

## **FIELD STRENGTH OF SPURIOUS EMISSIONS**

CFR Part 2.1053, 22.917, 24.238

### **Measurement Procedure**

The equipment under test is placed inside the semi-anechoic chamber on a wooden table at the turntable center. For each spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer. This is repeated for both horizontal and vertical polarizations of the receive antenna.

After all the spurious emissions were investigated and reported, the equipment under test is then replaced with a substitution antenna fed by a signal generator. With the signal generator tuned to a particular spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters to obtain a maximum reading at the spectrum analyzer. The output of the signal generator is then adjusted until a reading identical to that obtained with the actual transmitter is achieved.

The power in dBm of each spurious emission is calculated by correcting the signal generator level for cable loss and gain of the substitution antenna referenced to a dipole. A fully charged battery was used for the supply voltage.

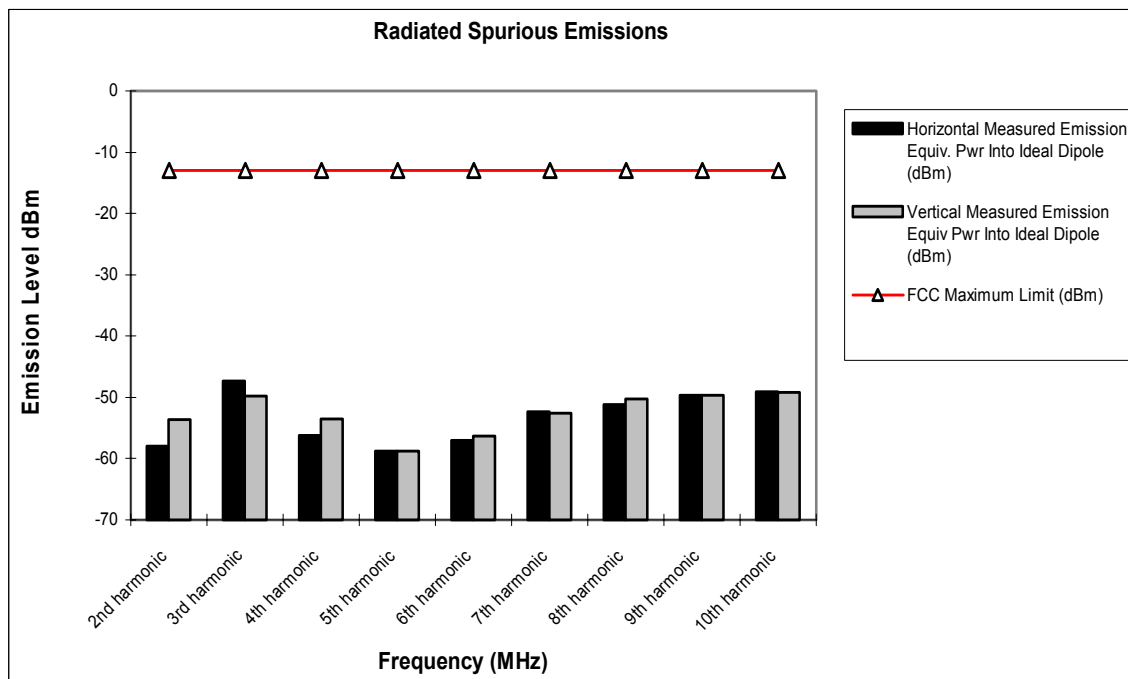
### **Measurement Results**

Attached

## Measurement Results

### Modulation: GSM 850

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-58.0	-53.6
3rd harmonic	-13	-47.3	-49.8
4th harmonic	-13	-56.2	-53.5
5th harmonic	-13	-58.8	-58.8
6th harmonic	-13	-57.0	-56.3
7th harmonic	-13	-52.4	-52.6
8th harmonic	-13	-51.2	-50.2
9th harmonic	-13	-49.7	-49.6
10th harmonic	-13	-49.1	-49.2



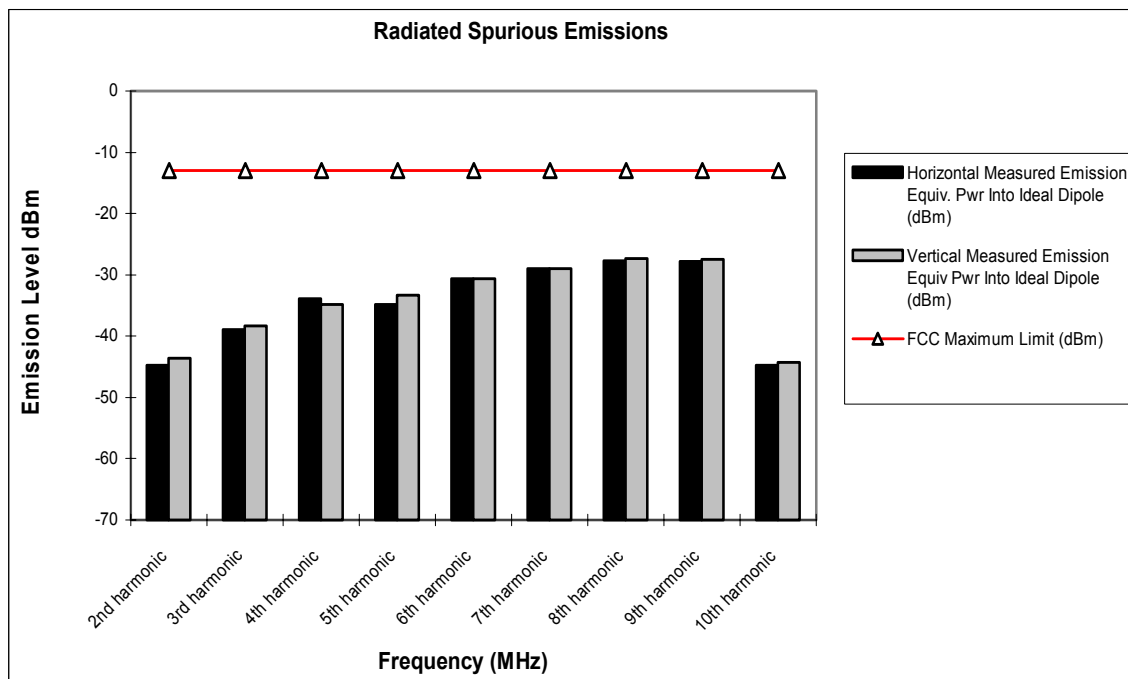
#### Notes:

1. \* Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

## Measurement Results

### Modulation: GSM 1900

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-44.8	-43.6
3rd harmonic	-13	-38.9	-38.4
4th harmonic	-13	-33.9	-34.8
5th harmonic	-13	-34.8	-33.3
6th harmonic	-13	-30.6	-30.6
7th harmonic	-13	-29.0	-29.0
8th harmonic	-13	-27.7	-27.4
9th harmonic	-13	-27.8	-27.5
10th harmonic	-13	-44.7	-44.3



#### Notes:

1. \* Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low and high channels at maximum power.
3. The Spectrum was investigated from 30 MHz to the tenth harmonic of the fundamental.

## **OCCUPIED BANDWIDTH**

CFR Part 2.1049, 22.917, 24.238

### **Measurement Procedure**

The RF output port of the equipment under test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. The amplitude of the spectrum analyzer is corrected for the attenuator and any other applicable losses. The analyzer is set for Peak Detector and each trace is set for Max Hold. A fully charged battery was used for the supply voltage.

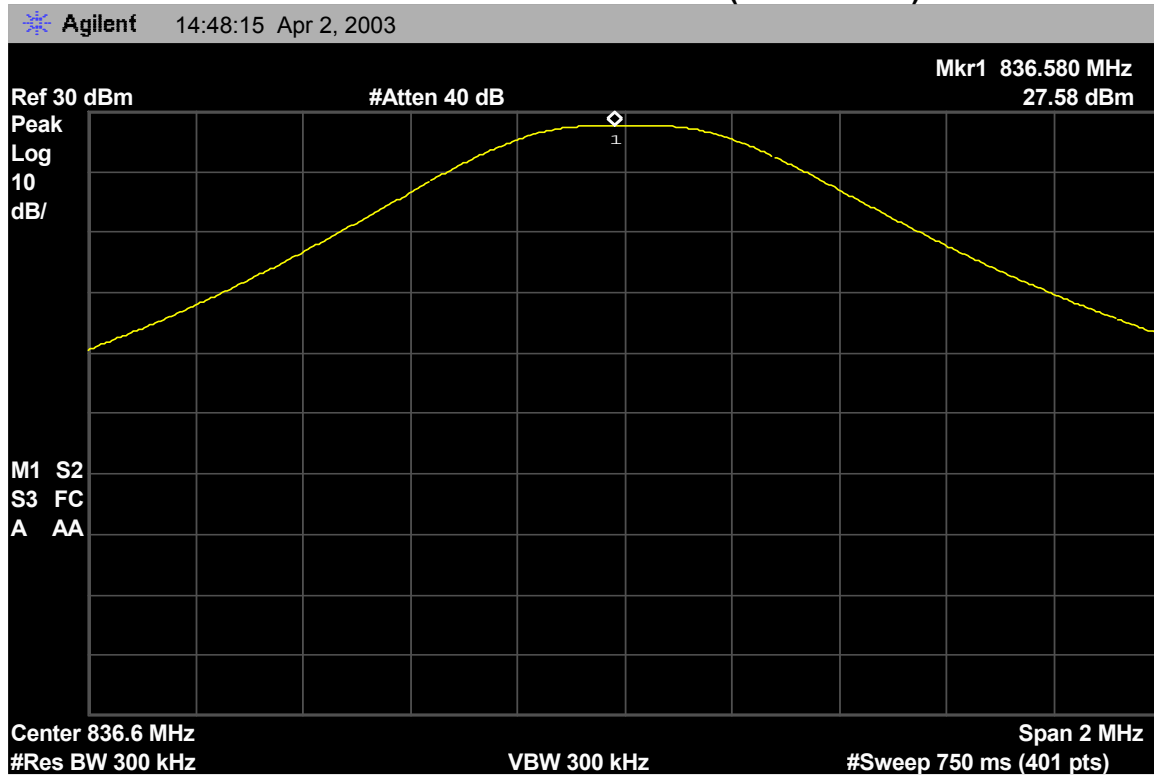
The middle channel within the designated frequency block was measured. For digital modulation, the lower and upper band edge plots are displayed.

### **Measurement Results**

Attached

## Measurement Results – GSM 850

### GSM 850 – Reference Level Plot – Channel 190 (836.60 MHz)



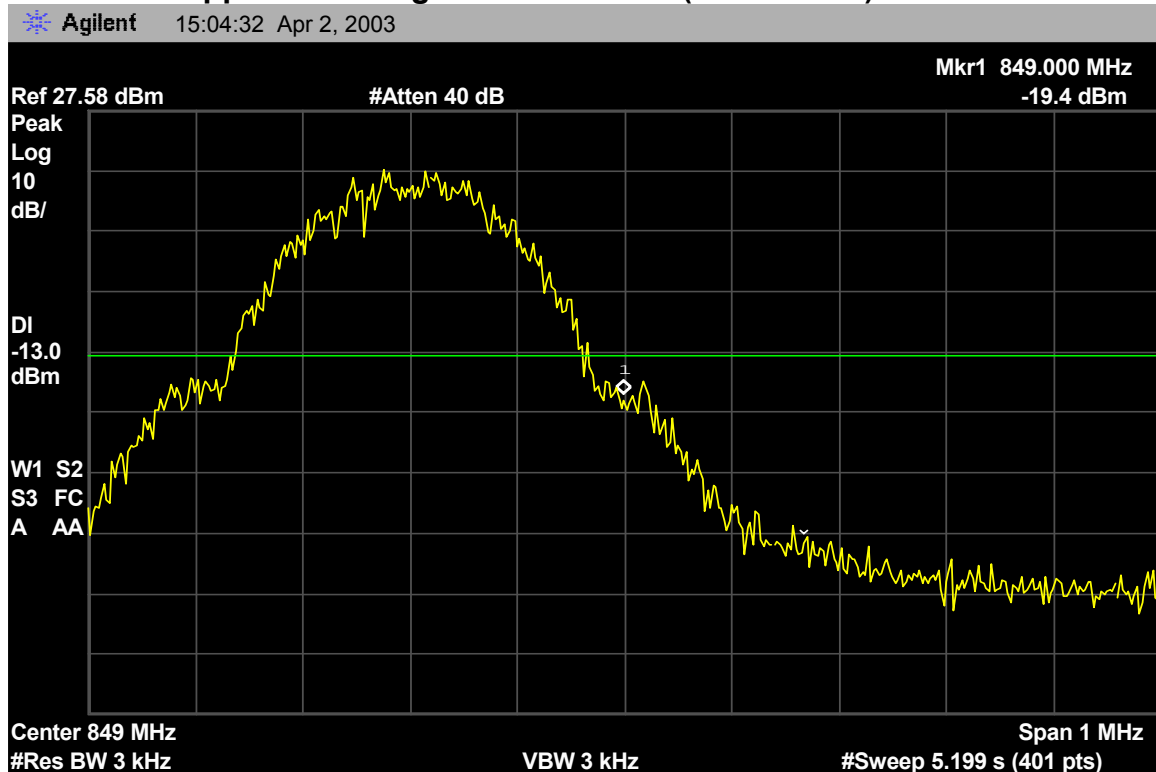
### GSM 850 – Channel 190 (836.60 MHz) – Occupied Bandwidth = 258.1 kHz



# GSM 850 – Lower Band Edge – Channel 128 (824.20 MHz)

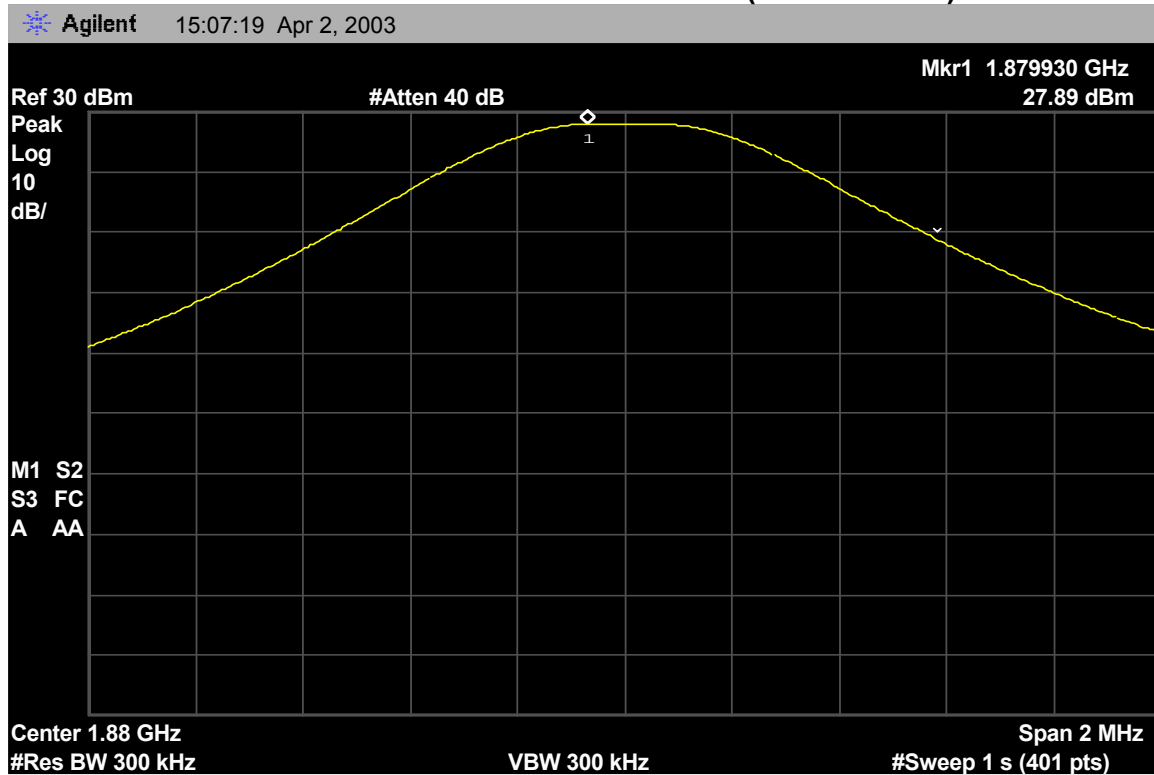


# GSM 850 – Upper Band Edge – Channel 251 (848.80 MHz)

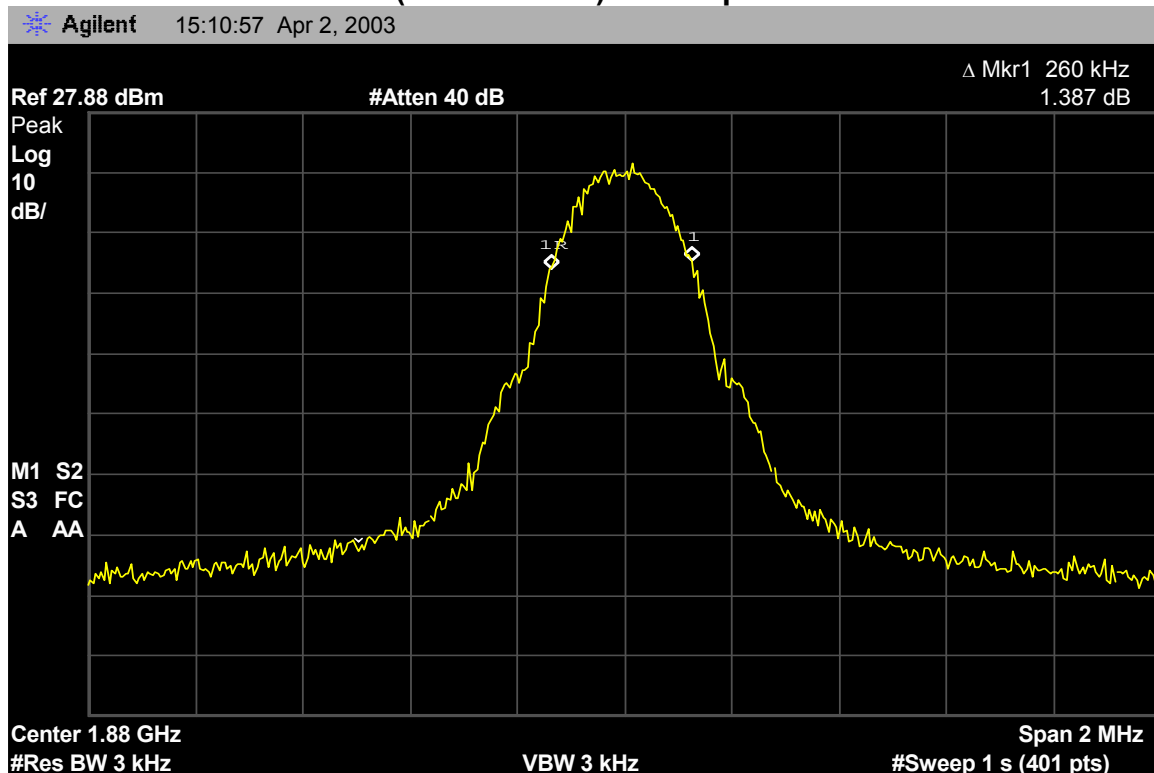


## Measurement Results – TDMA 1900

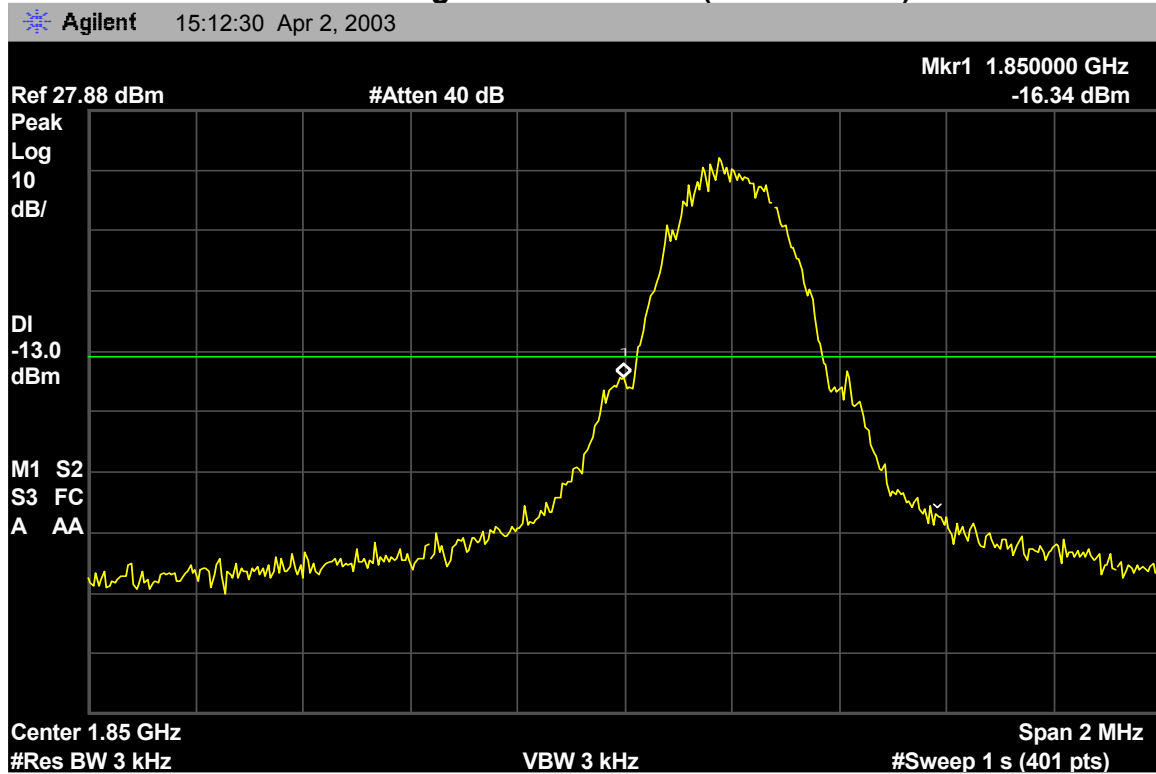
### GSM 1900 – Reference Level Plot – Channel 661 (1880.00 MHz)



### GSM 1900 – Channel 661 (1880.00 MHz) – Occupied Bandwidth = 260 kHz



### GSM 1900 – Lower Band Edge – Channel 512 (1850.20 MHz)



### GSM 1900 – Upper Band Edge – Channel 810 (1909.80 MHz)

