

TYP-907

Tune- up Procedure

TABLE OF CONTENTS

1	TX TUNE UP PROCEDURE.....	2
1.1	PURPOSE	2
1.2	General description	2
1.2.1	Characteristics of the transmit burst	2
1.3	Parameters used for temperature compensation	2
1.4	How to transmit a Tch burst (Random data), in GSM850 mode, channel 190, at power control level max:	3
1.4.1	Configuration of the common parameters:	3
1.4.2	How to stop Tx measurements:	3
1.4.3	How to transmit a burst after modifying parameters.	3
2	RX TUNE UP PROCEDURE	4
2.1	Purpose	4
2.2	General description	4
2.3	Calibration Procedure	4

1 TX tune Up Procedure

1.1 Purpose

This panel gives the possibility to manage the Module in the transmit mode.

This window includes both:

- all the parameters (frequency band, RF channel, RF level to get the desire antenna output power) the user needs to make the Module transmitting,
- all the parameters needed to define a transmit burst,
- all the compensation table, temperature alignment parameters to be able to align the Module in production.

This Tx_commands user guide is describing:

- the characteristics of the transmit burst,
- all the parameters used in the transmit mode,
- the operating mode to make the Module transmitting

1.2 General description

1.2.1 Characteristics of the transmit burst

The power levels and the shape of a transmit burst are controlled by the power amplifier controller integrated in the RPF08155B. The commands of the burst itself is generated by a 10 bits DAC from the RPF08155B as shown below:

The ramping shape is referenced with the rising edge of Tx-ON (from the baseband).

The transmit 2 types of parameters define the transmit burst:

- TXOLC: defines the signal power at the respective PCL.
- Ramp Shape: This consists of 8 points for Ramp Up and 8 points for Ramp Down. For both Ramp Up and Ramp Down, the 8 points are 1.85 us apart.

1.3 Parameters used for temperature compensation

In order to take into account the variation in temperature of each element constituting the power control loop (detector, power amplifier, and power controller), there is a temperature back-off parameter which is designed in during DESIGN. Factory CANNOT adjust this figure. There is a temperature back-off for each of 6 temperature ranges.

Effective TXOLC = TXOLC – (Back-off DAC Value).

1.4 How to transmit a Tch burst (Random data), in GSM850 mode, channel 190, at power control level max:

1.4.1 Configuration of the common parameters:

- band: GSM850,
- channel: 190,
- RF level: 5,
- Burst select: Mode Tch Random

Power on the Module, dial SOS ,you can find the burst must fit for the GSM curve.

1.4.2 How to stop Tx measurements:

On hook the Module ,the test will be stop.

1.4.3 How to transmit a burst after modifying parameters.

Please note that each time a parameter (such as parameter used to shape the burst, or temperature compensation parameter), is changed, then the user have to: **download to flash** to validate the parameter modification. If the command is not performed, the old parameters are taken into account.

2 RX Tune Up Procedure

2.1 Purpose

This panel gives the possibility to manage the Module in the receive mode.

This window includes both:

- all the parameters (frequency band, RF channel, input power...) the user needs to make the Module receive,
- all the gain compensation table, temperature alignment parameters ... to be able to align the Module in production.

2.2 General description

The RPF08155B receiver is a direct conversion architecture.

The receiver consists in two distinct parts, the Analog and Digital sections.

The Analog Section:

- amplifies the GSM850 (869-894 MHz), EGSM900(925-960 MHz), DCS1800(1805-1880 MHz), PCS (1930-1990 MHz) aerial signal. Direct converts the chosen channel down to a Baseband IQ and then ADC the IQ signal.

The Digital Section:

- Provides digital Offset and Gain.

2.3 Calibration Procedure

- a. Send a -75.5 dBm signal into the DUT.
- b. Set Rx Gain = 40.
- c. Read the IQRMS value and calculate the RXLEV.
- d. Based on (b) and (a), determine the Gain Compensation for this channel.
- e. Repeat (a)-(c) for all channels.

Tune-up Levels

Item	Description	Specification																																																																																																												
1	Frequency Band	GSM 850 TX : 824 ~ 849Mhz GSM 850 RX: 869 ~ 894Mhz EGSM 900 TX: 880 ~ 915Mhz EGSM 900 RX: 925 ~ 960Mhz DCS 1800 TX : 1710 ~ 1785Mhz DCS 1800 RX : 1805 ~ 1880Mhz PCS1900 TX : 1850 ~ 1910Mhz PCS 1900 RX : 1930 ~ 1990Mhz																																																																																																												
2	Phase Error	RMS<5 degrees Peak<20 degrees																																																																																																												
3	Frequency Error	<0.1ppm																																																																																																												
4	Power Level	GSM 850 & EGSM 900 <table><tr><th>Level</th><th>Power</th><th>Toler</th><th>Level</th><th>Power</th><th>Toler</th></tr><tr><td>5</td><td>33dBm</td><td>± 2dB</td><td>13</td><td>17dBm</td><td>± 3dB</td></tr><tr><td>6</td><td>31dBm</td><td>± 3dB</td><td>14</td><td>15dBm</td><td>± 3dB</td></tr><tr><td>7</td><td>29dBm</td><td>± 3dB</td><td>15</td><td>13dBm</td><td>± 3dB</td></tr><tr><td>8</td><td>27dBm</td><td>± 3dB</td><td>16</td><td>11dBm</td><td>± 5dB</td></tr><tr><td>9</td><td>25dBm</td><td>± 3dB</td><td>17</td><td>9dBm</td><td>± 5dB</td></tr><tr><td>10</td><td>23dBm</td><td>± 3dB</td><td>18</td><td>7dBm</td><td>± 5dB</td></tr><tr><td>11</td><td>21dBm</td><td>± 3dB</td><td>19</td><td>5dBm</td><td>± 5dB</td></tr><tr><td>12</td><td>19dBm</td><td>± 3dB</td><td></td><td></td><td></td></tr></table> <table><tr><th>Level</th><th>Power</th><th>Toler</th><th>Level</th><th>Power</th><th>Toler</th></tr><tr><td>0</td><td>30dBm</td><td>± 2dB</td><td>8</td><td>14dBm</td><td>± 3dB</td></tr><tr><td>1</td><td>28dBm</td><td>± 3dB</td><td>9</td><td>12dBm</td><td>± 4dB</td></tr><tr><td>2</td><td>26dBm</td><td>± 3dB</td><td>10</td><td>10dBm</td><td>± 4dB</td></tr><tr><td>3</td><td>24dBm</td><td>± 3dB</td><td>11</td><td>8dBm</td><td>± 4dB</td></tr><tr><td>4</td><td>22dBm</td><td>± 3dB</td><td>12</td><td>6dBm</td><td>± 4dB</td></tr><tr><td>5</td><td>20dBm</td><td>± 3dB</td><td>13</td><td>4dBm</td><td>± 4dB</td></tr><tr><td>6</td><td>18dBm</td><td>± 3dB</td><td>14</td><td>2dBm</td><td>± 5dB</td></tr><tr><td>7</td><td>16dBm</td><td>± 3dB</td><td>15</td><td>0dBm</td><td>± 5dB</td></tr></table>	Level	Power	Toler	Level	Power	Toler	5	33dBm	± 2dB	13	17dBm	± 3dB	6	31dBm	± 3dB	14	15dBm	± 3dB	7	29dBm	± 3dB	15	13dBm	± 3dB	8	27dBm	± 3dB	16	11dBm	± 5dB	9	25dBm	± 3dB	17	9dBm	± 5dB	10	23dBm	± 3dB	18	7dBm	± 5dB	11	21dBm	± 3dB	19	5dBm	± 5dB	12	19dBm	± 3dB				Level	Power	Toler	Level	Power	Toler	0	30dBm	± 2dB	8	14dBm	± 3dB	1	28dBm	± 3dB	9	12dBm	± 4dB	2	26dBm	± 3dB	10	10dBm	± 4dB	3	24dBm	± 3dB	11	8dBm	± 4dB	4	22dBm	± 3dB	12	6dBm	± 4dB	5	20dBm	± 3dB	13	4dBm	± 4dB	6	18dBm	± 3dB	14	2dBm	± 5dB	7	16dBm	± 3dB	15	0dBm	± 5dB
Level	Power	Toler	Level	Power	Toler																																																																																																									
5	33dBm	± 2dB	13	17dBm	± 3dB																																																																																																									
6	31dBm	± 3dB	14	15dBm	± 3dB																																																																																																									
7	29dBm	± 3dB	15	13dBm	± 3dB																																																																																																									
8	27dBm	± 3dB	16	11dBm	± 5dB																																																																																																									
9	25dBm	± 3dB	17	9dBm	± 5dB																																																																																																									
10	23dBm	± 3dB	18	7dBm	± 5dB																																																																																																									
11	21dBm	± 3dB	19	5dBm	± 5dB																																																																																																									
12	19dBm	± 3dB																																																																																																												
Level	Power	Toler	Level	Power	Toler																																																																																																									
0	30dBm	± 2dB	8	14dBm	± 3dB																																																																																																									
1	28dBm	± 3dB	9	12dBm	± 4dB																																																																																																									
2	26dBm	± 3dB	10	10dBm	± 4dB																																																																																																									
3	24dBm	± 3dB	11	8dBm	± 4dB																																																																																																									
4	22dBm	± 3dB	12	6dBm	± 4dB																																																																																																									
5	20dBm	± 3dB	13	4dBm	± 4dB																																																																																																									
6	18dBm	± 3dB	14	2dBm	± 5dB																																																																																																									
7	16dBm	± 3dB	15	0dBm	± 5dB																																																																																																									