



Need for a reliable wireless link between a mobile camera and a fixed production site ? Need for a digital high definition picture to cover the sport event of the year ? Need to repatriate a picture for first-aid workers teams, for rapid deployment forces ?

Need to remote control a factory site exposed to the risk of pollution ? Need to transmit from any kind of vehicle (ship, motorbike, helicopter, drone) ... ? The technical solution for these increasing requests exist now and is more and more appreciated in various applications such as News Gathering, Sport Event, Security and Defense.

❖ SOLUTION

Wireless digital means based on systems composed of transceivers are the best solution for the question of transmission. These solutions use the COFDM modulation which revolutionizes the ENG transmissions (Electronic News Gathering) !

Metracom can design, dimension, install and bring all its expertise in the implementation of wireless digital video transmissions.

COFDM ENG technology is really suitable for digital wireless transmissions. It ensures the digital transmission of an MPEG-2 stream using the multi carrier COFDM modulation. This association between digital compression and COFDM modulation intensifies the signal owing to echoes, contrary to traditional analogue transmissions. Then, digital solutions allow both a better protection against surrounding RF noises and a limited occupation of the Bandwidth while the quality of the picture is maintained. These systems can be used with SNG (Satellite News Gathering) vehicles or with mobile satellite stations.

> **On-board systems** : some solutions can be installed on different kind of vehicle (helicopter, truck, motorcycle, car, drone). These systems are in accordance with the DVB-T standard and deliver a bit rate adjustable between 1.5 and 31Mbits/s. The transmission system can be rackable or used in a 1/2 rack 4 U chassis.

> **Portable systems** : Directly linked to the camera, these MPEG-2 DVB-T solutions offer reliable transmissions between a cameraman and a fixed or mobile installation. The encoding in 4:2:2 is in accordance with the higher standards of TV contribution. The technical solutions used in the receiving system, «diversity» mode, and in demodulation bring a great robustness to the signal and an extremely short delay of transmission. There are systems particularly dedicated to broadcast applications and others to monitor / safety applications.

- > *Compactness*
- > *Operational really quickly*
- > *Simple use*
- > *Reliable transmission*
- > *Extremely short delay*
- > *Digital Quality*
- > *A range allowing any kind of use !*





❖ BROADCAST APPLICATIONS

Broadcast applications need a perfect quality, a very short time of transmission, a reduced consumption and a perfect reliability !

The transmitters (broadband) which are put on the back of most of broadcast cameras operate in 2.5 GHz band. This offers a great flexibility to the cameraman because he can ideally work in any frequency (between 1.95GHz and 2.7 GHz) available for the event or on the site. The use of a broadband antenna means that the system operates internationally and can be adjusted on the available frequencies in each country.

Several functions (optional) exist to answer to the Broadcast specific requirements.

> **Camera remote control** : this functionality allows the remote control of the camera functions.

> **Amplifiers and specific antennas** : the combination of amplifiers and specific antennas allows to increase the capacity of the system and then the mobility. So, there are antennas to be used at ground level and others to be on-board (plane, car, motorbike...) : wireless camera installed in a racing car, pursuit on a motorbike during a cycling race...

A backpack specifically designed to integrate the transmitter and a 1W amplifier, extending the system area, is also available. This configuration particularly suits for contributions where the cameraman has to cover more than the 300-500m that most of the standard systems usually cover : ideal to cover a Golf tournament, for example !

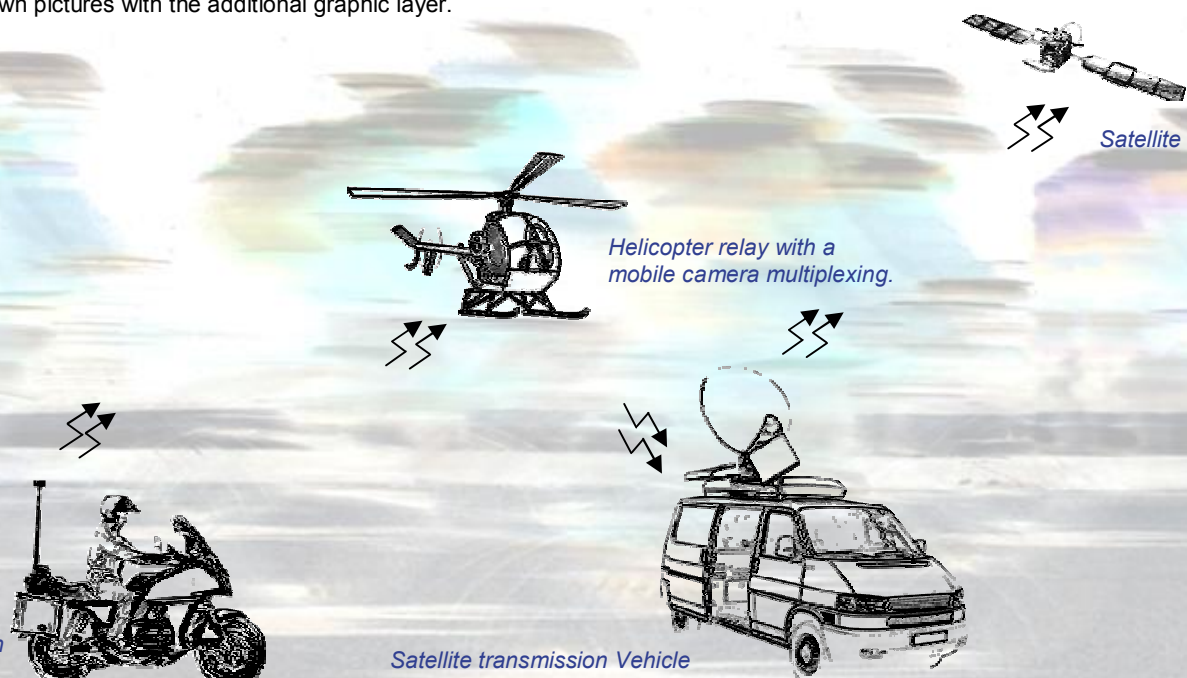
> **Video return** : The video return is a functionality particularly required by the users of digital RF cameras because it allows the cameraman to have the video return of the on-air program or to see its own pictures with the additional graphic layer.

WIRELESS DIGITAL TRANSMISSION AND HDTV

High definition is the most accomplished technology in the Broadcast environment. After the acquisition, coding and multiplexing equipment, the wireless transmissions systems also adopts this technology.

Wireless HD transmitters can be combined to all Broadcast cameras equipped with an HD-SDI output. This solution is equipped with a color display control panel allowing the setting of the encoder and the general configuration of the system.

The MPEG2 encoding-decoding technology is optimized to obtain extremely low delay transmission without losing any quality of the pictures. Then, the transmission delay (lower than 100ms) makes this system ideal for a use beside HD cameras cabled for live productions. The reception of the signal in "diversity" mode allows an incomparable cover in the zone where the camera is used. Then, the system allows a full use of the HD and also benefits from the robustness of the SD systems, approved by professionals. The consumption of the system, lower than 20 watts allows a great autonomy and a real freedom of action.



SECURITY & DEFENSE APPLICATIONS

- Repatriation of high quality pictures from disaster areas, notably in urban environment
- Supervision of sensitive zones
- On-board systems on vehicles
- Systems to be linked to a satellite network or else...

INDIVIDUAL SOLUTION

Compact, operational in a very short time, discretion are the most important qualities of this digital wireless video system.

The transmitters are declined in two versions :

- Installed on a vehicle,
- Mobile

This second model answers to the constraints of weight (400 gr.) and consumption (7W in active mode and 0.1W on standby) related to the security applications (sites monitoring, sensitive, and commercial zones...) and to the "soldier of the future"

The compactness of the system enables it to be carried under cloths or in a small backbag. There is also a safety jacket which directly integrates the antenna and the battery.

So, this system allows a robust wireless transmission which does not require being "line of sight" (500m range). The transmissions in urban environment are also made possible, thanks to COFDM digital modulation. For a better safety, AES scramblers and ABS are available in option.

MULTI-TRANSMITTER SOLUTION

It's the continuation of the "individual" solution. The multi-transmitting solution allows the fast deployment of a video/data network using MPEG-2 encoding and a COFDM modulation. Then, it is possible to use simultaneously 4 or 8 digital video/data transmitters located in the same zone.

The receiving station assigns to each transmitter an identification, an adjustment of the output power and a specific frequency. The management of the frequency assignment permits to optimize the channels and so, to allow four 2.5MHz transmitters to fit in a 10MHz channel, normally specific to the digital transmissions. The technology with COFDM modulation of 400 carriers permits an ideal propagation for the long range links and a better Bandwidth control.

Video : Formats PAL / NTSC
Bit rate 2.4Mb/s (QPSK) or 4.8Mb/s (16QAM)
Horizontal Resolution : 720, 544 or 480 pixels.

Audio : Bit rate per channel: 64kb/s to 364kb/s

> Video control

60mW - 900m Video transmission with camera monitoring

> Flying object, drone

1W - 20km Video transmission and command monitoring on-board

> Vehicle

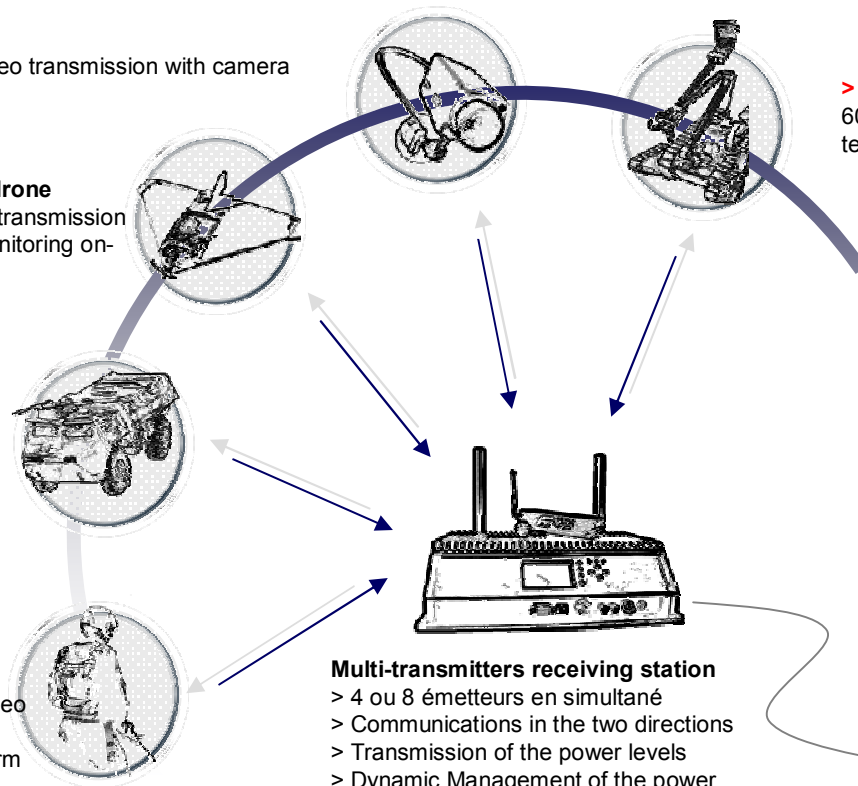
1W - 16km with disconnection alarm

> Individual equipment

60mW - 900m Video transmission with disconnection alarm

> Robot

60mW - 900m Video Transmission with telemetric controls



Multi-transmitters receiving station

- > 4 ou 8 émetteurs en simultan e
- > Communications in the two directions
- > Transmission of the power levels
- > Dynamic Management of the power
- > Access Controls
- > Protected Management

Pluggable peripherals :

- > 1 to 8 monitors
- > Storage units
- > Computer, IP network
- > Cellular Network
- > GPS mapping software...



SOLUTIONS METRACOM

✦ AIRLIFTED APPLICATIONS

Many Broadcast or Safety/Defence applications can require some wireless digital video transmissions equipments airlifted to cover an event occurring in a wide zone (marathon, cycling race...), to observe the road traffic on a holiday starting day, to supervise a disaster area and guide the rescue-teams on the ground, to supervise the borders...



Transmission equipment on a helicopter and a receiving antenna « Diversity » on a building roof.

AIR TO GROUND TRANSMISSION SOLUTIONS

> **On-board systems** : the air mean used (helicopter, drone, airship...) is equipped with a transmission system with a power amplifier (4 to 15W), an encoder, and a GPS antenna system (electronic pod).

> **Portable systems** : the reception part is also made up of a pod (with integrated GPS), a downconverter and a receiver.

Then, audio/ video/ data transmissions become possible on distances up to 50km.!



Air surveillance fires and transmission of the images towards fixed and mobile command center



Pod with antenna and integrated GPS

✦ METRACOM, Satellite communications integrator

Competitiveness, Reliability, Neutrality, Quality are our commitments!

Because you and your projects are unique, we have to be a reliable partner for you. We want to be available and in touch with you in order to offer you suitable solutions as well as services and a real support.

So, we anticipate the technological developments, and we invest in those. We also make use of very strong partnerships contracted with the suppliers of technologies. For each project, we call on a specialist team services endowed with a great expertise acquired near operators, integrators, famous manufacturers belonging to the Satellite world. We are always at your sides here, over there, everywhere else.

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