

# iPROTECT 1216

counter surveillance 3-band  
RF detector



## GENERAL DESCRIPTION

The iProtect 1216 is a new professional RF detector created for discovering all types of RF eavesdropping devices, including analog and digital, as well as those that transmit information over mobile networks and using wireless standards

## KEY FEATURES

### 3-band detection

The frequency range of the 1216 has been split into 3 parts, each displayed by a separate bargraph: "VHF/UHF 50-700 MHz", "Mobile and wireless 700 MHz – 3 GHz" and "Microwave and wireless 3-12 GHz". The separate indication allows the operator to understand better what type of signal is detected, to detect several signals at the same time and to sustain the ability of detection near the sources of interference. While the general sensitivity of a typical near-field receiver/RF detector drops near any interference, the iProtect 1216 decreases the sensitivity on just one band and maintains a high sensitivity on others

### Microwave

The third "microwave" band of the iProtect 1216 covers the 3-12 GHz frequency range. This band detects Wi-Fi and other wireless protocols operating at 5 GHz and on any higher frequencies. The microwave frequencies are supposed to be more covert since they are not detectable by common RF detectors. The iProtect 1216 finds these signals easily. In order to reduce the attenuation in cables the microwave circuitry of the 1216 is located directly in the microwave antenna's housing

### Alarm

Despite the recommendation to deactivate any known and safe radio devices like Wi-Fi access points, wireless devices, mobile phones and cordless phones before a bug sweep, sometimes interference can come from adjacent rooms and causes false detections. In this case the Alarm feature helps the operator to reject background interference by adjusting the threshold. When a signal exceeds the alarm threshold the device produces an alerting sound. The Alarm is also extremely convenient when probing hard-to-access places or keeping the device in the "guarding" state. The alarm threshold has 48 tuning steps

### Histogram

In the ONE BAND display mode the iProtect 1216 shows the histogram for the selected band in addition to the bargraph. The histogram draws the history of the signal obtained over the last 5 seconds and is very informative when observing intermittent/periodical signals or when probing the area quickly

## Wi-Fi and 3G

The iProtect 1216 has a significantly higher sensitivity to the 3G, Wi-Fi and Bluetooth bugging devices compared to conventional RF detectors. This advantage was achieved with the help of the additional radio frequency paths in the circuit dedicated to the specific frequency spans. Therefore Wi-Fi, Bluetooth and a number of other wireless protocols operating within the 2.4/5GHz bands are detected at an increased distance

## Signature

In addition to drawing a bargraph the iProtect 1216 can identify some types of signals and show a corresponding message on the display. By combining information coming from the extra RF paths and from the audio signature the 1216 identifies the following signals: cordless DECT device in an "idle" state, active DECT device, GSM, 3G, Wi-Fi/Bluetooth

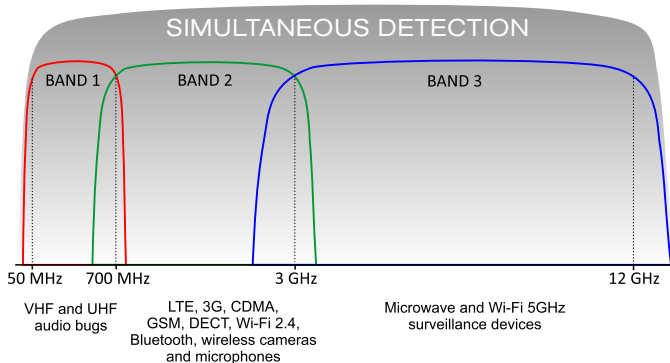
## ALL FEATURES

- ▶ Detects all types of RF transmissions including analog and digital, audio and video
- ▶ Frequency range 50 MHz – 12 GHz
- ▶ Separation into 3 bands helps to avoid loss of sensitivity near strong interference
- ▶ ALL BANDS and ONE BAND display modes
- ▶ High sensitivity to 3G and wireless protocols (Wi-Fi, Bluetooth, etc.)
- ▶ Working modes: SILENT, AUDIO and ALARM
- ▶ Adjustable alarm threshold
- ▶ Portable, reliable and easy-to-use
- ▶ The BARGRAPH shows the momentary RF level
- ▶ The HISTOGRAM displays the RF signal over 5 seconds (in 'ONE BAND' display mode)
- ▶ The SIGNATURE displays the possible signal type
- ▶ Built-in directed microwave antenna
- ▶ Shock-resistant CNC milled duralumin housing
- ▶ Rechargeable Li-Ion battery with resource of 6 hours
- ▶ Controlled by microcontrollers
- ▶ 2 x built-in OLED displays

## Specifications

Frequency range	50 MHz – 12 GHz Band 1: 50 – 700 MHz Band 2: 700 MHz – 3 GHz Band 3: 3GHz – 12 GHz
Indicators	Main display Status display
Display modes	ALL BANDS, ONE BAND
Working modes	SILENT, AUDIO, ALARM
RF connector	SMA (band 1 and 2), 50 Ohm
Microwave antenna	Built-in (band 3)
Threshold settings	48 steps
Battery	Rechargeable Li-Ion 1150mAh@3.7V
Battery resource	6 hours
Recharge time	4 hours
Recharge source	USB
Dimensions with antennas	173 x 71 x 21 mm
Weight	265 g
Operating temperature:	-10° C to 45° C

## FREQUENCY COVERAGE



## SUPPLIED SET

Detector, rod antenna, mini-USB cable for recharging


# PARTS AND CONTROLS



## POWER button

Turns the iProtect 1216 on and off

## JOYSTICK

Pressing the joystick's button  selects the display mode: ALL BANDS or ONE BAND.

- In the **ALL BANDS** the iProtect 1216 performs simultaneous detection in 3 bands and displays 3 bargraphs
- In the **ONE BAND** the detector displays the bargraph and histogram of the selected band



- select the band in the **ONE BAND** display mode and in the **AUDIO** working mode



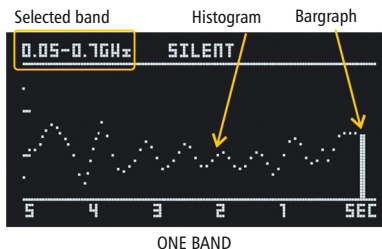
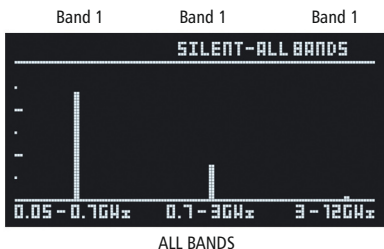
- select the threshold in the **ALARM** mode

## MODE button

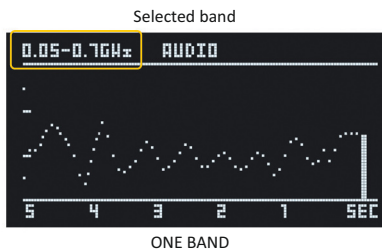
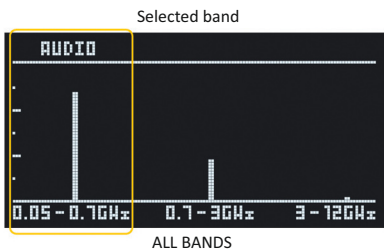
Selects the working mode:

**SILENT** – no sound is produced. Best suited for covert detection.

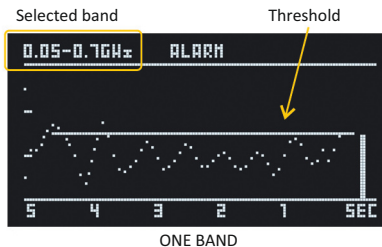
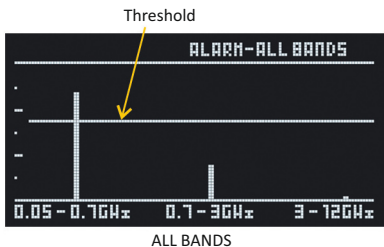
This mode is available both in ALL BANDS and ONE BAND display. Press the joystick ◀ ▶ to select the band in the ONE BAND display.



**AUDIO** – the 1216 produces the signal's audio footprint. Some signals have a typical sound, for example, a Wi-Fi or mobile GSM/3G/LTE device, so the user can recognize the protocol in some cases. The joystick's ◀ and ▶ buttons can be used for selecting the band



**ALARM** – the 1216 produces an alerting sound when the signal's level exceeds the threshold. This mode is especially convenient when it is necessary to reject background interference, e.g. when probing hard-to-access places or for guarding the area.



## Antennas

To achieve the best performance the iProtect 1216 uses 2 antennas. Bands 1 and 2 receive the signal from the SMA connector, while the 3rd band uses the rigidly attached microwave antenna.

Thanks to its compact size and relatively smooth frequency coverage the standard rod antenna from the supplied set is well suited for most detection tasks. It can be used both in the ALL BANDS and ONE BAND display modes.

Employing other antennas may increase sensitivity and detection distance on specific bands in accordance with the antenna's specifications.

The following optional antennas can be recommended (not included in the supplied set):

- Omnidirectional antenna ODA-4 - increases sensitivity on BAND 1
- Directed antenna MWA-6 – increases sensitivity and adds directivity on BAND 2

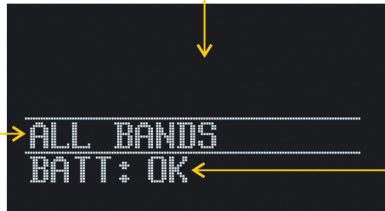
## Status display

The iProtect 1216 has the second display showing the auxiliary information:

ALARM – threshold exceeded

3G, GSM, BT\_WF, DECT Idle, DECT Active - signatures

Display mode:  
ALL BANDS or  
ONE BAND



Battery status:  
OK – fully charged  
MED. – charged 30-80%  
LOW. – less than 30% left

## USAGE

### Warning

To avoid false detections it is very important to deactivate all radio-transmitting devices in the area before using the iProtect 1216:

- All Wi-Fi access points and Wi-Fi devices (printers, surveillance cameras, laptops, pods, etc.)
- Cell phones
- Cordless phones
- Bluetooth devices, etc.

## Preparation

Create any sound in the room to activate the bugging devices and mask your actions. Use a portable speaker, radio or any other source.

Connect the antenna to the SMA socket.

Turn on the iProtect 1216 and make sure the device is in the ALL BANDS display mode with 3 bargraphs displayed.

## Selecting the working mode

- If the sweeping procedure is revealed, your adversary might deactivate the bugging device making the further search harder. For fully covert operation, when it is impossible to create a masking sound in the room, use the **SILENT** mode.

- The **AUDIO** mode can be selected in order to listen to the signal's audio footprint. Thanks to a specific sound some signals can be identified quicker.

Advice: Carry out a short training with several RF devices before applying this mode. Detect and listen to an active cell phone, Wi-Fi access point, cordless DECT phone, etc.

- The **ALARM** mode is very convenient since it allows the user to scan quickly without watching the display. When the iProtect 1216 approaches the transmitter the RF level exceeds the threshold and the device starts producing the alerting sound and shows the "ALARM" message. Additionally the threshold helps the user to mask the interference coming from outdoor broadcasting, communication towers or neighboring wireless devices.

To minimize false detections the alerting sound appears after the signal exceeds the threshold during a predefined time.

## Threshold

Adjust the threshold level to mask any background interference in the ALARM mode.

Use the ▲▼ buttons to set the threshold slightly higher than the existing RF background displayed on the bargraphs.



## Scanning the area

Walk around the room clockwise or counter clockwise and probe all objects, surfaces and constructions with the detector. Scan slowly, approaching the antenna(s) 10-20 cm to the objects.

Spy bugs can be located everywhere. Take into consideration that a hidden camera must be installed in a way that it observes the table, negotiation area or other place of interest. Audio listening bugs must hear the conversation clearly so they are typically placed closer to the target area and further from any source of noise.

Despite the fact a potential bugging device can be powered from a battery, special attention should be paid to objects and places where an AC source is available.

The bargraph levels will increase or decrease when the detector is closer to or further away from a transmitting device.

## Interference

The following appliances and equipment, when active, periodically send radio waves which may be detected during the search:

- Laptops
- Tablets
- Cell phones (GSM, 3G, CDMA, 4G/LTE)
- Printers and other office equipment with wireless functions
- Bluetooth headsets and accessories
- Internet-of-Things (IoT) devices (security systems, sensors, home appliances, etc.)
- Wireless alarm systems
- Cordless DECT phones
- Other wireless devices

Each transmitting device must be inspected carefully. It is recommended to consult with the owner/customer in order to confirm that the device is known and friendly. When possible deactivate its wireless function temporarily (switch off or turn on the flight mode) and continue searching.

Please note that the modern environment, especially urban areas, is full of RF sources. As a result the detector may show a constant or periodical illumination on the bargraphs. External interference coming from radio and TV broadcasting, cell towers, radio communications, etc. tend to cause a similar increase of RF level near a number of windows. Signals sent by wireless and mobile devices from neighboring premises cause an increased level near the adjacent walls or constructions. The ALARM mode is recommended when it is necessary to reject interference.

## Locating/pinpointing the bug

If a suspicious place with a high RF level is found, choose the ONE BAND display mode by pressing the joystick **▼** and select the dangerous band with the help of the **◀ ▶** buttons. As the detector is approached to the transmitter the RF level will increase. Increase the threshold periodically to narrow the area of search when in ALARM mode. The HISTOGRAM will help you not to omit the intermittent signals by displaying the recent measurements obtained during the last 5 seconds.

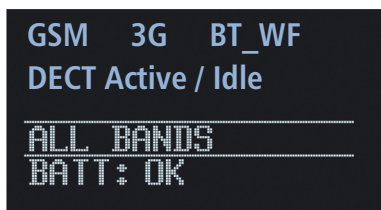
After finding the precise place start its physical inspection.

Do not forget to return the ALL BANDS display mode when continuing the general search.

If a bugging device is found, do not stop. There may be others!

## Signature

By analyzing the signal's audio footprint and some other properties the iProtect 1216 is able to identify and display certain protocols on the status display:



Message	Protocol
GSM	GSM
3G	3G
DECT Idle	DECT in the idle state
DECT Active	DECT in the active state
BT_WF	Wi-Fi, Bluetooth and other wireless devices in the 2.4 Ghz band

The identification is made when the signal is strong or when the source is approached closely.

The signature helps the user to distinguish between a real danger and interference in some cases, particularly when it is impossible to reach the transmitter physically.

## Detection distance

The detection distance of any RF detector (near-field receiver) depends on two major factors:

- Transmitter's output power
- Presence of interference

In a "clean" environment, with all known wireless and mobile devices deactivated, the bargraph of an RF detector shows the "near to zero" level. In this situation the user will observe the slightest increase on the bargraph caused by a bugging transmitter even at a long distance.

In a real urban environment there are a huge number of different transmitters including broadcasting, communication and portable wireless devices. A typical RF detector (near-field receiver) receives these signals and shows a constantly increased level on the bargraph. This results in decreasing the detecting distance as the bugging signal must exceed the constant background to be detected.

The iProtect 1216 has a big advantage compared to conventional RF detectors and near-field receivers. While the general sensitivity of a typical near-field receiver drops near any interference, the iProtect 1216 decreases the sensitivity of just one band and maintains a high sensitivity on others.

Some signals will be detected by the 1216 at a distance of 2-3 meters, while others – at 10-20 cm. For maximum possible security it is recommended to probe the surfaces and objects at a distance of 10 cm.

## Checking landline phones

Telephone bugs may be installed anywhere a phone line lays. It may be within the phone set, the phone outlet, connecting box or cable. Most telephone bugs activate only when the receiver is off-the-hook. Therefore the sweeping of phone lines should be carried out only when the receiver is in this state. Move along the phone line and probe it while your assistant picks and hangs up the phone periodically. Watch for the presence of changes on the bargraphs. A high RF level might well mean the presence of transmitter.

The iProtect 1216 will react to cordless phones since they send radio signals. The DECT cordless phones should be detected by the Band 2 with the corresponding message on the signature display - "DECT Idle" or "DECT Active".

The presence of a high RF level on the Band 2 at a distance of 1-2 meters to a DECT device is normal. At the same time the presence of a high RF level on the Band 1 and 3 should be treated as "suspicious".

## Battery

The iProtect 1216 has a built-in rechargeable battery providing a resource of up to 6 hours. As the battery becomes discharged the corresponding label on the status display will change:

**OK** – fully charged

**MED.** – charged 30-80%

**LOW.** – less than 30% left

The 1216 will turn off automatically when its battery is discharged to the crucial level.

You can recharge the detector from any USB port, including of the laptop, cell phone charger or car USB adapter. Recharging time is 4 hours.

The detector can be operated during recharging.



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