

MEASUREMENT DATA**Submitted Measure Data Index**

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R.F. Output – Measured data

Conducted Power

The input supply to the transmitter was set at 3.6V. The RF power output was measured with the indicated voltage and current applied into the final RF amplifying device.

The values measured for RF Output, DC Current and RF Input Power are all average values which reflect a-100% transmit duty cycle in CDMA operation.

- Measured RF output : 24.3dBm
- Measured DC voltage : 3.6V
- Measured DC current : 760mA
- Measured RF input : -4.8dBm

Effective Radiated Power:

The phone was tested in a 16' cubical anechoic chamber with a 2-axis positioner system that permits taking complete spherical scans of the AUT's radiation patterns. For all tests, the phone was supported in a free-space type environment, vertically oriented in the chamber. Tests were done for three frequencies (824.6, 836.52 and 848.37MHz) with antenna whip up and whip down.

CDMA measurements were made with the phone placed in a call using the HP8924C mobile station test set. The phone was weakly coupled to the test set and configured to transmit in full data rate mode, with a nominal output power setting of 25dBm. Radiated power was measured at every 15 degree step from theta=0 to 165 degrees and phi=0 to 360 degrees. The radiated power was measured using a Gigatronics 8542C power meter in "Mod Avg" mode. From these measurements, the software calculates the angle at which maximum radiated power occurs for each case, and the radiated power at this angle was extracted from the data. The max radiated power results for CDMA follow, as EIRP in dBm. To get ERP (effective radiated power referenced to a half-wave dipole), subtract 2.1 dB from these numbers.

CDMA, FIXED ANT

824.6 MHz: 22.04 dBm

836.52 MHz: 22.76 dBm

848.37 MHz: 22.26 dBm

For all measurements, calibration was performed via gain substitution with a half-wave dipole.

Maximum EIRP is 0.189 W (22.76 dBm) in CDMA mode.

Maximum Effective Radiated Power (Relative to Half-Wavelength Dipole): 0.117 W (20.66 dBm)

Occupied Bandwidth In The CDMA Digital Mode- Plots

Spurious emission level :

Modulate the transmitter with OQPSK modulation, using pseudo random data. Obtain image on spectrum analyzer. (Refer to IS98A, 10.4.2.1)

Deviation of the Carrier with OQPSK Modulation

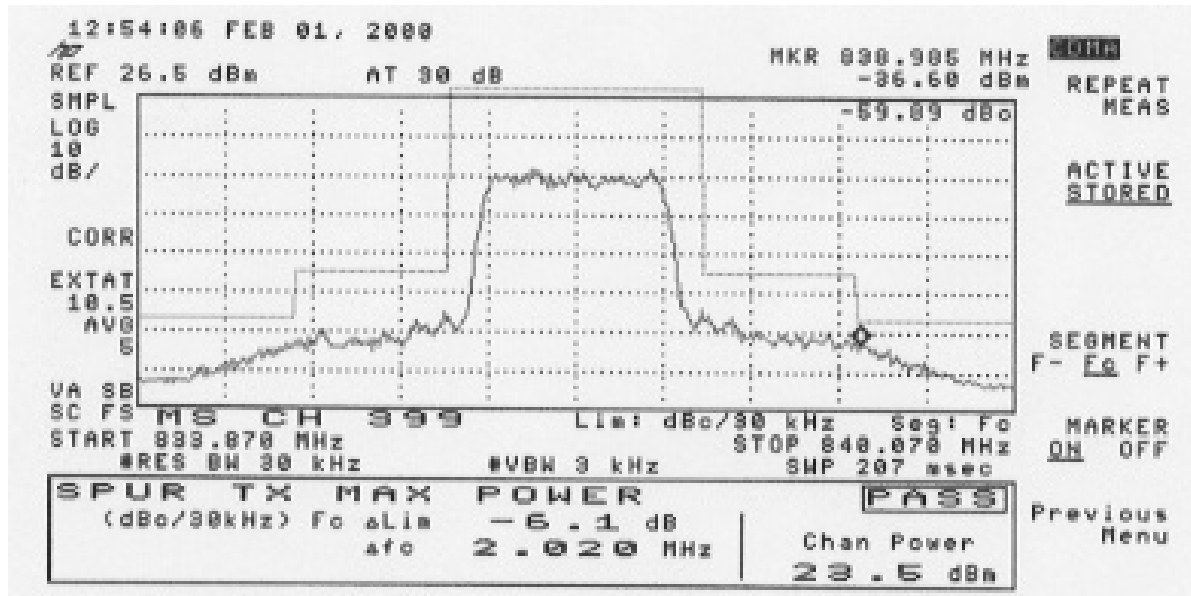
Horizontal Scale = 0.62 MHz/Division

Vertical Scale = 10 dB/Division(Attenuation)

Resolution Bandwidth =30 kHz

Power Level = 0.224 W (23.5 dBm) (Average power in transmitter)

Measured Data:



Comments:

Spurious emission level for frequency offset at greater than 885 kHz shall be at least -42 dBc/30kHz and level for frequency offset at greater than 1.98MHz shall be at least -54 dBc/30kHz.

Occupied Bandwidth should be less than 1.32 MHz.

Deviation of the Carrier with QPSK Modulation

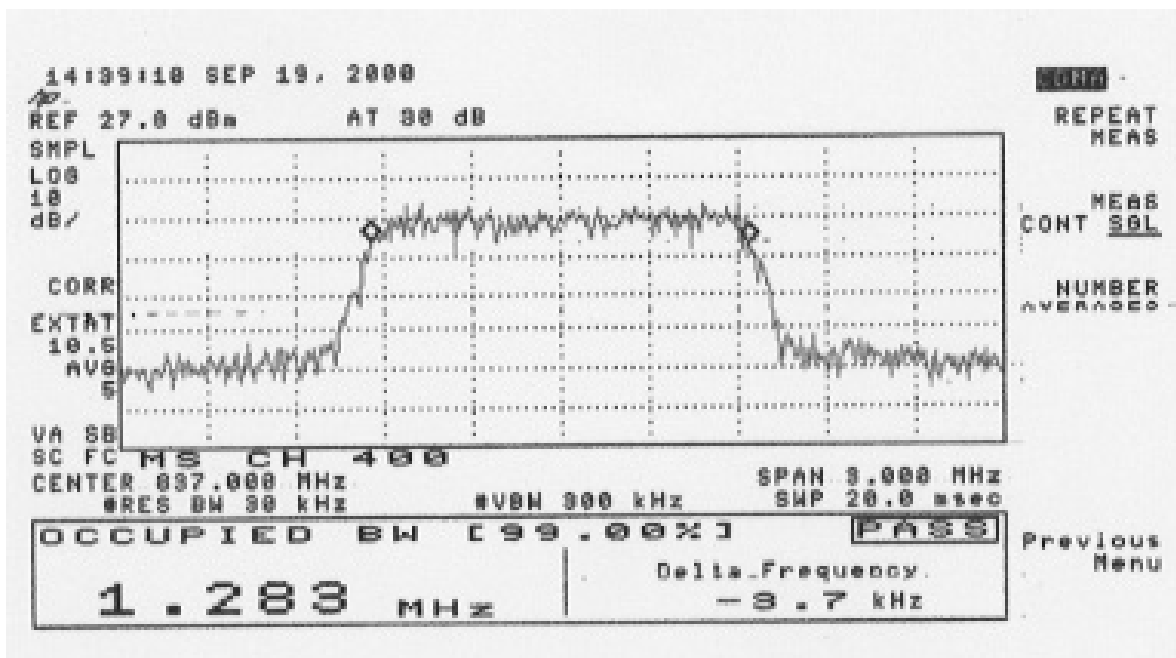
Horizontal Scale = 0.3 MHz/Division

Vertical Scale = 10 dB/Division(Attenuation)

Resolution Bandwidth =30 kHz

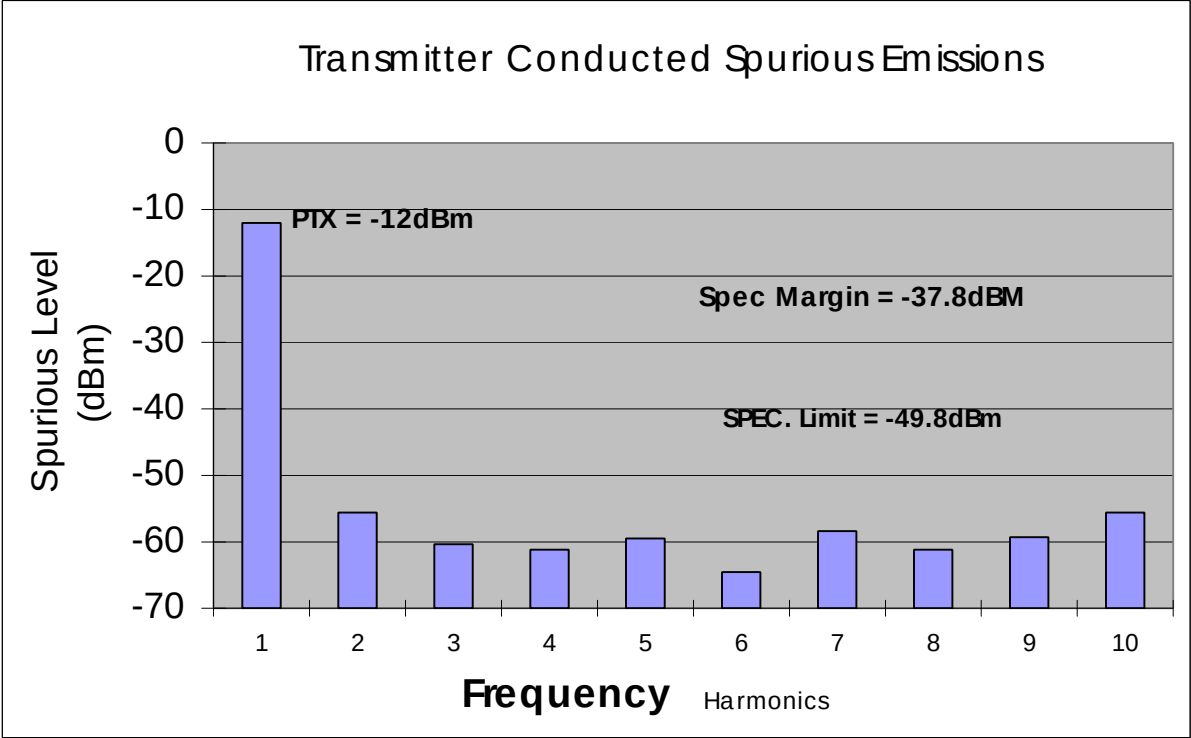
Occupied BW [99.00%] = 1.283 MHz

Measured Data:



Conducted Spurious and Harmonic Emissions – Graph.

1. Transmitter Conducted Spurious Emission
 Carrier Power: 0.065 mW (-12 dBm)



Carrier Frequency: low(ch#=1011), mid(ch#=363), high(ch#=779) in 824.04 to 848.97 MHz

* Each reported emission reflects the highest absolute level found among all power levels, channels,

and power amplifier configuration tested.

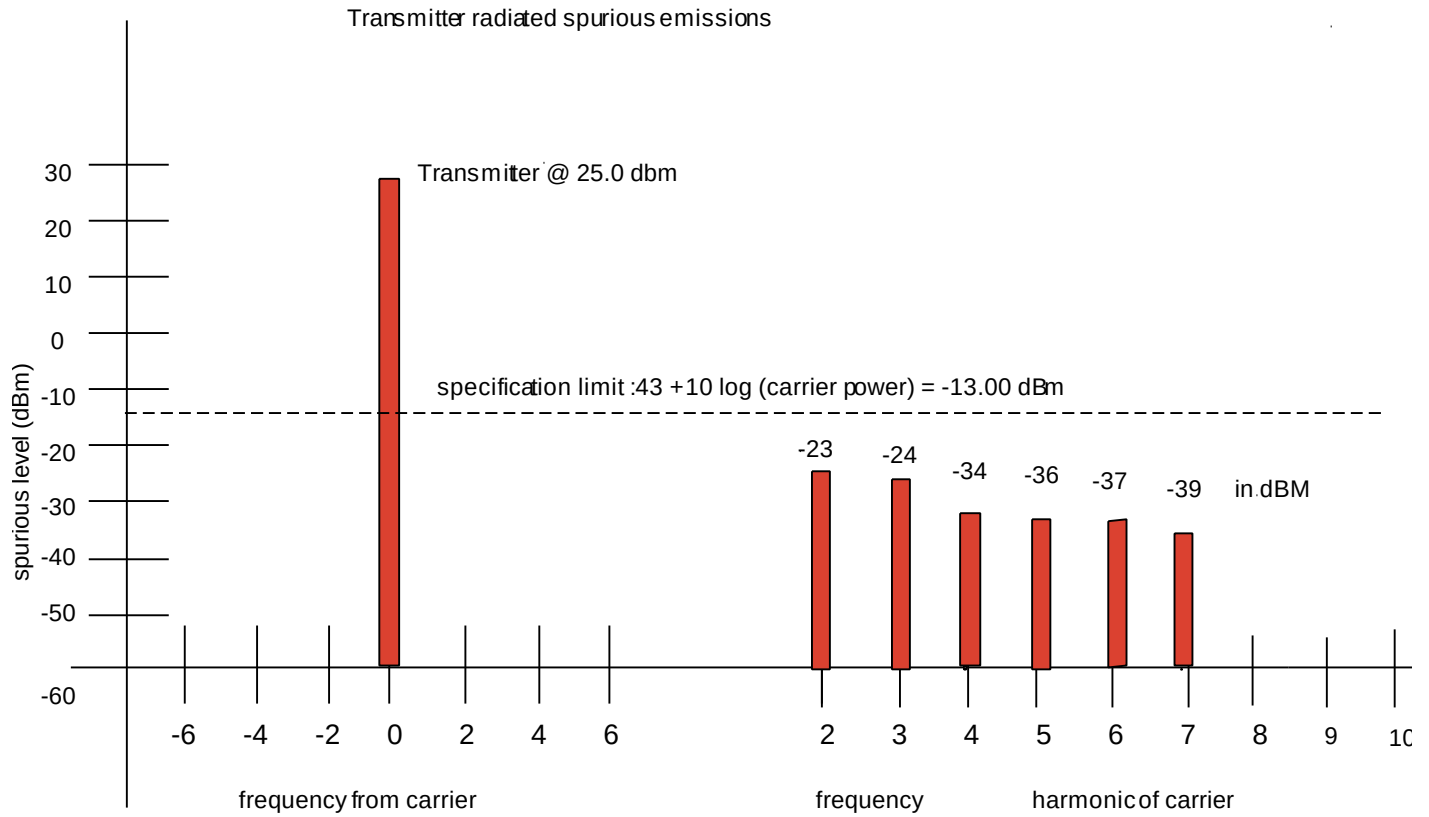
* All emissions not reported are more 20 dB below the FCC specification.

* Spectrum was searched from 30 kHz to the 10th harmonic of the transmitter.

** Spurious Emission Limits when transmitting in CDMA mode (IS-98A, 10.5.1)

For Frequency Offset Δf , with $ \Delta f $	Greater than 885.0 kHz	Greater than 1.98 MHz
Spurious Emission levels shall be less than either (a), or both (b) and (c)	(a) -42dBc/30 kHz	(a) -54dBc/30 kHz

Radiated Spurious Emissions – Graph



Transmitter Frequency Stability

To evaluate the frequency drift over a variety of voltage and temperature conditions.

Spec.; frequency stability is limited to within $\pm$ Hz in CDMA cellular phone.

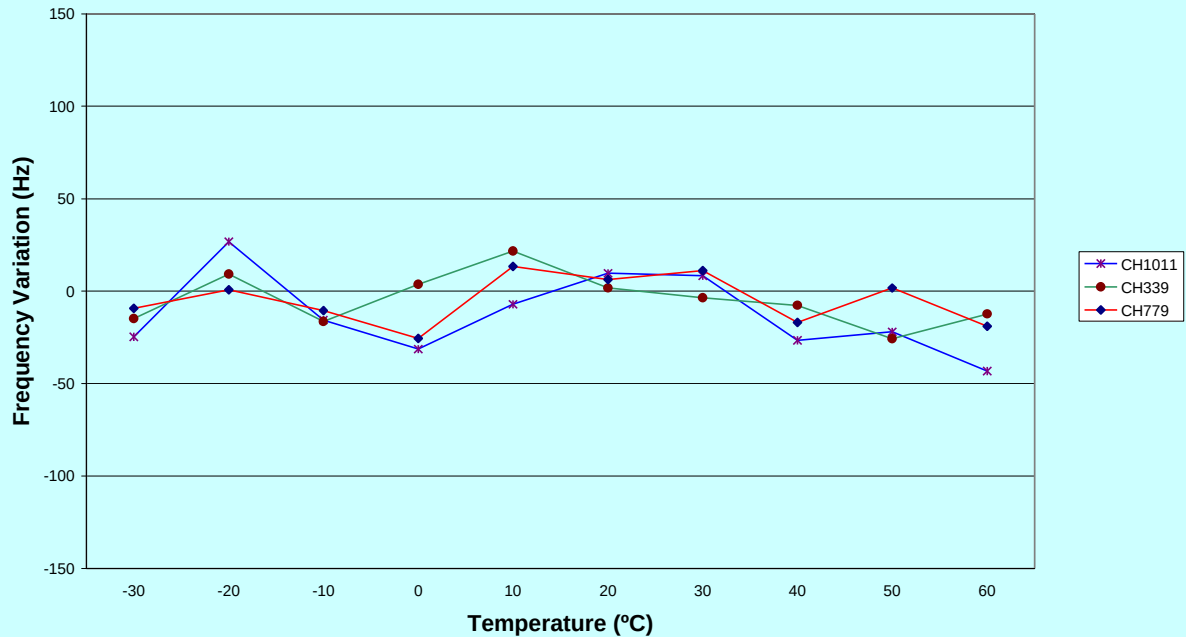
Summary:

After a radio was placed in the environmental chamber, the frequency drift was monitored through HP8924C.

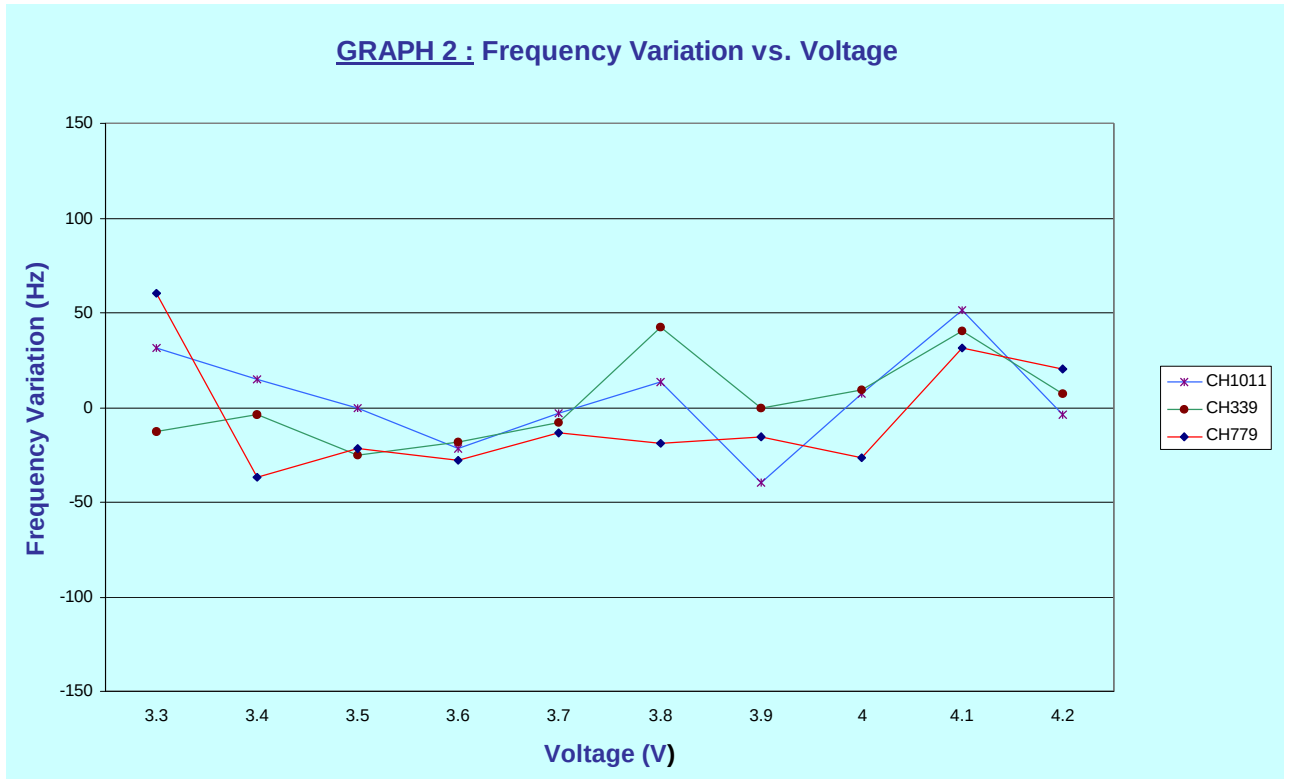
Frequency Change versus Temperature

Temp.	CH1011	CH339	CH779	Voltage	CH101 1	CH339	CH779
-30	-24.8	-14.8	-9.3	3.3	31.2	-13	60.4
-20	26.8	9.3	0.7	3.4	14.9	-3.6	-36.7
-10	-15.6	-16.4	-10.5	3.5	-0.3	-25.1	-21.6
0	-31.4	3.7	-25.6	3.6	-21.7	-18.5	-28.2
10	-7.1	21.7	13.4	3.7	-2.9	-8.2	-13.7
20	9.7	1.7	6.3	3.8	13.3	42.2	-19
30	8.4	-3.6	11.2	3.9	-39.8	-0.2	-15.3
40	-26.6	-7.7	-16.9	4	7.3	9.2	-26.3
50	-22	-25.7	1.7	4.1	51.3	40.6	31.7
60	-43.3	-12.3	-18.9	4.2	-3.5	7.3	20.3

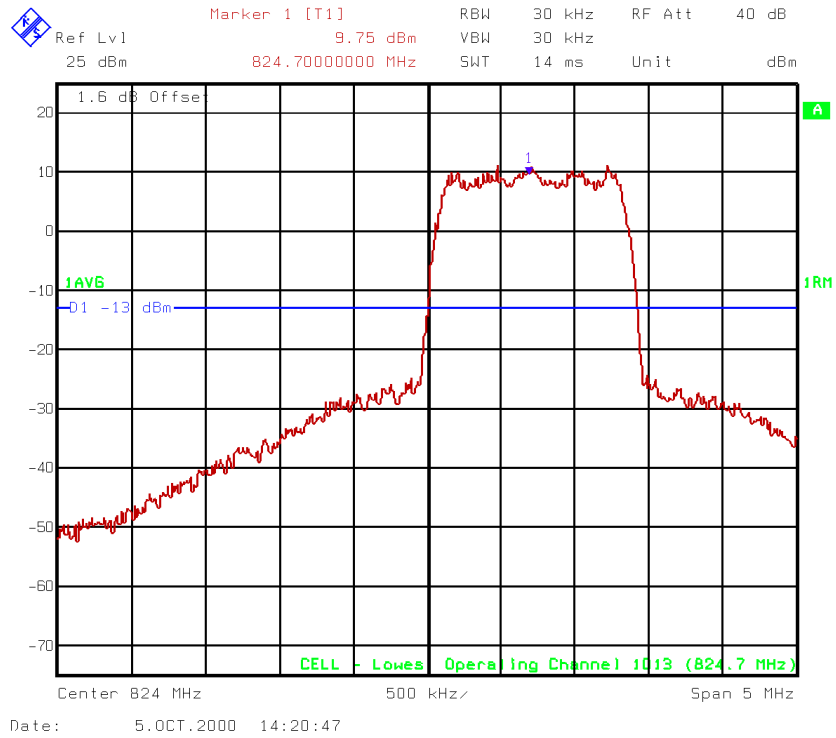
GRAPH 1 : Frequency Variation vs. Temperature



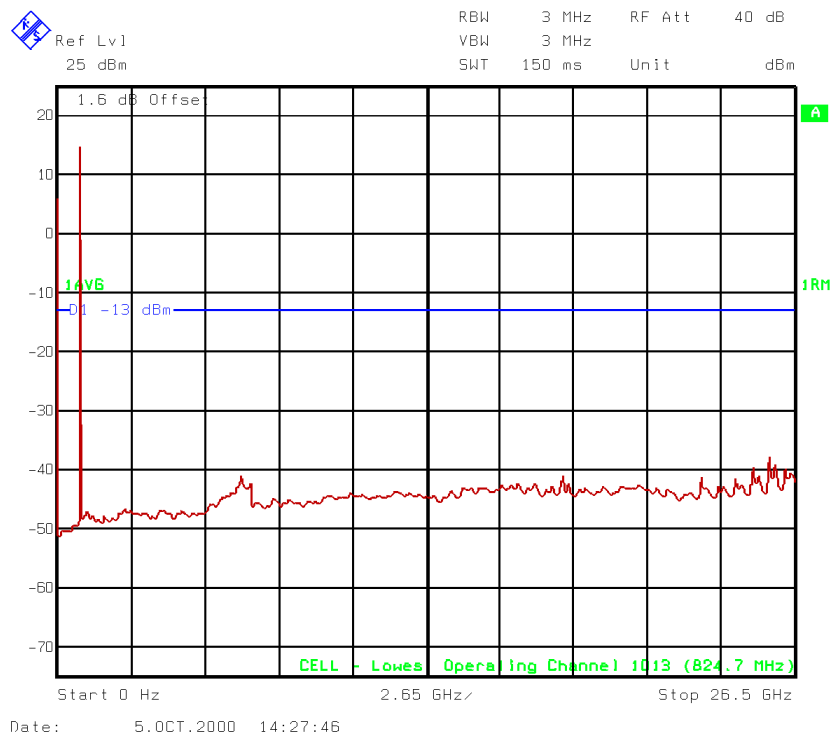
Frequency Change versus Supply Voltage



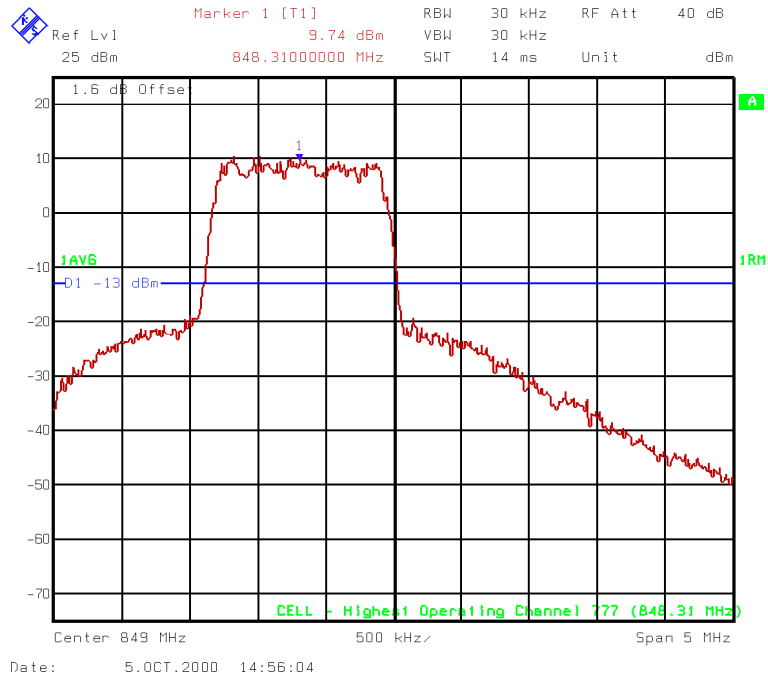
CELL channel 1013 conducted spurious, narrow band



CELL channel 1013 conducted spurious, wideband



CELL channel 777 conducted spurious, narrowband



CELL channel 777 conducted spurious, wideband

