

**Test Report On**  
**Dual-Band Dual-mode CDMA Cellular Phone**

**FCC Part 22 & 24 Certification**

FCC ID: **OVFKWC-KX18**

Models: **KX18**

Date: **September 06, 2005**

**STATEMENT OF CERTIFICATION**

*The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the measurements of the sample's radio frequency interference emissions characteristics as of the dates and at the times of the test under the conditions herein specified.*

**STATEMENT OF COMPLIANCE**

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

**Date of Test:** August 30, 2005 – September 6, 2005

**Test performed by:** Kyocera Wireless Corp.  
10300 Campus Point Drive  
San Diego, Ca 92121

**Report Prepared by:** Don Ouk, Engineer

**Report Reviewed by:** Lin Lu, Principal Engineer

Nemko USA, Inc. performed the tests that required an OATS site.

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**1 General Information**

|                                 |   |             |
|---------------------------------|---|-------------|
| <b>Applicant:</b>               | Kyocera Wireless Corp<br>10300 Campus Point Drive<br>San Diego CA 92121 |             |
| <b>FCC ID:</b>                  | OVFKWC-KX18   |             |
| <b>Product:</b>                 | Dual-Band Dual-mode Cellular Phone                                      |             |
| <b>Model Numbers:</b>           | KX18  |             |
| <b>EUT Serial Number:</b>       | A7DX----1CK3YS  |             |
| <b>Type:</b>                    | [ ] Prototype, [X] Pre-Production, [ ] Production                       |             |
| <b>Device Category:</b>         | Portable  |             |
| <b>RF Exposure Environment:</b> | General Population / Uncontrolled                                       |             |
| <b>Antenna:</b>                 | Fixed Stubby  |             |
| <b>Detachable Antenna:</b>      | Yes   |             |
| <b>External Input:</b>          | Audio/Digital Data  |             |
| <b>Quantity:</b>                | Quantity production is planned  |             |
| <b>FCC Rule Parts:</b>          | §22H  | §24E        |
| <b>Modes:</b>                   | 800 CDMA  | 1900 CDMA   |
| <b>Multiple Access Scheme:</b>  | CDMA  | CDMA        |
| <b>TX Frequency (MHz):</b>      | 824 – 849   | 1850 - 1910 |
| <b>Emission Designators:</b>    | 1M25F9W   | 1M25F9W     |
| <b>Max. Output Power (W):</b>   | 0.177 ERP   | 0.254 EIRP  |

## 2 Product Description

The OVFKWC-KX18 phones are Dual-mode Dual-Band 1XRTT products. There are two industrial designs for the lens of the phone (One is more shining than another), namely KX18-5D0 and KX18-5DW (see pictures below). The phones have assisted GPS software feature enabled to meet the emergency location requirements of the FCC's E911 Phase II mandate. The Dual-mode architecture is defined as 1900MHz (PCS CDMA), 800MHz (cellular CDMA).

The phone is designed in compliance with the technical specifications for compatibility of mobile and base stations in the Cellular Radio telephone service contained in "Cellular System Mobile Station -Land Station Compatibility Specification" as specified in OET Bulletin 53 and TIA Standards

As described in Exhibit 1 (operation description), OVFKWC-KX18 can operate in the CDMA mode specified in IS-2000.2 standard, release 0. It can only invoke a Spreading Rate 1 (SR1) operational mode. SR1 is defined as a 1.2288 Mcps chip rate-based system using a direct-spread single carrier, which limits the bandwidth to the same 1.25MHz bandwidth occupied by the legacy IS-95/8-A/B system. Thus, for SR1 in IS-2000, the frequency response is identical to the legacy IS-95 B system standard.

For Part 22 and 24, all of CDMA measurements were conducted with Agilent 8960 as a base station simulator. The base station simulator establishes a CDMA link with the test device. The CDMA link was configured via 8960 for all of measurements as follows:

Radio Configuration: RC1  
Service Options: SO2  
Code domain channels: R-FCH + R-PICH  
Cell Power: -100 dBm/1.23MHz to -103 dBm/1.23MHz  
Data Rate: full rate



### 3 Electronic Serial Numbers (ESN) Protection

The Dual-mode Phone, FCC ID: OVFKWC-KX18 uses ESN. The ESN is a unique identification number to each phone, which is contained in the Numeric Assignment Module and is automatically transmitted to the base station whenever a call is placed. The ESN is stored in an EPROM and is isolated from fraudulent contact and tampering. Any attempt to change the ESN will render the portable phone inoperative.

The phone complies with all requirements for ESN under Part 22.919.

### 4 FCC Compliance Emergency 911

| FCC § 22.921  |
|---|
| When an emergency 911 call is originated by the user, the mobile will attempt to acquire any available system and originate the emergency call on that system, disregarding restrictions set by the roaming list. The FCC NPRM WT99-13, CC94-102 automatic analog A/B roaming option has been implemented for 911 emergency calls. Note that the models that contain the letter "L" have Global Positioning System (GPS) support. |

### 5 TTY compliance

| FCC § 255 of the Telecom Act   |
|--|
| The OVFKWC-KX18 phone models have been designed for TTY Compliance with Cellular Compatibility Standard. |

## 6 Transmitter RF Power Output

### 6.1 Conducted Power

|  |                                       |
|--|---------------------------------------|
| <b>FCC:</b> § 2.1046   | <b>IC:</b> RSS-129 §7.1, RSS-133 §6.2 |
| <p><b>Measurement Procedures:</b></p> <p>The RF output power was measured using a Giga-tronics 8541C Universal Power Meter. Terminated to a resistive coaxial load of 50 ohms.</p> |                                       |

#### Open Position

| Mode      | Frequency (MHz) | Channel | Power (dBm) |
|-----------|-----------------|---------|-------------|
| CDMA 800  | 824.70          | 1013    | 24.16       |
|           | 836.49          | 383     | 24.19       |
|           | 848.31          | 777     | 24.31       |
| CDMA 1900 | 1851.25         | 25      | 23.35       |
|           | 1880.00         | 600     | 23.37       |
|           | 1908.75         | 1175    | 23.27       |

#### Close Position

| Mode      | Frequency (MHz) | Channel | Power (dBm) |
|-----------|-----------------|---------|-------------|
| CDMA 800  | 824.70          | 1013    | 22.75       |
|           | 836.52          | 384     | 22.70       |
|           | 848.31          | 777     | 22.68       |
| CDMA 1900 | 1851.25         | 25      | 21.80       |
|           | 1880.00         | 600     | 21.88       |
|           | 1908.75         | 1175    | 21.84       |

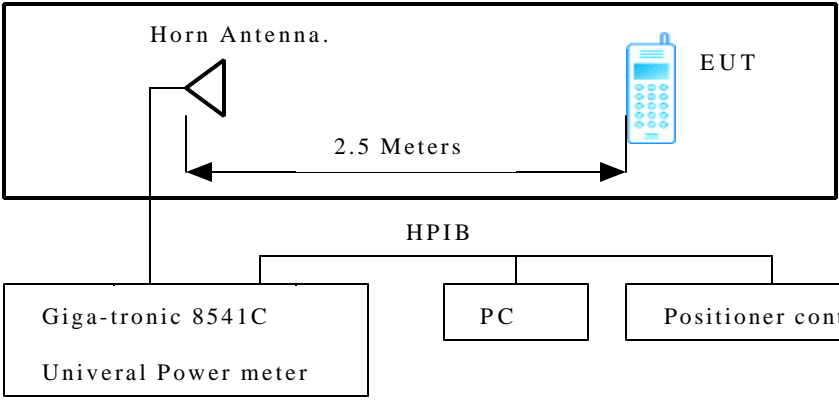
## 6.2 Radiated Power

|                                |  |
|--------------------------------|--|
| <b>FCC:</b> § 22.913, § 24.232 | <b>IC:</b> RSS-129 §7.1 and §9.1, RSS-133 §6.2 |
|--------------------------------|--|

**Measurement Procedures:**

The EUT (SN: 87DX----1CK3YN) was positioned on a 2-axis non-conductive positioner inside an anechoic chamber.

The EUT conducted power was set by the phone control software. During tests, the phone was rotated 360 degree in azimuth and elevation by an automated antenna measurement workstation. Maximum radiated power was recorded using a Giga-tronics 8541C Universal Power Meter. All measurement results are EIRP in dBm. For ERP, subtract 2.1 dB from the EIRP data.



| Mode             | Frequency (MHz) | Channel | Max. Power (dBm) | Ref. |
|------------------|-----------------|---------|------------------|------|
| <b>CDMA 800</b>  | 824.70          | 1013    | 20.74            | ERP  |
|                  | 836.52          | 384     | 21.17            |      |
|                  | 848.31          | 777     | 22.47            |      |
| <b>CDMA 1900</b> | 1851.25         | 25      | 24.04            | EIRP |
|                  | 1880.00         | 600     | 23.39            |      |
|                  | 1908.75         | 1175    | 22.15            |      |

Note: the radiated power was measured for both open (slide-up) position and close (slide-down) position. The highest level per channel is listed in the above table.

## 7 Occupied Bandwidth

|  |                               |
|--|-------------------------------|
| <b>FCC:</b> § 22.917(b)(d), § 24.238   | <b>IC:</b> RSS-129 §6.3, §8.1 |
| <p><b>Measurement Procedures:</b><br/>         The RF output of the EUT was connected to the input of the spectrum analyzer with sufficient attenuation. The spectrum with no modulation was recorded.</p> <p><u>For Digital:</u> Modulate with full rate.</p> |                               |

### List of Figures

| Figure | Mode             | Description               |
|--------|------------------|---------------------------|
| 7-1    | <b>CDMA 800</b>  | CDMA @ Ch383              |
| 7-2    | <b>CDMA 1900</b> | CDMA @ CH600              |
| 7-3    |                  | Lower Band Edge @ CH 25   |
| 7-4    |                  | Upper Band Edge @ CH 1175 |



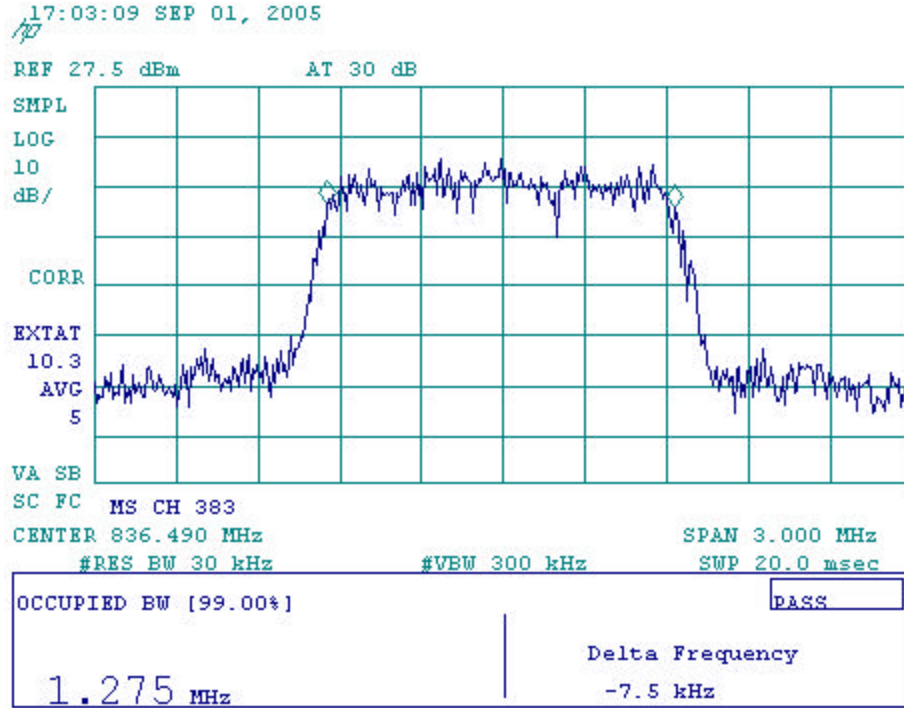


Figure 7-1 CDMA 800 @ CH 383

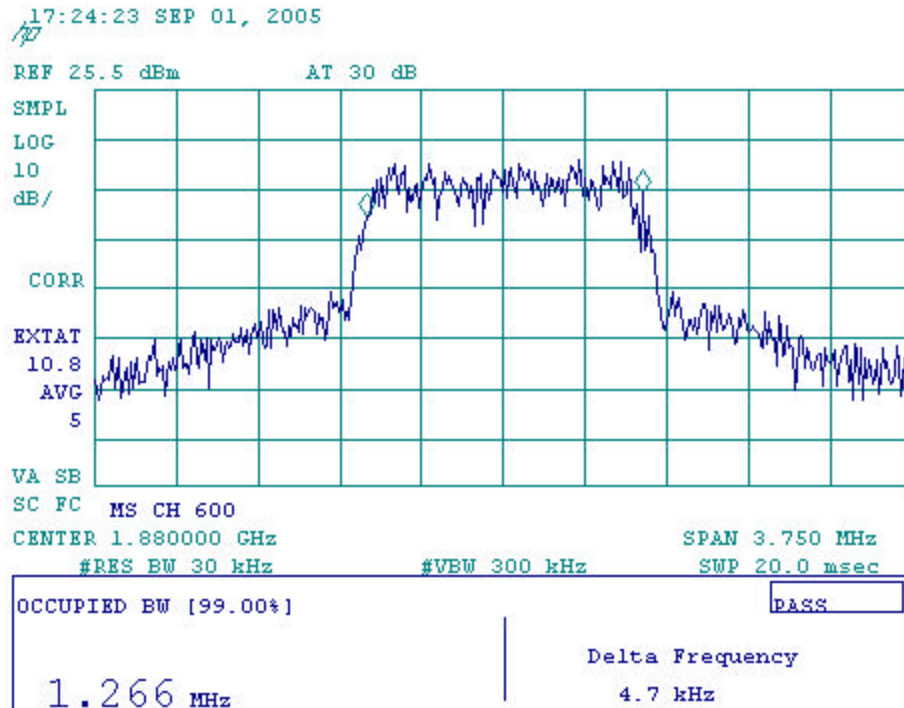


Figure 7-2 CDMA 1900 @ CH 600

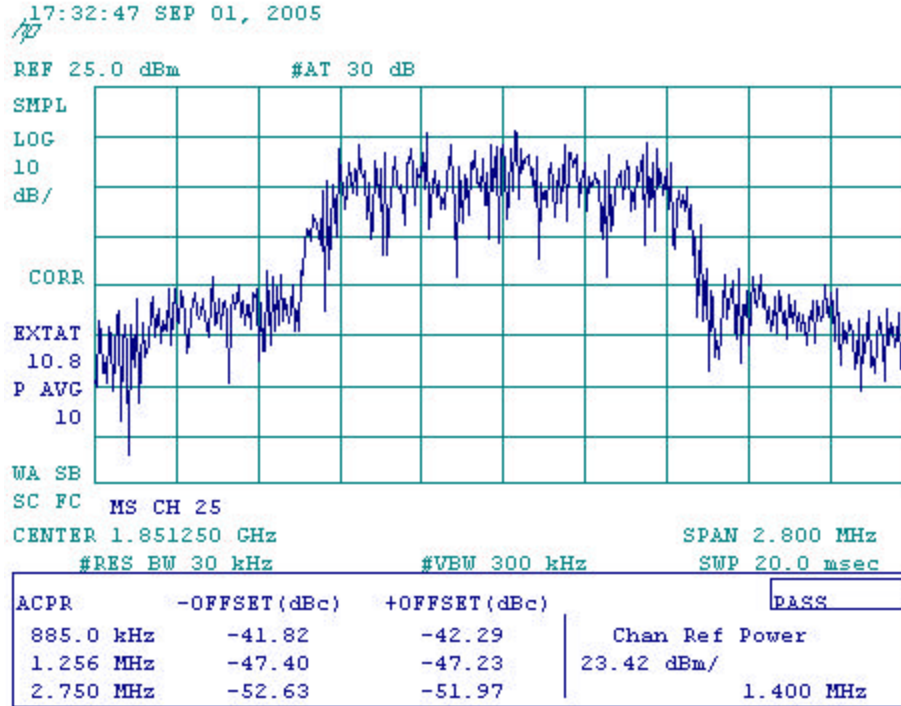


Figure 7-3 CDMA 1900 Lower Band Edge

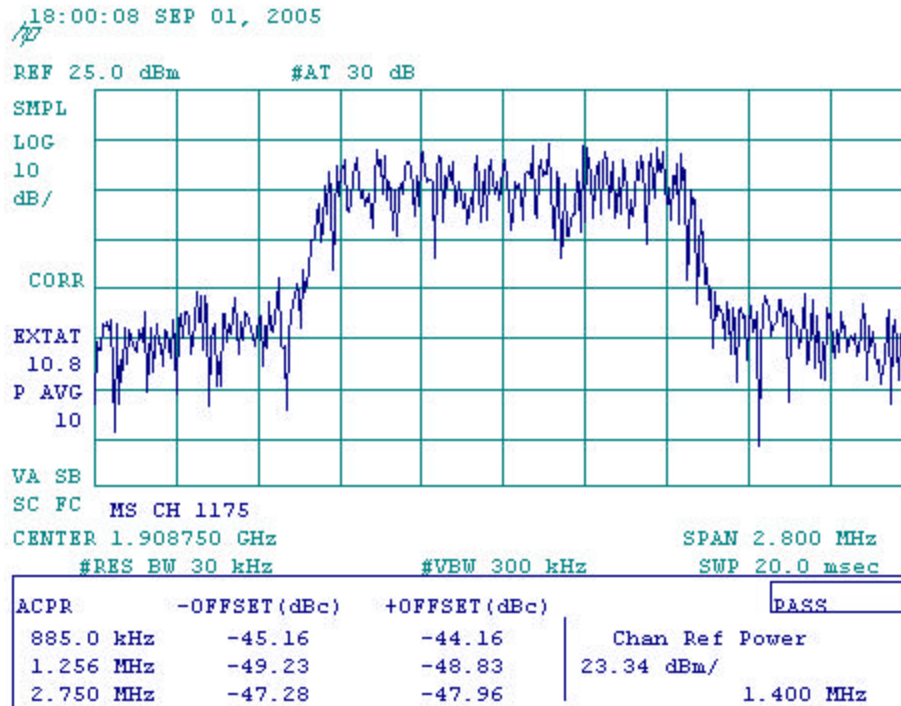


Figure 7-4 CDMA 1900 Upper Band Edge

## 8 Spurious Emissions At Antenna Terminals

|  |   |
|--|---|
| <b>FCC:</b> § 22.917(e)(f), § 24.238   | <b>IC:</b> RSS-129 §6.3, §8.1, RSS-133 §6.3 |
| <p><b>Measurement Procedures:</b></p> <p><u>Out of Band:</u> The RF output of the EUT was connected to the input of the spectrum analyzer with sufficient attenuation. The modulating signal was applied accordingly. The frequency spectrum was investigated from the lowest frequency signal generated up to at least the tenth harmonic of the fundamental.</p> <p><u>Base Band:</u> Spectrum was investigated from 869-894 MHz for Cellular.</p> |   |

***List of Figures:***

| Figure | Mode      | Channel | Plot Description   |
|--------|-----------|---------|--|
| 8-1    | CDMA 800  | 1013    | Emissions in base station frequency range, 869 - 894 MHz |
| 8-2    |           |         | Conducted spurious emissions, 9kHz to 10GHz              |
| 8-3    |           | 383     | Emissions in base station frequency range, 869 - 894 MHz |
| 8-4    |           |         | Conducted spurious emissions, 9kHz to 10GHz              |
| 8-5    |           | 777     | Emissions in base station frequency range, 869 - 894 MHz |
| 8-6    |           |         | Conducted spurious emissions, 9kHz to 10GHz              |
| 8-7    | CDMA 1900 | 25      | Conducted spurious emissions, 9kHz to 20GHz              |
| 8-8    |           | 600     | Conducted spurious emissions, 9kHz to 20GHz              |
| 8-9    |           | 1175    | Conducted spurious emissions, 9kHz to 20GHz              |

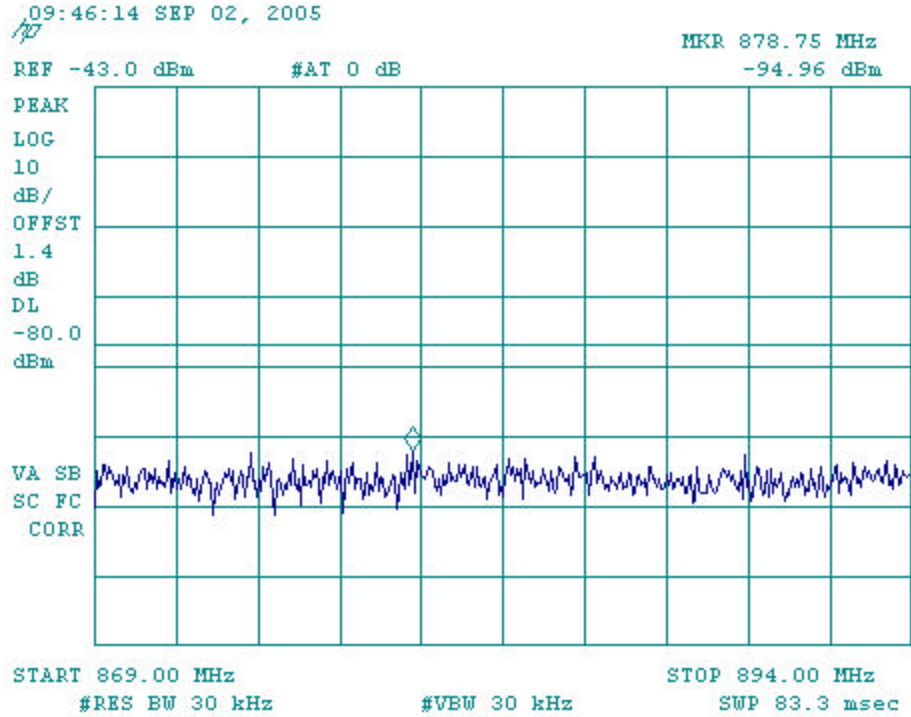


Figure 8-1 CDMA 800 - Emissions in base station frequency range (CH 1013)

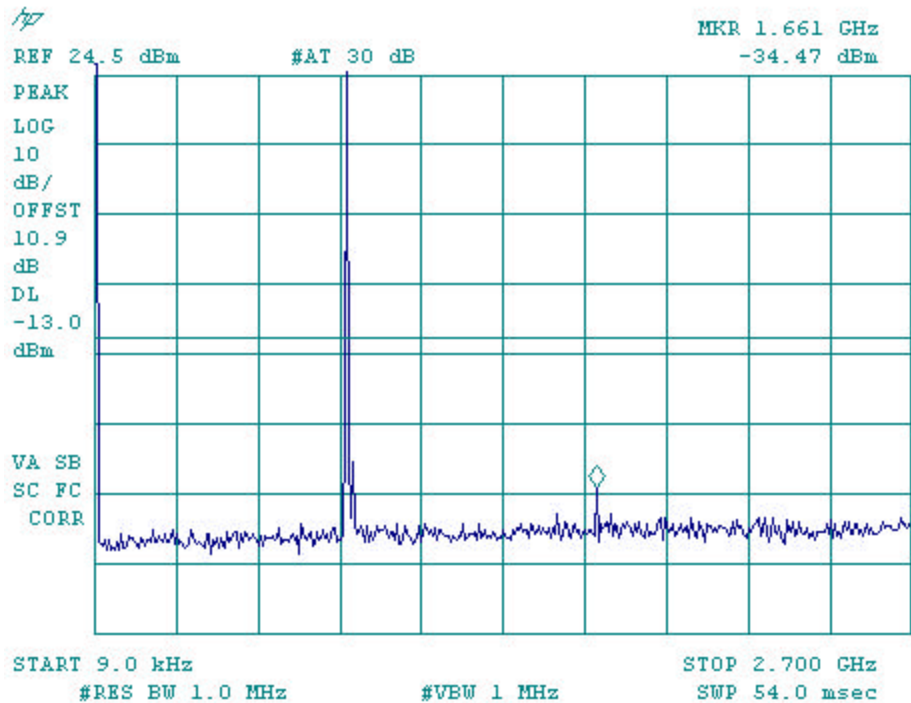


Figure 8-2a CDMA 800 – Conducted Spurious Emission (CH 1013)

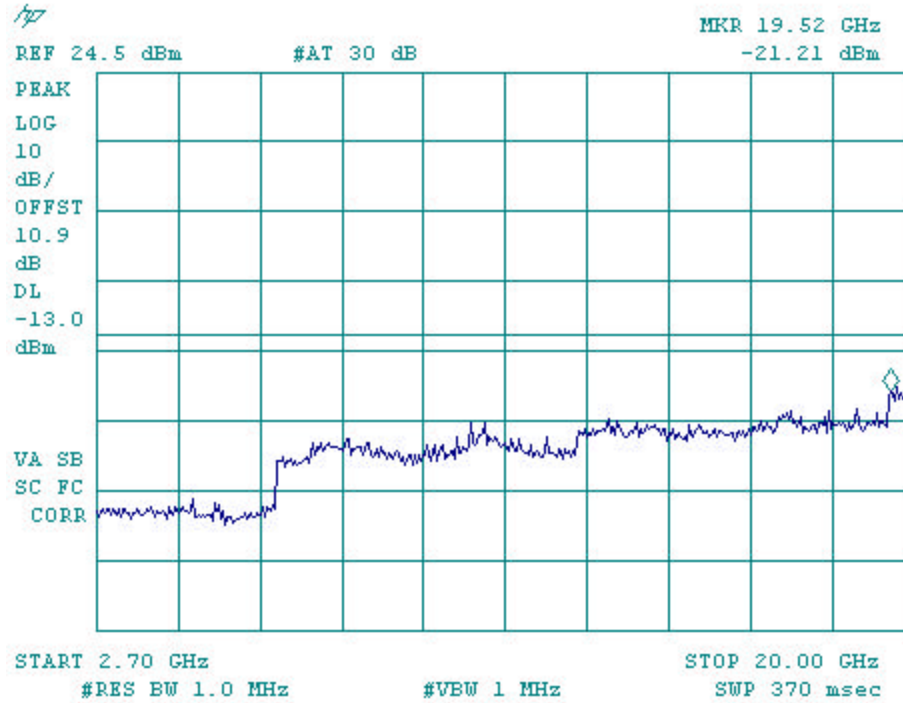


Figure 8-2b CDMA 800 – Conducted Spurious Emission (CH 1013)

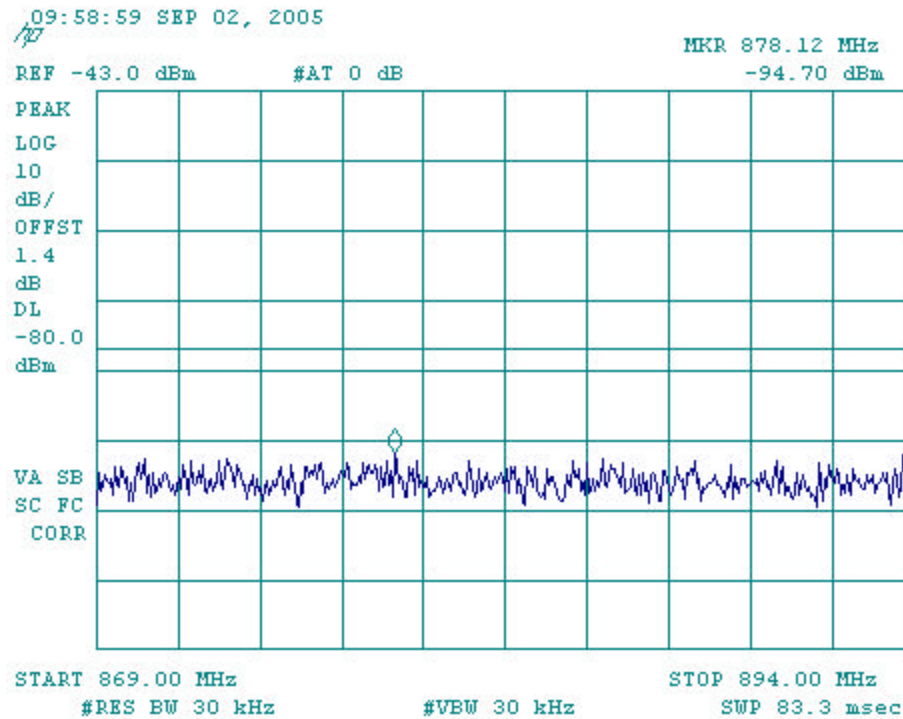


Figure 8-3 CDMA 800 - Emissions in base station frequency range (CH 383)

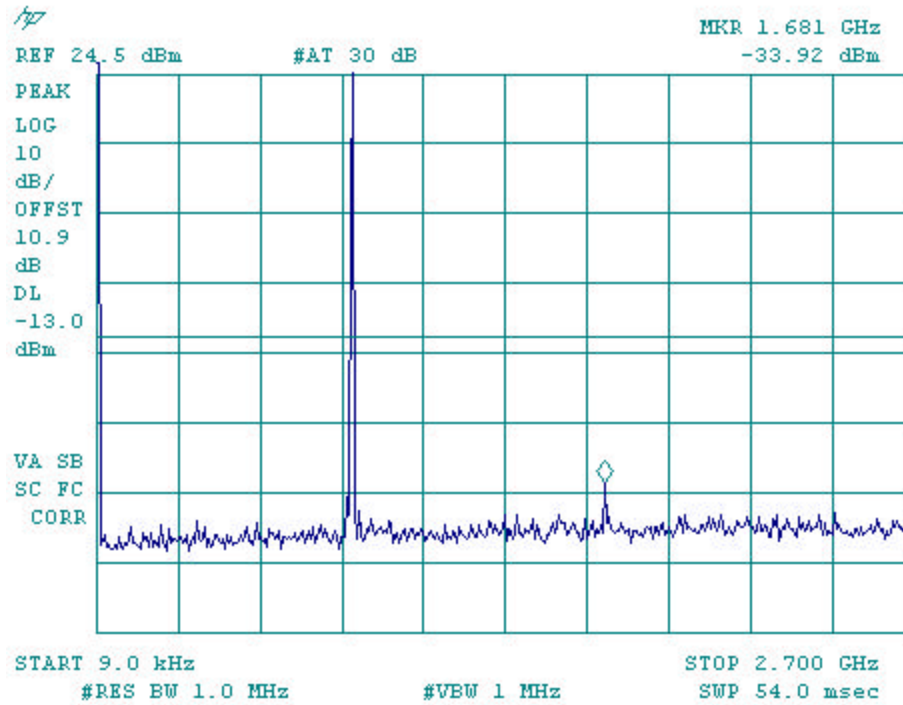


Figure 8-4a CDMA 800 – Conducted Spurious Emission (CH 383)

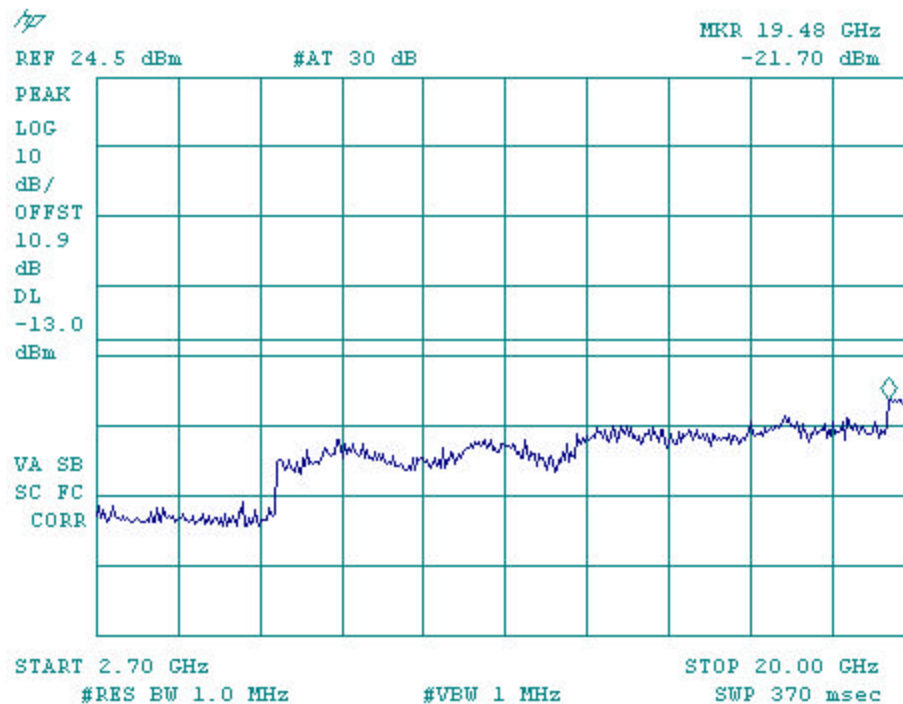


Figure 8-4b CDMA 800 – Conducted Spurious Emission (CH 383)

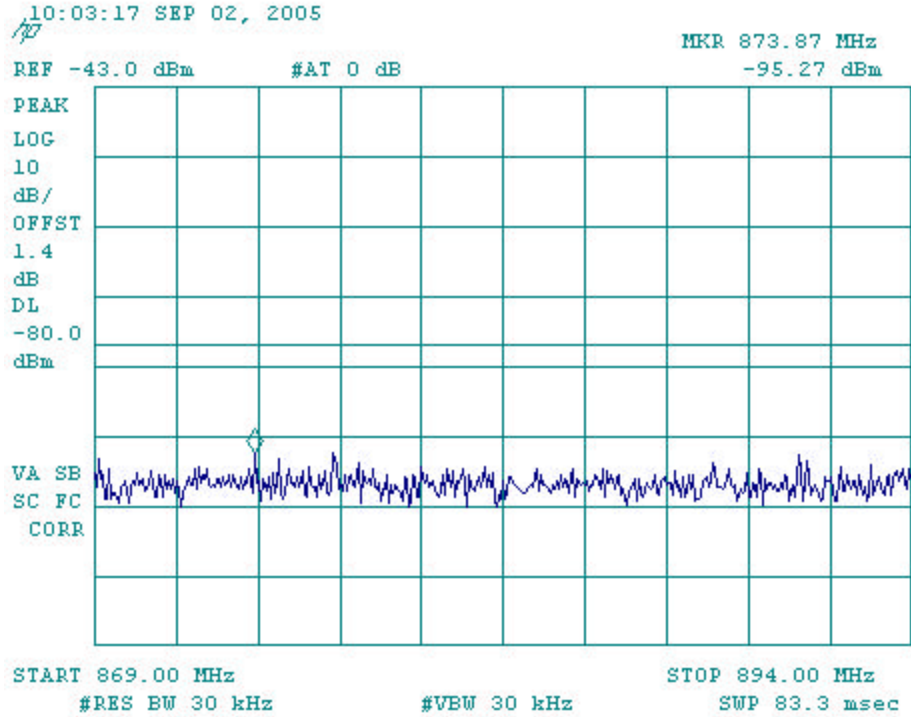


Figure 8-5 CDMA 800 - Emissions in base station frequency range (CH 777)

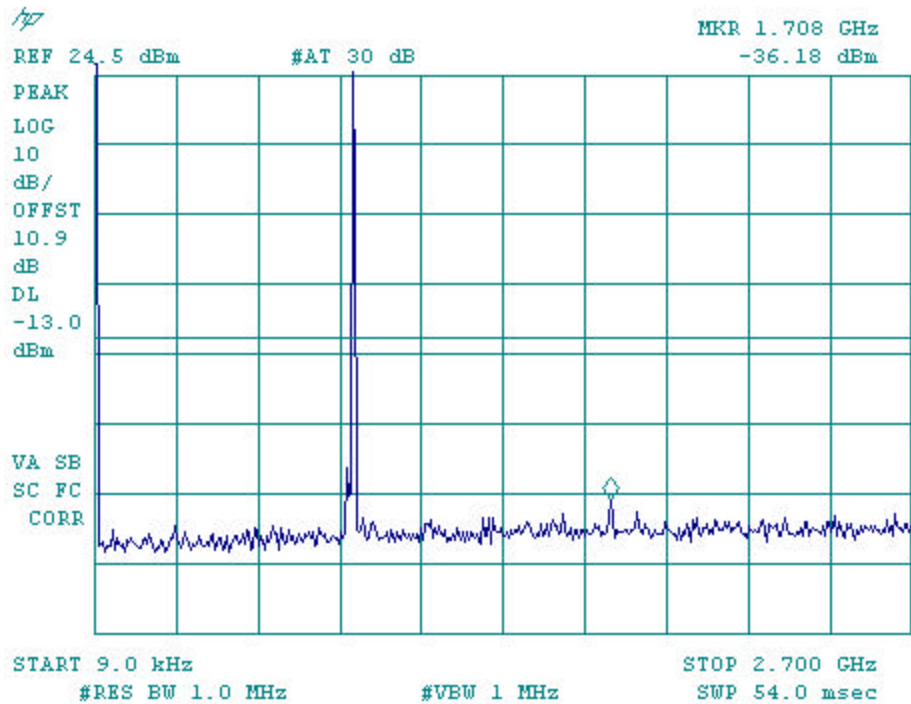


Figure 8-6a CDMA 800 – Conducted Spurious Emission (CH 777)



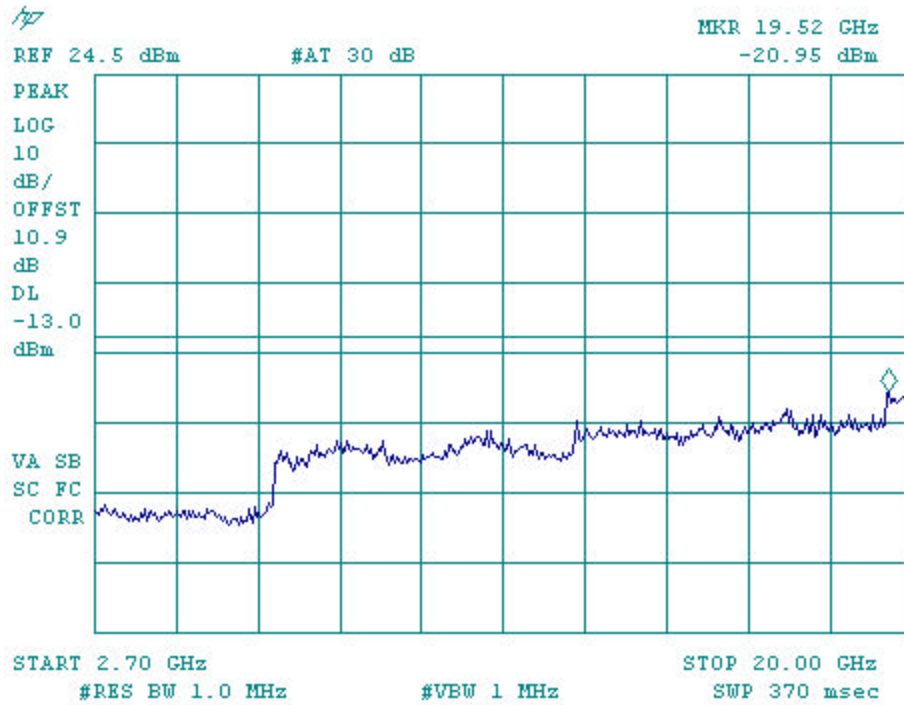


Figure 8-6b CDMA 800 – Conducted Spurious Emission (CH 777)

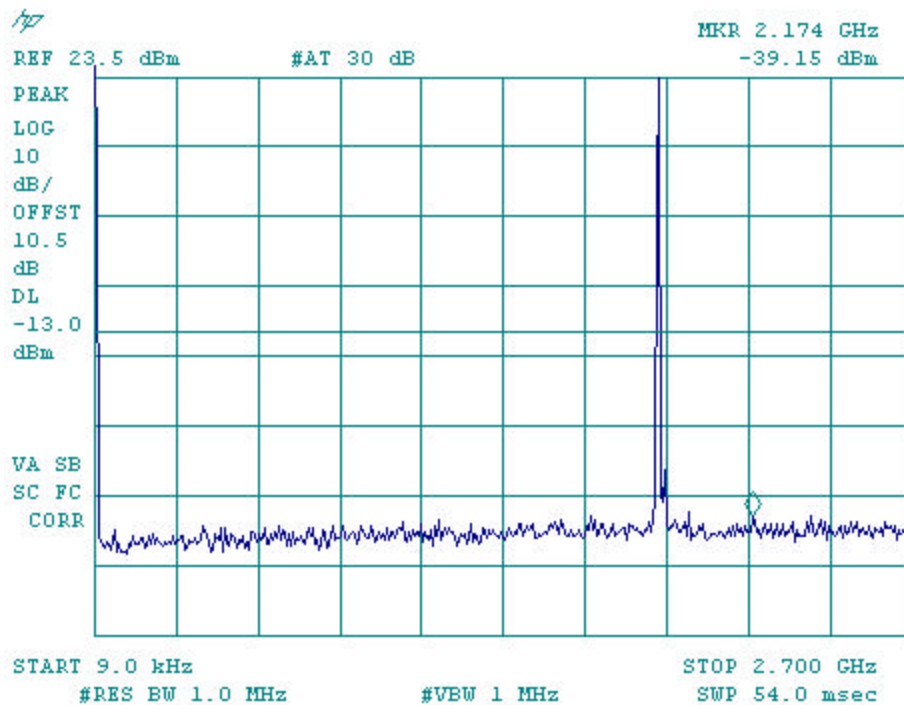


Figure 8-7a CDMA 1900 - Conducted Spurious Emission (CH 25)



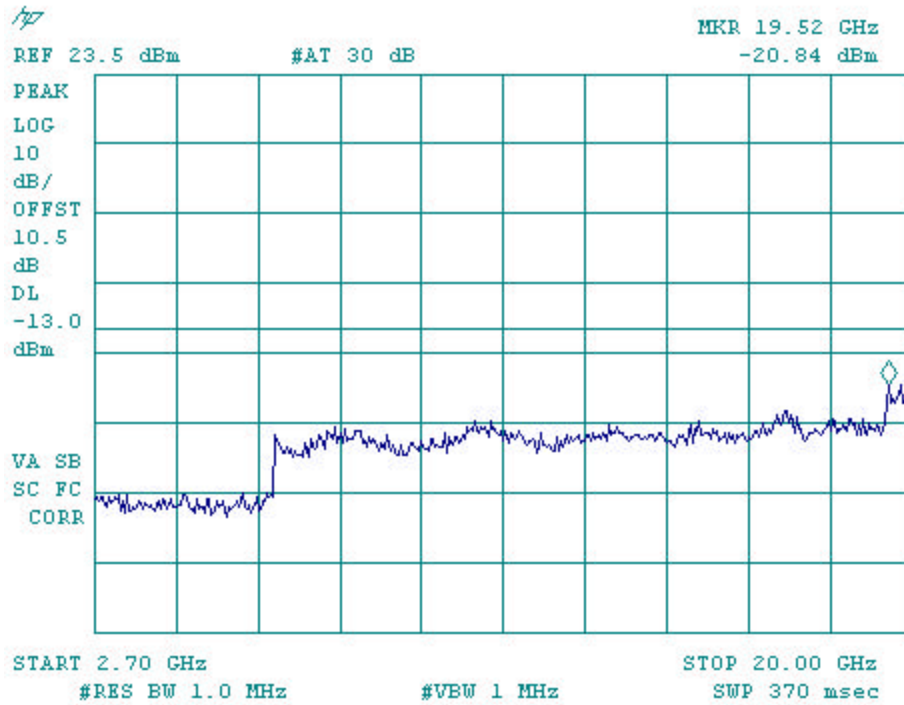


Figure 8-7b CDMA 1900 - Conducted Spurious Emission (CH 25)

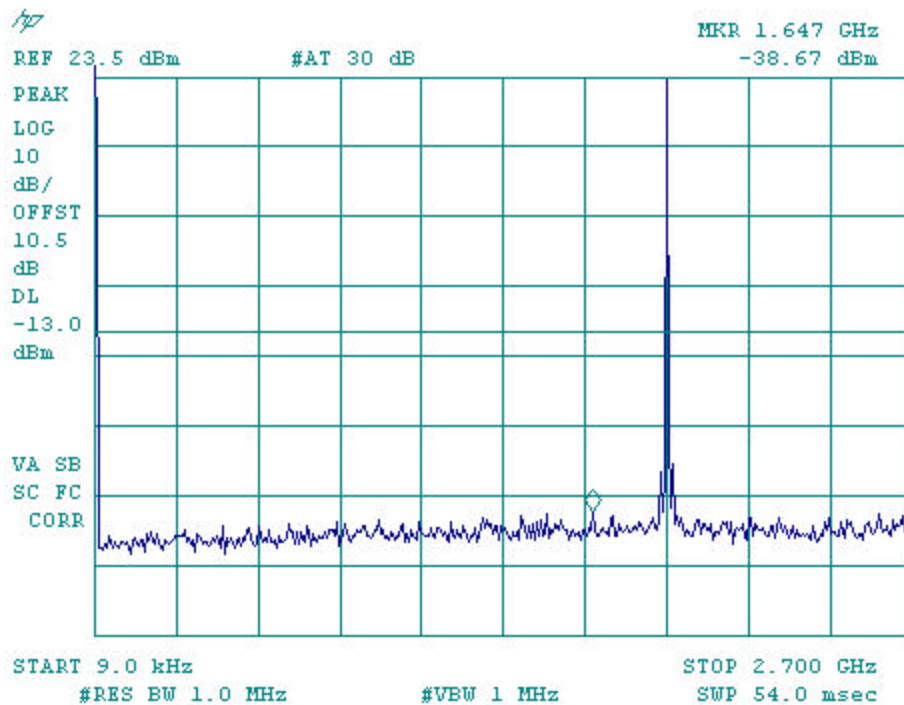


Figure 8-8a CDMA 1900 - Conducted Spurious Emission (CH 600)

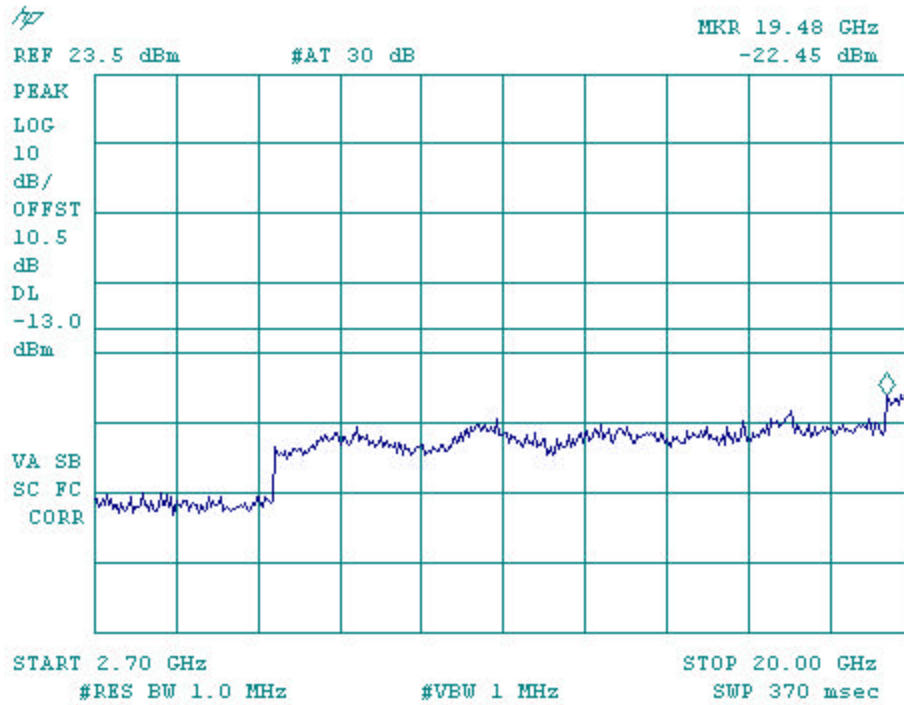


Figure 8-8b CDMA 1900 - Conducted Spurious Emission (CH 600)

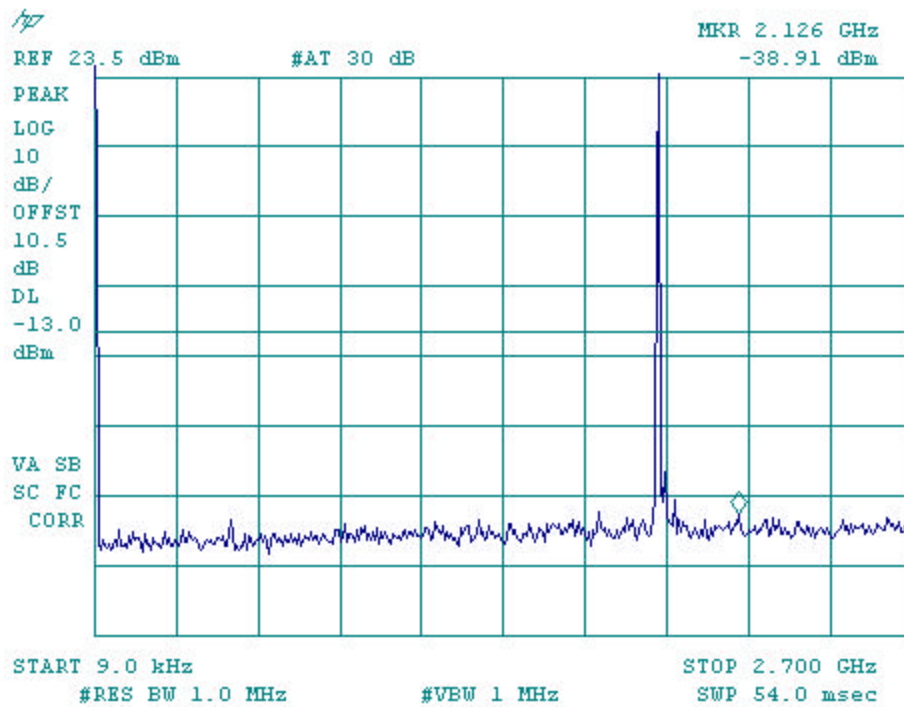


Figure 8-9a CDMA 1900 - Conducted Spurious Emission (CH 1175)

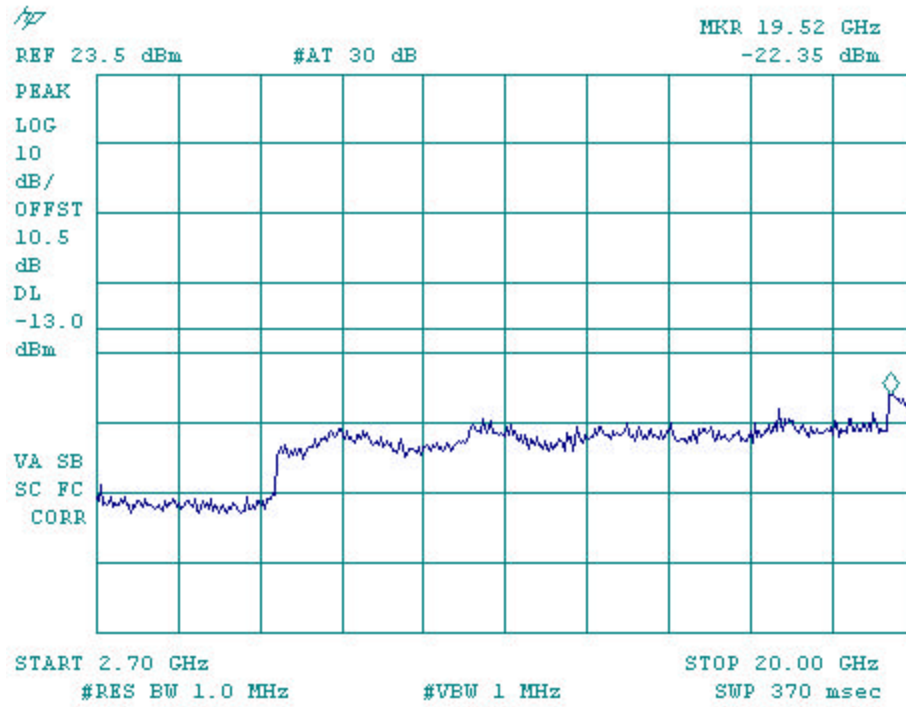


Figure 8-9b CDMA 1900 - Conducted Spurious Emission (CH 1175)

## 9 Transmitter Radiated Spurious Emissions Measured Data

|  |                                       |
|--|---------------------------------------|
| <b>FCC:</b> § 2.1053, § 22.91, § 24.238  | <b>IC:</b> RSS-129 §8.1, RSS-133 §6.3 |
| <b>Measurement Procedures:</b><br><br>The radiated spurious emission test was performed at Nemko in San Diego, California. The test report is attached in a separate attachment. |                                       |

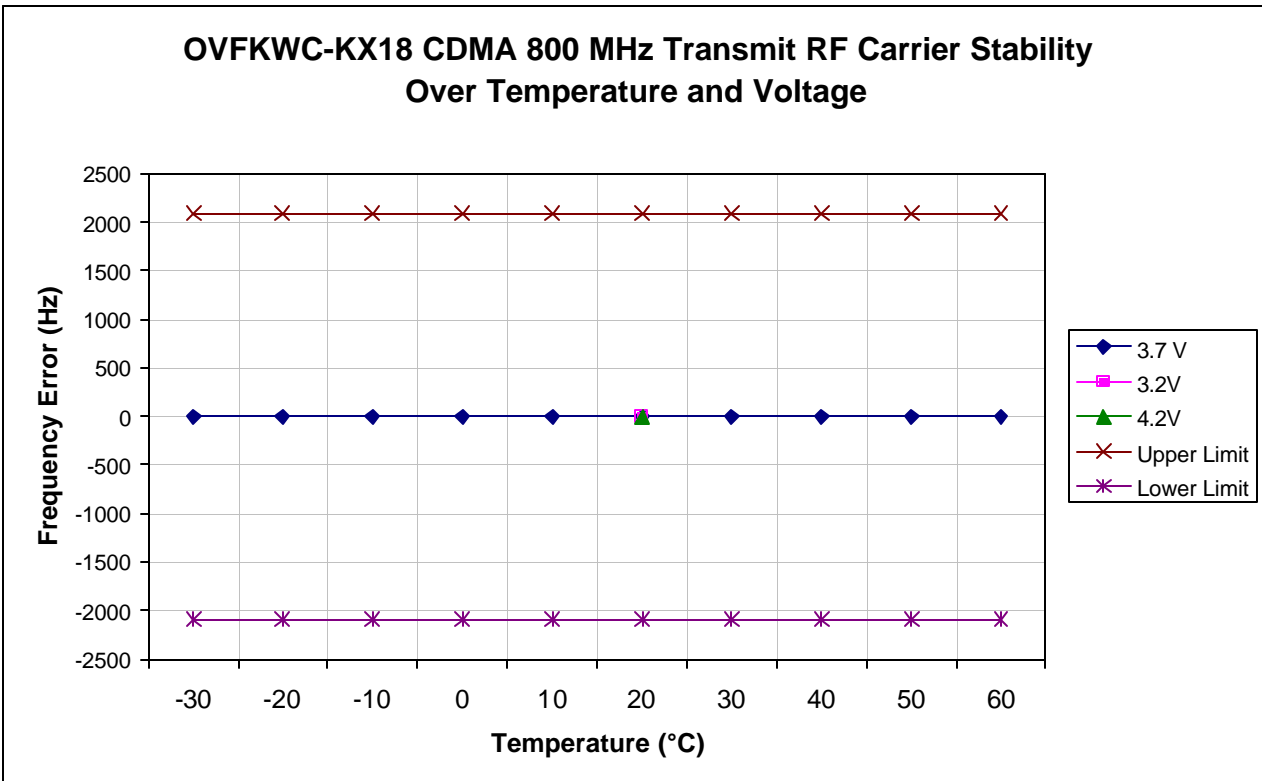
## 10 Transmitter RF Carrier Frequency Stability

|  |  |
|--|--|
| <b>FCC:</b> § 2.1055, § 22.355, § 24.235   | <b>IC:</b> RSS-129 §7.2 and §9.2, RSS-133 §7 |
| <b>Measurement Procedures:</b><br><br>The EUT was placed in an environmental chamber. The RF output of the EUT was connected to Agilent 8960 Series 10 E5515C. A power supplier was connected as primary voltage supply. |  |

10.1 CDMA 800 Mode

|                      |                           |                  |      |
|----------------------|---------------------------|------------------|------|
| <b>Tx Frequency:</b> | 836.49 MHz                | <b>Voltage :</b> | 3.7V |
| <b>Tolerance:</b>    | +/- 2.5 Ppm (+/- 2091 Hz) | <b>Ch:</b>       | 383  |

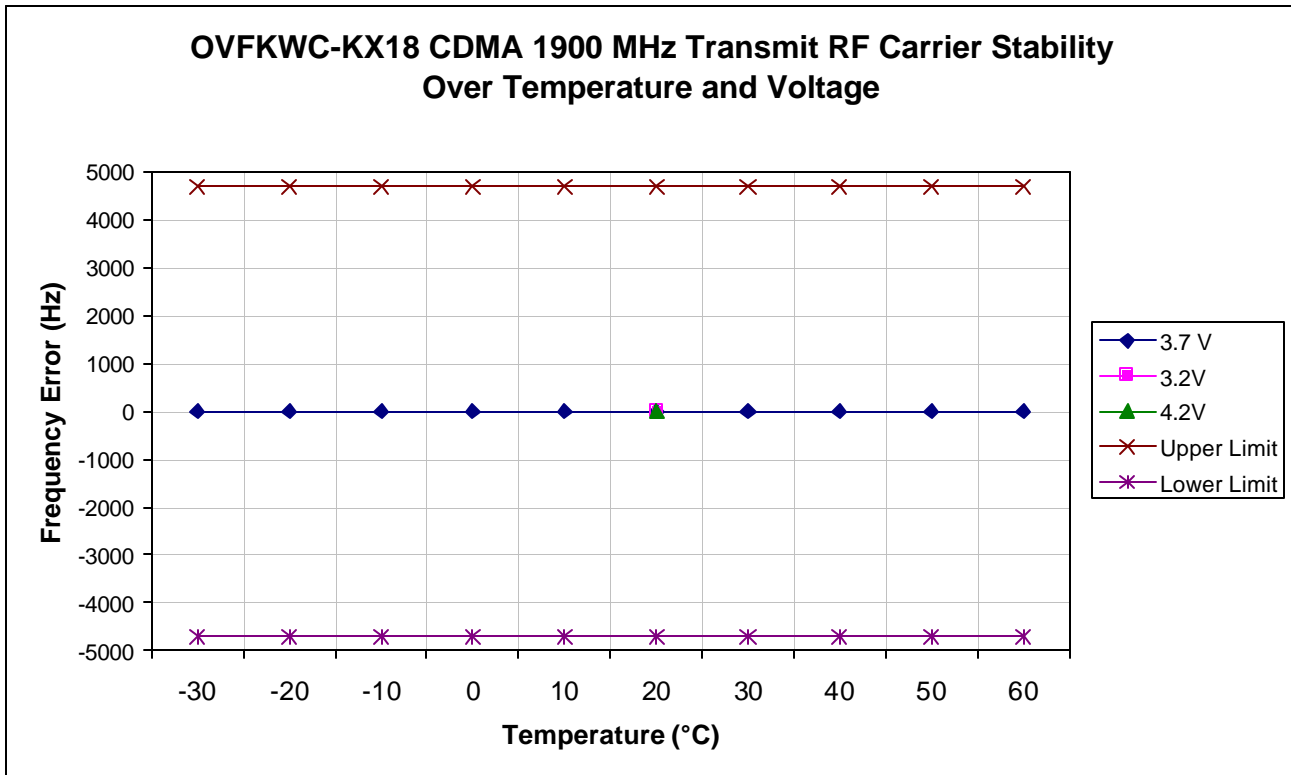
| Temperature (°C) | Deviation of Carrier (Hz) |              |              | Specification (Hz) |             |
|------------------|---------------------------|--------------|--------------|--------------------|-------------|
|                  | 3.2V (Battery endpoint)   | 3.7V         | 4.26V (115%) | Lower limit        | Upper limit |
| -30              |                           | 0.67         |              | -2091              | 2091        |
| -20              |                           | 0.28         |              | -2091              | 2091        |
| -10              |                           | 0.32         |              | -2091              | 2091        |
| 0                |                           | 1.85         |              | -2091              | 2091        |
| 10               |                           | 0.91         |              | -2091              | 2091        |
| 20               | <b>-0.36</b>              | <b>-0.27</b> | <b>0.42</b>  | -2091              | 2091        |
| 30               |                           | 0.41         |              | -2091              | 2091        |
| 40               |                           | 1.26         |              | -2091              | 2091        |
| 50               |                           | 0.38         |              | -2091              | 2091        |
| 60               |                           | 0.04         |              | -2091              | 2091        |



10.2 CDMA 1900 Mode

|                      |                          |                  |      |
|----------------------|--------------------------|------------------|------|
| <b>Tx Frequency:</b> | 1880.00 MHz              | <b>Voltage :</b> | 3.7V |
| <b>Tolerance:</b>    | +/- 2.5 Ppm (+/-4700 Hz) | <b>Ch:</b>       | 600  |

| Temperature (°C) | Deviation of Carrier (Hz) |             |              | Specification (Hz) |             |       |      |
|------------------|---------------------------|-------------|--------------|--------------------|-------------|-------|------|
|                  | 3.2V (Battery endpoint)   | 3.7V        | 4.26V (115%) | Lower limit        | Upper limit |       |      |
| -30              |                           | 1.46        |              | -4700              | 4700        |       |      |
| -20              |                           | 0.31        |              | -4700              | 4700        |       |      |
| -10              |                           | 0.22        |              | -4700              | 4700        |       |      |
| 0                |                           | 0.92        |              | -4700              | 4700        |       |      |
| 10               |                           | 0.20        |              | -4700              | 4700        |       |      |
| 20               | <b>-1.13</b>              | <b>0.49</b> | <b>0.41</b>  | -4700              | 4700        |       |      |
| 30               |                           | 1.58        |              | -4700              | 4700        |       |      |
| 40               |                           | 0.52        |              | -4700              | 4700        |       |      |
| 50               |                           | 1.08        |              | -4700              | 4700        |       |      |
| 60               |                           |             |              | 1.26               |             | -4700 | 4700 |



## 11 Exposure of Humans to RF Fields (SAR)

The SAR Test Report is showed in a separate attachment as Exhibit 9.

## 12 Test Equipment

| Description                      | Manufacturer    | Model Number | Serial Number | Cal Due Date |
|----------------------------------|-----------------|--------------|---------------|--------------|
| Power Meter                      | Giga-tronics    | 8541C        | 1835203       | 12/20/05     |
| Power Meter Sensor               | Giga-tronics    | 80601A       | 1830321       | 12/20/05     |
| Spectrum Analyzer                | Hewlett Packard | 8593EM       | 3710A00203    | 03/14/06     |
| Spectrum Analyzer                | Hewlett Packard | 8594E        | 3810A04238    | 04/16/06     |
| Wireless Communications Test Set | Agilent         | 8960         | US41140252    | 09/16/06     |
| CDMA Mobile Station Test Set     | Hewlett Packard | 8924C        | US37482647    | 09/16/06     |
| Temperature Chamber              | CSZ             | Z2033        | Z9343034      | 03/11/06     |