### **Use of the TTC System**

### Murrough Landon – 6 July 2000

#### **Overview**

- Common programming model for TTCrx
- TTCrx configuration
- TTC broadcast commands

#### **Guidelines**

- Allow for possibility of TTC broadcast commands on all modules
- Connect TTCrx command/subaddress/clock to VME PLD?
- Any TTC broadcast command also possible via VME (to one module)
- TTC command takes precedence over simultaneous VME cycle?

# **TTCrx Configuration**

### Ways to configure the TTCrx

- Via TTC system (after TTCrx ID is set)
- From PROM (the TTCdec card has one)
- Via I2C bus (new TTCrx only)

#### **Programming model**

- Aim for same programming model on all our modules (follow CPM?)
- Common software module to access/control TTCrx
- Access all TTCrx registers via I2C bus via suitable interface from VME PLD
- If using the PROM, require two registers:
  - TTCrxPROMReset: control register: reset PROM before reloading it; reload TTCrx from PROM
  - TTCrxPROMData: FIFO to write PROM data (read back new TTCrx configuration via I2C bus)
- TTCrx has ten read/writeable registers including various delays, control register and some detailed configuration registers
- TTCrx has ten read only registers including status, various error counters and (rapidly varying) bunch and event counters

## **TTC Broadcast Commands**

#### **Overview**

- Two broadcast command styles: long and short format
- Short format allows  $\operatorname{six}$  user command bits
- Long format has an additional eight bit subaddress
- Two command bits optionally clocked out with ClkDes2

#### **Possible Commands**

The following is an excessive list of what we might possibly think of doing... have we missed anything?

Many commands come in pairs: start and stop some activity, ie two bit patterns each.

Might want some commands specific to one type of module and/or global to all modules?

- start/stop playback [global, PPM, CPM, JEM, CMM]
- start/stop backplane timing calibration [global, CPM, JEM]
- start/stop/zero rate histograms [PPM]?
- start/stop pipelines?? (ie freeze a module to debug read out controller)
- restart LVDS links??
- restart Glinks to RODs??
- start/stop/reset pipeline bus [PPM]??
- start/stop other diagnostic activity (eg with alternate FPGA programs loaded?)
- anything else?