

Test Report

Report Number: 3186504MPK-003

Project Number: 3186504

Report Date: August 31, 2009

**Testing performed on the
Cellular Repeater
Model Number: AEON**

FCC ID: S2O-AEON

IC ID: 6416A-AEON

to

**FCC Part 22 Subpart H
FCC Part 24 Subpart E
RSS-131**

for

Advanced RF Technologies

Test Performed by:

Intertek
1365 Adams Court
Menlo Park, CA 94025 USA

Test Authorized by:

Advanced RF Technologies
2607 Colorado Boulevard
Los Angeles, CA 90041 USA

Prepared by:



Bruce Gordon, EMC Engineer

Date: August 31, 2009

Reviewed by:



Krishna Vemuri, Senior EMC Engineer

Date: August 31, 2009

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1.0 Introduction

1.1 Product Description

The Equipment Under Test (EUT), model AEON is a Cellular Repeater.

Rated RF Output Power	30 dBm, Down Link and Up Link
Frequency Ranges	Cellular Band 869 – 894 MHz, Down Link 824 – 849 MHz, Up Link PCS Band 1930 – 1990 MHz, Down Link 1850 – 1910 MHz, Up Link
Type of modulation	CDMA (F9W) GSM (GXW) TDMA (DXW)
Antenna Gain	12 dBi max, Donor (Up Link) 3 dBi max, Server (Down Link)

EUT receive date: August 3, 2009

EUT receive condition: The production version of the EUT was received in good condition with no apparent damage.

Test start date: August 4, 2009

Test completion date: August 31, 2009

1.2 Summary of Test Results

FCC Rule	RSS-131 Rule	Description of Test	Result
2.1046	6.2	RF Power Output	Complies
2.1049	6.1	Occupied Bandwidth	Complies
22.913 24.232	-	ERP EIRP	N/A*
2.1051	6.4	Out of Band Emissions at Antenna Terminals	Complies
2.1053	6.4	Transmitter Spurious Radiation	Complies
2.1055	6.5	Frequency Stability vs. Temperature and Voltage	Complies
15.109	-	Radiated Emissions	Complies
15.107	-	AC Line Conducted	Complies

* This requirement is not applicable for amplifiers

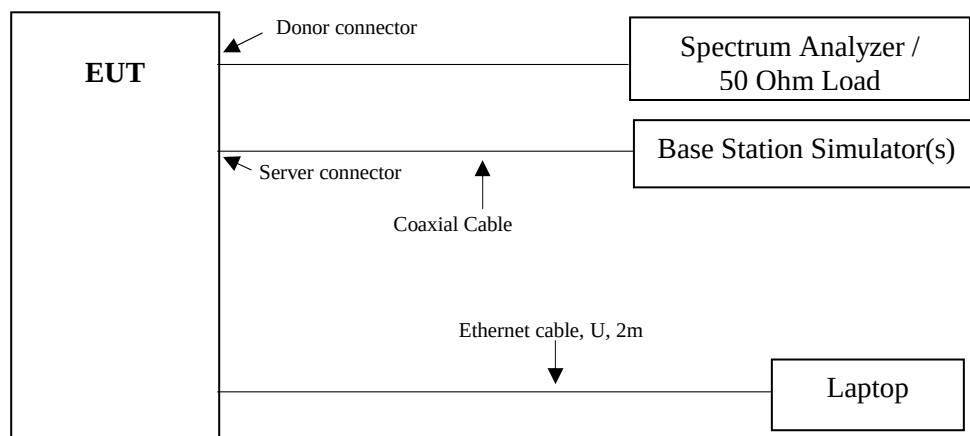
1.3 Test Configuration

1.3.1 Support Equipment

Description	Model	Serial Number
Compaq Laptop Computer	Compaq nc6220	None
JFW 50 Ohm Terminator	50T-034-1.0	ETL-342
JFW 50 Ohm Terminator	50T-034-1.0	ETL-343
Rohde & Schwarz Universal Radio Communication Set	CMU-200	101119
Rohde & Schwarz Universal Radio Communication Set	CMU-200	8374931/056

1.3.2 Block diagram of Test Setup

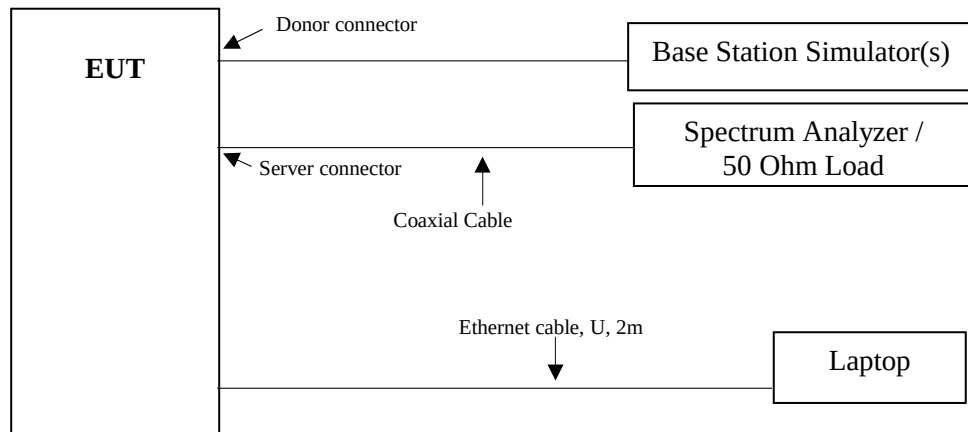
Up Link Configuration



S = Shielded
U = Unshielded

F = With Ferrite
m = Length in Meters

Down Link Configuration



S = Shielded
U = Unshielded

F = With Ferrite
m = Length in Meters

1.4 Mode of Operation

The EUT was powered by 120VAC. The EUT was configured for maximum gain, 90dB. Basestation simulators were used to provide the input signals to the EUT. Tests were performed with CDMA, GSM and TDMA modulations. The input power was the maximum declared by the manufacturer.

2.0 RF Power Output

FCC 2.1046

2.1 Test Procedure

The EUT RF output was connected as shown on the diagram in sec.1.3.2. The EUT was setup to transmit continuously with maximum power.

A spectrum analyzer was setup to measure peak power. Measurements were performed at three frequencies (low, middle, and high channels) with all modulations.

2.2 Test Equipment

Rohde & Schwarz FSU26 Spectrum Analyzer

2.3 Test Results

Up Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
CDMA Cell	1013	824.7	-57.5	30.0
CDMA Cell	384	836.5	-57.5	30.0
CDMA Cell	777	848.3	-57.4	30.0

Up Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
CDMA PCS	25	1851.3	-57.6	30.0
CDMA PCS	600	1880	-56.8	30.0
CDMA PCS	1175	1908.8	-57.2	30.0

Up Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
GSM 850	128	824.2	-60.0	29.8
GSM 850	190	836.6	-59.6	30.0
GSM 850	251	848.8	-60.0	30.0

Up Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
GSM 1900	517	1851.25	-60.0	29.5
GSM 1900	661	1880	-59.5	30.0
GSM 1900	805	1908.75	-60.0	29.7

Up Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
TDMA Cell	1013	824.7	-63.2	30.0
TDMA Cell	384	836.52	-63.4	30.0
TDMA Cell	777	848.31	-62.7	30.0

Up Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
TDMA PCS	41	1851.25	-61.3	30.0
TDMA PCS	999	1879.95	-62.8	30.0
TDMA PCS	1958	1908.75	-61.1	30.0

Down Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
CDMA Cell	1013	869.7	-57.9	30.0
CDMA Cell	384	881.5	-58.0	30.0
CDMA Cell	777	893.3	-57.9	30.0

Down Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
CDMA PCS	25	1931.3	-57.8	30.0
CDMA PCS	600	1960	-57.9	30.0
CDMA PCS	1175	1988.8	-58	30.0

Down Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
GSM 850	128	869.2	-60.0	29.1
GSM 850	190	881.6	-59.8	30.0
GSM 850	251	893.8	-60.0	29.8

Down Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
GSM 1900	517	1931.25	-60.0	29.0
GSM 1900	661	1960	-29.9	30.0
GSM 1900	805	1988.75	-60.0	29.9

Down Link				
Modulation	Channel	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
TDMA Cell	1013	869.7	-63.5	30.0
TDMA Cell	384	881.52	-63.4	30.0
TDMA Cell	777	893.31	-63.1	30.0

Down Link			
Modulation	Frequency (MHz)	Input Power (dBm)	Output Power (dBm)
TDMA PCS	41	-61.6	30.0
TDMA PCS	999	-61.7	30.0
TDMA PCS	1958	-60.5	30.0

3.0 Occupied Bandwidth, Input/Output Comparison

FCC 2.1049

3.1 Test Procedure

The EUT RF ports were connected as shown on the diagram in sec.1.3.2. The EUT was setup to transmit maximum power.

The spectrum analyzer was setup to measure the Occupied Bandwidth (defined as the 99% Power Bandwidth). The Occupied Bandwidth was measured at the input and output ports of the EUT at the middle channels for each type of modulation in the Up Link and Down Link bands.

3.2 Test Equipment

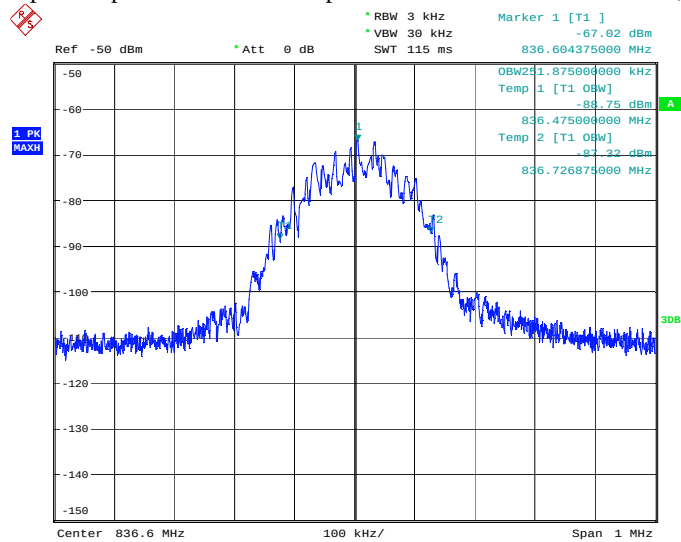
Rohde & Schwarz FSU26 Spectrum Analyzer

3.3 Test Results

Refer to the following Graphs.

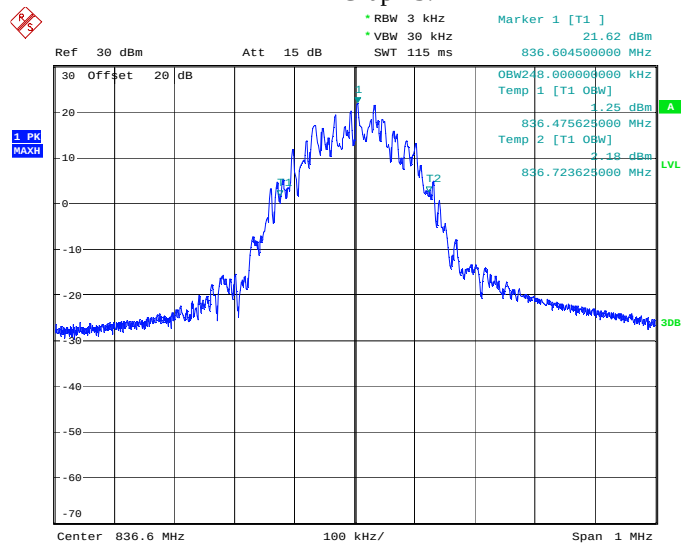
Result	Complies
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Graph 3.1
Input/Output Bandwidth Comparison – GSM 850 Channel 190, Up Link



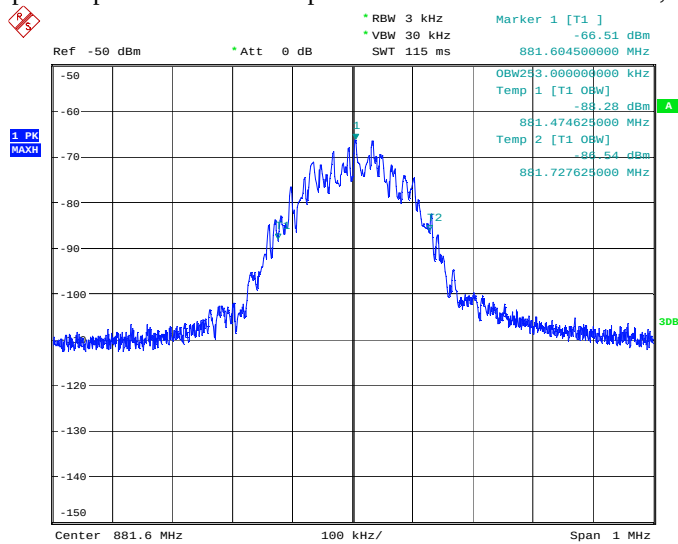
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Graph 3.2



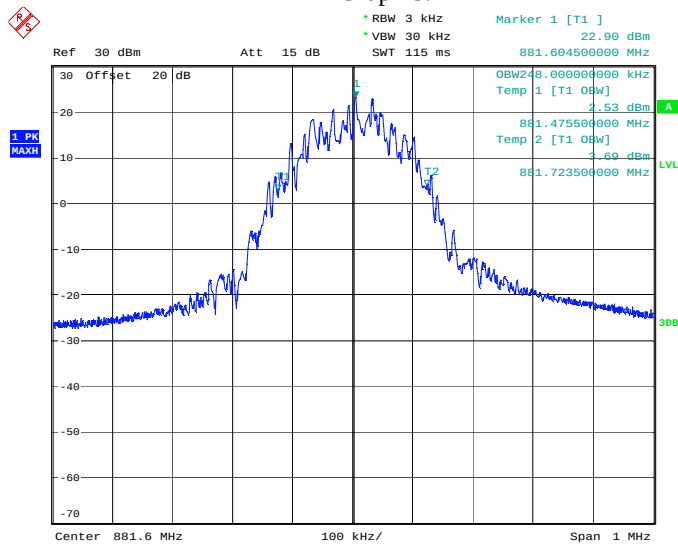
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Graph 3.3
Input/Output Bandwidth Comparison – GSM 850 Channel 190, Down Link



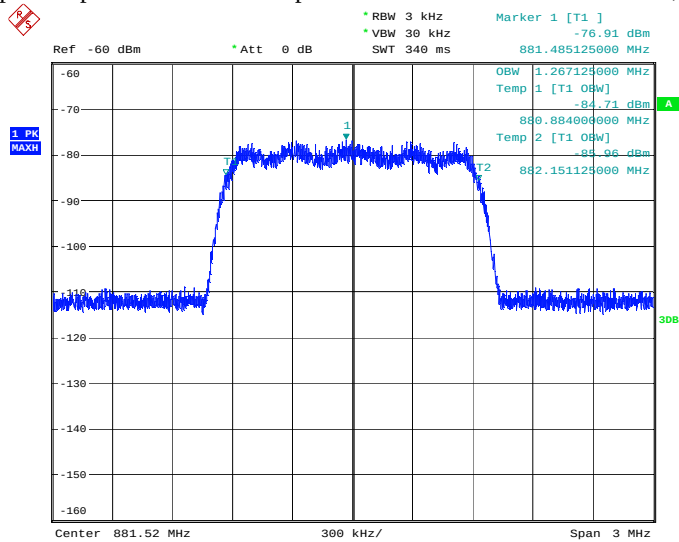
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Graph 3.4



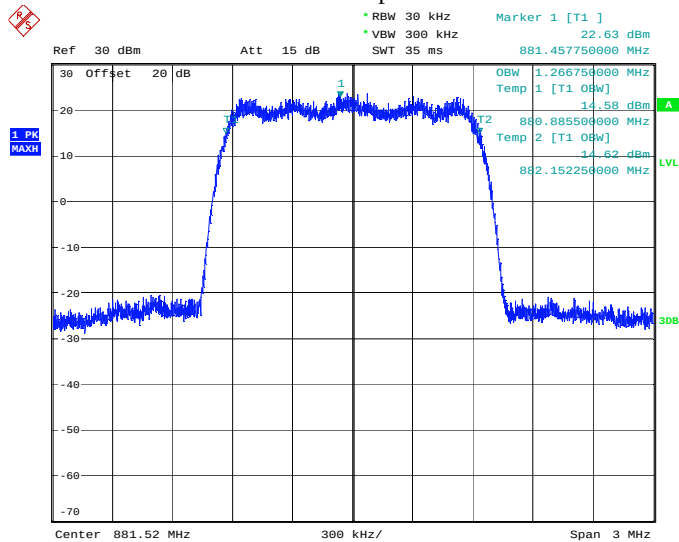
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Graph 3.5
Input/Output Bandwidth Comparison – CDMA Cell Channel 384, Down Link



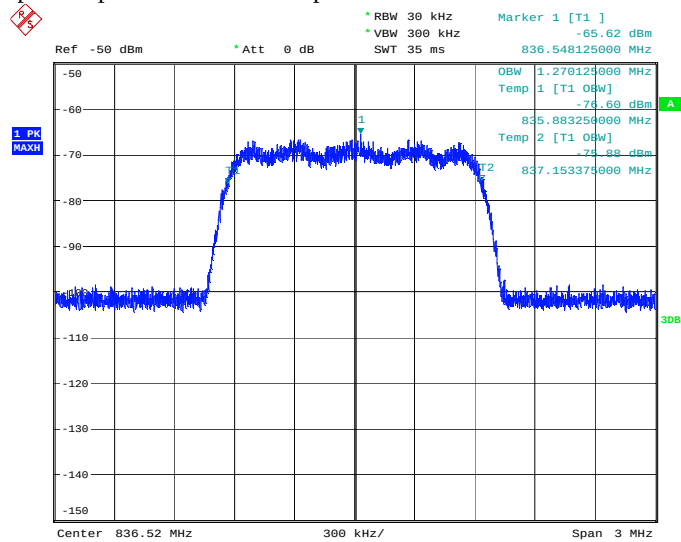
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Graph 3.6



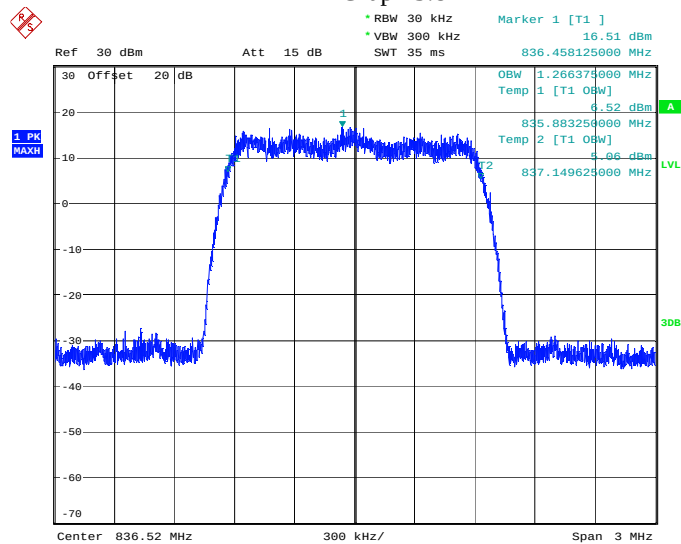
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Graph 3.7
Input/Output Bandwidth Comparison – CDMA Cell Channel 384, Up Link



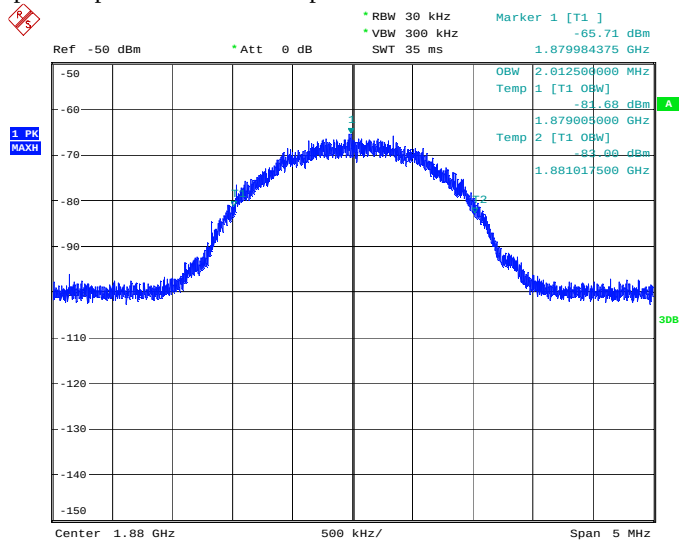
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Graph 3.8



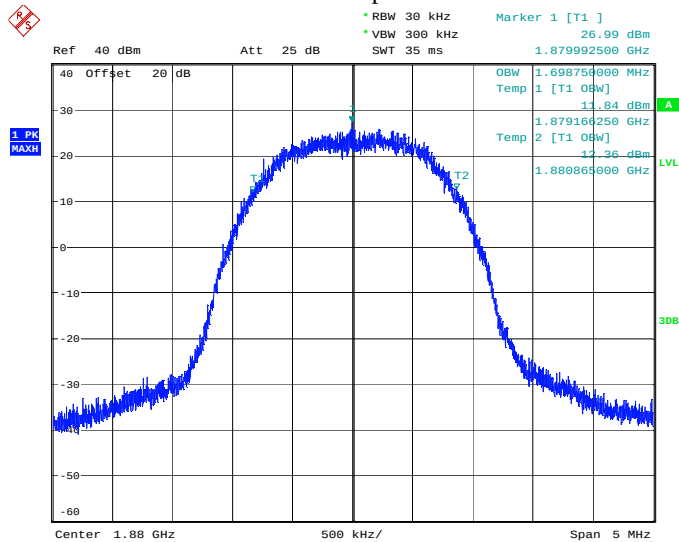
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Graph 3.9
Input/Output Bandwidth Comparison – CDMA PCS Channel 600, Up Link



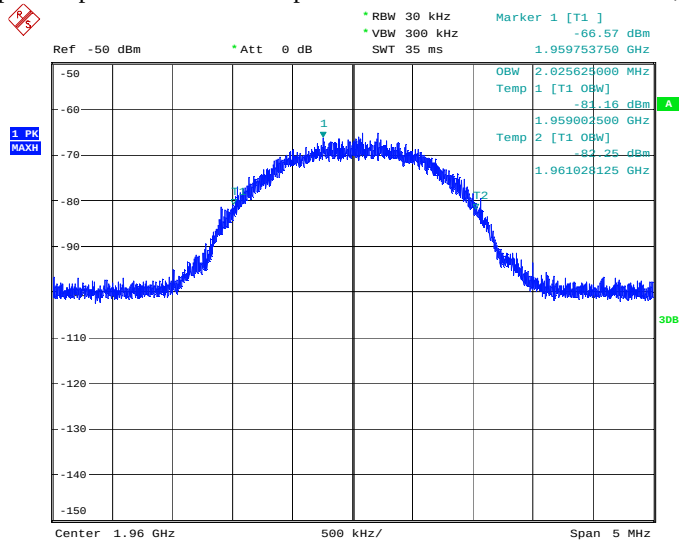
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Graph 3.10



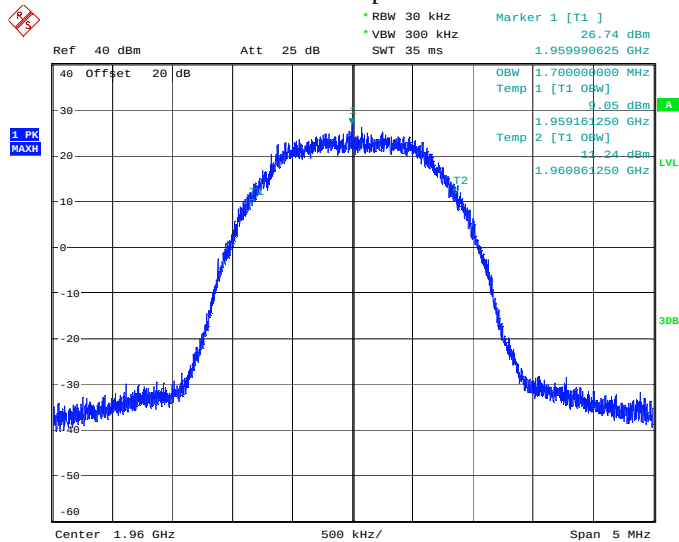
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Graph 3.11
Input/Output Bandwidth Comparison – CDMA PCS Channel 600, Down Link



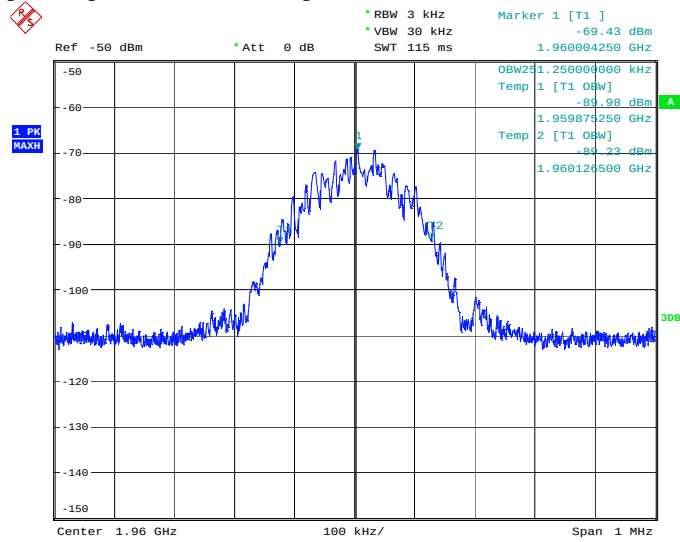
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Graph 3.12



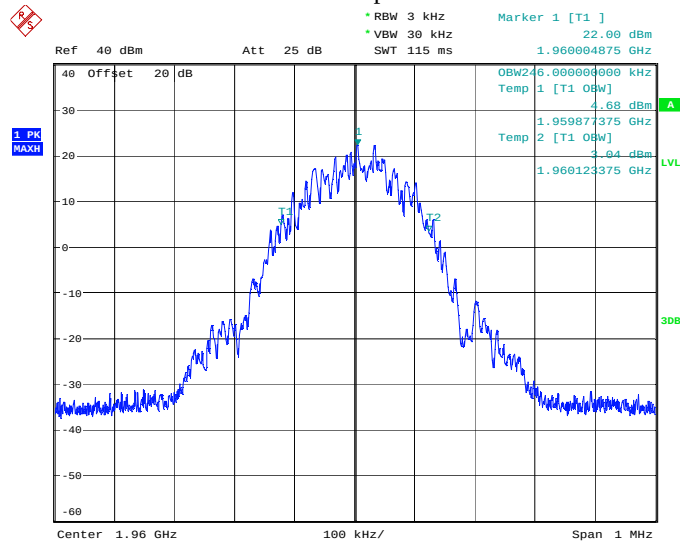
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Graph 3.13
Input/Output Bandwidth Comparison – GSM 1900 Channel 661, Down Link



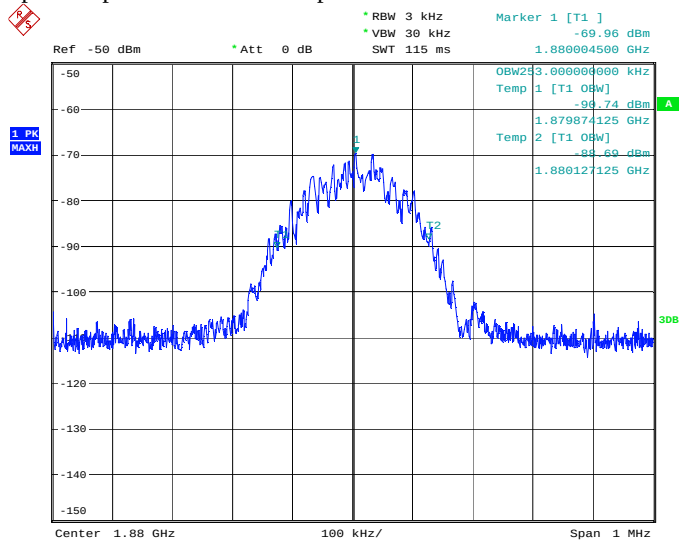
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Graph 3.14



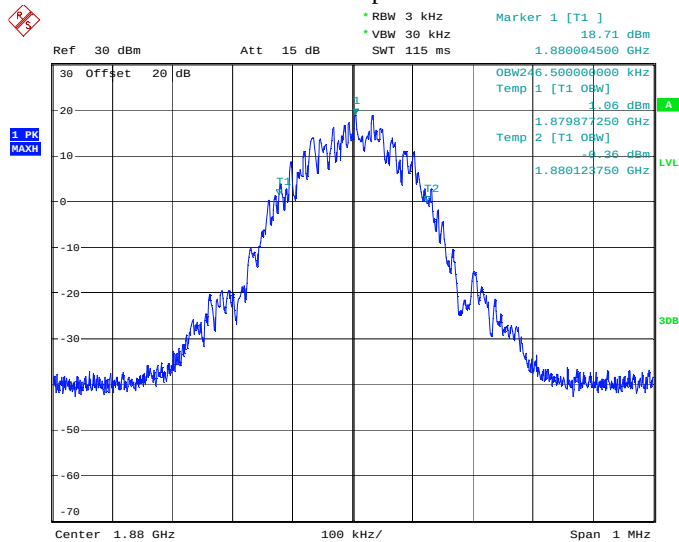
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Graph 3.15
Input/Output Bandwidth Comparison – GSM 1900 Channel 661, Up Link



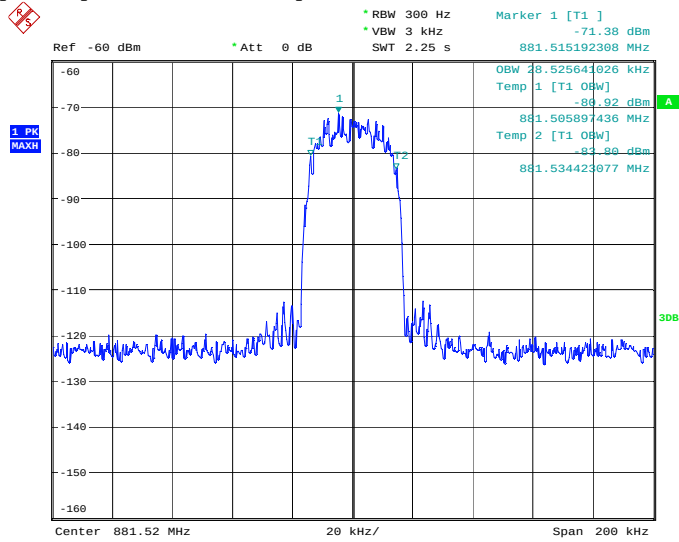
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Graph 3.16



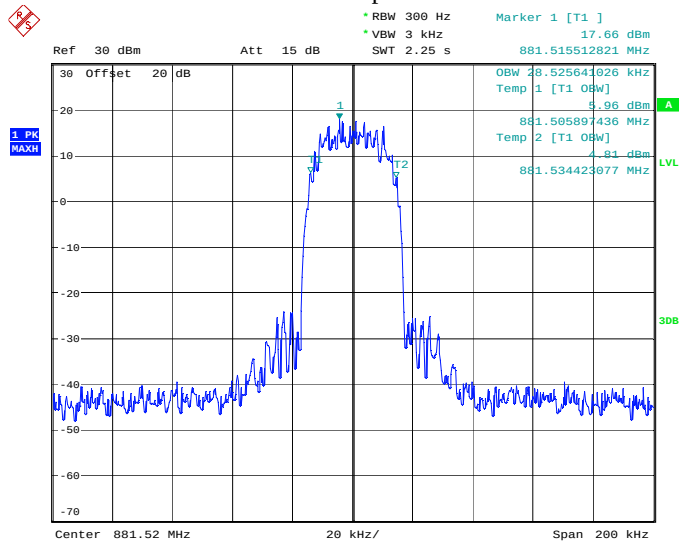
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Graph 3.17
Input/Output Bandwidth Comparison – TDMA Cell Channel 384, Down Link



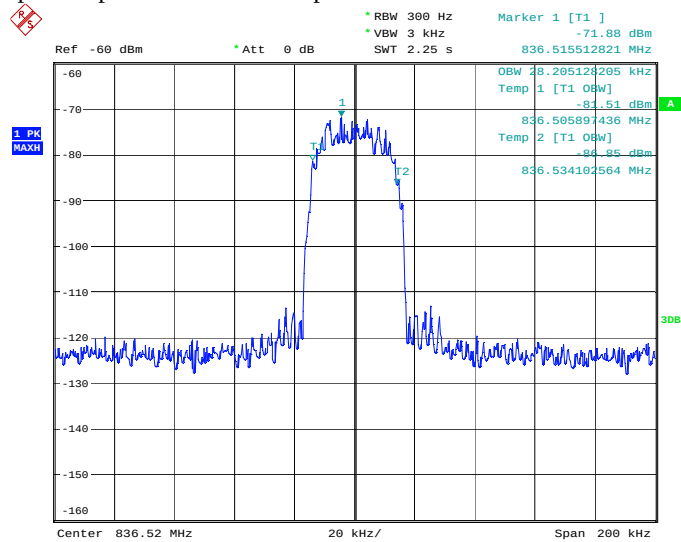
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Graph 3.18



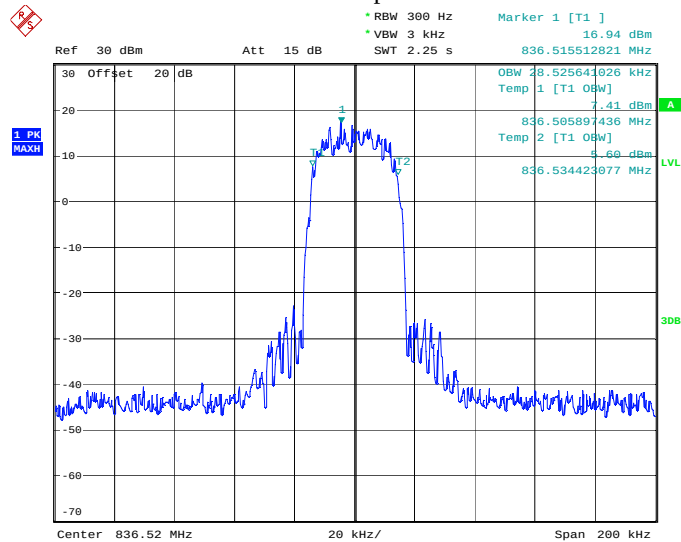
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Graph 3.19
Input/Output Bandwidth Comparison – TDMA Cell Channel 384, Up Link



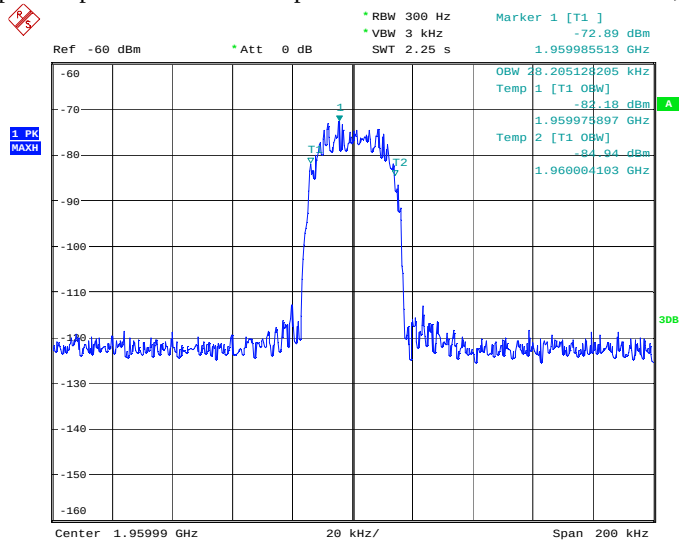
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Graph 3.20



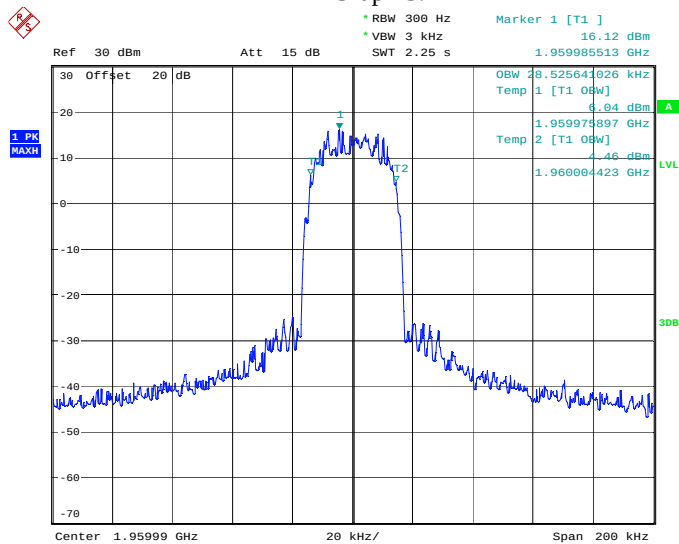
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Graph 3.21
Input/Output Bandwidth Comparison – TDMA PCS Channel 999, Down Link



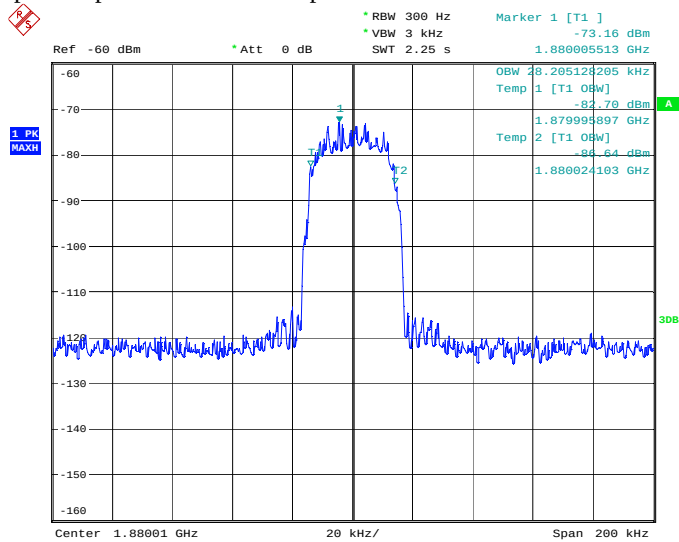
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Graph 3.22



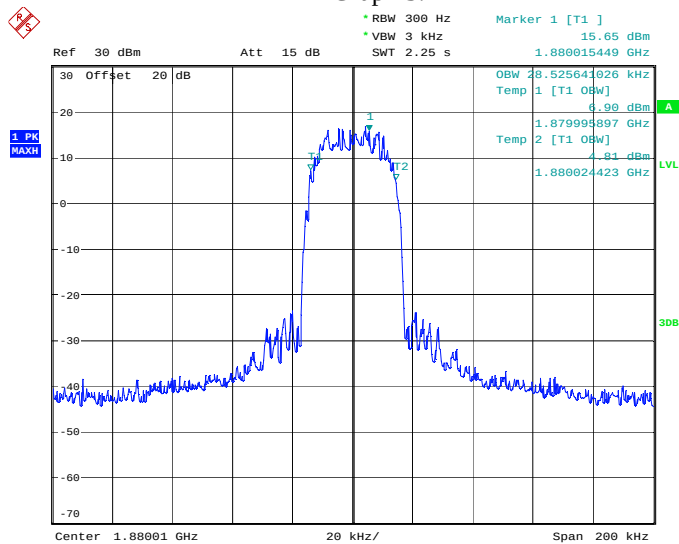
Date: 12.AUG.2009 17:14:54

Graph 3.23
Input/Output Bandwidth Comparison – TDMA PCS Channel 999, Up Link



Date: 12.AUG.2009 17:11:31

Graph 3.24



Date: 12.AUG.2009 17:09:35