

## CREATING A DOPPLER SHIFT WITH THE DLTM2

AP27

The model 461 Data Link Test Set (DLTS) allows for the creation of a Doppler Shift. This is implemented in the DLTM2 (model 2149). This is done when the DLTM2 is configured to run PRN data through a system. The DLTM2 mimics a Doppler Shift by increasing and decreasing the speed of the PRN data. The Doppler Shift may be output in three different ways, a SINGLE, SAWTOOTH, and or CYCLE output.

### A Setup & Configuration:

To perform this function, the DLTM2 must be configured properly. The following setup must be performed:

1. The Transmit side (TX SETUP) must be set up to run in PRN mode. The reset of the transmitter settings should be configured to be compatible with the interface data is being sent to.
2. The Doppler Settings (DOPPLER) must be configured. The START and END frequencies may be set up in either ascending or descending values. The CYCLE TIME will be the length in seconds it takes for the frequency to change from START to END. Finally, the OPERATION must be set to SINGLE, create a Doppler shift from START to END then stop, SAWTOOTH, create back to back SINGLE Doppler shifts, or CYCLE, create a back to back Doppler shifts from START to END and END to START.

EXAMPLE: Create and view a CYCLE Doppler shift within the DLTM2.

Hardware setup:                      Connect a BNC from the TTL DATA TX to the TTL DATA RX  
    Connect a BNC from the TTL CLK TX to the TTL CLK RX

TX SETUP:                              CLOCK: NA (Can be any, as the Doppler Shift will change this)  
    BIT RATE: NA (Can be any, as the Doppler Shift will change this)  
    OUTPUT CODE: NRZ-L  
    POLARITY: +clk/+dat  
    TYPE: PRN

DOPPLER:                              START: 00100000  
    END: 00101000  
    CYCLE TIME: 030  
    OPERATION: CYCLE

MEASURE:                              Set any measurement to RX FREQ

Notice the RX FREQ start at 100000 b/s, start to increase slowly, increase b/s<sup>2</sup> until 100500 b/s, then decrease b/s<sup>2</sup> until it reaches 101000 b/s and reverses the process.