Zakład Produkcyjny TEL-KA

EUROCOM / E1 mux converter box

User Manual

Warszawa 2010-14

1. General Information

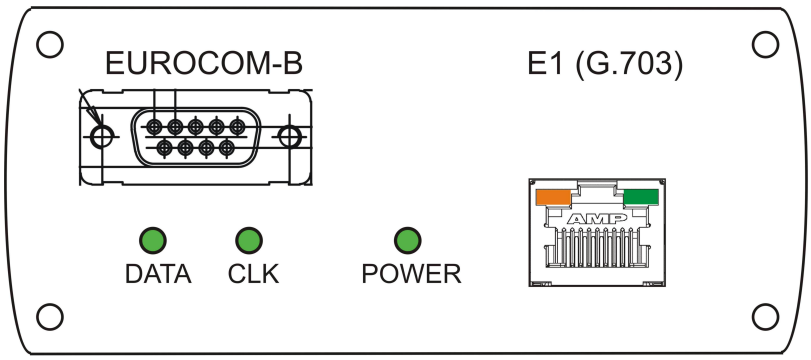
The Eurocom B/E1 Mux interface converter box allows to connect any equipment with Eurocom B interface to any equipment with E1 interface.

The EUROCOM B / E1 converter specification:

1. Binary throughput on E1 side: 2048 kbps ± 100ppm
2. Binary throughput on Eurocom side: 256/512/1024/2048kbps ± 100ppm
3. Modes of operation:
   - Raw data converter (2048 kbps only)
   - Multiplier mode with automatic throughput selection
   - Multiplexer mode
4. E1 interface:
   - G.703/120 Ω, balanced electrical parameters (ITU G.703, chapter 9)
   - RJ-45 socket (1,2–Rx, 4,5-Tx, 6,7-GND)
5. Eurocom interface:
   - B type, as per EUROCOM D/1 1986 IB6 (pages IB6-1 .. IB6-5)
   - connector: D-SUB 9 female-type
6. RS-232 interface (configuration/firmware update)
   - Baud rate 57,6 kbps, character format 8N2
   - connector: D-SUB 9 female-type
7. Power supply (available options):
   - DC +12V..+30, < 2W, non-isolated, '-' connected to board's earth and GND line of E1 interface, PSU socket 5.5/2.5mm
   - -48VDC (-36..-72VDC), isolated, MC 1,5/3-G-3.81 socket.
   - AC 85…240VAC, 47…63Hz, IEC60320-C14 socket
8. Power consumption < 1W
9. Box size: 106mm • 175mm • 46mm

2. Front panel layout

Front panel contains:



- EUROCOM (DSUB-9 connector) interface
- E1 (RJ-45 connector) interface
- 'Power' status indicator (LED)
- Received 'DATA' and 'CLK' signals indicators (LEDs) for EUROCOM interface.
- Received E1 signal indicator (green LED on E1 connector)
- Received E1 G.704 frame synchronization status indicator (orange LED on E1 connector)

3. Rear panel layout

Rear panel contains:

- Power supply socket (depending on power supply version)
- RS-232 (DSUB-9 connector) interface

4. Connector layout

1. Interface E1 connector RJ-45

Pin	Direction	Function
1	input to converter	Received Data – wire A
2	input to converter	Received Data – wire B
3	not used	
4	output from converter	Transmitted Data – wire A

5	output from converter	Transmitted Data – wire B
6	not used	
7	GND	Shield - ground
8	GND	Shield - ground

2. Eurocom B interface, connector DSUB-9/15 female (front panel)

No	DB 9	DB 15	Signal Name Eurocom B	Direction	RL-xxx TDM connector	AN/GRC-xxx Eurocom In/Out
1	1	4	Transmit Clock A	Output from converter	L	F
2	6	12	Transmit Clock B		M	E
3	2	1	Transmit Data A		H	H
4	7	9	Transmit Data B		G	G
5	3	7	Receive Clock A	Input to converter	J	S
6	8	15	Receive Clock B		K	R
7	4	3	Receive Data A		F	T
8	9	11	Receive Data B		E	J
9, 10	5	2,6 8,14	GND	Chassis	V	V

1. RL-xxx : Ericsson/Konsberg
2. AN/GRC-xxx : Marconi/Ultra

3. RS-232 interface, connector DSUB-9 female (rear panel)

Pin	Function	Direction
2	Received data	From converter
3	Transmitted data	To converter
5	Ground	
4	RTS (used only during firmware update)	To converter
7	DTR (used only during firmware update)	To converter

5. Power options

- DC 24V option
  Converter box is powered by +12..+30VDC (non-isolated). The equipment is resistant to incorrect power connection, if the voltage is below 35V. Socket is PSU 5.5/2.5mm.
- DC 48V option
  Converter box is powered by -36..-72VDC (isolated). The equipment is resistant to incorrect power connection, if the voltage is below 100V. Socket is MC 1,5/3-G-3.81.
- AC option
  Converter box is powered by 85…240VAC, 47…63Hz, socket IEC60320-C14

6. Configuration

1. Modes of operation

The converter offers three modes of operation:

- **Simple converter mode**
  Simple interface converter 2048kbps only
- **Multiplier mode**
  In this mode each bit received from Eurocom interface is transmitted 8, 4, or 2 by interface E1. In the direction from Eurocom interface to the E1 interface the degree of multiplication is determined automatically based on measurement Eurocom interface received clock frequency. In the opposite direction the equipment automatically recognized degree of multiplication on E1 interface and retrieve the original binary stream on Eurocom interface
- **Multiplexer mode**
  For 2048kbps it works just like simple raw-data converter. For lessee throughput, G.704 framing is generated on E1 interface and raw data from Eurocom side are placed in predetermined timeslots (and vice-versa). The byte integrity is not maintained (in the case of connecting two E1 nodes through Eurocom link with throughput 256/512 or 1024 kbps).

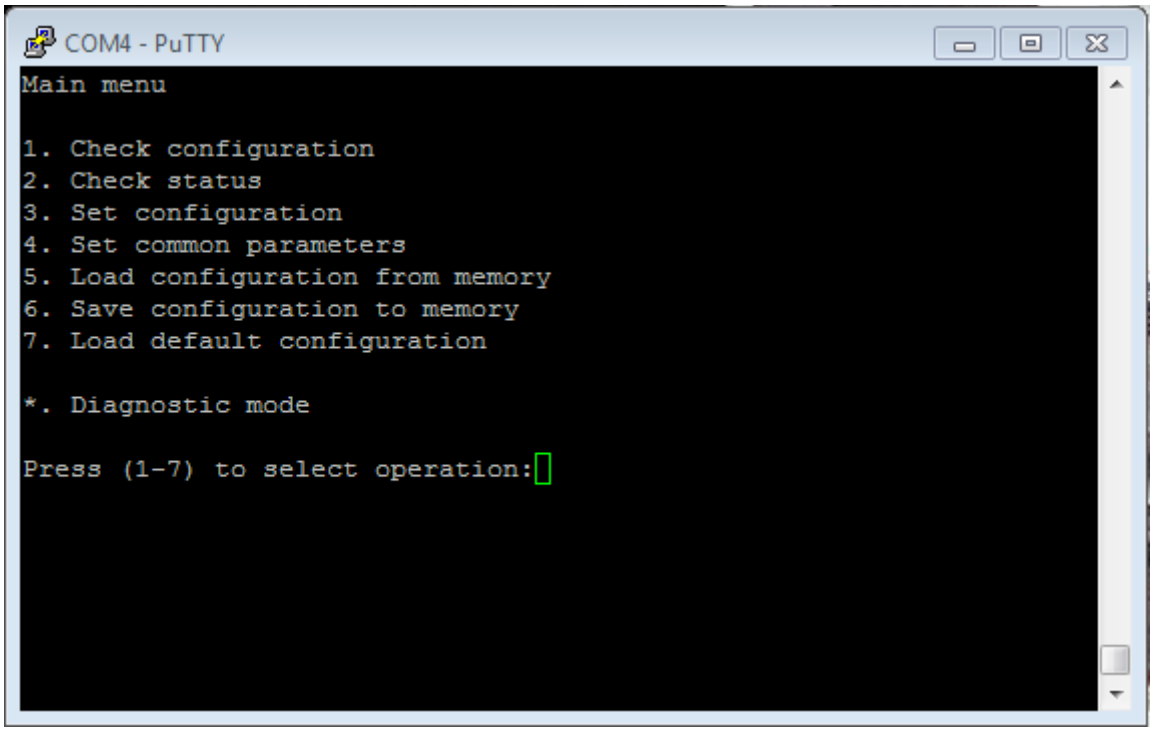
2. How to set up

Connect the device to terminal through the serial interface. Set the following parameters of the interface:
baud rate – 57600 bit/s

character format – 8N2 (8 bit, 2 stop bits, no parity)
flow control – none
kind on terminal – ansi/VT100
As the terminal can be used PC with a serial interface and an appropriate program such as Hyperterminal (under WindowsXP) or Putty (version 0.60 or higher). Then turn on the equipment and follow the instructions on the screen. After about 10 second the device is ready to work with the last set configuration.

3. Main menu

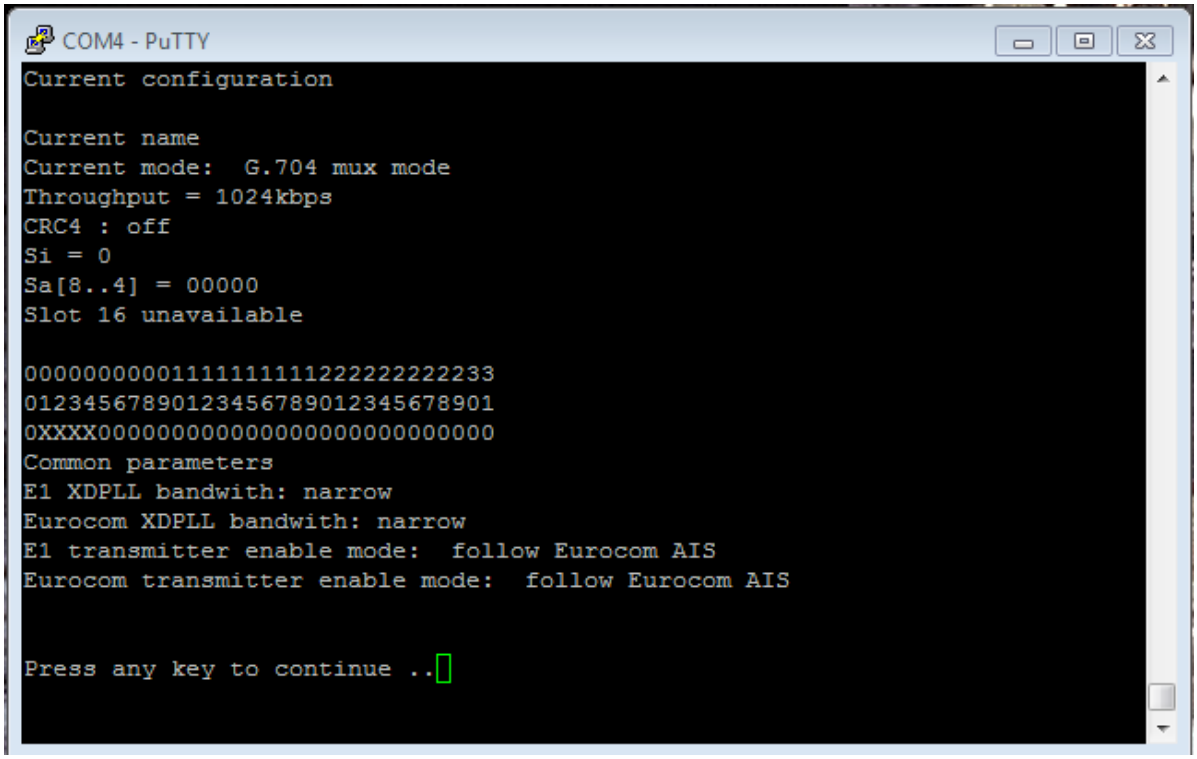
After power up the following screen appears:

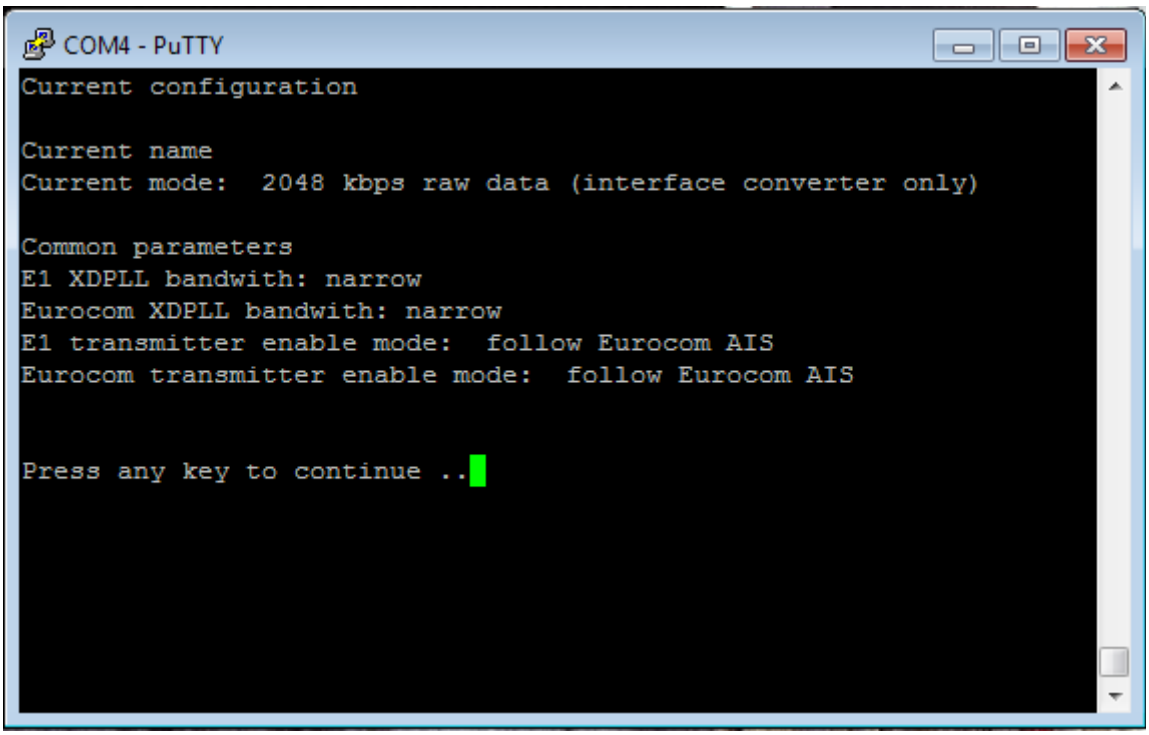


The following options are available:
Check configuration – display current configuration
Check status – display current status
Set configuration – select this option to change current configuration
Set common parameters – set common parameters like PLL bandwidth
Load configuration from memory – use this option to restore previously saved configuration
Save configuration to memory – use this option to write current configuration to non-volatile memory. 64 different configuration identified by name and number are possible.
Load default configuration – use this option to load one from fixed configuration examples.

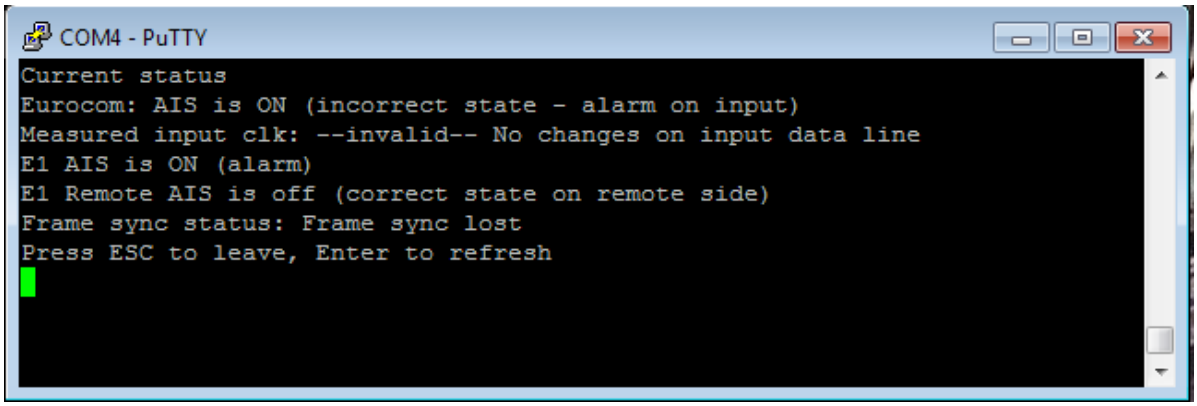
* – entry into debug mode, do not use.

4. **Check configuration menu (1)**
   After pressing key '1' the screen containing current configuration appears. The following figures show examples of configurations (2048kbps raw data and G.704 mode



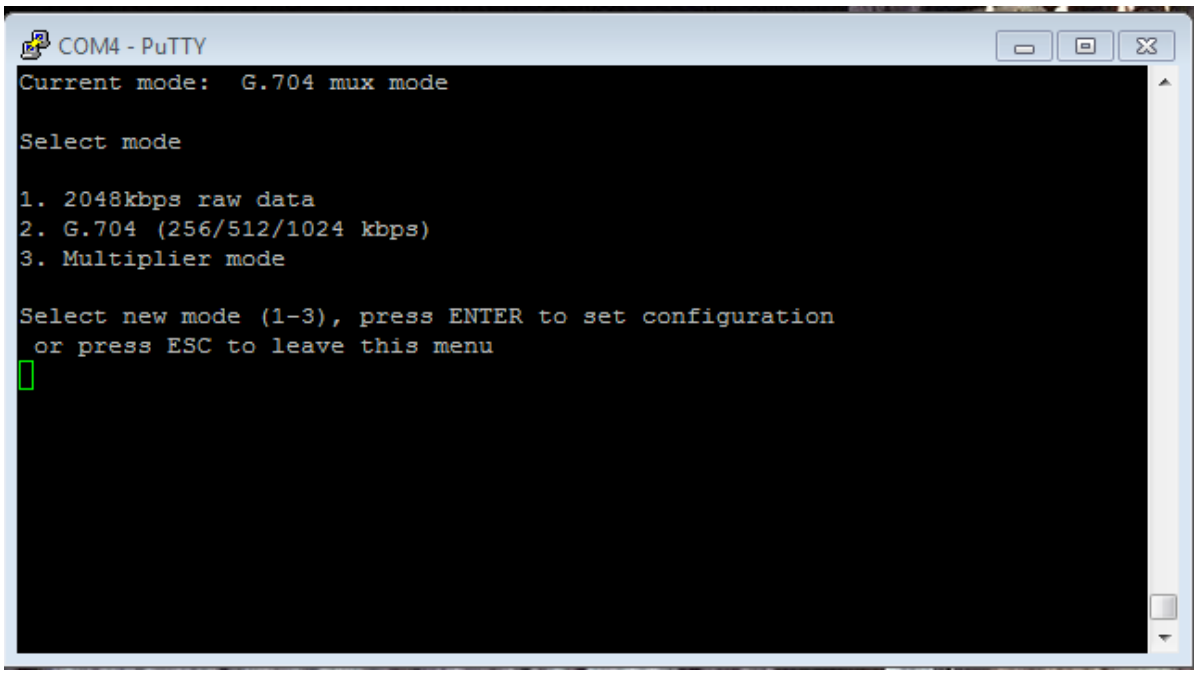


5. **Check status menu**
   After pressing key '2' the following screen appears:



   Above screen contains information about AIS (Alarm Indication Signal) on both Eurocom and E1 inputs, measured Eurocom input clock frequency and E1 framing synchronization status (in G.704 mode only). Pressing *Enter* refresh the screen.

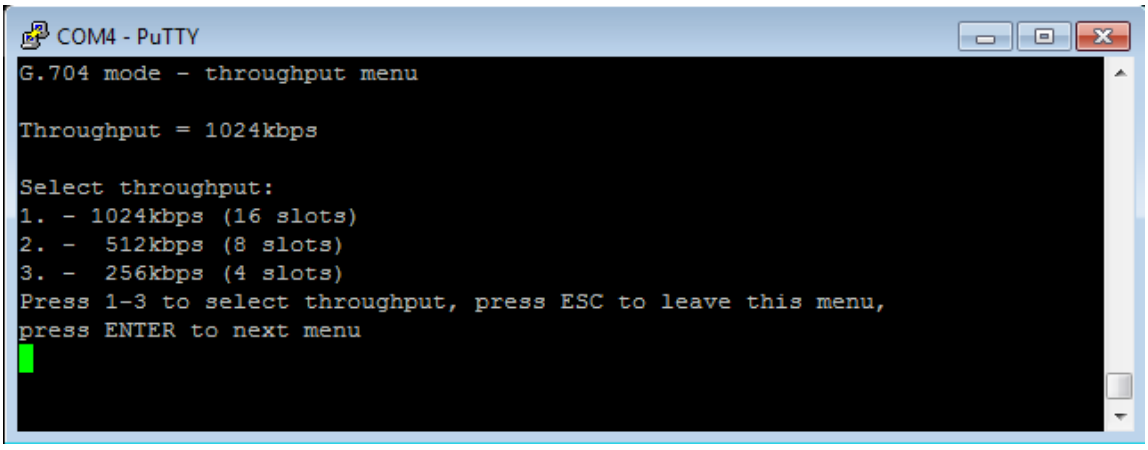
6. **Select configuration menu**
   New configuration is entered by pressing key 3. After pressing this key in the main menu the following screen appears:



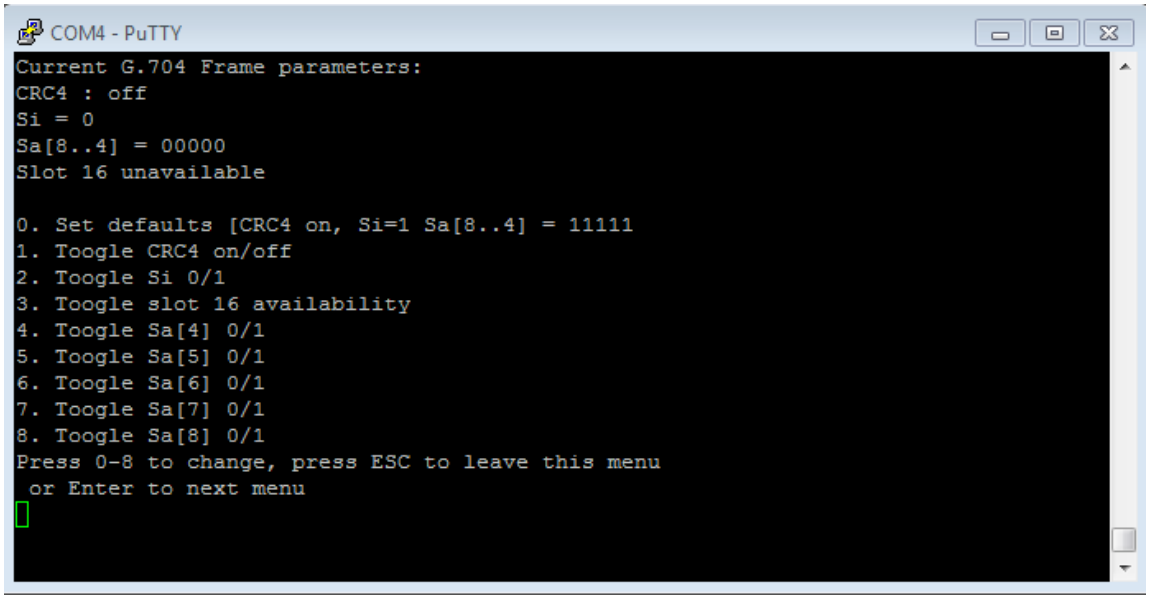
On the top of the screen the current mode is displayed. By pressing keys '1', '2' or '3' the new configuration may be introduced. The selection is confirmed by pressing Enter. The next screen depends on selected configuration.

- 2048kbps raw data mode
  For this mode there is only one screen.

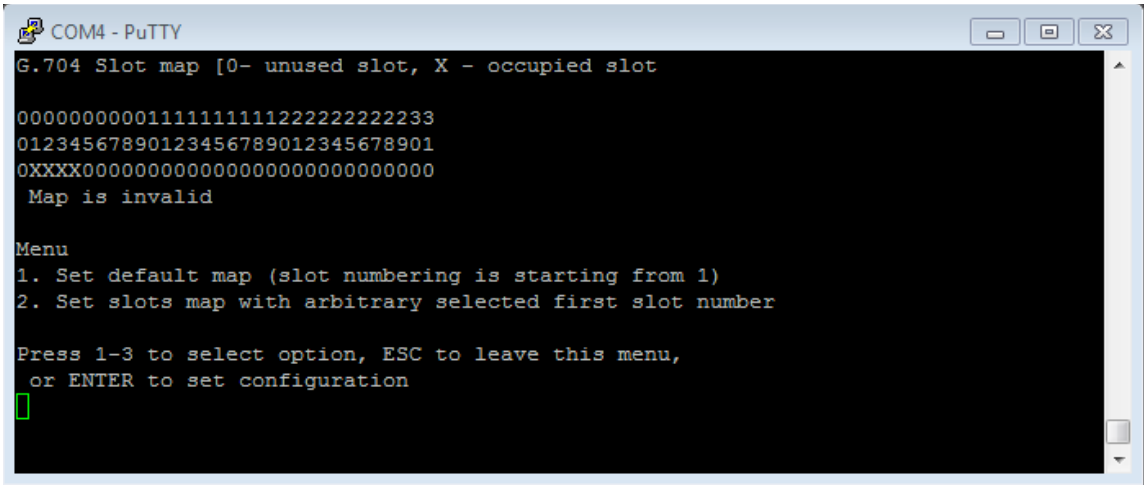
- G.704 mode
  The next screen allows throughput selection:



On the top of the screen the current throughput is displayed. By pressing keys '1', '2' or '3' the new throughput may be introduced. The selection is confirmed by pressing Enter. Then the next screen with G.704 frame parameters is displayed:

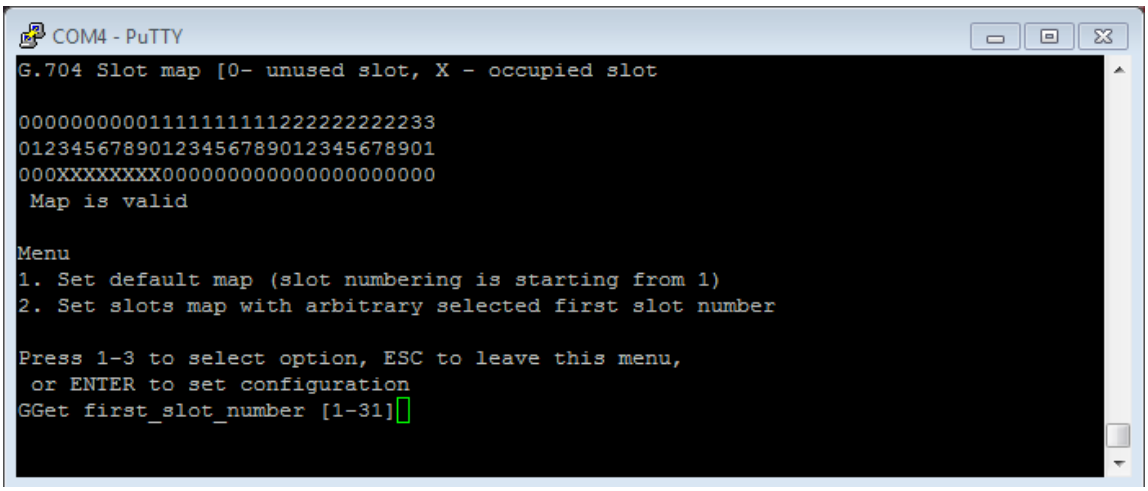


On the top of the screen current frame parameters are displayed. By pressing keys '1' … '8' the indicated bits may be changed. The selection is confirmed by pressing Enter. In the next step the slot maps is selected:



The current occupied slots map is displayed on the top (occupied slots are marked by X). By pressing key '1' and next the Enter the default map is selected. Pressing key '2' allows arbitrary slot origin selection. Enter the first slot number and confirm the selection by pressing Enter.

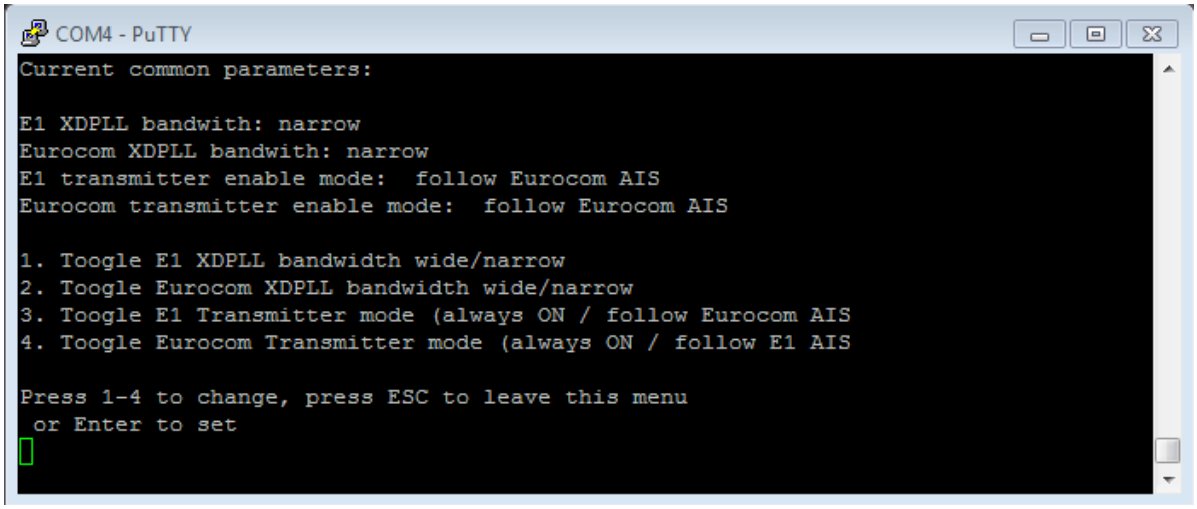
- Multiplier mode



For this mode is only one screen.

7. Set Common Parameters menu

After pressing key '4' the following screen appears:



It is possible to change the following parameters:
- wide/narrow bandwidth of PLL's
- transmitters enable mode

Last parameters are important only in certain modes

8. Load configuration from memory menu

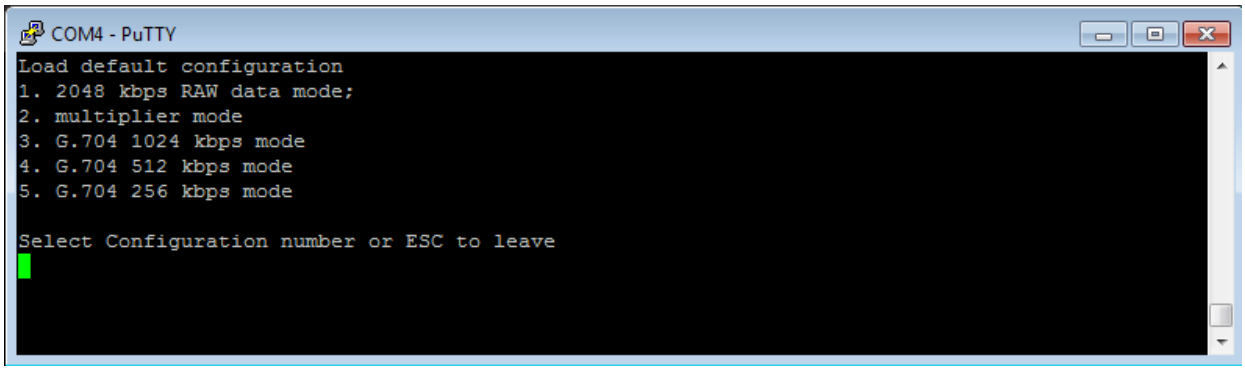
This option allows loading the previously saved configuration from the non volatile memory.

9. Save configuration to memory menu

It is possible to save current configuration in the nonvolatile memory for later use.

10. Load defaults configuration menu

The set of typical configuration is prepared:



By pressing one of the keys '1' … '5' the one of tipical configuration is introduced.

11. Converter board removal

1. Plug off power supply cable
2. Unscrew four screws holding rear panel
3. Unscrew four screws holding front panel
4. Disconnect flat cable from board
5. Pull out converter board in rear panel direction

12. Firmware upgrade

Follow the instruction that came with new version of firmware