

## ComBlock Assembly

COM5003B TCP-IP GATEWAY

- > COM1019 Spread-Spectrum Digital Modulator
- > COM4004 70 MHz modulator
- > 30 dB attenuator (10 – 40 dB preferred)
- > COM3004 70 MHz receiver
- > COM1018 Spread-Spectrum Digital Demodulator
- > COM5003B TCP-IP GATEWAY

## Configuration

IP address to send data: 172.16.1.128

IP address to receive data: 172.16.1.129

10 Mcps/s spread-spectrum modulation

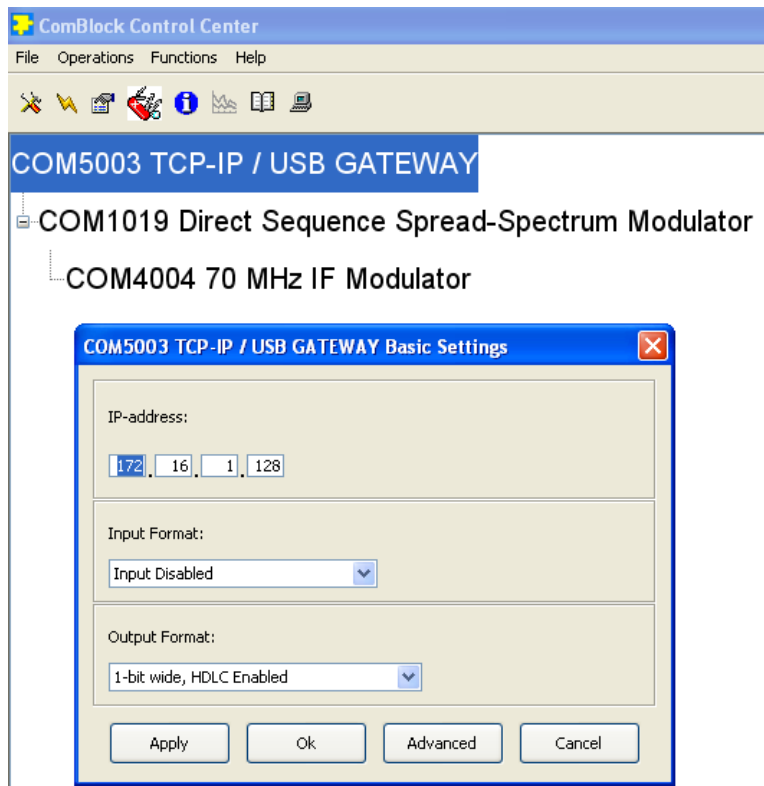
Barker code length 13, BPSK, bit rate = 769 Kbit/s

Interpolation is enabled at the modulator

AFC disabled at the demodulator

HDLC enabled

## Transmit Side



**COM1019 Direct Sequence Spread-Spectrum Modulat...**

Registers

All register values in HEX

Reg 0	00	Reg 6	03	Reg 12	00	Reg 18	81
Reg 1	00	Reg 7	00	Reg 13	00	Reg 19	0D
Reg 2	20	Reg 8	00	Reg 14	00	Reg 20	00
Reg 3	0D	Reg 9	00	Reg 15	00		
Reg 4	00	Reg 10	00	Reg 16	FF		
Reg 5	00	Reg 11	00	Reg 17	00		

Configuration

Configuration option currently loaded: E, rev D

Apply Ok Cancel

**COM4004 70 MHz IF Modulator Basic Settings**

IF Center Frequency: 69999999 Hz

Gain Control: 128

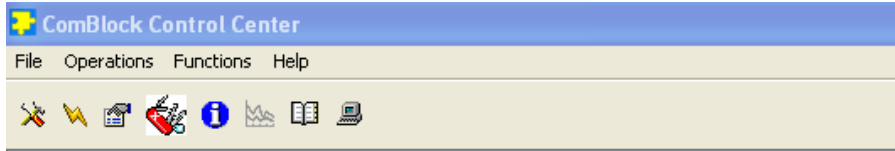
10 MHz External Frequency Reference

Unmodulated Test Mode

Output On

Apply Ok Advan... Cancel

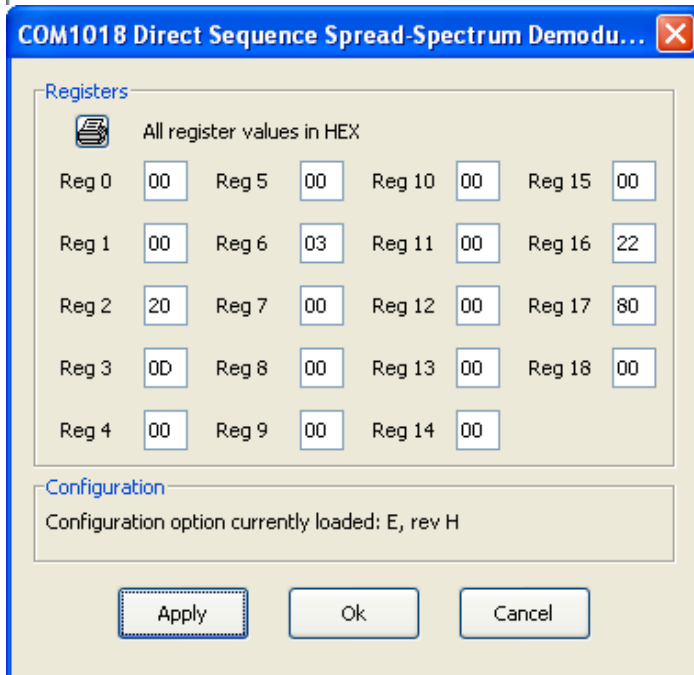
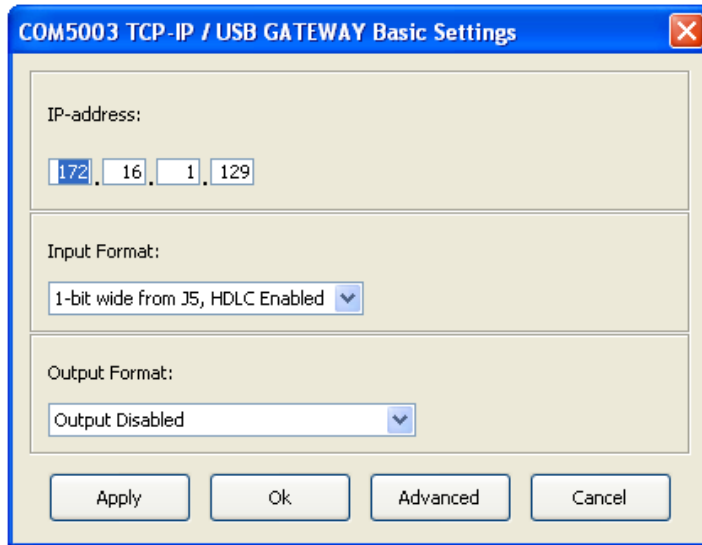
# Receive Side



## COM5003 TCP-IP / USB GATEWAY

COM1018 Direct Sequence Spread-Spectrum Demodulato

COM3004 IF receiver [20 - 90 MHz]



**COM3004 IF receiver [20 - 90 MHz] Basic Settings** ✕

Frequency Selection:

Frequency 0:  Hz

Frequency 1:  Hz

Frequency 2:  Hz

Frequency 3:  Hz

Frequency 4:  Hz

Frequency 5:  Hz

Frequency 6:  Hz

Frequency 7:  Hz

10 MHz External Frequency Reference

External Trigger

Number of Frequency Hopping Steps:

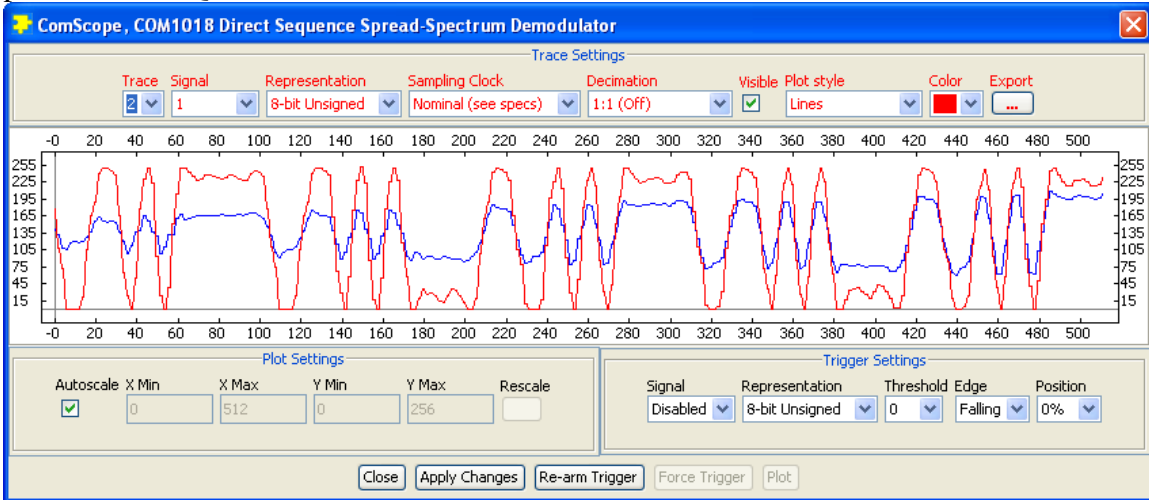
## Receive Side ComScope

Demodulator input signal at the COM-3004 -> COM-1018 interface:

Trace 1 Signal 1 I-channel

Trace 2 Signal 1 Q-channel

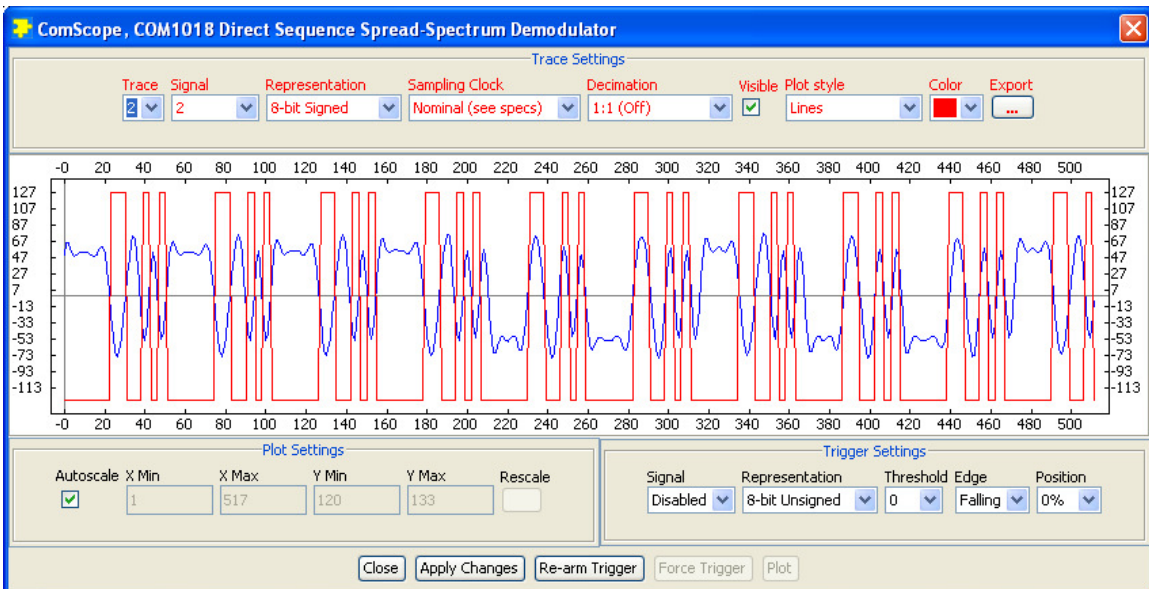
The code period is clearly visible. A phase error causes energy to move between the In-phase and the Quadrature channel.

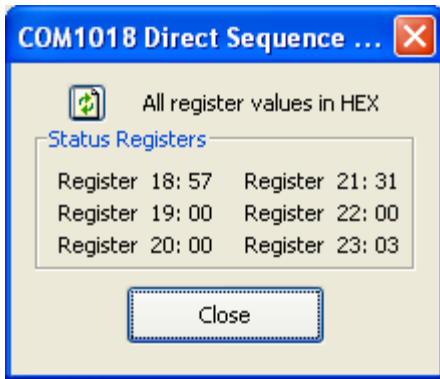


Note: the same signals can be observed with an oscilloscope at COM-3004 test points TP3/TP4 prior to the Analog-to-digital conversion.

Trace 1 Signal 2 (blue): Demodulator I-channel signal after phase correction and filtering.

Trace 2 Signal 2 (red): Demodulator code replica, shows code lock.





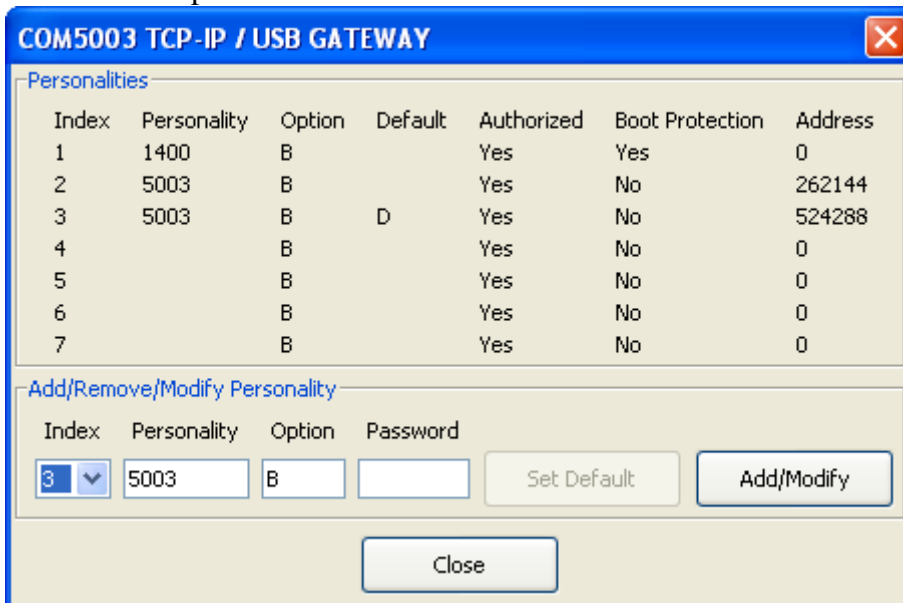
Demodulator status registers 23 shows code lock and carrier lock (03)

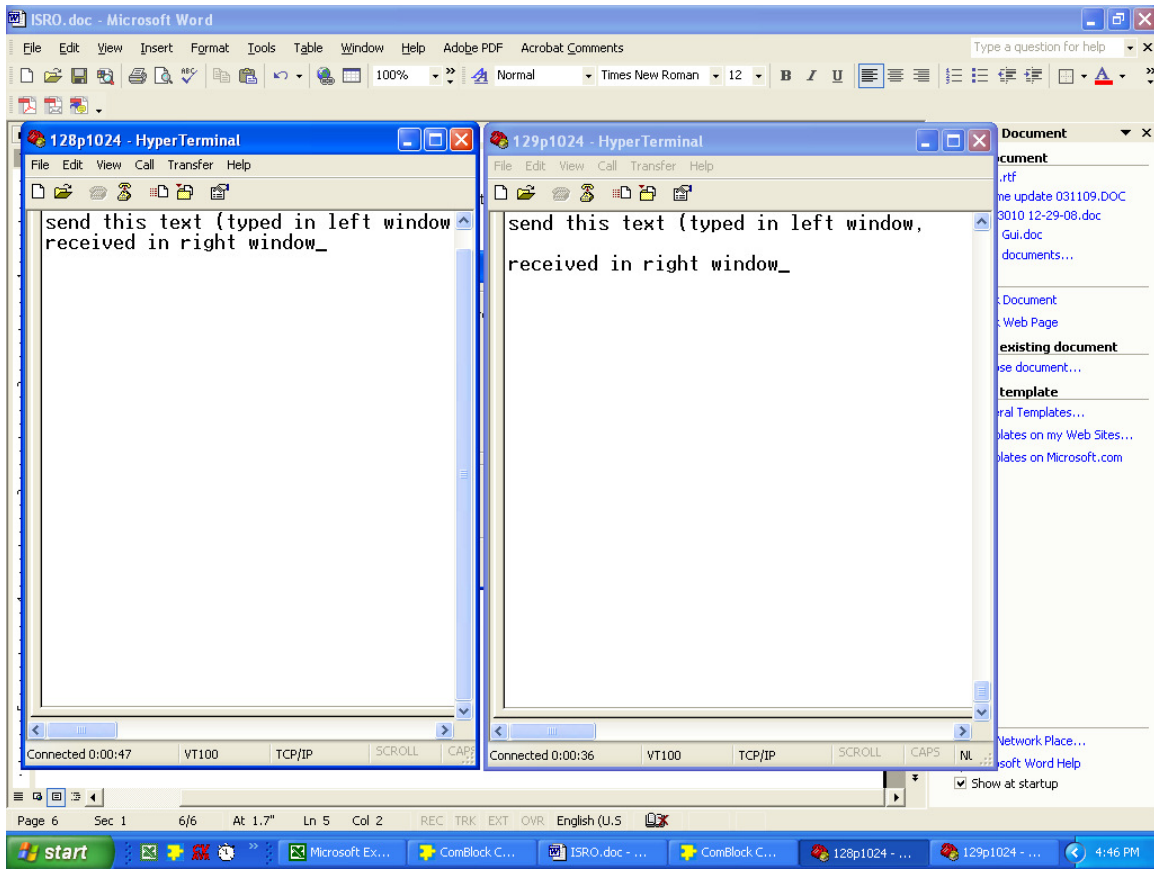
Using an oscilloscope, one can verify that the COM-5003 at the end of the reception chain detects the HDLC frame markers. TP8 should show periodic pulses 96.1 KHz start of HDLC frame (empty frame)

## End-to-end Communication

Using Hyperterminal, one can type data at one end and see it at the other end of the communication link. This test can work only if the COM-5003-B option (LAN) is active. To change the COM-5003 option, click on the swiss army knife button and select personality index 3 as the default. Do this twice for both COM-5003s.

com-5003-B option





For more details about Hyperterminal configuration, see the 5003\_5003 test description.