



SeeGull® EXflex | Scanning Receiver



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

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.

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

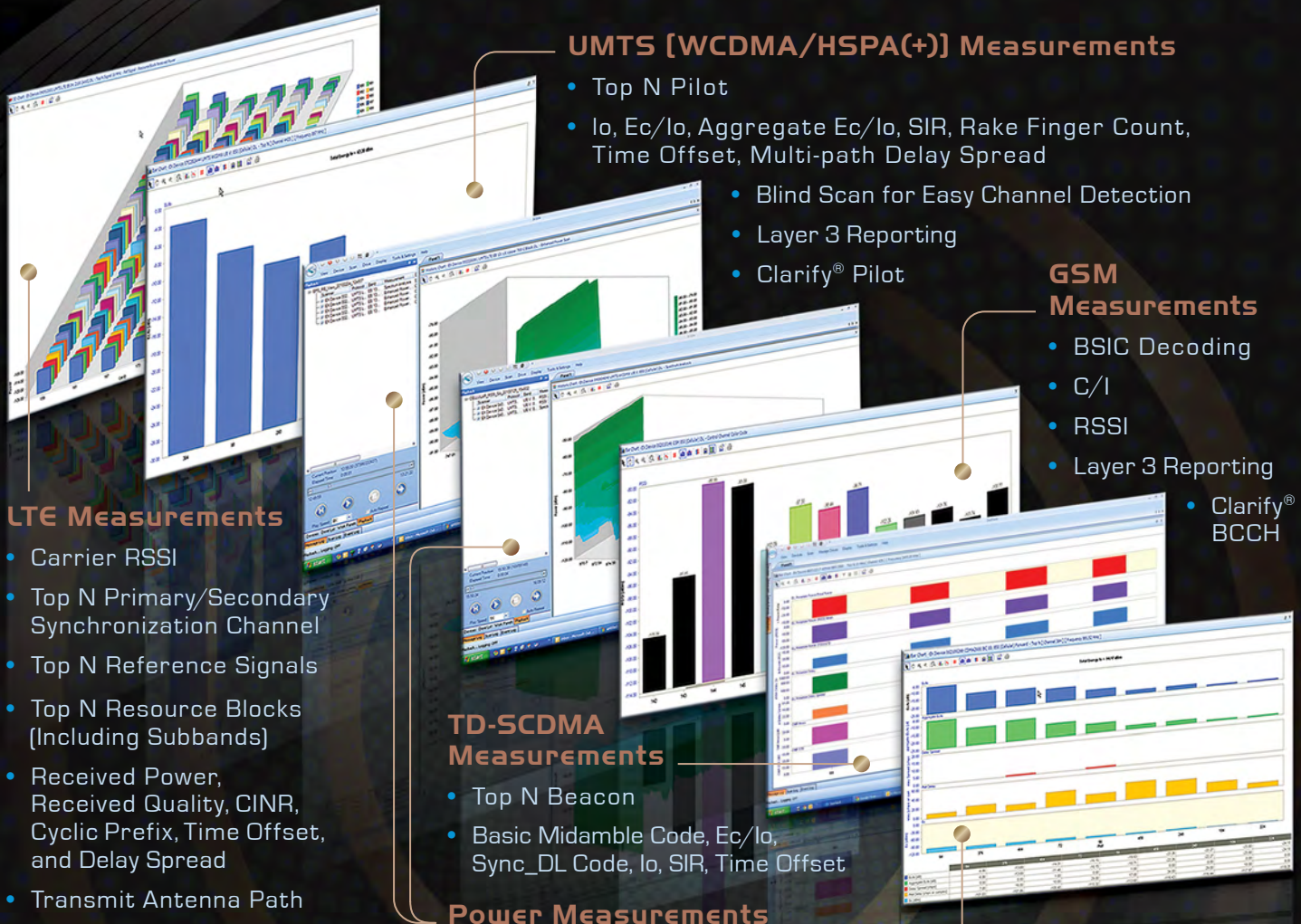
APPLICATIONS

- 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_0 , E_c/I_0 , Aggregate E_c/I_0 , 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

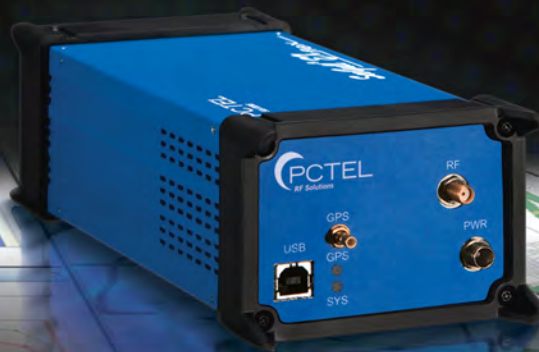
- Top N Beacon
- Basic Midamble Code, E_c/I_0 , Sync_DL Code, I_0 , SIR, Time Offset

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_0 , E_c/I_0 , Aggregate E_c/I_0 , 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 | RSSI MEASUREMENTS | |
| | 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) |
| | ENHANCED POWER SCAN (EPS™) MEASUREMENTS | |
| | 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) |
| | SPECTRUM ANALYSIS MEASUREMENTS | |
| | Measurement Range | >90 dB |
| | Measurement Rate (Single Sweep) | >270 MHz/sec |
| | Accuracy | ±1 dB (across Basic RF Input Power Range) |
| | LTE POWER ANALYSIS MEASUREMENTS (Available for TD-LTE Only) | |
| | 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 | -110 dBm Max. |
| | 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 for more details.



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Specifications subject to change without notice.

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PCTEL RF Solutions products are protected under the following U.S. patents:

7,272,126; 7,236,746; 7,050,755; 7,013,113; 6,950,665; 6,931,235; 6,917,609; 6,816,709; 6,609,001; 5,819,177; 7,639,985; 7,019,691; 7,301,920.
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