# DECLARATION OF COMPLIANCE
# FCC PART 24(E) & 22(H) EMC MEASUREMENTS


**Test Lab**

**CELLTECH LABS INC.**
Testing and Engineering Services
1955 Moss Court
Kelowna, B.C.
Canada V1Y 9L3
Tel.: 250-448-7047
Fax: 250-448-7046
e-mail: info@celltechlabs.com
web site: www.celltechlabs.com

**Applicant Information**

**ITRONIX CORPORATION**
801 South Stevens Street
Spokane, WA 99210
United States


| | |
|---|---|
| **FCC IDENTIFIER:** | **KBCIX260PLUSAC555** |
| **Model(s):** | **IX260PLUSAC555** |
| **FCC Rule Part(s):** | **FCC 47 CFR §24(E), §22(H), §2** |
| **IC Rule Part(s):** | **RSS-133 Issue 2, RSS-132 Issue 1 (Provisional)** |
| **Test Procedure(s):** | **FCC 47 CFR §24(E), §22(H), §2**<br>**IC RSS-133 Issue 2, IC RSS-132 Issue 1 (Provisional)**<br>**ANSI TIA/EIA-603-A-2001** |
| **FCC Device Classification:** | **PCS Licensed Transmitter (PCB)** |
| **IC Device Classification:** | **2 GHz Personal Communication Services (RSS-133)**<br>**800 MHz Cellular Telephones Employing New Technologies (RSS-132)** |
| **Device Type:** | **Rugged Laptop PC with Sierra Wireless AirCard 555/550 Dual-Band CDMA PCMCIA Modem with External Swivel Dipole Antenna, Mobile Vehicle-Mount Antenna, & Vehicle Cradle** |
| **Tx Frequency Range(s):** | **1851.25 - 1908.75 MHz (PCS CDMA)**<br>**824.70 - 848.31 MHz (Cellular CDMA)** |
| **Rx Frequency Range(s):** | **1931.25 - 1988.75 MHz (PCS CDMA)**<br>**869.70 - 893.31 MHz (Cellular CDMA)** |
| **Max. ERP/EIRP Measured:** | **0.302 Watts (24.80 dBm) EIRP - PCS CDMA (Itronix Swivel Dipole Antenna)**<br>**0.306 Watts (24.86 dBm) ERP - Cellular CDMA (Itronix Swivel Dipole Antenna)**<br>**0.040 Watts (16.03 dBm) EIRP - PCS CDMA (MaxRad Vehicle-Mount Antenna)**<br>**0.146 Watts (21.65 dBm) ERP - Cellular CDMA (MaxRad Vehicle-Mount Antenna)** |
| **Max. Conducted Power Measured:** | **23.0 dBm (PCS CDMA)**<br>**23.0 dBm (Cellular CDMA)** |
| **Modulation Type:** | **QPSK** |
| **Emission Designator(s):** | **1M25F9W** |
| **Frequency Tolerance(s):** | **150 Hz (PCS CDMA)**<br>**300 Hz (Cellular CDMA)** |
| **Antenna Type(s) Tested:** | **Itronix IX260+ External Swivel Dipole**<br>**MaxRad 3 dBi Gain Vehicle-Mount P/N: WMLPVDB800/1900** |
| **Power Source(s) Tested:** | **11.1 V Lithium-ion Battery, 6.0 Ah (Model: A2121-2)**<br>**12 V Vehicle Battery (for Vehicle Cradle)** |

**This mobile device has demonstrated compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC 47 CFR §24(E), §22(H), §2; Industry Canada RSS-133 Issue 2, RSS-132 Issue 1 (Provisional); and ANSI TIA/EIA-603-A-2001.**

**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.**



**Russell Pipe**
**Senior Compliance Technologist**
**Celltech Labs Inc.**

**Duane M. Friesen**
**EMC Manager**
**Celltech Labs Inc.**

# TABLE OF CONTENTS

# FCC PART 24(E) & 22(H) EMC MEASUREMENT REPORT

## 1.1 SCOPE

This report describes the measurements made and results collected during the Electromagnetic emissions testing of the Itronix Corporation IX260PLUSAC555 Rugged Laptop PC incorporating the internal Sierra Wireless AirCard 555/550 Dual-Band PCS/Cellular CDMA PCMCIA Modem with external swivel dipole antenna, vehicle-mount antenna, and vehicle cradle. The measurement results were applied against the EMC requirements and limits outlined in the technical rules and regulations set forth in the Federal Communication Commission Code of Federal Regulations Title 47 Parts 24(E), 22(H), and 2.

## 2.1 GENERAL INFORMATION / DEVICE DESCRIPTION

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **APPLICANT** | **ITRONIX CORPORATION** | | | **801 South Stevens Street Spokane, WA 99210** | | | | | |
| **FCC IDENTIFIER** | KBCIX260PLUSAC555 | | | | | | | | |
| **Model(s)** | IX260PLUSAC555 | | | | | | | | |
| **Serial No.** | ZZGEG4112ZZ9777 | | | Production Unit | | | | | |
| **Device Type** | Rugged Laptop PC with Sierra Wireless AirCard 555/550 Dual-Band CDMA PCMCIA Modem with External Swivel Dipole Antenna, Vehicle-Mount Antenna, & Vehicle Cradle | | | | | | | | |
| **FCC Rule Part(s)** | §24(E) | | | §22(H) | | | §2 | | |
| **IC Rule Part(s)** | RSS-133 Issue 2 | | | RSS-132 Issue 1 (Provisional) | | | | | |
| **FCC Classification** | PCS Licensed Transmitter (PCB) | | | | | | | | |
| **IC Classification** | 2 GHz Personal Communication Services (RSS-133) | | | | | | | | |
| | 800 MHz Cellular Telephones Employing New Technologies (RSS-132) | | | | | | | | |
| **Tx Frequency Range(s)** | 1851.25 - 1908.75 MHz | | | PCS CDMA | | | | | |
| | 824.70 - 848.31MHz | | | Cellular CDMA | | | | | |
| **Rx Frequency Range(s)** | 1931.25 - 1988.75 MHz | | | PCS CDMA | | | | | |
| | 869.70 - 893.31 MHz | | | Cellular CDMA | | | | | |
| **Antenna Type(s) Tested** | Type | Description | Max. RF Output Power (EIRP/ERP) | | | | | | Length |
| | Dual-Band CDMA | External Swivel Dipole | 0.302 | W | 24.80 | dBm | EIRP | PCS | 4.7 “ |
| | | | 0.306 | W | 24.86 | dBm | ERP | Cellular | |
| | Dual-Band CDMA | 3 dBi-Gain Vehicle-Mount | 0.040 | W | 16.03 | dBm | EIRP | PCS | 2.7 “ |
| | | | 0.146 | W | 21.65 | dBm | ERP | Cellular | |
| **Max. RF Conducted Output Power Tested** | 23.0 dBm | | Average | | PCS CDMA | | | | |
| | 23.0 dBm | | Average | | Cellular CDMA | | | | |
| **Emission Designator(s)** | 1M25F9W | | | | | | | | |
| **Modulation Type(s)** | QPSK | | | | | | | | |
| **Frequency Tolerance** | 150 Hz (PCS CDMA) | | | 300 Hz (Cellular CDMA) | | | | | |
| **Power Source(s) Tested** | Lithium-ion Battery | | 11.1 V, 6.0 Ah | | Model: A2121-2 | | | | |
| | Vehicle Battery | | 12 V | | (For Vehicle Cradle) | | | | |

# FCC PART 24(E) & 22(H) EMC MEASUREMENT REPORT (Continued)

## 3.1 TEST EQUIPMENT LIST

| Equipment Type | Model | Serial No. | Calibration Due Date |
|---|---|---|---|
| HP Signal Generator | 8648D (9kHz-4.0GHz) | 3847A00611 | April 2005 |
| Rohde & Schwarz Signal Generator | SMR 20 (10MHz-40GHz) | 100104 | April 2005 |
| Gigatronics Power Meter | 8651A | 8650137 | April 2005 |
| Gigatronics Power Meter | 8652A | 1835267 | April 2005 |
| Gigatronics Power Sensor | 80701A (0.05-18GHz) | 1833535 | April 2005 |
| Gigatronics Power Sensor | 80701A (0.05-18GHz) | 1833542 | April 2005 |
| Gigatronics Power Sensor | 80701A (0.05-18GHz) | 1834350 | April 2005 |
| Amplifier Research Power Amp. | 5S1G4 (5W, 800MHz-4.2GHz) | 26235 | N/A |
| Amplifier Research Power Amp. | 10W1000C (0.5 – 1 GHz) | 27887 | N/A |
| Microwave System Amplifier | HP 83017A (0.5-26.5GHz) | 3123A00587 | N/A |
| Network Analyzer | HP 8753E (30kHz-3GHz) | US38433013 | April 2005 |
| Frequency Counter | HP 53181A (3GHz) | 3736A05175 | April 2005 |
| DC Power Supply | HP E3611A | KR83015294 | N/A |
| Multi-Device Controller | EMCO 2090 | 9912-1484 | N/A |
| Mini Mast | EMCO 2075 | 0001-2277 | N/A |
| Turntable | EMCO 2080-1.2/1.5 | 0002-1002 | N/A |
| Double Ridged Horn Antenna | ETS 3115 (1-18GHz)<br>TX Substitution Antenna (Horn SN6267) | 6267 | Oct 2004 |
| Double Ridged Horn Antenna | ETS 3115 (1-18GHz) | 6276 | Oct 2004 |
| Standard Gain Horn Antenna | ETS 3160-09<br>TX Substitution Antenna (3160-09) | 9810-1123 | N/A |
| Standard Gain Horn Antenna | ETS 3160-09 | 1263 | N/A |
| Bilog Antenna | Schaffner CBL6111A | 1607 | Jan 2005 |
| Roberts Dipole Antenna | 3121C-DB4<br>TX Substitution Antenna (B_3121C) | 0003-1494 | Dec 2004 |
| Roberts Dipole Antenna | 3121C-DB4 | 0003-1498 | Dec 2004 |
| Spectrum Analyzer | HP 8594E | 3543A02721 | April 2005 |
| Spectrum Analyzer | HP E4408B | US39240170 | Dec 2004 |
| Shielded Screen Room | Lindgren R.F. 18W-2/2-0 | 16297 | N/A |
| Environmental Chamber | ESPEC ECT-2 (Temperature/Humidity) | 0510154-B | Feb 2005 |
| Directional Coupler | Amplifier Research DC7154 (0.8-4.2 GHz) | 26197 | N/A |
| Directional Coupler | Pasternack PE2214-20 | 00078 | N/A |
| High Pass Filter | Microwave Circuits HIG318G1 | 0001DC0020 | N/A |
| High Pass Filter | Microwave Circuits H02G18G1 | 0001DC0020 | N/A |
| 30 dB Attenuator | Pasternack PE7019-30 | 00065 | N/A |

# APPENDIX A - RF OUTPUT POWER MEASUREMENT - §2.1046

## A.1. MEASUREMENT PROCEDURE

The RF conducted power levels for both PCS and cellular bands were measured at the AirCard 555 PCMCIA modem antenna connector port using a Gigatronics 8652A Universal Power Meter in mean average power mode. An offset was entered into the power meter to correct for the losses of the attenuator and cable installed between the transmitter output port and the power sensor input. The Sierra Wireless AirCard 555 test software was used to set the DUT to transmit in the CDMA "always up" power control mode. All subsequent tests were performed using the same power measurement procedures.

## A.2. MEASUREMENT DATA

| RF CONDUCTED OUTPUT POWER MEASUREMENTS (measured at the AirCard 555 PCMCIA Modem Antenna Port) | | | |
|---|---|---|---|
| **Frequency (MHz)** | **Average Power (dBm)** | **Frequency (MHz)** | **Average Power (dBm)** |
| **824.70** | 23.0 | **1851.25** | 23.0 |
| **835.89** | 23.0 | **1880.00** | 23.0 |
| **848.31** | 23.0 | **1908.75** | 23.0 |

# APPENDIX B - SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051

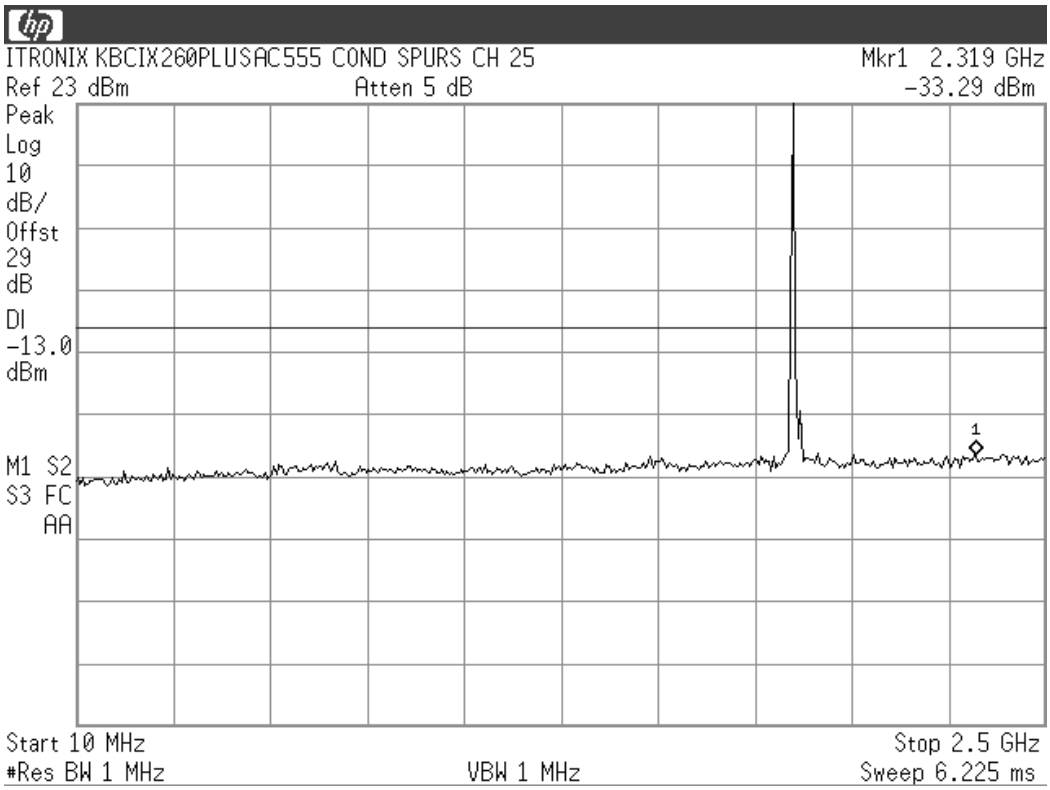
## B.1. MEASUREMENT PROCEDURE

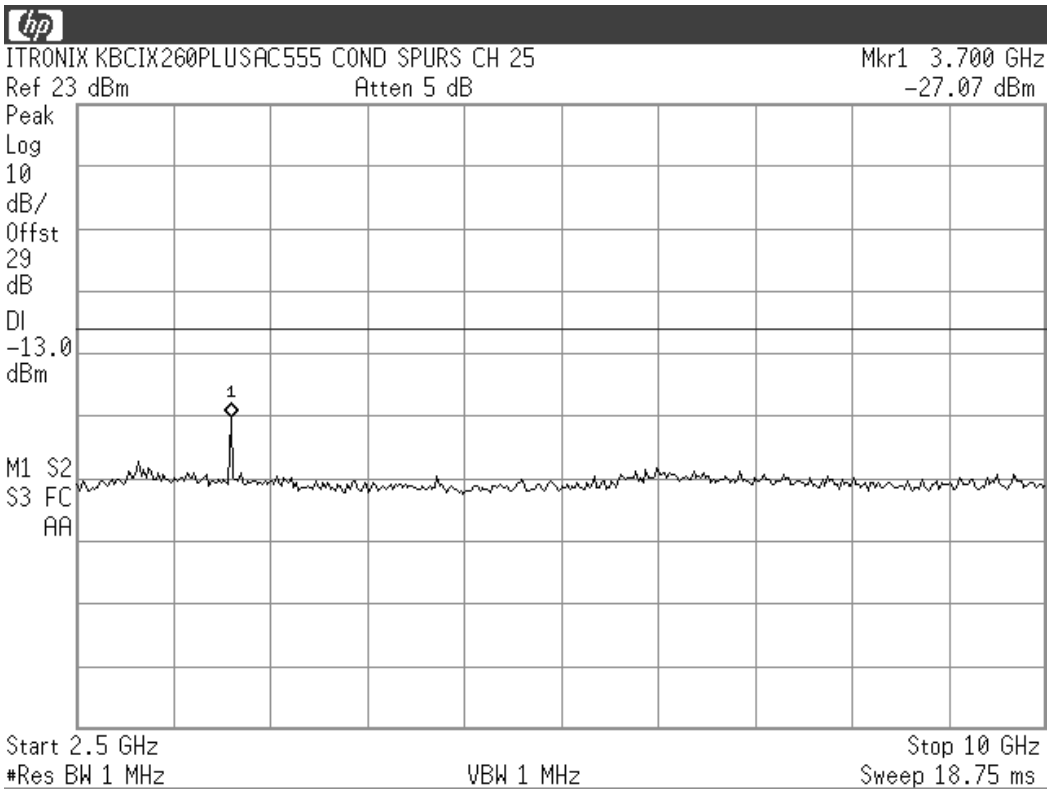
The Sierra Wireless AirCard 555 test software installed in the IX260+ Laptop PC was used to set the DUT to transmit in the CDMA "always up" power control mode. The level of the carrier and the various conducted spurious frequencies were measured by means of a calibrated spectrum analyzer. The resolution bandwidth and video bandwidth were set to 1MHz. The spectrum was scanned from 10MHz to 20GHz at the low, mid, and high channels. The radio transmitter was operating at maximum output power. The antenna output terminal of the DUT was connected to the input of a 50Ω spectrum analyzer through a matched 30dB attenuator and coaxial cable. The reported emissions were below the specified limit of -13dBm.

(See next pages for Spectrum Analyzer plots)

## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

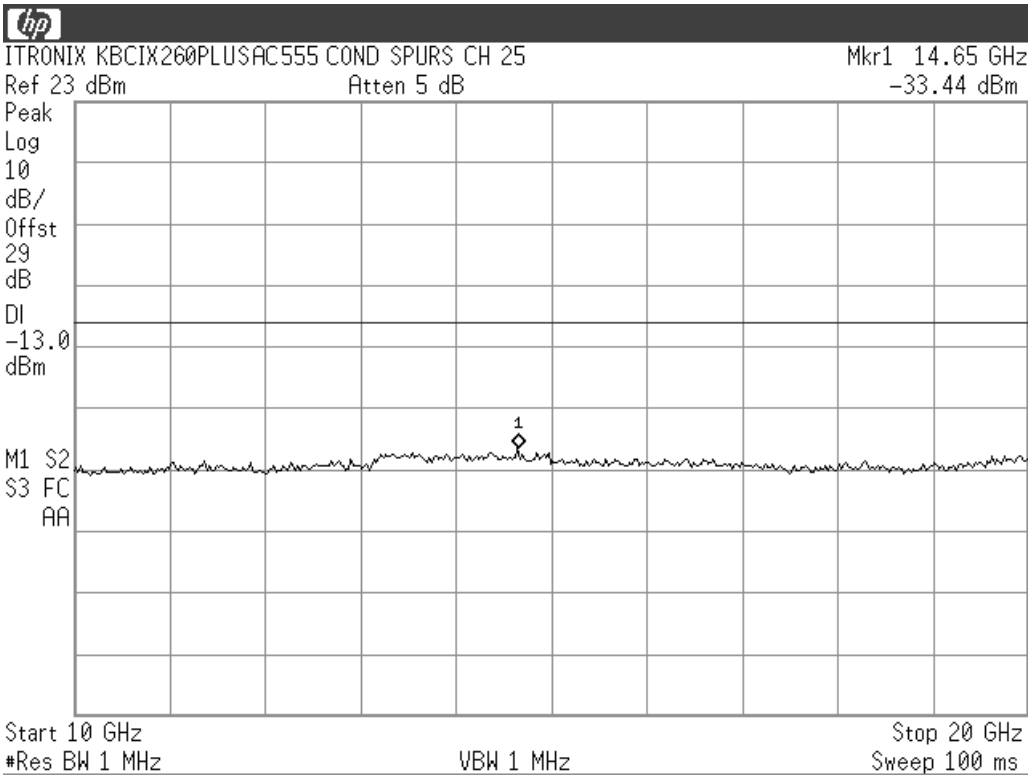
### B.2. MEASUREMENT DATA - PCS Band

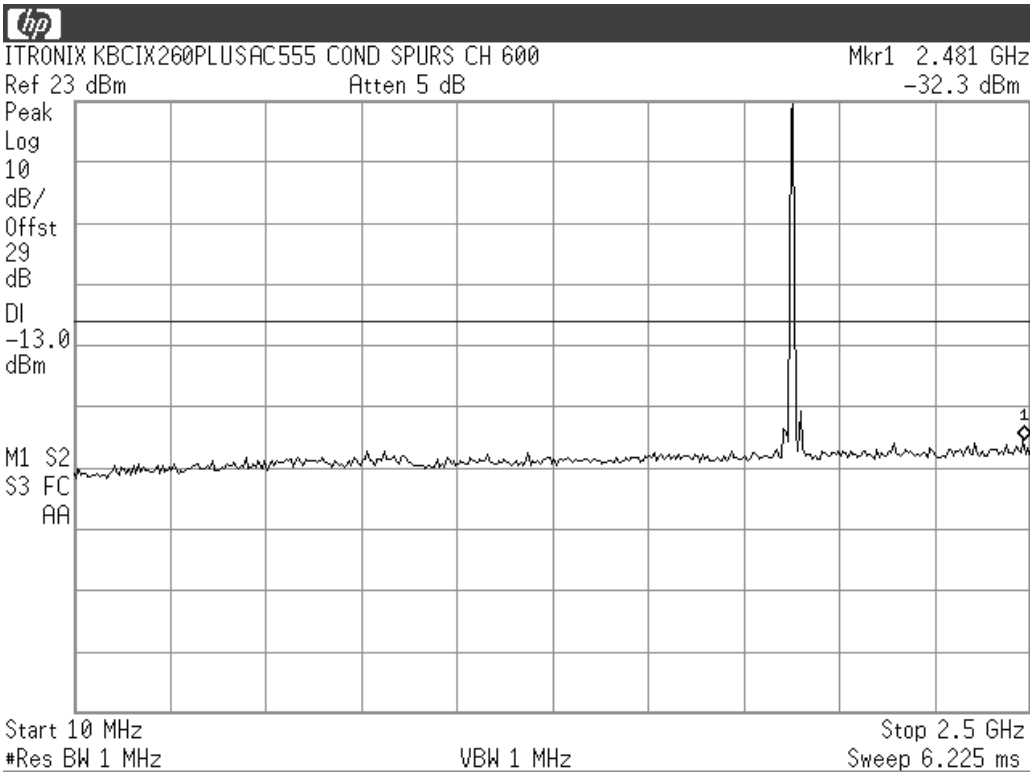


## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

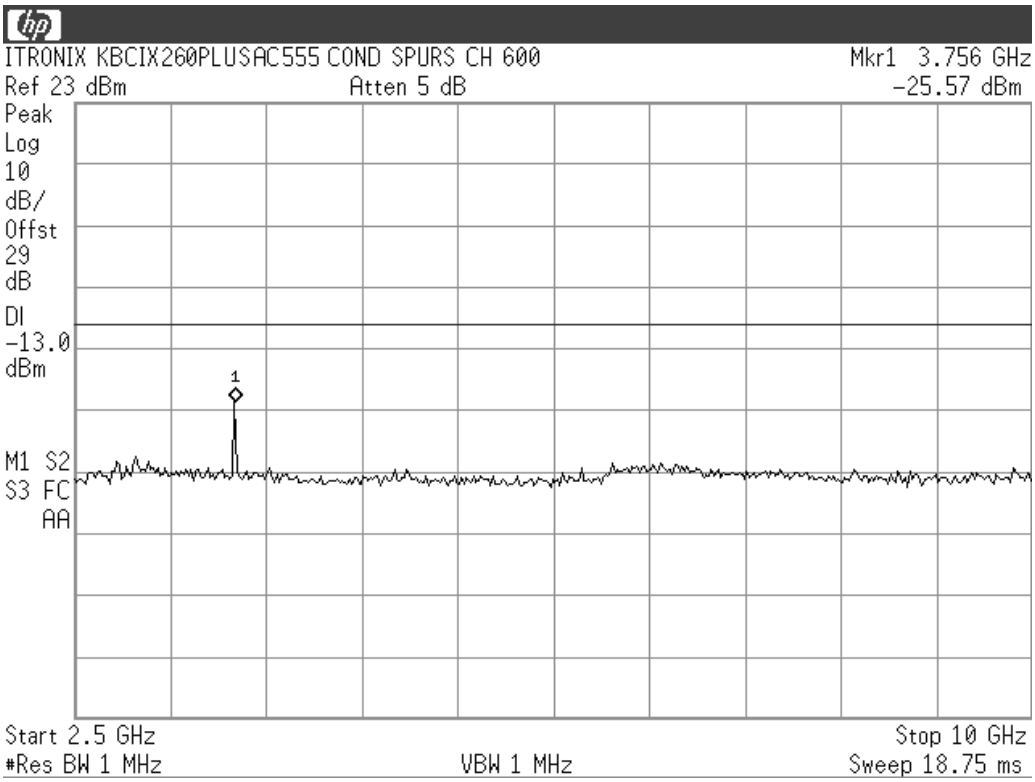
### B.2. MEASUREMENT DATA - PCS Band (Cont.)

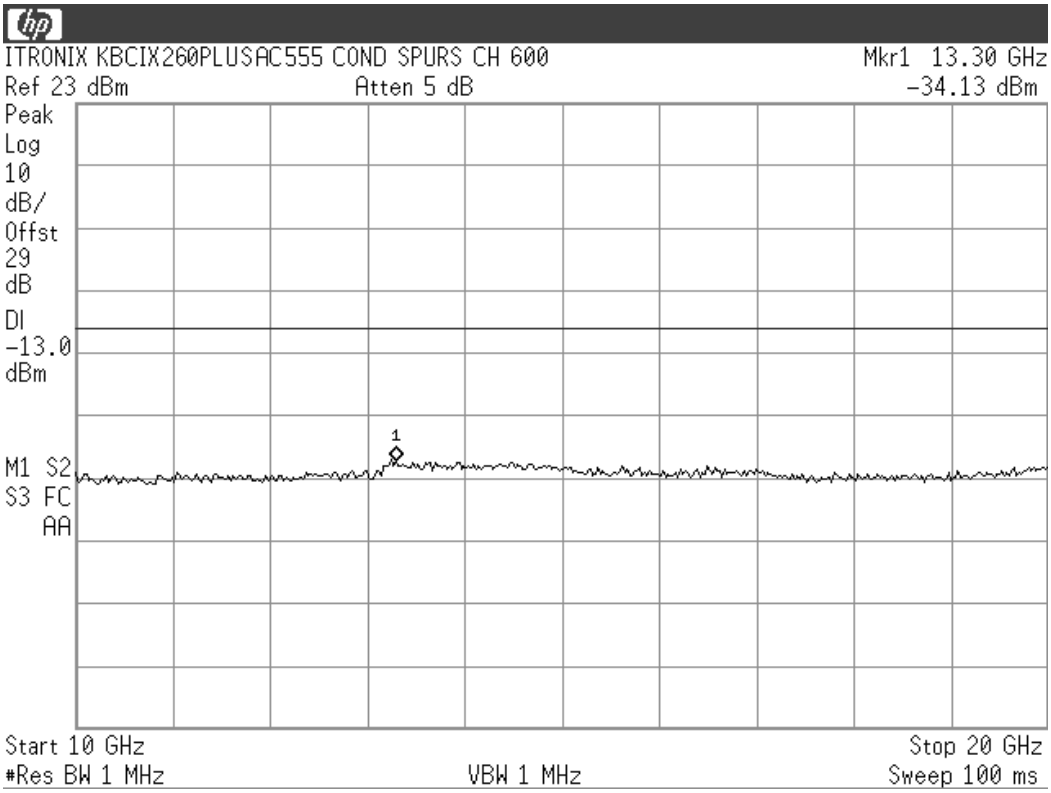


## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

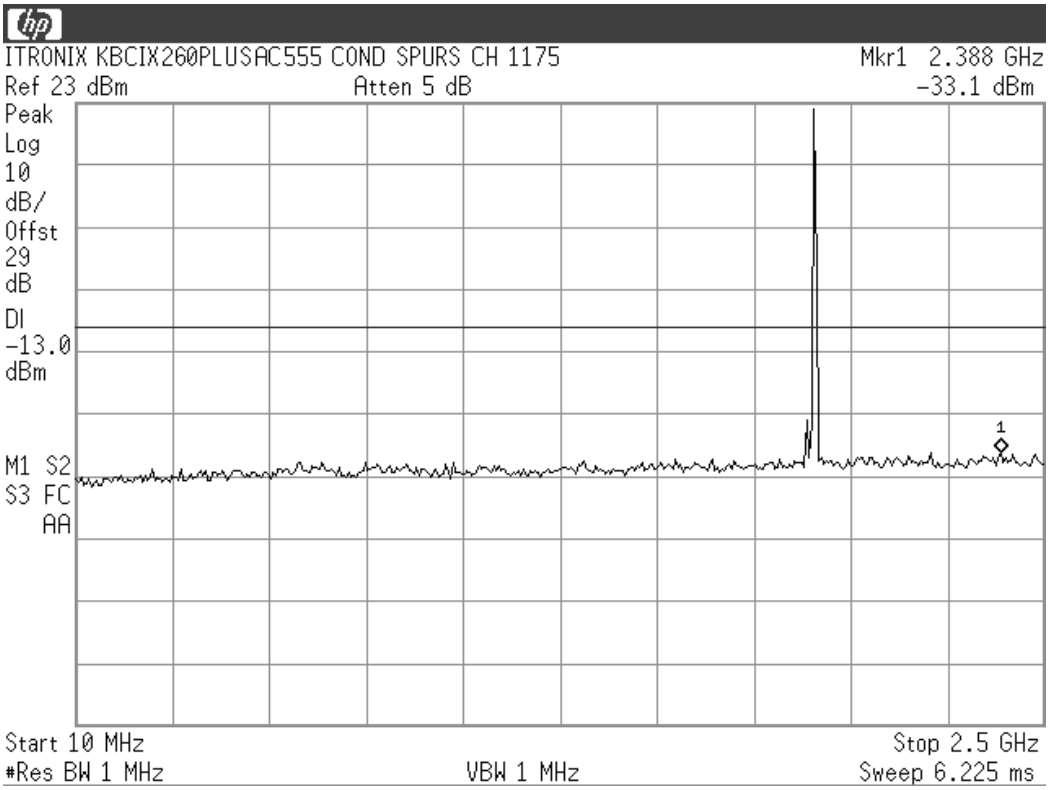
### B.2. MEASUREMENT DATA - PCS Band (Cont.)

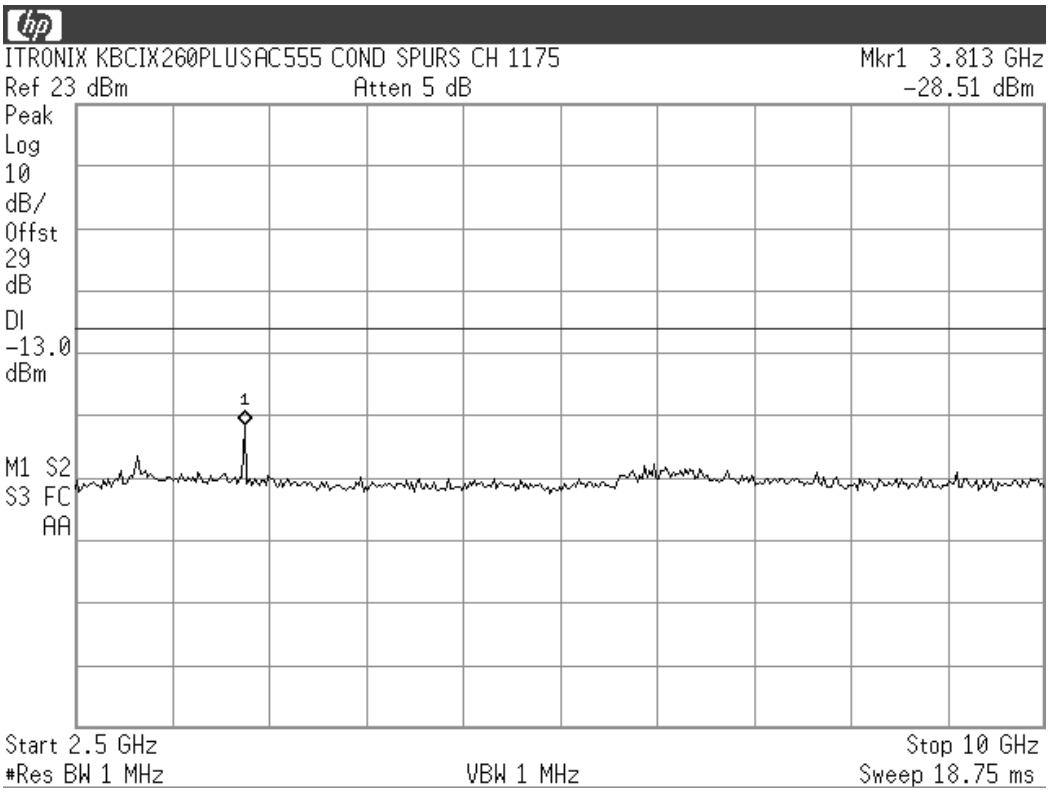


## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

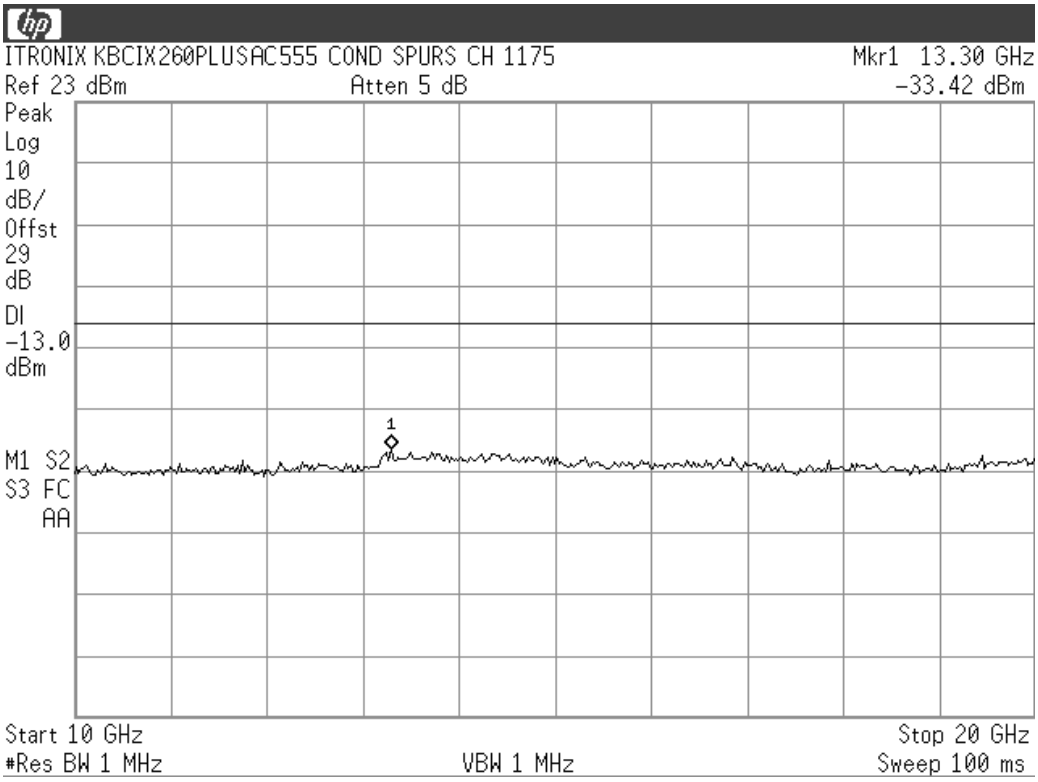
### B.2. MEASUREMENT DATA - PCS Band (Cont.)



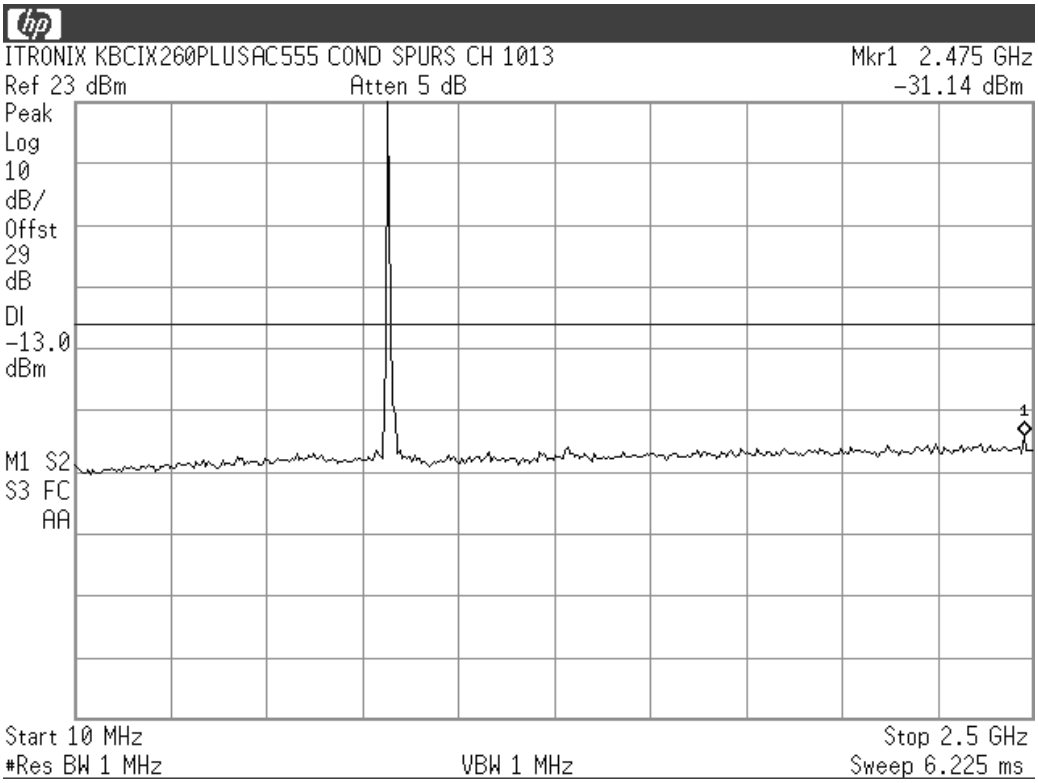
## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

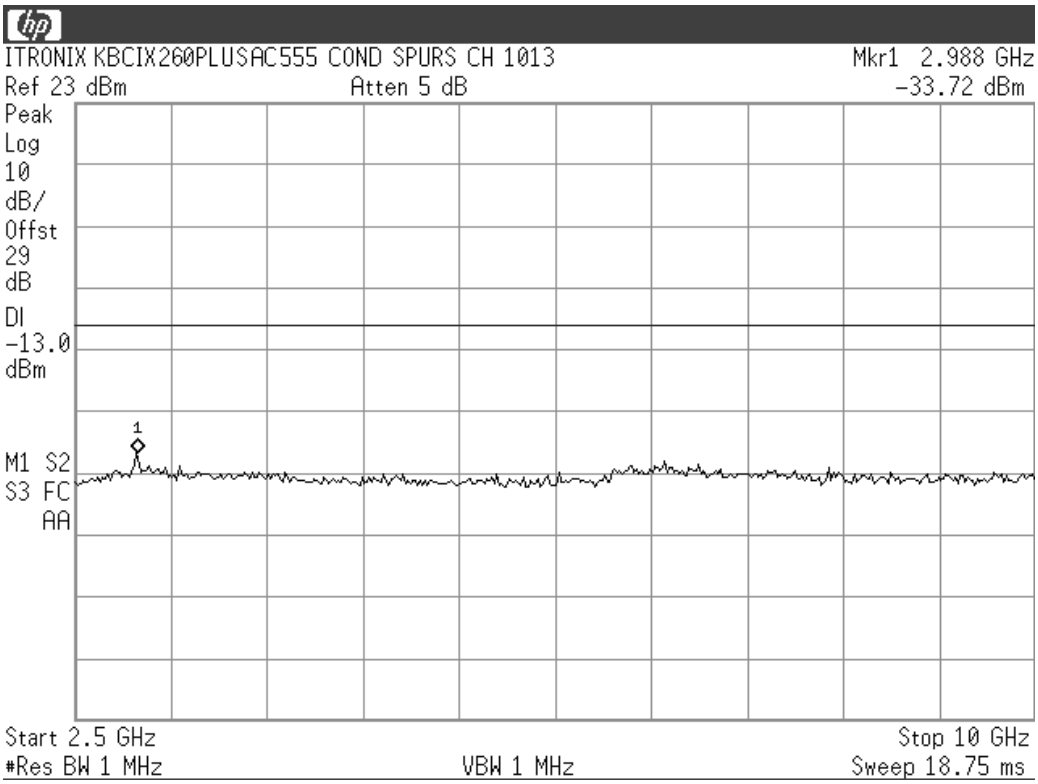
### B.2. MEASUREMENT DATA - PCS Band (Cont.)



## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

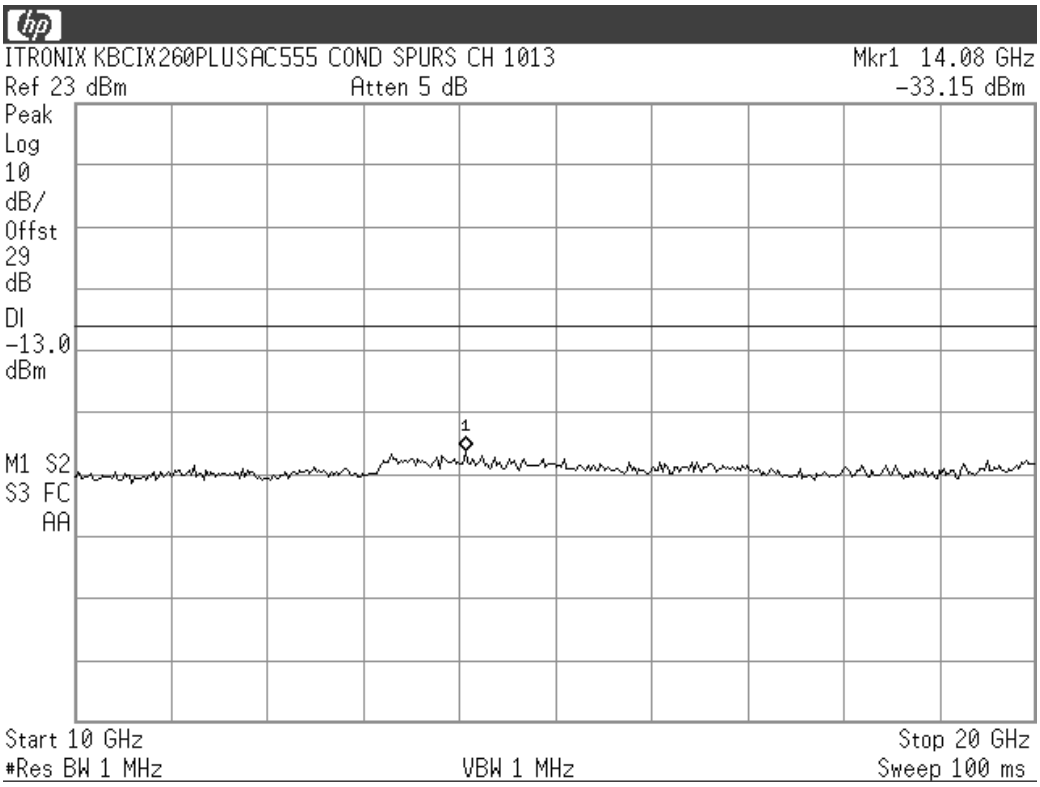
### B.2. MEASUREMENT DATA - Cellular Band

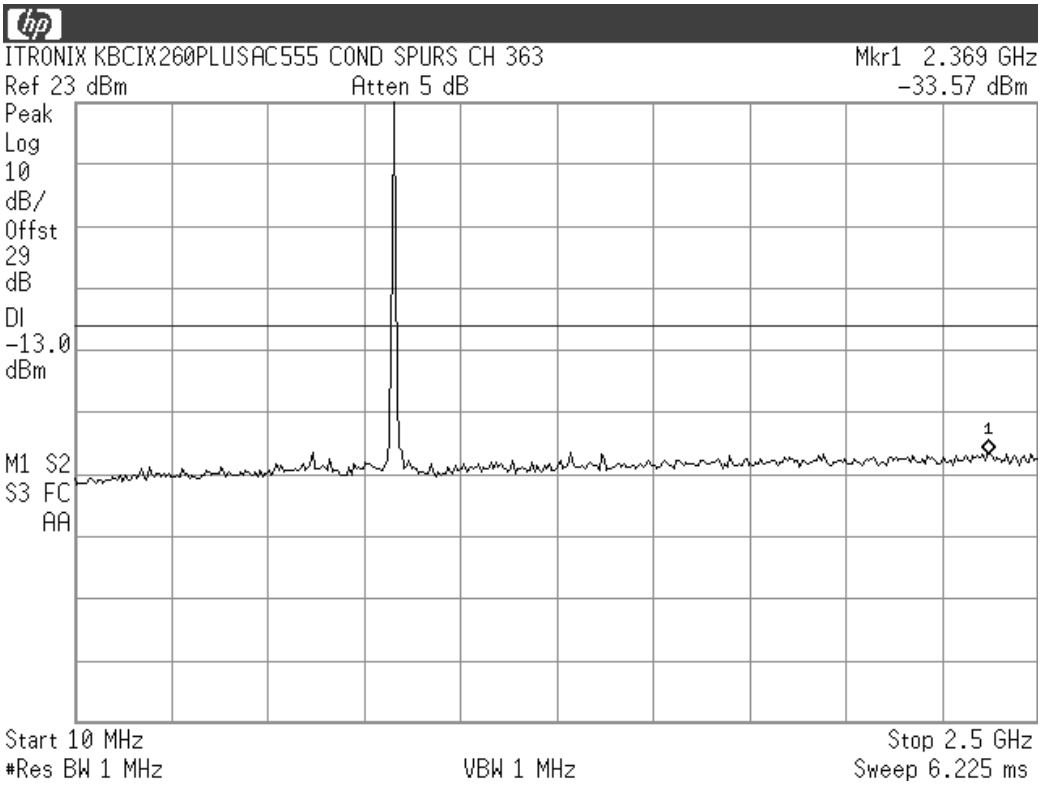


## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

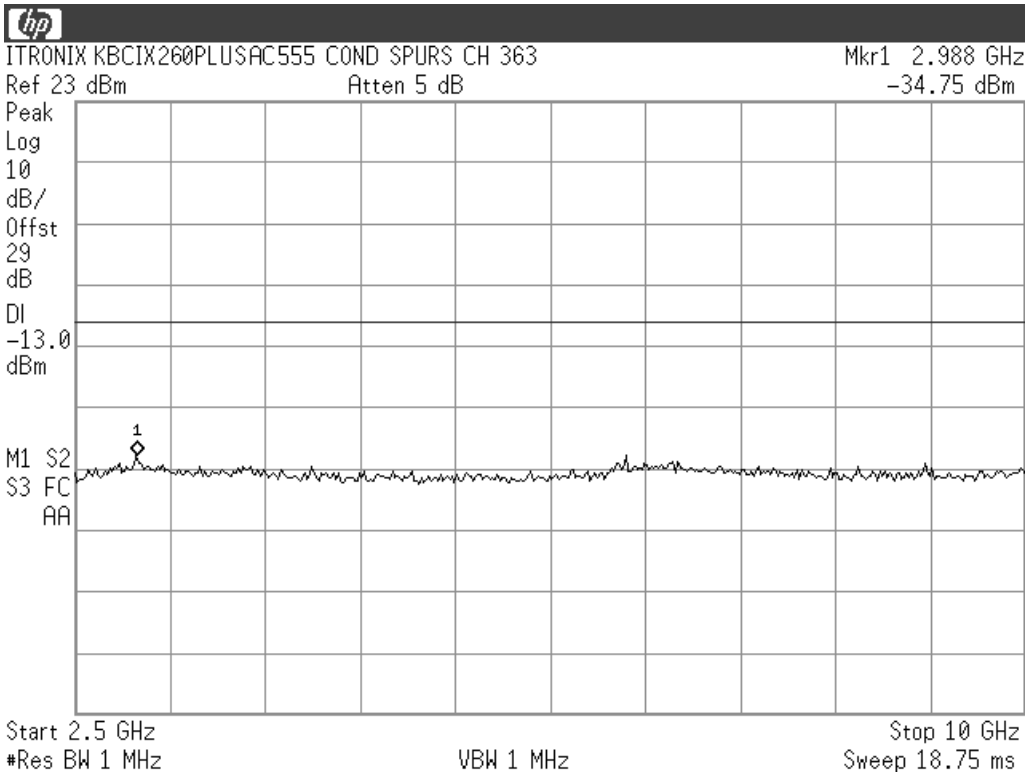
### B.2. MEASUREMENT DATA - Cellular Band (Cont.)

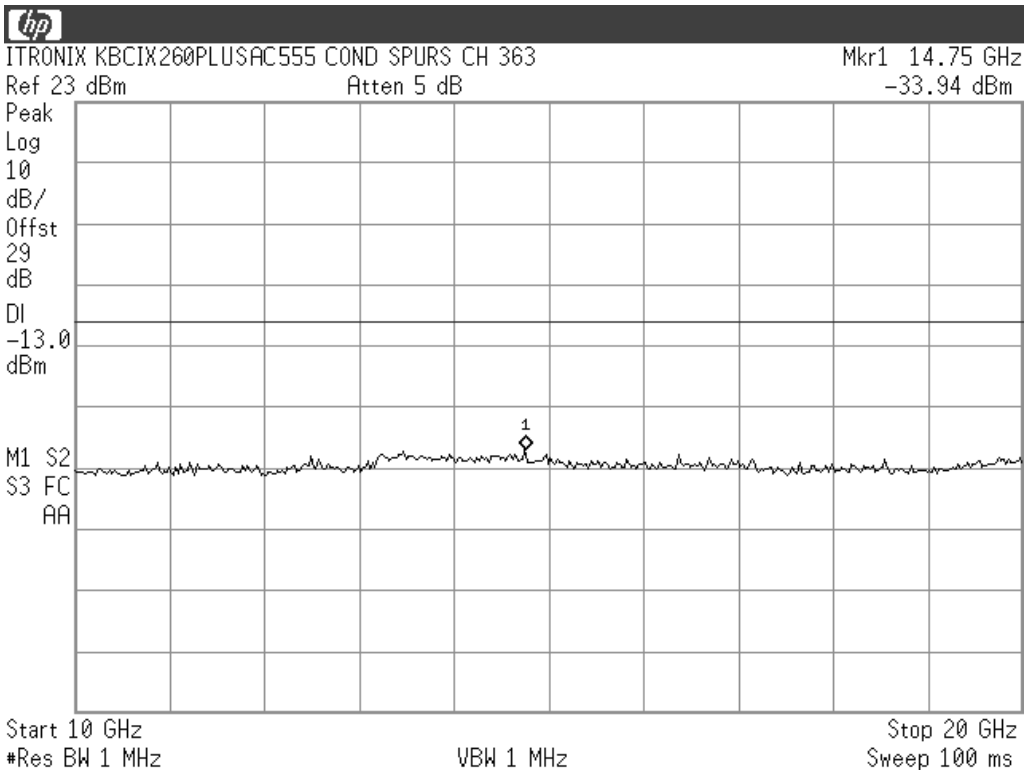


## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

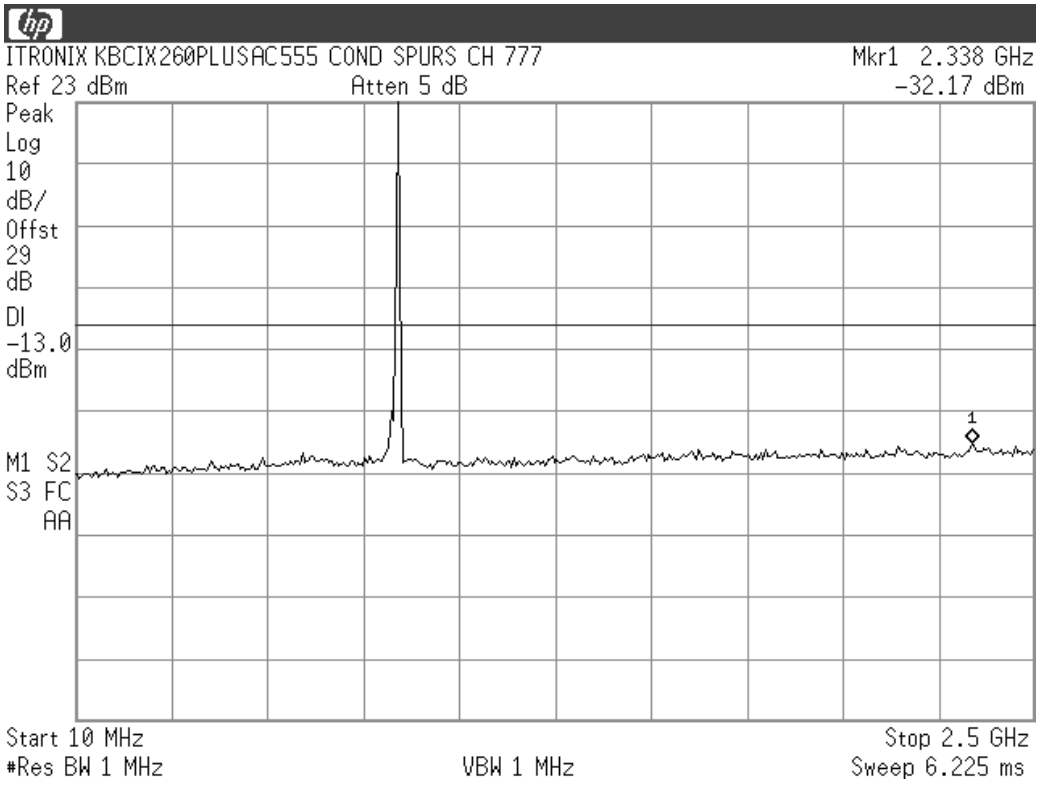
### B.2. MEASUREMENT DATA - Cellular Band (Cont.)

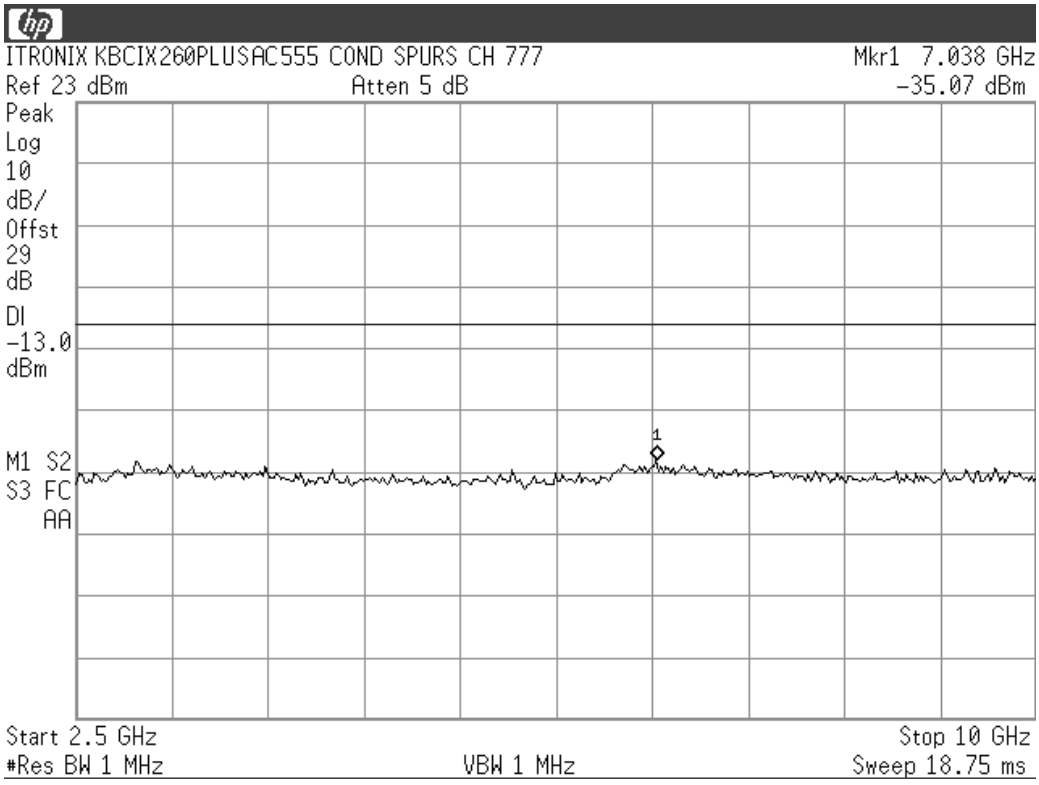


## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

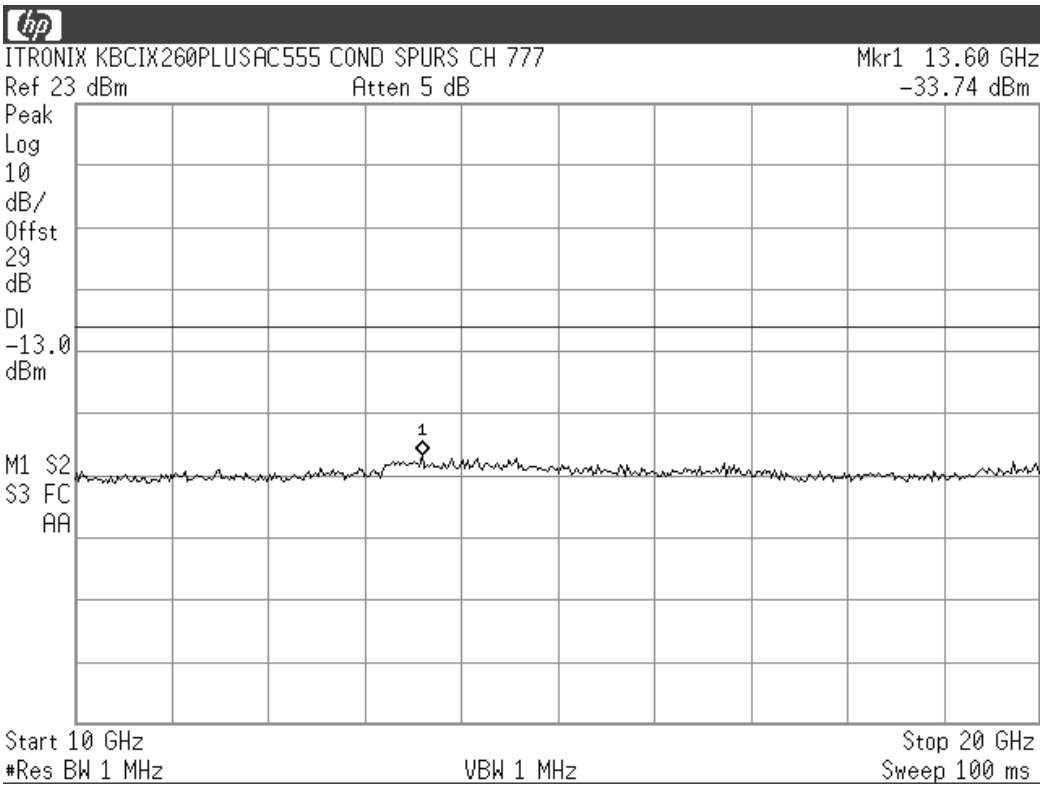
### B.2. MEASUREMENT DATA - Cellular Band (Cont.)



## SPURIOUS EMISSIONS AT ANTENNA TERMINAL - §2.1051 (Continued)

### B.2. MEASUREMENT DATA - Cellular Band (Cont.)



# APPENDIX C - OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238

## C.1. MEASUREMENT PROCEDURE

The Sierra Wireless AirCard 555 test software installed in the IX260+ Laptop PC was used to set the DUT to transmit in the CDMA "always up" power control mode. The DUT was connected to the input of a 50Ω spectrum analyzer through a matched 30 dB attenuator. For both PCS CDMA and cellular CDMA modes the resolution bandwidth was set to 30 kHz and the video bandwidth was set to 300 kHz.

Specified Limits:

### §22.917

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
(c) Alternative out of band emission limit. Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.
(d) Interference caused by out of band emissions. If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

### §24.238

(a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB.
(b) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
(c) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
(d) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.
(e) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

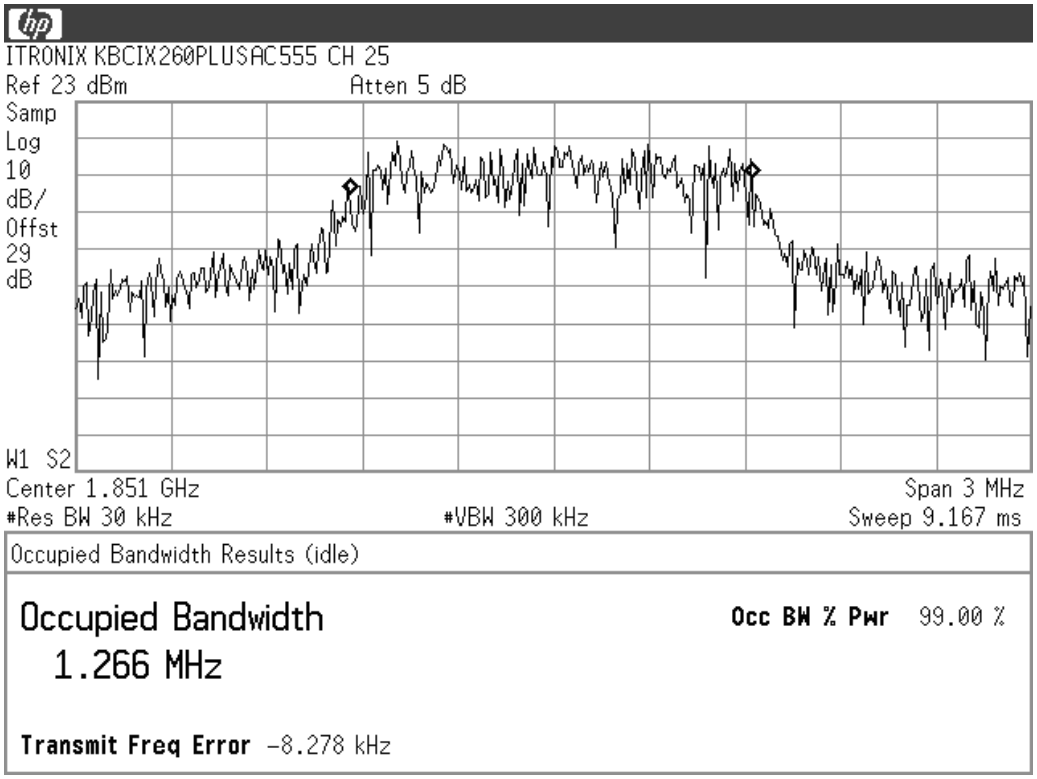
## C.2. MEASUREMENT DATA

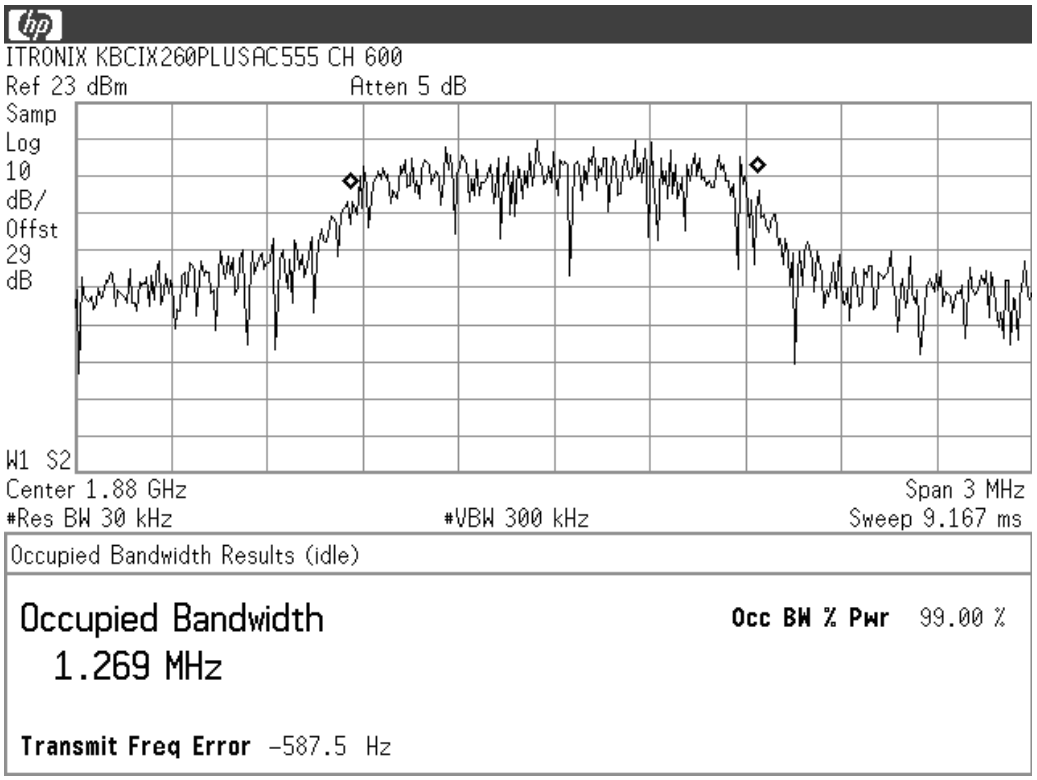
| Frequency (MHz) | 99% Occupied Bandwidth (MHz) | -26 dBc Emission Bandwidth (MHz) |
|---|---|---|
| 1851.25 | 1.266 | 1.473 |
| 1880.00 | 1.269 | 1.483 |
| 1908.75 | 1.260 | 1.499 |
| 824.70 | 1.254 | 1.424 |
| 835.89 | 1.258 | 1.432 |
| 848.31 | 1.267 | 1.442 |

(See next pages for Spectrum Analyzer plots)

## OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238 (Continued)

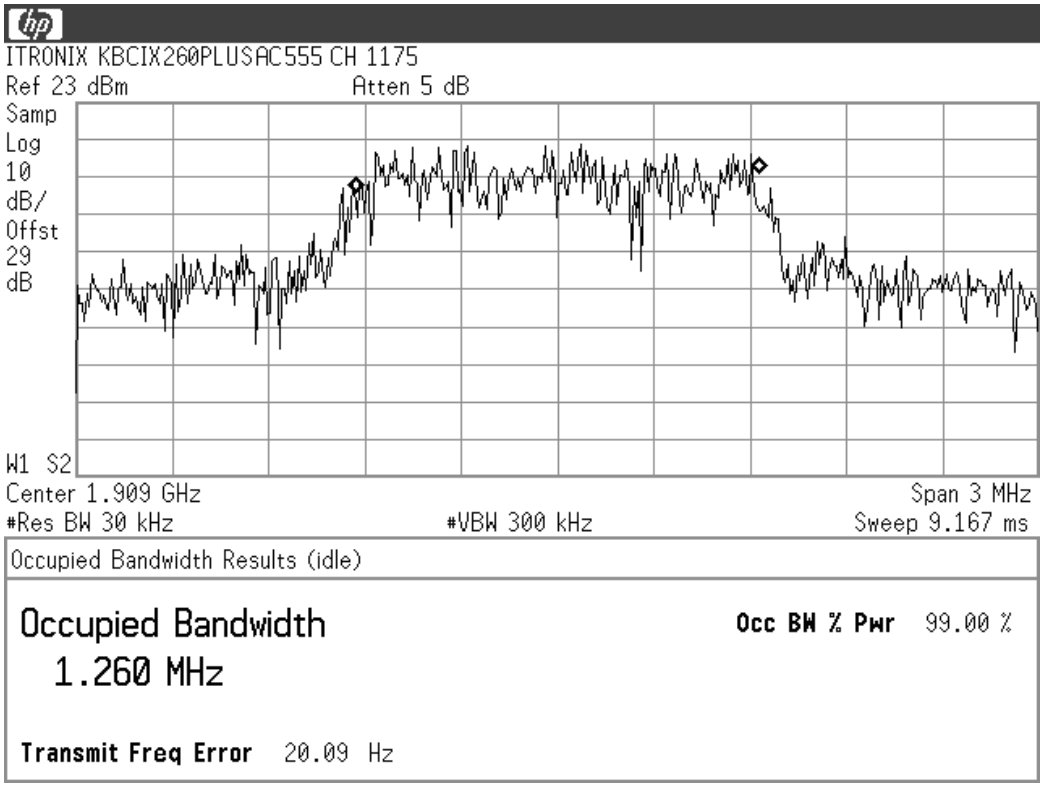
### C.2. MEASUREMENT DATA - PCS Band

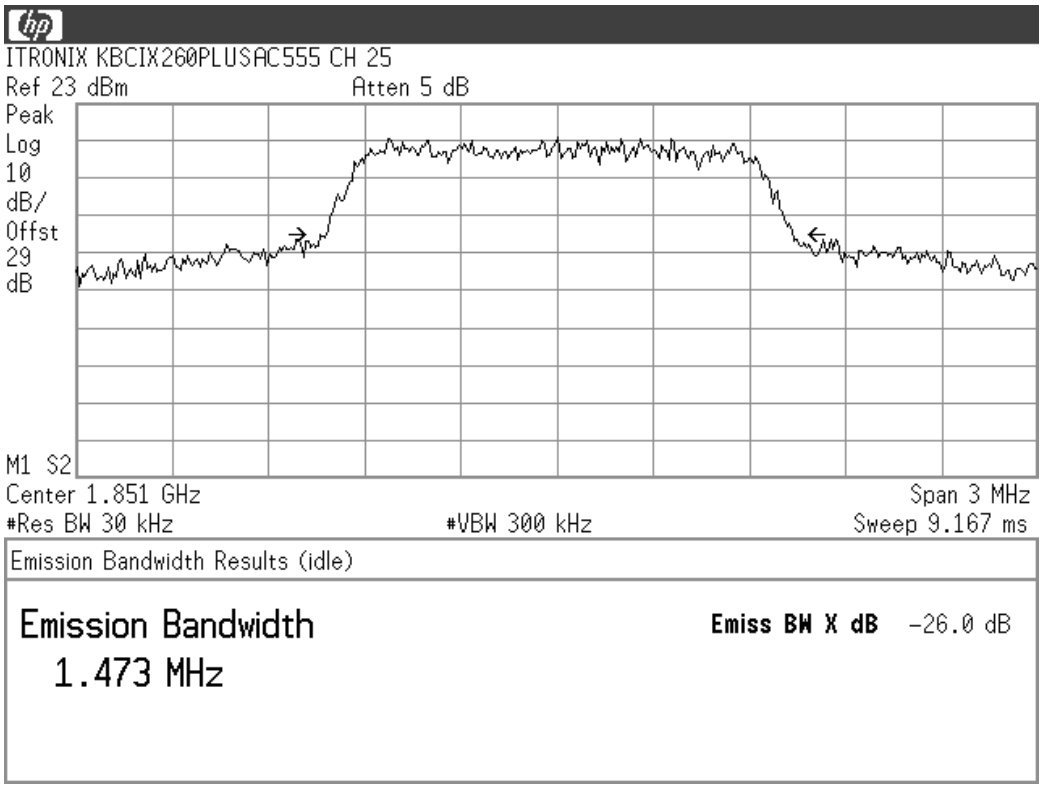


## OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238 (Continued)

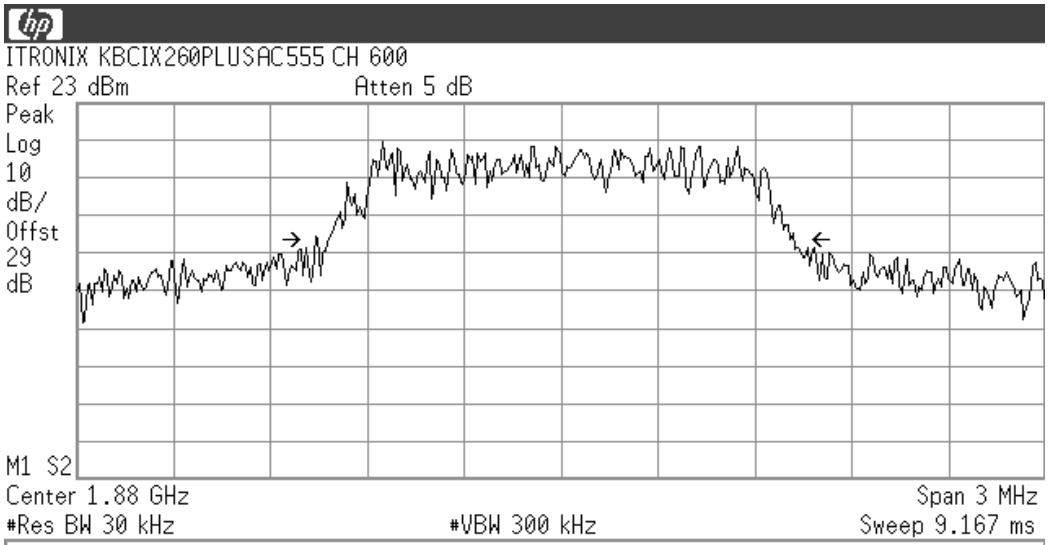
### C.2. MEASUREMENT DATA - PCS Band (Cont.)

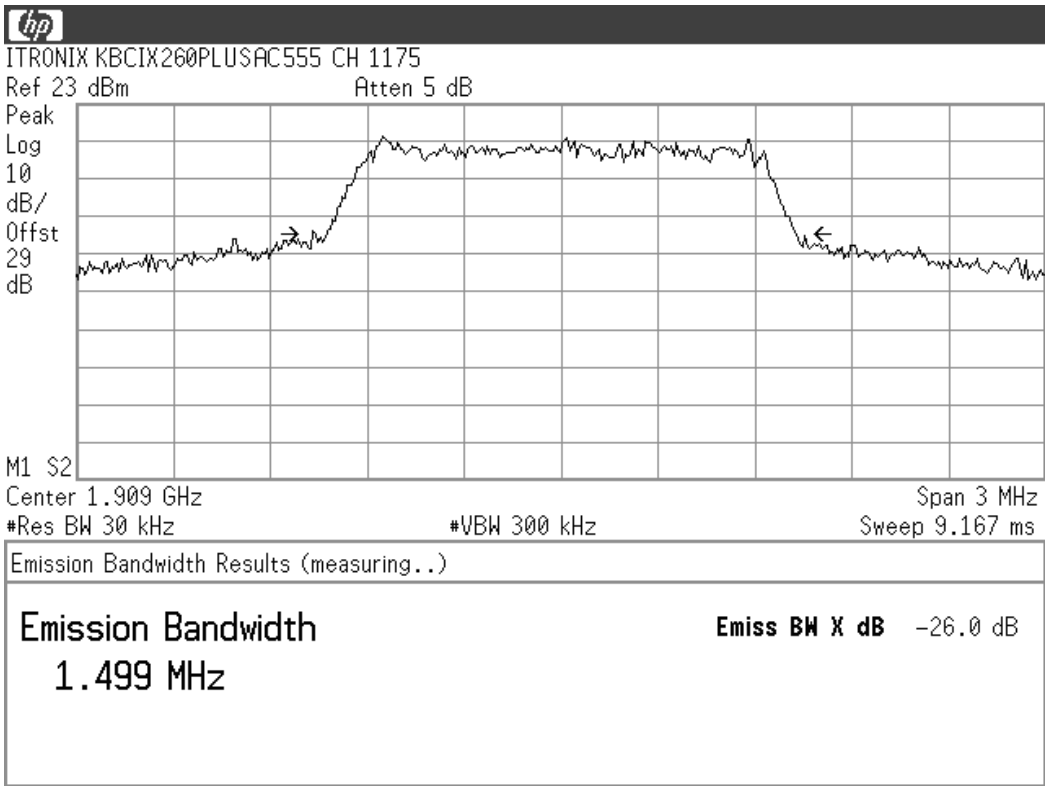


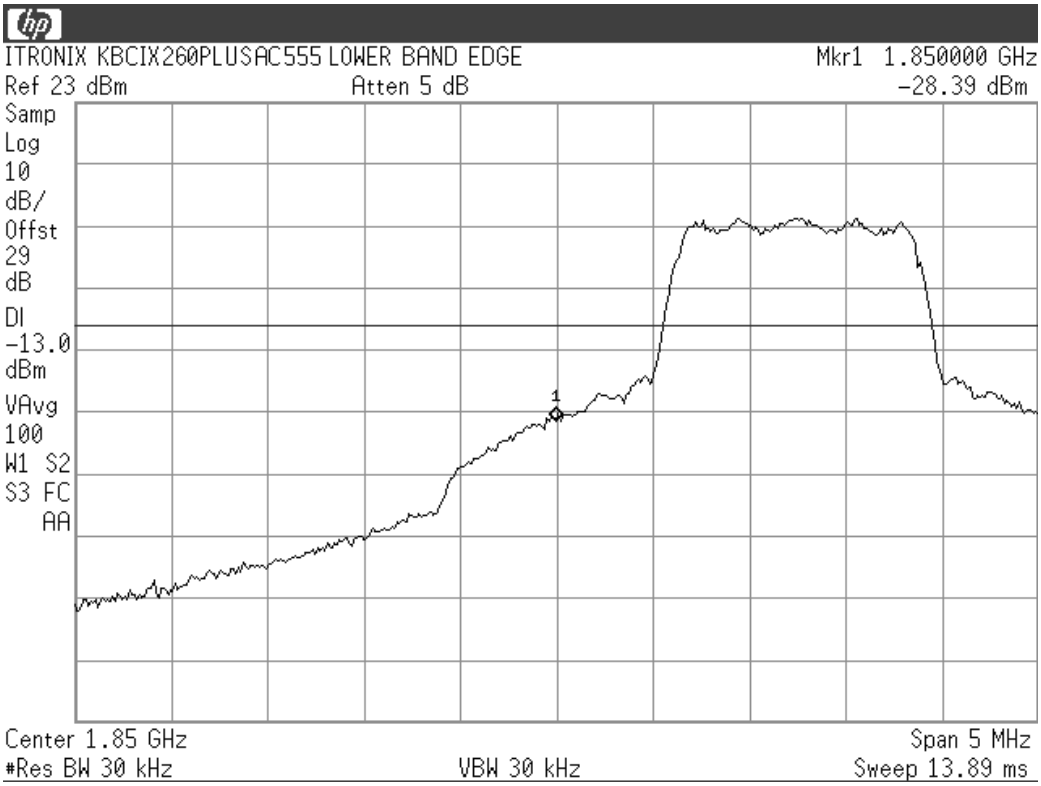
## OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238 (Continued)

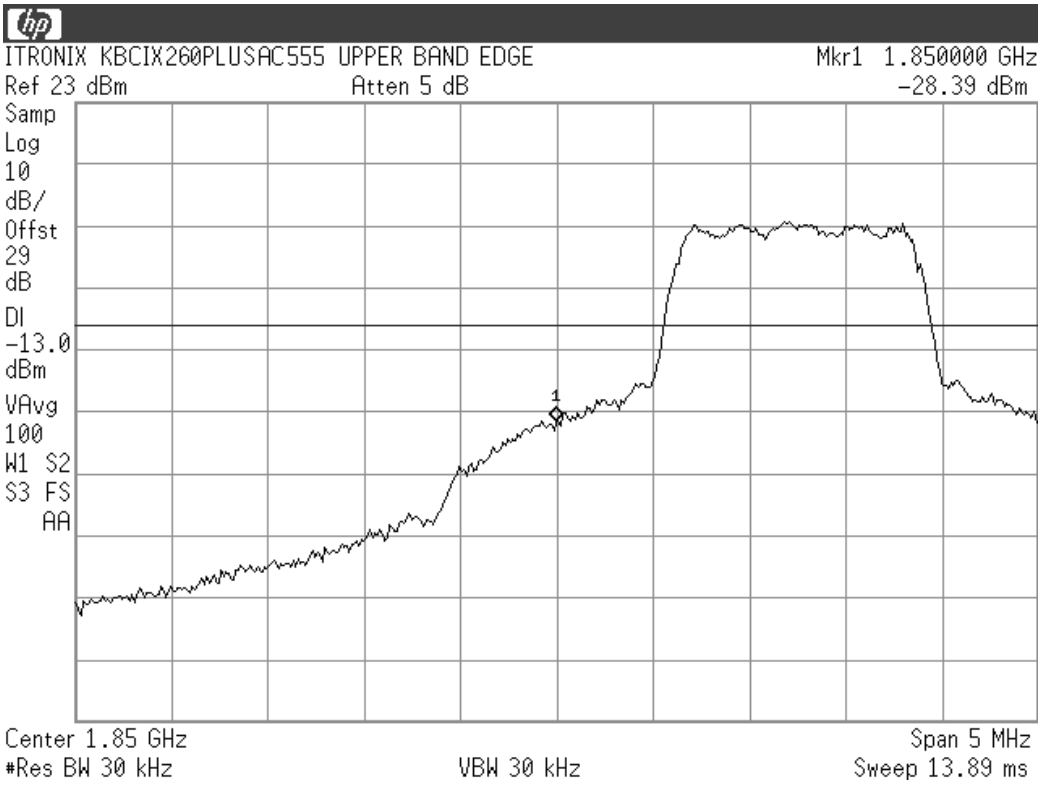
### C.2. MEASUREMENT DATA - PCS Band (Cont.)



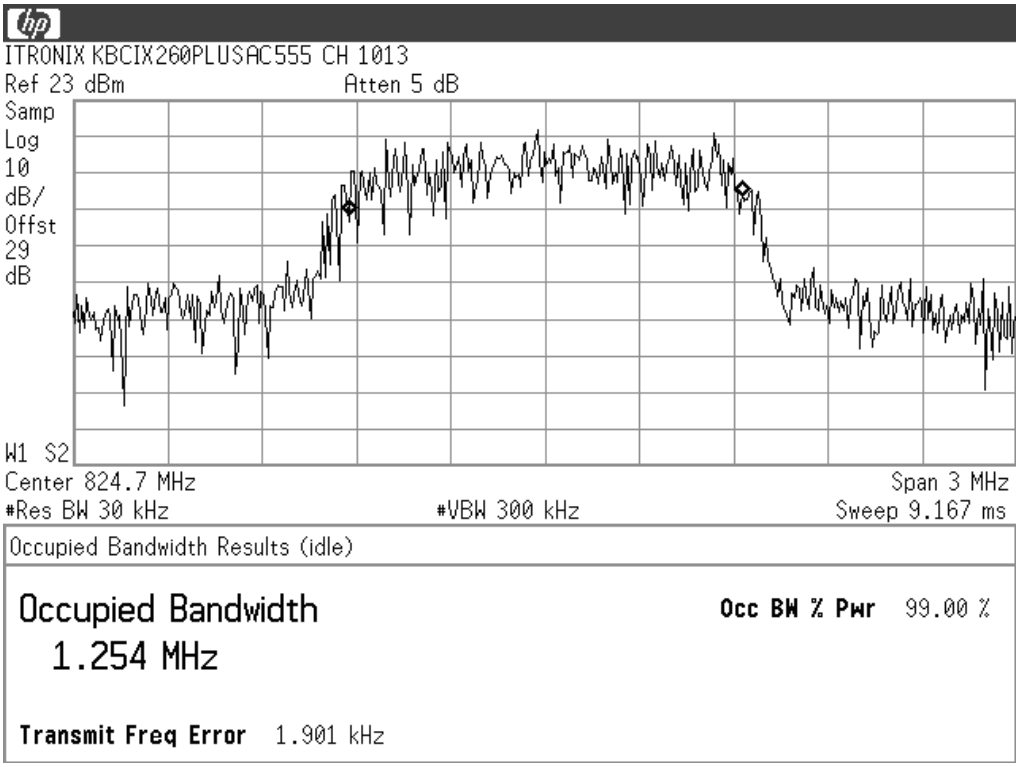
## C.2. MEASUREMENT DATA - PCS Band (Cont.)

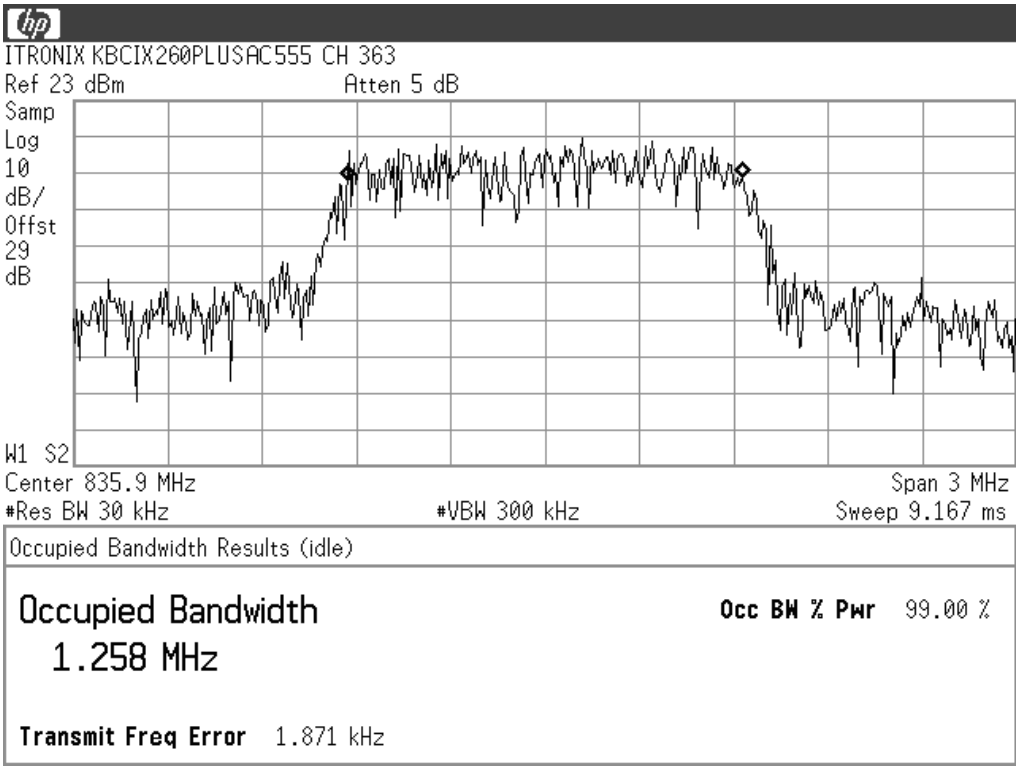


## OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238 (Continued)

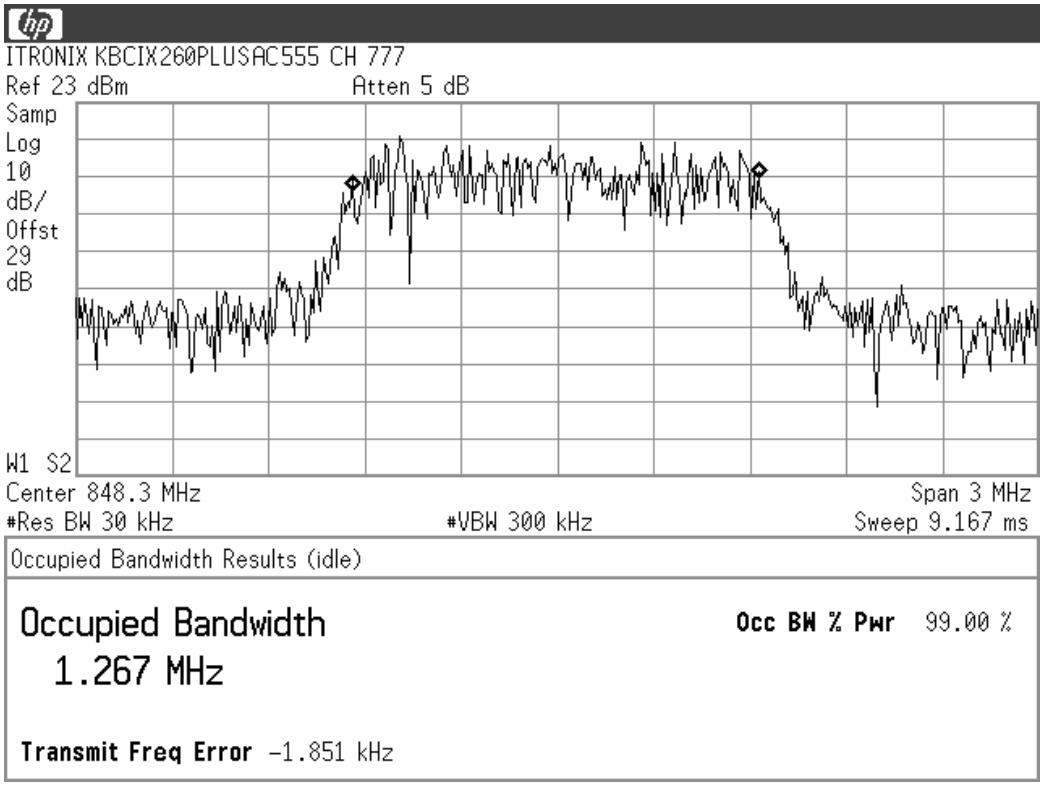
### C.2. MEASUREMENT DATA - Cellular Band

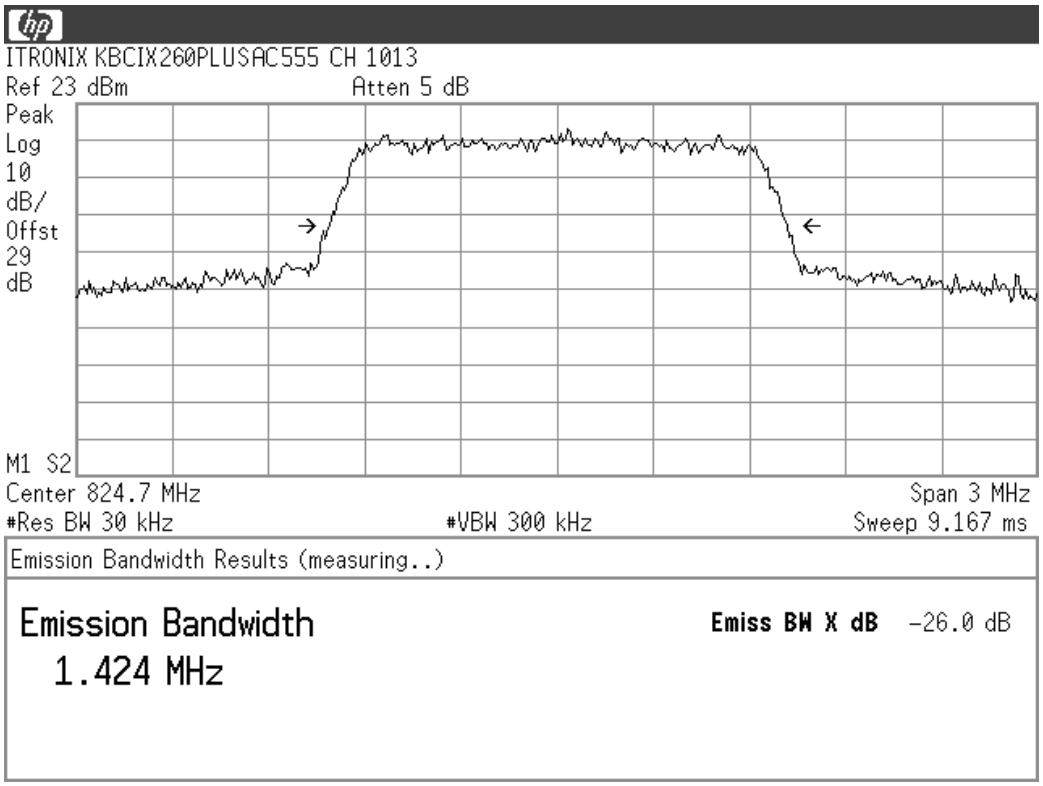


## OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238 (Continued)

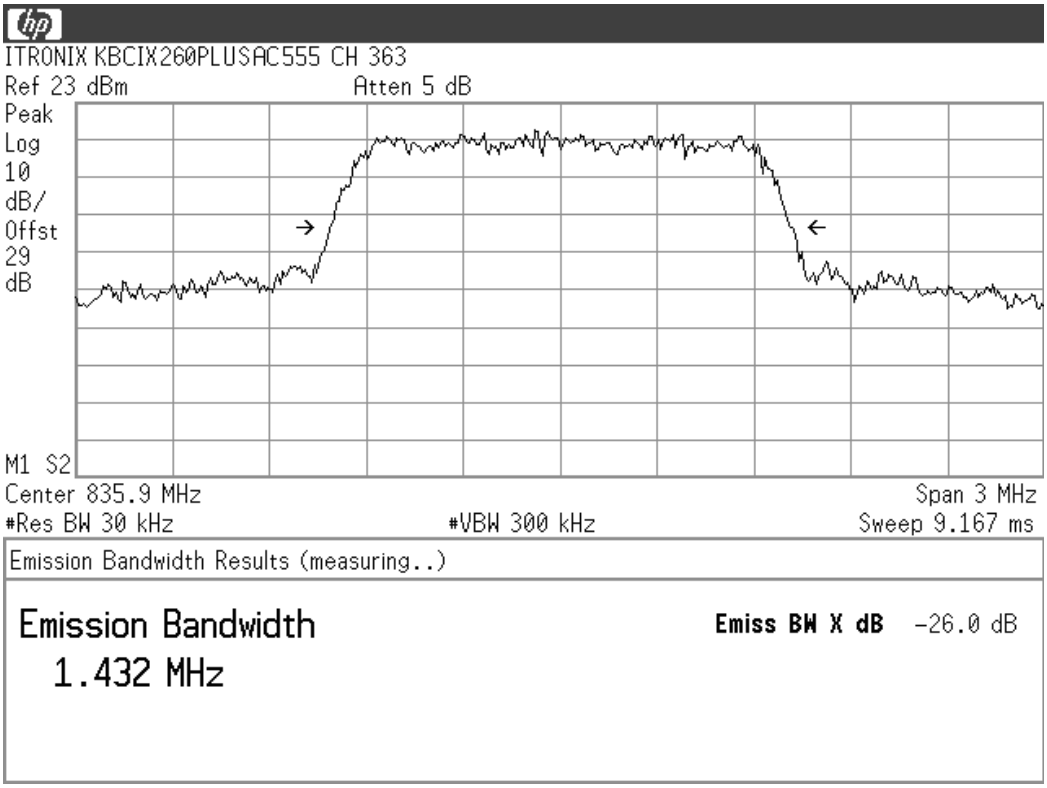
### C.2. MEASUREMENT DATA - Cellular Band (Cont.)

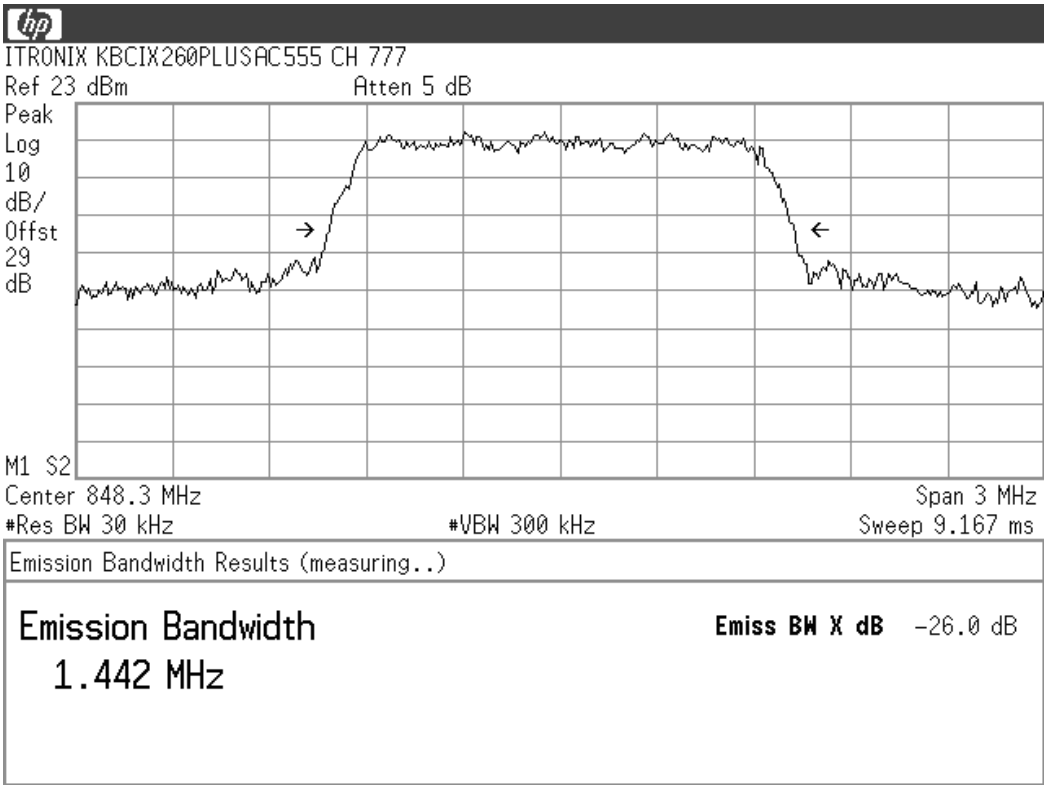


## OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238 (Continued)

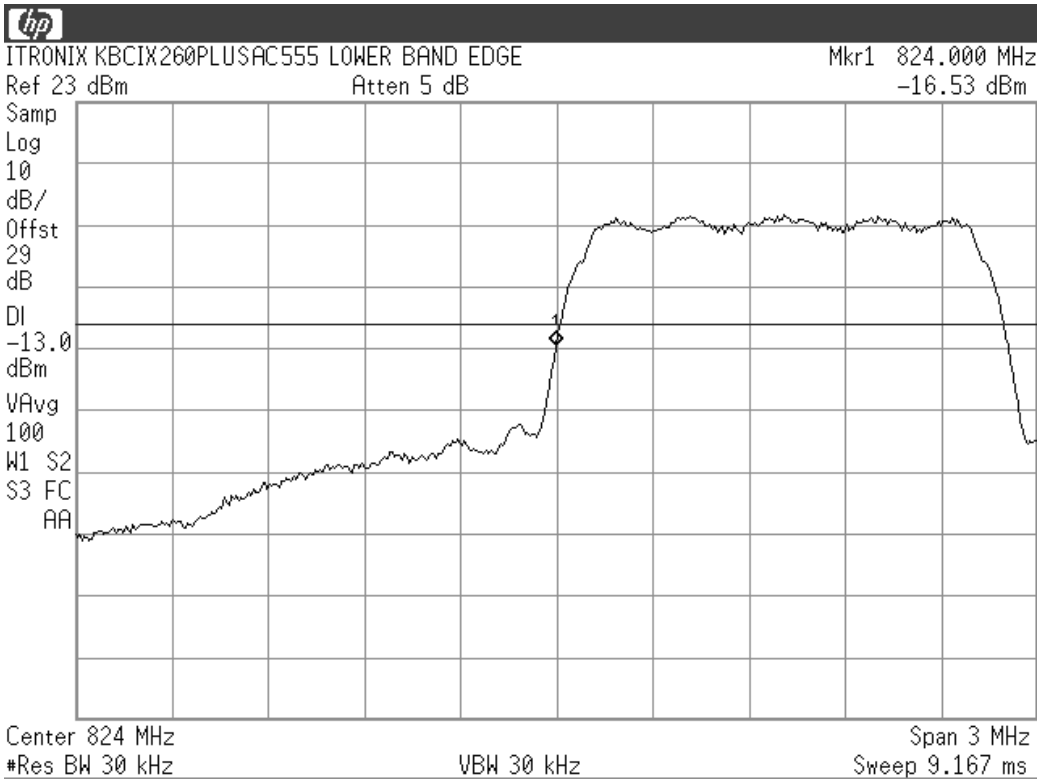
### C.2. MEASUREMENT DATA - Cellular Band (Cont.)

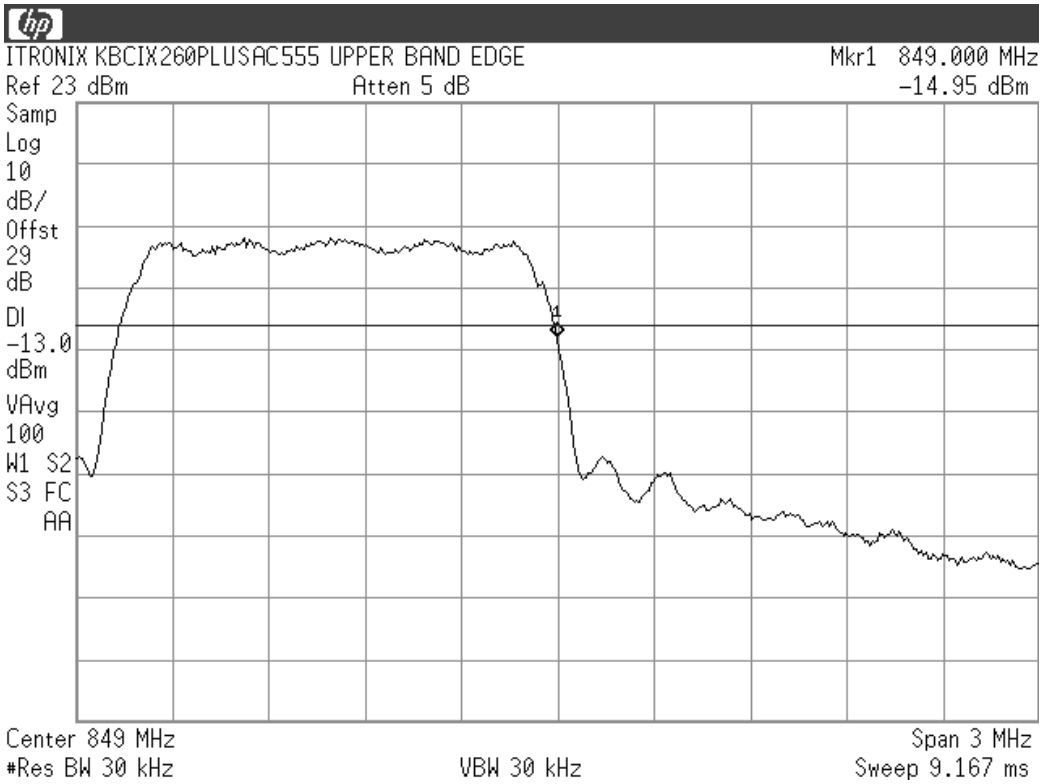


## OCCUPIED BANDWIDTH - §2.1049, §22.917, §24.238 (Continued)

### C.2. MEASUREMENT DATA - Cellular Band (Cont.)



# APPENDIX D - EFFECTIVE ISOTROPIC RADIATED POWER OUTPUT - §24.232(b)

## D.1. MEASUREMENT PROCEDURE

EIRP measurements were performed on a 3-meter open area test site using the Signal Substitution Method in accordance with ANSI TIA/EIA-603-A-2001. The Sierra Wireless AirCard 555 test software installed in the IX260+ Laptop PC was used to set the DUT to transmit in the CDMA "always up" power control mode. The DUT was placed on a turntable 3 meters from the receive antenna. For the swivel dipole evaluation, the DUT was placed in the center of the turntable, on a Styrofoam support, 1 meter above the ground plane. For the vehicle-mount antenna evaluation, the antenna was fixed on a 50 cm x 50 cm ground plane and installed on the Styrofoam support, and connected to the transmitter via a 17-foot LMR-195 cable representing a typical vehicle mount installation. The IX260+ Laptop PC was installed in the cradle on the turntable below the 50 cm x 50 cm ground plane. The maximum field intensity was determined by rotating the DUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. Once the maximum emission was found, the spectrum analyzer was set to peak hold and the uncorrected emission value recorded for each of the low, mid and high channels tested. The DUT was then substituted with a horn antenna. A signal, simulating the DUT emission was generated, amplified, and fed through a directional coupler to the substitution antenna. The height and direction of the receive antenna as well as the direction of the substitution horn was adjusted for a maximum received signal. The power applied to the horn was then adjusted to give the same field strength reading as previously recorded for the DUT and the power at the forward coupler port recorded. The substitution antenna was then replaced with a calibrated power sensor, the forward coupler port power level confirmed and the power applied to the horn antenna recorded. The EIRP level was determined by correcting the applied feed point power with the addition of the horn gain.

(See next page for measurement data)

# EFFECTIVE ISOTROPIC RADIATED POWER OUTPUT - §24.232(b) (Continued)

## D.2. MEASUREMENT DATA

| | | | | | |
|---|---|---|---|---|---|
| **Project Number:** | 052604-519 | | | **Standard:** | FCC24.232b |
| **Company:** | Itronix | | | **Test Start Date:** | 23-Aug-04 |
| **Product:** | IX260+ with AC555 | | | **Test End Date:** | 23-Aug-04 |

**Swivel Dipole Antenna Carrier Power Levels**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Carrier EIRP Level | | EIRP Limit | | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | Watts | dBm* | Watts | dB | |
| H | 3 | Horn SN6267 | 25 | 1851.25 | 123.55 | 91.60 | 18.25 | 6.55 | 24.80 | 0.302 | 33.01 | 2.00 | 8.21 | PASS |
| H | 3 | Horn SN6267 | 600 | 1880.00 | 121.69 | 89.60 | 17.64 | 6.58 | 24.22 | 0.264 | 33.01 | 2.00 | 8.79 | PASS |
| H | 3 | Horn SN6267 | 1175 | 1908.75 | 119.14 | 86.90 | 17.08 | 6.61 | 23.69 | 0.234 | 33.01 | 2.00 | 9.32 | PASS |
| V | 3 | Horn SN6267 | 25 | 1851.25 | 118.35 | 86.40 | 13.42 | 6.55 | 19.98 | 0.099 | 33.01 | 2.00 | 13.03 | PASS |
| V | 3 | Horn SN6267 | 600 | 1880.00 | 117.59 | 85.50 | 13.70 | 6.58 | 20.28 | 0.107 | 33.01 | 2.00 | 12.73 | PASS |
| V | 3 | Horn SN6267 | 1175 | 1908.75 | 115.74 | 83.50 | 13.81 | 6.61 | 20.42 | 0.110 | 33.01 | 2.00 | 12.59 | PASS |

Note:
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
EIRP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Power (watts) = (10^(Power in dBm/10)/1000
Margin (dB) = Limit (dBm) - Level (dBm)

| | | | | | |
|---|---|---|---|---|---|
| **Project Number:** | 052604-519 | | | **Standard:** | FCC24.232b |
| **Company:** | Itronix | | | **Test Start Date:** | 23-Aug-04 |
| **Product:** | IX260+ with AC555 | | | **Test End Date:** | 23-Aug-04 |

**Vehicle Mount Antenna Carrier Power Levels**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Carrier EIRP Level | | EIRP Limit | | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | Watts | dBm* | Watts | dB | |
| H | 3 | Horn SN6267 | 25 | 1851.25 | 102.95 | 71.00 | -1.63 | 6.55 | 4.92 | 0.003 | 33.01 | 2.00 | 28.09 | PASS |
| H | 3 | Horn SN6267 | 600 | 1880.00 | 103.89 | 71.80 | 0.44 | 6.58 | 7.02 | 0.005 | 33.01 | 2.00 | 25.99 | PASS |
| H | 3 | Horn SN6267 | 1175 | 1908.75 | 98.04 | 65.80 | -3.41 | 6.61 | 3.20 | 0.002 | 33.01 | 2.00 | 29.81 | PASS |
| V | 3 | Horn SN6267 | 25 | 1851.25 | 114.35 | 82.40 | 9.47 | 6.55 | 16.03 | 0.040 | 33.01 | 2.00 | 16.98 | PASS |
| V | 3 | Horn SN6267 | 600 | 1880.00 | 112.79 | 80.70 | 9.07 | 6.58 | 15.65 | 0.037 | 33.01 | 2.00 | 17.36 | PASS |
| V | 3 | Horn SN6267 | 1175 | 1908.75 | 109.54 | 77.30 | 7.80 | 6.61 | 14.40 | 0.028 | 33.01 | 2.00 | 18.61 | PASS |

Note:
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
EIRP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Power (watts) = (10^(Power in dBm/10)/1000
Margin (dB) = Limit (dBm) - Level (dBm)

# APPENDIX E - EFFECTIVE RADIATED POWER OUTPUT - §22.913

## E.1. MEASUREMENT PROCEDURE

ERP measurements were performed on a 3-meter open area test site using the Signal Substitution Method in accordance with ANSI TIA/EIA-603-A-2001. The Sierra Wireless AirCard 555 test software installed in the IX260+ Laptop PC was used to set the DUT to transmit in the CDMA “always up” power control mode. The DUT was placed on a turntable, 3 meters from the receive antenna. For the swivel dipole testing, the DUT was placed in the center of the turntable, on a Styrofoam support, 1 meter above the ground plane. For the vehicle-mount antenna evaluation, the antenna was fixed on a 50 cm x 50 cm ground plane and installed on the Styrofoam support and connected to the transmitter via a 17-foot LMR-195 cable representing a typical vehicle mount installation. The IX260+ Laptop PC was installed in the cradle on the turntable below the 50 cm x 50 cm ground plane. The maximum field intensity was determined by rotating the DUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters. Once the maximum emission was found, the spectrum analyzer was set to peak hold and the uncorrected emission value recorded for each of the low, mid and high channels tested. The DUT was then substituted with a dipole antenna. A signal, simulating the DUT emission was generated, amplified, and fed through a directional coupler to the substitution antenna. The height and direction of the receive antenna as well as the direction of the substitution dipole was adjusted for a maximum received signal. The power applied to the dipole was then adjusted to give the same field strength reading as previously recorded for the DUT and the power at the forward coupler port recorded. The substitution antenna was then replaced with a calibrated power sensor, the forward coupler port power level confirmed and the power applied to the dipole antenna recorded. The ERP level was determined by correcting the applied feed point power with the addition of the dipole gain.

(See next page for measurement data)

# EFFECTIVE RADIATED POWER OUTPUT - §22.913 (Continued)

## E.2. MEASUREMENT DATA

| | | | | | |
|---|---|---|---|---|---|
| **Project Number:** | 052604-519 | | **Standard:** | FCC22.913 |
| **Company:** | Itronix | | **Test Start Date:** | 23-Aug-04 |
| **Product:** | IX260+ with AC555 | | **Test End Date:** | 23-Aug-04 |

**Swivel Dipole Antenna Carrier Power Levels**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Carrier ERP Level | | ERP Limit | | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBd | dBm | Watts | dBm* | Watts | dB | |
| H | 3 | B_3121C | 1013 | 824.70 | 116.17 | 91.00 | 23.79 | -0.84 | 22.95 | 0.197 | 38.45 | 7.00 | 15.50 | PASS |
| H | 3 | B_3121C | 363 | 835.89 | 116.36 | 90.90 | 23.45 | -0.71 | 22.74 | 0.188 | 38.45 | 7.00 | 15.71 | PASS |
| H | 3 | B_3121C | 777 | 848.31 | 115.38 | 89.80 | 23.20 | -0.56 | 22.64 | 0.183 | 38.45 | 7.00 | 15.81 | PASS |
| V | 3 | B_3121C | 1013 | 824.70 | 113.17 | 88.00 | 25.70 | -0.84 | 24.86 | 0.306 | 38.45 | 7.00 | 13.59 | PASS |
| V | 3 | B_3121C | 363 | 835.89 | 113.46 | 88.00 | 24.66 | -0.71 | 23.95 | 0.248 | 38.45 | 7.00 | 14.50 | PASS |
| V | 3 | B_3121C | 777 | 848.31 | 113.48 | 87.90 | 23.09 | -0.56 | 22.53 | 0.179 | 38.45 | 7.00 | 15.92 | PASS |

Note:
Dipole Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14
Margin (dB) = Limit (dBm) - Level (dBm)
Power (watts) = (10^(Power in dBm/10)/1000

| | | | | | |
|---|---|---|---|---|---|
| **Project Number:** | 052604-519 | | **Standard:** | FCC22.913 |
| **Company:** | Itronix | | **Test Start Date:** | 23-Aug-04 |
| **Product:** | IX260+ with AC555 | | **Test End Date:** | 23-Aug-04 |

**Vehicle Mount Antenna Carrier Power Levels**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Carrier ERP Level | | ERP Limit | | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBd | dBm | Watts | dBm* | Watts | dB | |
| H | 3 | B_3121C | 1013 | 824.70 | 102.97 | 77.80 | 11.09 | -0.84 | 10.25 | 0.011 | 38.45 | 7.00 | 28.20 | PASS |
| H | 3 | B_3121C | 363 | 835.89 | 104.36 | 78.90 | 11.93 | -0.71 | 11.22 | 0.013 | 38.45 | 7.00 | 27.23 | PASS |
| H | 3 | B_3121C | 777 | 848.31 | 102.98 | 77.40 | 11.32 | -0.56 | 10.76 | 0.012 | 38.45 | 7.00 | 27.69 | PASS |
| V | 3 | B_3121C | 1013 | 824.70 | 109.27 | 84.10 | 21.97 | -0.84 | 21.12 | 0.129 | 38.45 | 7.00 | 17.33 | PASS |
| V | 3 | B_3121C | 363 | 835.89 | 111.06 | 85.60 | 22.36 | -0.71 | 21.65 | 0.146 | 38.45 | 7.00 | 16.80 | PASS |
| V | 3 | B_3121C | 777 | 848.31 | 110.68 | 85.10 | 20.40 | -0.56 | 19.84 | 0.096 | 38.45 | 7.00 | 18.61 | PASS |

Note:
Dipole Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14
Margin (dB) = Limit (dBm) - Level (dBm)
Power (watts) = (10^(Power in dBm/10)/1000

# APPENDIX F - FIELD STRENGTH OF SPURIOUS RADIATION - §24.238, 22.917

## F.1. MEASUREMENT PROCEDURE

EIRP measurements were performed on a 3-meter open area test site using the Signal Substitution Method in accordance with ANSI TIA/EIA-603-A-2001. The Sierra Wireless AirCard 555 test software installed in the IX260+ Laptop PC was used to set the DUT to transmit in the CDMA "always up" power control mode. For the swivel dipole testing, the DUT was placed in the center of the turntable, on a Styrofoam support, 1 meter above the ground plane. For the vehicle-mount antenna evaluation, the antenna was fixed on a 50 cm x 50 cm ground plane and installed on the Styrofoam support and connected to the transmitter via a 17-foot LMR-195 cable representing a typical vehicle mount installation. The IX260+ Laptop PC was installed in the cradle on the turntable below the 50 cm x 50 cm ground plane. A frequency band from just above the highest transmitted frequency to just above the 10$^{th}$ harmonic of the highest transmitted frequency was divided into smaller bands corresponding to measurement equipment setups and capabilities. The measurement equipment including carrier blocking filters, was optimized for maximum sensitivity for each band while ensuring no saturation occurred in any gain stages that may be present. It was also necessary to measure the bands above 10 GHz at a distance of 1 meter versus the 3-meter measurement distance used for the lower bands. The applicable bands were chosen from: 800 MHz to 1 GHz, 1 GHz to 5 GHz, 5 GHz to 10 GHz, 10 GHz to 18 GHz and 18 GHz to 20 GHz. The maximum field intensity in each of these bands were determined by rotating the DUT approximately 360 degrees and changing the height of the receive antenna from 1 to 4 meters while maintaining the spectrum analyzer trace in max hold. The stored trace was then evaluated to determine any significant emissions that should be evaluated by substitution. The frequency and uncorrected field strength level for each significant emission was recorded. To describe the noise floor, the maximum level associated with a number of frequencies within the band were also recorded. The DUT was then substituted with a transmit antenna. A signal simulating the DUT emission was generated for each of the signals recorded; it was amplified and fed through a directional coupler to the substitution antenna. The height and direction of the receive antenna as well as the direction of the substitution horn was adjusted for a maximum received signal. The power applied to the transmit antenna was then adjusted to give the same field strength reading as previously recorded for the DUT and the power at the forward coupler port recorded. The substitution antenna was then replaced with a calibrated power sensor, the forward coupler port power level confirmed and the power applied to the horn antenna recorded. The radiated power level was determined by correcting the applied feed point power with the addition of the antenna gain.

## F.2. MEASUREMENT SETUP

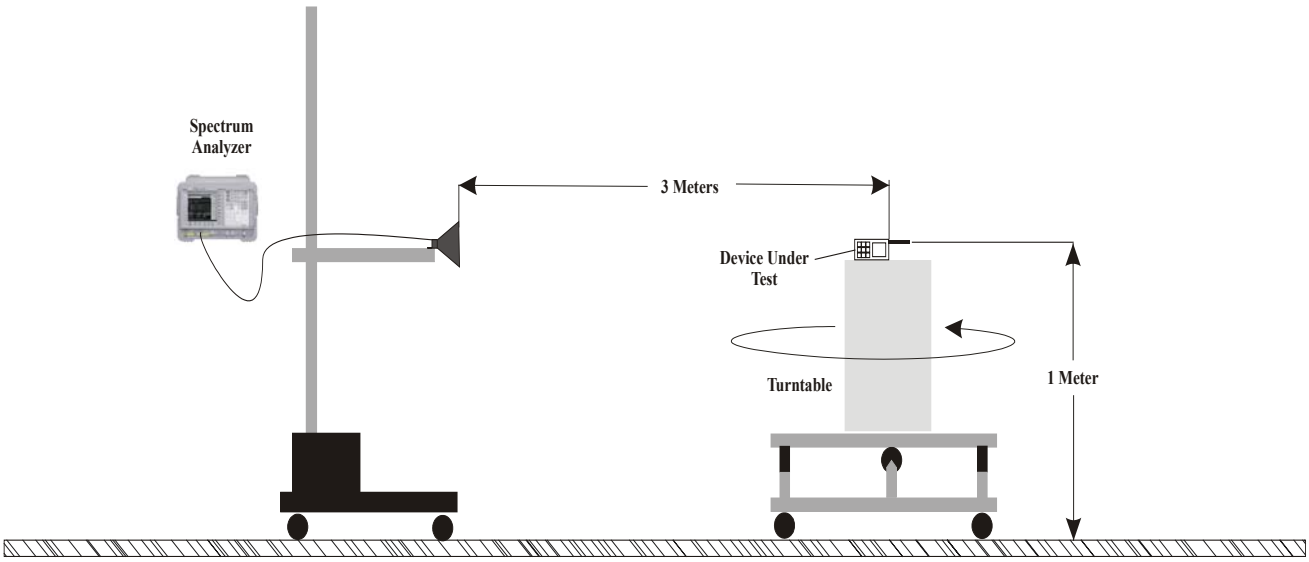



**Figure 1. Radiated Measurement Test Setup Diagram**
**(3 Meters for Frequencies < 10 GHz - 1 Meter for Frequencies ≥ 10 GHz)**

# FIELD STRENGTH OF SPURIOUS RADIATION - §24.238 (Continued)

## F.3. MEASUREMENT DATA - PCS Band

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC24.238 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ w/ AC555 | **Test End Date:** | 13-Aug-04 |

**Swivel Dipole Antenna Low Channel (Channel 25), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission EIRP Level | EIRP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 25 | 5553.75 | 48.90 | 42.50 | -54.39 | 8.66 | -45.73 | -13.00 | 32.73 | PASS |
| H | 3 | Horn SN6267 | 25 | 7405.00 | 51.81 | 42.50 | -55.54 | 8.98 | -46.56 | -13.00 | 33.56 | PASS |
| H | 3 | Horn SN6267 | 25 | 9256.25 | 53.27 | 41.50 | -54.59 | 9.06 | -45.53 | -13.00 | 32.53 | PASS |
| H | 3 | Horn SN6267 | 25 | 9340.00 | 64.23 | 52.40 | -38.88 | 9.14 | -29.74 | -13.00 | 16.74 | PASS |
| H | 1 | Horn SN6267 | 25 | 11107.50 | 49.41 | 37.30 | -64.39 | 10.45 | -53.94 | -13.00 | 40.94 | PASS |
| H | 1 | Horn SN6267 | 25 | 12958.75 | 58.55 | 44.50 | -64.20 | 10.64 | -53.56 | -13.00 | 40.56 | PASS |
| H | 1 | Horn SN6267 | 25 | 14810.00 | 59.54 | 44.10 | -64.00 | 11.06 | -52.94 | -13.00 | 39.94 | PASS |
| H | 1 | Horn SN6267 | 25 | 16661.25 | 62.26 | 45.90 | -64.48 | 12.58 | -51.90 | -13.00 | 38.90 | PASS |
| H | 1 | Horn SN6267 | 25 | 17960.00 | 66.42 | 46.30 | -57.96 | 8.08 | -49.88 | -13.00 | 36.88 | PASS |
| H | 1 | 3160-09 | 25 | 18512.50 | 58.56 | 43.70 | -64.23 | 15.31 | -48.93 | -13.00 | 35.93 | PASS |
| H | 1 | 3160-09 | 25 | 19978.00 | 60.65 | 44.30 | -58.57 | 15.99 | -42.58 | -13.00 | 29.58 | PASS |
| V | 3 | Horn SN6267 | 25 | 5794.38 | 56.99 | 50.40 | -41.89 | 8.95 | -32.94 | -13.00 | 19.94 | PASS |
| V | 1 | Horn SN6267 | 25 | 11107.50 | 50.61 | 38.50 | -64.63 | 10.45 | -54.18 | -13.00 | 41.18 | PASS |
| V | 1 | Horn SN6267 | 25 | 12920.00 | 60.38 | 46.30 | -63.67 | 10.68 | -52.99 | -13.00 | 39.99 | PASS |
| V | 1 | Horn SN6267 | 25 | 12958.75 | 59.75 | 45.70 | -63.66 | 10.64 | -53.02 | -13.00 | 40.02 | PASS |
| V | 1 | Horn SN6267 | 25 | 14810.00 | 59.14 | 43.70 | -63.72 | 11.06 | -52.66 | -13.00 | 39.66 | PASS |
| V | 1 | Horn SN6267 | 25 | 14816.00 | 61.63 | 46.20 | -61.60 | 11.06 | -50.54 | -13.00 | 37.54 | PASS |
| V | 1 | Horn SN6267 | 25 | 16661.25 | 62.46 | 46.10 | -64.84 | 12.58 | -52.26 | -13.00 | 39.26 | PASS |
| V | 1 | 3160-09 | 25 | 18512.50 | 57.96 | 43.10 | -64.11 | 15.31 | -48.81 | -13.00 | 35.81 | PASS |
| V | 1 | 3160-09 | 25 | 19984.00 | 60.44 | 44.10 | -60.63 | 15.99 | -44.64 | -13.00 | 31.64 | PASS |

Note:
All bands were investigated and the significant worsecase emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
EIRP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Margin (dB) = Limit (dBm) - Level (dBm)

## FIELD STRENGTH OF SPURIOUS RADIATION - §24.238 (Continued)

### F.3. MEASUREMENT DATA - PCS Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC24.238 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ w/ AC555 | **Test End Date:** | 13-Aug-04 |

**Swivel Dipole Antenna Mid Channel (Channel 600), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission EIRP Level | EIRP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 600 | 3760.00 | 53.81 | 51.20 | -44.22 | 8.05 | -36.17 | -13.00 | 23.17 | PASS |
| H | 3 | Horn SN6267 | 600 | 5273.13 | 60.80 | 54.90 | -39.61 | 8.60 | -31.01 | -13.00 | 18.01 | PASS |
| H | 1 | Horn SN6267 | 600 | 11280.00 | 48.90 | 36.90 | -63.94 | 10.69 | -53.25 | -13.00 | 40.25 | PASS |
| H | 1 | Horn SN6267 | 600 | 13160.00 | 58.11 | 43.50 | -63.89 | 10.70 | -53.19 | -13.00 | 40.19 | PASS |
| H | 1 | Horn SN6267 | 600 | 15040.00 | 59.95 | 44.70 | -64.11 | 11.29 | -52.82 | -13.00 | 39.82 | PASS |
| H | 1 | Horn SN6267 | 600 | 16920.00 | 61.13 | 44.10 | -65.21 | 11.91 | -53.30 | -13.00 | 40.30 | PASS |
| H | 1 | Horn SN6267 | 600 | 17944.00 | 66.53 | 46.50 | -59.09 | 8.15 | -50.94 | -13.00 | 37.94 | PASS |
| H | 1 | 3160-09 | 600 | 18800.00 | 59.87 | 44.30 | -61.15 | 15.42 | -45.73 | -13.00 | 32.73 | PASS |
| H | 1 | 3160-09 | 600 | 19930.00 | 60.43 | 44.10 | -57.86 | 15.97 | -41.89 | -13.00 | 28.89 | PASS |
| V | 3 | Horn SN6267 | 600 | 9400.00 | 52.95 | 41.10 | -55.96 | 9.20 | -46.76 | -13.00 | 33.76 | PASS |
| V | 1 | Horn SN6267 | 600 | 11280.00 | 48.10 | 36.10 | -64.74 | 10.69 | -54.05 | -13.00 | 41.05 | PASS |
| V | 1 | Horn SN6267 | 600 | 13160.00 | 58.31 | 43.70 | -64.27 | 10.70 | -53.57 | -13.00 | 40.57 | PASS |
| V | 1 | Horn SN6267 | 600 | 15040.00 | 59.55 | 44.30 | -63.61 | 11.29 | -52.32 | -13.00 | 39.32 | PASS |
| V | 1 | Horn SN6267 | 600 | 16920.00 | 61.93 | 44.90 | -63.27 | 11.91 | -51.36 | -13.00 | 38.36 | PASS |
| V | 1 | Horn SN6267 | 600 | 17744.00 | 66.17 | 46.70 | -59.08 | 9.03 | -50.05 | -13.00 | 37.05 | PASS |
| V | 1 | 3160-09 | 600 | 18800.00 | 58.67 | 43.10 | -61.71 | 15.42 | -46.29 | -13.00 | 33.29 | PASS |
| V | 1 | 3160-09 | 600 | 19934.00 | 61.23 | 44.90 | -57.81 | 15.97 | -41.84 | -13.00 | 28.84 | PASS |

Note:
All bands were investigated and the significant worsecase emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
EIRP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Margin (dB) = Limit (dBm) - Level (dBm)

# FIELD STRENGTH OF SPURIOUS RADIATION - §24.238 (Continued)

## F.3. MEASUREMENT DATA - PCS Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC24.238 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ w/ AC555 | **Test End Date:** | 13-Aug-04 |

**Swivel Dipole Antenna High Channel (Channel 1175),Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission EIRP Level | EIRP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 1175 | 3818.13 | 66.41 | 63.60 | -30.46 | 8.04 | -22.42 | -13.00 | 9.42 | PASS |
| H | 1 | Horn SN6267 | 1175 | 11452.50 | 50.98 | 38.90 | -63.52 | 10.93 | -52.59 | -13.00 | 39.59 | PASS |
| H | 1 | Horn SN6267 | 1175 | 13361.25 | 59.20 | 44.30 | -63.83 | 10.82 | -53.01 | -13.00 | 40.01 | PASS |
| H | 1 | Horn SN6267 | 1175 | 15270.00 | 60.29 | 45.70 | -63.45 | 12.40 | -51.05 | -13.00 | 38.05 | PASS |
| H | 1 | Horn SN6267 | 1175 | 17178.75 | 63.42 | 45.50 | -64.99 | 11.13 | -53.86 | -13.00 | 40.86 | PASS |
| H | 1 | Horn SN6267 | 1175 | 17968.00 | 66.68 | 46.50 | -60.12 | 8.04 | -52.08 | -13.00 | 39.08 | PASS |
| H | 1 | 3160-09 | 1175 | 19087.50 | 58.59 | 43.30 | -60.45 | 15.55 | -44.90 | -13.00 | 31.90 | PASS |
| H | 1 | 3160-09 | 1175 | 19904.00 | 60.84 | 44.50 | -59.93 | 15.99 | -43.94 | -13.00 | 30.94 | PASS |
| V | 3 | Horn SN6267 | 1175 | 7937.50 | 55.00 | 44.90 | -55.79 | 9.25 | -46.54 | -13.00 | 33.54 | PASS |
| V | 1 | Horn SN6267 | 1175 | 11452.50 | 49.78 | 37.70 | -64.35 | 10.93 | -53.42 | -13.00 | 40.42 | PASS |
| V | 1 | Horn SN6267 | 1175 | 13361.25 | 58.80 | 43.90 | -64.11 | 10.82 | -53.29 | -13.00 | 40.29 | PASS |
| V | 1 | Horn SN6267 | 1175 | 15270.00 | 59.69 | 45.10 | -63.64 | 12.40 | -51.24 | -13.00 | 38.24 | PASS |
| V | 1 | Horn SN6267 | 1175 | 17178.75 | 63.62 | 45.70 | -55.42 | 11.13 | -44.29 | -13.00 | 31.29 | PASS |
| V | 1 | Horn SN6267 | 1175 | 17904.00 | 66.00 | 46.10 | -47.04 | 8.32 | -38.72 | -13.00 | 25.72 | PASS |
| V | 1 | 3160-09 | 1175 | 19087.50 | 58.59 | 43.30 | -59.27 | 15.55 | -43.72 | -13.00 | 30.72 | PASS |
| V | 1 | 3160-09 | 1175 | 19948.00 | 60.85 | 44.50 | -59.03 | 15.98 | -43.05 | -13.00 | 30.05 | PASS |

Note:
All bands were investigated and the significant worsecase emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
EIRP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Margin (dB) = Limit (dBm) - Level (dBm)

# FIELD STRENGTH OF SPURIOUS RADIATION - §24.238 (Continued)

## F.3. MEASUREMENT DATA - PCS Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC24.238 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ with AC555 | **Test End Date:** | 13-Aug-04 |

**Vehicle Mount Antenna Low Channel (Channel 25), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission EIRP Level | EIRP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 1 | Horn SN6267 | 25 | 11107.50 | 49.61 | 37.50 | -62.22 | 10.45 | -51.77 | -13.00 | 38.77 | PASS |
| H | 1 | Horn SN6267 | 25 | 12958.75 | 58.15 | 44.10 | -62.70 | 10.64 | -52.06 | -13.00 | 39.06 | PASS |
| H | 1 | Horn SN6267 | 25 | 14810.00 | 58.14 | 42.70 | -61.71 | 11.06 | -50.65 | -13.00 | 37.65 | PASS |
| H | 1 | Horn SN6267 | 25 | 16661.25 | 57.86 | 41.50 | -62.06 | 12.58 | -49.48 | -13.00 | 36.48 | PASS |
| H | 1 | Horn SN6267 | 25 | 17998.00 | 65.10 | 44.70 | -60.81 | 7.91 | -52.90 | -13.00 | 39.90 | PASS |
| H | 1 | 3160-09 | 25 | 18512.50 | 57.36 | 42.50 | -63.51 | 15.31 | -48.21 | -13.00 | 35.21 | PASS |
| H | 1 | 3160-09 | 25 | 19994.00 | 60.24 | 43.90 | -56.60 | 16.00 | -40.60 | -13.00 | 27.60 | PASS |
| V | 3 | Horn SN6267 | 25 | 3702.50 | 51.25 | 48.80 | -48.99 | 8.06 | -40.93 | -13.00 | 27.93 | PASS |
| V | 1 | Horn SN6267 | 25 | 11107.50 | 50.41 | 38.30 | -62.27 | 10.45 | -51.82 | -13.00 | 38.82 | PASS |
| V | 1 | Horn SN6267 | 25 | 12958.75 | 57.15 | 43.10 | -62.68 | 10.64 | -52.04 | -13.00 | 39.04 | PASS |
| V | 1 | Horn SN6267 | 25 | 14810.00 | 57.74 | 42.30 | -62.44 | 11.06 | -51.38 | -13.00 | 38.38 | PASS |
| V | 1 | Horn SN6267 | 25 | 16661.25 | 58.06 | 41.70 | -62.09 | 12.58 | -49.51 | -13.00 | 36.51 | PASS |
| V | 1 | Horn SN6267 | 25 | 17994.00 | 64.07 | 43.70 | -58.14 | 7.93 | -50.21 | -13.00 | 37.21 | PASS |
| V | 1 | 3160-09 | 25 | 18512.50 | 57.76 | 42.90 | -61.77 | 15.31 | -46.47 | -13.00 | 33.47 | PASS |
| V | 1 | 3160-09 | 25 | 19996.00 | 59.64 | 43.30 | -57.56 | 16.00 | -41.56 | -13.00 | 28.56 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
EIRP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Margin (dB) = Limit (dBm) - Level (dBm)

# FIELD STRENGTH OF SPURIOUS RADIATION - §24.238 (Continued)

## F.3. MEASUREMENT DATA - PCS Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC24.238 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ with AC555 | **Test End Date:** | 13-Aug-04 |

**Vehicle Mount Antenna Mid Channel (Channel 600), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission EIRP Level | EIRP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 600 | 5981.88 | 51.85 | 45.10 | -52.02 | 9.18 | -42.84 | -13.00 | 29.84 | PASS |
| H | 1 | Horn SN6267 | 600 | 11280.00 | 50.90 | 38.90 | -62.45 | 10.69 | -51.76 | -13.00 | 38.76 | PASS |
| H | 1 | Horn SN6267 | 600 | 13160.00 | 56.71 | 42.10 | -62.52 | 10.70 | -51.82 | -13.00 | 38.82 | PASS |
| H | 1 | Horn SN6267 | 600 | 13558.00 | 60.71 | 45.90 | -62.55 | 10.92 | -51.63 | -13.00 | 38.63 | PASS |
| H | 1 | Horn SN6267 | 600 | 15040.00 | 57.95 | 42.70 | -62.38 | 11.29 | -51.09 | -13.00 | 38.09 | PASS |
| H | 1 | Horn SN6267 | 600 | 16920.00 | 60.33 | 43.30 | -61.90 | 11.91 | -49.99 | -13.00 | 36.99 | PASS |
| H | 1 | 3160-09 | 600 | 18800.00 | 58.27 | 42.70 | -57.84 | 15.42 | -42.42 | -13.00 | 29.42 | PASS |
| H | 1 | 3160-09 | 600 | 19974.00 | 61.05 | 44.70 | -55.77 | 15.99 | -39.78 | -13.00 | 26.78 | PASS |
| V | 3 | Horn SN6267 | 600 | 5640.00 | 44.14 | 37.70 | -42.99 | 8.77 | -34.22 | -13.00 | 21.22 | PASS |
| V | 1 | Horn SN6267 | 600 | 11280.00 | 50.10 | 38.10 | -62.24 | 10.69 | -51.55 | -13.00 | 38.55 | PASS |
| V | 1 | 3160-09 | 600 | 19942.00 | 61.44 | 45.10 | -56.65 | 15.98 | -40.67 | -13.00 | 27.67 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
EIRP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Margin (dB) = Limit (dBm) - Level (dBm)

# FIELD STRENGTH OF SPURIOUS RADIATION - §24.238 (Continued)

## F.3. MEASUREMENT DATA - PCS Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC24.238 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ with AC555 | **Test End Date:** | 13-Aug-04 |

**Vehicle Mount Antenna High Channel (Channel 1175), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission EIRP Level | EIRP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 1 | Horn SN6267 | 1175 | 11452.50 | 50.78 | 38.70 | -62.41 | 10.93 | -51.48 | -13.00 | 38.48 | PASS |
| H | 1 | Horn SN6267 | 1175 | 13361.25 | 59.00 | 44.10 | -62.92 | 10.82 | -52.10 | -13.00 | 39.10 | PASS |
| H | 1 | Horn SN6267 | 1175 | 15270.00 | 58.49 | 43.90 | -61.91 | 12.40 | -49.51 | -13.00 | 36.51 | PASS |
| H | 1 | Horn SN6267 | 1175 | 17178.75 | 60.62 | 42.70 | -61.72 | 11.13 | -50.59 | -13.00 | 37.59 | PASS |
| H | 1 | Horn SN6267 | 1175 | 17996.00 | 65.08 | 44.70 | -60.12 | 7.92 | -52.20 | -13.00 | 39.20 | PASS |
| H | 1 | 3160-09 | 1175 | 19087.50 | 58.59 | 43.30 | -57.25 | 15.55 | -41.70 | -13.00 | 28.70 | PASS |
| H | 1 | 3160-09 | 1175 | 19928.00 | 60.62 | 44.30 | -54.73 | 15.97 | -38.76 | -13.00 | 25.76 | PASS |
| V | 3 | Horn SN6267 | 1175 | 3818.13 | 55.71 | 52.90 | -39.02 | 8.04 | -30.98 | -13.00 | 17.98 | PASS |
| V | 1 | Horn SN6267 | 1175 | 11452.50 | 50.18 | 38.10 | -62.46 | 10.93 | -51.53 | -13.00 | 38.53 | PASS |
| V | 1 | Horn SN6267 | 1175 | 13361.25 | 57.80 | 42.90 | -62.81 | 10.82 | -51.99 | -13.00 | 38.99 | PASS |
| V | 1 | Horn SN6267 | 1175 | 15270.00 | 58.09 | 43.50 | -61.73 | 12.40 | -49.33 | -13.00 | 36.33 | PASS |
| V | 1 | Horn SN6267 | 1175 | 17178.75 | 61.22 | 43.30 | -62.13 | 11.13 | -51.00 | -13.00 | 38.00 | PASS |
| V | 1 | 3160-09 | 1175 | 19087.50 | 58.19 | 42.90 | -58.51 | 15.55 | -42.96 | -13.00 | 29.96 | PASS |
| V | 1 | 3160-09 | 1175 | 19908.00 | 60.99 | 44.70 | -56.65 | 15.96 | -40.69 | -13.00 | 27.69 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit – 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power –> -13 dBm
EIRP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi)
Margin (dB) = Limit (dBm) - Level (dBm)

# FIELD STRENGTH OF SPURIOUS RADIATION - §22.917 (Continued)

## F.3. MEASUREMENT DATA - Cellular Band

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC22.917 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ w/ AC555 | **Test End Date:** | 13-Aug-04 |

**Swivel Dipole Antenna Low Channel (Channel 1013), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission ERP Level | ERP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBd or dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 1013 | 2474.10 | 53.58 | 56.40 | -52.86 | 7.74 | -45.12 | -13.00 | 34.26 | PASS |
| H | 3 | Horn SN6267 | 1013 | 5772.90 | 49.87 | 43.30 | -55.28 | 8.93 | -46.35 | -13.00 | 35.49 | PASS |
| H | 3 | Horn SN6267 | 1013 | 7422.30 | 53.08 | 43.70 | -55.16 | 8.96 | -46.20 | -13.00 | 35.34 | PASS |
| H | 3 | Horn SN6267 | 1013 | 8247.00 | 52.67 | 42.30 | -55.02 | 9.30 | -45.72 | -13.00 | 34.86 | PASS |
| H | 3 | Horn SN6267 | 1013 | 9353.13 | 61.94 | 50.10 | -44.96 | 9.15 | -35.81 | -13.00 | 24.95 | PASS |
| V | 3 | Horn SN6267 | 1013 | 1649.40 | 57.07 | 53.60 | -54.91 | 6.35 | -48.56 | -13.00 | 37.70 | PASS |
| V | 3 | Horn SN6267 | 1013 | 6597.60 | 50.49 | 43.10 | -55.44 | 9.54 | -45.90 | -13.00 | 35.04 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Dipole Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
ERP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) -2.14
Margin (dB) = Limit (dBm) - Level (dBm)

# FIELD STRENGTH OF SPURIOUS RADIATION - §22.917 (Continued)

## F.3. MEASUREMENT DATA - Cellular Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC22.917 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ w/ AC555 | **Test End Date:** | 13-Aug-04 |

**Swivel Dipole Antenna Mid Channel (Channel 363), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission ERP Level | ERP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 363 | 1671.80 | 54.15 | 51.20 | -44.22 | 6.37 | -37.85 | -13.00 | 26.99 | PASS |
| H | 3 | Horn SN6267 | 363 | 5015.40 | 42.25 | 36.90 | -63.94 | 8.60 | -55.34 | -13.00 | 44.48 | PASS |
| H | 3 | Horn SN6267 | 363 | 5273.13 | 60.80 | 54.90 | -39.61 | 8.60 | -31.01 | -13.00 | 20.15 | PASS |
| H | 3 | Horn SN6267 | 363 | 5851.30 | 50.12 | 43.50 | -63.89 | 9.02 | -54.87 | -13.00 | 44.01 | PASS |
| H | 3 | Horn SN6267 | 363 | 6687.20 | 52.33 | 44.70 | -64.11 | 9.49 | -54.62 | -13.00 | 43.76 | PASS |
| H | 3 | Horn SN6267 | 363 | 7523.10 | 53.67 | 44.10 | -65.21 | 8.92 | -56.29 | -13.00 | 45.43 | PASS |
| H | 3 | Horn SN6267 | 363 | 8359.00 | 54.79 | 44.30 | -61.15 | 9.30 | -51.85 | -13.00 | 40.99 | PASS |
| H | 1 | Horn SN6267 | 363 | 17944.00 | 66.53 | 46.50 | -59.09 | 8.15 | -50.94 | -13.00 | 40.08 | PASS |
| H | 1 | 3160-09 | 363 | 19930.00 | 60.43 | 44.10 | -57.86 | 15.97 | -41.89 | -13.00 | 31.03 | PASS |
| V | 3 | Horn SN6267 | 363 | 4179.50 | 44.82 | 41.10 | -55.96 | 8.25 | -47.71 | -13.00 | 36.85 | PASS |
| V | 3 | Horn SN6267 | 363 | 5015.40 | 41.45 | 36.10 | -64.74 | 8.60 | -56.14 | -13.00 | 45.28 | PASS |
| V | 3 | Horn SN6267 | 363 | 5851.30 | 50.32 | 43.70 | -64.27 | 9.02 | -55.25 | -13.00 | 44.39 | PASS |
| V | 3 | Horn SN6267 | 363 | 6687.20 | 51.93 | 44.30 | -63.61 | 9.49 | -54.12 | -13.00 | 43.26 | PASS |
| V | 3 | Horn SN6267 | 363 | 7523.10 | 54.47 | 44.90 | -63.27 | 8.92 | -54.35 | -13.00 | 43.49 | PASS |
| V | 3 | Horn SN6267 | 363 | 8359.00 | 53.59 | 43.10 | -61.71 | 9.30 | -52.41 | -13.00 | 41.55 | PASS |
| V | 1 | Horn SN6267 | 363 | 17744.00 | 66.17 | 46.70 | -59.08 | 9.03 | -50.05 | -13.00 | 39.19 | PASS |
| V | 1 | 3160-09 | 363 | 19934.00 | 61.23 | 44.90 | -57.81 | 15.97 | -41.84 | -13.00 | 30.98 | PASS |

Note:
All bands were investigated and the significant emissions or noise floor reported.
Dipole Antenna used for substitution
Antenna factors are stated in dBd

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
ERP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) -2.14
Margin (dB) = Limit (dBm) - Level (dBm)

## FIELD STRENGTH OF SPURIOUS RADIATION - §22.917 (Continued)

### F.3. MEASUREMENT DATA - Cellular Band (Cont.)

| | | | | |
|---|---|---|---|---|
| **Project Number:** | 052604-519 | | **Standard:** | FCC22.917 |
| **Company:** | Itronix | | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ w/ AC555 | | **Test End Date:** | 13-Aug-04 |

**Swivel Dipole Antenna High Channel (Channel 777), Spurious Emissions**

| Polarity | Disance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission ERP Level | ERP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBd or dBi * | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 777 | 3818.13 | 66.41 | 63.60 | -30.46 | 8.04 | -22.42 | -13.00 | 11.56 | PASS |
| H | 3 | Horn SN6267 | 777 | 5089.86 | 44.42 | 38.90 | -63.52 | 8.60 | -54.92 | -13.00 | 44.06 | PASS |
| H | 3 | Horn SN6267 | 777 | 5938.17 | 51.02 | 44.30 | -63.83 | 9.13 | -54.70 | -13.00 | 43.84 | PASS |
| H | 3 | Horn SN6267 | 777 | 6786.48 | 53.57 | 45.70 | -63.45 | 9.43 | -54.02 | -13.00 | 43.16 | PASS |
| H | 3 | Horn SN6267 | 777 | 7634.79 | 55.24 | 45.50 | -64.99 | 9.01 | -55.98 | -13.00 | 45.12 | PASS |
| H | 3 | Horn SN6267 | 777 | 8483.10 | 53.89 | 43.30 | -60.45 | 9.30 | -51.15 | -13.00 | 40.29 | PASS |
| H | 1 | Horn SN6267 | 777 | 17968.00 | 66.68 | 46.50 | -60.12 | 8.04 | -52.08 | -13.00 | 41.22 | PASS |
| H | 1 | 3160-09 | 777 | 19984.00 | 60.84 | 44.50 | -59.93 | 15.99 | -43.94 | -13.00 | 33.08 | PASS |
| V | 3 | Horn SN6267 | 777 | 5089.86 | 43.22 | 37.70 | -64.35 | 8.60 | -55.75 | -13.00 | 44.89 | PASS |
| V | 3 | Horn SN6267 | 777 | 5938.17 | 50.62 | 43.90 | -64.11 | 9.13 | -54.98 | -13.00 | 44.12 | PASS |
| V | 3 | Horn SN6267 | 777 | 6786.48 | 52.97 | 45.10 | -63.64 | 9.43 | -54.21 | -13.00 | 43.35 | PASS |
| V | 3 | Horn SN6267 | 777 | 7634.79 | 55.44 | 45.70 | -55.42 | 9.01 | -46.41 | -13.00 | 35.55 | PASS |
| V | 3 | Horn SN6267 | 777 | 8483.10 | 53.89 | 43.30 | -59.27 | 9.30 | -49.97 | -13.00 | 39.11 | PASS |
| V | 3 | Horn SN6267 | 777 | 7937.50 | 55.00 | 44.90 | -55.79 | 9.25 | -46.54 | -13.00 | 35.68 | PASS |
| V | 1 | Horn SN6267 | 777 | 17904.00 | 66.00 | 46.10 | -47.04 | 8.32 | -38.72 | -13.00 | 27.86 | PASS |
| V | 1 | 3160-09 | 777 | 19948.00 | 60.85 | 44.50 | -59.03 | 15.98 | -43.05 | -13.00 | 32.19 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Dipole Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
ERP (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) -2.14
Margin (dB) = Limit (dBm) - Level (dBm)

## FIELD STRENGTH OF SPURIOUS RADIATION - §22.917 (Continued)

### F.3. MEASUREMENT DATA - Cellular Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC22.917 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ with AC555 | **Test End Date:** | 13-Aug-04 |

**Vehicle Mount Antenna Low Channel (Channel 1013),Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission ERP Level | ERP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 1013 | 4948.20 | 47.09 | 41.90 | -55.27 | 8.61 | -48.80 | -13.00 | 35.80 | PASS |
| H | 3 | Horn SN6267 | 1013 | 7422.30 | 52.48 | 43.10 | -55.25 | 8.96 | -48.43 | -13.00 | 35.43 | PASS |
| H | 3 | Horn SN6267 | 1013 | 8247.00 | 53.47 | 43.10 | -55.34 | 9.30 | -48.18 | -13.00 | 35.18 | PASS |
| V | 3 | Horn SN6267 | 1013 | 4123.50 | 46.17 | 42.50 | -56.36 | 8.17 | -50.33 | -13.00 | 37.33 | PASS |
| V | 3 | Horn SN6267 | 1013 | 5772.90 | 47.67 | 41.10 | -55.27 | 8.93 | -48.48 | -13.00 | 35.48 | PASS |
| V | 3 | Horn SN6267 | 1013 | 6597.60 | 49.89 | 42.50 | -55.24 | 9.54 | -47.84 | -13.00 | 34.84 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14
Margin (dB) = Limit (dBm) - Level (dBm)

# FIELD STRENGTH OF SPURIOUS RADIATION - §22.917 (Continued)

## F.3. MEASUREMENT DATA - Cellular Band (Cont.)

| | | | | |
|---|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC22.917 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ with AC555 | **Test End Date:** | 13-Aug-04 |

**Vehicle Mount Antenna Mid Channel (Channel 363), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission ERP Level | ERP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 363 | 2507.70 | 41.80 | 44.50 | -59.63 | 7.80 | -53.97 | -13.00 | 40.97 | PASS |
| H | 3 | Horn SN6267 | 363 | 3343.60 | 42.08 | 41.10 | -58.15 | 8.01 | -52.28 | -13.00 | 39.28 | PASS |
| H | 3 | Horn SN6267 | 363 | 5851.30 | 49.12 | 42.50 | -55.21 | 9.02 | -48.33 | -13.00 | 35.33 | PASS |
| H | 3 | Horn SN6267 | 363 | 6687.20 | 49.53 | 41.90 | -55.10 | 9.49 | -47.75 | -13.00 | 34.75 | PASS |
| H | 3 | Horn SN6267 | 363 | 7523.10 | 52.67 | 43.10 | -55.11 | 8.92 | -48.33 | -13.00 | 35.33 | PASS |
| H | 3 | Horn SN6267 | 363 | 8359.00 | 53.59 | 43.10 | -55.15 | 9.30 | -47.99 | -13.00 | 34.99 | PASS |
| V | 3 | Horn SN6267 | 363 | 4179.50 | 46.62 | 42.90 | -55.28 | 8.25 | -49.17 | -13.00 | 36.17 | PASS |
| V | 3 | Horn SN6267 | 363 | 5015.40 | 45.45 | 40.10 | -57.31 | 8.60 | -50.85 | -13.00 | 37.85 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14
Margin (dB) = Limit (dBm) - Level (dBm)

## FIELD STRENGTH OF SPURIOUS RADIATION - §22.917 (Continued)

### F.3. MEASUREMENT DATA - Cellular Band (Cont.)

| | | | |
|---|---|---|---|
| **Project Number:** | 052604-519 | **Standard:** | FCC22.917 |
| **Company:** | Itronix | **Test Start Date:** | 26-Jul-04 |
| **Product:** | IX260+ with AC555 | **Test End Date:** | 13-Aug-04 |

**Vehicle Mount Antenna High Channel (Channel 777), Spurious Emissions**

| Polarity | Distance | Tx Antenna | Channel | Frequency | Corrected Field Strength | Substituted SA Signal Level | Power Applied to Antenna | Antenna Gain | Emission ERP Level | ERP Limit | Margin | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | m | | | MHz | dBuV/m | dBuV | dBm | dBi | dBm | dBm* | dB | |
| H | 3 | Horn SN6267 | 777 | 5938.17 | 46.62 | 39.90 | -55.14 | 9.13 | -48.15 | -13.00 | 35.15 | PASS |
| H | 3 | Horn SN6267 | 777 | 6786.48 | 49.97 | 42.10 | -55.28 | 9.43 | -47.99 | -13.00 | 34.99 | PASS |
| V | 3 | Horn SN6267 | 777 | 4241.55 | 46.67 | 42.90 | -57.12 | 8.34 | -50.92 | -13.00 | 37.92 | PASS |
| V | 3 | Horn SN6267 | 777 | 5089.86 | 45.62 | 40.10 | -55.05 | 8.60 | -48.59 | -13.00 | 35.59 | PASS |
| V | 3 | Horn SN6267 | 777 | 7634.79 | 52.24 | 42.50 | -55.15 | 9.01 | -48.28 | -13.00 | 35.28 | PASS |
| V | 3 | Horn SN6267 | 777 | 8158.75 | 54.64 | 44.30 | -55.18 | 9.30 | -48.02 | -13.00 | 35.02 | PASS |
| V | 3 | Horn SN6267 | 777 | 8483.10 | 52.29 | 41.70 | -55.14 | 9.30 | -47.98 | -13.00 | 34.98 | PASS |

Note:
All bands were investigated and the worsecase significant emissions or noise floor reported.
Horn Antenna used for substitution
Antenna factors are stated in dBi

Formulae:
Limit = 43 + 10*log(Fundemental Power Level, in watts) below the Fundemental peak power => -13 dBm
ERP Level (dBm) = Power applied to Antenna (dBm) + Antenna Gain (dBi) - 2.14
Margin (dB) = Limit (dBm) - Level (dBm)

# APPENDIX G - FREQUENCY STABILITY / TEMPERATURE VARIATION - §2.1055, §24.235

## G.1. MEASUREMENT PROCEDURE

The minimum frequency stability shall be ±300Hz (Cellular CDMA) and ±150Hz (PCS CDMA) referenced to a received carrier frequency. This meets the requirement for operational accuracy of 0.00005% for digital mode. An HP 53181A Frequency Counter was used to measure the error in the fundamental frequency. The transmitter was set to maximum power at the center frequency of the band. The DUT was placed inside the temperature chamber. The test data is shown on pages 18-19.

**Measurement Method:**

The frequency stability of the transmitter was measured by:

1. Temperature:

   The temperature was varied from -30°C to +60°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 was 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:**

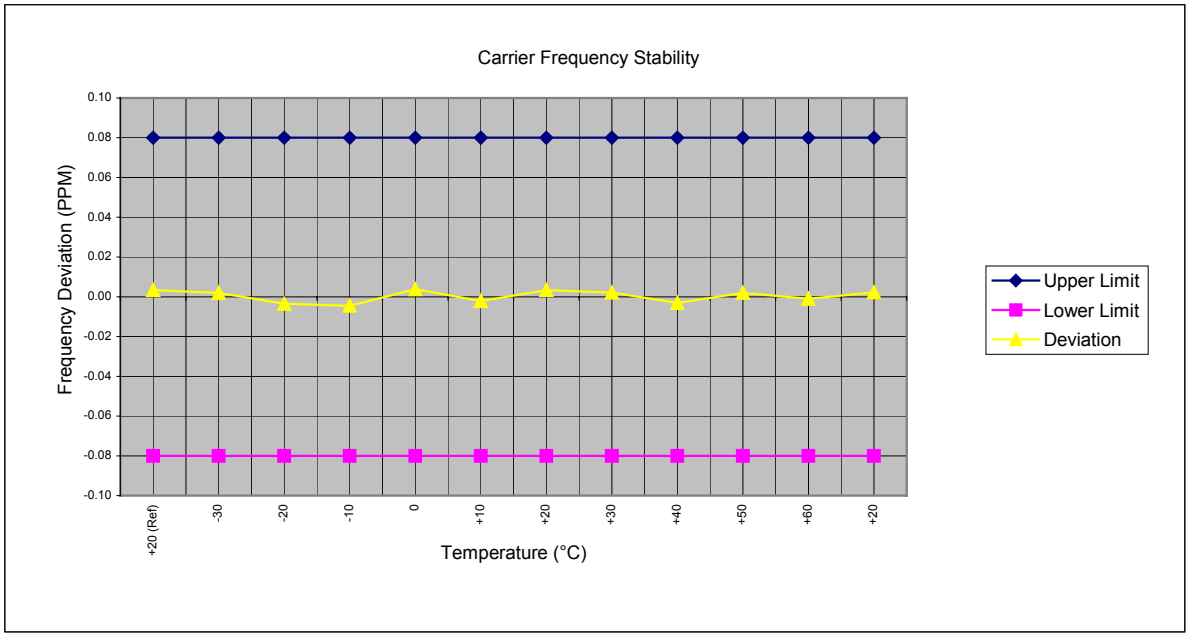
1. The carrier frequency of the transmitter was measured at room temperature (25°C to 27°C to provide a reference).
2. The equipment was subjected to an overnight “soak” at -30°C without any power applied.
3. After the overnight “soak” at -30°C, the measurement of the carrier frequency of the transmitter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

## FREQUENCY STABILITY / TEMPERATURE VARIATION - §2.1055, §24.235 (Continued)

### G.2. MEASUREMENT DATA - PCS Band

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

| Temperature | Voltage | Power | Carrier Frequency Deviation | | Specification | |
|---|---|---|---|---|---|---|
| (°C) | (%) | (VDC) | (Hz) | (PPM) | Lower Limit (PPM) | Upper Limit (PPM) |
| +20 (Ref) | 100 | 6.0 | 6.47 | 0.003 | 0.08 | -0.08 |
| -30 | 100 | 6.0 | 3.58 | 0.002 | 0.08 | -0.08 |
| -20 | 100 | 6.0 | -6.71 | -0.004 | 0.08 | -0.08 |
| -10 | 100 | 6.0 | -8.36 | -0.004 | 0.08 | -0.08 |
| 0 | 100 | 6.0 | 7.11 | 0.004 | 0.08 | -0.08 |
| +10 | 100 | 6.0 | -3.85 | -0.002 | 0.08 | -0.08 |
| +20 | 100 | 6.0 | 6.47 | 0.003 | 0.08 | -0.08 |
| +30 | 100 | 6.0 | 4.02 | 0.002 | 0.08 | -0.08 |
| +40 | 100 | 6.0 | -5.90 | -0.003 | 0.08 | -0.08 |
| +50 | 100 | 6.0 | 3.63 | 0.002 | 0.08 | -0.08 |
| +60 | 100 | 6.0 | -1.78 | -0.001 | 0.08 | -0.08 |
| +20 | Battery Endpoint | 4.0 | 4.21 | 0.002 | 0.08 | -0.08 |



## FREQUENCY STABILITY / TEMPERATURE VARIATION - §2.1055, §24.235 (Continued)

### G.2. MEASUREMENT DATA - Cellular Band

**Carrier Frequency (MHz): 835.89**
**Channel: 363**
**Mode: Cellular CDMA**
**Deviation Limit (PPM): 0.359**

| Temperature | Voltage | Power | Carrier Frequency Deviation | | Specification | |
|---|---|---|---|---|---|---|
| (°C) | (%) | (VDC) | (Hz) | (PPM) | Lower Limit (PPM) | Upper Limit (PPM) |
| +20 (Ref) | 100 | 6.0 | 5.64 | 0.007 | 0.359 | -0.359 |
| -30 | 100 | 6.0 | 1.44 | 0.002 | 0.359 | -0.359 |
| -20 | 100 | 6.0 | -3.17 | -0.004 | 0.359 | -0.359 |
| -10 | 100 | 6.0 | 2.02 | 0.002 | 0.359 | -0.359 |
| 0 | 100 | 6.0 | -1.95 | -0.002 | 0.359 | -0.359 |
| +10 | 100 | 6.0 | -2.32 | -0.003 | 0.359 | -0.359 |
| +20 | 100 | 6.0 | 5.64 | 0.007 | 0.359 | -0.359 |
| +30 | 100 | 6.0 | 1.93 | 0.002 | 0.359 | -0.359 |
| +40 | 100 | 6.0 | -5.41 | -0.006 | 0.359 | -0.359 |
| +50 | 100 | 6.0 | -3.37 | -0.004 | 0.359 | -0.359 |
| +60 | 100 | 6.0 | 2.11 | 0.003 | 0.359 | -0.359 |
| +20 | Battery Endpoint | 4.0 | -1.46 | -0.002 | 0.359 | -0.359 |