Q2686-X60 tuning

From :	**Erwin Dang**
Date :	**24/04/2006**
Pages :	**2**
To :	**Thierry Goupil**
Copy :	**Jacques Suires, Didier Paulin**
Subject :	**Tuning procedure**

FSBfiThres
EFSBfiThres
HSBfiThres
AFSBfiThres
AHSBfiThres
These parameters are used when decoding a TCH speech
block to determine whether the decoded block is valid. It is compared with the number of errors detected at the input of the convolutional decoding. If the number of errors is greater or equal to the BFI Error count threshold, the bad frame indicator (BFI) is set to 1.
This value is different for each speech codec.

- FSBfiThres : Full Rate BFI error count threshold
- EFSBfiThres : Enhanced Full Rate BFI error count threshold
- HSBfiThres : Half Rate BFI error count threshold
- AFSBfiThres : AMR Full Rate BFI error count threshold
- AHSBfiThres : AMR Half Rate error count threshold

It allows a trade-off to be made between residual bit error rate and frame erasure rate

To be adjusted according to the mobile in use.

Recommended values:

FSBfiThres : 60
EFSBfiThres : 60
HSBfiThres : 14
AFSBfiThres : 60
AHSBfiThres : 42

FacchThres
This parameter is used when decoding a traffic block to determine whether a FACCH block has been received.

To be adjusted according to the mobile in use.

Recommended value :

FacchThres : 0

HRUfiThres
This parameter is used to decide if any TCH/HS block is reliable or not. The estimation of the number of erroneous demodulated bits is compared to this threshold. If the number of errors is strictly higher than this threshold the TCH/HS block is declared as unreliable. If the TCH/HS decoded block is not reliable the Unreliable Frame Indicator (UFI) is set to 1.

To be adjusted according to the mobile in use.

Recommended value :

Memo

HRUfiThres : 36

USFMetricCS1Thres
USFMetricCS24Thres
This parameter is used in GPRS transfer to decide of any USF decoded on the downlink path is reliable or not. It allows the MS to compute an uplink PDCH packet on the next TDMA frame.
The USF threshold value differs between coding scheme CS1 and coding schemes CS2 to CS4.

- USFMetricCS1Thres : USF metric threshold for CS1
- USFMetricCS24Thres : USF metric threshold for CS2, CS3 and CS4

To be adjusted according to the mobile in use.

Recommended values :
USFMetricCS1Thres : 23
USFMetricCS24Thres : 25

TaOffset_GSM900
TaOffset_DCS1800
TaOffset_PCS1900
TaOffset_GSM850
These parameters are used to compensate the propagation delay in the mobile's radio system on the uplink path. This delay differs for each supported band.
They are expressed in a number of quarter bits period, i.e. 12/13 MHz.

Values are determined by measuring and minimizing the timing offset of TX bursts.

Recommended values :
TaOffset_GSM900 : 0
TaOffset_DCS180 : 0
TaOffset_PCS1900 : 0
TaOffset_GSM850 : 0

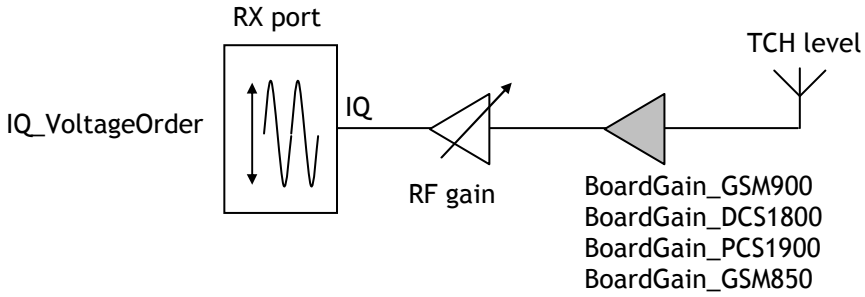
Memo

IQ_VoltageOrder
BoardGain_GSM900
BoardGain_DCS1800
BoardGain_PCS1900
BoardGain_GSM850

These parameters are used to calibrate the mobile's radio reception gain control.

The actual IQ base-band signal is the result of several gain contribution:

- TCH level : level of received GSM signal
- BoardGain_GSM900 : static power loss in the GSM 900 radio reception stage
- BoardGain_DCS1800 : static power loss in the DCS 1800 radio reception stage
- BoardGain_PCS1900 : static power loss in the PCS 1900 radio reception stage
- BoardGain_GSM850 : static power loss in the radio GSM 850 radio reception stage
- RF Gain : dynamic radio programmable gain
- IQ_VoltageOrder : expected IQ base-band input signal amplitude



BoardGain_GSM900, BoardGain_DCS1800, BoardGain_PCS1900 and BoardGain_GSM850 parameters are determined using a TCH reference signal at level in the [-38;-110] dBm range. The value is computed by comparing the mobile's power measurement with the actual TCH reference signal. This parameter is expressed in dBm.

IQ_VoltageOrder value is determined to match two boundary conditions:

- At reference sensitivity, it is desired to have the minimum noise figure for optimal receive sensitivity, therefore IQ signal must be maximized.
- Above reference sensitivity, interferers may be present, therefore IQ signal must be reduced to avoid saturating the receive path.

Recommended value :

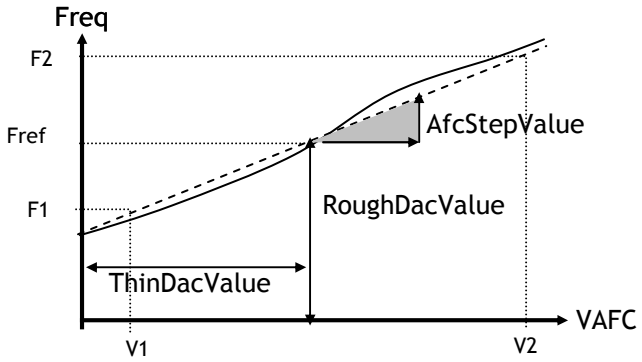
IQ_VoltageOrder : 69

Memo

RoughDacValue
ThinDacValue
AfcStepValue
This parameters are used to tune the mobile's internal reference clock and frequency control.

The frequency response of the mobile's reference clock to the VAFC control signal is approached by a linear representation where:

- RoughDacValue :is the static initial offset of the reference clock,
- ThinDacValue :is the dynamic value of VAFC at wich RoughDacValue is measured,
- AfcStepValue : is the approached slope value of the frequency response.



ThinDacValue is chosen at the medium range of VAFC span. It is expressed in step of VAPC.

RoughDacValue is a mobile internal value determined at a reference frequeny Fref by minimizing the TX burst frequency error.

To determine AfcStepValue, two frequency measurements F1 and F2 are performed using TX bursts at respectively V1 and V2. Actual value is computed using a first order interpolation of F1 and F2. It is expressed in Hz.

Memo

txPwrMinBase
txPwrNMin
txRampUpNbPts
txRampDwnNbPts
txRampUpNbNullPts
txRampDwnNbNullPts
txRampNmax
txRampStartBase
txRampStopBase
txRampStart
txRampStop
These parameters are used to match the mobiles TX power busrt shape with each PCL template.

TxRampNmax is the maximum power level. It differs for each PCL of each band. This value is expressed in TX power control DAC step.

TxPwrMinBase is part of the minimum power level. The same value is used for all PCLs and frequency bands. This value is expressed in TX power control DAC step.

TxPwrNMin is added to TxPwrMinBase to generate the minimum power level. This value differs for each PCL of each band. This value is expressed in TX power control DAC step.

TxRampUpNbNullPts and txRampDwnNbNullPts are the delays during which no power is issued from the mobile at respectively ramp up and ramp down. These values are expressed in quarter bit period, i.e. 12/13 MHz, and are the same for all PCLs and bands.

TxRampUpNbPts and txRampDwnNbPts are the delays during which power is issued with respect of a hamming shape

- from txPwrMinBase + txPwrNMin up to txRampNmax at ramp up,
- from txRampNmax to txPwrMinBase + txPwrNMin at ramp down.

These values are expressed in quarter bit period, i.e. 12/13 MHz, and are the same for all PCLs and bands.

TxRampStartBase and txRampStopBase are used to delay the hamming power shape at respectively ramp up and ramp down. These values are expressed in quarter bit period, i.e. 12/13 MHz and are the same for all PCLs and bands.

TxRampStart and txRampStop are additional delays to respectively TxRampStartBase and txRampStopBase delays. These values are expressed in quarter bit perio, i.e. 12/13 MHz, and differs for each PCLs and bands.