

CERTIFICATE OF COMPLIANCE **FCC PART 22 CERTIFICATION**

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Applicant Name:

WIDE TELECOM INC.

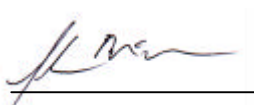
3551 Voyager St., Suite 103
Torrance, CA 90503
Attn: Matt Park, Sales Manager
Phone: 310-921-9737
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FCC Classification:	Licensed Non-Broadcast Transmitter Held to Ear (TNE)
FCC Rule Part(s):	§22.901(d), §2
FCC ID:	NPWWCH-101
Model(s):	WCH-101
Equipment Type:	Single-Mode CDMA Cellular Phone
Tx Frequency Range:	824.70 - 848.31 MHz
Rx Frequency Range:	869.70 - 893.31 MHz
Max. RF Output Power:	0.182 Watts (ERP)
Frequency Tolerance:	2.5 PPM
Emission Designator:	1M25F9W

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Celltech Research Inc. certifies that no party to this application has been denied FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).



Shawn McMillen
General Manager
Celltech Research Inc.



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MEASUREMENT REPORT - FCC PART 22.901(d)

1.1 SCOPE

Measurement and determination of electromagnetic emissions (EME) from radio frequency devices for compliance with the technical rules and regulations of the Federal Communications Commission.

§2.1033(a) General Information

<u>APPLICANT:</u> WIDE TELECOM INC. 3551 Voyager St., Suite 103 Torrance, CA 90503 Attn: Matt Park, Sales Manager Phone: 310-921-9737 Fax: 310-921-9686	
FCC ID	NPWWCH-101
Model(s)	WCH-101
EUT Type	Single-Mode CDMA Cellular Phone
Classification	Licensed Non-Broadcast Transmitter Held to Ear (TNE)
Rule Part(s)	§22.901(d), §2
Max. RF Output Power	0.182 Watts (ERP)
Tx Freq. Range	824.70 - 848.31 MHz
Rx Freq. Range	869.70 - 893.31 MHz
Emission Designator	1M25F9W
Modulation	CDMA
Battery Type(s)	3.6V Li-ion Standard Model: B1-LPS or 3.7V Li-ion Extended Model: B1-LIM

2.1 MEASUREMENT PROCEDURES

2.2 OCCUPIED BANDWIDTH - §2.1049(c)

The antenna output terminal of the EUT was connected to the input of a 50Ω spectrum analyzer through a matched 30dB attenuator. The radio transmitter was operating at maximum output power with and without internal data modulation. 100% of the in-band modulation was below the specified mask per §22.917.

Specified Limits:

- (a) On any frequency removed from the assigned carrier frequency by more than 20kHz, up to and including 45kHz, the sideband was at least 26dB below the carrier.
- (b) On any frequency removed from the assigned carrier frequency by more than 45kHz, up to and including 90kHz, the sideband was at least 45dB below the carrier.
- (c) On any frequency removed from the assigned carrier frequency by more than 90kHz, up to the first multiple of the carrier frequency, the sideband was at least 60dB below the carrier of $40 + \log_{10}$ (mean power output in Watts) dB, whichever was the smaller attenuation.

2.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL - §2.1051

The level of the carrier and the various conducted spurious and harmonic frequencies was measured by means of a calibrated spectrum analyzer. The spectrum was scanned from 10MHz to 20GHz. The transmitter was modulated with a 2500Hz tone at a level of 16dB greater than that required to provide 50% modulation. The antenna output terminal of the EUT was connected to the input of a 50Ω spectrum analyzer through a matched 30dB attenuator and coaxial cable. The transmitter was operating at maximum power with internal data modulation.

2.4 RADIATED SPURIOUS AND HARMONIC EMISSIONS - §2.1053

Radiated and harmonic emissions above 1 GHz were measured at our 3-meter outdoor site. The EUT was placed on the turntable with the transmitter transmitting into a non-radiating load. A receiving antenna located 3 meters from the turntable received any signal radiated from the transmitter and its operating accessories. The receiving antenna was varied from 1 to 4 meters and the polarization was varied (horizontal and vertical) to determine the worst-case emission level.

2.5 FREQUENCY STABILITY/TEMPERATURE VARIATION - §2.1055

The frequency stability of the transmitter was measured by:

- a) Temperature: The temperature was varied from -30°C to +60°C using an environmental chamber.
- b) Primary Supply Voltage: The primary supply voltage was varied from 85% to 115% of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied. The EUT was tested down to the battery endpoint.

Specification – The minimum frequency stability shall be +/- 0.00025% at any time during normal operation.

Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators was measured at room temperature (25°C to 27°C to provide a reference).
2. The equipment was subjected to an overnight “soak” at -30°C without any power applied.
3. After the overnight “soak” at -30°C (usually 14-16 hours), the equipment was turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter and the individual oscillators was made within a three-minute interval after applying power to the transmitter.
4. Frequency measurements were made at 10°C intervals up to +60°C, then back to room temperature. A minimum period of one and one half-hour was provided to allow stabilization of the equipment at each temperature level.

3.1 TEST DATA

3.2 EFFECTIVE RADIATED POWER OUTPUT - §2.1046

CDMA MODE

Frequency Tuned (MHz)	EUT Conducted Power (dBm)	Max. Field Strength of EUT (antenna extended) (dBm)		Dipole Gain (dBd)	Dipole Forward Conducted Power (dBm)	ERP of EUT Dipole Gain + Dipole Forward Conducted Power	
		V	H			(dBm)	Watts
824.70	23.4	- 16.18	- 14.92	- 1.44	24.05	22.61	0.182
835.89	23.3	- 14.59	- 13.33	- 1.34	22.48	21.14	0.130
848.31	22.8	- 15.41	- 14.15	- 1.24	21.92	20.68	0.117
824.70*	23.4	- 16.41	- 15.15	- 1.44	23.82	22.38	0.173

Notes:

1. ERP Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The spectrum analyzer was set to measure channel power for CDMA mode. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. A half-wave dipole was substituted in place of the EUT. The dipole was fed through a directional coupler and the power at the coupler port was monitored. A signal generator and power amplifier controlled the dipole, and the input level of the dipole was adjusted to the same field strength level as the EUT. The feed point for the dipole was then connected to a calibrated power meter and the power adjusted to read the same as the coupler port previously recorded, this is to account for any mismatch in impedance, which may occur at the dipole antenna. The conducted power at the antenna feed point was recorded. The forward power for the dipole was then determined and the ERP level was determined by adding the forward dipole power and the dipole gain in dB. For readings above 1GHz the above method is repeated using standard gain horn antennas.

2. ERP measurements were performed using the standard battery, except for * using the extended battery.

3.3 FIELD STRENGTH OF SPURIOUS RADIATION - §2.1053

Operating Frequency: 824.70 MHz
Channel: 1013 (Low)
Measured Conducted Power: 23.4 dBm
Modulation: CDMA (Internal)
Distance: 3 meters
Limit: $43 + 10 \log_{10}(W) = 37.48 \text{ dBc}$

800MHz CDMA MODE

Frequency (MHz)	Level (dBm)	Horn Forward Cond. Pwr. (dBm)	Standard-Gain Horn Antenna Gain (dBi)	POL (H/V)	EIRP (dBm)	ERP (dBm)	dBc
1649.40	≤ -73.01	-45.21	6.6	H	-36.47	-38.61	61.22
2474.10	≤ -81.36	-51.56	7.8	H	-41.62	-43.76	66.37
3298.80	≤ -93.17	-66.59	7.75	H	-56.70	-58.84	81.45
4123.50	≤ -104.13	-75.11	7.6	H	-65.37	-67.51	90.12
4948.20	≤ -104.56	-78.20	8.5	H	-67.56	-69.70	92.31
5772.90	≤ -104.29	-73.41	8.8	H	-62.47	-64.61	87.22
6597.60	≤ -103.48	-64.12	9.6	H	-52.38	-54.52	77.13
7422.30	≤ -101.32	-63.18	9.0	H	-52.04	-54.18	76.79
8247.00	≤ -103.04	-67.06	9.3	H	-55.62	-57.76	80.37

Radiated Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. A standard gain horn antenna was substituted in place of the EUT. The antenna was fed through a directional coupler and the power at the coupler port was monitored. A signal generator and power amplifier controlled the antenna, and the input level of the antenna was adjusted to the same field strength level as the EUT. The feed point for the antenna was then connected to a calibrated power meter and the power adjusted to read the same as the coupler port previously recorded, this is to account for any mismatch in impedance, which may occur at the horn antenna. The conducted power at the antenna feed point was recorded. The forward power for the antenna was then determined and the EIRP level was determined by adding the forward power and the antenna gain in dB.

800MHz CDMA MODE

Operating Frequency: 835.89 MHz
Channel: 363 (Mid)
Measured Conducted Power: 23.3 dBm
Modulation: CDMA (Internal)
Distance: 3 meters
Limit: $43 + 10 \log_{10}(W) = 37.48 \text{ dBc}$

Frequency (MHz)	Level (dBm)	Horn Forward Cond. Pwr. (dBm)	Standard-Gain Horn Antenna Gain (dBi)	POL (H/V)	EIRP (dBm)	ERP (dBm)	dBc
1671.78	≤ -75.54	-48.24	6.6	H	-39.50	-41.64	62.78
2507.67	≤ -83.29	-50.95	7.8	H	-41.01	-43.15	64.29
3343.56	≤ -106.54	-78.60	7.75	H	-68.71	-70.85	91.99
4179.45	≤ -105.55	-76.22	7.6	H	-66.48	-68.62	89.76
5015.34	≤ -106.85	-78.13	8.5	H	-67.49	-69.63	90.77
5851.23	≤ -102.11	-66.25	8.8	H	-55.31	-57.45	78.59
6687.12	≤ -105.00	-73.72	9.6	H	-61.98	-64.12	85.26
7523.01	≤ -104.16	-64.21	9.0	H	-53.07	-55.21	76.35
8358.90	≤ -108.54	-74.07	9.3	H	-62.63	-64.77	85.91

Radiated Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. A standard gain horn antenna was substituted in place of the EUT. The antenna was fed through a directional coupler and the power at the coupler port was monitored. A signal generator and power amplifier controlled the antenna, and the input level of the antenna was adjusted to the same field strength level as the EUT. The feed point for the antenna was then connected to a calibrated power meter and the power adjusted to read the same as the coupler port previously recorded, this is to account for any mismatch in impedance, which may occur at the horn antenna. The conducted power at the antenna feed point was recorded. The forward power for the antenna was then determined and the EIRP level was determined by adding the forward power and the antenna gain in dB.

800MHz CDMA MODE

Operating Frequency: 848.31 MHz
Channel: 777 (High)
Measured Conducted Power: 22.8 dBm
Modulation: CDMA (Internal)
Distance: 3 meters
Limit: $43 + 10 \log_{10} (W) = 37.48 \text{ dBc}$

Frequency (MHz)	Level (dBm)	Horn Forward Cond. Pwr. (dBm)	Standard-Gain Horn Antenna Gain (dBi)	POL (H/V)	EIRP (dBm)	ERP (dBm)	dBc
1697.40	≤ -73.77	-47.03	6.6	H	-38.29	-40.43	61.11
2546.10	≤ -82.95	-51.81	7.8	H	-41.87	-44.01	64.69
3394.80	≤ -105.57	-79.50	7.75	H	-69.61	-71.75	92.43
4243.50	≤ -106.00	-76.86	7.6	H	-67.12	-69.26	89.94
5092.20	≤ -104.74	-79.12	8.5	H	-68.48	-70.62	91.30
5940.90	≤ -104.82	-73.82	8.8	H	-62.88	-65.02	85.70
6789.60	≤ -102.70	-64.54	9.6	H	-52.80	-54.94	75.62
7638.30	≤ -104.04	-67.38	9.0	H	-56.24	-58.38	79.06
8487.00	≤ -103.00	-66.95	9.3	H	-55.51	-57.65	78.33

Radiated Measurements by Substitution Method:

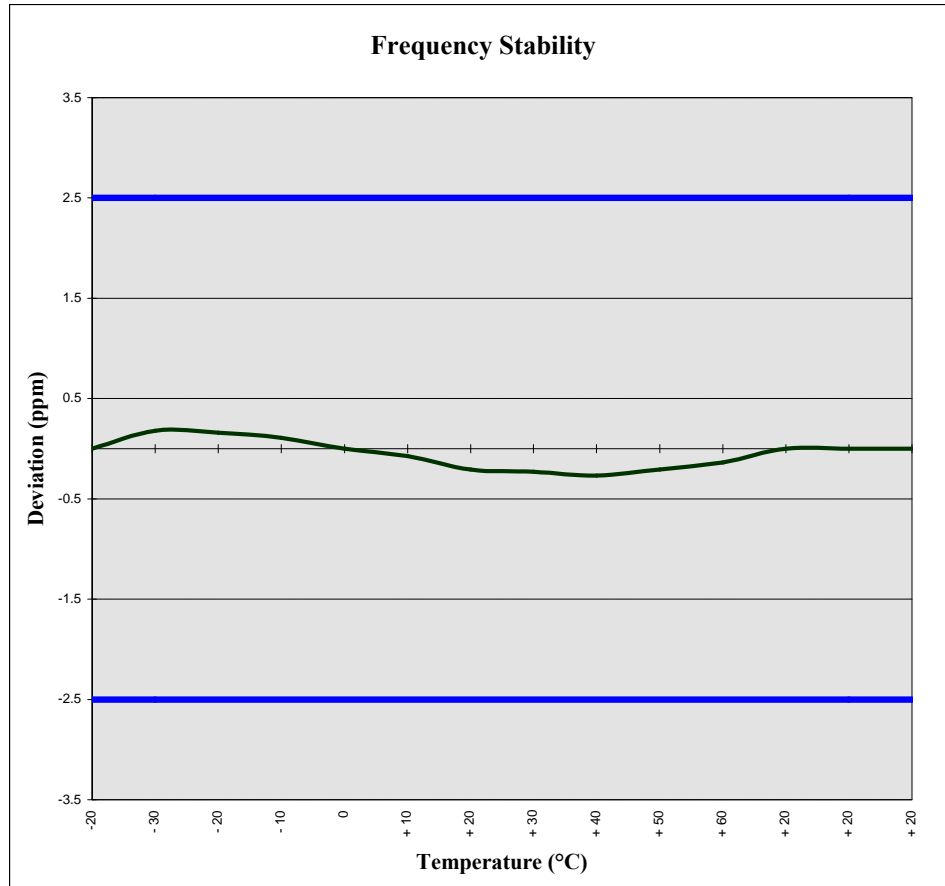
The EUT was placed on a turntable 3-meters from the receive antenna. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. A standard gain horn antenna was substituted in place of the EUT. The antenna was fed through a directional coupler and the power at the coupler port was monitored. A signal generator and power amplifier controlled the antenna, and the input level of the antenna was adjusted to the same field strength level as the EUT. The feed point for the antenna was then connected to a calibrated power meter and the power adjusted to read the same as the coupler port previously recorded, this is to account for any mismatch in impedance, which may occur at the horn antenna. The conducted power at the antenna feed point was recorded. The forward power for the antenna was then determined and the EIRP level was determined by adding the forward power and the antenna gain in dB.

3.4 FREQUENCY STABILITY - § 2.1055

Operating Frequency: 835,890,000 Hz
Channel: 363
Reference Voltage: 3.6 VDC
Deviation Limit: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQ. (Hz)	Deviation (%)
100 %	3.60	+ 20 (Ref)	835890000	0.00000000
100 %		- 30	835889850	0.00000018
100 %		- 20	835889865	0.00000016
100 %		- 10	835889910	0.00000011
100 %		0	835890001	0.00000000
100 %		+ 10	835890063	-0.00000008
100 %		+ 20	835890175	-0.00000021
100 %		+ 30	835890193	-0.00000023
100 %		+ 40	835890223	-0.00000027
100 %		+ 50	835890173	-0.00000021
100 %		+ 60	835890114	-0.00000014
85 %	3.14	+ 20	835890000	0.00000000
115 %	4.25	+ 20	835890000	0.00000000
BATT. ENDPOINT	2.40	+ 20	835890000	0.00000000

FREQUENCY STABILITY - § 2.1055



4.1 TEST EQUIPMENT

<u>Type</u>	<u>Model</u>	<u>Calib. Date</u>	<u>Serial No.</u>
HP Signal Generator	8648D (9kHz-4.0GHz)	Nov 1999	3847A00611
Rohde & Schwarz Signal Generator	SMR40 (10MHz-40GHz)	Nov 2000	835537/022
Gigatronics Power Meter	8652A	Oct 1999	1835272
Gigatronics Power Sensor (2)	80701A (0.05-18GHz)	Oct 1999	1833535, 1833542
Amplifier Research Power Amp. 5S1G4 (5W, 800MHz-4.2GHz)		N/A	26235
Microwave System Amplifier	HP 83017A (0.5-26.5GHz)	N/A	3123A00587
Network Analyzer	HP 8753E (30kHz-3GHz)	Nov 1999	US38433013
Audio Analyzer	HP 8903B	March 1999	3729A18691
Modulation Analyzer	HP 8901A	March 1999	3749A07154
Frequency Counter	HP 53181A (3GHz)	May 1999	3736A05175
DC Power Supply	HP E3611A	N/A	KR83015294
Multi-Device Controller	EMCO 2090	N/A	9912-1484
Mini Mast	EMCO 2075	N/A	0001-2277
Turntable	EMCO 2080-1.2/1.5	N/A	0002-1002
Double Ridged Horn Antenna	ETS 3115 (1-18GHz)	Oct. 2000	6267
Double Ridged Horn Antenna	ETS 3115 (1-18GHz)	Oct. 2000	6276
Horn Antenna	Chase BBHA 9120-A (0.7-4.8GHz)	Sept 1998	9120A-239
Horn Antenna	Chase BBHA 9120-A (0.7-4.8GHz)	Sept 1998	9120A-240
Roberts Dipoles	Compliance Design (2 sets) 3121C	June 2000	
Spectrum Analyzer	HP 8594E	March 2000	3543A02721
Spectrum Analyzer	HP E4408B	Nov 1999	US39240170
Shielded Screen Room	Lindgren R.F. 18W-2/2-0	N/A	16297
Environmental Chamber	ESPEC ECT-2 (Temperature/Humidity)	Feb 2000	0510154-B

5.1 CONCLUSION

The data in this measurement report shows that the Wide Telecom Inc. Model: WCH-101 Single-Mode CDMA Cellular Phone FCC ID: NPWWCH-101 complies with all the requirements of Parts 2 and 22.901(d) of the FCC rules.

TEST PLOTS



15:00:42 Nov 14, 2000

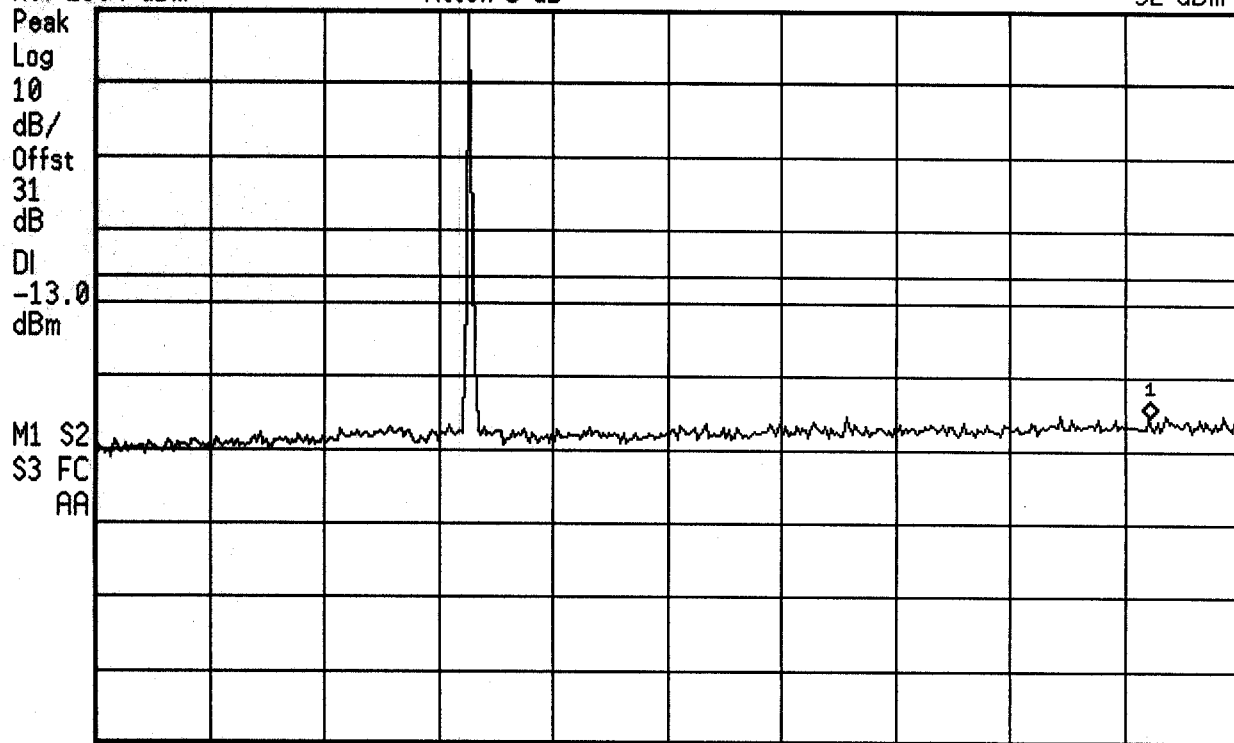
WCH-101 COND SPURS CH 1013

Ref 23.4 dBm

Atten 5 dB

Mkr1 2.307 GHz

-32 dBm



Start 10 MHz

*Res BW 1 MHz

VBW 1 MHz

Stop 2.5 GHz

Sweep 6.225 ms

15:01:05 Nov 14, 2000

WCH-101 COND SPURS CH 1013

Ref 23.4 dBm

Atten 5 dB

Mkr1 7.075 GHz

-34.01 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

M1 S2

S3 FC

AA

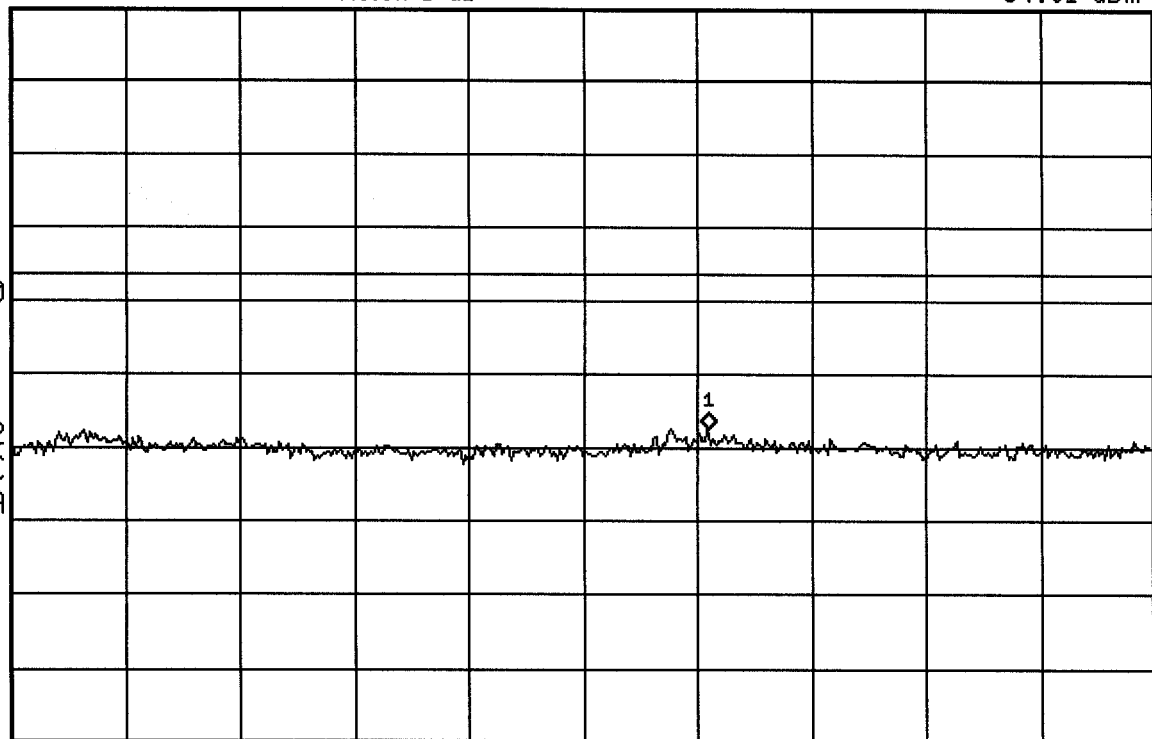
Start 2.5 GHz

*Res BW 1 MHz

VBW 1 MHz

Stop 10 GHz

Sweep 18.75 ms



hp 15:01:26 Nov 14, 2000

WCH-101 COND SPURS CH 1013

Ref 23.4 dBm

Atten 5 dB

Mkr1 13.48 GHz

-32.51 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

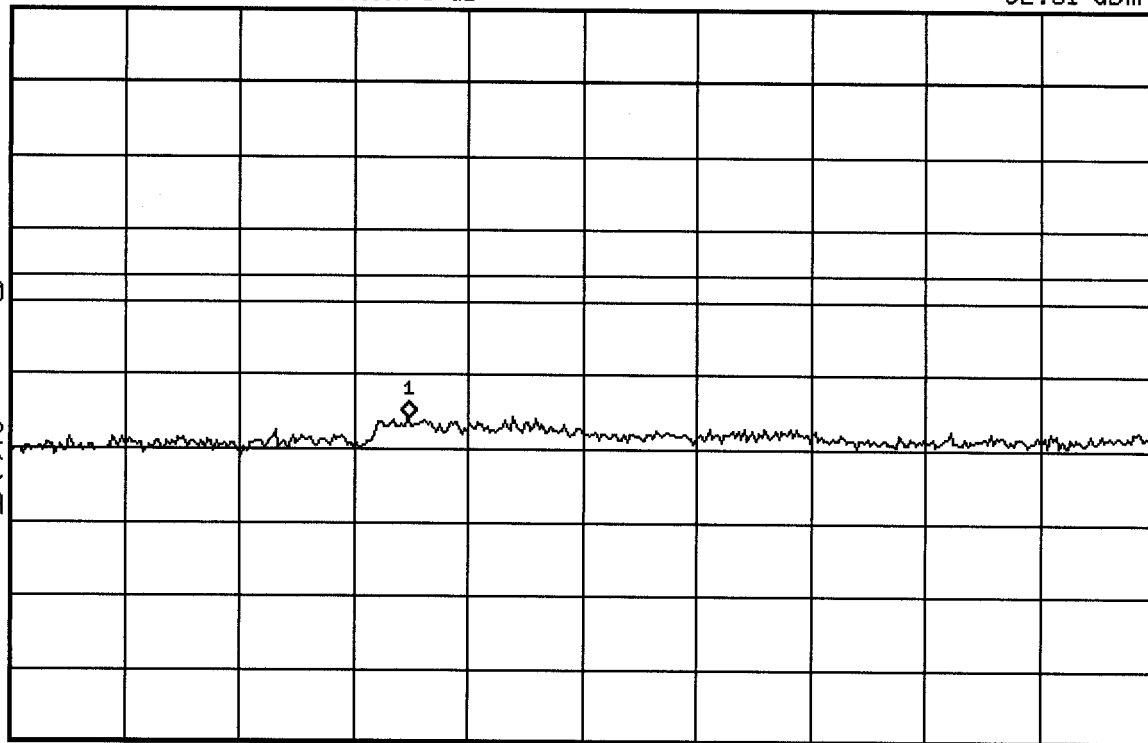
-13.0

dBm

M1 S2

S3 FC

AA



Start 10 GHz

*Res BW 1 MHz

VBW 1 MHz

Stop 20 GHz

Sweep 100 ms

hp 14:58:40 Nov 14, 2000

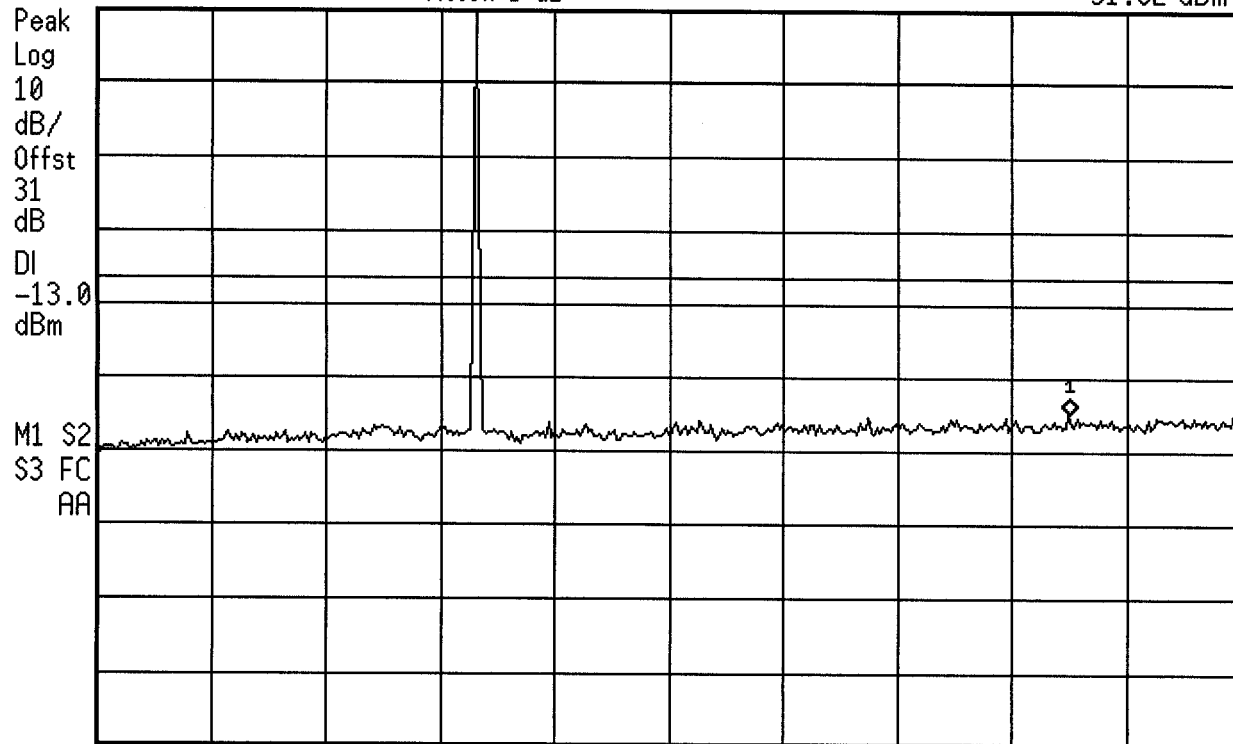
WCH-101 COND SPURS CH 363

Ref 23.3 dBm

Atten 5 dB

Mkr1 2.127 GHz

-31.62 dBm



Start 10 MHz

*Res BW 1 MHz

VBW 1 MHz

Stop 2.5 GHz

Sweep 6.225 ms

hp 14:59:04 Nov 14, 2000

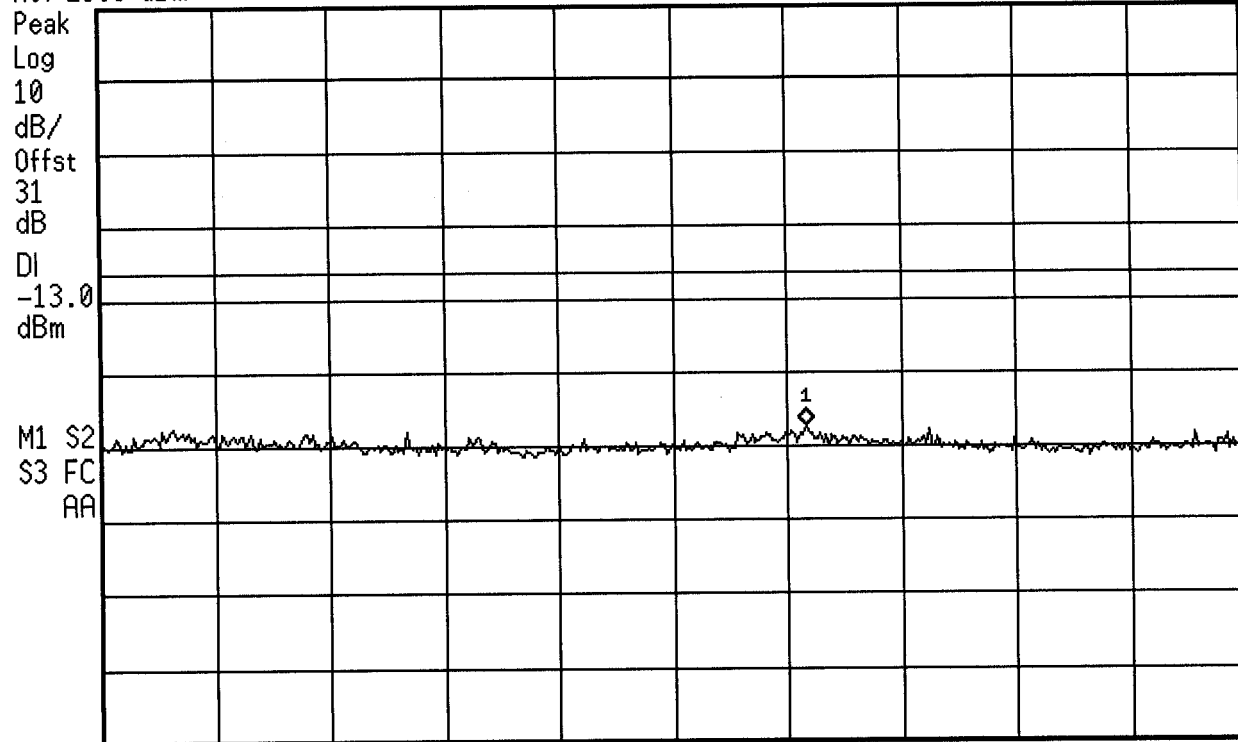
WCH-101 COND SPURS CH 363

Mkr1 7.131 GHz

Ref 23.3 dBm

Atten 5 dB

-34.01 dBm



Start 2.5 GHz

Stop 10 GHz

*Res BW 1 MHz

VBW 1 MHz

Sweep 18.75 ms

hp 14:59:26 Nov 14, 2000

WCH-101 COND SPURS CH 363

Ref 23.3 dBm

Atten 5 dB

Mkr1 13.50 GHz

-33.06 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

M1 S2

S3 FC

AA

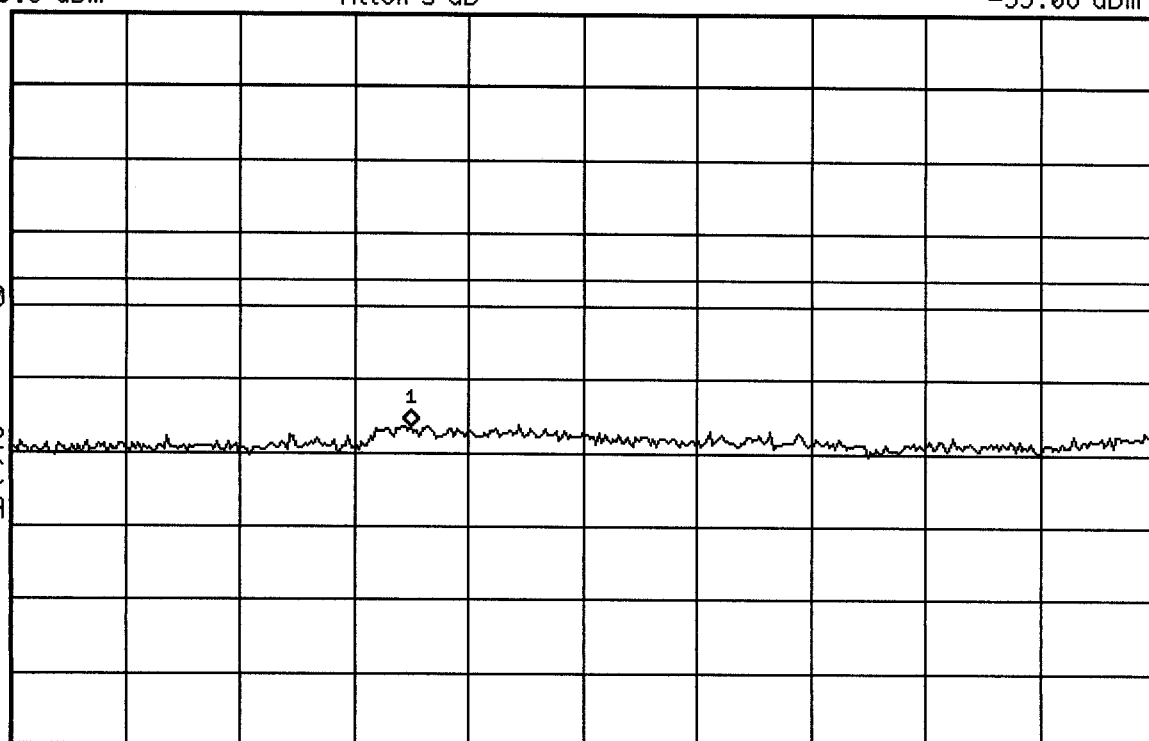
Start 10 GHz

*Res BW 1 MHz

VBW 1 MHz

Stop 20 GHz

Sweep 100 ms



hp 15:03:05 Nov 14, 2000

WCH-101 COND SPURS CH 777

Ref 22.8 dBm

Atten 5 dB

Mkr1 1.778 GHz

-32.59 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

M1 S2

S3 FC

AA

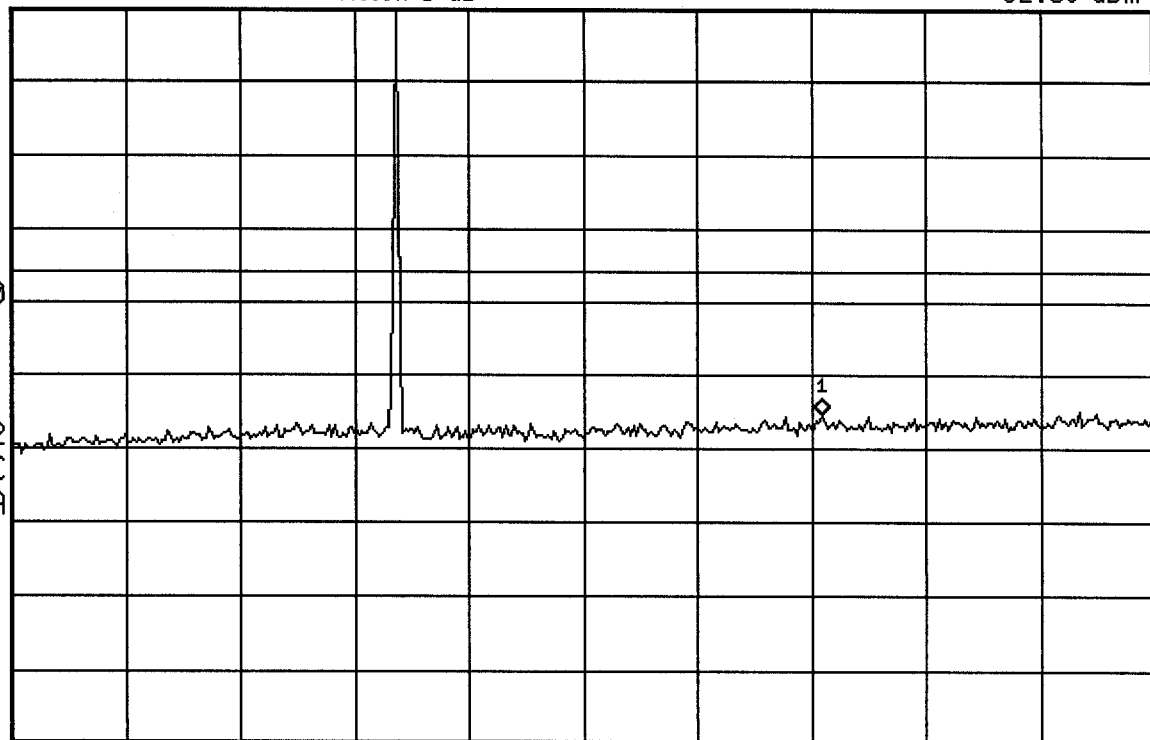
Start 10 MHz

*Res BW 1 MHz

VBW 1 MHz

Stop 2.5 GHz

Sweep 6.225 ms





15:03:27 Nov 14, 2000

WCH-101 COND SPURS CH 777

Ref 22.8 dBm

Atten 5 dB

Mkr1 3.381 GHz

-34.4 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

M1 S2

S3 FC

AA

1

Start 2.5 GHz

*Res BW 1 MHz

VBW 1 MHz

Stop 10 GHz

Sweep 18.75 ms



15:03:48 Nov 14, 2000

WCH-101 COND SPURS CH 777

Ref 22.8 dBm

Atten 5 dB

Mkr1 14.80 GHz

-33.12 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

M1 S2

S3 FC

AA

1

Start 10 GHz

*Res BW 1 MHz

VBW 1 MHz

Stop 20 GHz

Sweep 100 ms

hp 12:42:36 Nov 14, 2000

WCH-101 CDMA CH 1013

Ref 23.4 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

31

dB

DI

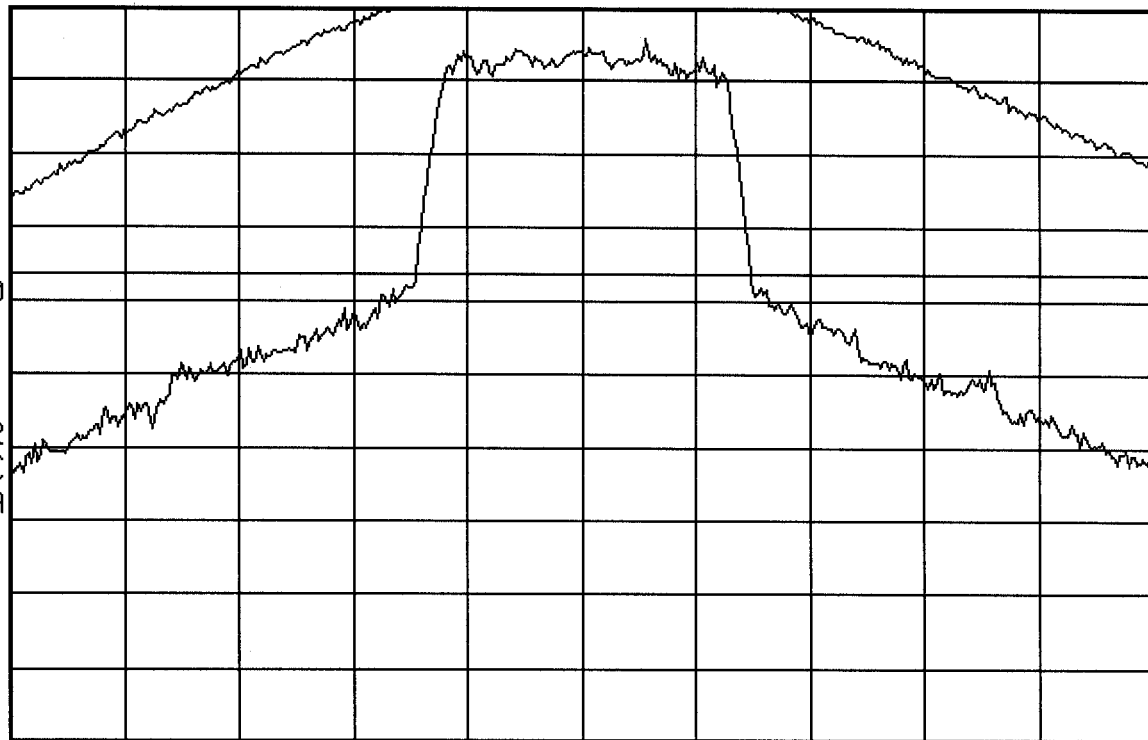
-13.0

dBm

M1 M2

S3 FC

AA



Center 824.7 MHz

*Res BW 30 kHz

VBW 30 kHz

Span 5 MHz

Sweep 13.89 ms

hp 12:39:37 Nov 14, 2000

WCH-101 CDMA CH 363

Ref 23.3 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

31

dB

DI

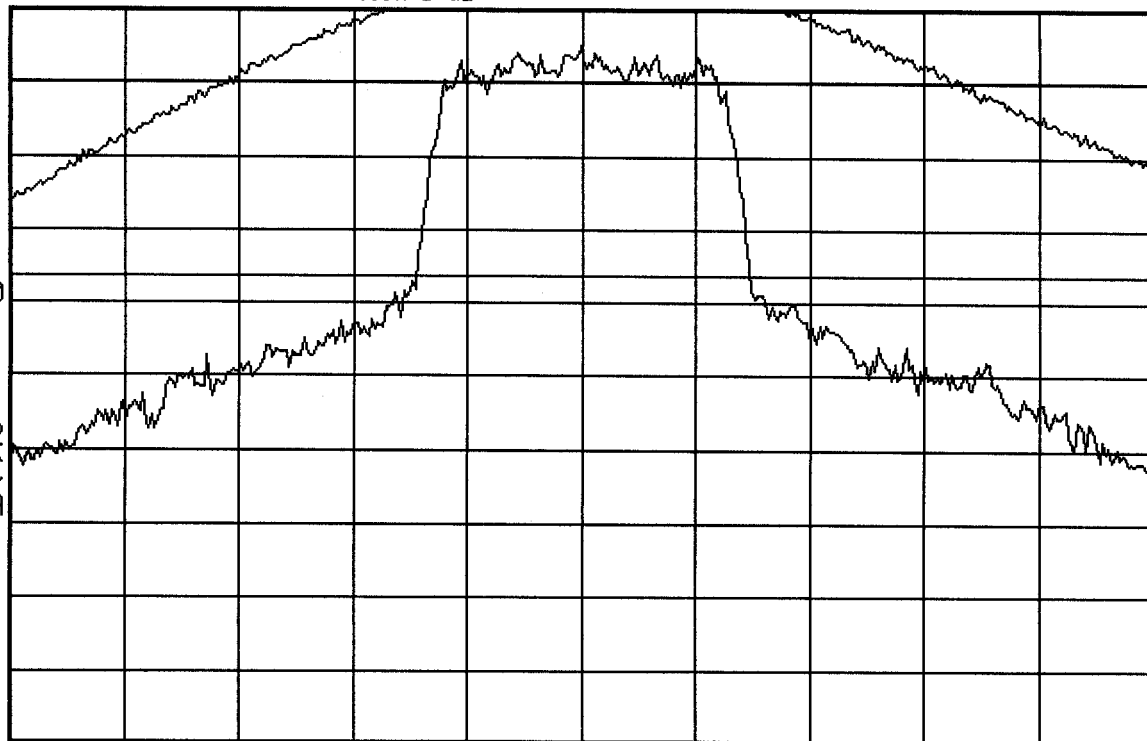
-13.0

dBm

M1 M2

S3 FC

AA



Center 835.9 MHz

*Res BW 30 kHz

VBW 30 kHz

Span 5 MHz

Sweep 13.89 ms

hp 12:44:55 Nov 14, 2000

WCH-101 CDMA CH 777

Ref 22.8 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

31

dB

DI

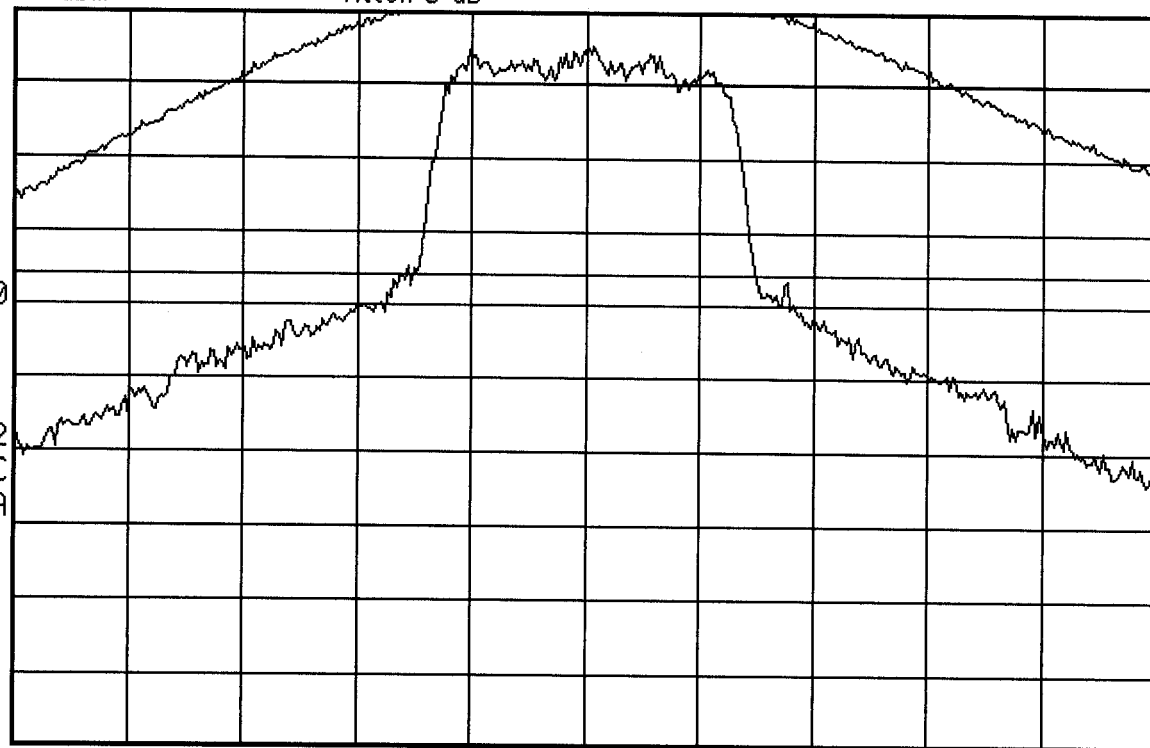
-13.0

dBm

M1 M2

S3 FC

AA



Center 848.3 MHz

*Res BW 30 kHz

VBW 30 kHz

Span 5 MHz

Sweep 13.89 ms

hp 13:30:24 Nov 14, 2000

WCH-101 LOWER BAND EDGE

Ref 23.4 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

31

dB

DI

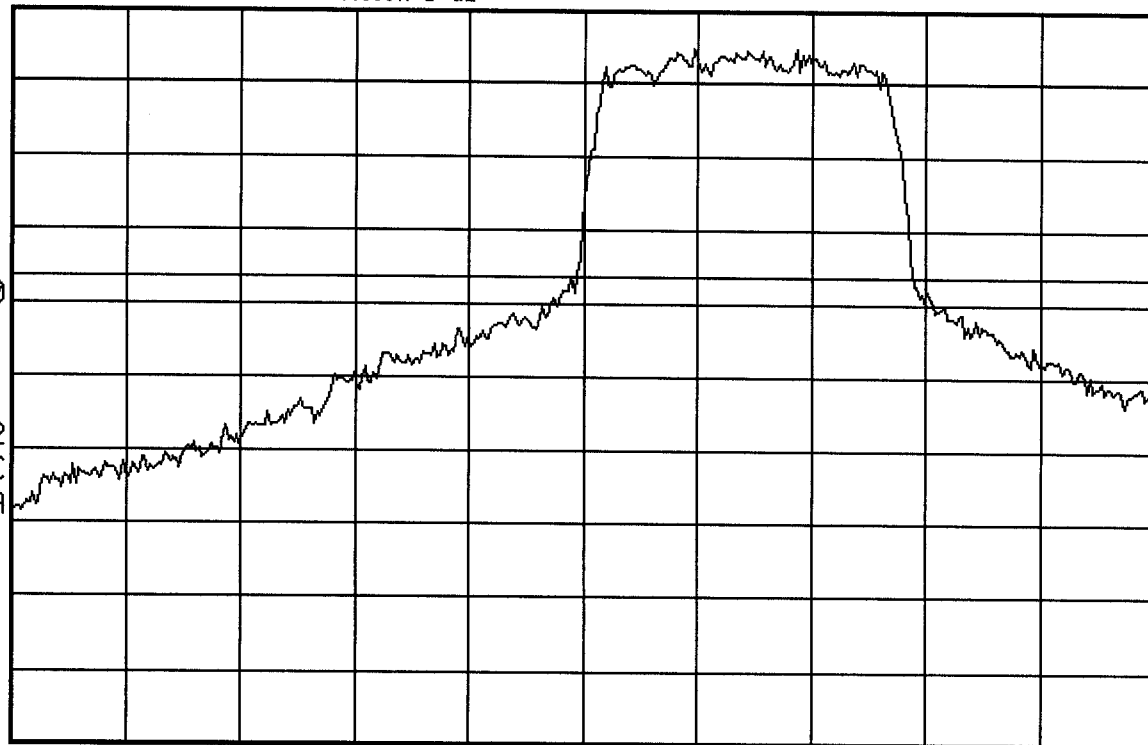
-13.0

dBm

M1 S2

S3 FC

AA



Center 824 MHz

*Res BW 30 kHz

VBW 30 kHz

Span 5 MHz

Sweep 13.89 ms

hp 13:32:31 Nov 14, 2000

WCH-101 UPPER BAND EDGE

Ref 22.8 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

31

dB

DI

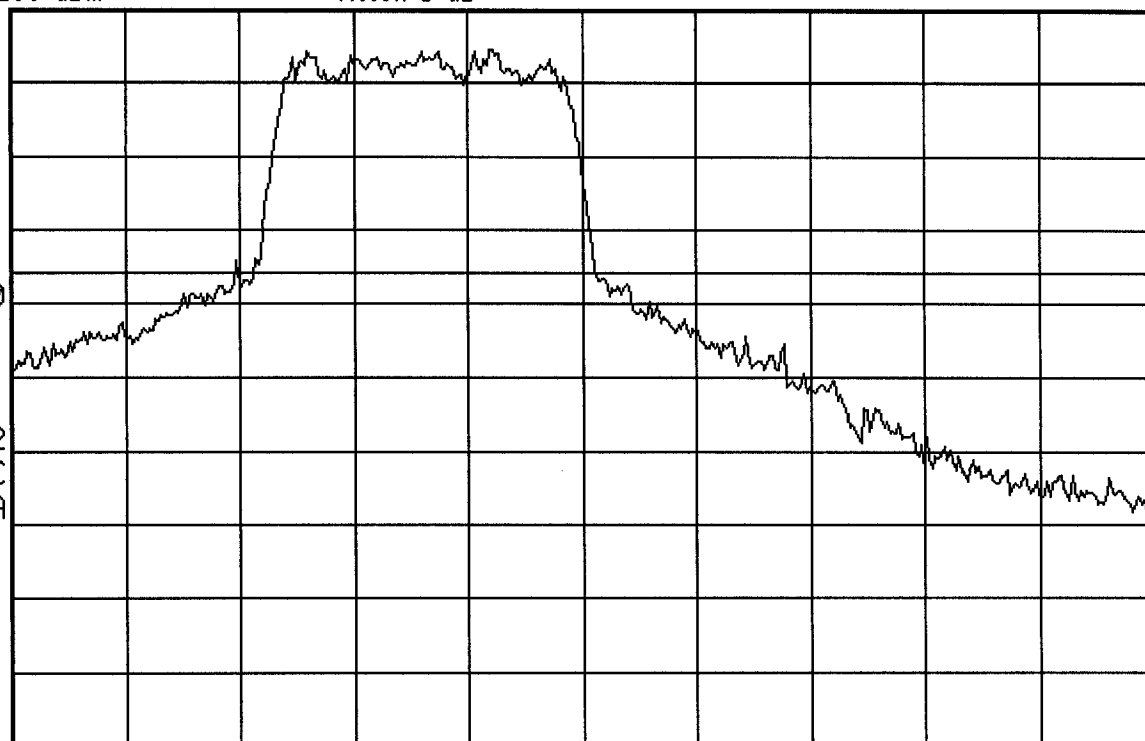
-13.0

dBm

M1 S2

S3 FC

AA



Center 849 MHz

*Res BW 30 kHz

VBW 30 kHz

Span 5 MHz

Sweep 13.89 ms

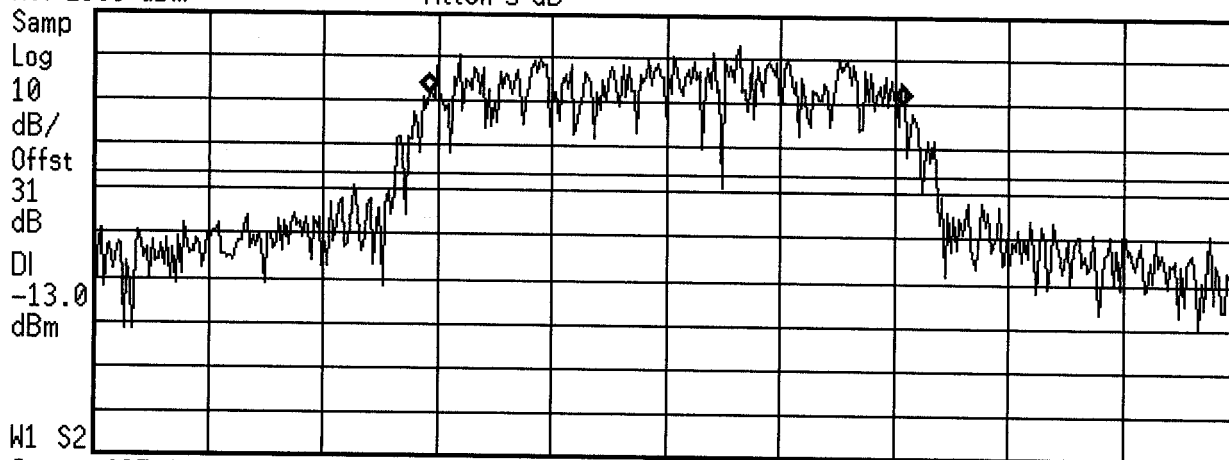


13:35:13 Nov 14, 2000

WCH-101 99% BAND WIDTH

Ref 23.3 dBm

Atten 5 dB



Center 835.9 MHz

Span 3 MHz

*Res BW 30 kHz

*VBW 300 kHz

Sweep 9.167 ms

Occupied Bandwidth Results (measuring..)

Occupied Bandwidth
1.250 MHz

Occ BW % Pwr 99.00 %

Transmit Freq Error 862.4 Hz