



## Preliminary Data Sheet

# **Chirper Model Chirp- 6800 Programmable 802.11 g Frequency Translator**

### FEATURES

- Exceptional linearity allows it to work with ANY waveform
- Wide programmable frequency range – up to 6.8 GHz
- Small and light weight – less than 8 ounces, less than 15 cubic inches
- Low power consumption – 400 mw
- Extremely flexible programming – through PDA, smart phone or laptop with Micro-USB, with tailorable serial port, or with miniature switches
- Easily adaptable to work with a variety of COTS products

### DESCRIPTION

The Chirper accepts a standard 802.11g 2.4 GHz nominal 100MHz band and translates it up or down in frequency according to user settable commands. The linearity of the translator allows use with ANY waveform (hopped or non-hopped), since the translator is waveform-transparent. The transmitter may be implemented with the user-specified power output and frequency band(s), using low-risk Commercial Off The Shelf (COTS) components. The frequency is fully programmable for a continuous wide range of frequencies up to 6.8 GHz with the exception of a narrow guard band frequency range around the 2450 MHz center frequency.

The translator frequency may be controlled one of three ways, all using the onboard PIC microcontroller:

1. Miniature switches or jumpers to select preset frequencies
2. Micro-USB connector that allows a smart phone, PDA or PC to program a channel
3. Tailorable serial port that allows ANY device to program the frequency, including the Wi-Fi device or its controller

The standard translator requires no T/R switching. Should an additional LNA or power amplifier be required (as shown in red), the transmit signal from the Wi-Fi node can be used to drive a COTS T/R switch.

The microcontroller operates in conjunction with a very low power, miniature, SPI-bus real time clock that may be used for other sensor applications. This clock may be omitted if not needed. This may be used to schedule event, frequency changes, etc. The microcontroller can control the sleep mode of the Wi-Fi transceiver, sensors, translator, and microcontroller itself.

The linear translator design can be easily adjusted for use with *other* new or existing data link transceivers. The mixing scheme can be easily adjusted to accommodate the output frequency

*Specifications subject to change without notice as we improve our products*

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(the synthesizer tune range is 137 to 4400 MHz continuous, mixer is 0-6 GHz), requiring only changing the image/lowpass/highpass filter network by substituting drop-in components of the requisite band.

The conversion loss through the translator is approximately 6.5 to 8.5 db; Wi-Fi node transmitter output and receive noise figure (NF) will be reduced by that amount across the translator's tunable range. If that loss reduces the NF and/or transmit power below that required, then auxiliary amplifier components and a low-cost solid-state T/R switch can be added to make up the loss. That loss can also be made up by antenna gain.

## SPECIFICATIONS

### PARAMETERS

<i>Frequency Coverage</i> .....	0-2313 MHz and 2587 -6850 MHz
<i>Frequency Bandwidth</i> .....	100 MHz
<i>Tune Time</i> .....	1 msec max
<i>RF Loss</i> .....	6.5-8.5 dB (Tx and Rx)
<i>Operating Input Level</i> .....	-20 dBm max
<i>Spurious and Harmonic Attenuation</i> .....	40 dB min

### CONTROL CHARACTERISTICS

- Remote control/programming*
  - PDA or PC through Micro-USB connector*
  - Tailorable serial port that allows any device to program the frequency, including the Wi-Fi Device or its controller*
  - Miniature switches or jumpers to select preset frequencies*

### PHYSICAL/ENVIRONMENTAL CHARACTERISTICS

<i>Power input</i> .....	5-28 VDC
<i>Power consumption</i> .....	Approximately 0.4 w
<i>Weight</i> .....	Less than 8oz
<i>Size</i> .....	1" X 3" X 5"
<i>Operating temperature range</i> .....	-20 to +50°C
<i>Connectors</i>	
<i>RF in/out</i> .....	SMA
<i>Micro-USB</i>	
<i>Barrel power connector</i>	

### OPTIONS

- Option 1 Integrated wireless data link network
- Option 2 Integrated 10 dB amplifier

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