IDS
INGEGNERIA DEI SISTEMI S.p.A.

TRHF/TRHFNA
Hardware Configuration
User's Guide

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OUR CONTACTS

IDS Ingegneria dei Sistemi S.p.A. – GeoRadar Division
Via Enrica Calabresi, 24
56121 Montacchiello (PISA) - ITALIA
Fax: +39.050.3124 205
inforis@ids-spa.it

Customer Care department:
customercare.gpr@ids-spa.it
Tel.: +39.050.3124 355/356

Sales & Marketing department:
sales.gpr@ids-spa.it
Tel.: +39.050.3124 352

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CONFORMITY TO EUROPEAN REGULATIONS

The equipment conforms to the following requirements set by EC regulations, including subsequent modifications, and to the legislation set by the member states that implement these regulations:

1999/05/EEC Radio Directive

Warning: this equipment is destined for use in industrial environments (Class A apparatus). In residential, commercial and light industry environments, this apparatus may generate radio interference: in this case, the user may be required to operate while taking appropriate countermeasures.

The apparatus is sensitive to the presence of external electromagnetic fields, which may reduce its performance.

$$C\epsilon$$

CLEANING INFORMATION

⚠️ **WARNING**

Before cleaning any external parts of the apparatus, make sure that all cables have been disconnected, including the power supply cable. If a damp cloth is used, make sure it is not too wet, to avoid any damage to the electrical components of the equipment. Wait until the equipment is totally dry before reconnecting the cables.

The system should be cleaned periodically using a damp cloth.

Do not use solvents or abrasive detergents.

Do not apply liquid directly to the electrical contacts of the various connectors. If a specific spray is used to clean the PC TFT monitor, make sure it is not flammable; ion any case, do not spray it directly on the screen, instead, spray it onto the cleaning cloth.

BATTERIES REMOVAL INFORMATION

Laptop Batteries:

Manufacturer: PANASONIC

Type: Li-ion Ni

Characteristics: 10.65V 5.7Ah

Removal instructions:

1. turn off the laptop;
2. open the drawer with the symbol of the batteries;
3. extract the battery pack pulling the tab.

Radar batteries:

Manufacturer: FIAMM FG21202 / SAFT MP176065

Type: rechargeable lead acid / rechargeable lithium-ion

Characteristics: 12V & 12Ah / 15V & 6.8Ah

Removal instructions:

1. disconnect the battery from the instrument:
    a. pull the connector wings;
    b. separate the connectors;
2. remove the battery from the cover (optional) opening the strap.

RECICLYING

The crossed out wheeled bin symbol shown on the equipment indicates that the product must be recycled separately from other waste at the end of its useful life.

Separate waste disposal of this product at the end of its useful life will be organized and managed by IDS. When you decide to dispose of the equipment, contact IDS and follow the system that IDS has set up to permit the separate collection of the apparatus at its life end.

Adequate separate collection for its subsequent recycling, treatment and environmental friendly disposal contribute towards avoiding any unnecessary effects on the environment and to health and favor the reuse or recycling of the materials that make up the equipment. Unauthorized disposal of this product as unsorted waste by its possessor will lead to an administrative penalty foreseen by national regulations.

WARRANTY CERTIFICATE CONDITIONS

1) IDS Ingegneria dei Sistemi S.p.A, hereinafter referred to as IDS, warrants hardware/software products for a period of 12 months from the delivery date to the original customer;

2) The delivery date is certified by the "Warranty Registration Form";

3) IDS's hardware products will be free from defects in materials workmanship under normal use and service;

4) IDS's obligation is limited to repairing or replacing parts or equipment which are returned to IDS, without alteration or further damage, and which in IDS s judgment, were defective or became defective during normal use;

5) IDS' software will have to be installed on a PC according to the requirement of the IDS hardware (see IDS User's Guide the Software Data Acquisition);

6) IDS' s software products designed by IDS for use for IDS hardware products are warranted not to fail to execute their programming instructions due to defects during the warranty period, provided they are properly installed on IDS hardware products. IDS does not warrant if the IDS software will be used and operated in hardware and software combinations not selected by IDS;

7) IDS does not assumes any liability for any direct, indirect, special, incidental or consequential damages or injuries caused by proper or improper operation of its equipment whether defective or not defective;

8) This software may include automated data processing and analysis tools. While every effort is made to ensure the accuracy of the information provided by those tools, they must not be intended as a substitute for intelligent analysis; rather, they have to be intended as an advisor and the user must not completely rely on the results provided by them to give the complete answer. IDS assumes no liability for any direct, indirect special, incidental or consequential damages or injuries caused by such reliance on the accuracy, reliability, or timeliness of the information provided by those tools. Any person or entity who relies on information obtained from the automated data processing/analysis tools only, does so at his or her own risk;

9) IDS's warranty does not extend and shall not apply to:

   a) Products which have been repaired or altered by other than IDS personnel;

   b) Products which have been subjected to misuse, neglect, accident or improper installation;

   c) Products in which have been installed Hardware/Software accessories not supplied by IDS and/or without any approval by IDS;

   d) Products which have been connected to equipment different from the ones supplied by IDS (except the PC data Logger which must conform to IDS specifications;

   e) Products which have been damaged by natural disaster or calamities.

10) Before returning any equipment to IDS , you have to contact the IDS Customer Care Office that will authorize you to return the material to be repaired;

11) Once the parts/equipment to be repaired arrive to IDS, IDS may inspect the defective products to verify they are eligible for repair or replacement. All packing must be saved for inspection purpose in order to assist IDS to understand the cause of the defects. IDS, will not be obliged to repair, or replace for products returned as defective but damaged from abuse, misuse, negligence , accident loss or damage in transit;

12) The final clients, is responsible for ensuring the defective products returned to be properly packaged;

13) The above warranty are sole and exclusive, and no other warranty, whether written or oral, is expressed or implied.

IMPORTANT NOTE FOR THE US CUSTOMERS

FCC ID: UFW-TRHFNA

This device complies with part 15 of the FCC Rules:

Operation is subject to the following conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, Including interference that may cause undesired operation

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Operation of this device is restricted to law enforcement, fire and rescue officials, scientific research institutes, commercial mining companies, and construction companies. Operation by any other party is a violation of 47 U.S.C. § 301 and could subject the operator to serious legal penalties.

Coordination Requirements.

(a) UWB imaging systems require coordination through the FCC before the equipment may be used. The operator shall comply with any constraints on equipment usage resulting from this coordination.

(b) The users of UWB imaging devices shall supply detailed operational areas to the FCC Office of Engineering and Technology who shall coordinate this information with the Federal Government through the National Telecommunications and Information Administration. The information provided by the UWB operator shall include the name, address and other pertinent contact information of the user, the desired geographical area of operation, and the FCC ID number and other nomenclature of the UWB device. This material shall be submitted to the following address:

Frequency Coordination Branch., OET

Federal Communications Commission

445 12th Street, SW

Washington, D.C. 20554

ATTN: UWB Coordination

(d) Users of authorized, coordinated UWB systems may transfer them to other qualified users and to different locations upon coordination of change of ownership or location to the FCC and coordination with existing authorized operations.

(e) The NTIA/FCC coordination report shall include any needed constraints that apply to day-to-day operations. Such constraints could specify prohibited areas of operations or areas located near authorized radio stations for which additional coordination is required before operation of the UWB equipment. If additional local coordination is required, a local coordination contact will be provided.

(f) The coordination of routine UWB operations shall not take longer than 15 business days from the receipt of the coordination request by NTIA. Special temporary operations may be handled with an expedited turn-around time when circumstances warrant. The operation of UWB systems in emergency situations involving the safety of life or property may occur without coordination provided a notification procedure, similar to that contained in CFR47 Section 2.405(a)-(e), is followed by the UWB equipment user.

Notice: Use of this device as a wall imaging system is prohibited by FCC regulations.

According to the FCC Part 15 rules, the system includes a manually operated switch ("dead-man switch") that causes the transmitter to cease operation within 10 seconds of being released by the operator.

The use of this switch is further explained in this manual; specific instructions for operating a system sold in the US are identified by the following label

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IMPORTANT NOTE FOR THE CANADIAN CUSTOMERS

IC Certification Number: IC:8991A – TRHFNA

This device complies with the requirements of IC Standard RSS-220

This Ground Penetrating Radar Device shall be operated only when in contact with or within 1 m of the ground.

This Ground Penetrating Radar Device shall be operated only by law enforcement agencies, scientific research institutes, commercial mining companies, construction companies, and emergency rescue or firefighting organizations.

NOTE IMPORTANTE POUR LES UTILISATEURS CANADIENS

Numéro de certification IC:8991A – HIBRIGHT

Cet appareil est conforme aux exigences de la norme RSS IC-220

Cet équipement géoradar doit être utilisé que lorsqu'il est en contact ou à moins de 1 mètre du sol.

Cet équipement géoradar doit être utilisé que par des organismes d'application de la loi, des instituts de recherche scientifique, des sociétés minières commerciales, des entreprises de construction et de secours d'urgence ou les organisations de lutte contre les incendies.

According to the IC Standard RSS-220, the system includes a manually operated switch ("dead-man switch") that causes the transmitter to cease operation within 10 seconds of being released by the operator.

The use of this switch is further explained in this manual; specific instructions for operating a system sold in Canada are identified by the following label

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RADIO-FREQUENCY EXPOSURE COMPLIANCE

This product operated is usually operated at least 1 m from the operator.

Typical power density levels at a distance of 1 m or greater is below 1 μW/cm^2 (0.01 W/m^2) which are far below the levels specified by the current regulations.

Thus, this product pose no health and safety risk when operated in the normal manner of intended use.

CONFORMITÉ D'EXPOSITION AUX FRÉQUENCES RADIO

Le produit doit être à au moins un mètre de l'utilisateur lorsqu'en opération.

Le niveau de densité de puissance à une distance de 1 mètre et plus est de 1 μW/cm^2 (0.01 W/m^2), ce qui est nettement inférieur aux niveaux spécifiés par la réglementation en vigueur.

Ainsi, ce produit ne représente aucun risque pour la santé et la sécurité lorsqu'il est exploité dans les conditions d'utilisation prescrites.

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FIGURES INDEX

1. HARDWARE EQUIPMENT OF THE HI-BRIGHT SYSTEM

This handbook shows you the equipment you will receive and guides you through the configuration of your system.

The system is composed of:

- A TRHF or TRHFNA antenna (central frequency 2 GHz)
- A Single or Multi Channel Control Unit (DAD 1CH or DAD MCH)
- One Battery kit
- One LAN cables
- One DAD power supply cables
- One backpack kit (optional)
- A Data Logger (PC Panasonic CF 19 or other PC, optional)
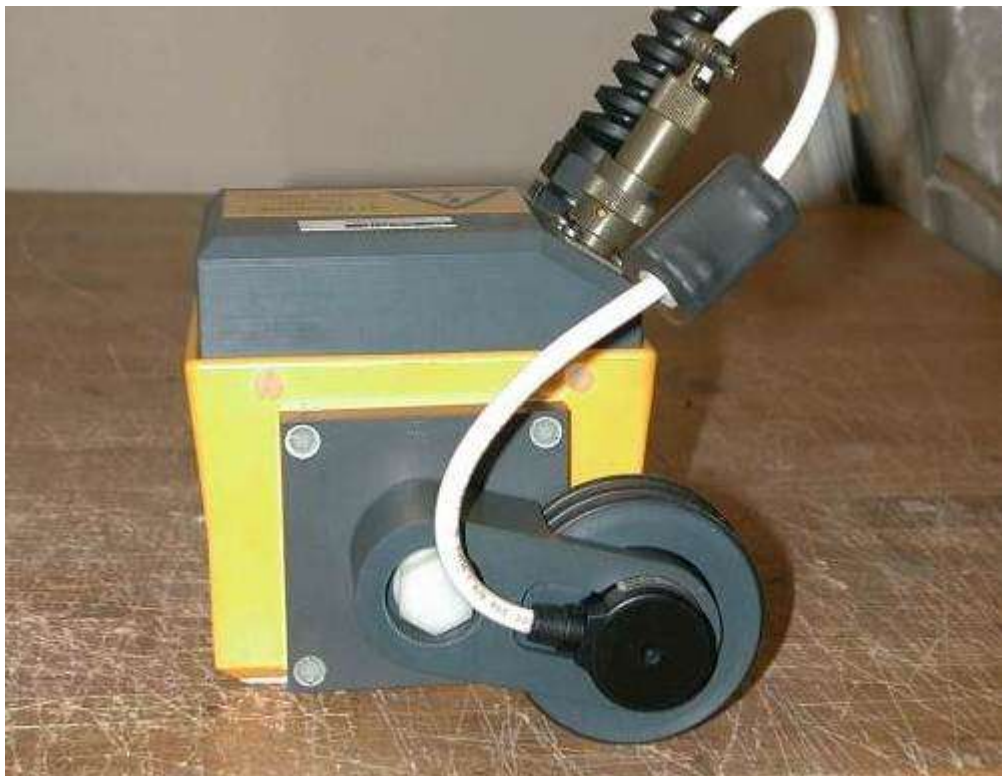
Fig. 1.1 – The TRHF Antenna

2. SETTING THE SYSTEM UP

The following list contains all the cables and how they are connected:

> ➢ Fixed connection between the antenna and DAD (Fig. 2.1);

Fig. 2.1 – Fixed connection cable between the antenna and DAD

> ➢ LAN cable connecting the PC to the DAD (Fig. 2.2); connect the large LAN connector to the port on the DAD and the other end to the smaller port on the back of the PC;

Fig. 2.2 – LAN cable

> ➢ Cable connecting the battery power supply to the DAD (Fig. 2.3); connect the metallic connector to the DAD and the white plastic connector to the battery.

Fig. 2.3 – Power cable

➢ Metric wheel cable: connect the cable of the metric wheel to the WHEEL port located on the back side of the antenna (Fig. 2.4).

Fig. 2.4 – Metric wheel cable

3. WORKING PROCEDURE

Step 1: Assemble the system and place the antenna on the surface to be investigated).

Fig. 3.1 – Surveying with the system

Step 2: Start the K2 SW, perform the calibration and set the acquisition parameters

Step 3: Position the antenna on the initial preset coordinate in the L (or T) direction

Step 4A (Standard System): Press one of the START buttons placed on the handle or directly on the antenna

Step 4B (US-Canada System): Press one of the START buttons placed on the antenna **and keep it pressed**. Releasing the button, will stop the collection after 10 sec.

Step 5A (Standard System): Insertion of *User Markers* during scanning is performed by rapidly pressing the START button.

Step 5B (US-Canada System): Insertion of *User Markers* during scanning is performed **by rapidly releasing and pressing again** the START button.

Step 6A (Standard System): The scan is STOPPED by keeping the START button pressed

Step 6B (US-Canada System): The scan is STOPPED by releasing the START button

4. THE DAD CONTROL UNIT

The *DAD Control Unit* is the control unit responsible for directing the antennas and digitalising the acquired radar data.

The *DAD Control Unit* has the following ports

- *Lan Port* for a network connection to the Notebook Computer
- *Battery Port* to connect the battery
- *Wheel Port* to connect the position sensor wheel
- *Ant.1/CHAINE - Ant.2* for radar antenna connection
- *Power switch with pilot light*
- *Wireless antenna connector*

Fig. 4.1 – DAD side Fast Wave with Battery Port, Lan Port and wireless connector

Ant1 and Ant 2 Connectors

Wheel Port

Fig. 4.2 – DAD side Fast Wave with connections to position sensor and antennae

Considering the type of available antenna, the following combinations are possible:

1. **Ant.1 (connector with 19 poles)**

   This kind of connector may be connected to the following categories of radar antennae.

   ➢ Entire range of **TR IDS** antennae that has a 19 pole connector and foresee a cascade connection, Fig. 2-3 shows an example of a an antennae with a 19 pole connector with a cascade connection.

For DAD connection or toward another antenna

To connect the other antenna
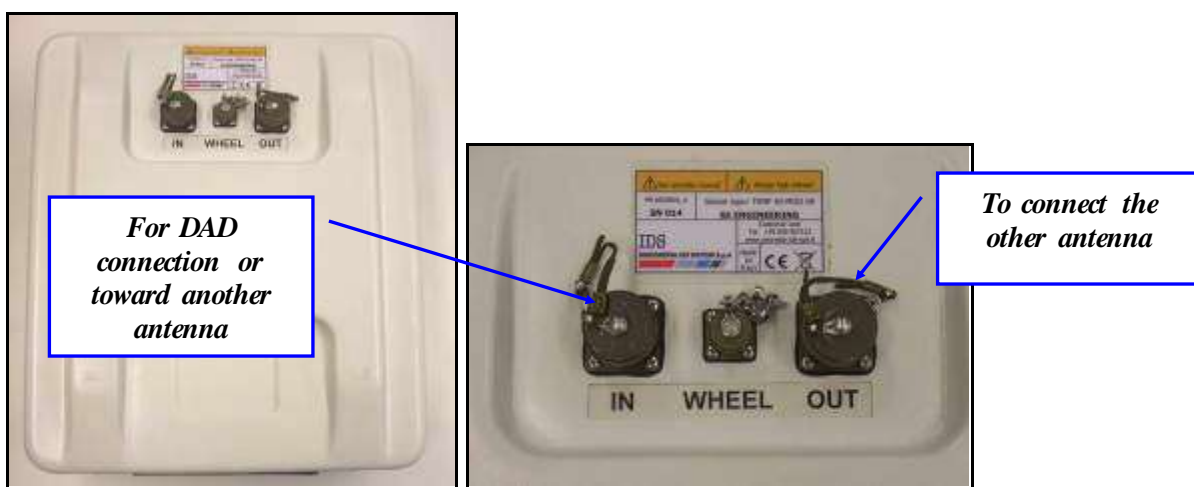
Fig. 4.3 – Example of antenna with a 19 pole connector and possibility of a cascade connection

> ➤ Entire range of **TR IDS** antennae that have an 11 pole connector, if supplied with an appropriate 19-11 pole adaptor (Fig. 4.4).

Fig. 4.4 – 19-11 pole Adaptor

2. *Ant.2 (11 pole connector)*

This kind of connector may have the following antenna radar categories connected

> ➤ Entire range of mono static **TR IDS** antennae with an 11 pole connector

> ➤ Entire range of **TR IDS** antennae with internal or external multiplex and an 11 pole connector

5. THE NOTEBOOK COMPUTER

IDS acquisition SW is usually installed on a *Notebook Computer.* Our SW is dedicated to the specific phases of setting up, acquiring and saving radar data.

IDS recommends to use one of the following laptop:

5.1 Panasonic Toughbook rugged tablet PC

The Panasonic Toughbook CF-19 PC (Fig. 5.1), has the following characteristics:

- *CPU*: 1.6GHz Intel Core Duo.
- *Operating System*: Windows XP Professional SP2.
- *RAM/Expandable to*: 512MB SDRAM (DDR2)/4GB
- *Hard Drive/Speed*: 80GB shock-proof (mounted on a gel support or equivalent).
- *Optical Drive*: 2.4X DVD+R DL
- *Display Resolution*: 10.4 inches/1024 x 768

- *Graphics/Video Memory*: Intel 945GM video accelerator with up to 128MB shared video memory

- *Wireless Networking*: WLAN 802.11a/b/g, Bluetooth 2.0, Optional WWAN (EVDO, HSDPA) and GPS

- *Ports*: Two USB 2.0, Firewire, Ethernet, modem, headphone, mic, docking connector

- *Card Slots*: PC Card Type II, SD Card slot

- *Weight*: 5 pounds

- *Size*: 10.7 x 8.5 x 1.9 inches

- *Warranty/Support*: Three-year limited warranty, parts and labor lifetime toll-free 24/7.

- *Battery Life (Wi-Fi On/Off)*: 5h / 6h about

- *Environmental*: Water-proof (IP54)

Fig. 5.1 – Panasonic Toughbook CF-19

! NOTE	No communication software of the type Firewall, WiFi or Antivirus protection may be installed on the computer; these types of SW enter into conflict with the acquisition SW.
	IDS takes no responsibility for any functional conflicts that may occur between their own software and any other software installed by the user onto the Notebook Computer. IDS doesn't guarantee that equipment performance will be maintained using configurations different from those recommended.

5.2 Connecting the DAD Control Unit - Notebook Computer

The following describes how to cable the DAD Control Unit to the Notebook Computer

- Use the **Lan Cable** (Fig. 5.2) to connect the *DAD Control Unit* and the *Notebook Computer* as shown in (Fig. 5.3)

Fig. 5.2 – Lan Cable

Fig. 5.3 – Lan Cable connection between the Notebook Computer and the DAD Control Unit

- Connect the *DAD Control Unit* to the *Battery* using the **Battery Cable** (Fig. 5.4) as shown in (Fig. 5.5)

Fig. 5.4 – Battery Cable

Fig. 5.5 – Connecting the DAD Control Unit to the battery pack and switching on button (red color)

Press the red button to switch on the DAD control unit (Fig. 5.5). This button has to be kept pressed until the blue on switch lights up. If the K2_FW software is not activated within 30 seconds, the indicator light will start to flash. As soon as the K2_FW software is activated the indicator light stops flashing and appears a constant blue light. If, however, the Software is not activated within about 2 minutes 30 seconds, the DAD unit will automatically shut down. Once the K2_FW software has been shut down, the indicator will flash for about 30 seconds and will automatically shut down after 2 minutes.

! WARNING	DON'T CONNECT the **Battery Cable** to the **Remote** connector found on IDS TR antenna; IDS declines any responsibility for damage caused to the system due to erroneous connections.

5.3 Wireless connection

Here below you can see the requirements and steps to connect by wireless DAD to PC:

1) System requirement: wireless network board of PC must support network protocol type 802.11g.

2) Disconnect Lan cable from DAD and from PC.

3) Connect the wireless plug on LAN port of the DAD (Fig. 4.1 e Fig. 5.7).

4) Activate wireless network on PC choosing "ON" with the button on relative port shown in Fig. 5.6.

5) Set up wireless board on PC with the following IP address: 192.168.200.195.

6) Disable all boards present within "network connections" window on PC.

7) Switch off PC and reboot operating system.

8) Enable wireless board.

9) Switch on the DAD.

10) Wait for signal on PC of activating connection RIS K2.

11) Launch the acquisition software icon setting up a Wi-Fi configuration file: you can recognize them from the label "WiFi" (see Fig. 5.8).
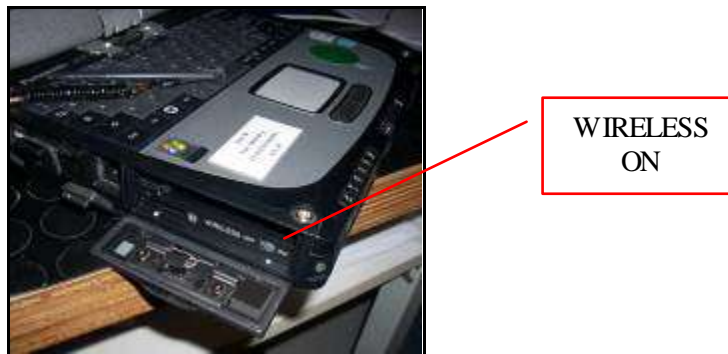
Fig. 5.6 – Wireless port to be activated on CF-19

Fig. 5.7 – Wireless connection on the DAD
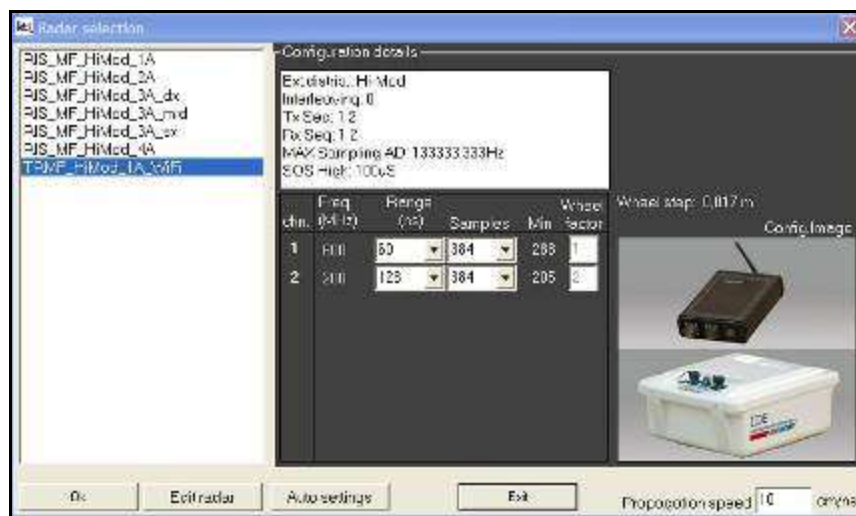
Fig. 5.8 – Configuration file for wireless connection

6. ON LINE ASSISTANCE

6.1 Remote assistance using Webex Support Center

Webex Support Center is a service that allows the activation of a two host session, making an application or the desktop available to the other user or letting you capture another remote desktop.

It can be used to perform web conferences and presentations.

It is easy to use thanks to its simple and intuitive interface.

Since there are no firewalls or other types of network configurations, it is a fast and secure means of reaching any client host in any part of the world. In fact, the client only has to accept to download a small plug used to permit the service authentication and functioning.

6.1.1 How to use the Webex service

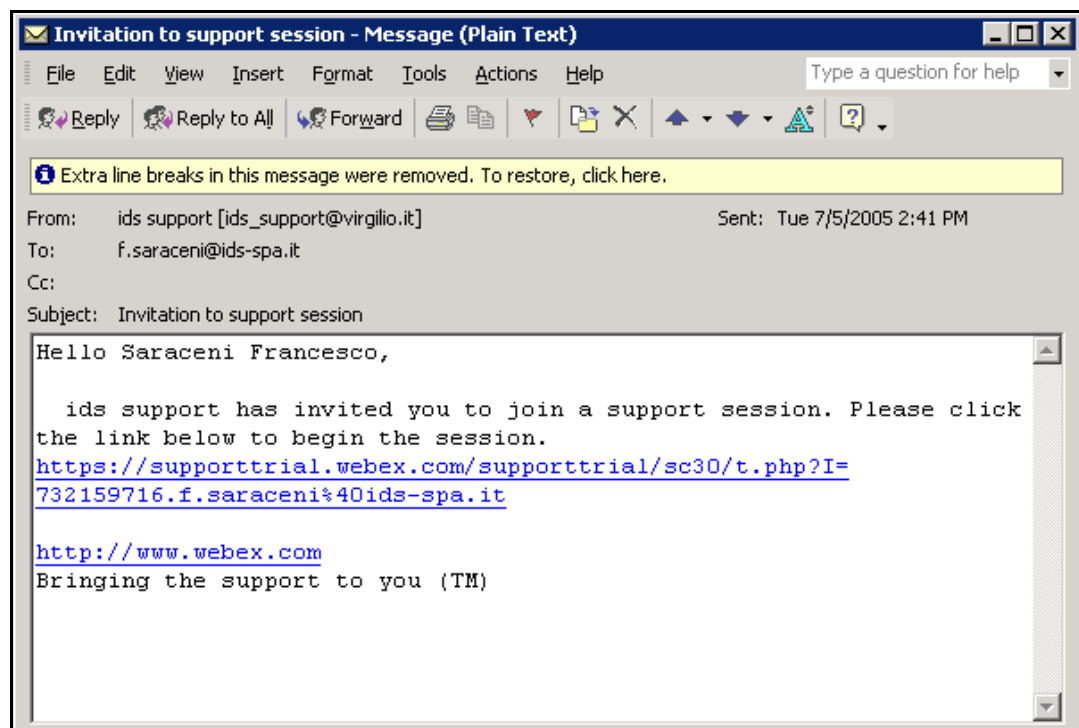You will receive an email from IDS Customer Care containing a link to the support session (see Fig. 6.1).

Fig. 6.1 – Mail sent by IDS to the client

Once you have clicked on the link sent by email, the following window will appear. Insert your data into the form (see Fig. 6.2).
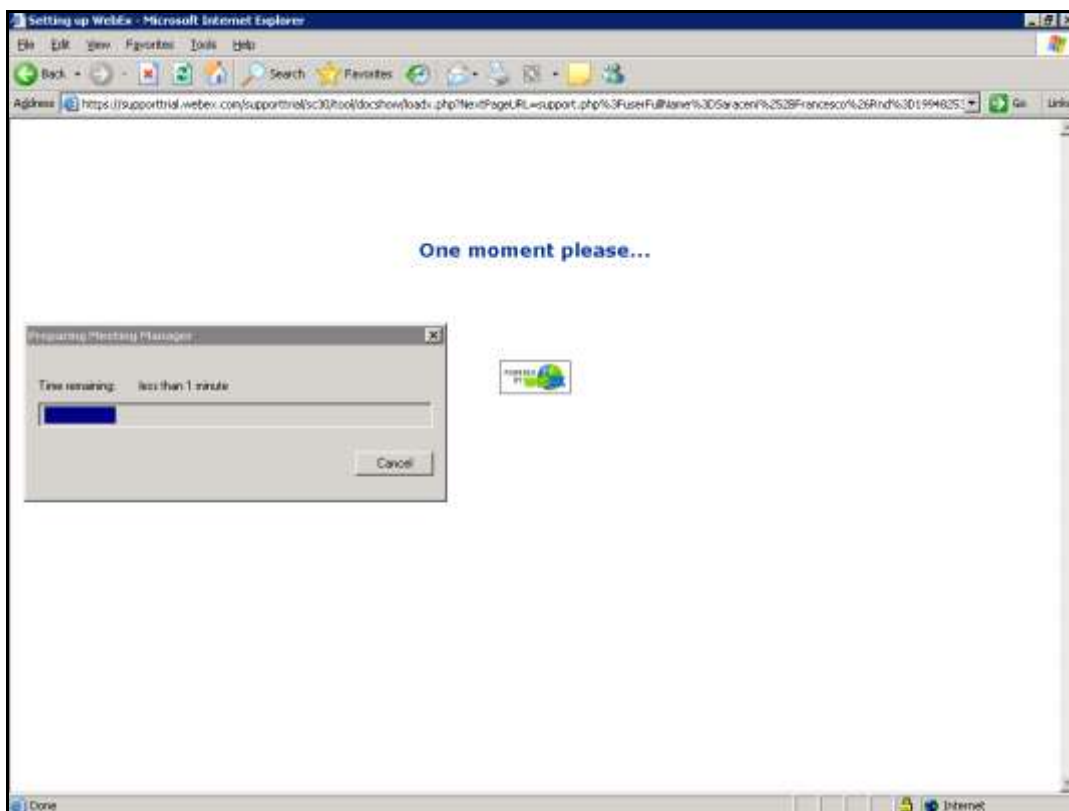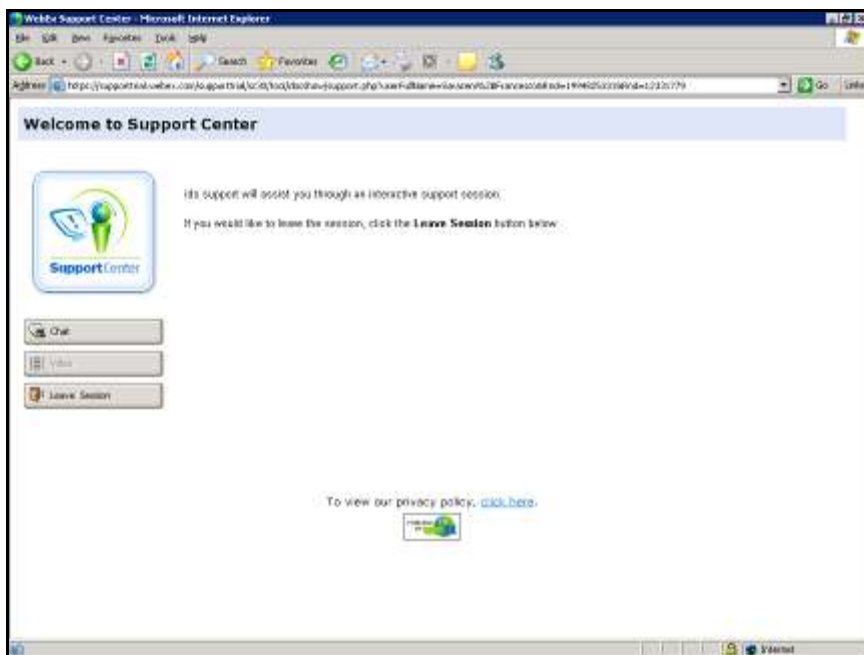

Fig. 6.2 – Client data insertion form

Once you have clicked **Submit,** the following page will appear showing a downloading bar. The session starts as soon as the download is complete. (see Fig. 6.3).

Fig. 6.3 – Webex Set up window

As you can see from the following screen, (Fig. 6.4) you are given a console, just containing the **Chat**, **Video** and **Leave Session** commands.


Fig. 6.4 – Welcome to Webex Support Center window

At this point, IDS Customer Care can perform a range of operations on your desktop:

- Request control of the desktop using the Request Control command.
- Give you control of the IDS desktop using the Share Control command.
- Request to display the remote desktop using Request View.
- Share the visualisation of the IDS desktop using Share View.

Before each command is activated, you are asked for confirmation through the following window (Fig. 6.5).
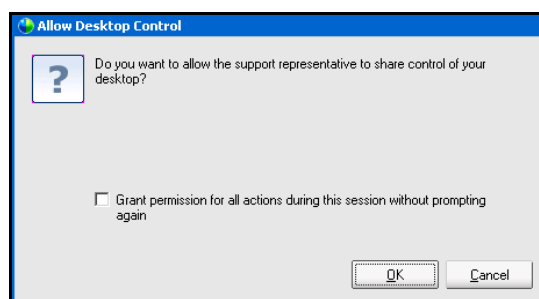
Fig. 6.5 – Command acceptance window