



# SeeGull® EXflex | Scanning Receiver



## Flexible Mobile Network Testing | PCTEL Performance

### CHALLENGE:

In an evolving regulatory and competitive environment, mobile networks are more diverse than ever. New frequency bands, new technologies, and new business models increase the need for flexibility in network drive test and walk test equipment. Operators and managed service providers need equipment that functions worldwide and adapts as spectrum and technologies evolve. Equally important is the ability of the scanning receiver to combine adaptability with high accuracy measurements over years of intensive use. In addition to technical challenges, test equipment needs to be competitively priced, with flexible commercial options for both CAPEX and OPEX budgets.

### SOLUTION: The SeeGull EXflex Scanning Receiver

The SeeGull EXflex combines the flexibility to test mobile networks on any frequency band with the proven performance and reliability of the SeeGull EX platform. It supports all major wireless technologies used around the world in a single unit. Users will never need to upgrade hardware or swap out modules in order to add a band or technology. The EXflex combines cutting-edge performance, competitive pricing, and a multi-year standard warranty, all of which allow you to pay for only what you use.

The EXflex is quite possibly the last scanner you will ever need.

LTE FDD / TD-LTE /  
UMTS [WCDMA/HSPA(+)] /  
TD-SCDMA / GSM /  
CDMA / EV-DO

### BENEFITS

- Increase Productivity with Multi-Technology, Multi-Band Scanning
- Future-Proof Investment: Band Range from 300 MHz to 3.8 GHz
- Proven High Dynamic Range for Expanded Signal Detection
- Advanced Analysis of LTE Resource Blocks and Subbands
- Reduce Complexity by Eliminating the Need for Separate Modules
- Improve In-Building Testing Productivity
  - Test Multi-Operator Networks with One Unit
  - Accurate CDMA/EV-DO Measurements with GPS Holdover
  - Low Power Consumption Maximizes Battery Life

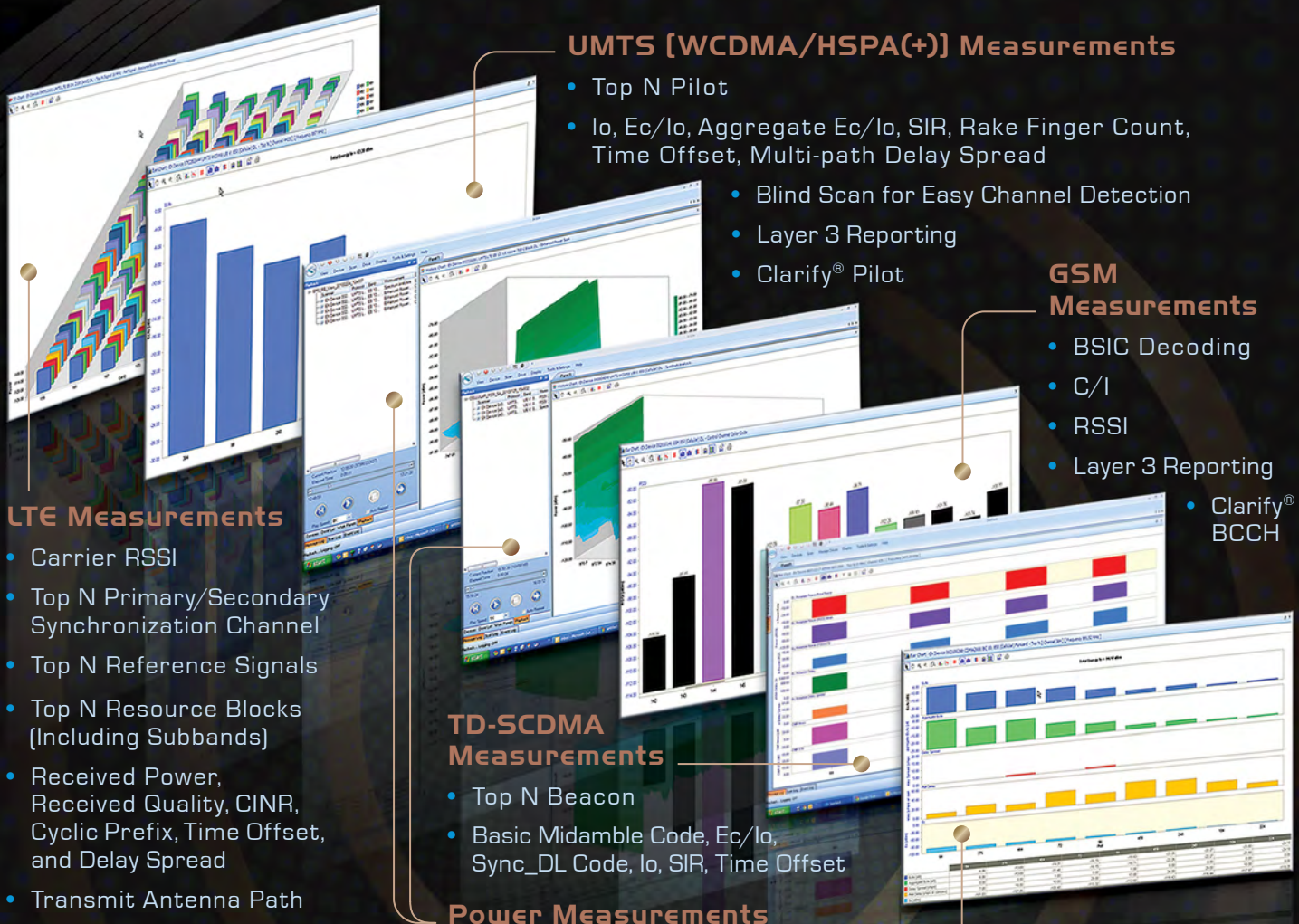
### APPLICATIONS

- Identify Sources of Interference with Spectrum Analysis
- Plan, Baseline and Optimize Multi-Technology Networks
- Maximize Network Data Capacity and Throughput
- Conduct Site Surveys and Tune Models with CW Testing
- Identify Antenna Connection Problems with Path Measurements
- Test WiFi and Public Safety Networks with Power Measurements
- Walk Test In-Building and Campus Venues with Portable Indoor Kit

PRELIMINARY

# SeeGull® EXflex | Scanning Receiver

## Full Suite of Broadband Wireless Technology Measurements



### LTE Measurements

- Carrier RSSI
- Top N Primary/Secondary Synchronization Channel
- Top N Reference Signals
- Top N Resource Blocks (Including Subbands)
- Received Power, Received Quality, CINR, Cyclic Prefix, Time Offset, and Delay Spread
- Transmit Antenna Path
- TD-LTE Uplink/Downlink Configuration and Uplink Pilot Time Slot
- TD-LTE Power Analysis of Resource Blocks, Slots, Frames, and Sub-frames
- Supports Measurements Over Entire Channel Bandwidths

### UMTS [WCDMA/HSPA(+)] Measurements

- Top N Pilot
- $I_o$ ,  $E_c/I_o$ , Aggregate  $E_c/I_o$ , SIR, Rake Finger Count, Time Offset, Multi-path Delay Spread
- Blind Scan for Easy Channel Detection
- Layer 3 Reporting
- Clarify® Pilot

### GSM Measurements

- BSIC Decoding
- C/I
- RSSI
- Layer 3 Reporting
- Clarify® BCCH

### TD-SCDMA Measurements

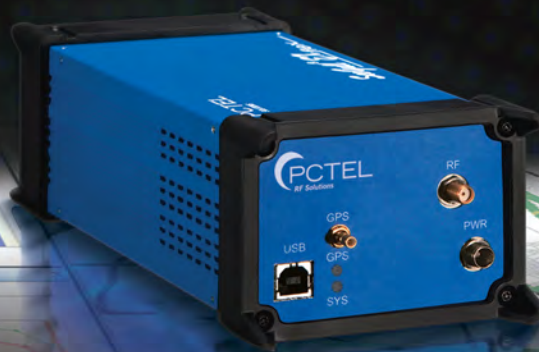
- Top N Beacon
- Basic Midamble Code,  $E_c/I_o$ , Sync\_DL Code,  $I_o$ , SIR, Time Offset

### Power Measurements

- RSSI: Total Channel Power
- Spectrum Analysis: High Sweep Rate Frequency/Amplitude
- Enhanced Power Scan (EPS™): Time-Stamped Power Measurements Selectable by Time and Frequency
- Out-of-Band Power Measurements

### CDMA/EV-DO Measurements

- Top N PN
- $E_c$ ,  $I_o$ ,  $E_c/I_o$ , Aggregate  $E_c/I_o$ , Pilot Delay, Delay Spread



# SeeGull EXflex | Specifications\*

LTE FDD and TD-LTE	Measurement Modes	Top N Synchronization Channel (P-SCH/S-SCH), Reference Signal, and Resource Block (Wideband, Subband)
	Data Modes	RS, RQ, CINR, Cyclic Prefix, Time Offsets, Delay Spread, Averaging
	Channel Bandwidths	1.4 / 3 / 5 / 10 / 15 / 20 MHz
	Transmit Antenna Configurations	1, 2, 4
	Measurement Rates @ 20 MHz: Top N Sync Channel RS	25 msec
	Dynamic Range (CINR) @ 20 MHz: P-SCH/S-SCH RS	-10 to +18 dB** -20 to +40 dB**
	Min. Detection Level: RS RP	-140 dBm (RSRP@ 10 MHz)
	Relative Accuracy (CINR): P-SCH/S-SCH RS	±1 dB ±1 dB
UMTS [WCDMA/HSPA(+)]	Measurement Modes	Top N Pilot
	Data Modes	Io, Ec/Io, Aggregate Ec/Io, SIR, Rake Finger Count, Time Offset, Delay Spread
	Channel Bandwidths	200 kHz / 3.84 MHz
	Measurement Rate	100/sec (High Speed Mode); 50/sec (High Dynamic Range Mode); 50/sec Pilots with Clarify® Option
	Top N CPICH Dynamic Range (Ec/Io)	-21.5 dB (High Speed Mode); -26 dB (High Dynamic Range Mode)**; -33 dB (High Dynamic Range) with Clarify® Option (via Post Processing)
	Min. Detection Level	-120 dBm (High Dynamic Range Mode)
	Relative Accuracy	±1 dB
TD-SCDMA	Measurement Modes	Top N Beacon
	Data Modes	Basic Midamble Code, Ec/Io, Sync_DL Code, Io, SIR, Time Offset
	Channel Bandwidths	200 kHz / 1.28 MHz
	Measurement Rate	50/sec
	Top N PN Dynamic Range, Ec/Io	-20 dB
	Min. Detection Level	-110 dBm
	Relative Accuracy	±1 dB
GSM	Measurement Modes	Color Code
	Data Modes	BSIC, C/I, RSSI
	Channel Bandwidths	30 kHz / 200 kHz
	Measurement Rate	Up to 190 BSIC Decodes/sec; 160 Decodes/sec BCCH with Clarify® Option
	Dynamic Range	+2 dB C/I @ 90% BSIC Detection with <0.1% False Detection Rate -18 dB C/I with Clarify® Option (via Post Processing)
	Min. BSIC Detection Level	-110 dBm
	Relative Accuracy	±1 dB
	CDMA	Measurement Modes
Data Modes		Ec, Io, Ec/Io, Aggregate Ec/Io, Pilot Delay, Delay Spread
Channel Bandwidths		30 kHz / 1.25 MHz
Measurement Rate		25/sec
Top N PN Dynamic Range, Ec/Io		-28 dB**
Min. PN Detection Level		-130 dBm
Relative Accuracy		±1 dB
EV-DO	Measurement Modes	Top N PN
	Data Modes	Ec, Io, Ec/Io, Aggregate Ec/Io, Pilot Delay, Delay Spread
	Channel Bandwidths	30 kHz / 1.25 MHz
	Measurement Rate	18/sec
	Top N PN Dynamic Range, Ec/Io	-18.5 dB**
	Min. PN Detection Level	-120 dBm
	Relative Accuracy	±1 dB

\* Specifications are for single-technology scanning.

\*\* @ 90% Signal Detection with <0.1% False Detection Rate

# SeeGull EXflex | Specifications\* [continued]

Power Measurements	<b>RSSI MEASUREMENTS</b>	
	Measurement Rate (Maximum)	LTE 5,000 ch/sec UMTS [WCDMA/HSPA(+)] 5,000 ch/sec GSM 5,000 ch/sec CDMA 5,000 ch/sec EV-DO 5,000 ch/sec TD-SCDMA 5,000 ch/sec
	Dynamic Range	-120 to -20 dBm @ 30 kHz
	Absolute Accuracy	±1 dB (across Basic RF Input Power Range)
	<b>ENHANCED POWER SCAN (EPS™) MEASUREMENTS</b>	
	Channel Bandwidths	5 kHz to 20 MHz in 2.5 kHz Increments
	Measurement Rate	1,000 MHz/sec @ 5 MHz (Typical)
	Absolute Accuracy	±1 dB (across Basic RF Input Power Range)
	<b>SPECTRUM ANALYSIS MEASUREMENTS</b>	
	Measurement Range	>90 dB
	Measurement Rate (Single Sweep)	>270 MHz/sec
	Accuracy	±1 dB (across Basic RF Input Power Range)
	<b>LTE POWER ANALYSIS MEASUREMENTS (Available for TD-LTE Only)</b>	
	Channel Bandwidths	1.4 / 3 / 5 / 10 / 15 / 20 MHz
	Measurement Rate	20 msec @ 20 MHz
	Accuracy	±1 dB (across Basic RF Input Power Range)
	RF Characteristics	Internally Generated Spurious Response
Conducted Local Oscillator		-75 dBm Max.
RF Operating Range:		In-Band -15 dBm Max.
Desensitization:		Adjacent Channel >50 dB (CDMA/EV-DO) Adjacent Channel >55 dB (All Other Technologies) Alternate Channel >65 dB
Safe RF Input Range		≤10 dBm
Frequency Accuracy		±0.05 ppm (GPS Locked); ±0.1 ppm (GPS Unlocked)
GPS		Type
	Position Accuracy	±2.5 meter
	Acquisition Time	Cold Start: <30 sec; Hot Start: <2 sec
	Sensitivity (Tracking)	>-150 dBm
Physical	Maximum Power (+8 to +16 VDC)	20W
	Size	8.7" D x 3.7" W x 2.7" H (221 mm D x 94 mm W x 68.5 mm H)
	Weight	1.6 lb (0.71 kg)
	Temperature Range	Operating: 0°C to +50°C; Storage: -40°C to +85°C
	Host Data Communications Interface	USB 2.0
	RF Input	RF: SMA Female (50Ω); GPS: Male (50Ω) SMB
	Safety (CE)	EN 60950-1
	EMC	EN 301 489-1
	Shock and Vibration	MIL-STD-810G, SAE J1455
	RoHS	Compliant (6/6)

\* Specifications are for single-technology scanning.

**The SeeGull EXflex supports LTE FDD, TD-LTE, UMTS [WCDMA/HSPA(+)], TD-SCDMA, GSM, CDMA, EV-DO operating bands currently deployed around the world.**

Please contact your sales representative or email [RFS.Sales@pctel.com](mailto:RFS.Sales@pctel.com) for more details.



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Specifications subject to change without notice.

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