5003 -> 7001 -> 1028 -> 4004 (tx)
**3004 -> 1027 -> 7001 -> 5003 (rx)**

Objective:
Transmit data from end to end over MSK modems.

Configuration:
- 70 MHz center frequency
- 1 Mbits/s MSK modulation
- rate 0.66 2-D turbo product code
- HDLC enabled for asynchronous to synchronous conversion
- IP addresses 172.16.1.128 (tx) and 172.16.1.129 (rx). Port 1024 for data.

The first configuration step is to select two unique IP addresses consistent with the host PC address. For example, if the host PC address is a.b.c.d, the selected addresses for the COM-5003 should be in the form a.b.c.e and a.b.c.f, where e and f are unique on the LAN network.

Then, using the ComBlock control center, configure the selected IP addresses over USB or serial link.
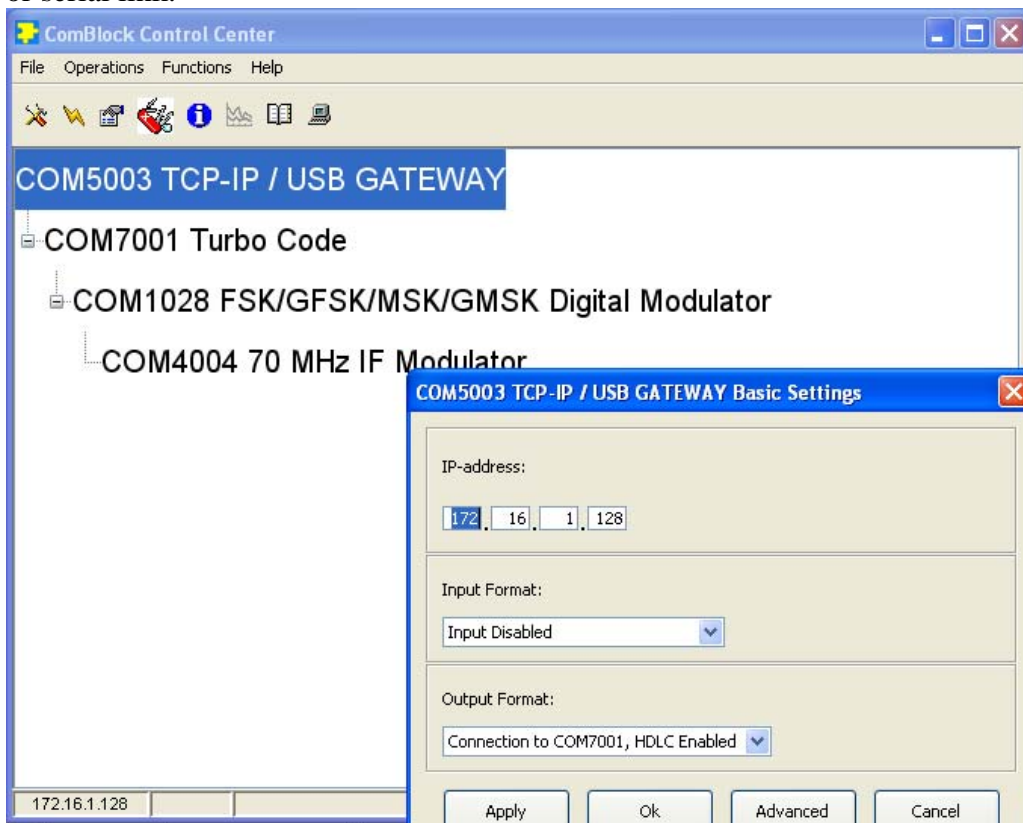
Recycle power.
Verify that the IP address is reachable by doing a ping
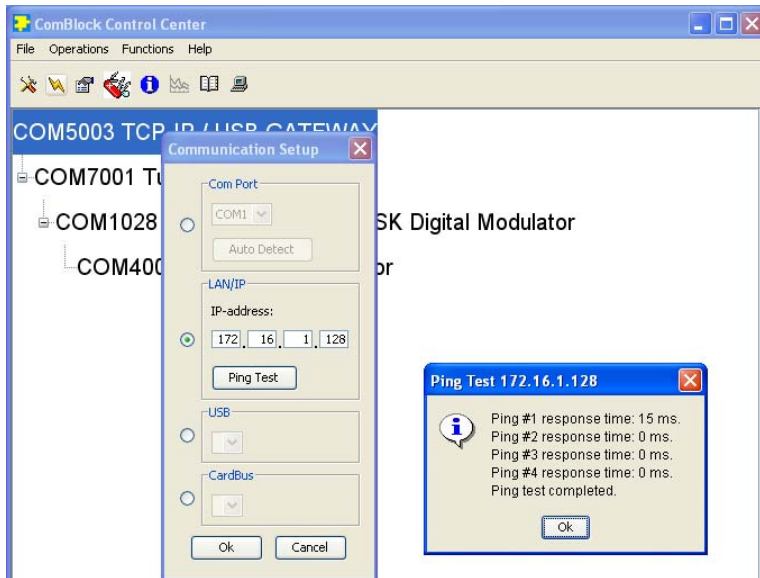
Once ping is successful, we can switch the COM-5003 firmware from COM-5003-A (USB high-speed data transfer) to COM-5003-B (TCP-IP high-speed data transfer). To do so, please click on the swiss army knife button and select personality index 3 as default. Reboot when asked.
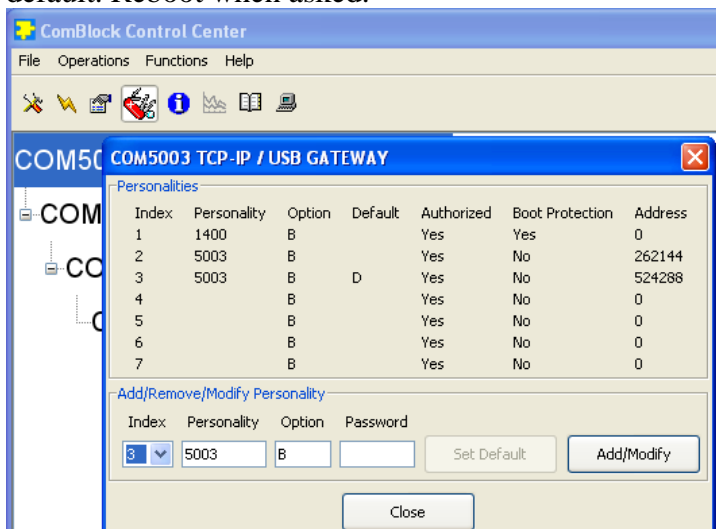
This process is repeated for the other COM-5003.

Once the communication links are configured, it is time to configure the other ComBlocks. The easiest way is to import the prepared settings (in the ComBlock CD "Basic Settings" folder). From the ComBlock Control Center, go to the File | Import menu and import
5003_7001_1028_4004_3004_1027_7001_5003_tx.stn into the transmitter section
5003_7001_1028_4004_3004_1027_7001_5003_rx.stn into the receiver section

Alternatively, the configuration can be entered manually as illustrated below.

Transmitter configuration:

COM5003 TCP-IP / USB GATEWAY Basic Settings

IP-address:

172 . 16 . 1 . 128

Input Format:

Input Disabled

Output Format:

Connection to COM7001, HDLC Enabled

[Apply] [Ok] [Advanced] [Cancel]

COM7001 Turbo Code Settings

Registers

All register values in HEX

Reg 0	82	Reg 4	2A	Reg 8	00	Reg 12	00
Reg 1	02	Reg 5	00	Reg 9	00		
Reg 2	55	Reg 6	00	Reg 10	00		
Reg 3	40	Reg 7	40	Reg 11	00		

Configuration

Configuration option currently loaded: A, rev M

[Apply] [Ok] [Cancel]

COM1028 FSK/GFSK/MSK/GMSK Digital Modula...

Symbol rate: 999999.046 Symbols/s

Center frequency: 0 Hz

Signal amplitude: 255 range 0 - 255

Modulation: MSK

M-ary number: 2-FSK (1 bit/symbol)

Modulation index: 0.5 range 0 - 7.9

Test mode: test mode disabled

Output: to COM-4004, format 2's complement

[Apply] [Ok] [Advan...] [Cancel]

COM4004 70 MHz IF Modulator Basic Settings

IF Center Frequency: 69999998 Hz

Gain Control: 180

☐ 10 MHz External Frequency Reference

☐ Unmodulated Test Mode

☑ Output On

[Apply] [Ok] [Advan...] [Cancel]

Receiver configuration:

COM5003 TCP-IP / USB GATEWAY Basic Settings

IP-address:

172 . 16 . 1 . 129

Input Format:

1-bit wide from J5, HDLC Enabled

Output Format:

Output Disabled

Apply   Ok   Advanced   Cancel

COM7001 Turbo Code Settings

Registers

All register values in HEX

Reg 0	04	Reg 4	2A	Reg 8	06	Reg 12	00
Reg 1	05	Reg 5	55	Reg 9	00		
Reg 2	55	Reg 6	00	Reg 10	00		
Reg 3	40	Reg 7	40	Reg 11	00		

Configuration

Configuration option currently loaded: A, rev M

Apply   Ok   Cancel

COM1027 FSK/MSK/GFSK/GMSK Digital Demod...

Symbol rate: 999999.046 Symbols/s

Center frequency: 0 Hz

M-ary number: 2-FSK (1 bit/symbol)

Modulation index: 0.5 range 0.125 - 4.0

☑ Spectrum inversion   ☑ disable AFC

Input Format: unsigned input (default)

Apply   Ok   Advan...   Cancel

COM3004 IF receiver [20 - 90 MHz] Basic Settings

Frequency Selection: 0

Frequency 0: 69999996 Hz

Frequency 1: 19999996 Hz

Frequency 2: 89999995 Hz

Frequency 3: 0 Hz

Frequency 4: 0 Hz

Frequency 5: 0 Hz

Frequency 6: 0 Hz

Frequency 7: 0 Hz

☐ 10 MHz External Frequency Reference

☐ External Trigger

Number of Frequency Hopping Steps: 3

Apply   Ok   Advan...   Cancel

a) verify that the received waveform is correct. Using ComScope at the COM-1027 demodulator, one can visualize the MSK-modulated received waveform at baseband.Use trace1 signal 1 and trace 2 signal 1 for the I and Q channels respectively.
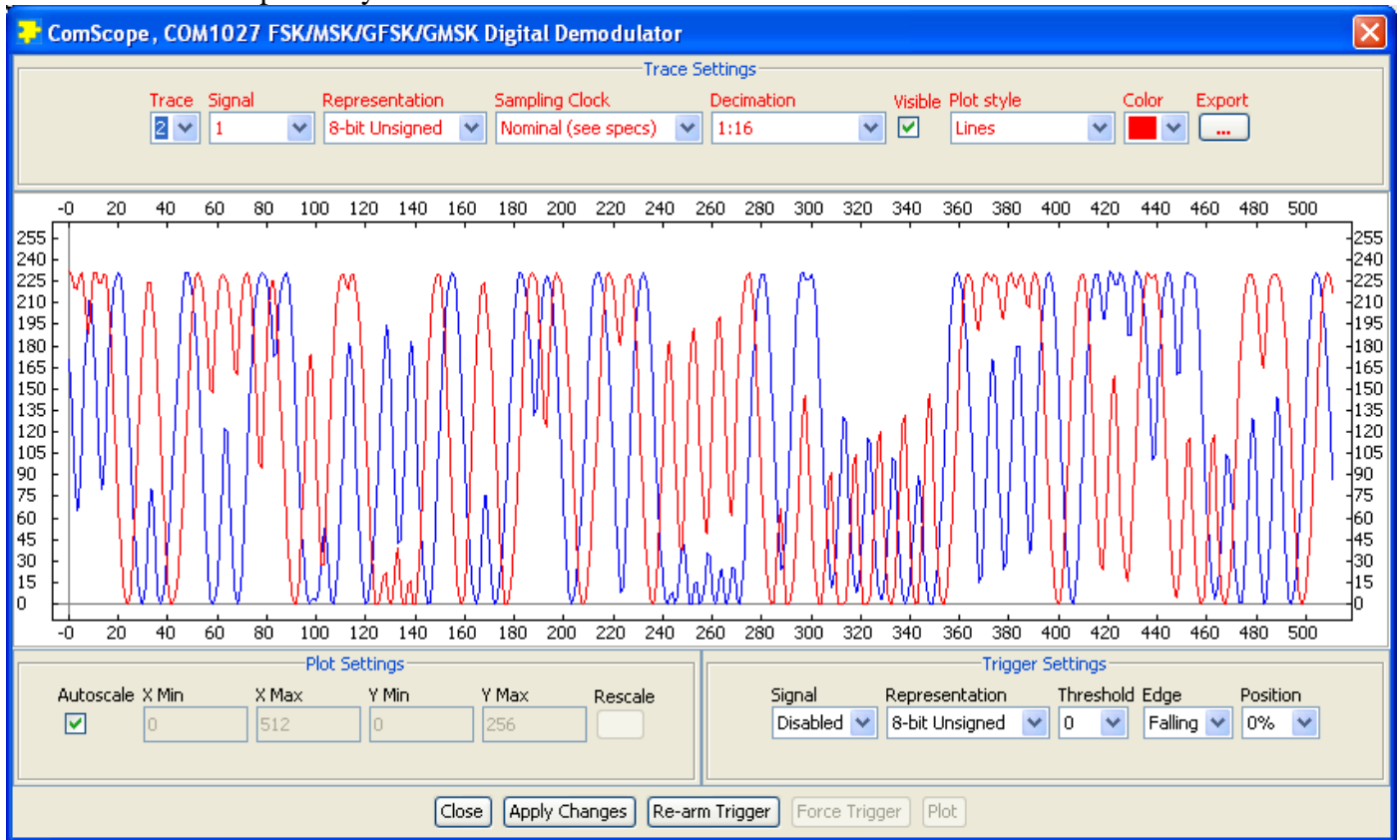
b) Verify that there are no bit errors in the turbo code header. The number of bit errors detected in a 1024 header bits window is shown in the rx COM-7001 status registers 13/14.
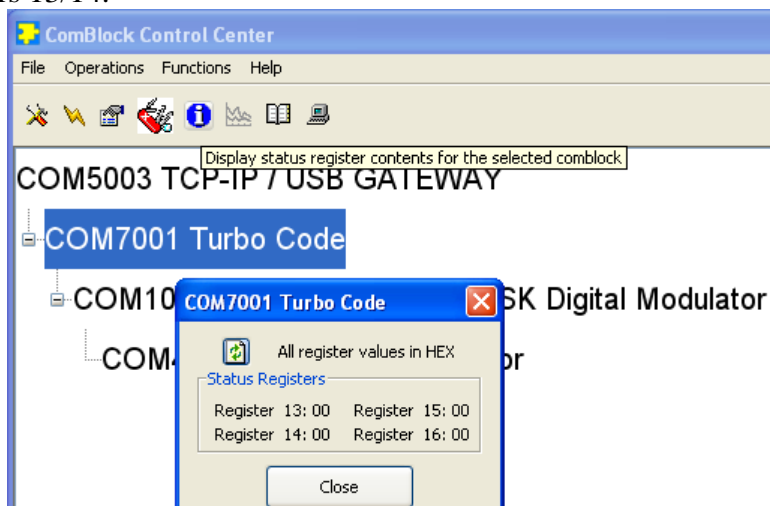
At this point, we are ready to send user text from one side to the other.
Start two hyperterminal windows (for more details on how to configure hyperterminals, see the 5003_5003.pdf document in the "Basic Settings" folder).

The connection addresses are a.b.c.e and a.b.c.f (user selected at the start), port 1024.

The hyperterminal windows should show "connected" in the lower left corner.

Text entered on the hyperterminal tx panel should be visible on the hyperterminal rx panel as illustrated below.