

## Transmitter Specification

### GSM850&GSM900

Transmitter output power: 29-34 dBm

Phase Error(RMS):  $\leq 5^\circ$  degree

Phase Error(Peak):  $-20^\circ$  to  $+20^\circ$  degree

Frequency Error:  $< 0.1$  ppm Hz

Reference Sensitivity Level (Class II RBER  $\leq 2\%$ ):  $\leq -104$  dBm

### DCS1800&PCS1900

Transmitter output power: 27-31 dBm

Phase Error(RMS):  $\leq 5^\circ$  degree

Phase Error(Peak):  $-20^\circ$  to  $+20^\circ$  degree

Frequency Error:  $< 0.1$  ppm Hz

Reference Sensitivity Level (Class II RBER  $\leq 2\%$ ):  $\leq -102$  dBm

### WCDMA

Maximum output power: 21~25 dBm

Minimum output power:  $\leq -50$  dBm

Frequency Error:  $< \pm 0.1$

Occupied Bandwidth:  $< 5$  MHz

EVM:  $\leq 17.5\%$

Reference sensitivity level : -106.7,  $< 0.1\%$

### CDMA

Maximum RF Output Power: 23~30 dBm

Minimum Controlled Output Power:  $< -50$  dBm

Time Reference:  $< \pm 1 \mu s$

Waveform Quality: 0.944

Reference sensitivity level: -106,  $< 0.5\%$

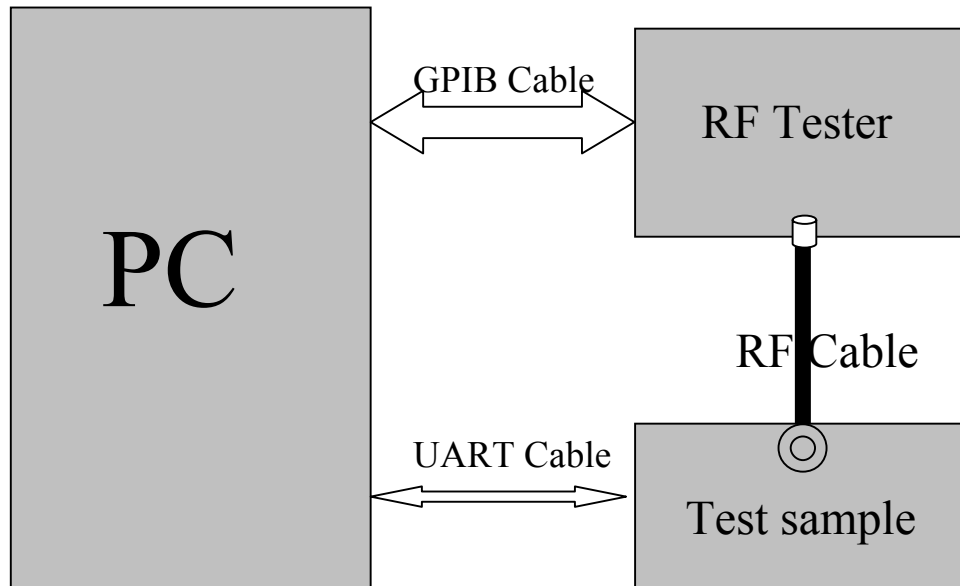


Figure 1

### 1 Adjustment of RF Output Power:

(1) The equipment setup as shown in Figure 1.

(2) Operation of PC adjusts equipment.

(3) Use RF Engineering Tools at PC side.

Select GSM850 Band:

- 1) Set GSM850 Band.
- 2) Set ARFCN: 190
- 3) TX ON.
- 4) Adjust the power to 32.4dBm (+1.0dB/-1.0dB, Power control level: PCL=5) by PA DAC value.
- 5) Repeat 4) for 15 times, and adjust the power level to 30.5, 28.8, 27, 25, 23, 21, 19, 17, 15, 13, 11, 9, 7, 5.
- 6) Make 16 Ramp-Up/Ramp-Down data from the adjustment value of (5) and (6).

7) Data of 5) and 6) is written to flash memory.

Select PCS1900 Band:

- 1) Set PCS Band.
- 2) Set ARFCN: 661.
- 3) TX ON.
- 4) Adjust the power to 29.0 dBm (+2.0dB/-2.0dB, Power control level: PCL=0) by PA DAC value.
- 5) Repeat 4) for 15 times, and adjust the power level to 27.5, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0.
- 6) Make 16 Ramp-Up/Ramp-Down data from the adjustment value of (5) and (6).
- 7) Data of 5) and 6) is written to flash memory.

## **2 Adjustment of oscillation frequency of VCXO:**

(1) The equipment setup as shown in Figure 1.

(2) Use Crystal AFC Control Tools to Set CapID and AFC DAC value.

(3) Set Band=GSM850, Set ARFCN=190, Set PCL=12.

- 1) Set AFC DAC=4096, fixed. (Check that  $V_{afc}=1.4V$ ).
- 2) Set CapID=0, and verify that frequency error  $\gg 10KHz$ .
- 3) Set CapID=63, and verify that frequency error  $\ll -10KHz$ .
- 4) If the above 3 items are verified, then change CapID value to make frequency error be closed to 0 Hz as possible, record this CapID value.
- 5) Set CapID value got from step 4), then change AFC DAC value to make frequency error be closed to 0 Hz as possible, record this AFC DAC value.
- 6) Download the CapID value and AFC DAC value to flash memory.

## **3 Adjustment of RX Sensitivity:**

(1) Select GSM850 Band:

- 1) Set BCCH level: -85dBm; ARFCN: 128.
- 2) Test sample make a call to connect RF Tester..
- 3) Set TCH level: -106dBm.
- 4) Measure BER II error at TCH ARFCN: 128, 190, 251.
- 5) Tune up the RX matching circuit to make sure  $BER II < 2\%$  at each ARFCN.

(2) Select PCS Band:

- 1) Set BCCH level:-85dBm;ARFCN:512.
- 2) Test sample make a call to connect RF Tester..
- 3) Set TCH level:-106dBm.
- 4) Measure BER II error at TCH ARFCN:512, 661, 810.
- 5) Tune up the RX matching circuit to make sure BER II < 2% at each ARFCN.

## 2.1 Bluetooth Information

|                                    |                                                               |
|------------------------------------|---------------------------------------------------------------|
| <b>Product</b>                     | GSM Mobile Phone                                              |
| <b>Trade Name</b>                  | <b>AEG</b>                                                    |
| <b>Model Number</b>                | QSX400                                                        |
| <b>Series Number:</b>              | N/A                                                           |
| <b>Description of Differences:</b> | N/A                                                           |
| <b>Power Supply</b>                | DC 5V by AC/DC adapter 100-240V~50/60Hz<br>DC 3.7V by battery |
| <b>Frequency Range</b>             | 2402MHz -2480MHz                                              |
| <b>Modulation Type</b>             | FHSS                                                          |
| <b>Antenna Type:</b>               | Internal Fixed                                                |
| <b>Channel Spacing:</b>            | 1MHz                                                          |
| <b>Channel Number</b>              | 79(CH Low: 2402MHz, CH Mid: 2441MHz, CH High: 2480MHz)        |
| <b>Temperature Range</b>           | -20°C ~ 50°C                                                  |

### NOTE:

1. Please refer to Appendix I for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.

## 2.2 Product WIFI Information

|                       |                                                                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description:          | Mobile Phone                                                                                                                                                                                                     |
| Model Name:           | QSX400                                                                                                                                                                                                           |
| Power Supply:         | DC: 3.7V by Li-ion Battery;<br>DC: 5V by AC Adapter(100V-240V 50/60Hz);                                                                                                                                          |
| Frequency Range:      | IEEE 802.11b/g/n: 2412MHz – 2462MHz                                                                                                                                                                              |
| Number of Channels:   | IEEE 802.11b/g/n mode: 11 Channels                                                                                                                                                                               |
| Modulation Technique: | IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps)<br>IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps)<br>IEEE 802.11n Standard-20 MHz Channel mode: OFDM (6.5, 13, 19.5, 26, 39, 52, 58.5, 65.0Mbps) |
| Antenna Gain:         | 2.5 dBi                                                                                                                                                                                                          |
| Antenna Type:         | Internal                                                                                                                                                                                                         |
| Test Channel:         | Low: 2412MHz, Middle: 2437MHz, High: 2462MHz                                                                                                                                                                     |
| Temperature Range:    | -20°C ~ +40°C                                                                                                                                                                                                    |

**NOTE:** For a more detailed features description about the EUT, please refer to User's Manual.