

EXHIBIT 11

Frequency Stability

Exhibit Summary:

EXHIBIT 11 contains measurement data pertaining to frequency stability. In addition, this section contains a measurement modification to the requirements of Sec. 2.995.

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Method of Measurement:

In order to measure the carrier frequency under the condition of AFC lock, see EXHIBIT 3, it is necessary to make measurements with the mobile station in a "call mode". This is accomplished with the use of a Hewlett Packard 8922H GSM MS Test Set.

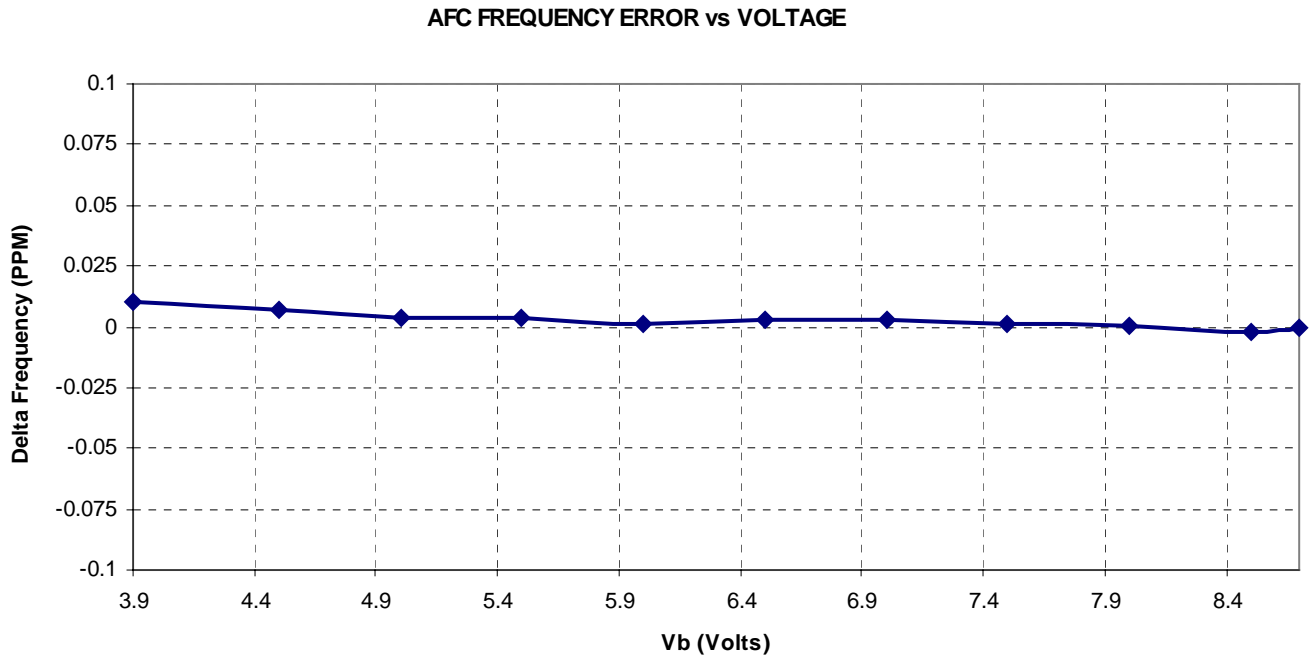
1. Measure the carrier frequency at room temperature.
2. Subject the mobile station to overnight soak at -30 C.
3. With the mobile station, powered via 6.2 Volts, connected to the 8922H and in a simulated call on channel 662 (center channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self warming.
4. Repeat the above measurements at 10 C increments from -30 C to +20 C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal 6.2 Volts. Vary supply voltage from minimum 3.9 Volts to maximum 8.7 Volts, in 0.4 Volt increments remeasuring carrier frequency at each voltage. Pause at 4.8 Volts for 1 1/2 hours unpowered, to allow any self heating to stabilize, before continuing.
6. Subject the mobile station to overnight soak at +60 C.
7. With the mobile station, powered via 6.2 Volts, connected to the 8922H and in a simulated call on channel 662 (center channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self warming.
8. Repeat the above measurements at 10 C increments from +60 C to +20 C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5 C during the measurement procedure.

Measurement Limit:

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Measurement Modification to Sec. 2.995:

Section 2.995 of CFR 47 calls for a measurement of frequency stability for a supply voltage variance of +/- 15 percent. The mobile station is specified to operate with an input voltage of between 3.9 Vdc and 8.7 Vdc, with a nominal voltage of 4.8 Vdc (based on operation off of a 4-cell Nickel-Metal Hydride battery pack). Operation above or below these voltage limits is prohibited by transceiver software in order to protect components from overstress. These voltages represent a tolerance of + 42 % and - 21 %. For the purposes of measuring frequency stability these voltage limits are to be used.



AFC FREQUENCY ERROR vs TEMPERATURE

