Per Vices Corporation

# TECHNICAL DATASHEET

Per Vices Corporation
High Performance SDR for Test and Measurement

## CRIMSON TNG TECHNICAL SPECIFICATIONS

| | |
|---|---|
| Independent Rx/Tx Channels | 4 Rx and 4 Tx |
| Dynamic Range (dB) | 25 - 70 |
| SFDR (dB) | 65 |
| Frequency Tuning Range | near DC - 6 GHz |
| Frequency Resolution | 0.035 Hz |
| Frequency Accuracy | 5 ppm |
| Tuning Time | 6 ms |
| Fast Tuning Time | Customizable (<40 us) |
| Sweep Speed | 6 GHz/ms (Custom option 20 GHz +) |
| Rx Power Gain - Low RF Stage (dB) | 15 - 45 |
| Rx Power Gain - High RF Stage (dB) | -10 - 65 |
| Rx Noise Figure (dB) | 3.1 - 7 |
| Rx ADC Resolution | 16 bit |
| Rx Sampling Bandwidth | 325 MHz |
| Rx ADC Sample Rate | 325 MSPS |
| Tx Power Gain - Low RF Stage (dBm) | -30 - 18 |
| Tx Power Gain - High RF Stage (dBm) | -10 - 15 |
| Tx DAC Resolution | 16 bit |
| Tx Sampling Bandwidth | 325 MHz |
| Tx DAC Sample Rate | 325 MSPS |
| Antenna Interface | 50 Ω SMA |
| FPGA | Intel Arria V ST SoC<br>350k Logic Elements |
| CPU | ARM Cortex-A9<br>1 - 4 Cores |
| Networking | 10GBASE-R, Full Duplex x2, SFP+<br>20 Gbps data transfer rate |
| Operating Temperature | 5°C - 40°C |
| Mass | 5.4 kg |
| Volume | 1U, 19” rackmount serve |
| MTBF | 23.6k hrs @ 40°C |

Per Vices Corporation

## SDR INTEGRATION

Crimson TNG is a powerful tool for test & measurement. Whether it be for testing circuit design, prototyping, or network and communication protocols, Crimson TNG is able to provide multi-functional capablitilities to assist and save time during development phases. The 4 Rx and 4 Tx channels can be independently tuned and controlled to accommodate different devices under test. The platform can be integrated easily with your host system via dual 10GBASE-R SFP+ interfaces. Includes a web interface for controlling radio front end and UHD compatibility.

## INTERNAL ARCHITECTURE

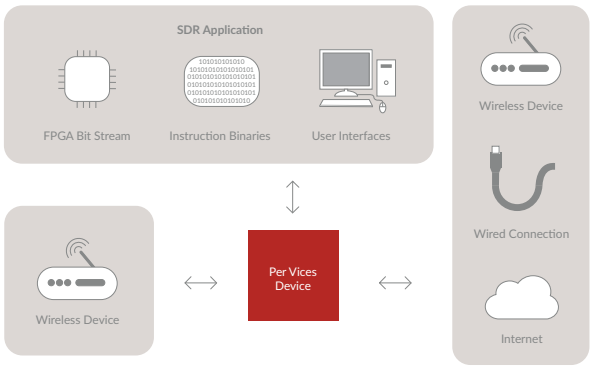
Crimson TNG is able to be connected to recording and processing systems, provided and configured by Per Vices, for T&M applications requiring remote, extensive and long term data recording and processing. Crimson TNG incorporates both radio and digital resources to allow for radio tuning, configuration, conversion of analog to digital signals, DSP on a FPGA, and passing the data over two 10 Gbps ports. The Digital board hosts the FPGA to manage communications with the host computer in addition to in-unit DSP for quick response. The Digital board sends data to DACs on the Transmit board, and receives data from the ADCs on the Receive board through high speed interfaces. The Time board distributes clock signals to all boards, from either internal reference crystal or user provided reference through a 50 Ohm SMA. The Power board distributes power to all boards from a Power Supply Unit compatible with 120V or 240V AC input.

Moreover, the FPGA can be configured for controlling, testing and optimizing devices, such as MIMO antenna arrays for new networks. The system is highly flexible and reconfigurable due to the FPGA, MIMO, and modular board design; allowing for development using various channels for different tasks. Additionally, we accommodate changes to the form factor of the chassis and IP cores for testing multiple communication protocols and frequency bands simultaneously. The product includes UHD compatibility and can be easily interfaced with a host system to run GNU Radio or other software development toolkits.

## INTEGRATION CAPABILITIES

- Network & Spectrum Analyzer Capabilities
- Oscilloscope
- Signal generator
- Power Meter
- Antenna Interface for measuring VSWR
- GNU Radio Toolkit
- FPGA Logic Elements for Custom T&M applications
- Reconfigurable Form Factor
- Customizable independent channel counts

## TEST & MEASUREMENT APPLICATION BLOCK DIAGRAM




## EVALUATION REQUIREMENTS

Get started quickly with our COTS solutions and have us work with you to determine if there are any changes you need made to meet your overall objectives. This will allow you to use one of our stock products with a host system and UHD compatibility to demonstrate proof of concepts (POCs) and reduce overall risks associated with your projects.

## PRODUCTION CAPABILITIES

After the product has been integrated into your system, we offer full support through the lifetime of your project to ensure changes are not required. We guarantee performance with standard factory test reports and customer specified reports. Per Vices scales low, medium, and high volume capabilities to match the size of your project.

Our build-your-own SDR tool allows you select from a wide range of features and certifications. The tool will also provide a rough order of magnitude (ROM) estimate. For more information or if you have more niche requirements, contact us directly and we'll help you out.

## CONTACT US

More information is available at www.pervices.com.
If you have any questions, please contact us at solutions@pervices.com.

Published September 2021