Frequency Specifications

General Frequency Specifications

Frequency Range	1.5 to 6 Ghz
Center Frequency Resolution	1 Hz

Reference Frequency

External Input (optional)	5-150 Mhz SMA
Source	100 MHz OCXO
Aging per Year	<±3ppm
Aging over 10-years	<10ppm
Temperature stability (-40°C to +85°C)	±.2 ppm
Calibration accuracy	.1 ppm (10Hz)
Accuracy	±(time since last adjust x aging rate) + temperature stability + calibration accuracy

Spectral Purity, Single Sideband Phase Noise (normalized to 2GHz)

10Hz	-80 dBc/Hz
100 hz offset	-78 dBc/Hz
1kHz offset	-102 dBc/Hz
10kHz offset	-104 dBc/Hz
30 kHz offset	-110 dBc/Hz
100 kHz offset	-113 dBc/Hz
1 MHz offset	-128 dBc/Hz

Vector Analyzer

Carrier Frequency

Frequency Range	1.5 to 6 GHz, Baseband
Center Frequency Set Resolution	1 Hz
Frequency Accuracy	10Hz + Carrier Freq. * Reference Freq. Accuracy

Sampling Frequency

Sample Frequency Set (Fs)	50 to 80 Mhz (optimized for channel BW)
Sample Frequency Set Accuracy	10Hz
Sample Frequency Set Resolution	1 Hz
Sample Freq. Decimation Factor (DF)	Integer from 1 to 64

FFT / OFDM Mode Analysis Bandwidth

Frequency Analysis Bandwidth	1MHz to 10 MHz (dependent on sampling frequency and channel Bandwidith)
Frequency Resolution	sampling frequency ÷ decimation factor ÷ 256, 2048, 16384

FFT / OFDM Mode Noise Floor, 3.5GHz (Displayed Average Noise Level)

1024 pts, 10 MHz channel BW (~11 kHz RBW)

PreAmp - OFF	-115 dBm
PreAmp 1 - ON	-125 dBm
PreAmp 2 - ON	-130 dBm
Normalized to 1Hz, PreAmp 1 - ON	-170 dBm

2.4 and 3.5 GHZ EVM vs. Sensitivilty

Input Power (802.16e 10MHz BW)	***EVM dB rms typical***
-10	-35.9
-20	-41.2
-30	-41

-40	-41.1
-50	-40.7
-60	-38
-70	-29

64 MHz Digitizer Harmonic Distortion

2nd Harmonic Distortion	-70 dBc
3rd Harmonic Distortion	-70 dBc
Two Tone intermodulation	-80 dBc

Immunity to Interference

Image	N/A (current RF has no image rejection at ~94MHz)
Spurious Response	< 60 dBm

Baseband Receiver

No. of Channels	2
Variable Gain	-10 to +30 dB
A/D Bits	16 bits
A/D Clock (Sampling Frequency)	50 MHz to 80 MHz in 1Hz Steps
Anti Alias Filter Bandwidth	±20 MHz pass, ±40 MHz stop at -70 dB, Elliptic
Anti Alias Filter Center Frequency	47MHz
I/Q Memory	256 MByte

Amplitude Specifications

General Amplitude Specifications

Gain Range	-10 to +87 dB
Preamp1	~32dB
Preamp2	~16dB
Variable Gain	-10 to +55 dB
Measurement Range	DANL to Maximum Input Level
Maximum Input Level	+17 dBm
Typical 1 db Gain Compression	+7 dBm
Absolute Amplitude Accuracy	±3.5 dB
Relative Amplitude Accuracy (adjacent tones ~11kHz)	±..2 dB

General Specifications

General Specifications

Operating Temperature Range	0°C to +55°C
Storage Temperature Range	-40°C to +80°C
Dimensions	17" width x 1.75" height x 20 depth
Power, Concerter to Chassis	12V, 100W
Power, AC to Converter	110 to 230V, 100W

Mobility and MIMO

# of Receive Channels per Chassis	2
# of RF Synthesizers per Chassis (1 / channel)	2

Inputs and Outputs

USB 2	10/100 Ethernet
Calibration Input	N/A, SMA
Transmit Channel 1	N/A, SMA
Transmit Channel 2	N/A, SMA
Receive Channel 1	SMA female, 50 Ohm
Receive Channel 2	SMA female, 50 Ohm
5-150MHz Reference Input	SMA female, 50 Ohm
Aux. Input (general purpose)	SMA female, LVCMOS (TTL tolerant)
Aux. Output (general purpose)	SMA female, LVCMOS
Power Jack	

VSA Features

Vector Signal Analyzer Features

Modulation Formats

OFDM with BPSK, QPSK, 16QAM, 64QAM

Capture

Sample Size to 128 Mbytes/Channel

Triggers

Manual Trigger

External Trigger

Trigger on Boolean Phrase (Ex. Power > -20 dBm)

Traces

Constellation

Carrier and Symbol Frequency Error

Common Pilot Error

EVM vs. SubCarrier

EVM vs. Symbol Time

Spectral Flatness (Frequency Domain)

Amplitude Flatness (Time Domain)

CCDF, PAPR

Spectral Mask

Preamble Detector vs Time

Amplitute, Phase, Frequency during Preamble

Statistics

RCE

RCE Peak

Pilot RCE

CPE

Frequency Error

IQ Offset

Quadrature Error

1

Symbol Clock Error

Payload Bits

PA Features

Protocol Analyzer Features

Trigger

- Advanced real time triggers based on content
- Trigger on Packet Content (Protocol, Field Values, Patterns) and extended events using Boolean logic

Filter

- MAC Address filtering
- CID Address filtering
- Message Type
- Errors

Decodes

- MAC Management Messages decoded and displayed with all TLV's and IE's
- Decode and Parse Receive Data Packets
- Display of packet bursts with preamble, midamble, and SDU's
- Raw data packets display
- Display of all subheader
- Verifiication of Proper Fragmentation and Packing

Statistics

- Statistics summary include timing, synch errors
- Detection of overruns, under runs, CRC Errors
- Correlation of MAC PDU's with PHY/RF statistics such as power, FEC, modulation type

Capture

- User defined PHY/MAC Capture, up to 128 Mbyte/Channel

Protocol Analyzer Decodes

- Network Entry
- Service Flows
- AAS
- Security
- Mesh
- ARQ
- Misc

Other Features

MAC PHY Radio Cross-Correlation Features

- PHY/MAC Cross layer trigger capability
- Filter MAC messages based on PHY Conditions
- Correlated Layer 2 data with PHY Frame, Burst, and PDU's

RCT Test Plan Support

- Modulation and coding
- Cyclic Prefic and symbol timing
- Preambles and Midambles
- Ranging support
- Power Control
- Spectral Flatness
- Relative Constellation Error
- Synchronization
- Spectral Mask
- ACPR
- RSSI
- CINR