		774.99375	35.88
	Uplink 700	799.00000	38.05
		806.00625	39.42
	Uplink 800	815.00000	37.82
		823.99375	36.09
		851.00625	40.12
		860.00000	38.81
		868.99375	38.55
Regular High Power	Downlink 700	763.00625	22.43
		774.99375	23.38
	Uplink 700	799.00000	26.26
		806.00625	25.51
	Uplink 800	815.00000	22.84
		823.99375	22.40
		851.00625	25.51
		860.00000	23.09
		868.99375	22.49
Fiber Optic High Power	Downlink 700	763.00625	25.35
		774.99375	23.70
	Uplink 700	799.00000	24.87
		806.00625	25.66
	Uplink 800	815.00000	22.29
		823.99375	22.38
		851.00625	26.36
		860.00000	24.04
		868.99375	23.03

8.2.3 Test data, continued

Table 8.2-2: Output power results for Motorola HPD modulation

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	39.05
		774.99375	38.85
	Uplink 700	799.00000	39.54
		806.00625	39.12
	Uplink 800	815.00000	39.23
		823.99375	39.17
		851.00625	38.50
		860.00000	36.72
Fiber Optic + Power Amplifier	Downlink 700	763.00625	38.03
		774.99375	36.45
	Uplink 700	799.00000	38.74
		806.00625	39.72
	Uplink 800	815.00000	39.12
		823.99375	37.28
		851.00625	39.42
		860.00000	38.66
Regular High Power	Downlink 700	763.00625	22.71
		774.99375	23.15
	Uplink 700	799.00000	23.12
		806.00625	25.17
	Uplink 800	815.00000	23.86
		823.99375	22.02
		851.00625	24.19
		860.00000	23.38
Fiber Optic High Power	Downlink 700	763.00625	25.26
		774.99375	23.33
	Uplink 700	799.00000	24.04
		806.00625	24.89
	Uplink 800	815.00000	23.54
		823.99375	22.03
		851.00625	24.83
		860.00000	23.89
		868.99375	23.92

8.2.3 Test data, continued

Table 8.2-3: Output power results for CQPSK modulation

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	39.02
		774.99375	38.12
	Uplink 700	799.00000	39.51
		806.00625	39.46
	Uplink 800	815.00000	39.54
		823.99375	39.41
		851.00625	38.49
		860.00000	38.27
	Downlink 800	868.99375	36.92
		763.00625	38.24
Fiber Optic + Power Amplifier	Downlink 700	774.99375	36.19
		799.00000	37.98
	Uplink 700	806.00625	39.87
		815.00000	38.10
	Uplink 800	823.99375	36.34
		851.00625	39.76
		860.00000	39.02
		868.99375	38.27
	Downlink 800	763.00625	22.67
		774.99375	23.23
Regular High Power	Downlink 700	799.00000	23.05
		806.00625	25.42
	Uplink 700	815.00000	23.72
		823.99375	21.70
	Uplink 800	851.00625	24.58
		860.00000	24.12
		868.99375	22.09
		763.00625	25.63
	Downlink 800	774.99375	23.71
		799.00000	24.13
Fiber Optic High Power	Downlink 700	806.00625	25.11
		815.00000	24.03
	Uplink 700	823.99375	21.86
		851.00625	25.43
	Uplink 800	860.00000	24.31
		868.99375	22.99
		763.00625	25.63
		774.99375	23.71
	Downlink 800	799.00000	24.13
		806.00625	25.11

8.2.3 Test data, continued

Table 8.2-4: Output power results for C4FM modulation

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	38.71
		774.99375	37.53
	Uplink 700	799.00000	39.25
		806.00625	39.57
	Uplink 800	815.00000	39.57
		823.99375	39.67
		851.00625	38.54
		860.00000	36.36
Fiber Optic + Power Amplifier	Downlink 700	763.00625	38.06
		774.99375	35.84
	Uplink 700	799.00000	37.95
		806.00625	39.38
	Uplink 800	815.00000	38.32
		823.99375	36.02
		851.00625	40.07
		860.00000	38.79
Regular High Power	Downlink 700	763.00625	22.93
		774.99375	23.16
	Uplink 700	799.00000	23.61
		806.00625	25.35
	Uplink 800	815.00000	23.46
		823.99375	21.42
		851.00625	24.53
		860.00000	23.78
Fiber Optic High Power	Downlink 700	763.00625	25.3
		774.99375	23.69
	Uplink 700	799.00000	24.46
		806.00625	25.13
	Uplink 800	815.00000	23.29
		823.99375	21.37
		851.00625	25.92
		860.00000	24.04
	Downlink 800	868.99375	23.04

8.2.3 Test data, continued

Table 8.2-5: Output power results for LSM modulation

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	38.38
		774.99375	37.17
	Uplink 700	799.00000	38.85
		806.00625	39.27
	Uplink 800	815.00000	39.38
		823.99375	39.44
		851.00625	38.74
	Downlink 800	860.00000	36.38
		868.99375	36.02
Fiber Optic + Power Amplifier	Downlink 700	763.00625	38.50
		774.99375	36.21
	Uplink 700	799.00000	37.96
		806.00625	39.89
	Uplink 800	815.00000	38.16
		823.99375	36.4
		851.00625	39.75
	Downlink 800	860.00000	39.03
		868.99375	37.60
Regular High Power	Downlink 700	763.00625	22.46
		774.99375	23.75
	Uplink 700	799.00000	23.12
		806.00625	25.17
	Uplink 800	815.00000	23.97
		823.99375	21.43
		851.00625	24.07
	Downlink 800	860.00000	23.36
		868.99375	22.18
Fiber Optic High Power	Downlink 700	763.00625	25.62
		774.99375	23.16
	Uplink 700	799.00000	24.09
		806.00625	24.98
	Uplink 800	815.00000	23.99
		823.99375	21.69
		851.00625	25.42
	Downlink 800	860.00000	24.36
		868.99375	22.94

8.2.3 Test data, continued

Table 8.2-6: Output power results for OpenSky modulation

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	38.43
		774.99375	37.84
	Uplink 700	799.00000	38.76
		806.00625	39.17
	Uplink 800	815.00000	39.26
		823.99375	39.31
		851.00625	39.04
	Downlink 800	860.00000	36.4
		868.99375	36.18
Fiber Optic + Power Amplifier	Downlink 700	763.00625	38.31
		774.99375	36.27
	Uplink 700	799.00000	38.92
		806.00625	39.46
	Uplink 800	815.00000	38.11
		823.99375	37.39
		851.00625	39.47
	Downlink 800	860.00000	39.57
		868.99375	37.96
Regular High Power	Downlink 700	763.00625	22.74
		774.99375	23.13
	Uplink 700	799.00000	23.21
		806.00625	25.40
	Uplink 800	815.00000	23.73
		823.99375	21.78
		851.00625	23.97
	Downlink 800	860.00000	23.42
		868.99375	22.11
Fiber Optic High Power	Downlink 700	763.00625	24.97
		774.99375	23.44
	Uplink 700	799.00000	24.09
		806.00625	24.98
	Uplink 800	815.00000	23.55
		823.99375	21.76
		851.00625	25.17
	Downlink 800	860.00000	24.06
		868.99375	23.71

8.2.3 Test data, continued

Table 8.2-7: Output power results for WCQPSK modulation

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	38.25
		774.99375	37.75
	Uplink 700	799.00000	38.86
		806.00625	39.25
	Uplink 800	815.00000	39.47
		823.99375	39.34
		851.00625	38.43
	Downlink 800	860.00000	36.34
		868.99375	36.62
Fiber Optic + Power Amplifier	Downlink 700	763.00625	38.31
		774.99375	36.24
	Uplink 700	799.00000	38.24
		806.00625	39.47
	Uplink 800	815.00000	38.00
		823.99375	36.45
		851.00625	39.87
	Downlink 800	860.00000	39.02
		868.99375	37.92
Regular High Power	Downlink 700	763.00625	22.73
		774.99375	23.17
	Uplink 700	799.00000	23.12
		806.00625	25.02
	Uplink 800	815.00000	23.64
		823.99375	21.71
		851.00625	24.02
	Downlink 800	860.00000	23.29
		868.99375	22.04
Fiber Optic High Power	Downlink 700	763.00625	25.57
		774.99375	23.49
	Uplink 700	799.00000	24.11
		806.00625	25.13
	Uplink 800	815.00000	23.53
		823.99375	21.68
		851.00625	25.43
	Downlink 800	860.00000	24.37
		868.99375	23.31

8.2.3 Test data, continued

Table 8.2-8: Output power results for TETRA modulation

EUT type	Band	Frequency	Power
Regular + Power Amplifier	Downlink 700	763.00625	37.53
		774.99375	37.85
	Uplink 700	799.00000	38.12
		806.00625	38.75
	Uplink 800	815.00000	39.36
		823.99375	39.33
		851.00625	38.57
	Downlink 800	860.00000	36.26
		868.99375	36.72
Fiber Optic + Power Amplifier	Downlink 700	763.00625	38.24
		774.99375	35.98
	Uplink 700	799.00000	38.91
		806.00625	39.77
	Uplink 800	815.00000	38.02
		823.99375	37.04
		851.00625	39.78
	Downlink 800	860.00000	39.43
		868.99375	38.45
Regular High Power	Downlink 700	763.00625	22.09
		774.99375	23.15
	Uplink 700	799.00000	23.68
		806.00625	25.18
	Uplink 800	815.00000	24.19
		823.99375	21.76
		851.00625	24.01
	Downlink 800	860.00000	22.95
		868.99375	22.09
Fiber Optic High Power	Downlink 700	763.00625	25.70
		774.99375	23.51
	Uplink 700	799.00000	24.05
		806.00625	25.07
	Uplink 800	815.00000	23.50
		823.99375	21.52
		851.00625	25.48
	Downlink 800	860.00000	24.17
		868.99375	23.23

Table 8.2-9: Maximum output power results

EUT type	Uplink / Downlink	Maximum output power, dBm	Antenna gain, dBd	Maximum ERP, dBm	ERP limit, dBm	Margin, dB
Regular + Power Amplifier	Downlink	39.05	-6.15	32.90	37.00	4.10
	Uplink	40.43	-3.43	37.00	37.00	0.00
Fiber Optic + Power Amplifier	Downlink	40.12	-6.15	33.97	37.00	3.03
	Uplink	39.89	-3.43	36.46	37.00	0.54
Regular High Power	Downlink	25.51	-6.15	19.36	37.00	17.64
	Uplink	26.26	-3.43	22.83	37.00	14.17
Fiber Optic High Power	Downlink	26.36	-6.15	20.21	37.00	16.79
	Uplink	25.66	-3.43	22.23	37.00	14.77