



PCTEL RF Telecom Scanners



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Precision Network Testing for 5G New Radio, LTE, Public Safety..



IBflex®

HBflex™

MXflex®

PCTEL's IBflex®, HBflex™, and MXflex® scanning receivers are precision RF testing tools. They are used to verify and improve the performance of wireless networks worldwide, including 5G NR, LTE, and public safety technologies. PCTEL scanning receivers support a variety of network engineering activities, including spectrum clearing, baseline testing, model tuning, network planning, network commissioning, acceptance testing, competitive benchmarking, troubleshooting, and network optimization. They integrate easily with third-party software and are supported by PCTEL's own Engage™, SeeHawk®, and SeeWave® tools.

Key Features

- 5G NR measurements
- LTE, NB-IoT, public safety, and LTE-M measurements
- LTE-LAA measurements (HBflex™ and IBflex®)
- Wide mmWave (HBflex) and sub-6 GHz (all) band range
- Field-upgradeable software-defined radio (SDR) architecture
- Simultaneous testing on multiple technologies and bands (ie 2G, 3G, 4G, 5G). Therefore, this is a huge time saver because there is no need to sequentially scan LTE and then 5G.

The **IBflex** scanning receiver is designed for in-building and small cell testing, but it also has the performance and accuracy needed for traditional drive testing. Low power consumption and a hot-swap battery system make the **IBflex** scanner a convenient tool for a long day of walk testing or interference hunting.

The **IBflex Lite** scanning receiver combines competitive pricing with high performance measurements. It supports most major wireless technologies used around the world in a single unit, including a wide range of LTE bands. The **IBflex Lite** scanner is also a lightweight, low power consumption device, making it a good choice for both walk testing and drive testing. Although the **IBflex** has 5G (NR), the **IBflex** does not, due to having only one RF port (no MIMO capabilities and no NR).

The **HBflex** is a highly flexible test tool for mmWave and traditional wireless spectrum. With 5G NR testing capabilities on both mmWave and sub-6 GHz bands, it can be used to clear spectrum or test 5G NR alongside LTE, NB-IoT, LAA, Wi-Fi, and legacy 3G and 2G wireless network technologies.

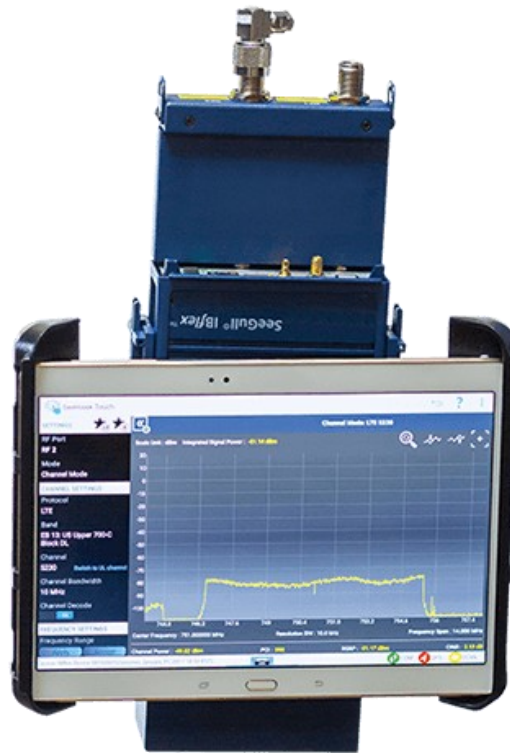
The **MXflex** scanning receiver is designed for benchmarking and co-managing multiple wireless network technologies across sub-6 GHz spectrum. 5G NR and 4x4 LTE MIMO measurements make it the ideal choice for optimizing user experience during the transition from 4G and 4.5G to 5G. The **MXflex** scanner features concurrent scanning for fast multi-technology and multi-channel measurements.

Tools



SeeWave® interference locating system - offers an economical, adaptable, and intuitive way to locate and eliminate network interference. A host platform links the scanner to both a direction-finding antenna and a touchscreen tablet. The platform can be comfortably held in one hand while the user operates SeeWave's intuitive software application.

Tools



SeeHawk® Touch Signal Analyzer option with IBflex® scanner and hardware adapter

Applications

- DAS system verification, including downlink, uplink, and additive noise testing
- DAS commissioning
- Modulation and distortion measurements
- Spectrum clearing
- Public safety testing
- Interference identification

SeeHawk Engage™

SeeHawk Engage™ is PCTEL's family of UE-based mobile network performance test and engineering tools. SeeHawk Engage uses standard commercial UEs instead of modified custom test devices, so you will see the network exactly as your customers see it. SeeHawk Engage, SeeHawk Engage+, and SeeHawk™ Studio also support PCTEL's IBflex® scanning receivers for accurate, detailed RF measurements.

PCTEL Scanning Receiver Software



HBflex™

MXflex®

Indoor Grid Testing

IBflex®

SeeHawk Touch data collection software for HBflex™, MXflex® and IBflex® scanning receivers is a powerful tool for analyzing the performance of 5G NR, LTE, Wi-Fi, and other wireless networks. Featuring a touchscreen interface optimized for Android™ mobile devices, SeeHawk Touch is especially suited for in-building and outdoor walk tests when paired with the IBflex via Bluetooth™ interface. SeeHawk Touch software also offers optional tools for specialized engineering tasks, including the Signal Analyzer, Antenna Verification Testing (AVT), and Indoor Grid Testing for public safety networks.

SeeHawk Collect is as per the above but for computers running “Windows”. The SeeHawk Touch is used for walk testing and SeeHawk Collect for drive testing.

Antenna Verification Testing (AVT) Option

- Quickly verify equipment installation and configuration
- Saves engineering time by reducing the need for repeated walk tests
- For small cells, DAS, Wi-Fi, and HetNets

Indoor Grid Testing Option

- Efficient in-building public safety network testing
- Test P25, TETRA, and FirstNet/LTE networks
- Designed to support building codes based on National Fire Protection Association (NFPA) and International Fire Code (IFC) standards



Antenna Options

Drive Test and Walk Test Antennas

OP034H - ANT, GPS High Gain

OP278H - ANT, 698-3800 MHz Multi-Band Mag Mount, High Performance, 12' cable

OP379H - ANT, 698-3800 MHz Multi-Band Mag Mount, High Performance w/ GPS

OP286H - ANT, 698-3800 MHz Multi-Band Permanent Mount, High Performance, 12' cable

OP123 - 450 MHz Antenna, Mag Mount

OP450H - ANT, 4.9 – 5.9 GHz Multi-Band Mag Mount, High Performance, 12' cable

OP451 - ANT, 450 Mhz – 6 GHz Multi-Band Mag Mount, High Performance, 12' cable

OP697 - ANT, 136 - 174 MHz, 380 - 960 MHz Multi-Band Mag Mount, High Performance, 12'

Indoor Antennas

OP136 - Indoor Antenna 450 MHz

OP293 - Indoor Antenna 700-1100 MHZ, 1475-2700 MHz

OP452 - ANT, Public Safety Band Antenna VHF/UHF/ 700-800 MHz

OP688 - Spare Antenna, SMA "Stubby" Bluetooth Single Band 2.4 GHz

OP691 - Indoor Antenna, 600 MHz - 6 GHz

Antenna Bases and Mounts

OP087 - Permanent Mount for OP278H

OP212H - Mag Mount Antenna Base, High Performance

PCTEL also offer walk test kits, batteries, antennas, and cables for their scanning receivers.



In-Building Antennas for SeeGull® Scanning Receivers

Multi-Band RF Antennas for Indoor Testing



IBflex® with OP293

OP293 | 698 - 1100 MHz and 1475 - 2700 MHz

Advantage: Smaller form factor



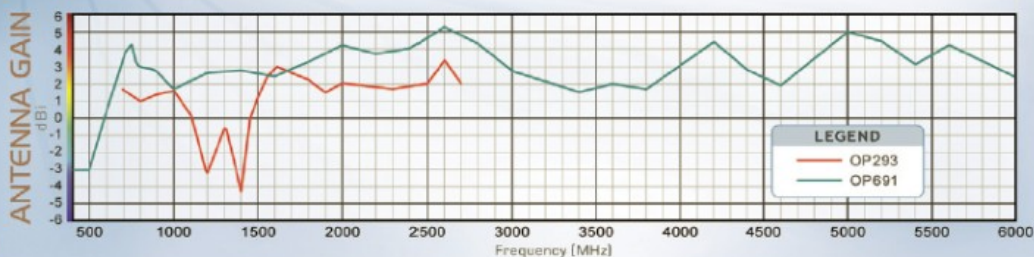
OP691 | 600 - 6000 MHz

Advantage: Wider range



OP136 | 450 - 490 MHz

Advantage: Specialized for lower range testing



SPECIFICATIONS

	OP293	OP691	OP136
Frequency in MHz	698 – 1100 1475 – 2700	600 – 6000	450 – 490
Gain	Refer to Antenna Gain graph above.		
Impedance	50Ω		
VSWR	<2.5:1	<2.5 at 675 – 1100, 1300 – 2900, 4900 – 6000 MHz <6:1 at all other ranges	<1.5:1
Polarization	Vertical	Linear	
Connector	Male SMA		
Physical (Max.)	8.3" H x 0.9" W 211 mm H x 24 mm W	8.7" H x 2.3" W 222 mm H x 57 mm W	3.2" H x 0.5" W 82 mm H x 12 mm W



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