EXHIBIT 15

FREQUENCY STABILITY MEASUREMENTS

Measurements of RM frequency stability were performed in accordance with the requirements of §§ 24.235 and 2.1055; procedures and results are described in this exhibit.

Requirements

In general, as required by § 24.235, the frequency stability of broadband PCS equipment "shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block." However, as a GSM-compliant terminal, the stability of the RM carrier frequency is accurate to within 0.1 ppm of the received frequency from the base station (J-STD007, Air Interface: Volume 1, Section 7.4.1; and GSM 05.10, "Digital cellular telecommunications system (Phase 2); Radio subsystem synchronization").

Measurements of transmitter frequency stability are described in § 2.1055 and are necessary to obtain a Certification grant of equipment authorization. As required by § 2.1055, these measurements are to be made as follows:

1. Over variations of ambient temperature from -30° to +50° centigrade at intervals of 10° centigrade.
2. Over variations of primary supply voltage from 85 to 115 percent of the nominal input voltage. The RM has a rated input voltage specified in the technical specification of 5 +/- 0.2 VDC this is a fixed input voltage which is supplied by the developers application. The RM was tested varying the input DC voltage from 4.25 to 5.75 VDC thus satisfying the variation requirement.

Measurement Procedure

Measurements of RM frequency stability were performed using the Rhode & Schwarz CMD 55 Digital Radio Communications Tester. Variations in ambient temperature were accomplished using a Hanse HALT/HASS environmental test chamber; variations in DC input voltages made with the use of a DC power supply. Specific procedures for powering the unit are as follows:

RM Powered by Variable Output DC Supply

1. Configure the RM:
   - Location — Hanse environmental test chamber (unit only)
   - Input voltage — DC input to unit varied during test (4.25 to 5.75 VDC)
   - Mode — Transmit, random data pattern selected using PC controller
   - RF Output Power — Maximum level (step 0, 30 dBm nominal) selected using the PC controller
   - Frequency — Channel 661 (1880.0 MHz) selected using the PC controller

2. Set the Hanse Environmental Chamber to -30° C. Soak the RM for ten minutes (powered off) to allow unit to reach a steady state temperature (as measured on the RM PCB itself).
3. Set DC input to unit to 5.75 VDC.
4. Measure and record carrier frequency ten times in succession using the R&S CMD 55.
5. Set DC input to unit to 4.25 VDC.
6 Measure and record carrier frequency ten times in succession using the R&S CMD 55.
7. Increase chamber temperature by 10° C. Soak unit for ten minutes(powered off) to allow unit to reach steady state at new temperature.
8. Repeat steps 3 through 7 until final measurements made at +50 ° C.

Measurement Results

Table E15.1 summarizes the RM frequency stability measurements taken in accordance with the preceding procedures. The Maximum Frequency Deviation columns (in Hertz) show the largest frequency deviations from the desired carrier frequency over the ten measurements made at each combination of temperature, line and DC input voltage. A plot of these results (maximum deviation from desired carrier in Hertz) is presented in Figure E15.1. In all cases, the frequency stability of the RM over variations in ambient temperature and DC input voltages, are sufficient to ensure that the fundamental emission will stay within its authorized frequency block.

No data is provided for the -30° C temperature because the RM will not operate at this temperature. On-board temperature sensing circuitry detects when the ambient temperature falls below -20° C and shuts the unit off. Operation is thus only possible at ambient temperatures of -20° C and higher; measurements were attempted at -30° C to ensure that the unit did indeed shut down as designed.

Table E15.1. Frequency stability measurement results.

Ambient Temperature (degrees C)	Line DC input Voltage(VDC)	Maximum Frequency Deviation (Hz)
50°	4.25	613
	5.75	21
40°	4.25	1724
	5.75	720
30°	4.25	2571
	5.75	1485
20°	4.25	3241
	5.75	2293
10°	4.25	4016
	5.75	3027
0°	4.25	4632
	5.75	3658
-10°	4.25	5368
	5.75	4556
-20°	4.25	6170
	5.75	5486
-30°	4.25	EUT SHUT-DOWN
	5.75	EUT SHUT-DOWN

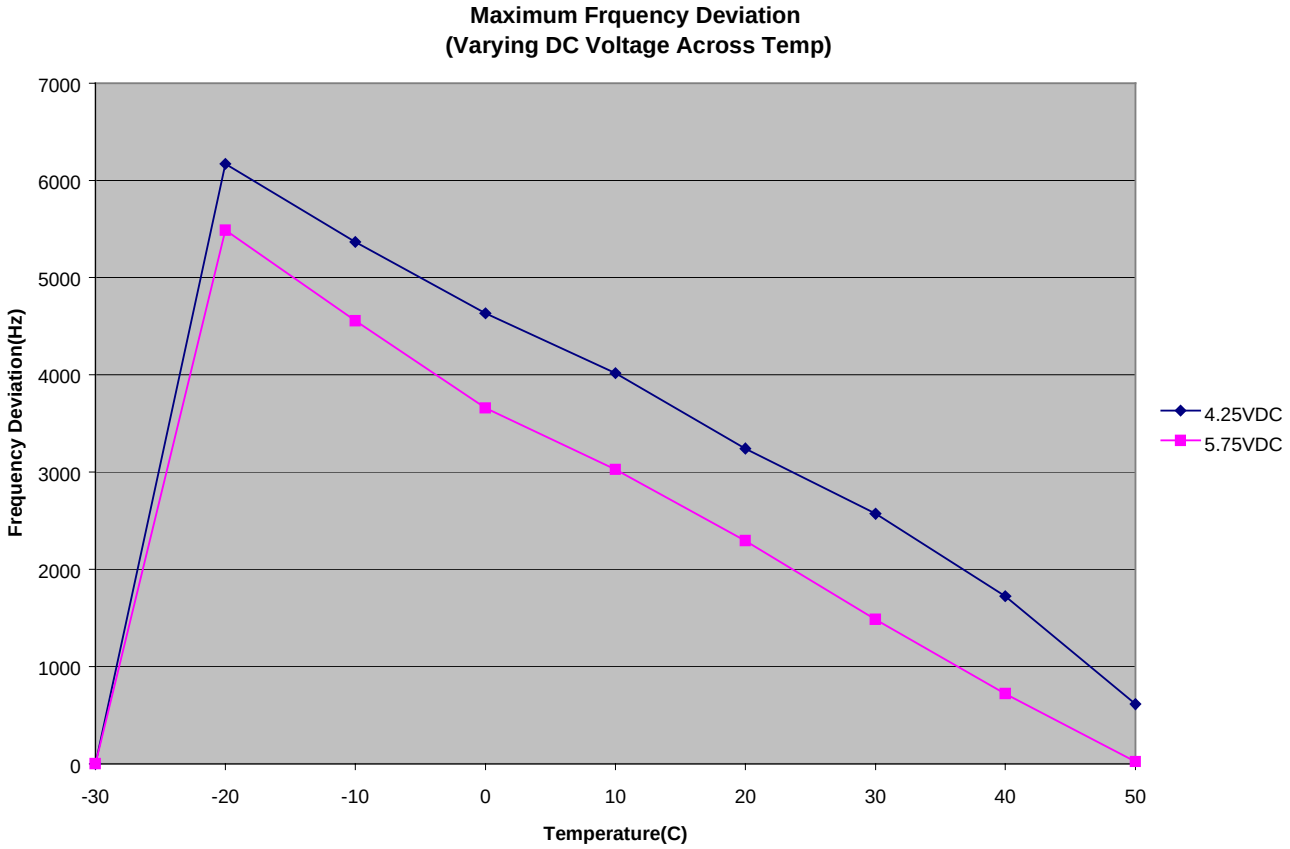

Figure E15.1. Graphical representation of Frequency Stability Results.

During normal operation, the GSM (PCS1900) network and terminal (mobile) work in conjunction to ensure an overall (long-term) frequency stability of 0.1 ppm. The base station measures the receive frequency from each terminal and, once every ten TDMA frames, commands the terminal to adjust its RF carrier frequency as required to maintain the required stability.

The measurements of frequency stability described in this Exhibit were performed with this closed-loop frequency adjustment disabled, to ensure that the frequency stability of the RM, by itself, is sufficient to keep the RF carrier within the authorized frequency block. As the measurement results indicate, this is indeed the case. Furthermore, during normal operation the frequency stability of the RM complies with the 0.1 ppm requirement specified in the GSM standards previously referenced.