

CERTIFICATE OF COMPLIANCE **FCC PART 24 CERTIFICATION**

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Applicant Information:

WITHUS IT CO., LTD.
2F. DongNam Bldg. 448-16
Shingil-5Dong, YongDungPo-Ku,
Seoul, Korea

| | |
|------------------------------|--|
| FCC Classification: | Part 24 Licensed Portable Transmitter Held to Ear (PCE) |
| FCC Rule Part(s): | §24(E), §2 |
| FCC ID: | POQWPE-2200 |
| Model(s): | WPE-2200 |
| Equipment Type: | Single-Mode PCS CDMA Phone |
| Tx Frequency Range: | 1851.25 - 1908.75 MHz |
| Rx Frequency Range: | 1931.25 - 1988.75 MHz |
| Max. RF Output Power: | 0.463 Watts (EIRP) |
| Frequency Tolerance: | 150 Hz |
| 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.

This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Research Inc. The results and statements contained in this report pertain only to the device(s) evaluated.


Shawn McMillen
General Manager
Celltech Research Inc.



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MEASUREMENT REPORT - FCC PART 24

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.

1.2 GENERAL INFORMATION - §2.1033(a)

APPLICANT:

WITHUS IT CO., LTD.
2F. DongNam Bldg. 448-16
Shingil-5Dong, YongDungPo-Ku,
Seoul, Korea

| | |
|-----------------------------|--|
| FCC ID | POQWPE-2200 |
| Model(s) | WPE-2200 |
| EUT Type | Single-Mode PCS CDMA Phone |
| Classification | Licensed Portable Transmitter Held to Ear (PCE) |
| Rule Part(s) | §24(E), §2 |
| Max. RF Output Power | 0.463 Watts (EIRP) |
| Tx Freq. Range | 1851.25 - 1908.75 MHz |
| Rx Freq. Range | 1931.25 - 1988.75 MHz |
| Frequency Tolerance | ± 150 Hz |
| Emission Designator | 1M25F9W |
| Modulation | PCS CDMA |
| Battery Type(s) | 3.7V 950mA/h Lithium Ion |
| Antenna Type | Retractable Whip (1/4l) |

2.1 MEASUREMENT PROCEDURES

2.2 RF OUTPUT POWER MEASUREMENT - §2.1046

The conducted power was measured using a Gigatronics 8650A Universal Power Meter in modulated average power mode. An offset value in dB was entered into the power meter to correct for the losses of the attenuator and cable installed before the sensor input. The transmitter terminal was coupled to the power meter and the EUT was placed into test mode via keypad access at a full data rate in the “always up” power control mode. All subsequent tests were performed using the same tune up procedures.

2.3 OCCUPIED BANDWIDTH EMISSION LIMITS - §24.238

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. 100% of the in-band modulation was below the specified mask per §24.238.

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.

2.4 SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051

The level of the carrier and the various conducted spurious frequencies were measured by means of a calibrated spectrum analyzer. The spectrum was scanned from 10MHz to 20GHz. 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.

2.5 EMISSION DESIGNATOR - §2.202

2M + 2DK

CDMA BW = 1.25 MHz

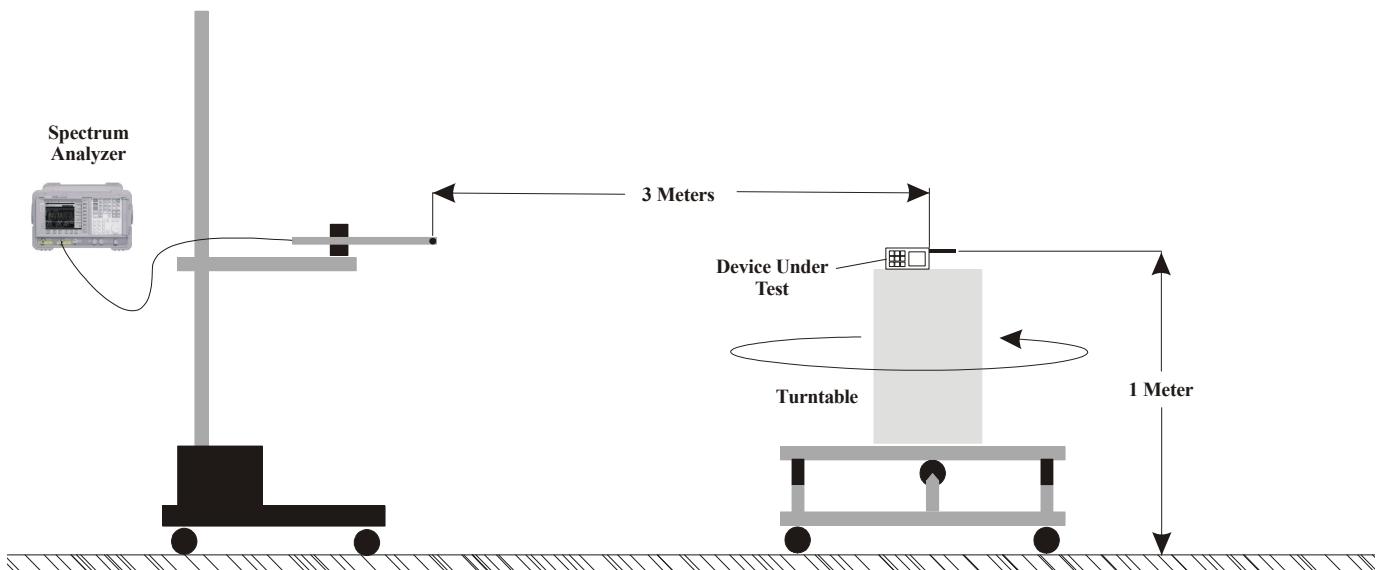
F = Frequency Modulation

9 = Composite Digital Info

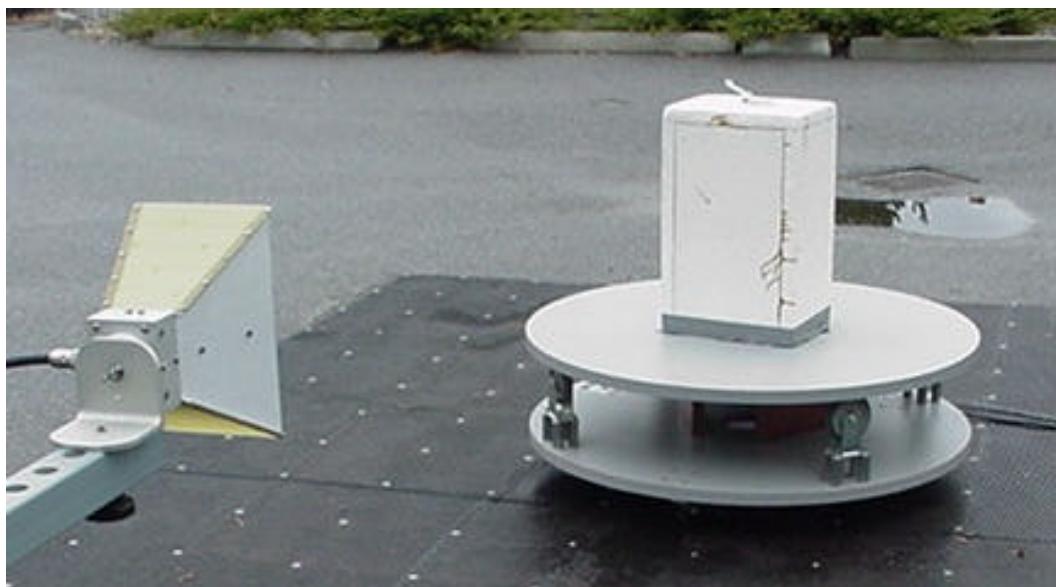
W = Combination (Audio/Data)

2.6 FIELD STRENGTH OF SPURIOUS RADIATION - §2.1053

Radiated and harmonic emissions were measured on a 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 in height from 1 to 4 meters and the polarization was varied (horizontal and vertical) to determine the worst-case emission level.



Radiated Measurement Test Setup Diagram



Radiated Measurement Test Setup Photograph

2.7 FREQUENCY STABILITY / TEMPERATURE VARIATION - §24.235

The minimum frequency stability shall be $\pm 150\text{Hz}$ referenced to a received carrier frequency from a base station. This meets the requirement for operational accuracy of 0.00005% for digital mode. A base station simulator was used in order to measure the error in the frequency.

Measurement Method:

The frequency stability of the transmitter was measured by:

1. Temperature: The temperature was varied from -30°C to $+60^\circ\text{C}$ at intervals no more than 10°C throughout the temperature range using an environmental chamber. A period of time sufficient to stabilize all of the components in the equipment shall be allowed prior to each frequency measurement.
2. Primary Supply Voltage: The primary supply voltage was set at the specified nominal rating and reduced to the battery operating endpoint specified by the manufacturer. The voltage was measured at the terminals of the power supply or at the input to the cable normally provided with the equipment.

Time Period and Procedure:

1. The carrier frequency of the transmitter 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 , the measurement of the carrier frequency of the transmitter was made within a three-minute interval after applying power to the transmitter.

Frequency measurements were made at 10°C intervals up to $+60^\circ\text{C}$, then back to room temperature. A minimum period of one hour was provided to allow stabilization of the equipment at each temperature level.

3.1 TEST DATA

3.2 EFFECTIVE ISOTROPIC RADIATED POWER OUTPUT - §24.232(b)

PCS CDMA MODE

| Freq. Tuned (MHz) | EUT Conducted Power (dBm) | Max. Field Strength of EUT (dBm) (Horizontal Polarization) | | Horn Gain (dBi) | Horn Forward Conducted Power (dBm) | EIRP of EUT Horn Gain + Horn Forward Conducted Power (dBm) Watts | |
|-------------------------|------------------------------------|--|---------|-----------------------|--|--|-------|
| 1851.25 | 24.50 | - 15.79 | - 13.95 | 6.55 | 17.11 | 23.66 | 0.232 |
| 1880.00 | 24.50 | - 14.57 | - 11.91 | 6.58 | 20.08 | 26.66 | 0.463 |
| 1908.75 | 24.50 | - 16.28 | - 13.50 | 6.61 | 18.50 | 25.11 | 0.324 |

NOTES:

1. EIRP 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 horn antenna was substituted in place of the EUT. A CDMA signal with the same bandwidth as the EUT was generated, amplified, and fed through a directional coupler. The height and direction of the horn antenna was adjusted in order to give the field of maximum intensity. The power to the antenna was adjusted in order to give the same field strength reading as previously recorded for the EUT. The power at the coupler port was recorded at this point. 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, 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 EIRP level was determined by adding the horn forward conducted power and the horn antenna gain in dB.

2. EIRP measurements were performed using the standard battery, which is the only battery option for this phone.

3.3 FIELD STRENGTH OF SPURIOUS RADIATION - § 2.1053

Operating Frequency (MHz): 1851.25
 Channel: 25 (Low)
 Measured Cond. Pwr. (dBm): 24.50
 Measured ERP (dBm): 23.66
 Modulation: PCS CDMA
 Distance: 3 Meters
 Limit: $43 + 10 \log (W) = 38.13 \text{ dBc}$

| Frequency (MHz) | Field Strength of Spurious Radiation (dBm) | Horn Forward Cond. Pwr. (dBm) | Standard Gain Horn Antenna Gain (dBi) | POL (H/V) | EIRP (dBm) | ERP (dBm) | dBc |
|--------------------|---|-------------------------------------|--|--------------|---------------|--------------|-------|
| 3702.50 | -90.28 | -57.39 | 6.6 | H | -50.79 | -52.93 | 76.59 |
| 5553.75 | -77.96 | -40.16 | 7.8 | H | -32.36 | -34.50 | 58.16 |
| 7405.00 | -94.56 | -57.98 | 7.8 | H | -50.18 | -52.32 | 75.98 |
| 9256.25 | -94.93 | -56.91 | 7.6 | H | -49.31 | -51.45 | 75.11 |
| 11107.50 | -95.99 | -59.63 | 8.5 | H | -51.13 | -53.27 | 76.93 |
| 12958.75 | -95.19 | -57.31 | 8.8 | H | -48.51 | -50.65 | 74.31 |
| 14810.00 | -96.17 | -58.29 | 9.6 | H | -48.69 | -50.83 | 74.49 |
| 16661.25 | -95.77 | -57.94 | 9.0 | H | -48.94 | -51.08 | 74.74 |
| 18512.50 | -96.82 | -60.61 | 9.3 | H | -51.31 | -53.45 | 77.11 |

Radiated Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The video bandwidth and resolution bandwidth were set to 3MHz. 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 horn antenna was substituted in place of the EUT. A CDMA signal with the same bandwidth as the EUT was generated, amplified, and fed through a directional coupler.

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 horn forward conducted power and the horn antenna gain in dB.

NOTE: All other spurious emissions were found to be below the magnitude of each harmonic.

FIELD STRENGTH OF SPURIOUS RADIATION - § 2.1053

Operating Frequency (MHz): 1880.00
 Channel: 600 (Mid)
 Measured Cond. Pwr. (dBm): 24.50
 Measured ERP (dBm): 26.66
 Modulation: PCS CDMA
 Distance: 3 Meters
 Limit: $43 + 10 \log (W) = 38.13 \text{ dBc}$

| Frequency (MHz) | Field Strength of Spurious Radiation (dBm) | Horn Forward Cond. Pwr. (dBm) | Standard Gain Horn Antenna Gain (dBi) | POL (H/V) | EIRP (dBm) | ERP (dBm) | dBc |
|--------------------|---|-------------------------------------|--|--------------|---------------|--------------|-------|
| 3760.00 | -88.12 | -56.23 | 6.6 | H | -49.63 | -51.77 | 78.43 |
| 5640.00 | -90.10 | -57.30 | 7.8 | H | -49.50 | -51.64 | 78.30 |
| 7520.00 | -90.89 | -58.31 | 7.8 | H | -50.51 | -52.65 | 79.31 |
| 9400.00 | -95.33 | -63.11 | 7.6 | H | -55.51 | -57.65 | 84.31 |
| 11280.00 | -95.33 | -63.07 | 8.5 | H | -54.57 | -56.71 | 83.37 |
| 13160.00 | -94.88 | -62.30 | 8.8 | H | -53.50 | -55.64 | 82.30 |
| 15040.00 | -95.61 | -63.73 | 9.6 | H | -54.13 | -56.27 | 82.93 |
| 16920.00 | -95.63 | -63.10 | 9.0 | H | -54.10 | -56.24 | 82.90 |
| 18800.00 | -96.15 | -64.94 | 9.3 | H | -55.64 | -57.78 | 84.44 |

Radiated Measurements by Substitution Method:

The EUT was placed on a turntable 3-meters from the receive antenna. The video bandwidth and resolution bandwidth were set to 3MHz. 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 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 horn forward conducted power and the horn antenna gain in dB.

NOTE: All other spurious emissions were found to be below the magnitude of each harmonic.

FIELD STRENGTH OF SPURIOUS RADIATION - § 2.1053

Operating Frequency (MHz): 1908.75
 Channel: 1175 (High)
 Measured Cond. Pwr. (dBm): 24.50
 Measured ERP (dBm): 25.11
 Modulation: PCS CDMA
 Distance: 3 Meters
 Limit: $43 + 10 \log (W) = 38.13 \text{ dBc}$

| Frequency (MHz) | Field Strength of Spurious Radiation (dBm) | Horn Forward Cond. Pwr. (dBm) | Standard Gain Horn Antenna Gain (dBi) | POL (H/V) | EIRP (dBm) | ERP (dBm) | dBc |
|--------------------|---|-------------------------------------|--|--------------|---------------|--------------|-------|
| 3817.50 | -78.88 | -45.99 | 6.6 | H | -39.39 | -41.53 | 66.64 |
| 5726.25 | -87.36 | -47.56 | 7.8 | H | -39.76 | -41.90 | 67.01 |
| 7635.00 | -91.85 | -55.27 | 7.8 | H | -47.47 | -49.61 | 74.72 |
| 9543.75 | -93.90 | -55.88 | 7.6 | H | -48.28 | -50.42 | 75.53 |
| 11452.50 | -95.70 | -59.34 | 8.5 | H | -50.84 | -52.98 | 78.09 |
| 13361.25 | -96.01 | -58.13 | 8.8 | H | -49.33 | -51.47 | 76.58 |
| 15270.00 | -96.72 | -58.84 | 9.6 | H | -49.24 | -51.38 | 76.49 |
| 17178.75 | -95.91 | -60.38 | 9.0 | H | -51.38 | -53.52 | 78.63 |
| 19087.50 | -96.51 | -60.30 | 9.3 | H | -51.00 | -53.14 | 78.25 |

Radiated Measurements by Substitution Method:

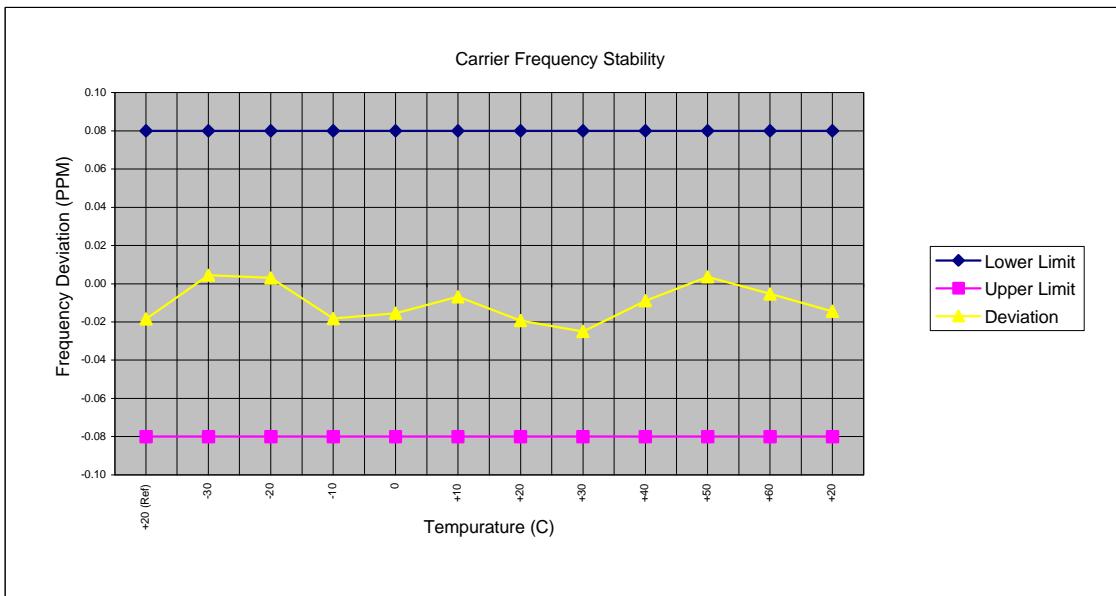
The EUT was placed on a turntable 3-meters from the receive antenna. The video bandwidth and resolution bandwidth were set to 3MHz. The field of maximum intensity was found by rotating the EUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. The field strength was recorded from a calibrated spectrum analyzer for each channel being tested. A 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 horn forward conducted power and the horn antenna gain in dB.

NOTE: All other spurious emissions were found to be below the magnitude of each harmonic.

3.4 FREQUENCY STABILITY - § 24.235

Carrier Frequency (GHz): 1.88
Channel: 600
Mode: PCS CDMA
Deviation Limit (PPM): 0.08

| Temperature (C) | Voltage (%) | Power (VDC) | Carrier Frequency Deviation | | Specification | |
|--------------------|------------------|----------------|-----------------------------|--------|-------------------|-------------------|
| | | | (Hz) | (PPM) | Lower Limit (PPM) | Upper Limit (PPM) |
| +20 (Ref) | 100 | 3.7 | -34.75 | -0.018 | 0.08 | -0.08 |
| -30 | 100 | 3.7 | 8.43 | 0.004 | 0.08 | -0.08 |
| -20 | 100 | 3.7 | 5.79 | 0.003 | 0.08 | -0.08 |
| -10 | 100 | 3.7 | -34.27 | -0.018 | 0.08 | -0.08 |
| 0 | 100 | 3.7 | -29.08 | -0.015 | 0.08 | -0.08 |
| +10 | 100 | 3.7 | -12.78 | -0.007 | 0.08 | -0.08 |
| +20 | 100 | 3.7 | -36.30 | -0.019 | 0.08 | -0.08 |
| +30 | 100 | 3.7 | -47.10 | -0.025 | 0.08 | -0.08 |
| +40 | 100 | 3.7 | -16.80 | -0.009 | 0.08 | -0.08 |
| +50 | 100 | 3.7 | 6.90 | 0.004 | 0.08 | -0.08 |
| +60 | 100 | 3.7 | -9.81 | -0.005 | 0.08 | -0.08 |
| +20 | Battery Endpoint | 3.3 | -27.07 | -0.014 | 0.08 | -0.08 |



4.1 TEST EQUIPMENT

| <u>Type</u> | <u>Model</u> | <u>Calib. Due Date</u> | <u>Serial No.</u> |
|---|------------------------------------|------------------------|-------------------|
| HP Signal Generator | 8648D (9kHz-4.0GHz) | Nov 2002 | 3847A00611 |
| Rohde & Schwarz Signal Generator | SMR40 (10MHz-40GHz) | Nov 2002 | 835537/022 |
| Gigatronics Power Meter | 8652A | Oct 2002 | 1835272 |
| Gigatronics Power Sensor | 80701A (0.05-18GHz) | Sept. 2002 | 1833535 |
| Gigatronics Power Sensor | 80701A (0.05-18GHz) | Sept. 2002 | 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 2002 | US38433013 |
| Audio Analyzer | HP 8903B | Nov 2002 | 3729A18691 |
| Modulation Analyzer | HP 8901A | July 2002 | 3749A07154 |
| Frequency Counter | HP 53181A (3GHz) | May 2002 | 3736A05175 |
| DC Power Supply | HP E3611A | N/A | KR83015294 |
| CDMA Base Station Simulator | Agilent E8285A | Feb. 2002 | US40332926 |
| 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. 2002 | 6267 |
| Double Ridged Horn Antenna | ETS 3115 (1-18GHz) | Oct. 2002 | 6276 |
| Horn Antenna | Chase BBHA 9120-A (0.7-4.8GHz) | Sept 2002 | 9120A-239 |
| Horn Antenna | Chase BBHA 9120-A (0.7-4.8GHz) | Sept 2002 | 9120A-240 |
| Roberts Dipoles | Compliance Design (2 sets) 3121C | June 2002 | |
| Spectrum Analyzer | HP 8594E | March 2002 | 3543A02721 |
| Spectrum Analyzer | HP E4408B | Nov 2002 | US39240170 |
| Shielded Screen Room | Lindgren R.F. 18W-2/2-0 | N/A | 16297 |
| Environmental Chamber | ESPEC ECT-2 (Temperature/Humidity) | Feb 2002 | 0510154-B |

5.1 CONCLUSION

The data in this measurement report shows that the WITHUS IT CO., LTD. Model: WPE-2200 Single-Mode PCS CDMA Phone FCC ID: POQWPE-2200 complies with all the requirements of Parts 2 and 24 of the FCC rules.

TEST PLOTS



13:05:19 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 25

Ref 24.5 dBm

#Atten 5 dB

Mkr1 2.413 GHz
-29.6 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

W1 S2

S3 FC

AA

Start 10 MHz

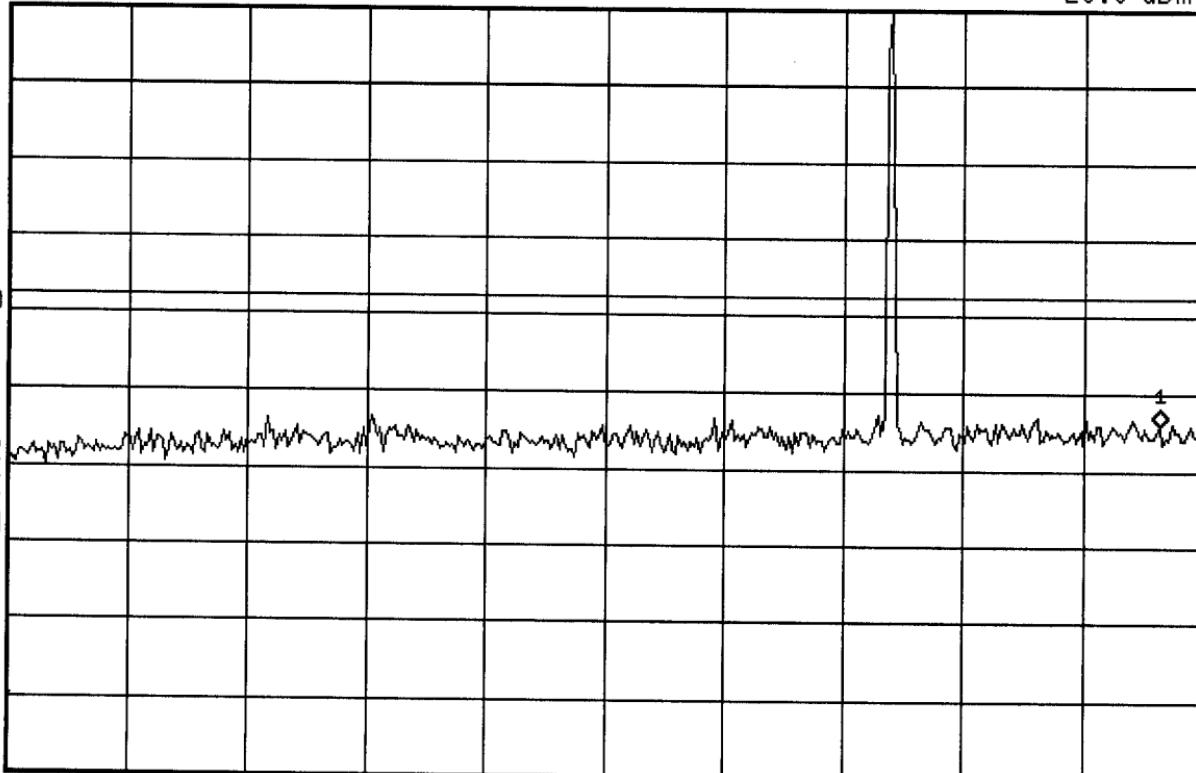
Res BW 3 MHz

VBW 3 MHz

Stop 2.5 GHz

Sweep 5 ms

4



hp

13:05:57 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 25

Ref 24.5 dBm

#Atten 5 dB

Mkr1 5.556 GHz
-24.37 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

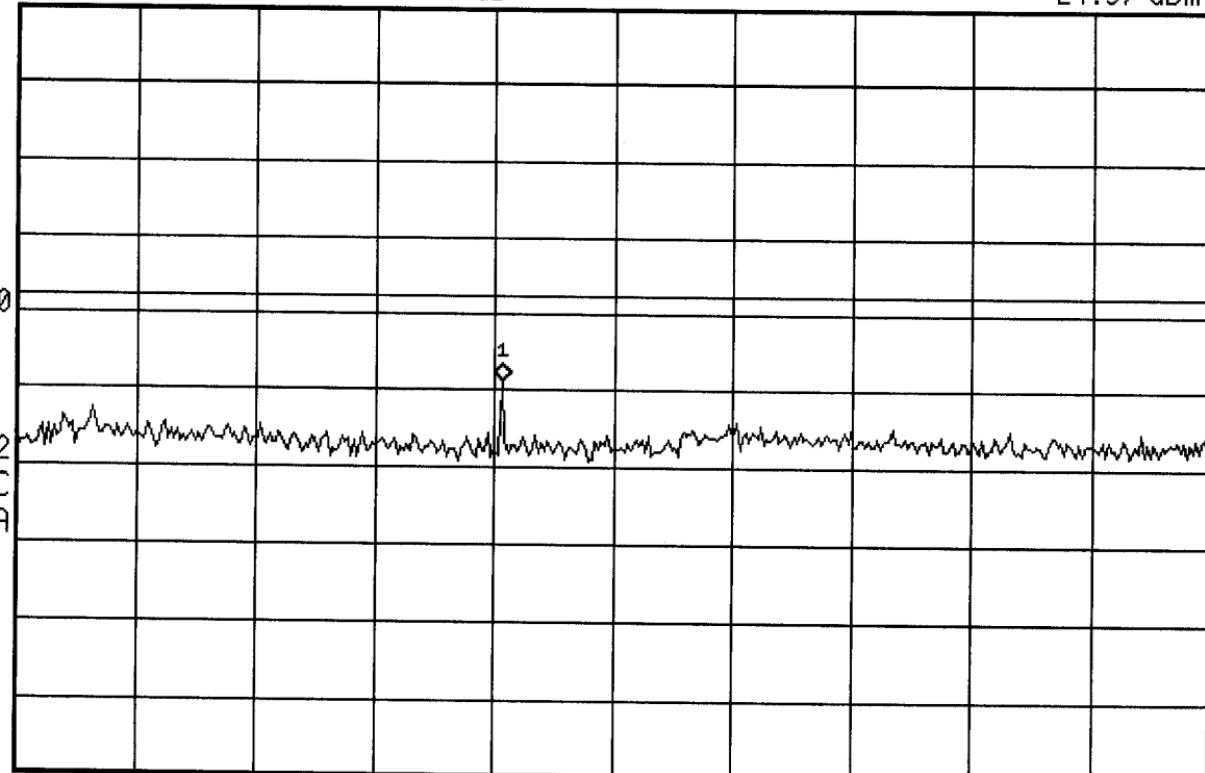
-13.0

dBm

W1 S2

S3 FC

AA



Start 2.5 GHz

Res BW 3 MHz

VBW 3 MHz

Stop 10 GHz

Sweep 18.75 ms

hp

13:06:32 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 25

Ref 24.5 dBm

#Atten 5 dB

Mkr1 14.30 GHz
-29.68 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

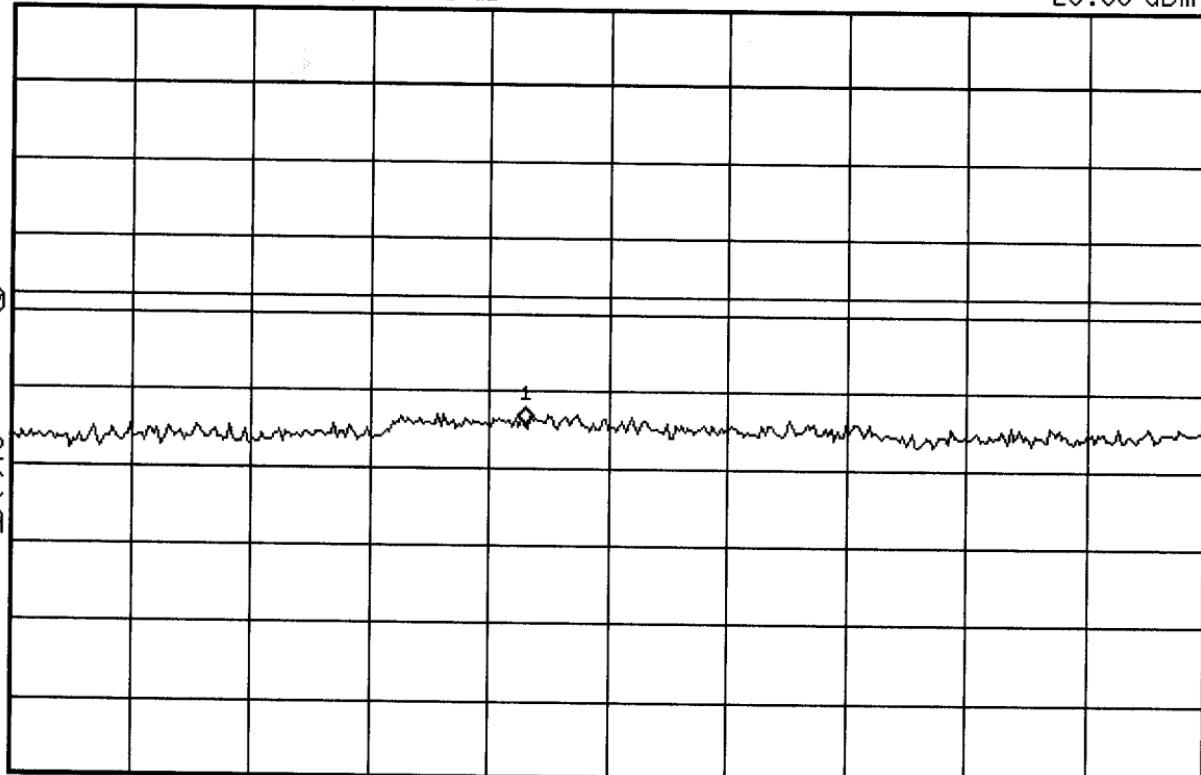
-13.0

dBm

W1 S2

S3 FC

AA



Start 10 GHz

Res BW 3 MHz

VBW 3 MHz

Stop 20 GHz

Sweep 100 ms

hp

13:19:01 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 600

Ref 24.5 dBm

#Atten 5 dB

Mkr1 2.438 GHz

-30.13 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

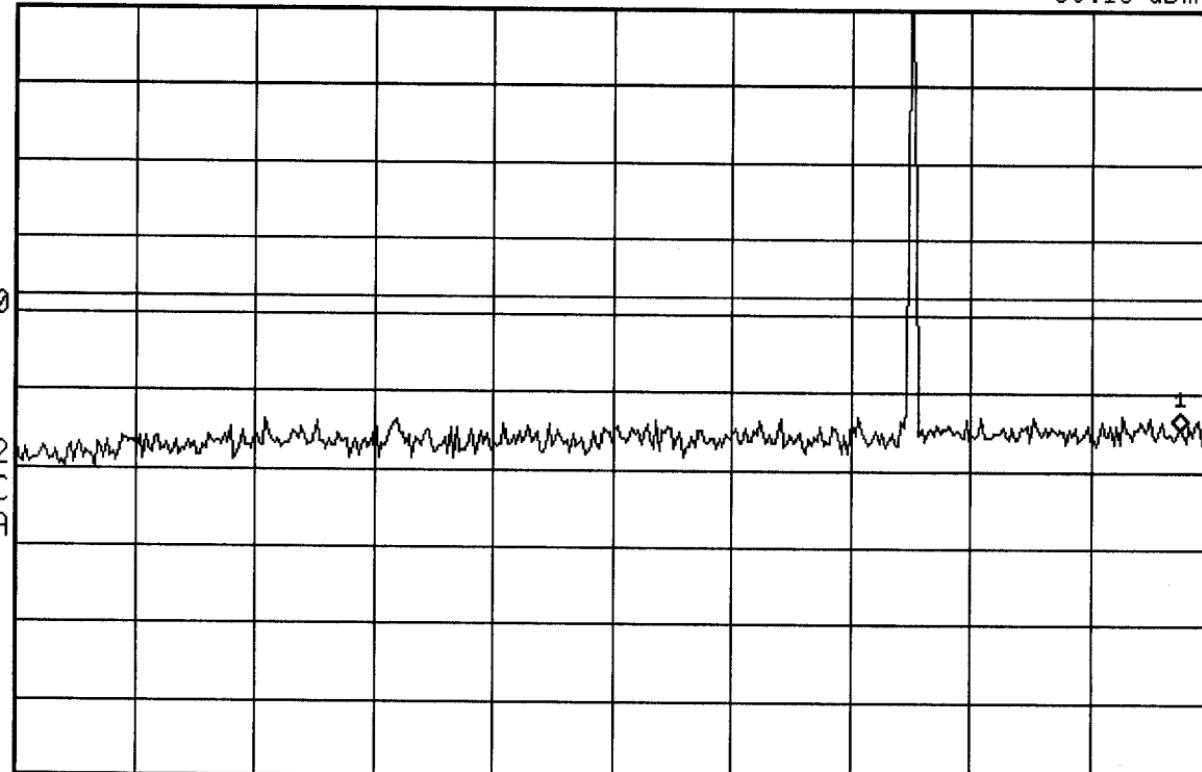
-13.0

dBm

W1 S2

S3 FC

AA



Start 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Stop 2.5 GHz

Sweep 5 ms



13:19:28 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 600

Ref 24.5 dBm

#Atten 5 dB

Mkr1 5.631 GHz
-23.8 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

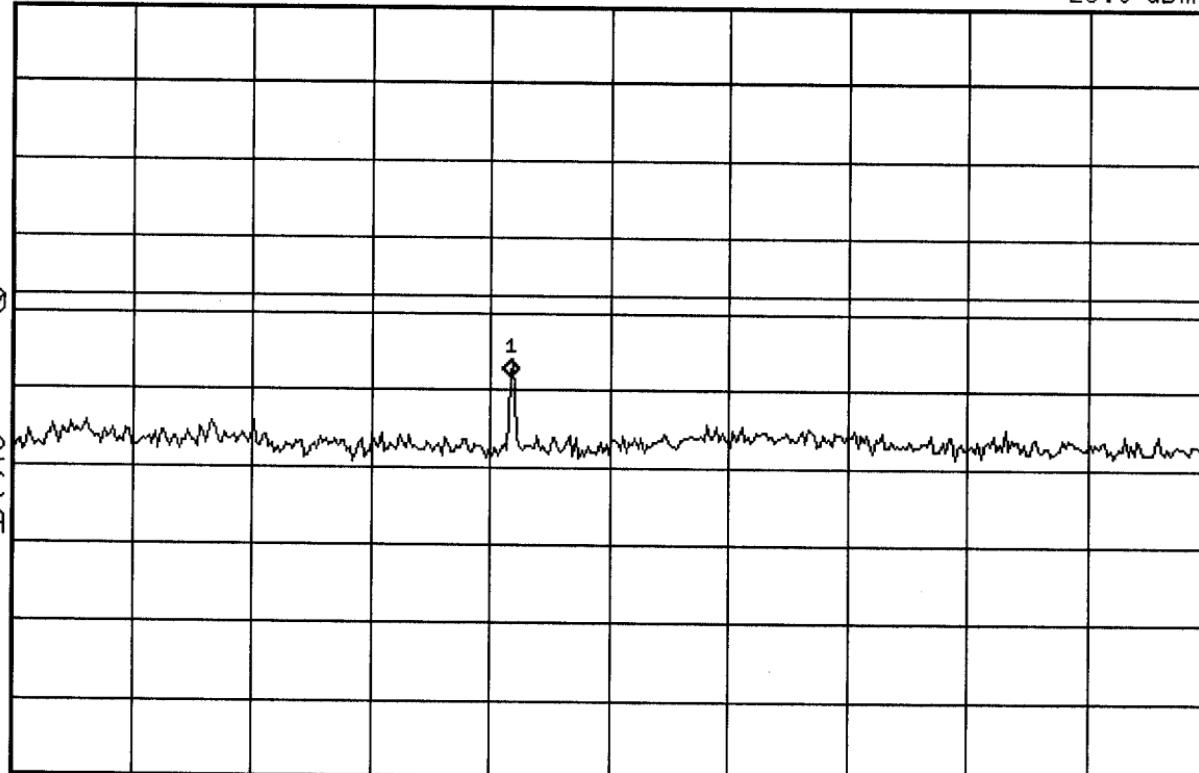
-13.0

dBm

W1 S2

S3 FC

AA



Start 2.5 GHz

#Res BW 3 MHz

#VBW 3 MHz

Stop 10 GHz

Sweep 18.75 ms



13:19:52 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 600

Ref 24.5 dBm

#Atten 5 dB

Mkr1 14.23 GHz
-29.92 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

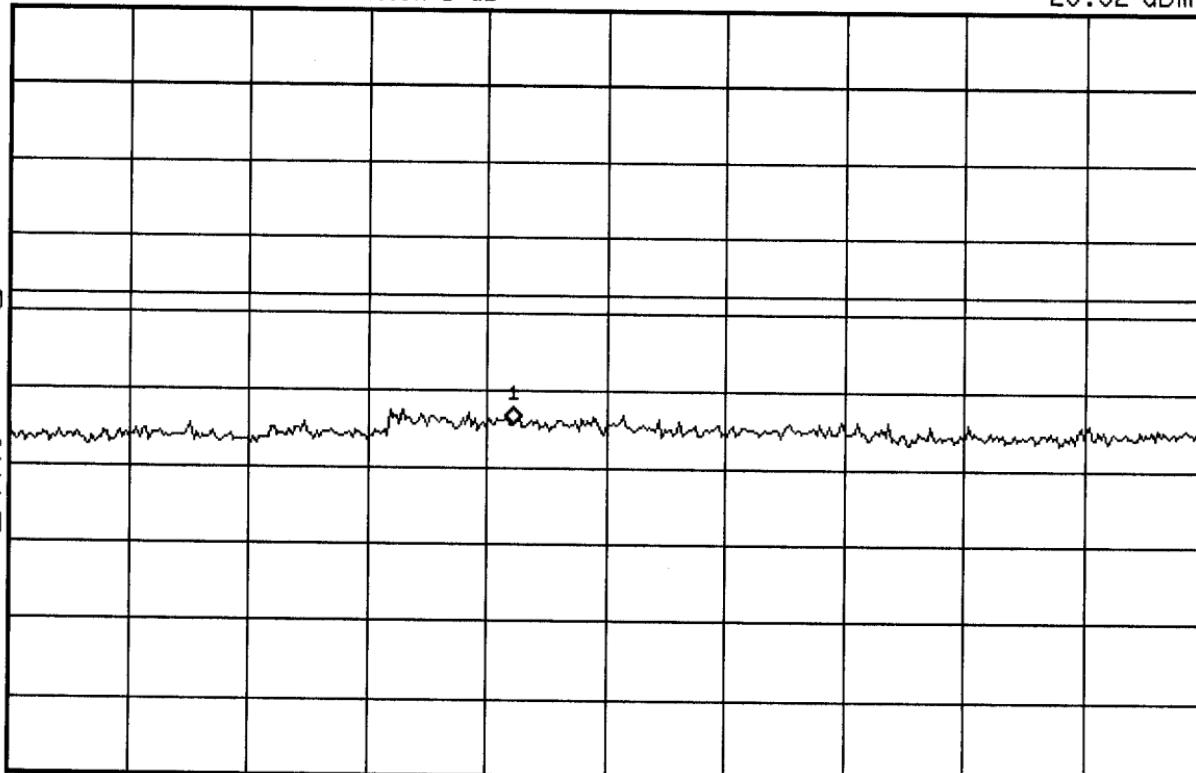
-13.0

dBm

W1 S2

S3 FC

AA



Start 10 GHz

#Res BW 3 MHz

#VBW 3 MHz

Stop 20 GHz

Sweep 100 ms



13:24:18 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 1175

Ref 24.5 dBm

#Atten 5 dB

Mkr1 2.463 GHz

-31.44 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

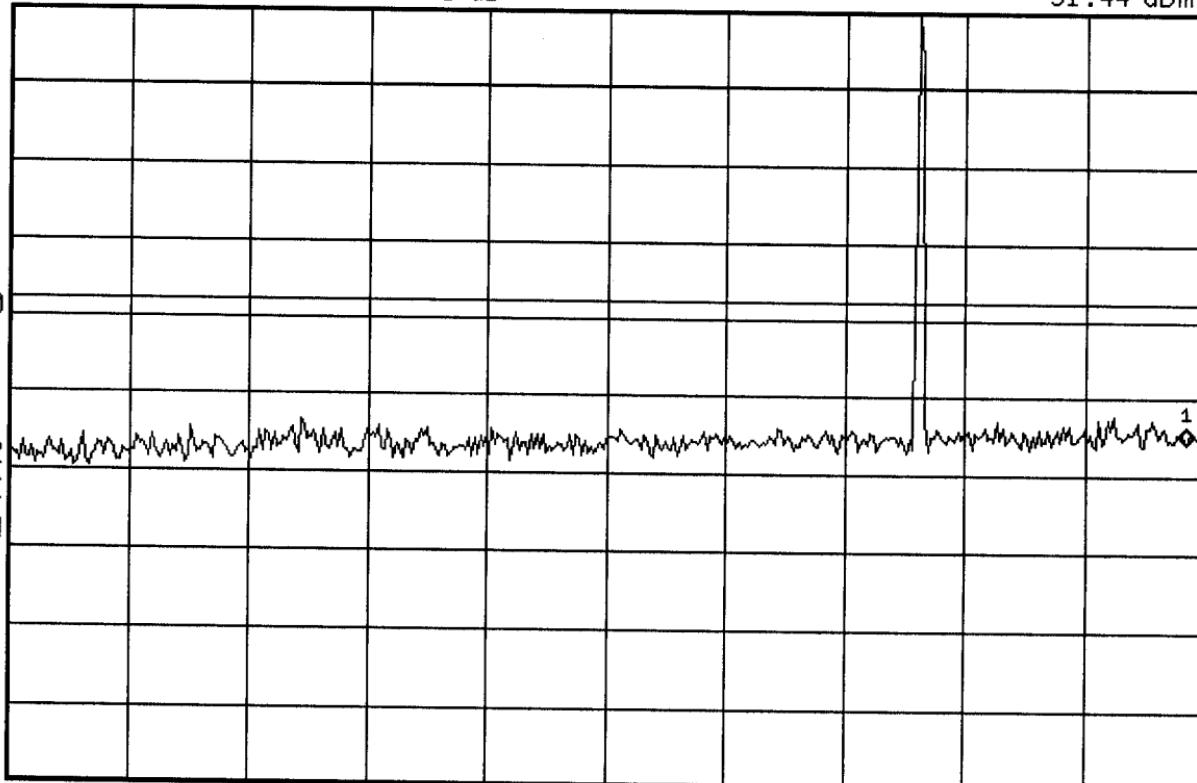
-13.0

dBm

W1 S2

S3 FC

AA



Start 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Stop 2.5 GHz

Sweep 5 ms

hp

13:24:41 Nov 21, 2001

WITHUS WPE-2200 COND SPURS CH 1175

Ref 24.5 dBm

#Atten 5 dB

Mkr1 5.725 GHz

-26.13 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

W1 S2

S3 FC

AA

1

Start 2.5 GHz

#Res BW 3 MHz

#VBW 3 MHz

Stop 10 GHz

Sweep 18.75 ms

hp 13:25:07 Nov 21, 2001
WITHUS WPE-2200 COND SPURS CH 1175
Ref 24.5 dBm

#Atten 5 dB

Mkr1 14.68 GHz
-28.31 dBm

Peak

Log

10

dB/

Offst

31

dB

DI

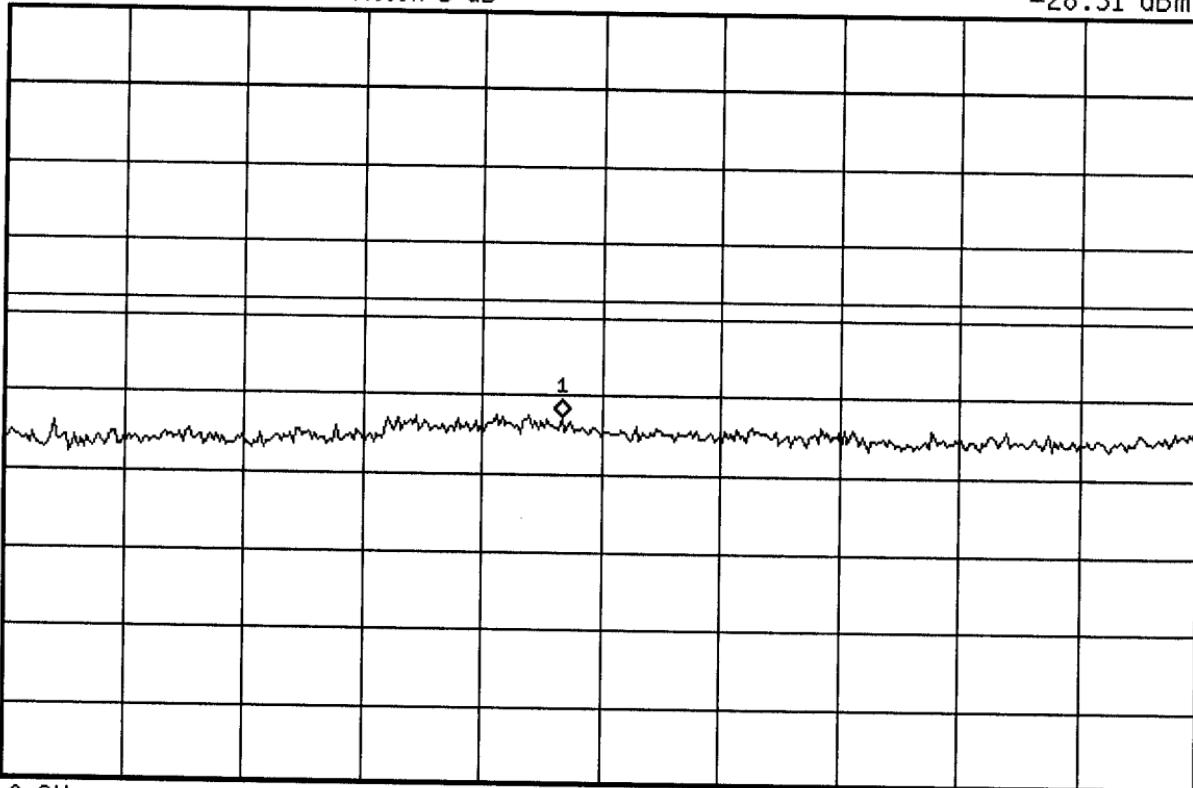
-13.0

dBm

W1 S2

S3 FC

AA



Start 10 GHz

#Res BW 3 MHz

#VBW 3 MHz

Stop 20 GHz

Sweep 100 ms



14:02:11 Nov 21, 2001

WITHUS WPE-2200 PCS CDMA CH 25

Ref 24.5 dBm

Atten 5 dB

Peak

Log

10

dB/

Offset

31

dB

DI

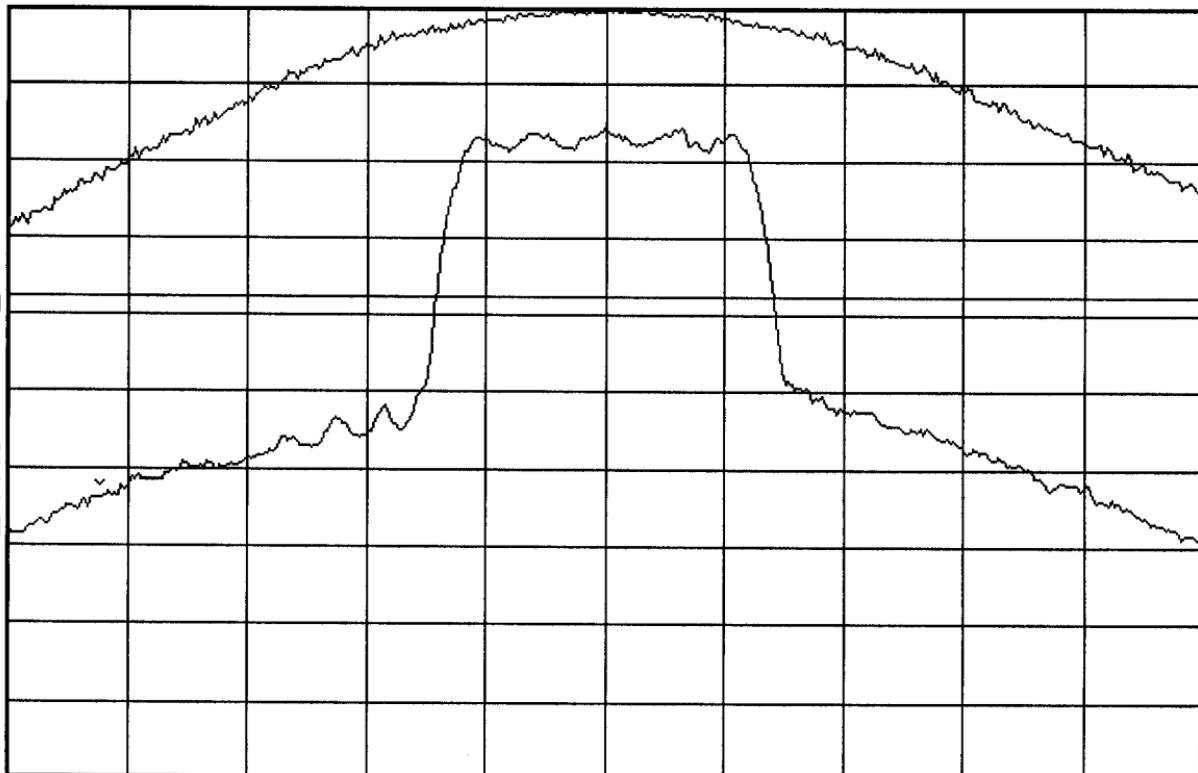
-13.0

dBm

M1 W2

S3 FC

AA



Center 1.851 GHz

#Res BW 30 kHz

#VBW 100 Hz

Span 5 MHz

Sweep 2.083 s



13:56:27 Nov 21, 2001

WITHUS WPE-2200 PCS CDMA CH 600

Ref 24.5 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

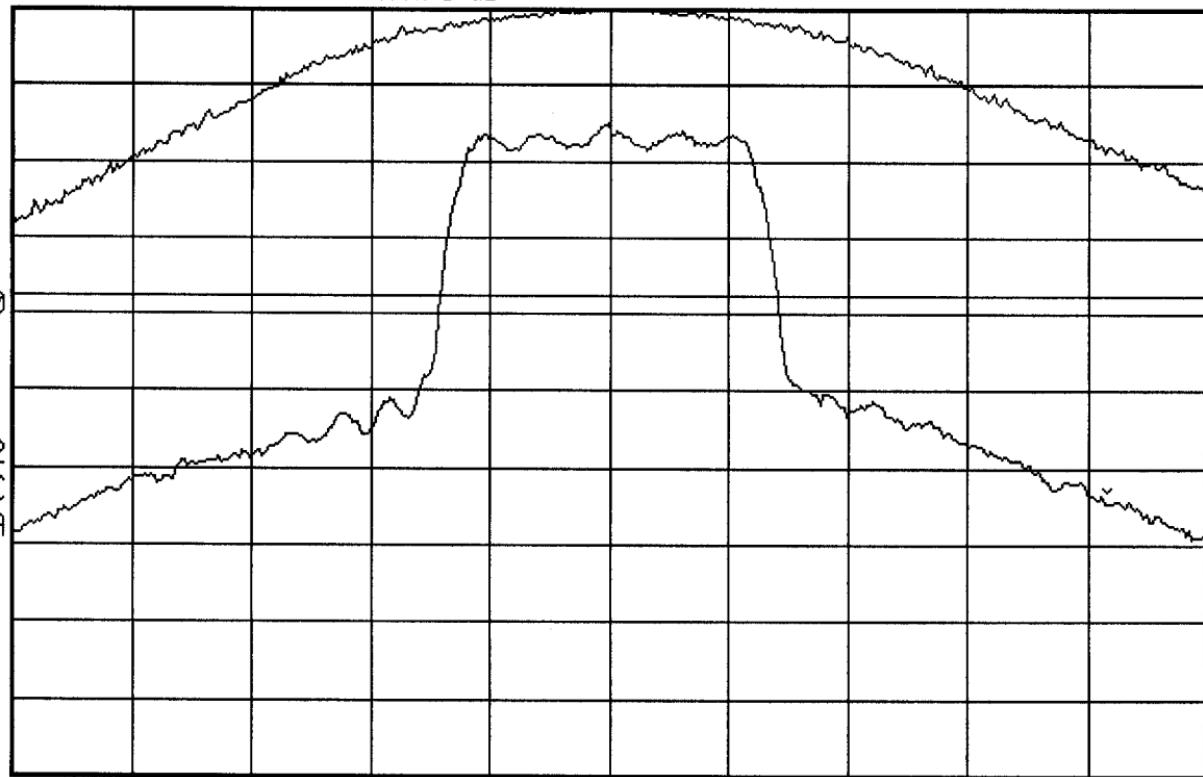
31

dB

DI

-13.0

dBm



Center 1.88 GHz

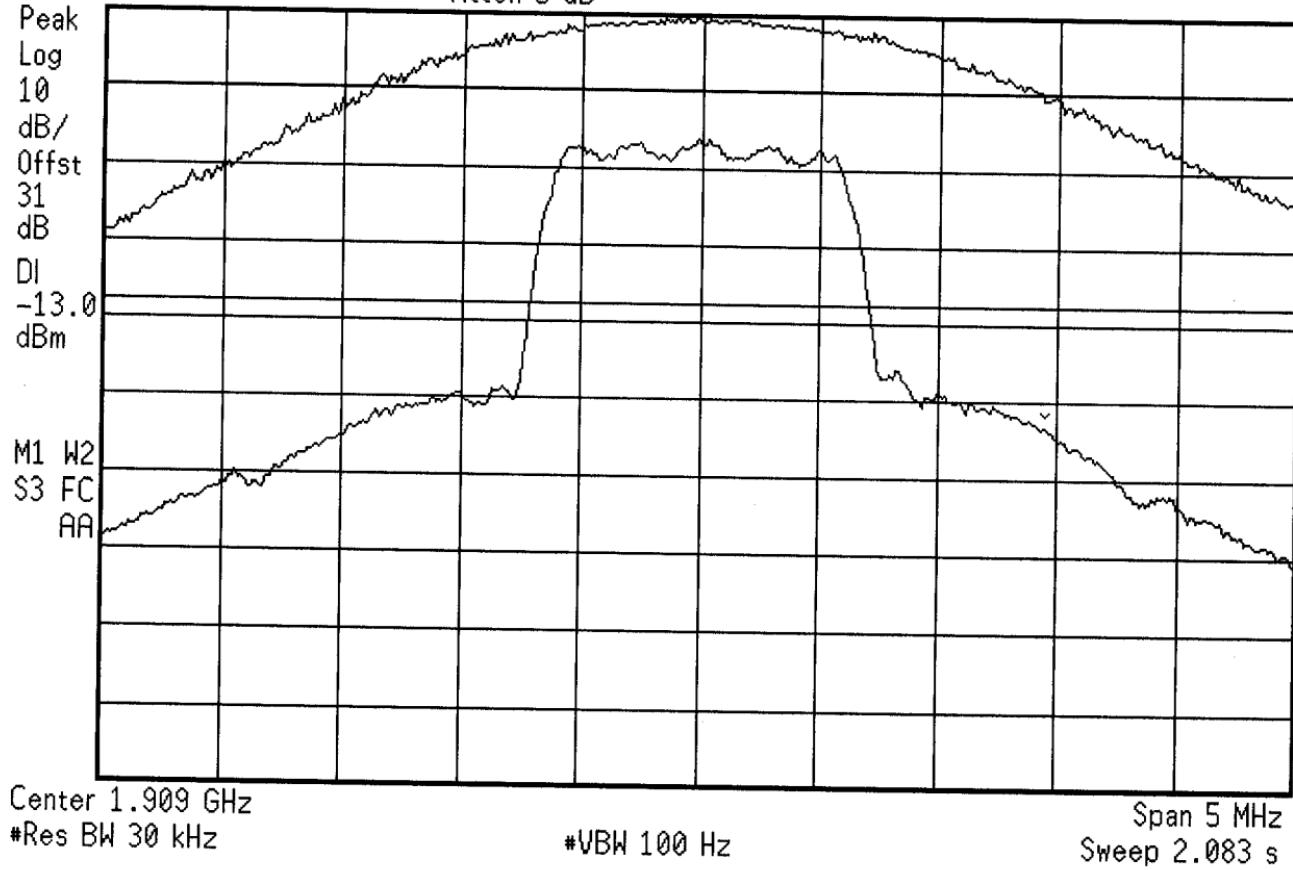
#Res BW 30 kHz

#VBW 100 Hz

Span 5 MHz

Sweep 2.083 s

hp 13:37:08 Nov 21, 2001
WITHUS WPE-2200 PCS CDMA CH 1175
Ref 24.5 dBm #Atten 5 dB



hp

09:46:29 Nov 22, 2001

WITHUS WPE-2200 BAND EDGE PCS CDMA LOW CH

Ref 24.5 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

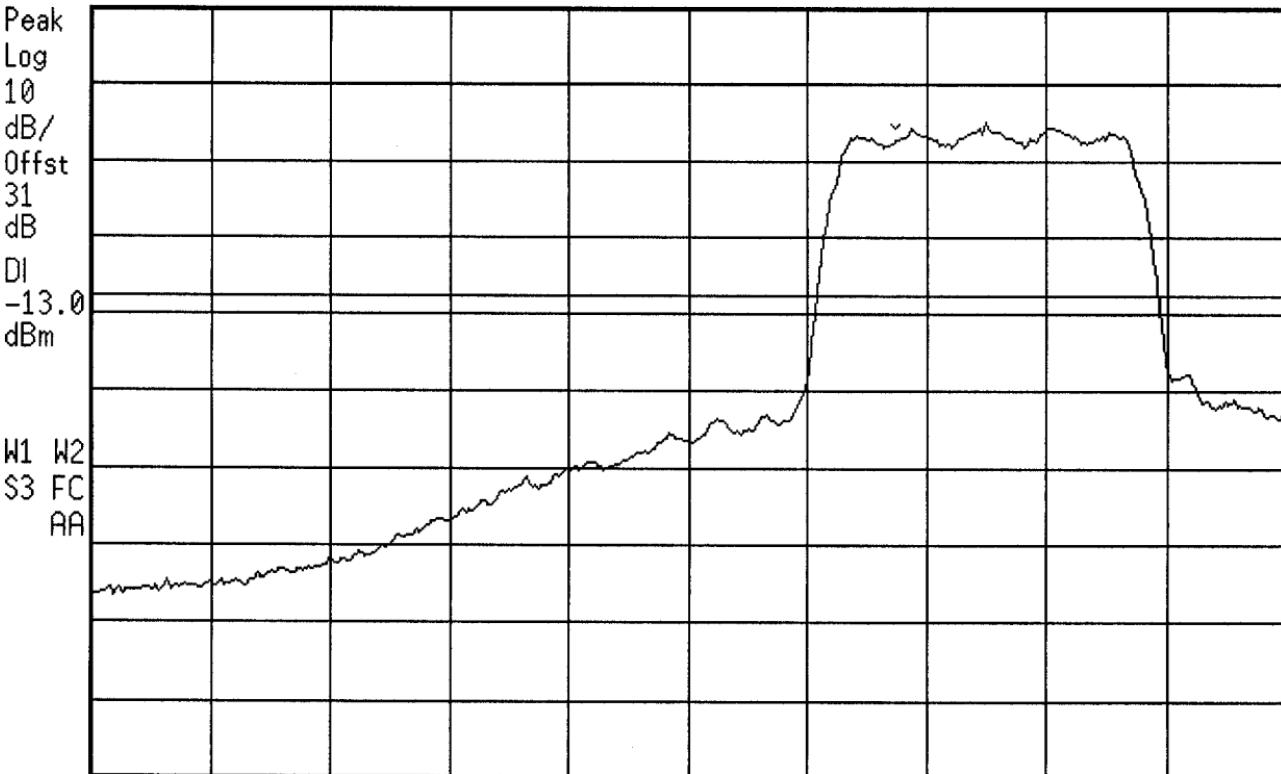
31

dB

DI

-13.0

dBm



Center 1.85 GHz

#Res BW 30 kHz

#VBW 100 Hz

Span 5 MHz

Sweep 2.083 s

hp

09:48:39 Nov 22, 2001

WITHUS WPE-2200 BAND EDGE PCS CDMA HIGH CH

Ref 24.5 dBm

Atten 5 dB

Peak

Log

10

dB/

Offst

31

dB

DI

-13.0

dBm

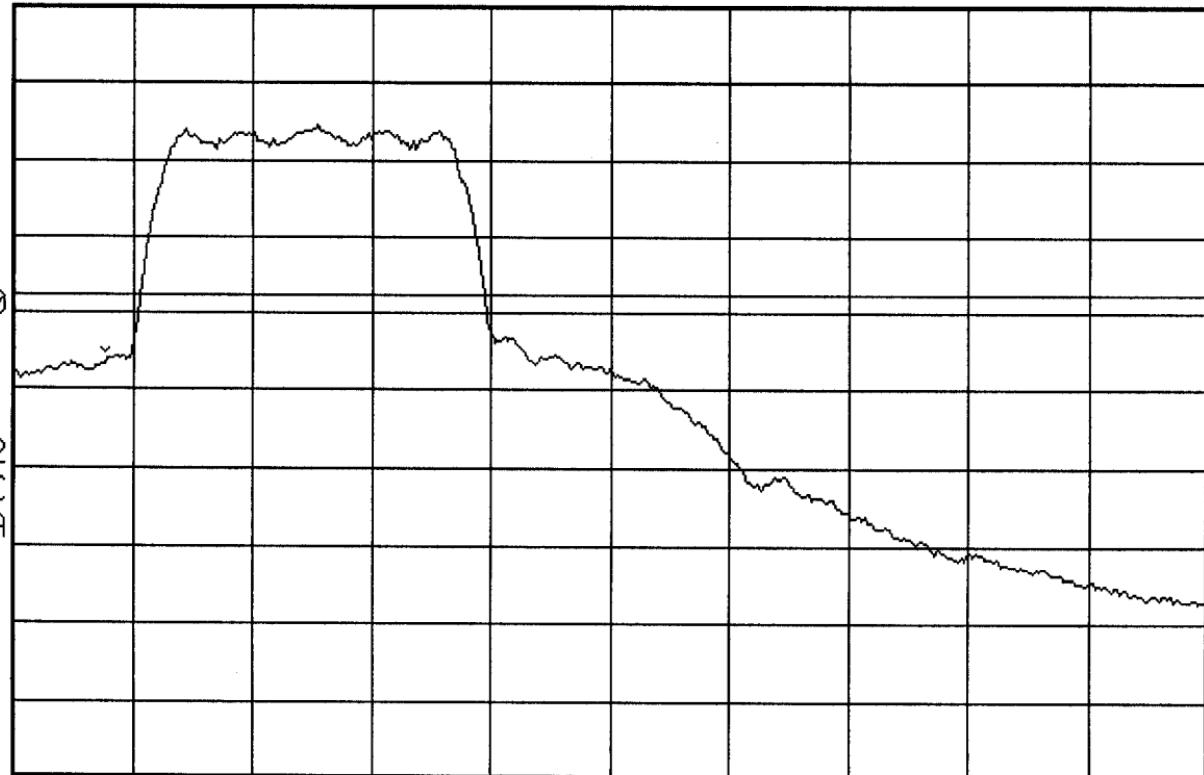
W1

W2

S3

FC

AA



Center 1.91 GHz

#Res BW 30 kHz

#VBW 100 Hz

Span 5 MHz
Sweep 2.083 s



15:06:49 Nov 21, 2001

WITHUS WPE-2200 OCCUPIED BAND WIDTH

Ref 24.5 dBm

#Atten 5 dB

Samp

Log

10

dB/

Offst

31

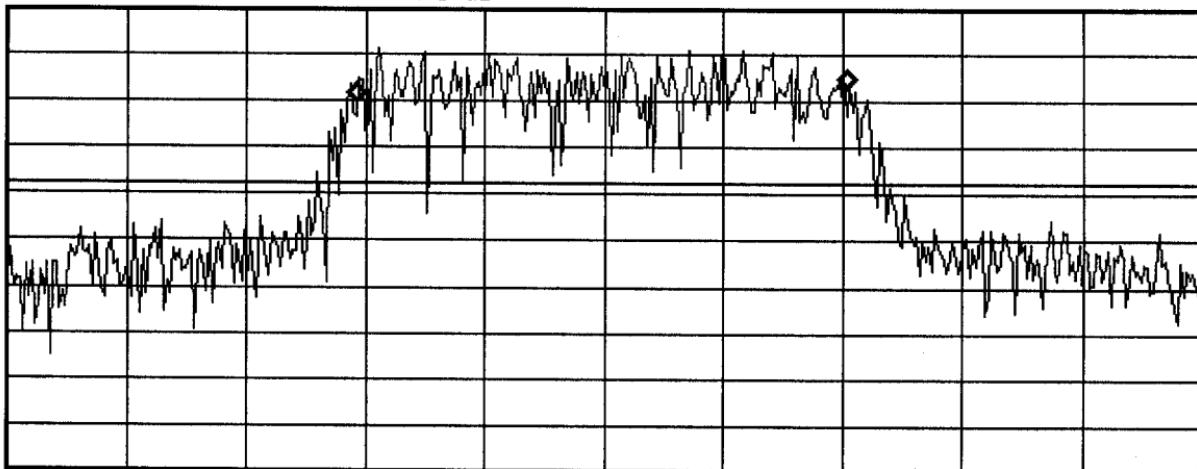
dB

DI

-13.0

dBm

W1 S2



Center 1.88 GHz

Span 3 MHz

#Res BW 30 kHz

#VBW 300 kHz

Sweep 9.167 ms

Occupied Bandwidth Results (measuring..)

Occupied Bandwidth
1.239 MHz

Occ BW % Pwr 99.00 %

Transmit Freq Error -4.395 kHz

hp 09:53:58 Nov 22, 2001

WITHUS WPE-2200 RECEIVER SPURS

Ref -8.5 dBm

Atten 5 dB

Mkr1 1.97813 GHz

-61.96 dBm

Peak

Log

10

dB/

Offst

1

dB

DI

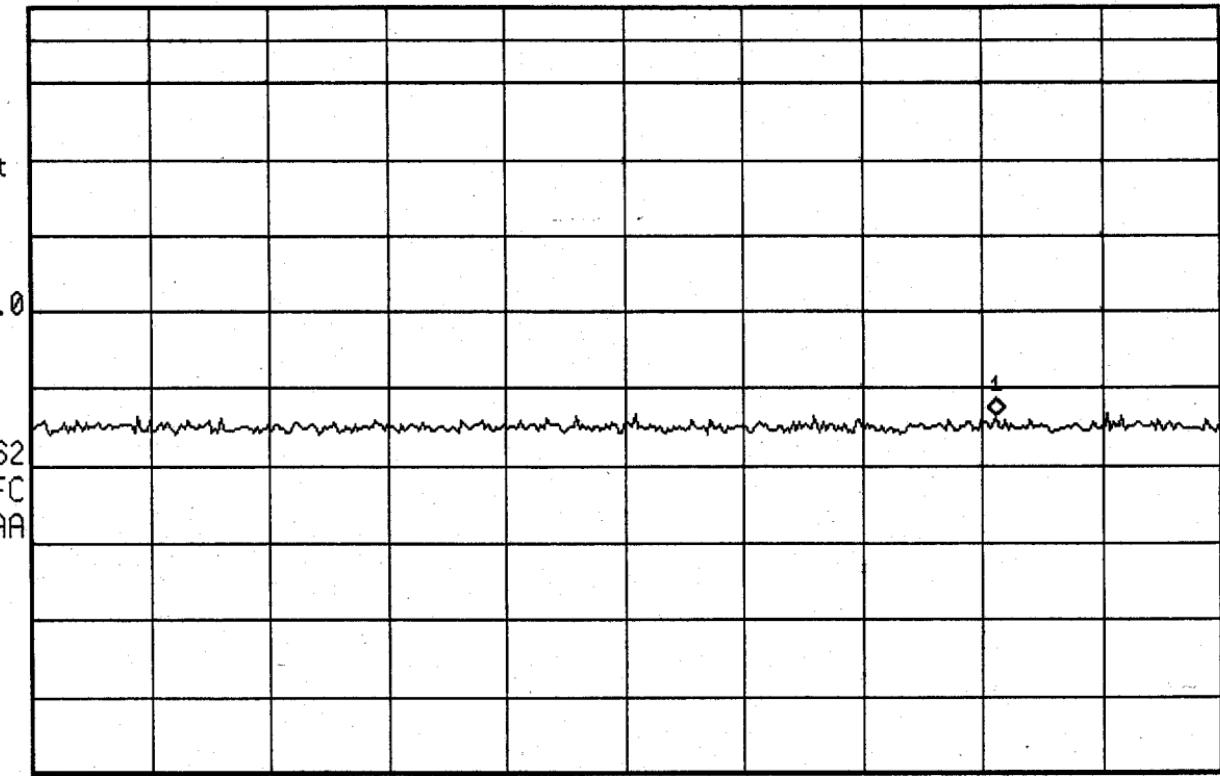
-13.0

dBm

M1 S2

S3 FC

AA



Start 1.931 GHz

*Res BW 3 MHz

*VBW 3 MHz

Stop 1.989 GHz

Sweep 5 ms