PRESS RELEASE

INFRA RED Vs RADIO

Listed below is a simple comparison between digital infra red and radio systems used for internal mobile voice communications in modern warships. Both systems have their advantages and disadvantages in different locations. Radio systems have the advantage of range while infra red systems are essential where there is a tempest requirement or in locations of electrical noise.

Machinery Spaces

	INFRA RED	RADIO (including leaky feeder.)
TEMPEST	HIGH SECURITY. No radiated radio signals and infra red contained within the desired envelope.	POOR SECURITY. The power levels required cause signals to be detected well outside the hull.
Coverage and area of reception.	Larger machinery spaces require a larger numbers of antenna. Most warships can be provided with excellent coverage in an engine room with 10 to 12 antenna.	Coverage can be obtained using leaky feeders. If the level of mobile radiated signals is to be kept low a large number of basestations & repeaters have to be employed.
Interference.	NONE The infra red system will not interfere with any other ships electronic systems. This is of particular importance near to engine control systems where damage can occur to prime movers from portable radio transmitters.	Radio systems are prone to cause interference with sensitive electronic and control systems. It has been known to have caused damage to large machinery with control loop interference.
Susceptibility	NONE Infra red is not susceptible to external EMC or radio signals. The high levels of electrical noise in modern warships normally	HIGHLY SUSCEPTIBLE to electrical noise, this can normally be only overcome by increasing radiated power from the mobile unit and exacerbating the

	caused by electrical drives have no effect on the crystal clear voice communications.	interference and TEMPEST problem.
Full duplex communications	Digital infra red allows reception and transmission from a mobile to the ship's internal communication system simultaneously.	Most portable radio systems do not allow full duplex operation.
Split headset	Digital infra red allows for the reception of different channels in each ear. This allows the use of a local communication channel within the room while still receiving the ship's broadcast messages.	Radio systems do not normally allow this feature.

Bridge.

	INFRA RED	**RADIO (including leaky feeder.)**
TEMPEST	HIGH SECURITY. No radiated radio signals and infra red contained within the desired envelope.	POOR SECURITY. Even signals as low as 1mW can be detected away from the ship. Hence sensitive internal voice communications can be detected at great distance from the ship.
Coverage and area of reception.	Being a relatively small area of limited obstacles obtaining total coverage is not difficult with a small number of antenna.	Good coverage with 1 antenna. *(Different channels normally have to be allocated to each ship to avoid confusion & conflicts in close proximity, when on an exercises, in the theatre of war or in a port.)*
Interference.	The infra red system will not interfere with any other ships electronic systems.	Radio systems are prone to cause interference will sensitive electronic and control systems.
Susceptibility	Infra red is not susceptible to external	Highly susceptible to radar and other electrical

	EMC or radio signals.	noise.
Full duplex communications	Digital infra red allows reception and transmission from a mobile to the ship's internal communication system simultaneously.	Most portable radio systems do not allow full duplex operation.
Split headset	Digital infra red allows for the reception of different channels in each ear.	Radio systems do not normally allow this feature.

Ops rooms.

	INFRA RED	**RADIO (including leaky feeder.)**
TEMPEST	HIGH SECURITY. No radiated radio signals and infra red contained within the desired envelope.	POOR SECURITY. The sensitive internal voice communications in an ops room can be detected at great distance from the ship.
Coverage and area of reception.	Being a relatively small area of limited obstacles obtaining total coverage is not difficult with a small number of antenna.	Good coverage with 1 antenna.
Interference.	The infra red system will not interfere with any other ships electronic systems.	Radio systems are prone to cause interference will sensitive electronic and control systems.
Susceptibility	Infra red is not susceptible to external EMC or radio signals.	Highly susceptible to radar and other electrical noise.
Full duplex communications	Digital infra red allows reception and transmission from a mobile to the ship's internal communication system simultaneously.	Most portable radio systems do not allow full duplex operation.
Split headset	Digital infra red allows for the reception of different channels in each ear.	Radio systems do not normally allow this feature.
Multi-channel	Up to 8 full duplex channels can be proved in ops room. Users can	Multi-channel can be available if appropriate frequencies are available

	move from one environment to another without the need to change equipment or compromise security.	in each port of call. *(Different channels normally have to be allocated to each ship to avoid confusion & conflicts in close proximity, when on exercises, in the theatre of war or in port.)*

Digital infra red is available now. There are no development issues, and the well proven systems are fully NATO codified.

Because of co-channel interference with analogue radio systems equipment frequently has to be configured for each individual ship. Moreover, the costs of procurement, installation and ownership of digital infra red are low. The Azdec Infra Com systems are competitively priced to low powered leaky feeder, are simple to install and set to work, have a high reliability, can be maintained by an unskilled workforce and require a low level of routine maintenance. With the Infra-Com system the equipment can be standardised across the whole fleet.