

COUNTER SURVEILLANCE



PKI ELECTRONIC INTELLIGENCE GmbH GERMANY

PKI 4100

Rapid Deployment Spectrum Analyser

PKI 4100 is one of the most recent developments of our counter-measures specialists. It is a portable counter-surveillance system for analysis of radio frequency surveillance. As an intermediate field counter measure it can monitor several rooms at the same time. It is easily programmable, with results stored for repeatability and future appraisal, with a full A4 report printout of text and graphical display in line or bar. It allows a novice user with a modest background in radio scanning to be operational in 30 minutes and to produce a fully documented predetermined scan. **PKI 4100** is not to be confused as near field, one room at a time, equipment. It provides rapid spectrum analysis, with additional spectrum analyser functions. It can readily identify clandestine transmissions including SMART spread spectrum devices, and display video transmissions at "picture in picture". The complete system is fully autarkic with integrated rechargeable battery and mains power supply. Its software on Windows basis is professionally designed especially for electronic counter measures. The video capturing system allows the operator to determine the type of video transmission detected. The captured video image is displayed, picture in picture, on the laptop screen, and can be stored for further analysis and playback.

The **PKI 4100** features mains and line monitoring for cable / telephone line.



Specifications:

- Software facilities incl. automatic save of scans, or once every hour for an unattended operation comparing the files routine for additions and omissions, possible threat mode for continuous unattended operation, with alarm manual tune mode spectrum analyser mode
- Frequency range 10 KHz to 3 GHz
- Internal rechargeable battery
- High speed scanning
- Video interpretation and display
- Mains and line / cable monitoring
- Auto save for unattended RF spectrum time profiling
- Possible threat warning
- A4 printout

PKI 4110

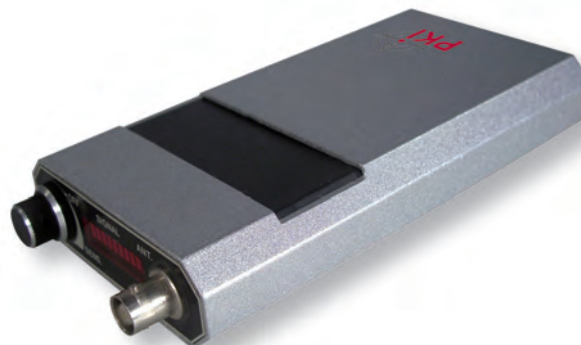
Frequency Detector

With the **PKI 4110**, you have a highly sensitive broadband frequency detector at hand providing a very wide frequency range for professional detection and location of radio monitoring systems. Its functionality allows even an amateur to use the basic functions of the device and to achieve protection against eavesdropping.

The built-in audio demodulator allows to eavesdrop on analog radio systems. With the Geiger click indicator, the detection and localization of most of the dangerous eavesdropping systems is simple and efficient. Fitted in a lightweight, compact and rugged metal housing with 4-way signal strength indication (graphical, numerical, delayed and peak), radio transmitters, whether digitally encoded, spread spectrum, hopping or pulse transmissions, no longer escape it. Even mobile phones and computers (including manipulated systems) are perfectly detected. Recording possibilities including time and signal strength complete the equipment.

Specifications:

- Frequency range: 0.5 MHz up to 22.5 GHz
- Sensitivity: 0.06 µW ERP (400 MHz / 5 cm / level=5)



- Dynamic range: 43 dB basic, +40 dB attenuation LOCAL
- Detectable pulse width: >80 µS
- HF filter (HF OFF): -26 dB at 10 MHz
- Audio volume: 4 steps
- Geiger click generator: internal buzzer
- LED display: 2 characters
- Signal strength indication: numerical 251 levels / graphical 39 levels
- Peak level indication: delayed numeric 251 steps / 24 steps
- Alarm memory: 16 events incl. time and signal level
- Alarm counter: 99 events
- Power supply: internal 9 V block battery (or rechargeable battery) external 12V - 20 V DC un stabilized
- Current consumption: 3.5-6 mA
- Dimensions: 150 x 60 x 31 mm
- Weight: 295 g

PKI 4115**Mobile Phone Detector**

PKI 4115 is designed for detection of mobile phones operating in 2G and 3G range and wireless cameras working on 50 MHz - 6 GHz frequency. It can operate universally e.g. in aircrafts, hospitals, petrol stations, prisons and many other security zones.

When detecting radio wave, the network indicator (LED) will blink in red. **PKI 4115** has a sensitivity tuner for 2 G and 3G. Alarm can be activated optional audible, optical or still. The built-in rechargeable battery is for 4 hours continuous use. When battery power runs low, the battery low warning indication will light up in red to warn the user. This handy detector satisfies highest demands.

Specifications:

- Detecting frequency band:
 - 1) 2G: GSM
 - 2) CDMA
 - 3) 3G: WCDMA 2100 (UMTS)
- Detecting distance:
 - 1) GSM: up to 20 meter
 - 2) CDMA: up to 15 meters
 - 3) 3G: WCDMA up to 15 meters
- Power: built-in rechargeable battery
Switching power adaptor
- Battery life: about 4 hours after full charge
- Warning mode:
 - 1) visible and audible alarm
 - 2) visible alarm, silent via earphone



- Humidity: 5% - 80%
- Operation temperature: 0-40°C
- Dimension: 150 x 80 x 30 mm (LxWxT)
- Weight: 310 g

PKI 4125**Mobile Phone Detector**

This manageable multiband cellular signal detector for 4G, 3G and GSM shouldn't be missed during any surveillance operation.

Signals of mobile phones, smartphones, vehicle trackers, GSM bugs and covert 3G/4G cameras are indicated on the **PKI 4125** display.

The distance between **PKI 4125** and the detectable object can be up to 50 m depending on the output power of the suspect object. Operation of **PKI 4125** is extraordinary versatile and allows detection of prohibited devices in prisons, conference rooms, hospitals etc.

PKI 4125 provides adjustable detected sensitivity, audio alarm (beeper or earphone), signal strength indicator, sensitivity tunes for each individual frequency band.

Specifications:

- Dimensions: 190 x 90 x 32 mm
- Weight: 220 g

- Detection frequency:

4G	703 - 748 MHz
GSM	880 - 915 MHz
CDMA	824 - 849 MHz
UMTS(WCDMA)	1920 - 1980 MHz
DCS	1710 - 1785 MHz
DECT	1895 - 1919 MHz
4G	2500 - 2570 MHz
- Sensitivity: >-40 dBm
- Dynamic range: 35 dB
- Built-in antenna: micro-strip multiband, inverted-F omnidirectional
- LCD display: 4 x 16 alphanumeric with backlight
- Power supply: built-in Li-Ion 3,8V, 2200 mAh cell
- Operating time: 16 hours

**PKI 4130****Digital Transmission Detector**

Currently used observation techniques often work with digital protocols in different frequency ranges. The **PKI 4130** provides a quick overview of existing RF sources. Simultaneously, transmissions in the frequency ranges CDMA, GSM, GSM (DCS), WCDMA, 3G, GSM (PCS), DECT, Bluetooth, WiFi or WiMax are accurately displayed in the 6 bar graphs with 10 segments each.

The microprocessor-controlled receiver, in a handy metal housing, equipped with 6 specifically adapted frequency bands (channels) thus enables the detection of even the weakest signal sources.

Different operating modes:

Silent - the bar graphs are used for covert investigations

Vibration - When reaching an adjustable value for each channel

Visual - The receiver tries to detect the type of

protocol transmitted

Listen - The receiver produces a signal depending on the type of reception

Specifications:

- Frequency range:

CDMA	824 - 849 MHz
GSM	880 - 920 MHz
GSM (DCS)	1710 - 1790 MHz
WCDMA, 3G, GSM (PCS),	
DECT	1920 - 2000 MHz
Bluetooth, WiFi	2400 - 2480 MHz
WiMax	3000 - 6000 MHz
- Out of band attenuation: 20 - 45 dB
- Antenna: 2 omni-directional antennas
- Detection range: 1 - 10 m
- Operating time: 10 - 15 hours
- Power: 2 AAAA (LR03) batteries
- Dimensions: (w/o antenna) 120 x 70 x 16 mm
- Weight: 217 g



PKI 4135

WiFi Network Analyser

PKI 4135 WiFi Network Analyser is designed for detection and monitoring of all active WiFi devices in the reception area as well as for identification of illegal WiFi devices among all operating ones. The device for the frequency range of 15-2700 MHz with 2 antennas for the different frequency ranges in a compact aluminium case is perfectly suitable for real time monitoring of the frequency ranges with representation of frequency and level (dBm and dBµV).

Specifications:

- Frequency range: 15 - 2700 MHz
- Graphic display: 128 x 64 pixels with backlight
- Auto marker function: automatic and manual marker positioning for individual carrier identification

- WiFi analyser: with representation of 13 WLAN channels
- Max. hold function: to detect extremely short HF carriers
- Interface: Mini USB 2.0 for connection to a PC or laptop as well as for charging of the internal rechargeable 860 mAh lithium polymer battery
- Software: with real time analysis for WindowsXP, VISTA, WIN7/WIN8
- Dimensions: 71 x 122 x 25 mm
- Weight: 200 g



PKI 4145

Multichannel RF Signal Detector

The only way to reliably detect wireless transmitter is to use preselected saw filter which attenuate all other signals except the desired one. This is the method implemented in **PKI 4145** which has 6 channels for different frequency ranges and can simultaneously detect 6 different kinds of transmissions at a distance much greater than any camera RF detectors. Such qualities make the **PKI 4145** item a very desirable and reliable device during counter surveillance sweeps. **PKI 4145** is an important tool for engineers or counter surveillance specialists.

Specifications:

- Frequency range:

CDMA, LTE 800 (4G)	824-849 MHz
GSM	880-920 MHz
GSM (DCS)	1710-1790 MHz
WCDMA, 3G, GSM(PCS) Dect	1920-2000 MHz
Bluetooth, WiFi	2400-2480 MHz
Wi-Max/WiFi high/LTE (4G)	2500-7000 MHz
- Bugging devices detection: GSM/3G/LTE standards

- Spy phones
- GPS trackers
- Baby monitoring
- Bluetooth bugging devices
- WiFi/Wi-Max bugging devices
- Wireless video cameras 2,4 / 5.8 GHz
- Antenna: 2 omni-directional antennas
- Detection range: 1-10 m
- Out of band attenuation: 20-45 dB
- Operation time: 15 hours
- Power: 2 AAA batteries
- Dimensions: 120 x 70 x 16 mm
- Weight: 220 gr
- Features
 - Portable device for the inspection and location of wireless sources
 - 6 channels of detection for different kinds of protocols
 - Detection of GSM/CDMA/3G/DECT/LTE
 - Detection of Bluetooth /WiFi/ Wi-Max
 - Can be used for tracing both regular sources and illegal eavesdropping devices
 - 6 bar graphs with 10-segments each, for



- accurate location of RF sources
- 4 modes: silent, vibration, visual and listen
- 2 levels of sensitivity (attenuator)
- Extra display shows probable protocol
- Microprocessor controlled
- Setup mode with selection of the threshold level for vibration

PKI 4150

RF Signal Detector for GSM and Wireless Cameras

This combination of lens finder and RF detector is especially suitable for tracking of mobile phones in the GSM range and of wireless cameras. Most wireless cameras operate in the 1.2 GHz, 2.4 GHz or 5.8 GHz range. In these and in the GSM range, **PKI 4150** offers the highest sensitivity and, depending on the output, detects them from a distance of 15 meters. With the additional lens finder, even the camera lens is detected by its own reflection. The LED bar display indicates the respective field strength and the input sensitivity can be continuously adjusted. The closer you get to the object to be located, the higher the field strength is. The integrated laser pointer can be activated

additionally in order to facilitate the orientation of the HF source searched for.

Specifications:

- Detecting range: 30 MHz - 6.0 GHz
- Sensitivity tuner: adjust the detecting distance to find signal source, eliminate the environment interference
- Detecting distance: up to 15 m
- Power: built-in rechargeable battery, charging by means of power pack adapter
- Warning mode: LED indication, vibration, beep alarm sound, earphone silent detection
- Weight: 220 g



Non-Linear Junction Detector Principle

Constant improvements in technology lead to ever smaller electronic bugs with higher transmission power and improved sound quality. Completely remote-controlled, they can even be switched off by the user. This makes the detection of these bugs particularly difficult, as frequency monitoring systems can often only

detect the transmission signal of the „active“ bug. **PKI** has been promoting the development of NLJDs (Non-Linear Junction Detectors) for years and consistently presents top products in this sector. This special technology is able to track electronic semi-conductors in electronic bugging devices without these having to be active

(switched on). The combination of easy handling, latest digital signal processing and optimum antenna design allow best results when detecting camouflaged and concealed electronic devices, even when switched off. With it, you will even find „dead“ bugs which have already fulfilled their task.

PKI 4160

Non-Linear Junction Detector

The device operates in the resonator frequency range from 880 - 906 MHz. Its design makes it the ideal device for typical cleanups. Equipped with a rechargeable battery, operation is possible for more than 3.5 h. With a weight of only 1 kg, it is a lightweight in its class. As a result of its extremely thin antenna (max. 18 mm) even little available space can be managed without problems. Automatic frequency hopping technology to avoid interferences from existing frequency bands used as well as automatic and manual adjustments to the transmission power allow optimal handling.



Specifications:

- Frequency band: 890 - 891 MHz
- Dynamic range: 80 dB
- Signal power, max. pulse (duty ratio 50) / CW: 15 / 1 W
- Sensitivity: not worse than -120 dBm
- Operating time: more than 3.5 h in pulse mode,

- 1.5 h in CW mode (continuous wave)
- Dimensions: 100 x 15 x 4 cm
- Weight: 1 kg
- Scope of supply: battery charger 220 V, headphones (wireless), rechargeable battery and bag

PKI 4170

Non-Linear Junction Detector

With this device, we break another record. Size and weight allow to take it in the pocket. Despite these minimum dimensions, the **PKI 4170** also offers the full comfort of the NLJD series. Automatic frequency hopping and adjustment to the transmission power. Its handy design is ideal to check persons for hidden electronics. The transmission power emitted in the process (electro-magnetic effect) is lower than that of a mobile phone. The high detection potential resulting from the high resonator frequency of 2400 - 2483 MHz as well as the compact antenna with a thickness of 18 mm are cutting edge in the field of NLJDs.



Specifications:

- Frequency band : 2400 - 2483 MHz
- Dynamic range: 80 dB
- Signal power, max. pulse (duty ratio 50) / CW: 10 / 1 W
- Sensitivity: not worse than -108 dBm
- Operating time: more than 3.5 h in pulse mode,

- 1.5 h in CW mode (continuous wave)
- Dimensions: 23 x 10 x 5.5 cm (transport dimensions), 39 x 10 x 4 cm (ready to operate)
- Weight: 700 g
- Scope of supply: battery charger 220 V, headphones (wireless), rechargeable battery and bag

PKI 4180

Non-Linear Junction Detector

When localizing electronic devices using NLJDs, the distance realized with the **PKI 4180** reaches entirely new dimensions. The high frequency of 3580 - 3620 MHz and the extremely narrow reception angle of the antenna enable an unprecedented detection. It is thus e.g. possible to locate a SIM card (1 x 2 cm) from a distance of 1 m. A built-in laser pointer can visualize the center of the detection field. Due to its super high frequency, the **PKI 4180** also offers unique possibilities of detection in the most varied materials. Slots, holes, hidden screenings and reflecting materials do not present any obstacle when detecting concealed electronics. The verification of unknown objects from a distance of 5 - 10 m with an NLJD is unparalleled. As a result of the extreme directional effect of the antenna, the electromagnetic radiation is reduced to a minimum level for the user.

Specifications:

- Transmission frequency: 3580 - 3620 MHz
- Pulse signal ratio: 160 pulses per second
- 2d harmonic receiver frequency range: 7160 - 7240 MHz
- 3d harmonic receiver frequency range: 10740 - 10860 MHz
- Antenna gain at fundamental frequency: 20 dB
- Antenna gain at 2d harmonic: 24 dB
- Antenna gain at 3d harmonic: 27 dB
- Pulse power and duty cycle: 20 W (0.6 %)
- EIRP (radiated power plus antenna gain): 2000 W
- 2d & 3d harmonics sensitivity: -110 dBm
- Dynamic range: 40 dB
- Antenna opening angle (1st / 2d / 3d harmonic): 16/8/4 degrees
- Operating time: 3 h



- Dimensions: 30.3 x 30.3 x 23 cm (transport dimensions), 47.7 x 30.3 x 23 cm (ready to operate)
- Weight: 1.4 kg
- Scope of supply: battery charger 110 - 240 V, headphones (wireless), rechargeable battery and bag

PKI 4200

Non Linear Junction Detector

Remote controlled transmitters and devices which are switched off, cannot be found by any counter surveillance equipment based on radio scanners. The solution is a debugging device independent from any emission of radio frequencies. Even before using a new room for conferences or after installations, respectively maintenance operations in the room, a basic sweep is absolutely necessary to avoid monitoring by planted devices. **PKI 4200** does not only detect active bug devices but also those which have been switched off. The extremely lightweight unit (only 1.8 kg) is a Third Harmonic Junction Detector and important facility for discriminating between false and real targets. The coloured LED display simply shows left

GREEN for false and right RED for target. In addition to the customary Geiger audio indicator, the unit also features AM and FM demodulation modes. Direct listening via headphones is possible.

Specifications:

- Fundamental Frequency: 888 MHz
- Maximum RF Power: 300 mW
- Analysed Harmonics: 2-nd and 3-rd
- Controls: ON/OFF, Volume, Range, Harmonic Selector, Tone-AM FM Selector, Squelch
- Dimensions: 210 x 145 x 45 mm
- Dimensions Antenna: 160 x 40 x 720 mm
- Weight: 1,8 kg

- Detects all types of bugs
- 2-nd and 3-rd harmonic analysis
- Switchable RF power
- Direct listening facility



PKI 4205

HF-Measuring Device

This HF- device measures reliably HF-radiation of mobile phones, DECT- wireless phones, flight security radars, WLAN/Bluetooth and microwaves. It is perfectly designed for measurement of pulsed HF-radiation. The results are measured in $\mu\text{W}/\text{m}^2$. **PKI 4205** offers easiest handling. The logarithmic-periodic antenna has a very good bearing and can perfectly be used for BFM. Measurements are shown on the large 3.5 digit LCD display. An acoustic signal proportional to field strength can be turned on. (sound effect as per our Geiger counter).

Specifications:

- Frequency range: 800 MHz – 2.5 GHz
- Field strength: 1-1999 $\mu\text{W}/\text{m}^2$
- Minimal resolution: -50 dBm
- Precision: +/- 6 dB (+/- 9 digit)
- Power supply: 9V battery
- Operating time: 10-12 h
- Dimension measuring device: 74 x 225 x 32 mm
- Dimensions antenna: 120 x 250 x 30 mm



PKI 4215

Bug Detector 1 MHz - 7 GHz

In order to trace a tapping device you need a professional, easy-to-operate locating device which measures the electric field strength of the tapping device. This can be measured because the field strength of the eavesdropping unit is stronger at 10 - 100 cm than local transmitters. The sensitivity is adjustable by potentiometer. The acoustic and visual display changes when approaching the tapping device which allows a quick location of AM or FM, analogue or digital tapping devices. The acoustic alarm can be switched off and be replaced by vibration alert.

This allows totally silent location even of mobile phones or remote controls. The wide band antenna offers the necessary sensitivity for the large frequency range of the **PKI 4215**.

Specifications:

- Frequency: 1 MHz to 7 GHz
- Power supply: 4 x 1,5 V AAA Alkaline battery
- Display: LED bar, for visual indication
- Dimensions: 120 x 60 x 30 mm
- Weight: 180 g
- Antenna socket: SMA-plug



PKI 4220

Detector for Wireless Camera Systems and WLAN Transmitters

Wireless cameras, WLAN networks, Bluetooth devices and audio/video transmitters, all use different frequencies and modulations within the license-free frequency range. The **PKI 4220** has especially been developed by us, in order to locate such devices. The working range of this detector is extremely versatile, from detecting concealed video systems, finding WLAN hot spots, localisation of unauthorized Bluetooth and WLAN devices, to measuring the radiation of video transmitters in the 2.4 GHz range. The **PKI 4220** is able to comply with all these

requirements. It is equipped with a very efficient directional antenna that allows exact bearing within a range of approximately 5 m. Optical and acoustic signs indicate the signal strength. The use of the **PKI 4220** is most easy - just turn it on and start searching spaces.

Specifications:

- Power supply: 9 V battery
- Frequency: up to 2.45 GHz
- Power consumption: 60 mA
- Range: up to 5 m in open



PKI 4225

Wired Microphone Detector

PKI 4225 has been especially designed by **PKI Electronic Intelligence GmbH** for locating hidden wired microphones.

In contrast to our various offered **PKI** wireless microphone detectors, the detection of such microphones is time-consuming and requires precision and endurance.

Without being damaged, each line must be measured with our **PKI** detector, i.e. the clamp is attached to the suspicious cable and connected to **PKI 4225** and our laptop. With the delivered software, the pulses are represented on the screen and saved.

An acoustic signal is briefly activated and recorded by the hidden microphone. This acoustic pulse is picked up by the microphone searched and converted into an electrical signal on the line. This again can be measured by means of our inductive coupling with **PKI 4225**. Should such a pulse be measured, utmost caution is advised and the search for the hidden microphone can begin.

Specifications:**Acoustic handheld sensor**

- Dimensions: 140 x 76 x 24 mm
- Weight: 80 g
- Audio frequency: 100 Hz - 18000 Hz
- Power supply: commercially available 9V battery

Electronic unit

- Dimensions: 140 x 76 x 24 mm
Clamp: 30 x 15 mm
- Weight: 100 g
- Capacitive clamp: 1 nF
- Power supply: commercially available 9V battery

- Laptop with PKI software
- Option: We recommend our handheld devices **PKI 4715, PKI 4700** for locating wireless microphones.

**PKI 4230**

Radio Eavesdropping Protector

This protector can be used to give real-time protection in meeting rooms, boardrooms etc. against the threat caused from radio eavesdropping devices. After a first swept of the meeting room for eavesdropping devices, the system can be deployed to ensure that no RF interception device is activated during the meeting. This system is available in 2 versions:

- a fully portable solution including a sensor, a semi-ruggedised laptop (with software) and power supplies housed in a smart briefcase
- a semi-deployable solution comprising a sensor, a semi-ruggedised laptop (with software), power supplies, sensor tripod and system carrying case

Specifications:**Broadband detector (channel A)**

- Frequency: 10 MHz to 2500 MHz
- Sensitivity: ≥ -60 dBm
- Dynamic Range: ≥ 50 dB
- Detector algorithms: Video (PAL, NTSC), GSM, DECT, 802.11 g(WiFi), Bluetooth, 3G (UMTS)

Broadband Detector (Channel B)

- Frequency: 2400 MHz to 2483.5 MHz
- Sensitivity: ≥ -60 dBm
- Dynamic range: ≥ 50 dB
- Detector algorithms: Video (PAL, NTSC), GSM, DECT, 802.11g (WiFi), Bluetooth, 3G (UMTS)

Harmonic Receiver (Channel C)

- Frequency band 0: 12,8 MHz to 2500 MHz (approx.)
band 1: 2500 MHz to 5000 MHz (approx.)
band 2: 5000 MHz to 7500 MHz (approx.)
band 3: 7500 MHz to 10000 MHz (approx.)
- Resolution: 8 kHz
- Sensitivity: ≥ -50 dBm (10dB SNR)
- Dynamic range: ≥ 50 dB (noise floor to P1dB)
- Sweep rate: band 0, 1, 2 and 3 approx. every 250 mS

Sensor Inputs & Outputs

- External power: 2,5 mm centre positive
- Network: RJ45, Ethernet
- Alarm outputs: green, blue, red LEDs, audio signal

Sensor power

- External power: 12V DC at 4A, reverse polarity, protected against overvoltage

Sensor mechanical

- Sensor size: 280 mm x 200 mm x 110 mm
- Sensor weight. < 2,5 kg

Sensor approvals

- EU EN 300 440-1, EN 301 489-3
- FCC Part 15B, unintentional radiators



PKI 4235**Scan Detecting Analyzer**

The **PKI 4235** provides you with an overview of the available frequency spectrum in your environment in the shortest possible time. The **PKI 4235** system was developed to detect and analyze dangerous radio transmitters using a PC with maximum efficiency. Besides classical radio signals, this also includes signals being specifically modulated onto wiring connections (telephone, alarm, electricity network) as well as signals occurring in the invisible infrared and inaudible ultrasound spectrum. These can be recorded by means of corresponding optional converters and sensors. The detection of signals is based on a scan of the desired frequency range searching for active signals. Known signal sources (radio, TV, communication) can be excluded from the evaluation and analysis as a whole in order to increase the scan speed. The suspicious transmission activities are stored in a database and a series of active and passive tests is applied to them, such as Passive Amplitude Correlation (PAC), Semi-Passive Amplitude Correlation (SPAC), Active Amplitude Correlation (AAC), Active Spectrum Correlation (ASC), Active Parametrical Correlation (APC) and Harmonic Presence Test (HPT). Subsequently, the software assesses the risk and alerts accordingly. The background noise required e.g. for voice-activated bugs can be produced by the system itself or also by an audio CD in the CD drive of the PC. A „silent mode“ is also available. During monitoring, there is a wide range of possibilities to evaluate the captured signals. Timer functions, audio recordings (e.g. mp3), frequency ranges, modulations, voice scrambling, DTMF decoding, etc. are freely scaleable and leave nothing to be desired. Obtained data are stored in a Microsoft database (.mdb) and can be further processed with the standard programs in Excel, Word, etc.

**Specifications:****Receiver**

- Frequency range: 100 kHz up to 3299.999 MHz
 - Power supply: 12 Volt +/- 15 % DC , approx. 0.8 A
 - Antenna socket: 2 x BNC, 50 Ohm impedance
 - Receiver principle: triple superhet with 1st IF: 266.70 MHz, 2nd IF: 10.70 MHz and 3rd IF: 450 kHz (excl. W-FM)
 - Receiver sensitivities:
- | Frequency ranges | SSB, CW | AM | FM | WFM |
|---------------------|---------|--------|---------|--------|
| 495 - 1799 kHz | 5.0 µV | 25 µV | - | - |
| 1.8 - 49.999 MHz | 0.5 µV | 2.5 µV | 0.63 µV | - |
| 50 - 699.999 MHz | 0.4 µV | 2 µV | 0.5 µV | 1.4 µV |
| 700 - 1300 MHz | 0.5 µV | 2.5 µV | 0.63 µV | 1.8 µV |
| 1300 - 2299.999 MHz | - | - | 5.6 µV | 18 µV |
| 2300 - 3000 MHz | - | - | 18 µV | 56 µV |

- Receiver dimensions: approx. 146 x 41 x 206 mm (WHD)
- System requirements: Windows PC (not included in the scope of supply): Win 2000, Win XP, Win 2003
- Pentium 2 400 MHz min. 400 MB
- Full-duplex sound card with Line In.
- Active loudspeaker
- Free RS 232 and 1 x USB / or 2 USB ports

Scope of supply:

- PC-based receiver 100 kHz - 3.3 GHz
- Software CD, reference microphone, power supply
- DS converter for wiring connections
- IR converter for IR reception
- Ultrasound sensor
- Antenna for receiver

PKI 4245**Passive Timer Detector**

An absolute innovation in the field of passive inspection is the **PKI 4245** Passive Time Detector. Active timers, whether of mechanical, electromechanical, electronic or even biological origin, are reliably detected with the **PKI 4245**. Any emissions of electric, magnetic and acoustic origin or even slightest vibrations are revealed to the user of the **PKI 4245**. Dubious objects are quickly checked for hidden timers (timed detonators). Even hidden persons can be located without X-ray device using the **PKI 4245**. Completely passive mode of operation, no emissions, etc. are produced by the detector.

Detector sensitivity:

- Electromechanic timers, etc.: up to 40 cm
- Electronic timers: up to 10 cm
- Communications units/transmitters, etc.: up to 15 cm

Specifications:

- Signaling: earphones
- Power supply: 4 batteries type AA



- Operating time: 30 h
- Dimensions: 510 x 34 mm
- Operating temperature: +5°C up to +40°C
- Weight, net: 0.65 kg

PKI 4250

Handheld Non-Linear Junction Detector

PKI 4250 Non Linear Junction Detector is designed to detect various kinds of electronic devices containing semiconductor elements. Flooding of suspected areas or targets with spectrally pure microwave RF signals locate eavesdropping devices, microphone amplifiers, audio recorders etc. - both in switched-on and switched-off mode. Analysing both 2nd and 3rd harmonics returned and varying on the materials with the different metallic junctions and semiconductor junctions return, gives the operator a clear indication of the source of any reflected signal. Due to the use of different formats of modulation for fundamental signals there is a possibility not only to detect radio transmitting devices, but also to define their types by listening to them.

PKI 4250 provides perfect characteristics for counter surveillance operations:

- Uses advanced technologies and materials, ergonomic design
- operates in hard-to-find places and under limited space conditions due to



- low antenna thickness not exceeding 18 mm
- both pulse and CW operation modes
- high detection capability (it is highly competitive to the best conventional NLJDs)
- listens to the envelope detector output as well as to the level of the received signal of the 2nd and 3rd harmonics via a built-in loudspeaker and wireless head phones
- automatic and manual modes of the probing signal power control
- easy-to-use, optionally used as an inspection tool
- light-weight and compact size

Specifications:

- Sensitivity (2nd and 3rd harmonic receivers) : <-110 dBm
- Probing signal type: pulse, CW
- Probing signal frequency range: 890 - 891 MHz
- Power pulse /CW: 10/0.3 W
- Operation time with a built-in battery (pulse/CW): < 3,5/ 1.5h
- Transportation/operation dimensions: 570 x 220 x 120 mm / 1000 x 150 x 40 mm
- Weight: < 1.0 kg
- Power supply: power adapter 220V AC and built-in Li-Ion battery
- Wireless accessories: receiver and headphone Transport bag

PKI 4300

Universal Line Analyser

The **PKI 4300** is used to check telephone lines, AC networks, alarm circuits and also LAN cabling. In the process, the telephone and line detector checks used and unused cables for capacitive and inductive tapping as well as metrological abnormalities.

Analog or digital modulation can be detected to ensure that no audio signal is transmitted via the checked telephone and/or network lines. With the pulse localisation method, the distance from the measuring point to the tapping point can be determined.

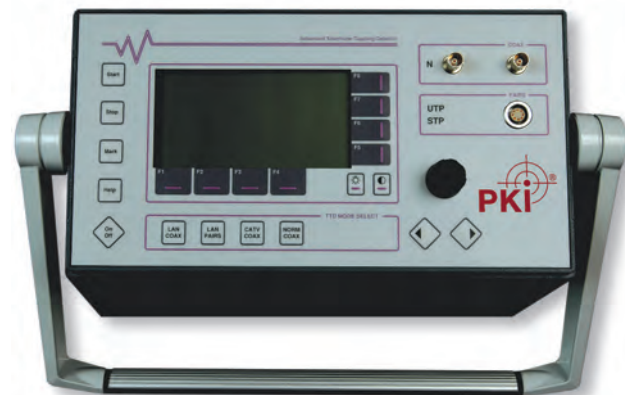
The **PKI 4300** can detect the following unauthorized tapping:

Phone lines (no separation necessary!):

- Serial connection with an impedance higher than 30 Ω .
- Parallel connection with a current consumption higher than 0.1 mA.
- High frequency signals on the line from 0.02 to 30 MHz minimum 10 mV.
- Low frequency signals 20 - 20,000 Hz with a signal level higher than 10 mV.

AC line (live)

- Observation of devices with a current consumption higher than 0.1 mA.
- High frequency signals on the line from 0.02 to 30 MHz minimum 10 mV.
- AC line (dead).
- Devices connected in parallel with an impedance up to 200 M Ω .
- Serial connections with an impedance higher than 1 Ω .
- Capacitive devices connected in parallel with a response time longer than 100 microseconds.



- Reactive elements with a capacitance from 100 pF or inductances higher than 10 mH.

Remaining lines (live and dead) if a reflectogram was made in advance.

- Serial connections with an impedance higher than 1 Ω
- Parallel connections with a capacitance higher than 5 pF.
- Parallel branch connections of whatever length. Re-established connections (after a break or mix-up)

With the universal line analyser, you can also measure AC/DC voltages, inductances, capacitances, and resistances of the checked lines.

Audio signals can be directly picked up

using the delivered headphones. A graphical representation of all measured results is shown on the display. Even Lissajous figures are possible without problems. All data can be stored and later be further processed on the PC via the USB interface. Connection to the lines to be measured is realised by means of the various adapters (banana plug, western plug, various telephone connectors, various mains plugs, etc.) included in the scope of supply.

Specifications:

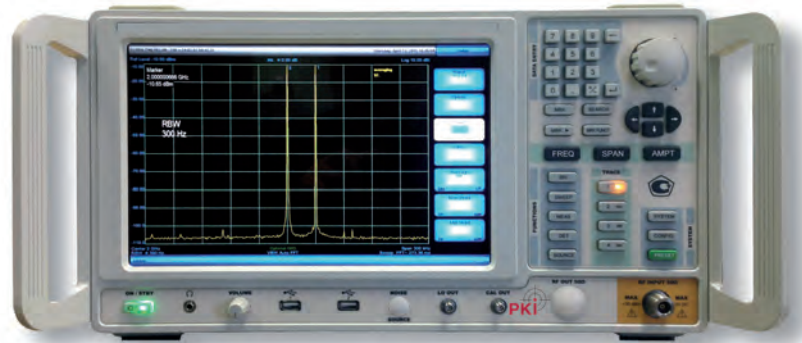
- Dimensions: 53 x 31 x 13 cm
- Weight: 15 kg
- Power supply: internal rechargeable battery with a battery life of 6 h.

PKI 4380**Interception Analyzer**

This monitoring receiver is designed for capturing of signals, for spectro analysis as well as for recording of received signals. It covers a range from 9 kHz - 24 GHz or optional 9 kHz - 40 GHz. This newest generation microwave spectrum analyzer rival the highest level of performance offered by the microwave industry today.

Options include preamplifier for the complete frequency range pushing the displayed average noise level (DANL) to values as low as -165 dBm/Hz at 40 GHz, hardware phase noise reduction down to < -140 dB c/Hz @ 10 kHz for input frequencies 9 kHz – 1GHz, software packages for phase noise and noise figure testing.

This **PKI 4380** Interception Analyzer should become the instrument of choice for a discerning engineer. **PKI 4380** is designed and manufactured for aerospace and defense areas, specialcommunication-control with high sensitive spectrum.

**Specifications:**

- Resolution bandwidth (-3dB level)
- Resolution bandwidths (-6dB level)
- Optional analysis bandwidth
- Scan setting range
- Span setting accuracy
- Frequency range
- RBW nominal value accuracy
- RBW selectivity -60 dB/-3dB
- Reference OCXO frequency
- Reference OCXO aging
- Short-term reference OCXO frequency drift:
- Initial setting accuracy
- Video Bandwidths
- Noise sidebands, dBc/Hz
- 1 GHz frequency carrier at a given offset
- Level measurement range
- Reference level setting range
- Absolute level measurement accuracy at 50 MHz
- Input attenuator range
- Input attenuator uncertainty

Frequency response in the frequency band

- 9 kHz - 3000 MHz +/- 0,5 dB
- 3 GHz - 11 GHz +/- 1,5 dB
- 11 GHz - 28 GHz +/- 2,0 dB
- 28 GHz - 40 GHz +/- 3,0 dB

Level measurement scale; logarithmic or linear

- Display scale range up to 200 dB
- Arbitrary scaling from 0,01 dB/div up to 20 dB/div
- Logarithmic scale uncertainty +/- 0,05 dB
- Harmonic distortion level - 70dBc from 10 MHz to 3 GHz
- (for levels at input mixer <-30 dBm) - 90dBc from 3 GHz to 40 GHz
- Intermodulation distortion for a two-tone signal <-80 dBc at 1GHz
- (2 signals with -20 dBm level offset by 30 kHz) (TOI >20 dBm, +25 dBm typical)
- Displayed average noise level 9 kHz - 100 kHz -135 dBm
- (1 Hz RBW, 0 dB input attenuation) 100 kHz - 3GHz - 150 dBm
- 3 GHz - 18 GHz - 150 dBm
- 18 GHz - 40 GHz - 145 dBm

from 1 Hz to 300 kHz in 1-3-10 sequence
200 Hz, 9 kHz, 120 kHz, 1 MHz, 3 MHz
10 MHz / 30 MHz / 160 MHz
zero span; from 1 Hz to full span
+/- 10%
9 kHz (option 10 Hz) - 24 GHz
9 kHz (option 10 Hz) - 40 GHz
+/- 10%
< 5:1
100 MHz
+/- 1x10⁻⁶ / year
+/- 3x10⁻⁷
+/- 1x10⁻⁷
10Hz; 100 Hz; 1 kHz; 10 kHz, 100 kHz
10 kHz - 125 dBc/Hz
1 MHz - 145 dBc/Hz
from DANL to +30 dBm
from -100 dBm to +30 dBm
+/- 0,50 dB
70 dB in 10 dB steps
9 kHz - 3 GHz +/- 0,50 dB
3 GHz - 28 GHz +/- 1,5 dB
28 GHz - 40 GHz +/- 2,0 dB

- Residual signals (input is terminated in 50 Ohm): <-100 dBm
- Spurious signals: <-70 dBc

Input connector

- 24 GHz version 3,5 mm female 50 Ohm
- 40 GHz version 2,92 mm male 50 Ohm
- Input VSWR (minimum attenuation 10 dB) < 2,0
- Calibration signal 100 MHz connector SMA female, 50 Ohm
- Display 12,1 inch touch-screen LCD resolution 1200 x 800

- normal (operation) conditions: temperature: 20 +/-5°C
relative humidity: 30-80%
air pressure: 84 - 106 kPa
- storage and transportation conditions: temperature: (from minus 25° to + 55 °C)
relative air humidity: must not exceed 90%

- power supply voltage and frequency: 220 +/- 22V, 50 +/- 0,5 Hz
harmonics content up to 5%

- maximum power consumption: 350W
- weight: 25 kg
30 kg for a fully loaded **PKI 4380** 40 GHz

Dimensions:

- with standard ribbon ears: 464 x 260 x 537 mm
- with rack mount option: 444 x 240 x 428 mm
- (with front rack handles) 503 mm

PKI 4390

Wideband Direction Finding System

PKI 4390 is designed for mobile use and operation in open space as well as for localisation of transmitters inside. It is the unique solution when high mobility and quick response is essential. The exceptional directional antenna set with integrated electronic compass and data transfer from antenna to analyser provides a classification and localisation of HF signals. This is most important when localising eavesdropping systems.

As soon as a signal is identified the transmitting source can be located by means of bar diagrams and numerical display of the signal level. Besides the displayed information an acoustic signal is audible. The actual antenna alignment is displayed on the monitor and continuously updated by the integrated electronic compass. Additionally the integrated GPS receiver provides necessary position data and hereby ideally supports direction finding.

PKI 4390 works in the frequency range from 9 kHz up to 6 GHz. 4 active directional antennas are necessary to cover this wide range.

Directional antenna 1:
for 9kHz up to 30 MHz
Directional antenna 2:

for 20 Mhz up to 250 MHz
Directional antenna 3:
for 200 MHz up to 500 MHz
Directional antenna 4:
for 400 MHz up to 6 GHz

These have to be connected to analyser. A

complete scan needs less than 500 ms at high resolution. Even sources with very low transmitting power can be identified using the directional antennas due to their extreme low noise level of -30 dBµV/m.



Specifications:

RF Data

Frequency

- Range:
- Phase noise (SSB)

Reference frequency

- initial deviation
- Aging
- Thermal drift

Amplitude

- Display range:
- Reference level (RL)
- RF input attenuation
- Reference level setting

- level uncertainty
- Displayed Average
- Noise Level (DANL)
- Basic unit only

- Displayed Average
- Noise Level (DANL)
- with active antenna
- handle, preamp. on (typ).
- RL = -30 dBm (input attenuation = 0 dB)
- 3rd order intermodulation

- Spurious responses
- (input related)
- Spurious responses
- (residual)

RF input

- Type
- Maximum RF power level
- Maximum DC voltage
- Return loss

9 kHz to 6 GHz

< -100 dBc/Hz (@ 300 kHz carrier offset verified at (57,5 / 2140.5 / 4500.5) MHz

< 1 ppm

< 1 ppm/year, < 5 ppm over 15 years

< 1,5 ppm (-10°C to +50°C)

from displayed average noise level(DANL) to +20dBm

-30 dBm to +20 dBm in steps of 1 dB

0 to 50 dB in steps of 1 dB (coupled with reference level)

set individually from a list or using the "RL Search" function for determining the optimum reference level at a given time

≤ 1.2 dB (15°C to 30°C)

f ≤ 30 MHz: < -160 dBm/Hz (noise figure < 14 dB)

f ≤ 2 GHz: < -156 dBm/Hz (noise figure < 18 dB)

f ≤ 4 GHz: < -155 dBm/Hz (noise figure < 19 dB)

f ≤ 6 GHz: < -150 dBm/Hz (noise figure < 24 dB)

f ≤ 3 GHz: < -167 dBm/Hz (noise figure < 7 dB)

f ≤ 4 GHz: < -166 dBm/Hz (noise figure < 8 dB)

f ≤ 6 GHz: < -164 dBm/Hz (noise figure < 10 dB)

<-60 dBc for two single tones,

with a level of 6 dB below RG, spaced by 1 MHz or more

< -60 dBm or RL-60dBm (whichever is worse)

and a carrier offset of 1 MHz or more

<-90 dBm (RL=-30 dBm, input attenuation = 0 dB)

for 294 to 306 MHz and 4534 to 3486 MHz limited to <-85 dBm

N-connector, 50 Ohm, female

+27 dBm (destruction limit)

+/- 50V

> 12 dB (typ.) f ≤ 4.5 GHz

> 10 dB (typ.) f > 4,5 GHz

RL ≥ 28 dBm (input attenuation ≥ 2 dB)

PKI 4390**Operating Modes**

- Measurements vs. frequency
- Measurements vs. time
- Measurements vs. orientation/position

Spectrum

- Measurement principle
- Resolution bandwidth
- RBW (-3 dB nominal)
- Video bandwidth VBW and RMS detection
- RMS detection:
- Filter type
shape factor (-60 dB/-3 dB) 3,8 typical

Measurement

- Spectrum
- Delta spectrum
- Spectrogram:
- Spectrogram & Spectrum

Trace (spectrum)

- Act:
- Max
- Avg:

- Max Avg:
- Min:
- Min. Avg:

Detector (Spectrogram)

- +Peak:
- RMS:
- -Peak:

Spectrogram recording

- Frequency resolution:
- Observation period:
- Time resolution:
- Magnifier

Level Meter

- Measurement principle
- Detector

- Resolution bandwidth
- RBW (-6 dB)
- Filter type
- Roll-off factor
- Video bandwidth (VBW)

- Max hold
- Noise threshold

Direction Finding

- Measurement principle

- Antenna direction
- indication

Position indication

- Outdoor

- Indoor
- Detector

Display modes

- Manual bearing

spectrum (including Spectrogram)
multi-channel power
level meter
scope (option)
direction finding incl. horizontal scan and localisation

high resolution spectrum analysis with up to 27000 frequency points per spectrum
10 Hz to 20 MHz (1-2-3-5 steps)

0,2 to 2 MHz (1-2-3-5 steps) or off
coupled with selected RBW (VBW = RBW/10...RBW/1000)
the effective integration time for forming the RMS value can be defined as $T = 0,32 / \text{VBW}$
Gaussian

graphical analysis, peak table, channel power
display of selected traces relative to the reference trace (ref)
visual representation of recorded spectra
visual representation of recorded spectra with simultaneous view of the actual trace

clears the previous spectrum and displays the actual measured spectrum
maximum hold function
RMS averaging over a selectable number of spectra (4 to 256)
or a selectable time period of 1 to 30 minutes
maximum hold function after averaging
minimum hold function
minimum hold function after averaging

maximum value of all values within an interval
root mean squared average power of all the measurements within an interval
minimum value of all values within an interval
All three detectors are used simultaneously for spectrogram recording

$\geq F_{\text{span}}/860$
Up to 400 traces (spectrogram lines)
approx.. 4 s up to 40 Hours
as fast as possible, 10 ms to 5 min (1-2-5 steps) or 6 min
Simultaneous display of the selected spectrum and a magnified section of interest (magnification level of 10x or 50x)

selective level measurement (zero span mode at a tunable fixed frequency)
peak (hold time = 480 ms)
RMS (average time selectable from 480 ms up to 30 min.)
Peak & RMS simultaneously
100 Hz to 32 MHz
(in steps of 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000,..., 10 MHz, 13.333 MHz, 16 MHz, 20 MHz, 26.666 MHz, 32 MHz)
steep cut-off channel filter (app. raised cosine)
0.16
0,01 H to 32 MHz or off
coupled with selected RBW (VBW = RBW/1... RBW/10000)
available for peak and RMS detectors
selectable at 0, 3, 6, 10, 15, or 20 dB relative to device noise floor.
Measurement values below threshold are shown as "absolute threshold value"

selective level measurement (zero span mode at a tunable fixed frequency)
Possible parameters and settings as specified under LEVEL METER
Numerical display of azimuth, elevation and polarization
determined by the embedded electronic compass of the antenna handle

instrument position displayed as latitude and longitude determined by the embedded GPS receiver of the basic unit. Optional: graphical indication of the current position drawn on a map.
instrument position set manually on an editable rectangular room layout
peak or RMS detection, RMS averaging time: selectable, 0,48 s to 30 min

bar graph and numerical display of the signal level and indication of the direction

PKI 4390

- Horizontal scan
- Smart DF localization

Horizontal scan

- Continuous
- Discrete
- Discrete with max hold
- SmartDF localization

- Transmitter table
- Maps (option)

Scope (Option)

- Measurement principle
- Resolution bandwidth
- RBW, (-6 dB nominal)
- Filter
- Video bandwidth (VBW)

Measurement

- High resolution scope
- Long-time scope
- I/Q data
- Detector
- Magnifier
- Duty cycle
- Triggering

Multi Channel Power

- Measurement principle
- Number of channels
- Channel band width
CBW (-3DB nominal)
- Roll-off factor
- Applied RBW

- Channel lists

- Detection
- Trace, RBW
- Display/Views
- Table

- Bar graph

polar diagram of the signal level vs. antenna orientation, normalized to the maximum signal, automatic direction finding and indication

graphical indication of the triangulation results for all measurement positions, accepts measurements being performed by manual bearing or horizontal scan. Display of the estimated emitter coordinates, optional drawn on a map (option mapping)

every 120 ms the polar diagram is updated with the current signal level and compass data. Start and stop is initiated by key press on the antenna handle. The duration of a scan is limited to a maximum of 4 min. The target azimuth is calculated automatically.

for every key press on the antenna handle the polar diagram is updated with the current signal level and compass data. At least 3 samples are required for calculating the target azimuth (up to 2000 samples are possible). Useful for longer averaging times.

The polar diagram is updated with the max hold signal level and compass data by pressing a key on the antenna handle. Allows determination of the direction even of intermittent signals.

Shows the vector of target azimuth related to the measurement position. Triangulation results based on several vectors will be calculated and the geo coordinates of the potential transmitter position will be displayed. Coordinates are referenced to the geodetic datum. Signal fading vs. distance can be taken into account for target position calculation. Remotely determined vector data can be added by manual entry.

used to simplify frequency settings and speed up finding multiple sources transmitting at different frequencies. Tables can be created on-site and include Fcent and RBW.

display of high-resolution street maps in various zoom levels. OpenStreetMap bitmap tiles can be downloaded from internet free of charge using the **PKI** map download tool. Map data are stored on micro SD card and then plugged into the card slot for portable use.

selective level measurement (zero span mode at a turnable fixed frequency)

100 Hz to 32 MHz

(in steps of 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000,...10 MHz, 13.333 MHz, 16 MHz, 20 MHz, 26.666 MHz, 32 MHz)

type: steep cut-off channel filter (app. raised cosine)

Roll-off factor 0.16

0,01 Hz to 32 MHz or off

coupled with selected RBW (VBW = RBW/1..RBW/10000)

measures the actual magnitude

Time resolution coupled to 1/RBW (31.25 ns to 10 ms)

uses selectable detectors to measure the magnitude

Sweep time 4 μ s to 24 h (resolution \geq 250 μ s)

measures the real and imaginary part of the signal I, Q or both (max. 250000 samples each)

Time resolution coupled to 1/RBW (31.25 ns to 1 ms)

+Peak, RMS, -Peak can be selected individually for long-time scope

simultaneous display of the selected spectrum and a magnified section of interest

(magnification level of 25x or 500x)

measurement function for the ratio of average power to maximum power (not for I/Q data)

free run, single, multiple, manual start, time controlled

Programmable trigger level, trigger slope and trigger delay

spectrum analysis, followed by channel power evaluation

1 to 500, to be defined on instrument or by PKI tools PC software

individually selectable for each channel, from 40 Hz to 6 GHz

$< 4 * RBW / CBW$

automatic: $CBW / 4$ ($RBW \leq 20$ MHz)

Manually: 10 Hz to 20 MHz (1-2-3-5 steps), ($RBW \leq CBW / 4$)

Individual: separately defined for each channel using **PKI**-tools

automatic creation on the unit or by PC configuration software. Channel name is assigned

automatically. User definable channel names (15 characters max.) can be assigned by PC. "Others"

summarizes results of all frequency gaps within the list of channels.

root mean square value (RMS), integration time $T = 1 / RBW$

see spectrum analysis mode

channel name, corresponding frequency band, measurement result, RBW if set individually for each channel. Sort function according to columns. Selectable evaluation function: distribution of each channel in relation to total amount

bar graph for measurement result of each channel

Noise threshold selectable at 0, 3, 6, 10, 15, or 20 dB relative to device noise floor, measurement values below threshold are shown as "< absolute threshold value".

PKI 4390

General Specification-Basic

Instrument display

- Type TFT color display with backlight
- Size, resolution 7 inch (152 mm x 91 mm) , 800 x 480 pixels
- Interface USB mini B (USB 2.0)
- Optical RS 232 (baud rate 115 200)
- Headphone 3.5 mm TRS, switches off the integrated speaker when connected
- MicroSD-card interface for maps and export of measurement data, screenshots and WAV
- RF cables are automatically detected (type, frequency response and more), other cables and external devices (e.g. filters) can be defined and selected manually
- directional antennas are automatically detected (type, polarization, consideration of typical antenna factors, preamp gain and frequency response)
- other antenna parameters can be defined and selected manually

• Cables, external devices

• Antenna detection

Result units

- With antenna V/m, A/m, W/m2, mW/cm2 , dBV/m, dBmV/m, dBA/m, dBµV/m, dBm, dBV, dBmV, dBµV
- Without antenna dBm, dBV, dBmV, dBµV
- Display functions Y-scale reference: -130 dBm, to 40 dBm
- Y-scale range: 20 dB, 40 dB, 60 dB, 80 dB, 100 dB, 120 dB
- Y-scale auto: automatic scaling
- Marker functions for graphical analysis of spectrum, spectrogram, scope, MCP bar graph
- single marker or delta marker
- peak marker: highest, lower, higher, left, right adjustable peak threshold and excursion

Demodulation

- Modulation types AM, FM, LSB, USB (level meter and DF mode)
- Representation instrument speaker or external earphone
- Squelch -120 dB to -40 dB nominal, off
- Audio recording format 16 Hz / 16 bit wave file recording (WAV)
- Fast frequency setting frequency setting by selection lists (multi-channel table or transmitter table) or by Fstep
- Fast mode switch "go to: mode" transfers centre frequency or marker frequency and other relevant parameters to the selected operating mode

• Setups

Results storage

- Measurement results ASCII format for further evaluation and import into spreadsheets (e.g. MS-Excel)
- Comments voice comments (wave file format) or text comments (ASCII) can be added to saved results
- Screenshots file format PNG
- Demodulation records file format WAV
- Conditional storing conditional storing of results exceeding a user definable
- (not for DF and scope) threshold value with individual storage rates and reset function
- Time controlled storing long term monitoring up to 99 hours
- (not for DF and scope) settings for: start date, start time, duration and time interval (6 s to 60 min.)
- Compass /GPS inside the basic unit is a GPS receiver for position detection and an electronic compass as an aid to orient the map northwards

General Specifications - Basic Unit

Environmental

- Operating temperature - 10°C to + 50°C with battery
- 0°C to + 40°C with external power supply
- Humidity < 29 g/m3 (< 93% RH at +30°C) non condensing

Compliance

- Climatic

Storage	1K3 (IEC 60721-3) extended to -10° to + 50°C
Transport	2K4 (IEC 60721-3) restricted -30°C to +70°C due to display
Operating	7K2 (IEC 60721-3) extended to -10°C to +50°C
- Mechanical

Storage	1M3 (IEC 60721-3)
Transport	2M3 (IEC 60721-3)
Operating	7M3 (IEC 60721-3)
- Ingress protection IP 52 (with antenna attached and interface protector closed)
- IP 67 (stored in the hardcase)
- EMC EU complies with EMC directive 2004/108/EC and IEC/EN 61326-1: 2006
- EMC immunity IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-11
- EMC emissions IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) class B
- Safety complies with European Low Voltage Directive 2006/95/EC and IEC/EN 61010-1: 2004
- Weight 2,8 kg (basic unit including battery)
- Dimensions 213 mm x 297 mm x 77 mm (HxWxD)

- Power supply Lithium-Ion rechargeable battery pack, hot-swappable during operation
- Battery Operating time: 2,5 hours (nominal)
- Charging time: 4,5 hours (nominal)
- input: 9 to 15 VDC
- Adapter 100-240 VAC / 12VDC 2,5 A
- External power supply 24 months (recommended)
- Calibration interval

PKI 4390

• Country of origin	Germany
General Specification - Antenna Handle and Antennas	
Environmental	
• Operating temperature	-10°C to +50°C
• Humidity	< 29 g/m3 (< 93% RH at +30°C) non condensing
Compliance	
• Climatic	Storage 1K3 (IEC 60721-3) extended to -10°C to +50°C Transport 2K4 (IEC 60721-3) Operating 7K2 (IEC 60721-3) extended to -10°C to +50°C
• Mechanical	Storage 1M3 (IEC 60721-3) Transport 2M3 (IEC 60721-3) Operating 7M3 (IEC 60721-3)
• EMS EU	complies with European Low Voltage Directive 2006/95/EC and IEC/EN 61326-1: 2006
• EMS immunity	IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-11
• EMS emissions	IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) class B
• Safety	complies with European Low Voltage Directive 2006/95/EC and IEC/EN 61010-1: 2004
• Dimensions (L.W.H)	handle: 165 x 165 x 43 mm, 470 g
• Weight without cable	dir. antenna 1: 326 x 255 x 80 mm, 450 g dir. antenna 2: 285 x 410 x 43 mm, 350 g dir. antenna 3: 460 x 320 x 48 mm, 400 g 3100/14: 430 x 370 x 42 mm, 380 g
• Country of origin	Germany
Active Antenna Handle (3100/10) with Electronic Compass and Preamplifier	
• Frequency range	9 kHz to 6 GHz Frequency response correction is applied automatically when used in conjunction with the PKI basic unit built-in, can be switched off
• preamplifier	amplification 20 dB, noise figure < 6 dB
• compass	embedded electronic compass
• compass uncertainty	azimuth uncertainty < 1,5° RMS for tilt < 15° pitch and roll uncertainty < 3° RMS in the range of +/- 30° (RMS means the standard deviation of the specified error)
• Connection cable to basic unit	RF cable and control cable combined in a flexible tube, length 1 meter
• RF connector to basic unit	N-connector, male, 50 Ω
• RF connector to directional antenna	BMA 50 Ω (female on handle side)
• Antenna connectivity	antennas can be plugged in with horizontal and vertical polarization. Type of antenna and polarization detected automatically and transferred to basic unit from basic unit
• power supply	connecting thread on the underside of the handle for tripod mounting
• mounting	
Directional Antenna 1	
• Frequency range	20 MHz to 250 MHz Typical antenna factor correction is applied automatically when used in conjunction with the basic unit and active antenna handle
• Antenna type	loop antenna
• Antenna factor	21 dB (1/m) typical @ 200 MHz (passive mode)
Directional Antenna 2	
• Frequency range	200 MHz to 500 MHz Typical antenna factor correction is applied automatically when used in conjunction with the basic unit and active antenna handle.
• Antenna type	dipole antenna
• Antenna factor	21 dB (1/m) typical @ 350MHz (passive mode)
Directional Antenna 3	
• Frequency range	400 MHz to 6 GHz Typical antenna factor correction is applied automatically when used in conjunction with the basic unit and active antenna handle
• Antenna type	log-periodic antenna
• Antenna factor	18,5 dB (1/m) typical @ 500 MHz (passive mode)
Loop Antenna, H-Field	
• Frequency range	9 kHz to 30 MHz Typical antenna factor correction is applied automatically when used in conjunction with the basic unit and active antenna handle
• Antenna type	shielded loop antenna
• Antenna factor	passive mode (preamp, off): 66,0 dB (1/m) typical @ 100 kHz 47,5 dB (1/m) typical @ 1 MHz 42,0 dB (1/m) typical @ f > 10 MHz

PKI 4400

Portable Noise Generator

The **PKI 4400** is designed as an easily portable acoustic noise-generating unit, which can be carried in coat-pockets or briefcases, in order to protect sensitive conversations inside rooms. The **PKI 4400** Portable Noise Generator is very versatile, as it can be fixed on many different surfaces inside the room in order to protect sensitive conversations from being monitored. The typical application is found in conference rooms with critical areas like windows and non controllable adjacent rooms. It is suitable for walls, floors, ceilings, water- and/or heating pipes and windows. By means of the supplied 4 resonators, the unit creates a noise which, by its vibrations, disturbs every common microphone by overlapping the sound-waves of spoken

words. The optimised voiceband noise masking reduces the effectiveness of eavesdropping devices such as contact microphones, wired microphones inside walls, battery operated audio transmitters or devices using mains power supplies for operation as well as laser-/microwave- and/or infrared reflections from windows. Any environmental masking easily is possible by using several units of the **PKI 4400** at the same location. The **PKI 4400** can be mounted to any smooth surface by the use of the provided suction cups or just placed in any critical area.

Specifications:

- Audio frequency range 300 Hz - 3 KHz
- Output sound level max. 92 dB at 1 m



- Power supply 2 x 9 V alkaline batteries or AC transformer
- Battery life typically 7 hours at 50% level, 2 hours at full level
- Size approx. 18 x 13 x 5 cm
- Weight approx. 350 g
- Includes carrying case, AC transformer
- Protection of sensitive conversations
- Suitable for walls, floors, ceilings and windows
- Easily portable in coat-pockets or briefcases

PKI 4410

Surveillance Mains Protection Unit

PKI 4410 prevents from information leakage through the power supply (220V) and ground lines providing a masking noise there. **PKI 4410** also suppresses wiretaps which are using these lines as a data-transmitting channel. This item detects also our room monitoring system via mains **PKI 2800**. **PKI 4410** is indispensable for any conference in order to protect its members. This reliable and durable device against eavesdropping attacks is nowadays necessary for every conference room.

- 5 - 300 MHz 12 dB
- Spectral-noise density (at 50 Ohm load relatively 1 µV/√ kHz) in the frequency bands, not less than
 - 0,01 - 1 MHz 90 dB
 - 1 - 10 MHz 70 dB
 - 10 - 100 MHz 50 dB
 - 100 - 300 MHz 35 dB

Specifications:

- Protected lines: power supply, ground
- Noise frequency range: 0,01 - 300 MHz
- Noise level adjustment range in the frequency bands, not less than: 0,01 - 0,5 MHz 20 dB

- Quantity of independent noise signal channels (for phase-to-ground and zero-to-ground circuits) 2
- Noise quality factor: not less than 0,9
- Leakage current through ground line: not more than 1 mA
- Noise actuation control: manual, remote,RS-45



- Power supply AC mains: 220 V +/- 10% 50 Hz
- Power consumption not more than 12 W
- Operating temperature: 0 - +50°C
- Relative humidity at +25°C up to 85%
- Atmospheric pressure: 750 +/- 40 mm Hg
- Dimensions: 172 x 172 x 42 mm
- Weight: not more than 1,5 kg

PKI 4650 PKI 4655

Wired Noise Generator, Wireless Noise Generator

The technology of monitoring devices is rapidly increasing and detection and location of such devices is very hard to realize. Transmission frequencies of such items may vary nowadays from VHF- to upper GHz ranges. Additionally optical monitoring systems, like Lasers, Infrared Systems and Audio-Stethoscopes are in use. Therefore it is essential that government departments, as well as industrial companies protect themselves against such monitoring devices. For this purpose we have developed our **PKI 4650** and **PKI 4655**. With both systems an electronic generator creates a white and/or pink noise which is emitted via the resonators to the windows, doors or walls. The resonators can be placed and fixed by the supplied special mastics material. By means of these vibrations, such monitoring devices are interfered and an understandable transmission is impossible. **PKI 4650**, as the standard set, comes with the generator and four cable-connected resonators. **PKI 4655** uses the same principle but is independent from cable connections, as the

resonators are battery-operated and each unit consists of an integrated generator and resonator. Each unit can be placed within seconds. Depending on room size, the number of devices can vary from one unit only to infinity. This white-noise generator especially is in use where members of conferences should not be aware of such protective actions.

Specifications:

- Power supply:
 - PKI 4650** 110/220 VAC
 - PKI 4655** 9 VDC Block battery
- Power consumption: max. 400 mA
- Dimensions: 95 x 29 x 37 mm
- Weight: approx. 130 g with battery
- Scope of supply:



PKI 4650

- 1 x 2-channel noise generator
 - 4 x Contact-resonators
 - 1 x Mains power adapter 12VDC
 - Set of adhesive mastics material
- PKI 4655**
generator combined with resonator, adhesive mastic material
- Cable length: 5 m

PKI 4700

Hand Held Detector

This handy and versatile detector can be used not only for the detection of listening devices but also wireless cameras and illicit mobile phones, that are for example used by unauthorised persons like in prisons etc. The transmitted field strength is indicated on a display as well as by a pitching tone. The nearer you approach to the object you wish to locate, not only the indicated field strength but also the tone pitch increases. Sound alarm of course can be switched off in cases where sounds must be avoided, as for example during sweeping of a room where active transmitters might be in operation. The sensitivity of reception is especially high within the frequency range of mobile phones and

wireless video transmitters, i.e. between 0,9 and 5,8 GHz.

Specifications:

- Frequency range: 10 MHz – 5,8 GHz
- Alarm: LED bar graph internal beeper External vibrator (optional)
- Localisation: by tone pitch
- Display: LED
- Detection range: up to 3 m depending on the signal
- Power: 9V standard battery
- Operating time: 5 hrs continuously



- Weight: approx. 350 g
- Dimensions: 7,5 x 14 x 2,2 cm
- Use for detection of spy cameras, mobile phones or bugs
- Frequency range up to 5.8 GHz
- Bar graph indicator for field strength
- Localisation also by tone pitch

PKI 4710

Computer RF Detector

By this **PKI 4710**, a direct localisation of hidden monitoring transmitters and other unknown transmitting objects, whether room-, telephone-, GSM or video related devices, is guaranteed. For many years our team of experts has been concentrating on latest developments of detection devices in order to provide our customers with best possible products for each and every task. This highly sensitive but small and handy near-field detector allows transfer via cable of all received information onto a laptop and by another connection directly to a suitable scanner to get the sound.

On both, the laptop and/or the optional scanner, the required adjustments and storage can be effected. The more you approach the suspicious object the more the beam-indicator on the **PKI 4710** will increase from left to right plus an audible alarm, additionally presenting the absolute correct frequency on its 10 figures LCD display.

By all of these three indicators the localisation of such suspicious transmitting sources is most easy. We strongly recommend this device for any sweeping operation, as for example for the police for the fight against

terrorism and criminal acts, or for special forces acting against each kind of espionage as well as for military and industrial security forces.

Specifications:

- Frequency range: 1 MHz to 3 GHz



- Resolution: 100 Hz steps
- Input sensibility: <25 mV at 12 dB SINAD
- Power supply: rechargeable battery with mains adapter
- Dimensions: 95 x 68 x 30 mm
- Weight: 220 g

PKI 4715

Optical Detection System

This **PKI** product requires minimal training. A basic security person can be instructed in half an hour. **PKI 4715** identifies the target including sniper scopes, binoculars, cameras, etc. up to 1.3 km distance. And gives you range to target. **PKI 4715** is used for VIP security, sniper detection, video and photography detection, border protection, security of important locations, etc. Devices for larger operating ranges and automatic localization on request.

Specifications:

- Dimensions: 207 x 180 x 83 mm
- Weight: 2 kg with batteries

- Storage temperature: -40°C to +65°C
- Operating temperature: - 20°C to +50°C
- Operating humidity: to 98% @25°C
- DC power: 12-16 VDC
- Battery supply: 4 Li batteries type CR123
- Video and photo recording: SD card
- Video output: NTSC /PAL video output
- Detection range: max. 1300 m depending on weather conditions
- Measurement accuracy: 10 m
- Detection field of view: vertical 3°, horizontal scanning
- Max. scan rate @ full range: 45°/second



PKI 4720

Camera Detector

You are afraid of being monitored by hidden miniature cameras? In this case you should always have this handy camera detector measuring only 50 x 65 x 15 mm with you, in order to control if you are not monitored by any camouflaged cameras in your hotel, home, office etc. The **PKI 4720** traces hidden cameras within some minutes. Just turn it on and scan the wall surfaces through the round hole. The detector emits a pulsating red LED-light. The pulsating frequency is adjustable from 1 to 5. If there is a camera hidden somewhere, the pulsating red light will be reflected by its lens, even if its

dimension is not more than 1 mm, no matter if the camera is active or not. Protect your privacy by using the **PKI 4720** for quick and easy control.

Specifications:

- Dimensions: 50 x 65x 15 mm
- Weight: 40 g
- Power supply: rechargeable battery
- Charger: included
- Operating time: 5 hours per battery charge



- 6 x LED: pulsating, red, pulsating frequency adjustable from 1 – 5
- Battery charge indicator included

PKI 4725

Detector for Cameras and Bugging Devices

This device should always be included in your luggage. Either surveillance cameras, bugs or infrared diodes, the **PKI 4725** detects all wired and wireless units and thus protects you from being monitored anywhere. You can choose between optical alarm via LED-diodes, acoustic alarm via loudspeaker or silent alarm via vibration. This camera and bug detector is the indispensable partner for protection of your privacy.

- Range for high frequency detection: 5 cm - 10 m (depending on signal intensity)
- Sensivity: adjustable, „high“ increases detection range, „low“ decreases detection range“
- Power supply: 2 x 1.5 V batteries type AAA
- IR-detection range: 920nm
- HF-detection range: 1 MHz – 6.5 GHz
- Optical lens: IR
- Dimensions: 108 x 48 x 18 mm
- Weight: 50 g



Specifications:

- Range for laser detection: 10 cm - 10 m

PKI 4730

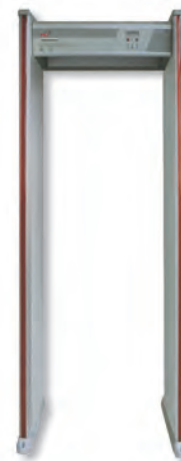
Transition Control Device

Nowadays you can never be sure anywhere, as there are unlimited varieties of eavesdropping devices on the market. There has been an enormous development in interception technology (please see our catalogue). The new devices do not only use higher frequencies, but also totally different technologies, like GSM and GPS. Furthermore digital tapping devices are rating high meanwhile and everybody knows that it is difficult to locate them. Our **PKI 4730** allows reliable localisation of these devices. Integrated in a frame with interior dimensions of 1 x 2 m the device can be arranged before or under every

front door. Now you can be sure that your interlocutor will not activate HF-eavesdropping devices without causing an alarm.

Specifications:

- Dimensions: 100x 200 x 25 cm
- Weight: 12 kg
- Locating frequency: 10 MHz – 6 GHz
- Power supply: 100 – 240 V AC, 50 Hz
- Alarm: optical or acoustical
- Detection range: up to 6 m, according to power of eavesdropping device
- Sensitivity: < 25 mV at 12 dB SINAD



PKI 4735

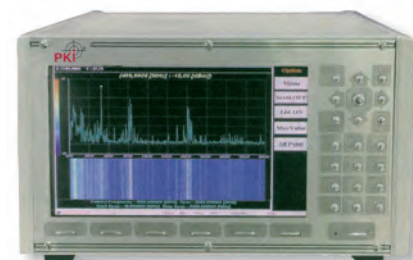
Active Eavesdropping Resistance

Often actions of foreign intelligence services have been planned long beforehand and are executed very professionally. Modern communication technology like GSM (see **PKI** catalogue), laptops and blackberrys facilitate spying attacks. In order to meet such attack, a reliable security structure for protection against eavesdropping is of highest importance. This means active and passive eavesdropping resistance. **PKI** works with experienced eavesdropping specialists using modern devices

(see **PKI** catalogue) in order to detect different types of tapping devices.

Specifications:

- **PKI 4735** comprises: inspection of telephone devices, inspection of local net work (current, computer), examination of rooms by measuring devices and visual devices, qualified training courses, information about risks of radio communication



PKI 4740

Passive Eavesdropping Resistance

PKI develops, supplies and installs bugproof rooms worldwide. This reliable and durable protection against eavesdropping attacks is nowadays necessary for every conference room. Interference attacks are no longer limited to 100 m. Eavesdropping technology has been revolutionized by GSM technology (see **PKI** catalogue). The room screening system comprises HF-screening and acoustic insulation including air conditioning, electrical installation and furniture. Screening is totally invisible for the

user. Furthermore, we are prepared to supply bug-proof booths ready to use.

Specifications:

- **PKI 4740** comprises electro magnetic screening
- acoustic insulation
- power supply bug-proof
- air condition bug-proof
- furniture
- fire-alarm and fire extinguishing systems

**PKI 4750**

Architectural Room Screening

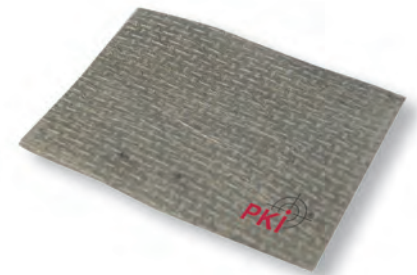
With the **PKI 4750** series of room screening devices we offer a large range of products, architectural engineering, planning and know-how for worldwide government agencies and special task forces in order to prevent their own facilities from being monitored and to make sure that internal electronic works will be kept inside their rooms. The **PKI 4750** Architectural Room Screening integrates the RF-screening into the architecture of a new or already existing room being invisible to the users and others. Each single component, by its own, cannot guarantee a complete protection. Only the integration of compatible devices can realise this. Planning, construction, production and aftersales-service are combined in one hand by

PKI ELECTRONIC INTELLIGENCE. Only with this complete service package attenuations of 40 or 60 dB at 10 MHz to 3 GHz can be achieved and guaranteed. For even higher requirements we use copper- or steel-sheets providing a damping of 80 dB up to 10 GHz.

But as each single project needs to be evaluated case by case it is essential to stay in close discussion with our customers and to find out which kind of electromagnetic screening is most suitable.

Ask us for:

- 1 Architectural Room Screening
- 2 Modular Room Screening Panels
- 3 Electromagnetic Screened Cages



- 4 Screened Tents for RF and EMV Measurements
- Communication and Security
- RF-screening up to 3 GHz
- Integrated screening in existing or new buildings
- Invisible to users and others

PKI 4850

Counter Surveillance Set

It is **PKI's** ambition to enable performance on the verge of technical feasibility. This motivates the **PKI** employees for innovation, research and development.

To make sure that conferences, secret conversations or telephone calls cannot be listened in or transmitted by unknown persons, **PKI** has assorted this counter surveillance equipment. A wide variety of eavesdropping possibilities have been taken into consideration. These special devices are designed for the professional use and should be part of any basic equipment of the police special forces. Please find a detailed list of the individual devices below.

Specifications:

- 1) **PKI 4215** Bug Detector 1 MHz -7 GHz
- 2) **PKI 4720** Camera Detector
- 3) **PKI 6870** Mains Jammer

- 4) **PKI 4170** Non-Linear Junction Detector
- 5) **PKI 4220** Detector for Wireless Systems and WL AN Transmitter
- 6) **PKI 4400** Portable Noise Generator
- 7) **PKI 4145** Multichannel RF Signal Detector
- 8) **PKI 6890** GPS Jammer
- 9) **PKI 4235** Scan Detecting Analyzer
- 10) **PKI 6750** Mobile Phone and WiFi Jammer

As an extra recommendation to be 100% sure that interception is impossible, we offer our

PKI 6700 - PKI 6715.

Please find a detailed description under **PKI 6700 - PKI 6715.**

**PKI 4860**

Professional Protection against Conference Listening

Please have a look at following **PKI** products:

PKI 6700 Conference Protector

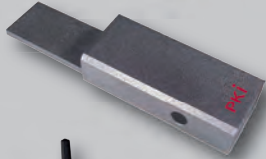
PKI 6710 Conference Protector against Mains Wired and Wireless Interception Possibilities

PKI 6715 Conference Listening Eliminator

GERMAN TURN-KEY SOLUTIONS



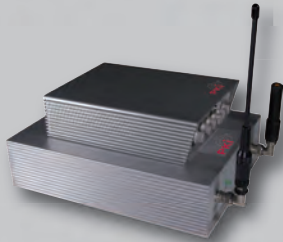
Interception and Monitoring Systems



GPS / GSM Technology



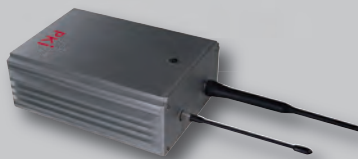
Audio Surveillance Equipment



Counter Surveillance



Video and Night Vision Systems



Jamming Systems



Police, Customs and Military Equipment

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