

### The distinctive features of the RASCAN-4 radar:

- Ability of executing one-sided sounding of a wall, instead of double-sided sounding as X-ray apparatus does
- Ability to find out not only metal objects, but also non-metallic ones
- Safety of radar's using for operator.

### RASCAN-4 radar can be used in the following areas:

- Inspection of building structures for determining the position of reinforcement, voids and other heterogeneities
- Surveying of especially critical constructions (airport runways, bridges, etc.) for determining their latent flaws
- Detection of cracks in underground parts of buildings and structures for prevention of the water infiltration
- Counterintelligence activities for detecting bugging devices
- Inquiry activities of law-enforcement agencies.

### Technical info:

The weight of equipment set	- 1.9 kg
Maximal sounding depth	- 0.2 m
Resolution in plane of sounding	- 2 cm
Radiating power	- 10 mW
Number of operating frequencies	- 5
Number of signal's polarizations	- 2
Productivity	- 4...6 sq m per hour

The input of the information in IBM PC is carried out through special interface connected to the USB port of computer. Thus computer's modernization is not required.

*The Laboratory's staff members had been rewarded with Russian Federation government's prize in the field of science and technology for creation of the RASCAN radar technology.*

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*We know how  
to see invisible*



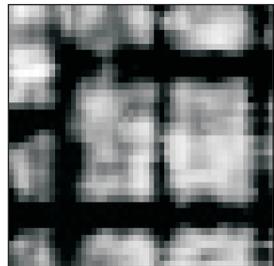
**High Resolution  
Radar for Sounding of Building  
Structures and Works**

**RASCAN-4**

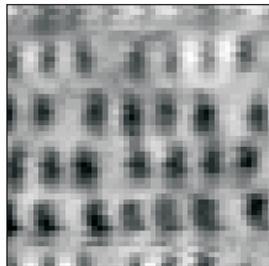
The Remote Sensing Laboratory offers a new UHF introscope intended for non-destructive testing and evaluation of construction details (brickworks, ferroconcrete and so on). The main destinations of the introscope are detection of concealed objects (wires, reinforcement), voids, defects and water infiltration. The device could be useful to receive images of internal structure of the objects under investigation. The introscope's resolution is about 2-3 cm in plane of searching.

The introscope is subsurface radar that records signals reflected from internal objects. All procedures with the received signal are performed by developed software. The microwave image of object under investigation is presented on the screen of the computer and could be put to processing with the purpose of improvement of its quality.

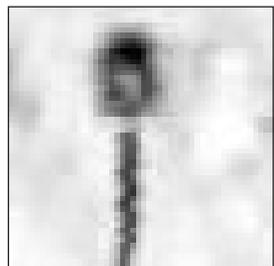
The figures presents examples of microwave images of various objects.



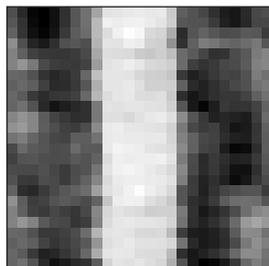
**A reinforced concrete wall**



**A wall made from slag concrete blocks**



**A socket with the latent posting in a concrete wall**



**A ventilating channel in brick work**

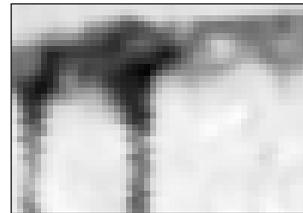
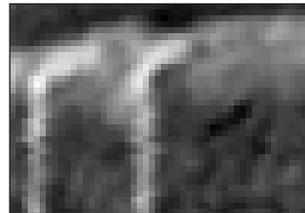
The employees of laboratory have carried out investigations of some real objects:

- Detection of places of water proofing faults in the walls and ceiling structures of the underground garage
- Definition of the exact position of plastic pipes laid within cement covering of a floor for prevention of possible damages of plastic pipes at mounting an underlying surface of parquet flooring.

**UNDERGROUND GARAGE INVESTIGATION**



**Operators with the RASCAN-4 radar during the wall examination**



**Two cross polarizations microwave images of the ceiling ledge show spots corresponding to the places with increased moistening**

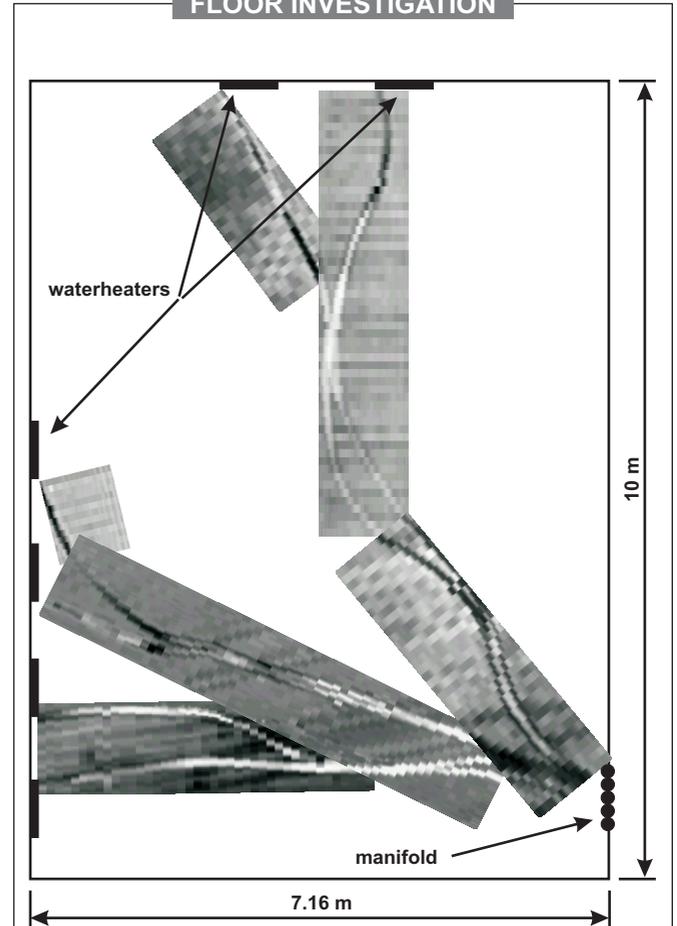


**Opening the crack**



**Sealing the crack with wet seal grout**

**FLOOR INVESTIGATION**



The figure presents location of plastic tubes in the room of the private house in Moscow Region. The routes of tube location in the form of dashed lines can be seen clearly in the picture. The variation in contrast along the lines is explained by the variation in the depth of their laying. The location of tubes was determined relative to the radar antenna by a local coordinate system. The position of the tubes was marked in chalk on the floor surface as the radar was moved along the investigated route. The investigation of the room with the area 300 sq. m was made within one working day. Thirty routes with overall length about 200 m were identified.