HCT CO., LTD.
Product Compliance Division
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CERTIFICATE OF COMPLIANCE
FCC Certification

Applicant Name:	**Date of Issue:**
RF WINDOW Co.,Ltd.	January 31, 2010
Address:	**Location:**
14F, Daerung Posttower3, 182-4, Guro-3dong, Guro-gu, Seoul, 152-847, South Korea	HCT CO., LTD., San 136-1 Ami-ri, Bubal-eup, Icheon-si, Gyeonggi-do, Korea
	Test Report No.: HCTR1001FR09
	HCT FRN: 0005866421
	IC Recognition No.: IC 5944A-1

FCC ID	**: X4O-ICS-F0837**
APPLICANT	**: RF WINDOW Co.,Ltd.**

Model(s):	ICS-F0837
EUT Type:	ICS-Digital Relay
Uplink Frequency:	824 - 849 MHz (WCDMA/CDMA)
Downlink Frequency:	869 - 894 MHz (WCDMA/CDMA)
Max. RF Output Power:	0.5 W (Uplink), 5 W (Downlink)
Emission Designator(s):	F9W (WCDMA/CDMA)
FCC Rule Part(s):	Title 47 of CFR,Part 22

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has been denied FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Chang Seok Choi

Report prepared by
: Chang Seok Choi
Test engineer of RF Team

Approved by
: Sang Jun Lee
Manager of RF Team

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

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1. CLIENT INFORMATION

The EUT has been tested by request of

Company	**RF WINDOW Co.,Ltd.**
Contact Point	**14F, Daerung Posttower3, 182-4, Guro-3dong, Guro-gu, Seoul, 152-847, South Korea**

- **EUT Type:** **ICS-Digital Relay**
- **MODEL :** **ICS-F0837**
- **Frequency Ranges:** **824 ~ 849 MHz (Uplink_WCDMA/CDMA)**

  869 ~ 894 MHz (Downlink_WCDMA/CDMA)
- **RF Output Power:** **0.5 W (Uplink), 5 W (Downlink)**
- **FCC Rules Part(s):** **Title 47 of CFR, Part 22**
- **Emission Designators:** **F9W (WCDMA/CDMA)**
- **Modulation :** **QPSK (WCDMA/CDMA), 16QAM (HSDPA/1xEVDO)**
- **Place of Tests:** **HCT Co., Ltd.**

2. TEST SPECIFICATIONS

2.1 Standards

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance With **Part 22 Subpart H.**

Description	Reference (FCC)	Results
RF Power Output	§2.1046 §22.913	Compliant
Modulation Characteristics	§2.1047	N/A
Occupied Bandwidth	§2.1049	Compliant
Spurious Emissions at Antenna Terminals	§2.1051 §22.917	Compliant
Frequency Stability	§2.1055 §22.355	Compliant

3. STANDARDS ENVIRONMENTAL TEST CONDITIONS

Temperature :	**+ 15 ℃ to + 35 ℃**
Relative humidity:	**30 % to 60 %**
Air pressure	**860 mbar to 1060 mbar**

4. TEST EQUIPMENT

Manufacturer	Model / Equipment	Cal Interval	Calibration Due	Serial No.
Agilent	E4438C /Signal Generator	Annual	12/15/2011	MY42082646
Agilent	E4416A /Power Meter	Annual	01/14/2011	GB41291412
WEINSCHEL	67-30-33/ATTENUATOR	Annual	01/14/2011	BR0530
Schwarzbeck	VULB 9168/ TRILOG Antenna	Annual	01/06/2011	9168-200
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
MITEQ	AMF-60-0010 1800-35-20P	Annual	04/25/2010	1200937
Schwarzbeck	BBHA 9120D/ Horn Antenna	Annual	03/26/2010	147
Agilent	N9020A/ Signal Analyzer	Annual	02/19/2010	US46220219

5. RF OUTPUT POWER

5.1 Test Procedure

Test Requirements:

§ 2.1046 Measurements required: RF power output:

§ 2.1046 (a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in § 2.1033(c)(8).The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

§ 2.1046 (b) For single sideband, independent sideband, and single channel, controlled carrier radiotelephone transmitters, the procedure specified in paragraph (a) of this section shall be employed and, in addition, the transmitter shall be modulated during the test as specified and as applicable in § 2.1046 (b) (1-5). In all tests, the input level of the modulating signal shall be such as to develop rated peak envelope power or carrier power, as appropriate, for the transmitter.

§ 2.1046 (c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

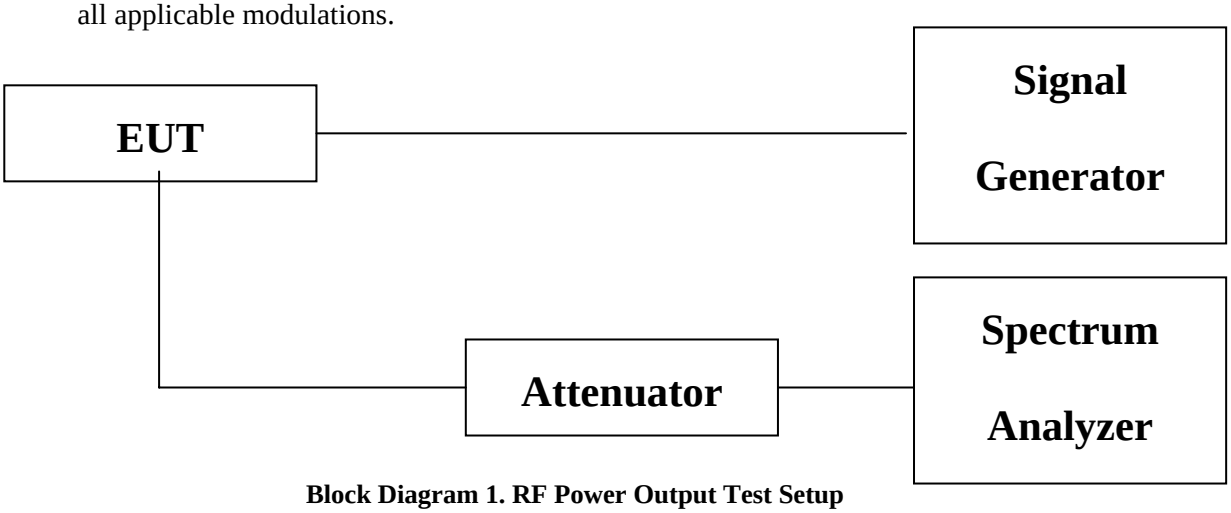
§ 22.913 Effective radiated power limits.

The effective radiated power (ERP) of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.

(a) Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts.

Test Procedures:

As required by 47 CFR 2.1046, RF power output measurements were made at the RF output terminals using an attenuator and spectrum analyzer or power meter. This test was performed in all applicable modulations.



Block Diagram 1. RF Power Output Test Setup

5.2 Test Results

(WCDMA)

CARRIER CHANNEL	DOWNLINK		UPLINK	
	Frequency (MHz)	Measured Power (dBm)	Frequency (MHz)	Measured Power (dBm)
Low	871.6	36.74	826.6	26.89
Mid	881.6	36.99	836.6	26.88
High	891.6	36.94	846.6	26.99

INPUT SIGNAL	DOWNLINK	UPLINK
Source	Test Model 1 w/64 DPCH	Test Model 1 w/64 DPCH
Power Level	- 63.1 dBm	- 73.6 dBm
Amplitude offset	30.90 dB	30.49 dB

(HSDPA)

CARRIER CHANNEL	DOWNLINK		UPLINK	
	Frequency (MHz)	Measured Power (dBm)	Frequency (MHz)	Measured Power (dBm)
Low	871.6	36.87	826.6	26.77
Mid	881.6	36.98	836.6	26.87
High	891.6	36.83	846.6	26.93

INPUT SIGNAL	DOWNLINK	UPLINK
Source	Test Model 5 w/64 DPCH	Test Model 5 w/64 DPCH
Power Level	- 63.1 dBm	- 73.6 dBm
Amplitude offset	30.90 dB	30.49 dB

(CDMA)

CARRIER CHANNEL	DOWNLINK		UPLINK	
	Frequency (MHz)	Measured Power (dBm)	Frequency (MHz)	Measured Power (dBm)
Low	869.63	36.88	824.63	27.07
Mid	881.50	36.92	836.50	26.91
High	893.37	36.57	848.37	26.86

INPUT SIGNAL	DOWNLINK	UPLINK
Source	Arb CDMA2000	Arb CDMA2000
Power Level	- 62.1 dBm	- 72.3 dBm
Amplitude offset	30.90 dB	30.49 dB

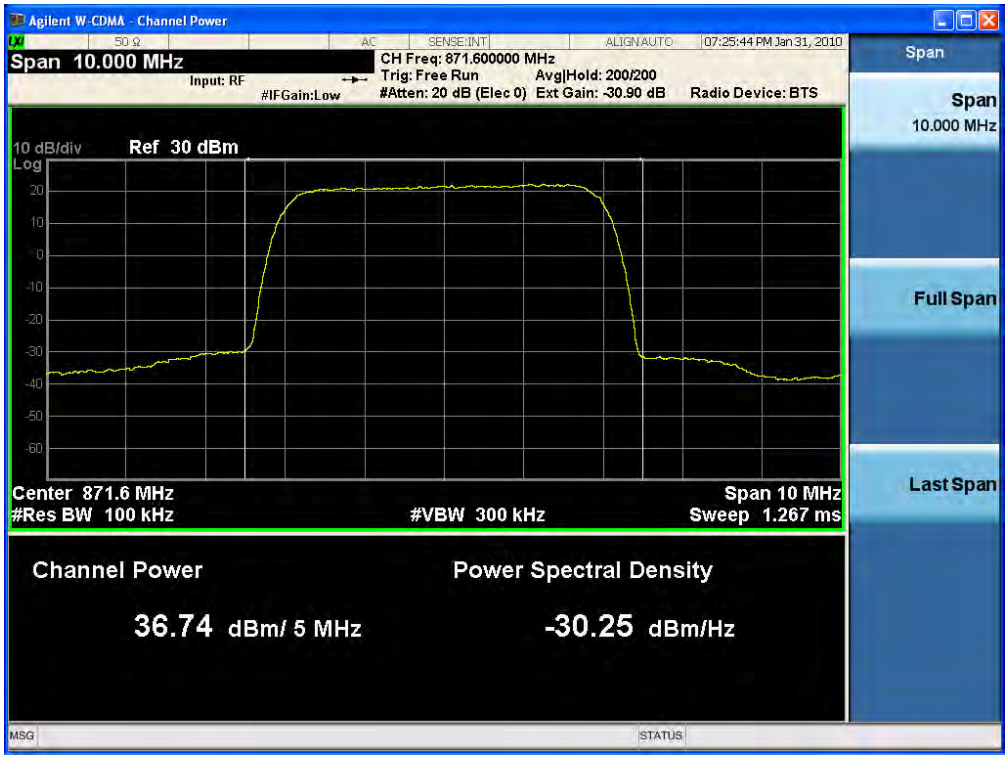
(EVDO)

CARRIER CHANNEL	DOWNLINK		UPLINK	
	Frequency (MHz)	Measured Power (dBm)	Frequency (MHz)	Measured Power (dBm)
Low	869.63	36.56	824.63	27.03
Mid	881.50	36.08	836.50	26.93
High	893.37	36.24	848.37	26.88

INPUT SIGNAL	DOWNLINK	UPLINK
Source	Arb 1xEVDO	Arb 1xEVDO
Power Level	- 62.1 dBm	- 72.3 dBm
Amplitude offset	30.90 dB	30.49 dB

Plots of RF Output Power

Downlink Low CH (WCDMA)

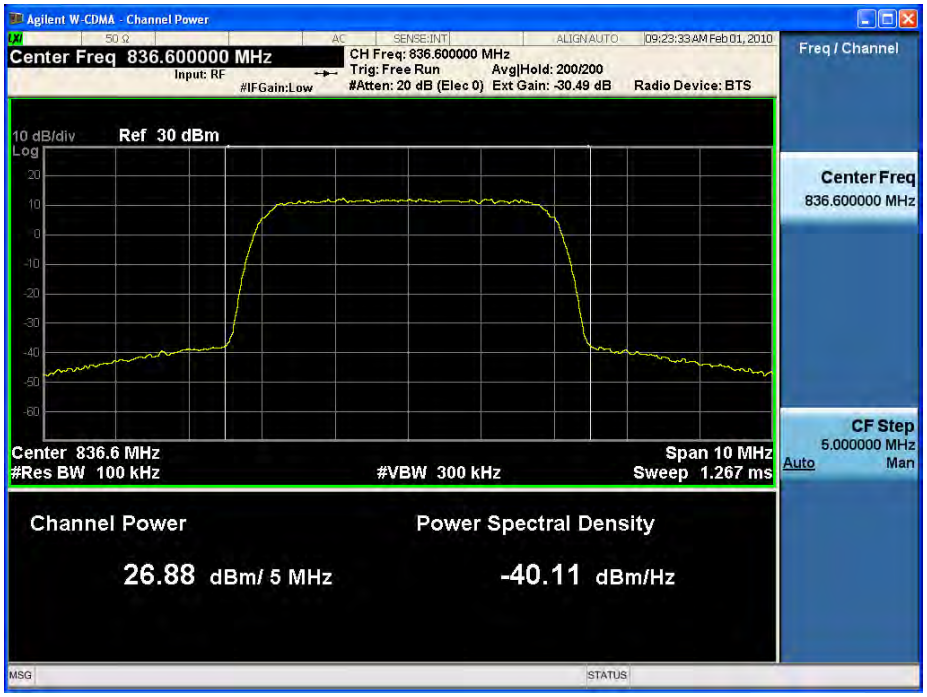


Downlink Middle CH (WCDMA)

Downlink High CH (WCDMA)

Uplink Low CH (WCDMA)

Uplink Middle CH (WCDMA)

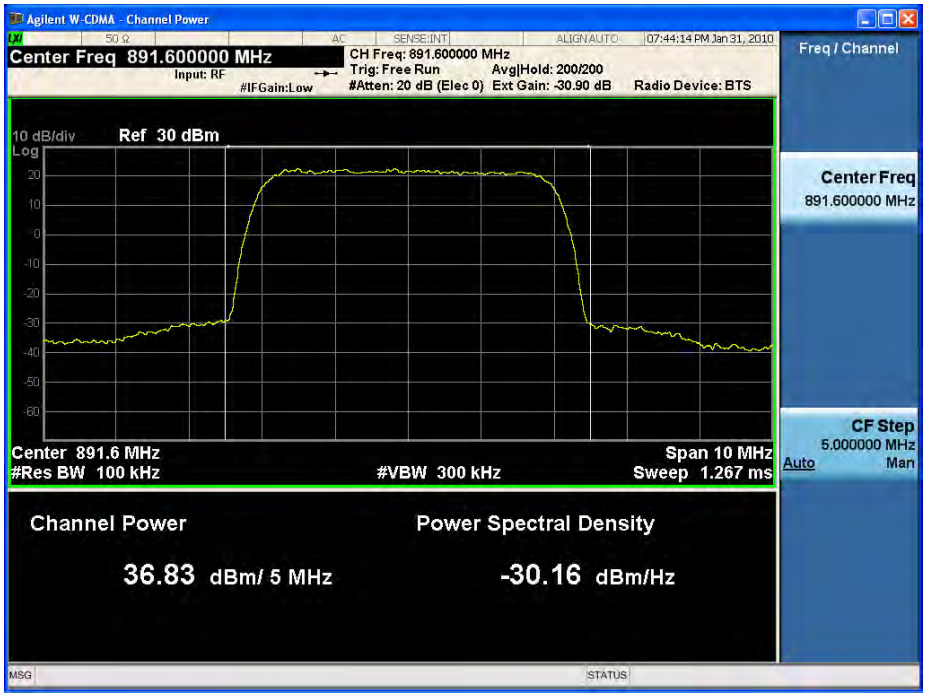


Uplink High CH (WCDMA)

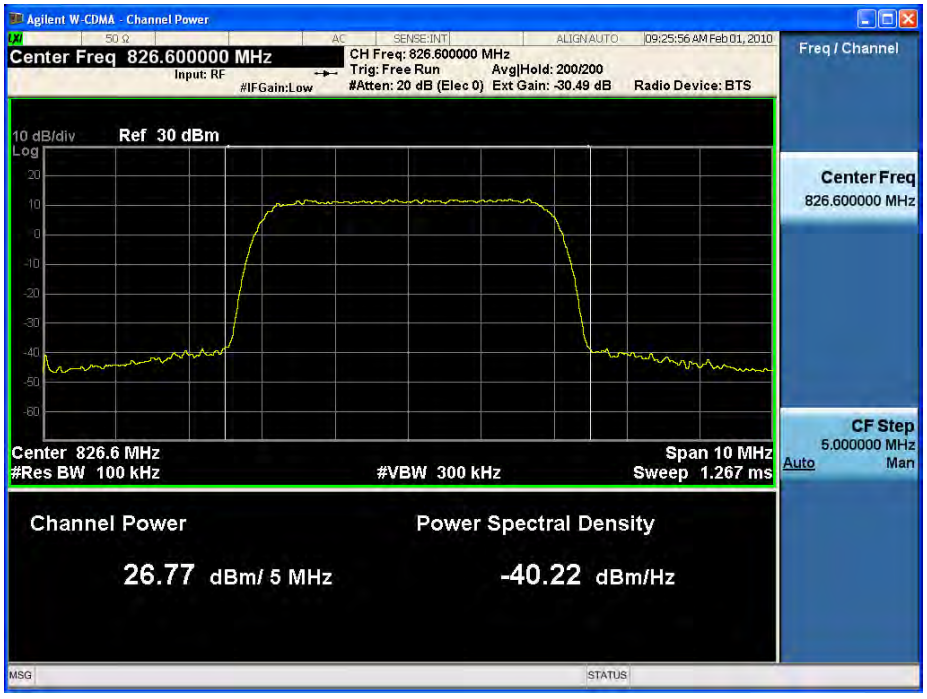
Downlink Low CH (WCDMA HSDPA)

Downlink Middle CH (WCDMA HSDPA)

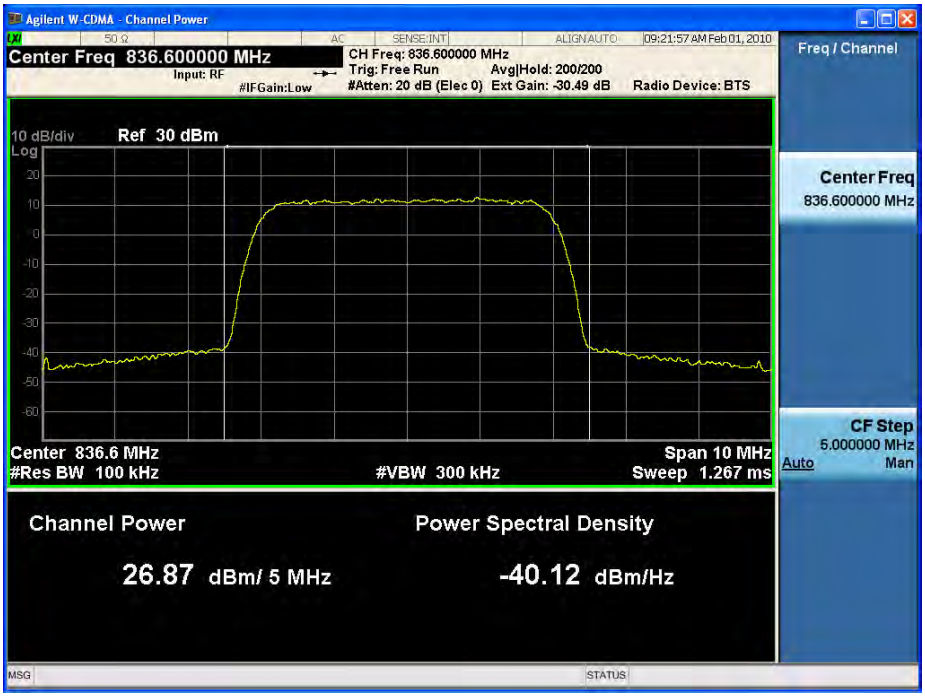
Downlink High CH (WCDMA HSDPA)



Uplink Low CH (WCDMA HSDPA)



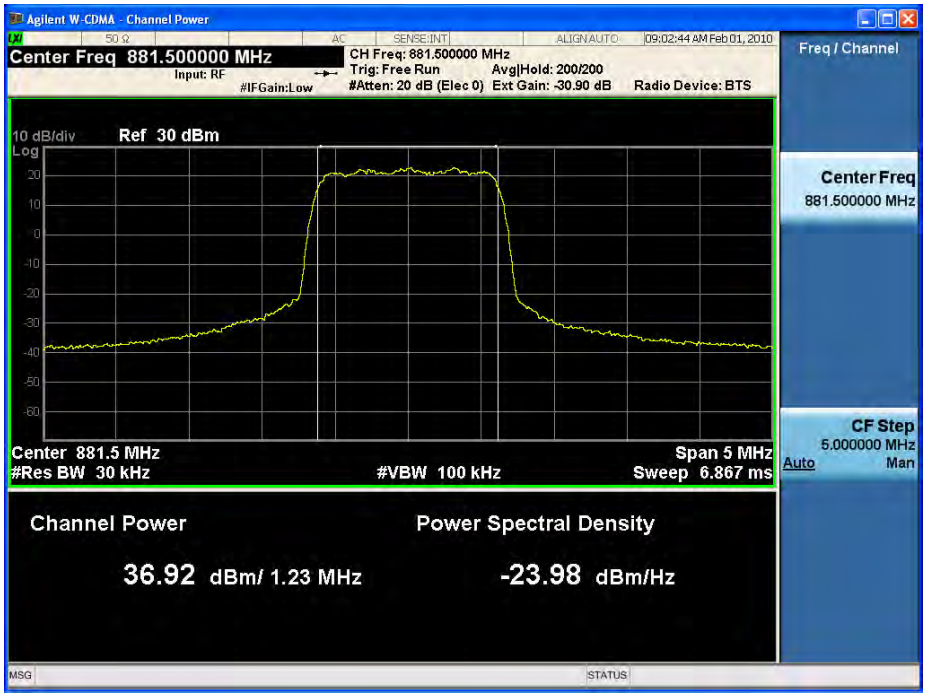
Uplink Middle CH (WCDMA HSDPA)



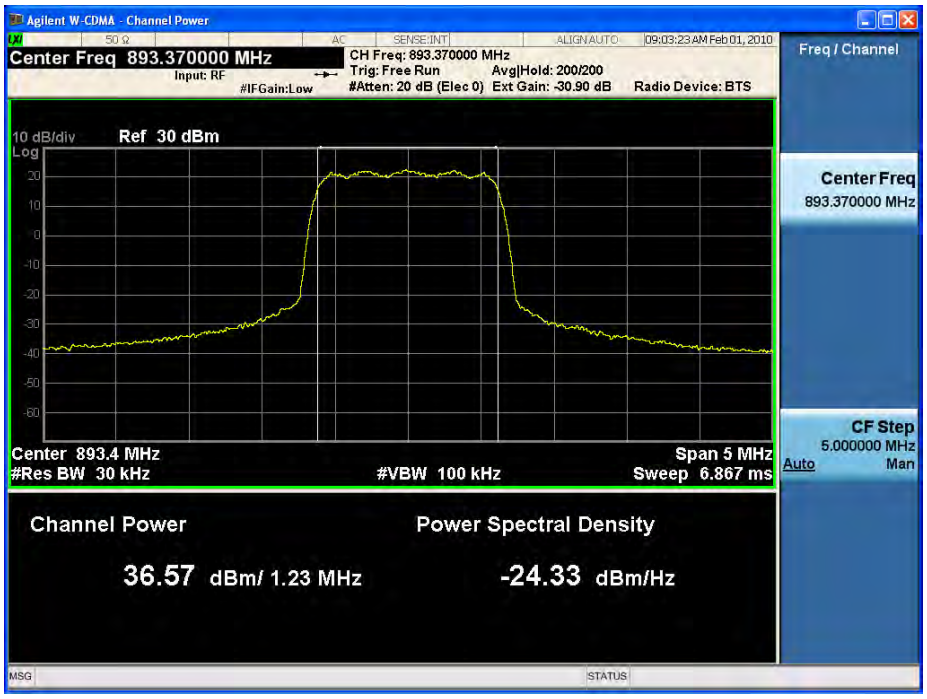
Uplink High CH (WCDMA HSDPA)

Downlink Low CH (CDMA)

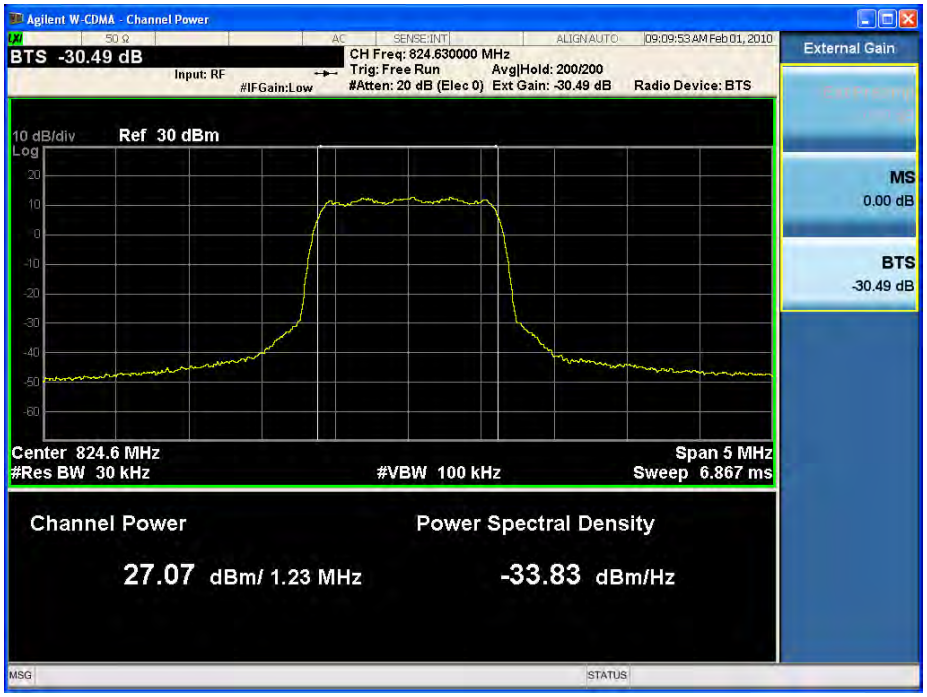
Downlink Middle CH (CDMA)



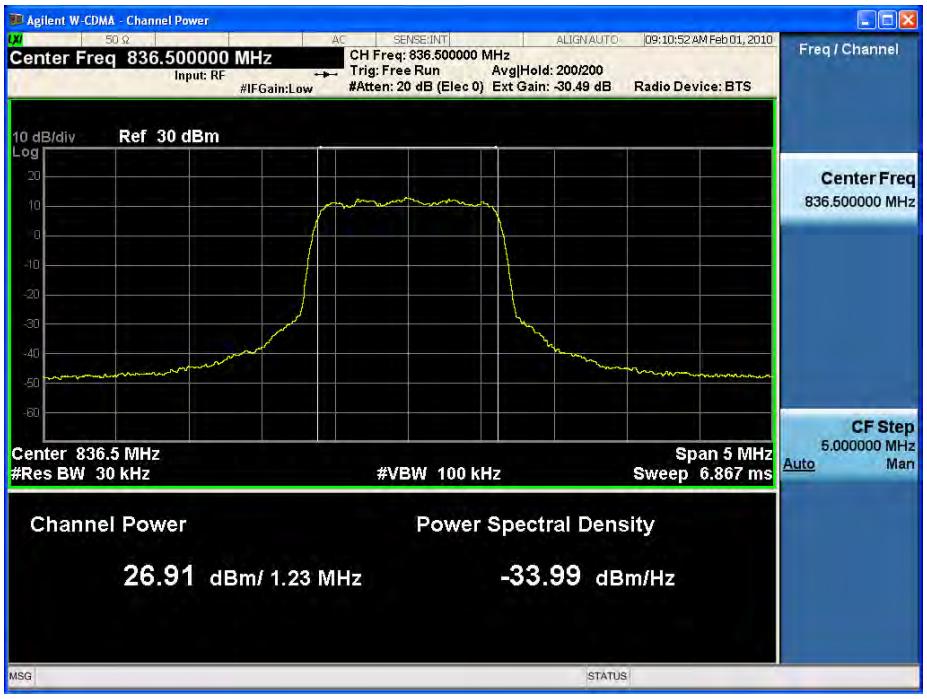
Downlink High CH (CDMA)



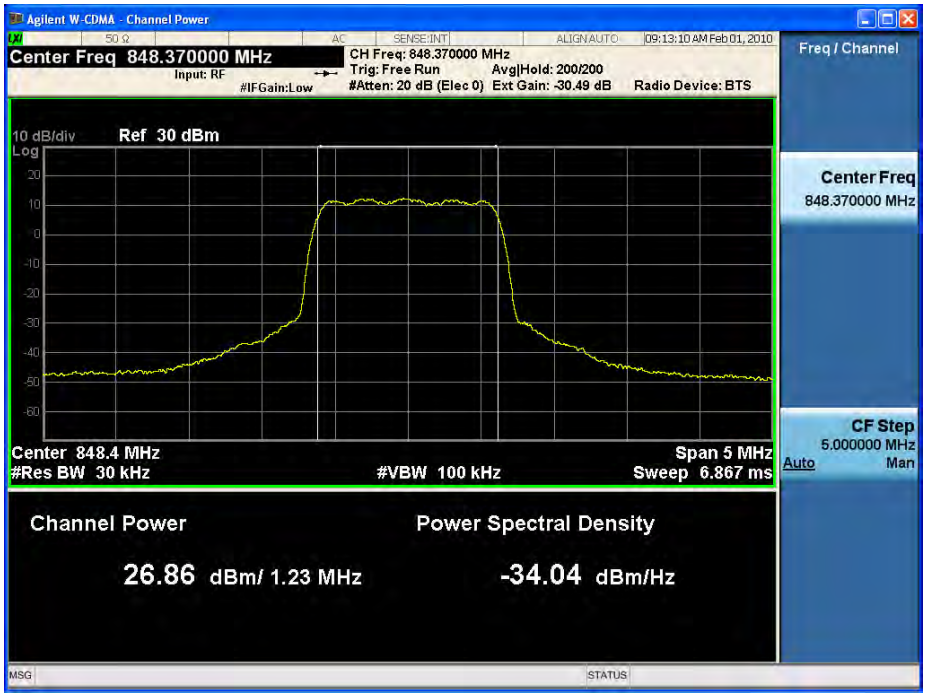
Uplink Low CH (CDMA)



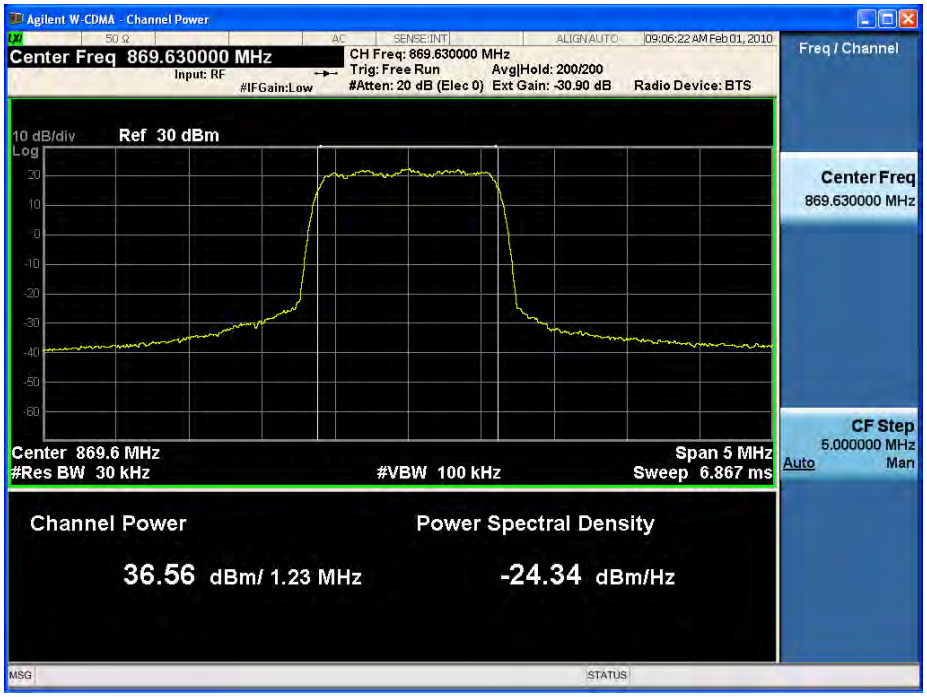
Uplink Middle CH (CDMA)



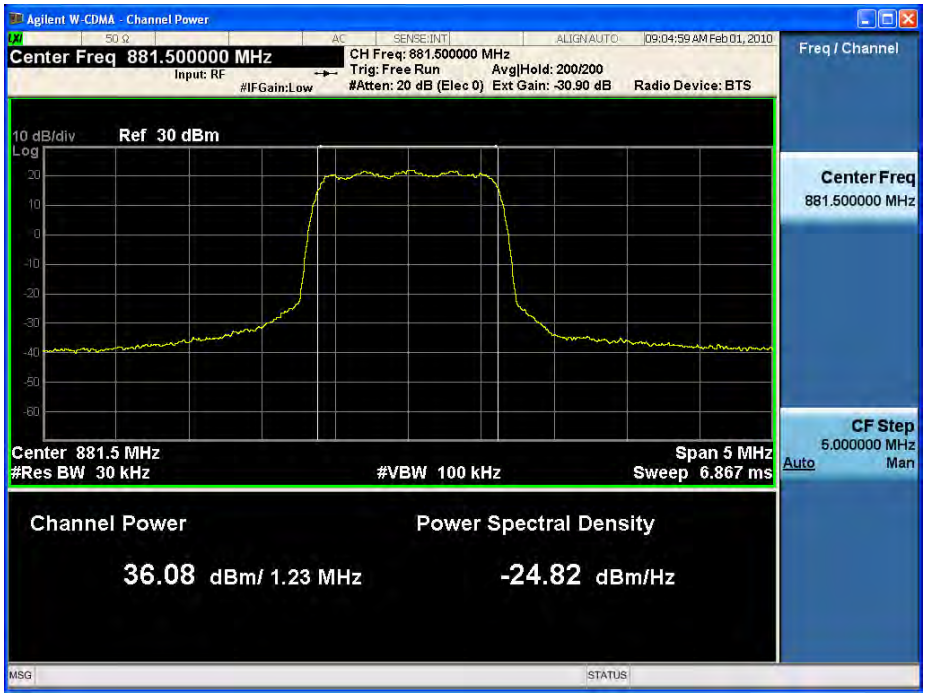
Uplink High CH (CDMA)



Downlink Low CH (CDMA EVDO)

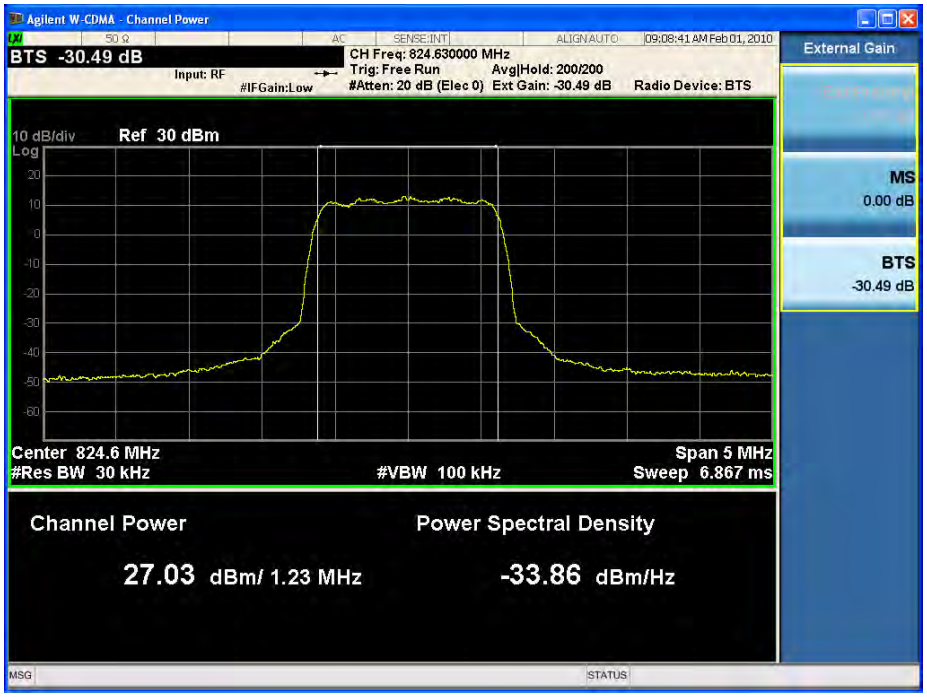


Downlink Middle CH (CDMA EVDO)



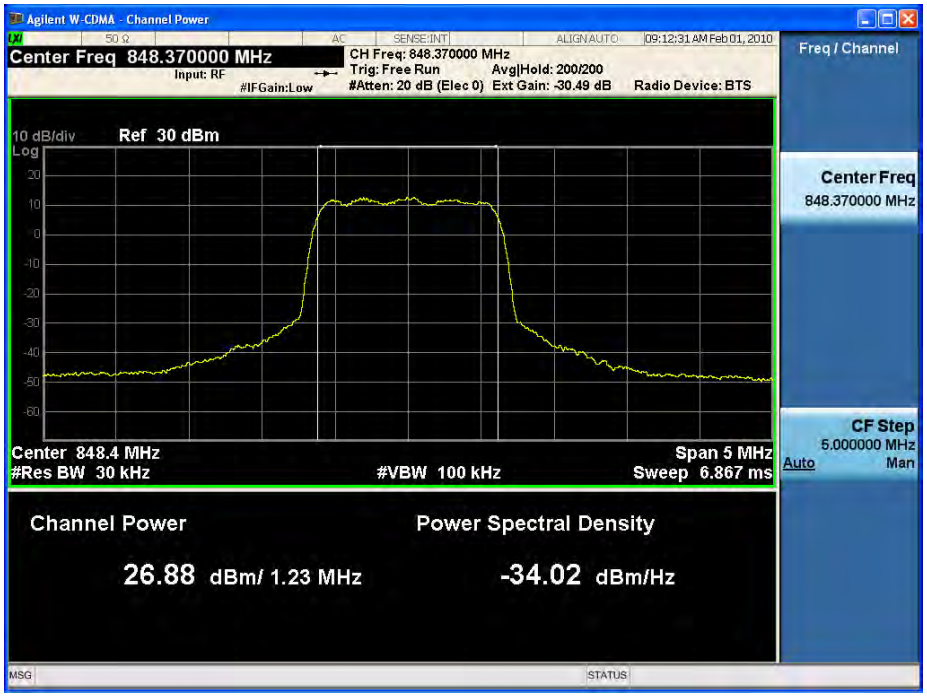
Downlink High CH (CDMA EVDO)

Uplink Low CH (CDMA EVDO)



Uplink Middle CH (CDMA EVDO)

Uplink High CH (CDMA EVDO)



6. OCCUPIED BANDWIDTH

6.1 Test Procedure

Test Requirement(s): § 2.1049 Measurements required: Occupied bandwidth:

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the specified conditions of § 2.1049 (a) through (i) as applicable.

Test Procedures: As required by 47 CFR 2.1049, *occupied bandwidth measurements* were made with a Spectrum Analyzer connected to the RF ports for both Uplink and Downlink

The modulation characteristics of signal generator's carrier was measured first at a maximum RF level prescribed by the OEM. The signal generator was then connected to either the Uplink or Downlink input at the appropriate RF level. The resulting modulated signal through the EUT was measured and compared against the original signal.

Test Results: The EUT complies with the requirements of this section.

(WCDMA)

CARRIER CHANNEL	DOWNLINK			UPLINK		
	Frequency (MHz)	Measured Bandwidth (MHz)		Frequency (MHz)	Measured Bandwidth (MHz)	
		99 %	26 dB		99 %	26 dB
Low	871.6	4.0186	4.524	826.6	4.0127	4.429
Mid	881.6	4.0229	4.550	836.6	4.0193	4.472
High	891.6	4.0260	4.533	846.6	4.0116	4.482

(WCDMA HSDPA)

CARRIER CHANNEL	DOWNLINK			UPLINK		
	Frequency (MHz)	Measured Bandwidth (MHz)		Frequency (MHz)	Measured Bandwidth (MHz)	
		99 %	26 dB		99 %	26 dB
Low	871.6	4.0205	4.525	826.6	4.0011	4.447
Mid	881.6	4.0222	4.529	836.6	4.0095	4.469
High	891.6	4.0237	4.531	846.6	4.0039	4.445

(CDMA)

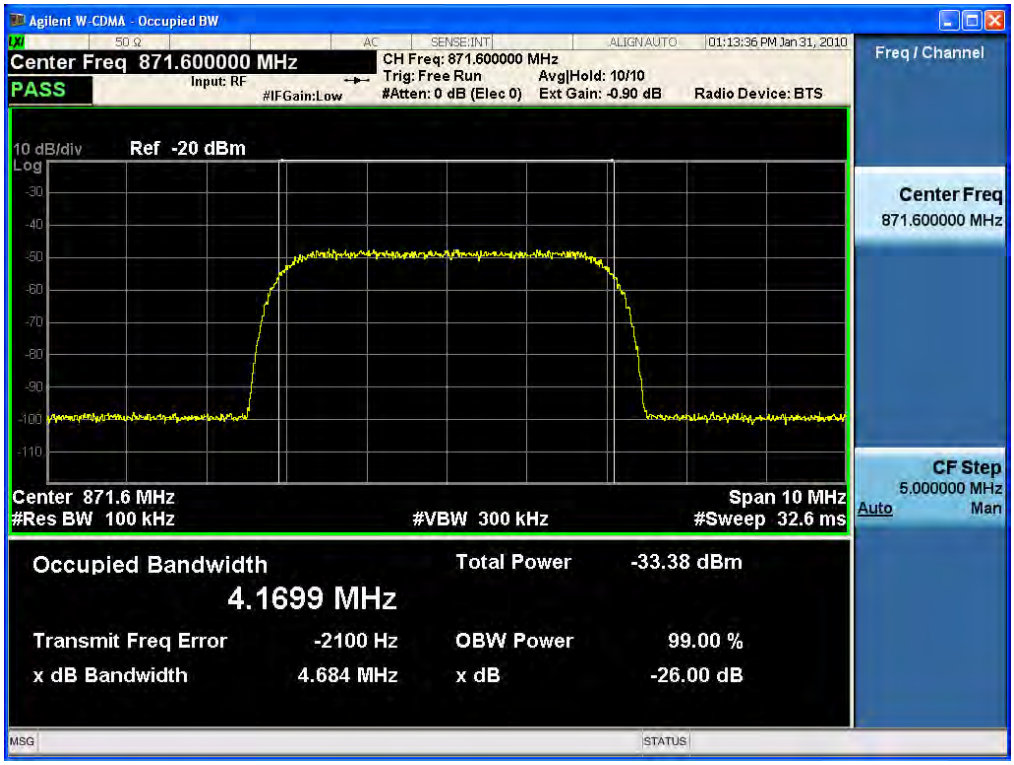
CARRIER CHANNEL	DOWNLINK			UPLINK		
	Frequency (MHz)	Measured Bandwidth (MHz)		Frequency (MHz)	Measured Bandwidth (MHz)	
		99 %	26 dB		99 %	26 dB
Low	869.63	1.2482	1.393	824.63	1.2435	1.383
Mid	881.50	1.2445	1.384	836.50	1.2424	1.391
High	893.37	1.2459	1.378	848.37	1.2538	1.386

(CDMA EVDO)

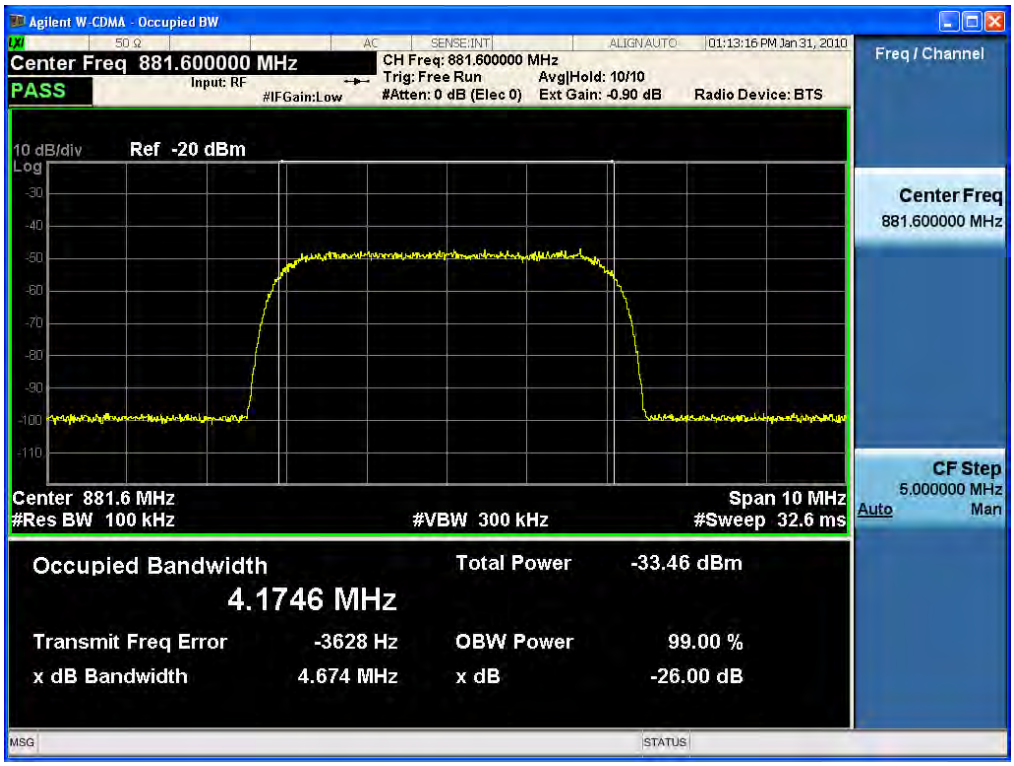
CARRIER CHANNEL	DOWNLINK			UPLINK		
	Frequency (MHz)	Measured Bandwidth (MHz)		Frequency (MHz)	Measured Bandwidth (MHz)	
		99 %	26 dB		99 %	26 dB
Low	869.63	1.2449	1.384	824.63	1.2460	1.382
Mid	881.50	1.2463	1.377	836.50	1.2527	1.384
High	893.37	1.2399	1.383	848.37	1.2413	1.385

Plots of Occupied Bandwidth

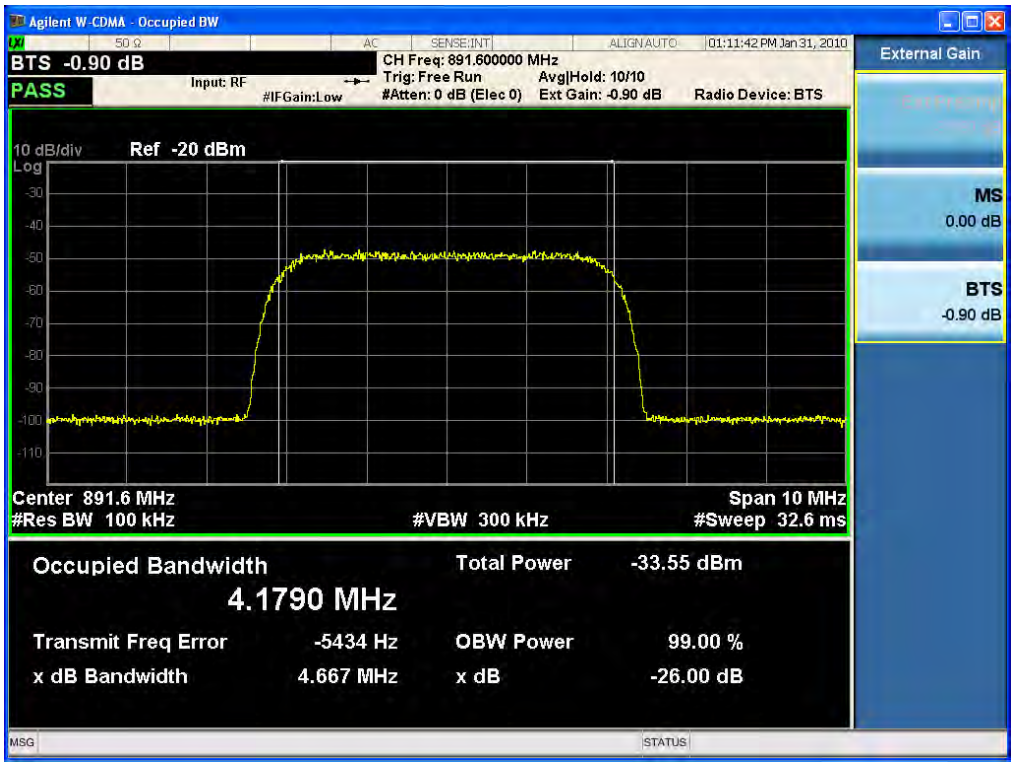
Downlink Low CH (WCDMA) Input Signal



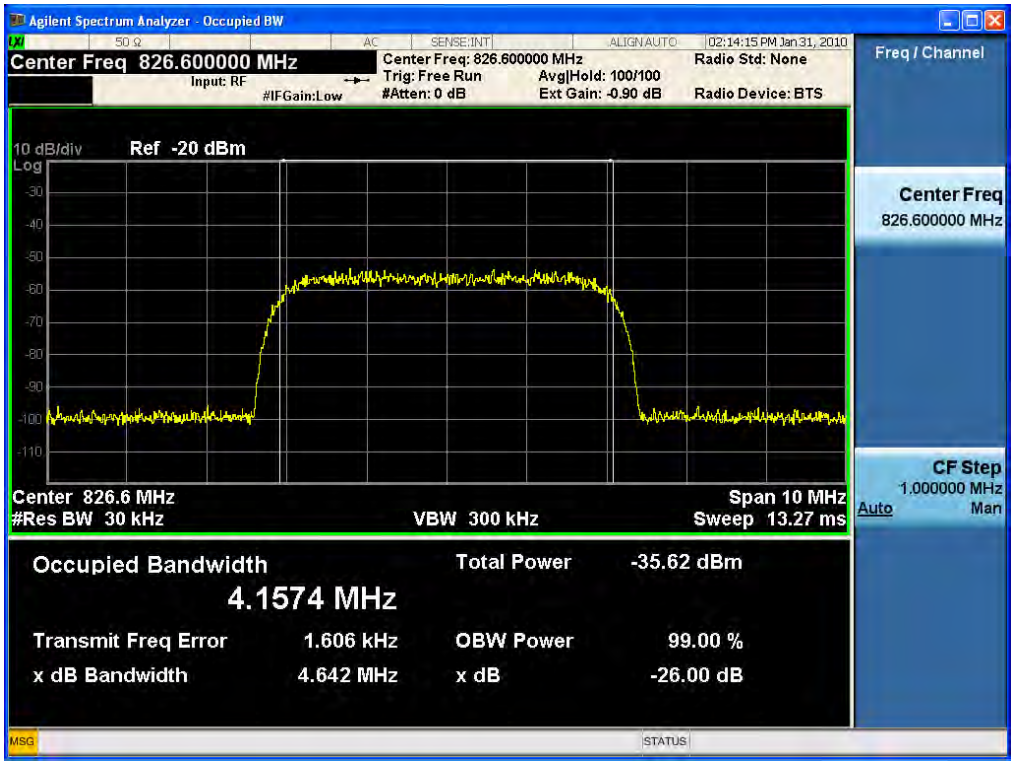
Downlink Mid CH (WCDMA) Input Signal



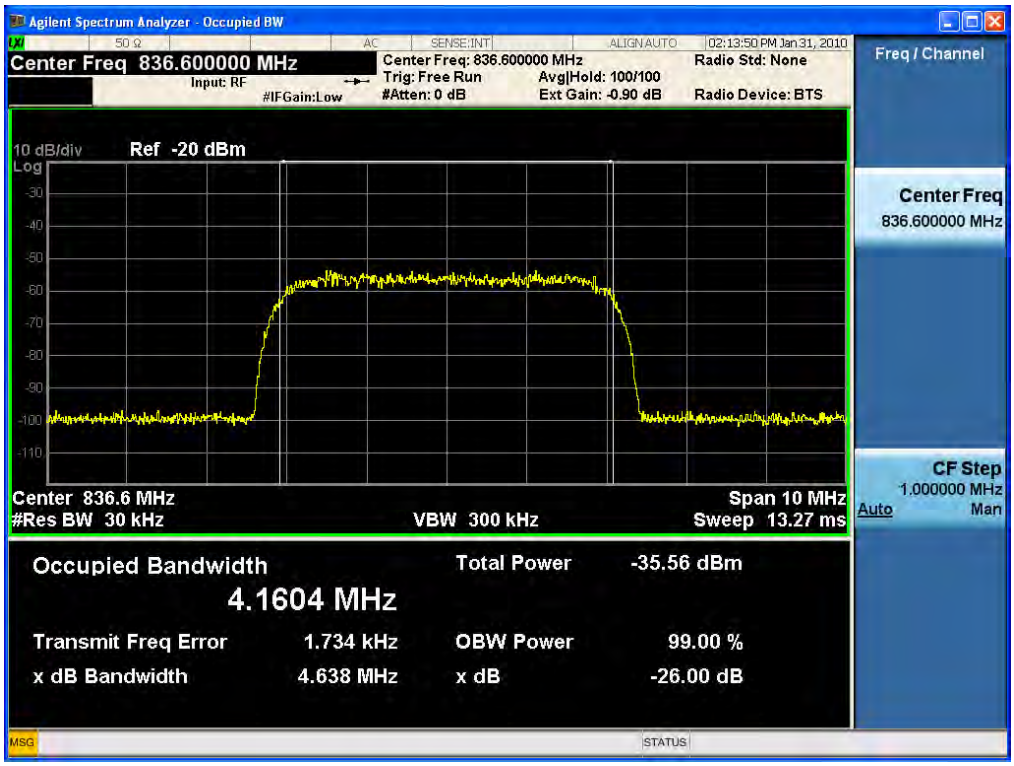
Downlink High CH (WCDMA) Input Signal



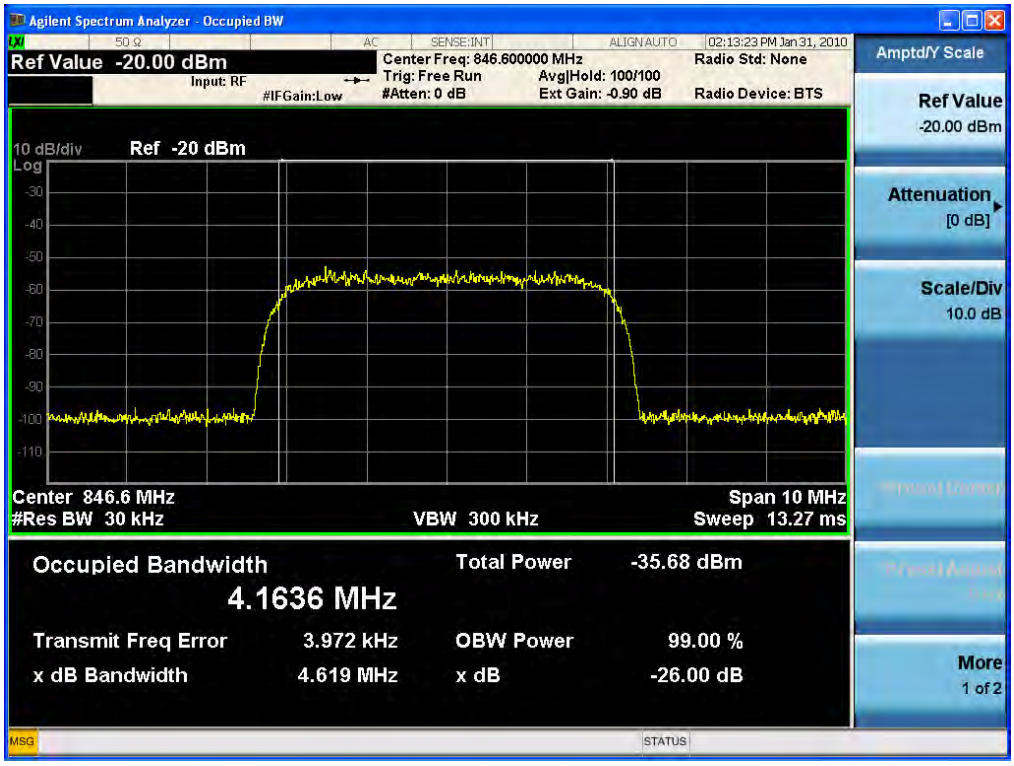
Uplink Low CH (WCDMA) Input Signal



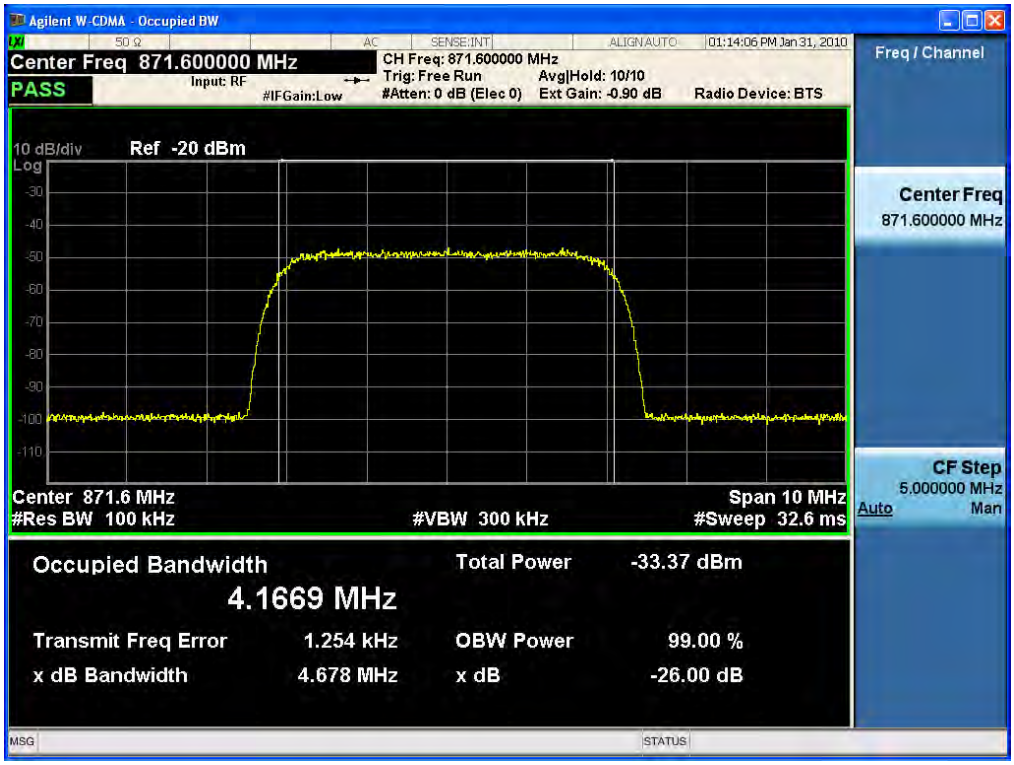
Uplink Mid CH (WCDMA) Input Signal



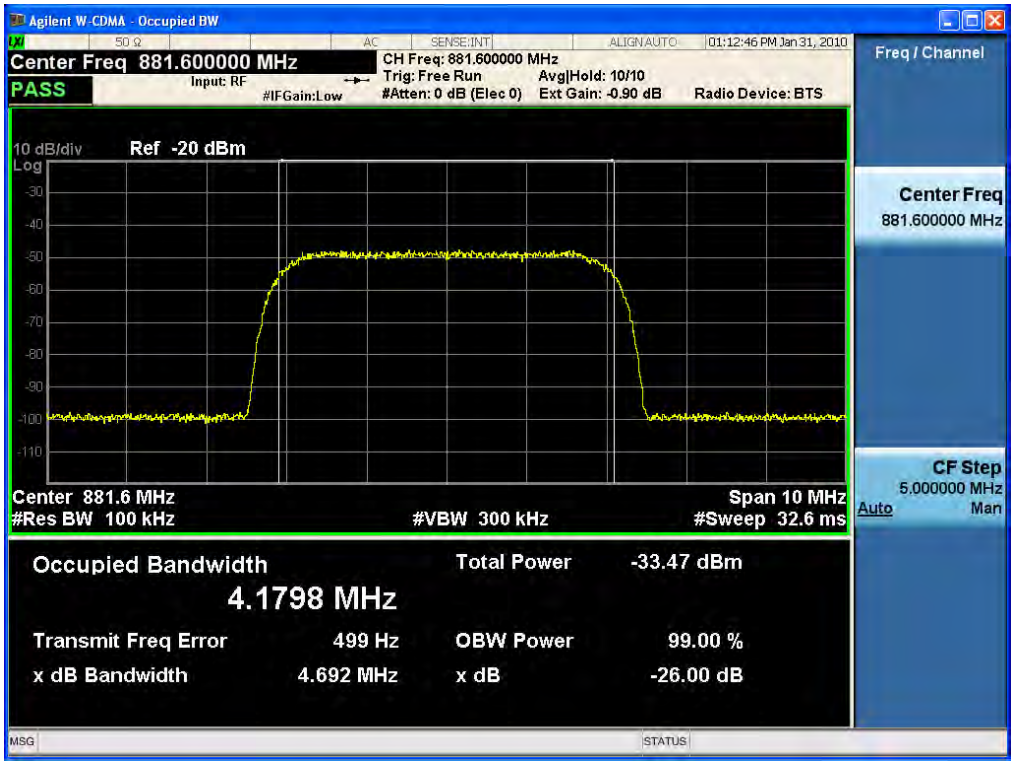
Uplink High CH (WCDMA) Input Signal



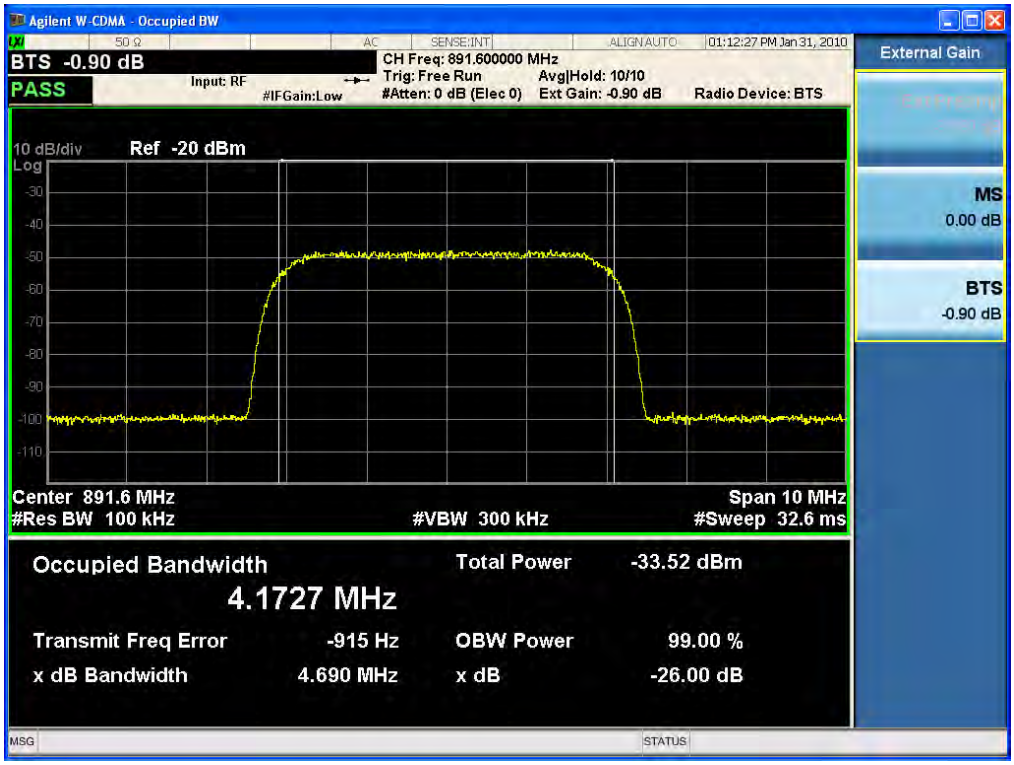
Downlink Low CH (WCDMA HSDPA) Input Signal



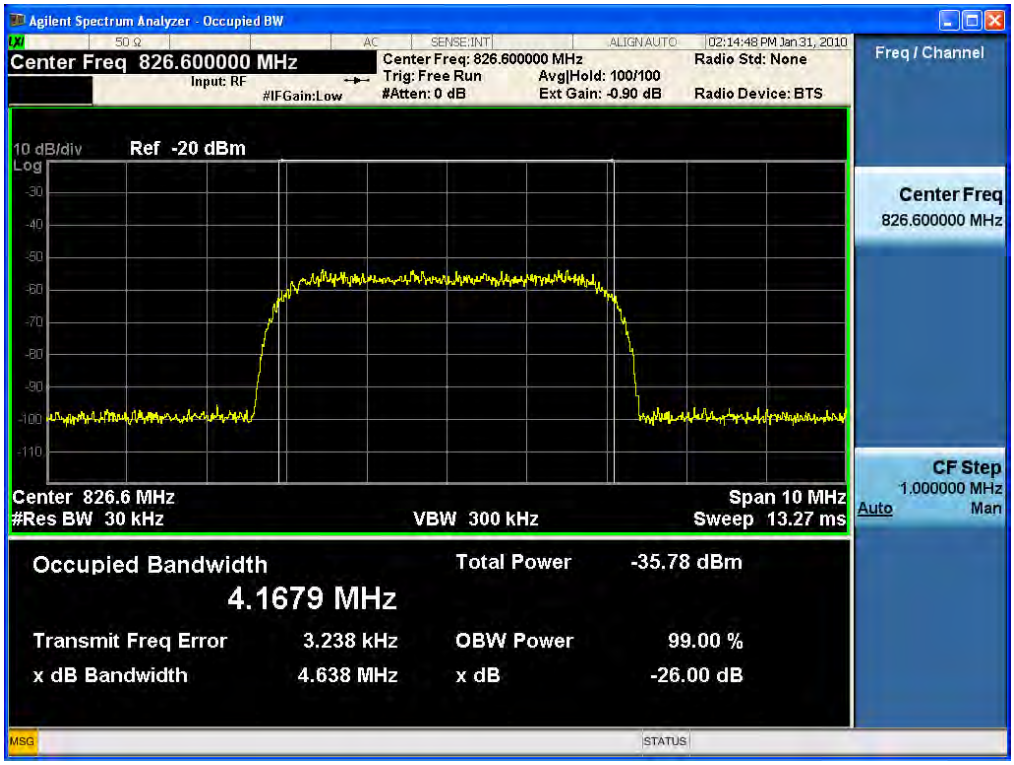
Downlink Mid CH (WCDMA HSDPA) Input Signal



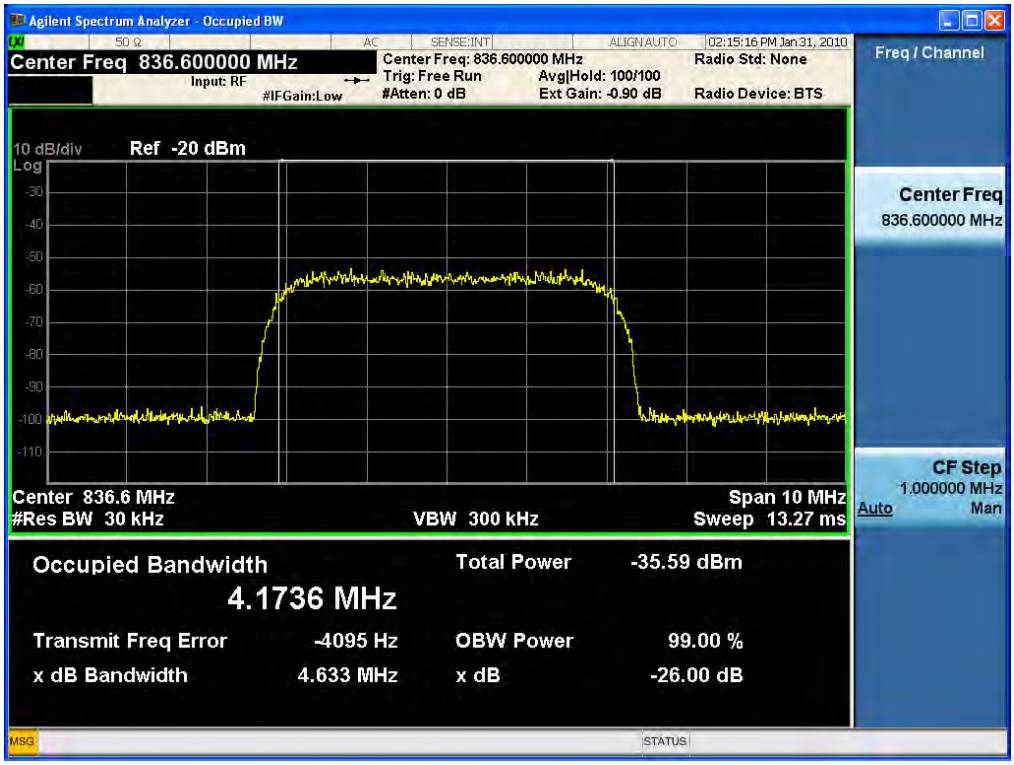
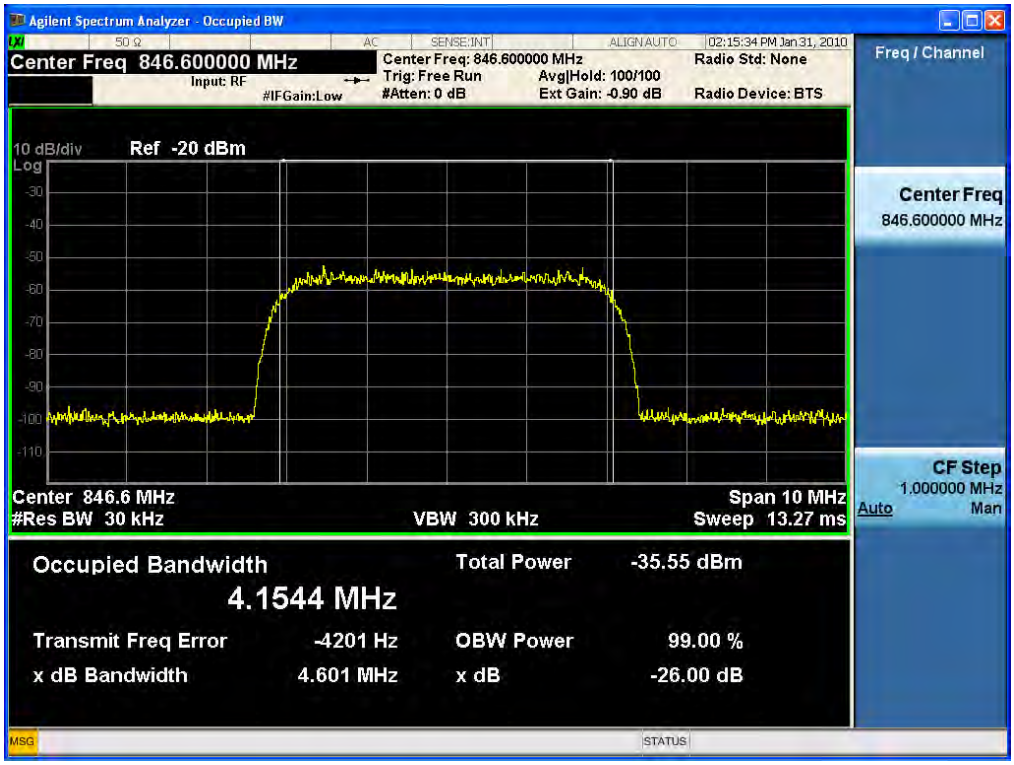
Downlink High CH (WCDMA HSDPA) Input Signal



Uplink Low CH (WCDMA HSDPA) Input Signal



Uplink Mid CH (WCDMA HSDPA) Input Signal



Uplink High CH (WCDMA HSDPA) Input Signal