威视锐® V3 Technology,.Ltd. INNOVATION FOR RESEARCH

V3 Technology(Beijing), Ltd

Wireless Solution

Brands owned by V3:

Sora Station

V3SDR

RED CYCLONE

ZING Zynq SoC Expert

About V3 Technology

V3 Technology focus on accelerating the realization of innovative ideas in areas including Wireless , Smart Vision , Testing & Measurement and embedded computing.

Innovation for Research

XILINX ALLIANCE PROGRAM

Typical Customers

Microsoft
france telecom orange
SONY
新岸线 NUFRONT
HUAWEI
ZTE中兴
Leland Stanford Junior University 1891
Duke University
The University of Wisconsin Madison
清華大學 Tsinghua University
北京大學
北京郵電大學 Beijing University of Posts and Telecommunications
復旦大學 Fudan University
北京理工大學 Beijing Institute of Technology
北京交通大學
北京航空航天大學 Beihang University
中国科学院 Chinese Academy of Sciences
華中科技大學 Huazhong University of Science and Technology
浙江大學 Zhejiang University
University of Cambridge
University of Washington 1861

V3 Wireless Solution

X86 Based Platform

- SoraStation
- SoraMIMO

EMPOWER WIRELESS REVOLUTION WITH THE MAGIC OF SOFTWARE

FPGA+DSP+ARM Based Platform

- V3SDR7602
- V3SDR7595

V3SDR

Portable SDR Platform

- SNOWLeo SDR
- YunSDR

Sora: High performance x86 based SDR Platform

Sora

Programmable hardware (FPGA)

Embedded DSP

Example: Rice WARP, TI SFF-SDR

Resolving the SDR platform dilemma

- Commodity PC w/ C program
- High performance
  - sys tput:10Gbps; ~µs latency
  - target wireless xput:10M~1Gbps

Low-performance GPP-based SDR

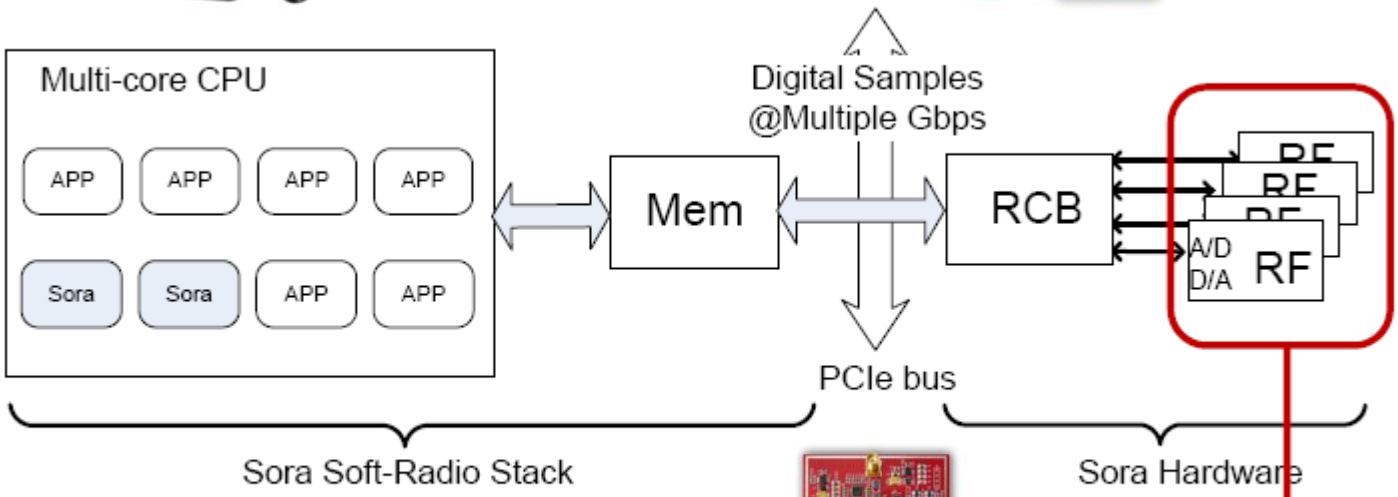
Example: GNU Radio/USRP(v1&2)

- Interface USB/GbE: <1Gbps, >1ms
- Achievable wireless xput: ~100Kbps

Performance: Low, High

Programmability: Low, High

Sora System Architecture



General radio front-end:

70MHz~6GHz

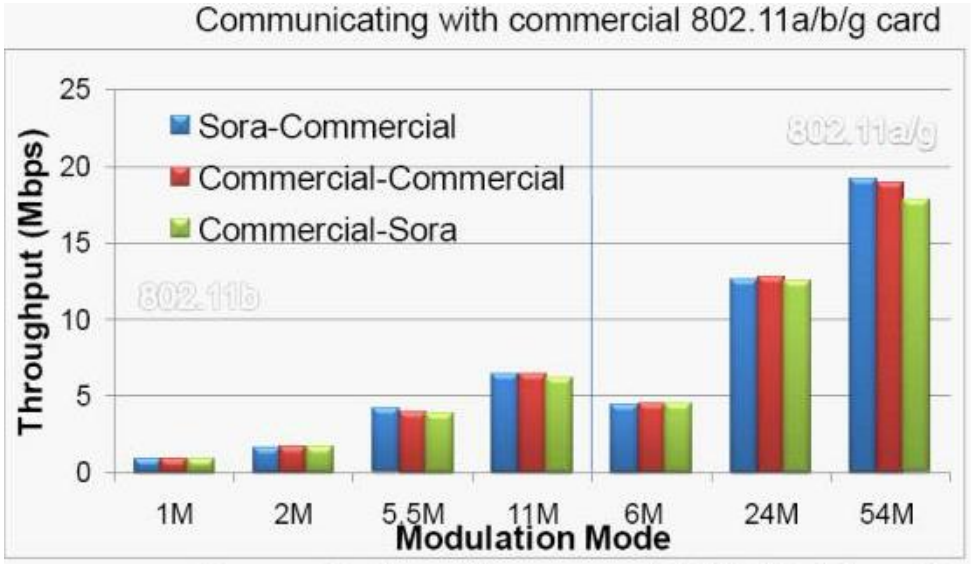
Up to 56MHz Bandwidth

MIMO 4x4

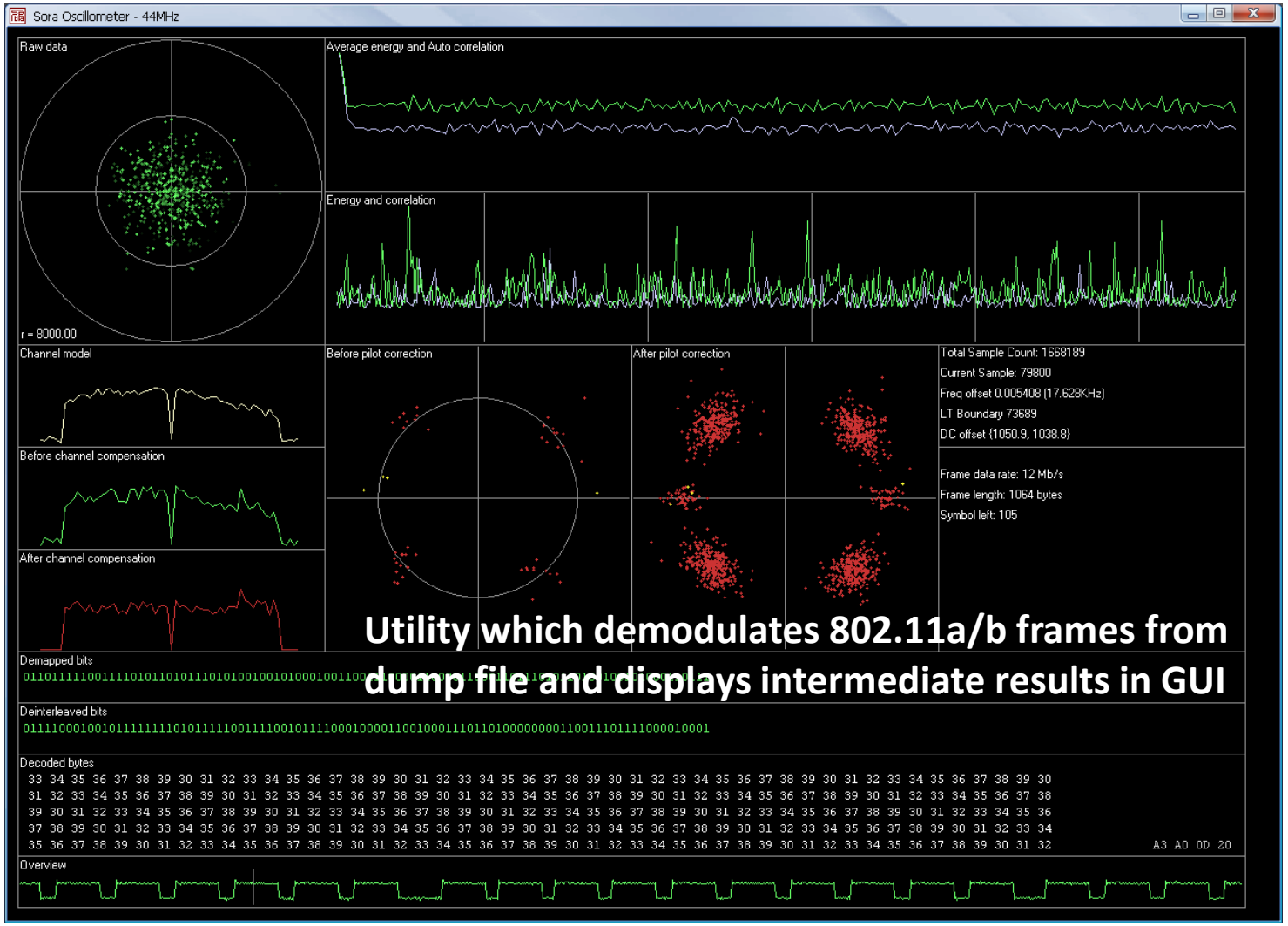
SoftWiFi on Sora

Sora is capable of running Wi-Fi at hundreds of Mbps in software and in real-time. The entire Wi-Fi PHY implementation is written in C and is open-source.

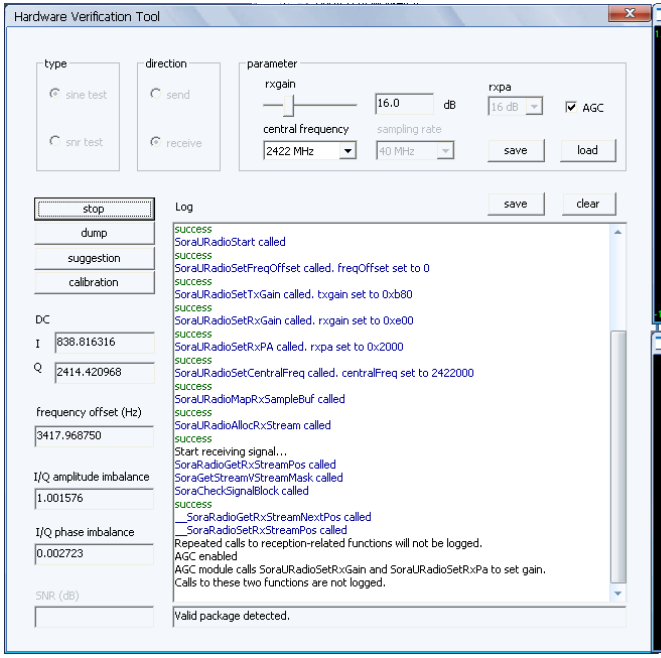
Researchers can now modify the source code to implement their ideas and validate them in real over-the-air experiments.

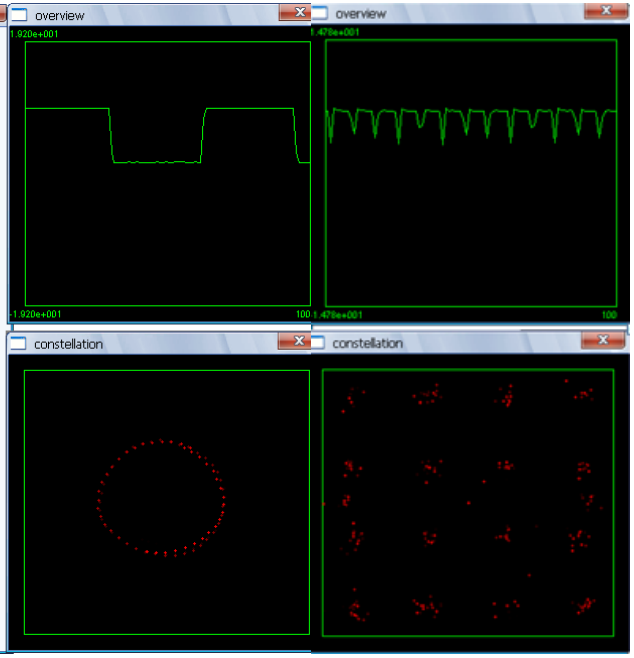


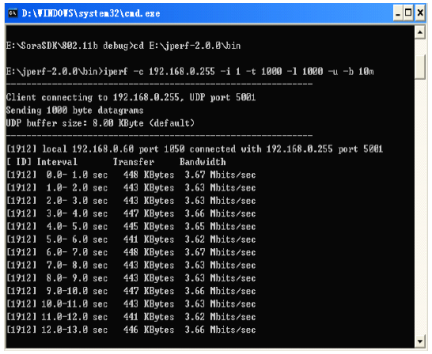
Sora Signal Scope

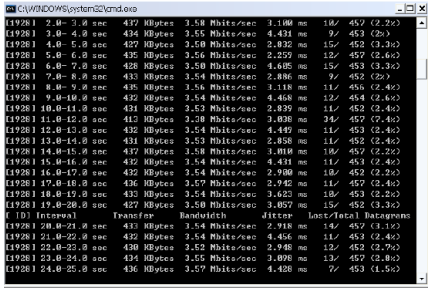


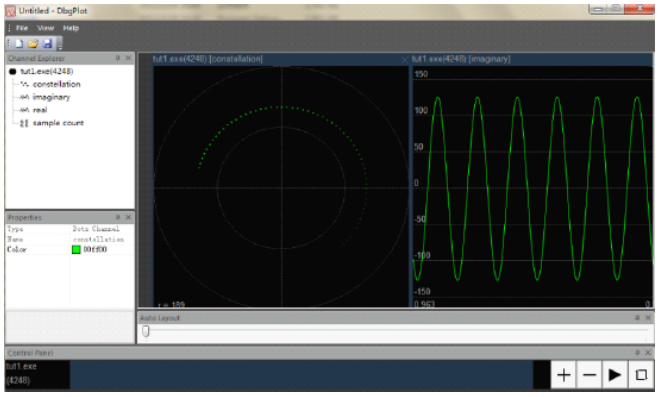
Sora SDK Tools











Debug Tools of Sora

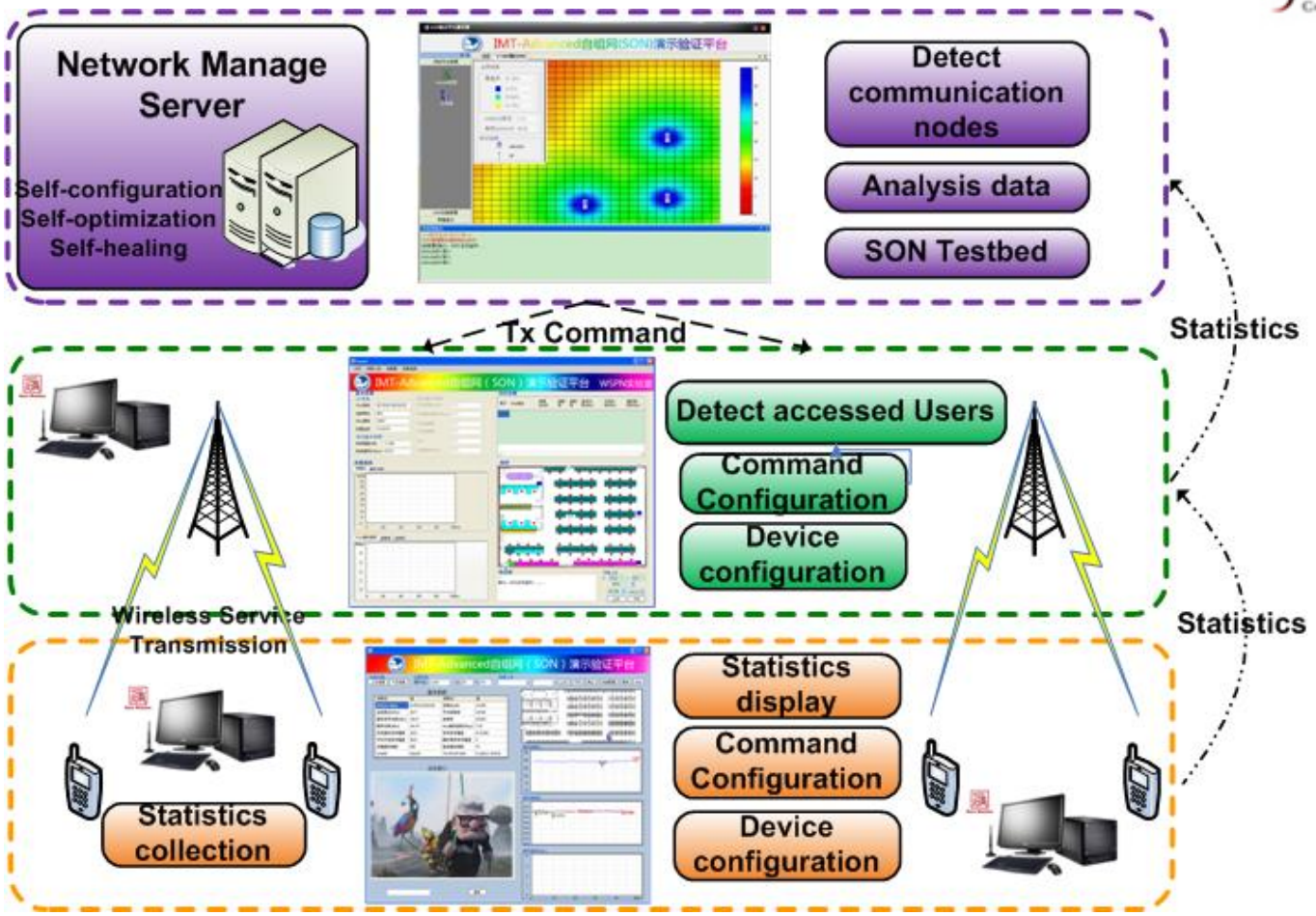
- HVT: Hardware Verification Tools
- iPerf: Sora network performance test
- DbgPlot: The GUI Design Tools

SoraMIMO

- **First x86 SDR platform support 4x4 MIMO in world**
- **Open source 802.11n MIMO 2x2 baseband**
- **Provide long-distance coverage solution up to 1000 m**

Support TV Whitespace Research

Successful Case:
IMT-Advanced(LTE) SON System – WSPN Lab of BUPT



Successful Case:
TV Whitespace network for Microsoft Redmond Campus

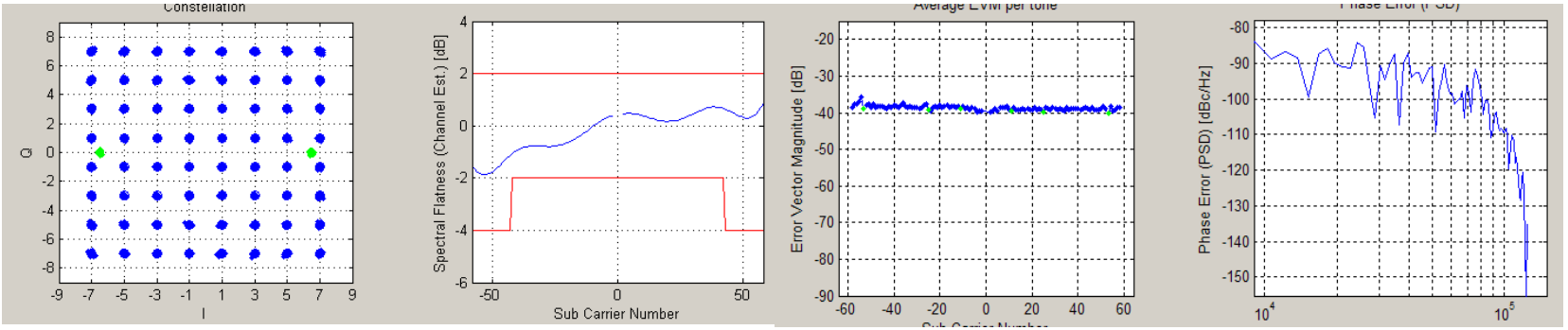
Sora 12x12 MIMO System

Sora MIMO on **ACM SIGCOMM 2013**

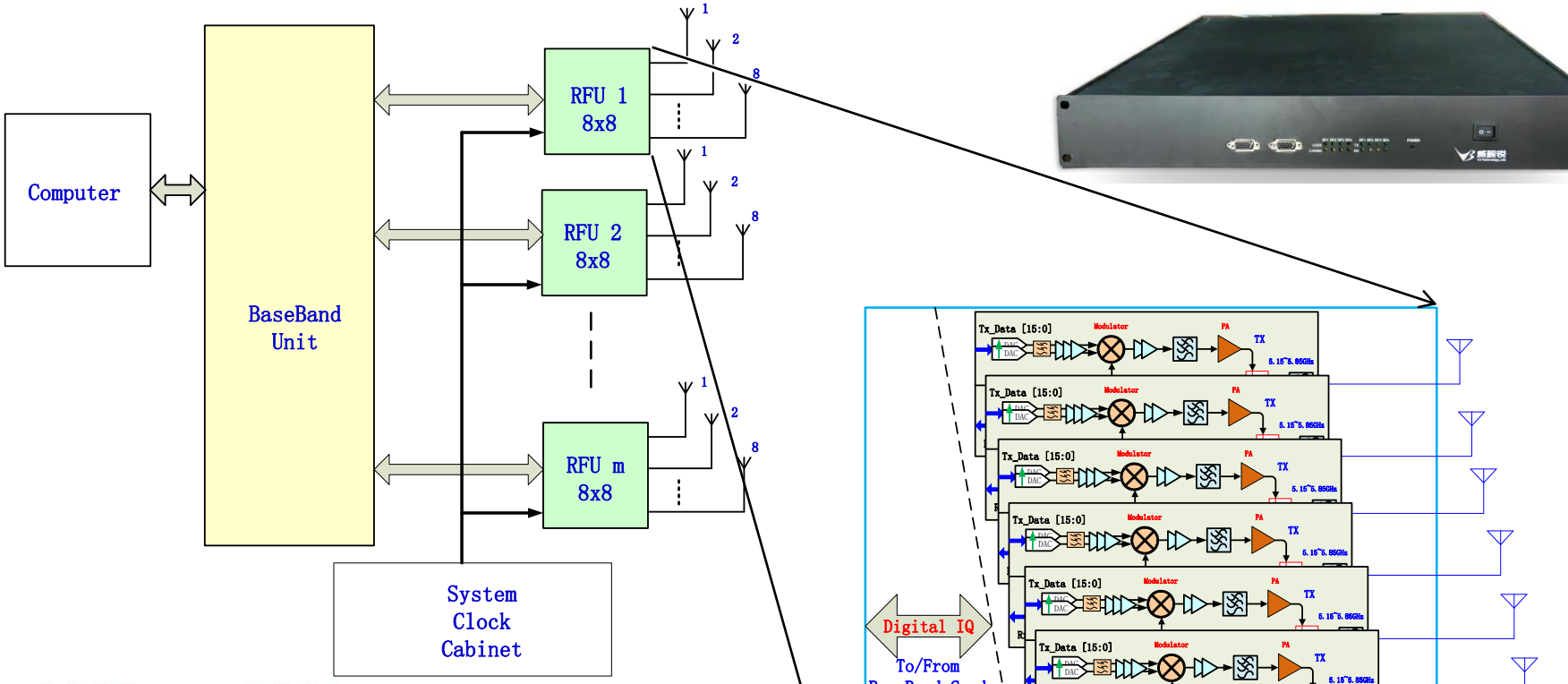
MIMO DRU for Server/HPC

PCI-Express MIMO4x4 Digital RF Unit

- PCIe 8x Interface , up to 40Gbps data throughput
- 2.4GHz/5GHz dual-band, up to 100MHz Bandwidth
- MIMO4x4 with 1 Unit and MIMO 8x8 with 2 Unit, design for WiFi 802.11ac /LTE-Advance
- 16bit 800MSPS DAC & 14bit 250MSPS ADC
- Digital IF or Zero-IF , directly connecting to HPC or Server for Baseband Processing
- Support Linux / Windows



Massive MIMO 64x64 RRU System for 5G Research



V3SDR Platform

V3SDR7602 MIMO

Vehicle terminals / Base stations for outdoor applications

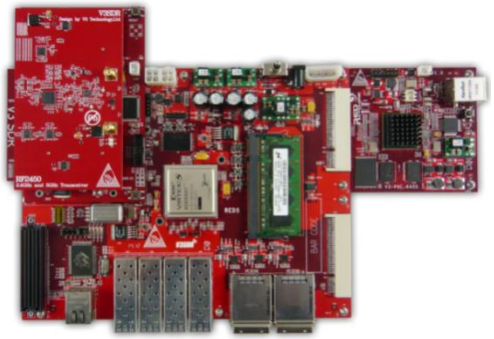
Based on FPGA+ ARM SoC Architecture

MIMO2x2, 5GHz Band, 40MHz BW, Support 802.11n/NUHT

QAM 64 OFDM PHY with AGC Reference design on FPGA

Support GNU-Radio and Matlab by PCIe/GigaE

VIRTEX 6 GNURadio MATLAB SIMULINK



V3SDR5595 SISO

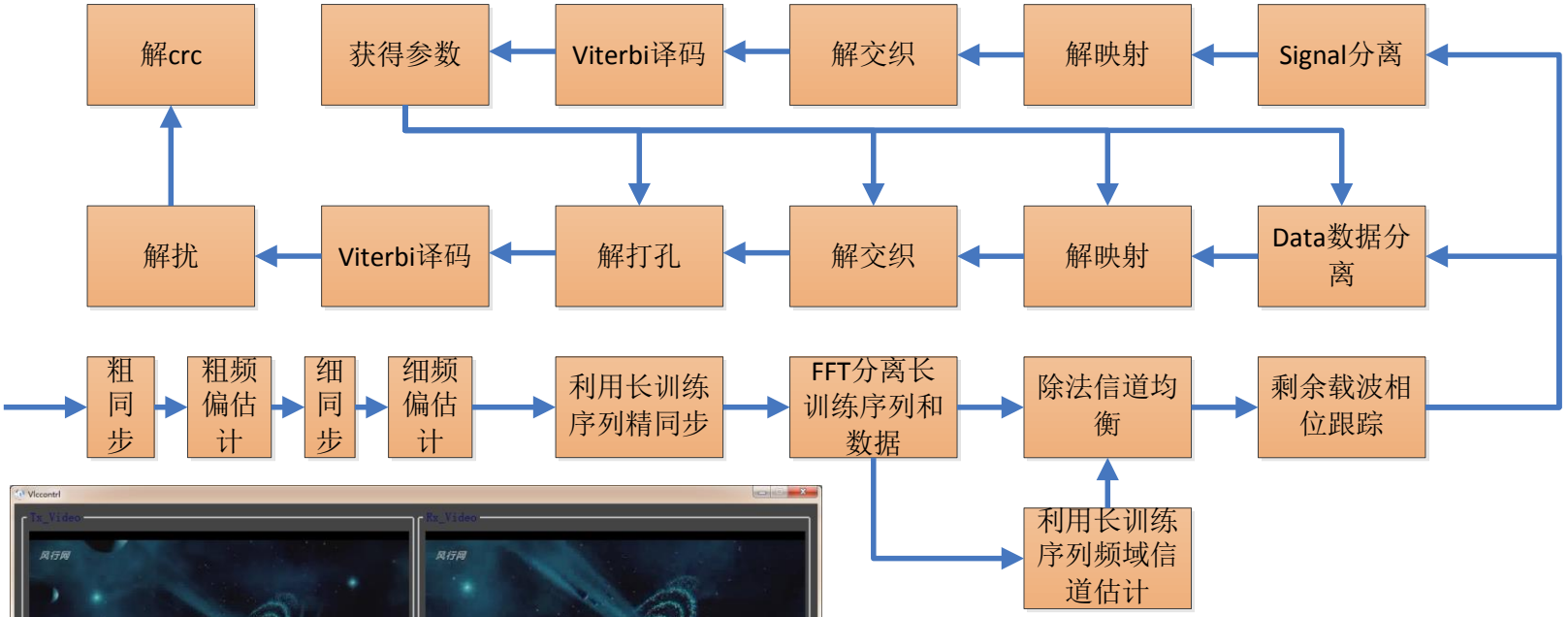
Based on FPGA+ DSP Architecture

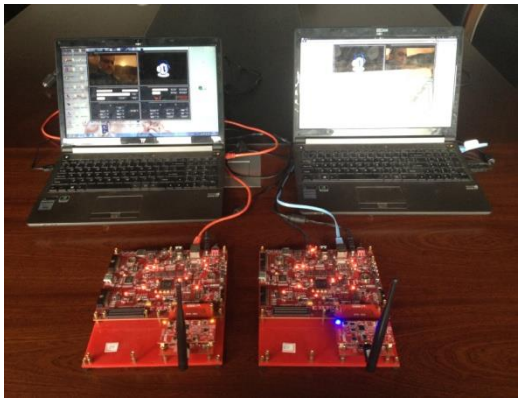
RF module can be replaced, supports 70MHz ~ 6GHz

Provide PCIe 8X and 4x3.125G fiber-optic interface

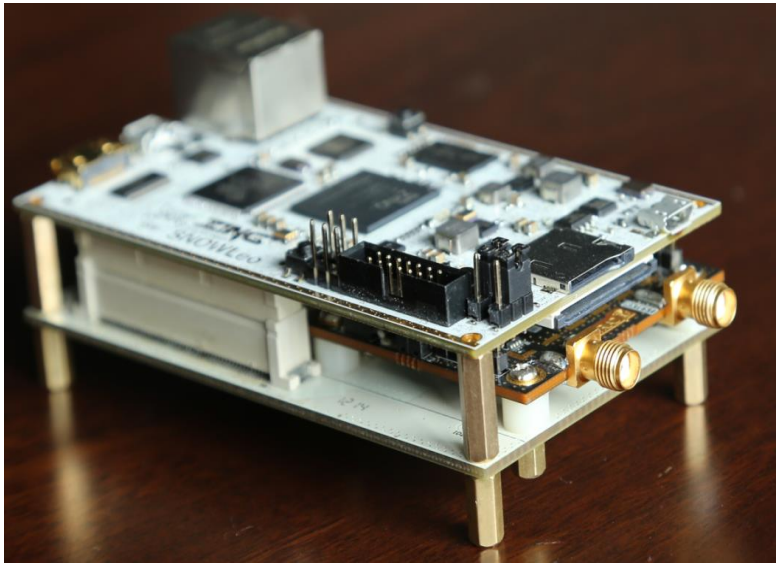
Support GNU-Radio and Matlab by PCIe/GigaE

OFDM 64QAM PHY Reference Design





Portable SDR Platform for Education



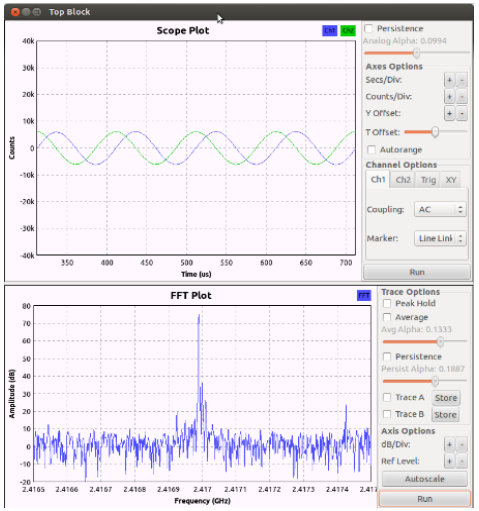
SNOWLeo SDR

Small size SDR Lab in pocket

Based on FPGA+ ARM SoC Architecture

300MHz~3.8GHz, 28MHz BW

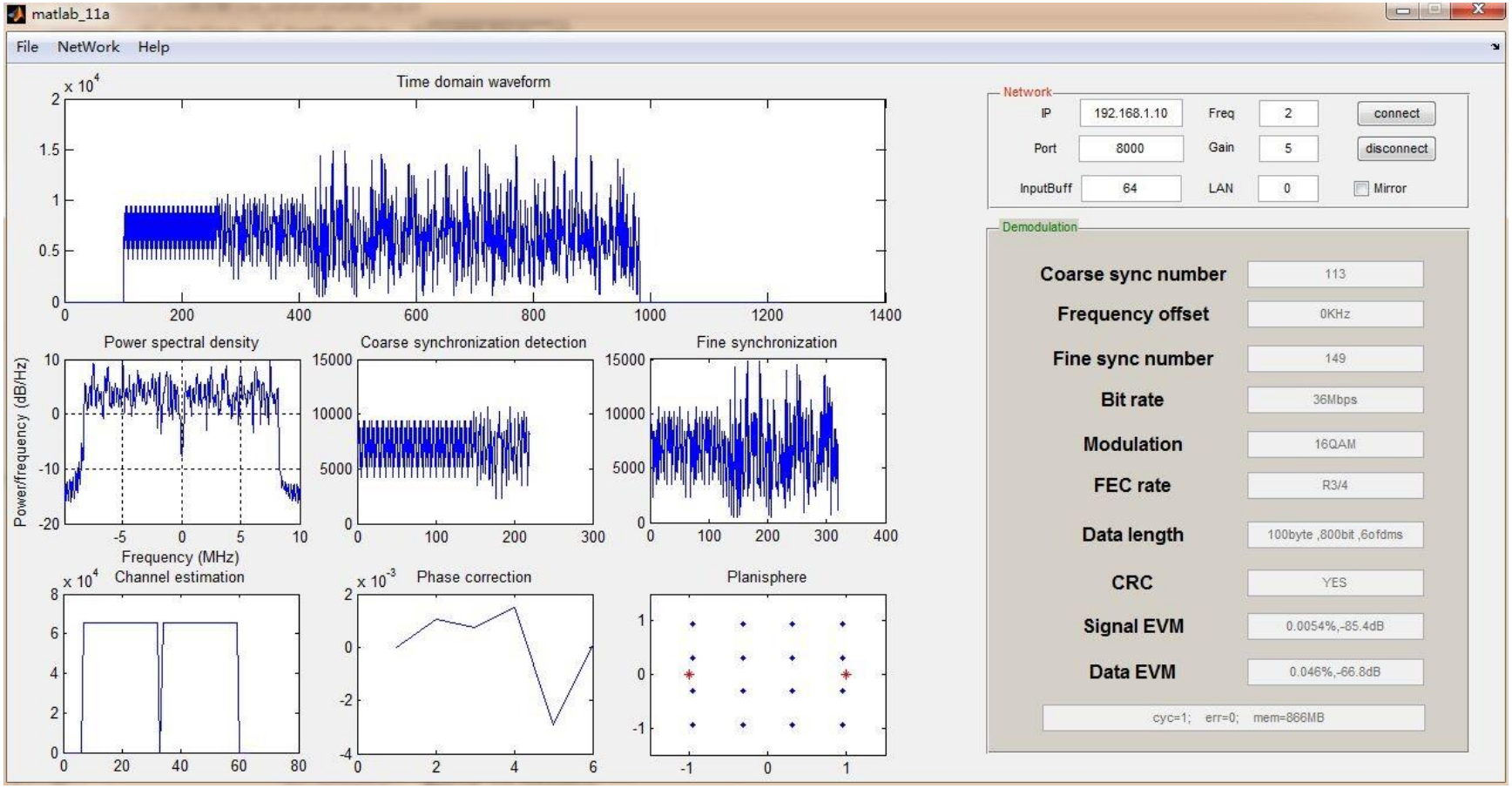
Support GNU-Radio and Matlab by GigaE



SDR application can be developed on ZYNQ SoC or x86 GPP processor. V3 technology will provide free firmware that support SNOWLeo SDR to connect Matlab or GNU Radio on PC.

GNURadio MATLAB SIMULINK

Using SNOWLeo SDR with Matlab



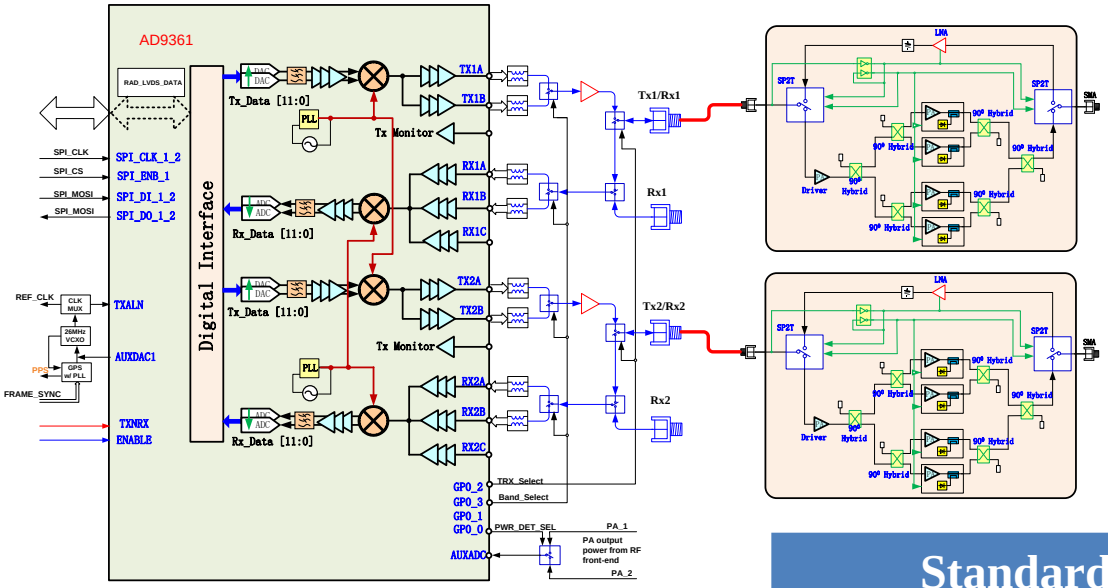
Embedded SDR Platform-YunSDR

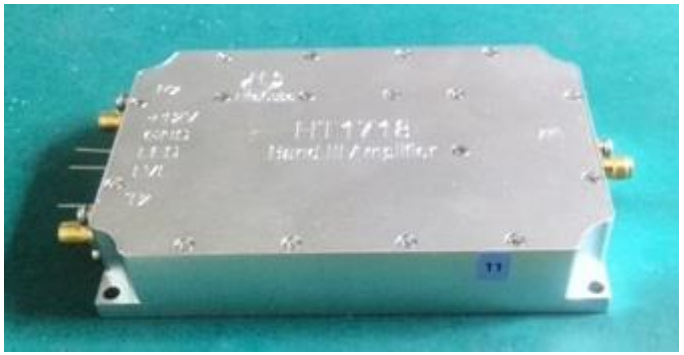
FPGA + ARM Dual-Core Cortex-A9

70MHz~6GHz, MIMO 2x2 , 56MHz BW

- Spectrum Analysis
- Portable VSA&VSG

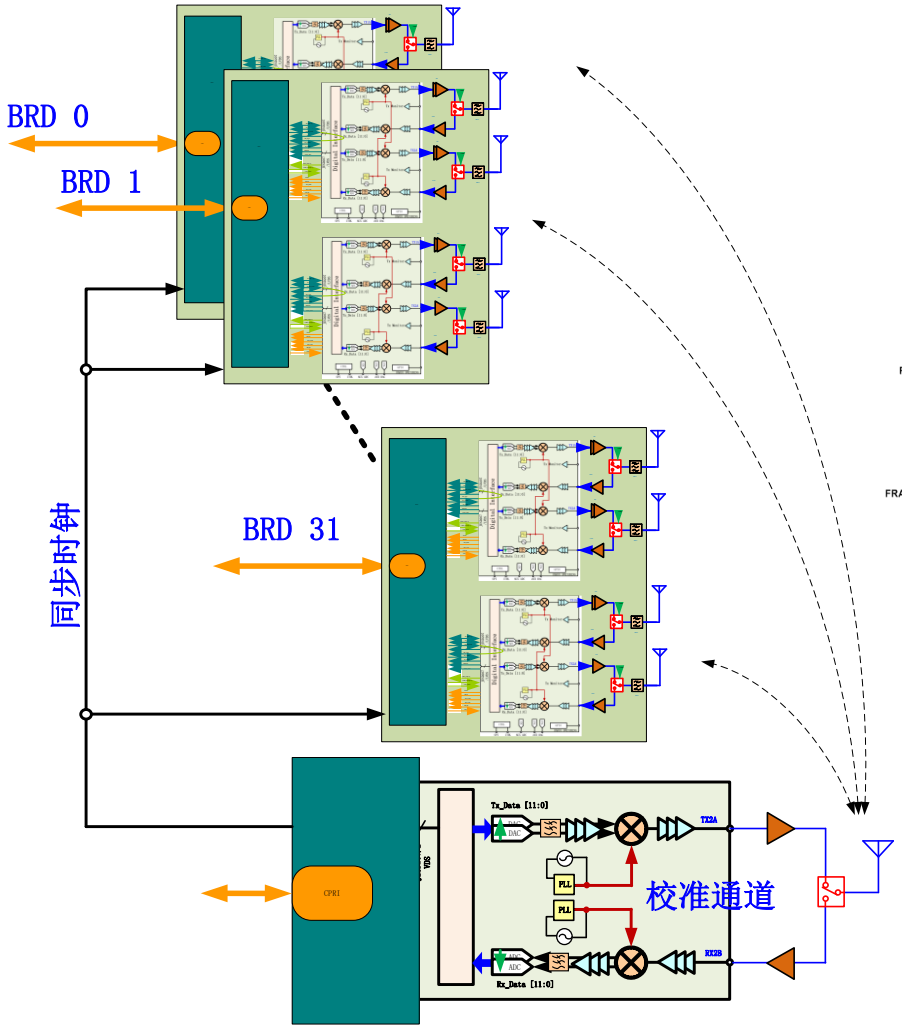
External PA Options for YunSDR

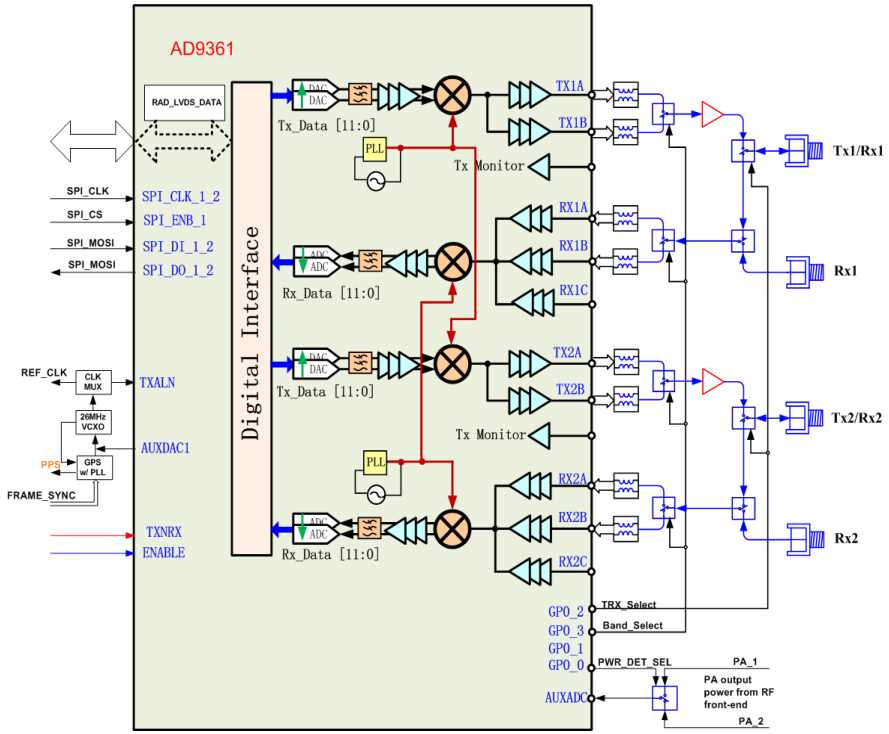




Standard	TX Power
TD-SCDMA	1W
WCDMA	1W
FDD-LTE	1W
TDD-LTE	2W
CDMA2000/EVDO	1W
WiFi	5W

Massive MIMO Prototype System based on YunSDR





MIMO 64x64 Prototype

Software Radio Expert

V3 Solution will help you Accelerating Next – gen Wireless Development