

Ogier Electronics

Mobile Digital Video COFDM Transmitter

Technology

The Ogier COFDM transmitter is available in two variants, Mobile Camera Unit supplied complete with ruggedised environmentally sealed housing and Vehicle mounted, in a 19" rack 3U housing. Both transmit a COFDM modulated MPEG2 or MPEG4 encoded low latency video. Power is supplied from a 24V dc supply.

The operating band is between 1 to 2.5GHz where a number of preset channels are selected by internal switch. Telemetry data for camera PTZ control is received using an internal telemetry receiver.

The equipment is factory set and operates in a robust mode. An optional RS232 configuration interface allows further configuration in the field. The unit is fully compatible with various telemetry protocols.

Non Line of Sight

Low Latency for Real Time Operation

COFDM Transmission

Optional Internal Encryption

Long Range Operation

Telemetry Receiver for PTZ Control

Sealed to IP 66

Factory Set Frequencies

Specification

Inputs	Composite Video (Kopex) Power (Kopex) Telemetry data (Kopex)
Outputs	Video RF Out (N-type female) Telemetry data (Kopex)
Transmit Modes	2.5MHz bandwidth Modulation QPSK (factory set)
RF Out Power	Up to 0.5W with P.A
Transmit Channel Selection	Factory pre-set channels selected by internal switch
Video Transmit Frequency Band	1.2 to 1.4GHz
Telemetry Receive Frequency Band	Several band options ranging from 100 to 900MHz, each with a number of preset frequencies
Telemetry RX Channel bandwidth	Typically 25KHz
Telemetry RX bit-rate	to 9600bps
Telemetry RX Interface	RS422 or RS232 simplex
COFDM TX Encryption	ABS Encryption 32 bit factory set key AES 128/256bit factory set key (optional)
Video Encoding Input Format	PAL
Video Encoding	MPEG2 or MPEG4
Power Supply Voltage	24VDC
Power Consumption	to 35W (depending on output power)
Physical Dimensions	285 x 240 x 150 (inc. Sunshield, exc connectors)
Cooling	Convection
Operating temperature	-10 to +50 deg C
Environmental Sealing	IP66



Ogier Electronics

Digital Video COFDM Demodulator

Technology

The multi-channel COFDM demodulator performs spatial diversity demodulation and video decoding simultaneously on up to 5 COFDM carriers.

The 19" rack unit (up to 3U depending on the number of channels required) may have up to four IF inputs that are used for receiving the COFDM signals from the external antenna downconverters. Internally there are up to five dual input COFDM diversity demodulator cards. Each internal demodulator card is fed from all the IF input ports using combiners where necessary and then uses maximum ratio combining to recover its received signal intact.

The operating frequency of each internal demodulator is set via a switch to one of a number of factory pre-set frequencies. The unit is operated from mains power.

COFDM Reception

Low Latency for Real Time Applications

Optional Internal Encryption

Optional DVB-T Compliant Reception

Spatial Diversity

90 degree sector Receive Antenna

1 to 5 channel simultaneous demodulation

Factory Set Frequencies

Specification

Inputs	Up to 4 IF inputs (female N-type) from external downconverters or antennas. The unit provides DC power on the N-Type inputs for the external downconverters Mains Power
Video Channels	Up to 5 as required
Outputs	PAL Video (BNC). Up to 5 off
Receive Modes	2.5MHz bandwidth Modulation QPSK
Channel Selection	Factory pre-set channels selected by a switch for each demodulator
Encryption	ABS Encryption 32 bit factory set AES 128/256bit factory set key (optional)
Video Encoding Output Format	Composite PAL - optional SD-SDI
Decoding	MPEG2 or MPEG4
Power Supply	240VAC
Power consumption	75W nominal (for 5 video)
Physical Dimensions	Up to 3U 19" rack.
Operating temperature	-10 to +50 deg C.
Cooling	Forced Air

Optional features that can be specified with this equipment type include the number of video channels, RS232 data channels, Svideo or SDI interfaces, DVB-T operating modes, AES Encryption, external RS232 control interfaces.



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Ogier Electronics

Mobile-T

Broadcast quality digital video

The Mobile-T is the latest generation of digital video transmission system that provides broadcast quality video under non line of sight conditions.

It uses the same sophisticated modulation technology as that used by broadcast TV to achieve superb picture quality, even in complex environments. It can operate on reflections at distances up to 5 km as well as on direct signals over ranges of 50 km.

Applications

The application of the Mobile-T is in transportable systems, which can be either vehicle mounted or man pack. The system can be used whilst on the move or at temporary sites that have been set up to cover incidents.

The use of the Mobile-T together with our Multichannel links enable us to offer systems with city wide coverage, using either automatic or manual video switching.

Broadcast digital TV quality

MPEG2 compression

Less than 50 mS latency

Non line of sight

DVB-T (OFDM NLOS)

Space diversity for added robustness

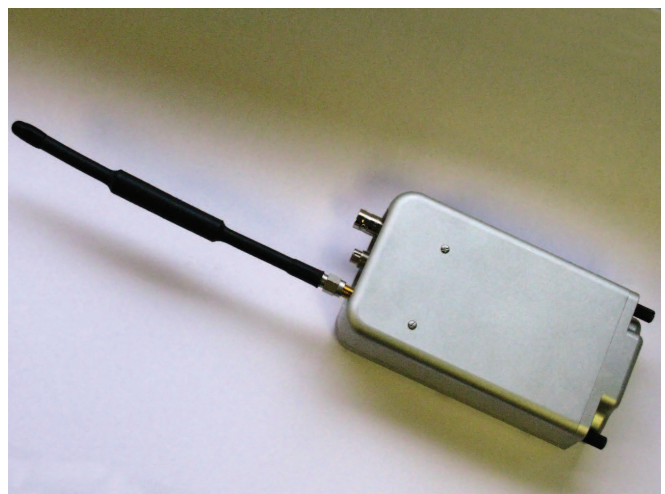
Omni or sector antennas

City wide coverage with multichannels

Benefits

The benefit of the Mobile-T over earlier generation spread spectrum equipment is that robust transmission can be achieved under non line of sight conditions to produce consistently sharp, high resolution, pictures. The system uses the latest form of orthogonal frequency division multiplexing in which the video is transmitted on 2,000 carriers. Just a few are needed by the space diversity receiver for high quality pictures to be displayed without artefacts.

The combination of the DVB-T modulation with low latency MPEG2 video compression and higher data rates means that the pictures are displayed without any visible blockiness or colour variation. It also means that full camera control is possible, even when tracking fast moving targets.



Options

There are several equipment options to suit many diverse applications. The options include different antenna patterns, transmit powers and frequencies.

In general if transmission is required from static sites, or from vehicles that follow a fixed path e.g. a train, then directional antennas with gains of up to 20 dB can be used. Here, it is generally better to use higher transmission frequencies because there is less chance of interference.

Against this, if the transmission is required under truly mobile situations, such as continuously from moving cars or from a man pack, then an omni directional transmit antenna will probably be required. In these circumstances the gain will be reduced and a lower operating frequency is recommended. This is because the reflection loss is less at lower frequencies, which generally compensates for the smaller antenna gain.

Typical Ranges

The range under non line of sight conditions differs from urban to rural environments. It depends on the nature and size of the obstructions and the location of the equipment. To illustrate this, the range of a typical 1.4 GHz system with 50 km coverage under line of sight conditions, will be reduced to 1 to 2 km in an urban environment when it is used in mobile situations. If however the same equipment were installed on an 8 metre mast in static deployments, the range would be increased to 4 to 5 km.

City Systems

The Mobile-T can transmit directly to control centres or to local collecting points from where the signals can be relayed on to the control centre.

The Ogier ML3100 Multichannel link is the ideal solution for re-transmission because it can accommodate the videos from 19 Mobile-T's, all transmitting simultaneously.

Ogier Electronics equipment is CE approved and is a supplier to major security and telecoms companies, local authorities, police, military and railway network operators world wide

Specifications

Video channels	1 in one direction
Data or audio channels	1 in both directions
Frequency band	1 to 24 GHz
Space diversity	Standard
Frequency stability	30 ppm
LOS range - all weathers	Typically 20 to 50 km in 1 to 12 GHz band
NLOS range - all weathers	Typically 1 to 5 km in 1 to 5 GHz band
Availability	99.95% (UK conditions)
Antenna type	Planar sector antennas or omni dipoles
Antenna size (both ends)	Up to 30 cm
Antenna gain (both ends)	2 to 20 dBi
Transmit power	0 to +25 dBm
Transmit EIRP	2 to 45 dBm
Polarisation	Vertical or horizontal
Receiver Sensitivity	-84 dBm typical
Modulation	OFDM with 2,000 QPSK or QAM modulated carriers
Tuner bandwidth	8 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video compression	MPEG2
Video quality	DVB-T
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	12 Volts DC
Input power	35 Watts each end
Temperature Range	-20 to +60 C
Wind	Up to 200 kph
Life	15 Years
Routine maintenance	None required



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Ogier Electronics Mobile-T Man Pack

The equipment is the lower power version of the digital Mobile-T. It provides broadcast quality video in line of sight and non line of sight conditions. It can be configured for different applications. Here, the transmitter is configured as a man portable equipment and the receiver is configured for vehicle mounting. The specifications below apply to the 1.4 GHz band, but other frequencies can be used.

Video Channels	1 in one direction	
Frequency	Centre frequency	Selectable between 1,000 and 2,800 MHz
	Bandwidth	8 MHz per channel
Range	Line of Sight	3 km
	Non Line of Sight	Up to 300 metres
	Availability	99.95% all weathers
Transmitter	Power	17 dBm (50 mW)
	EIRP	19 dBm (80 mW)
	Modulation	OFDM with 2,000 QPSK modulated carriers
	Polarisation	Linear
	Frequency stability	30 ppm
Receiver	Space diversity	Automatic antenna selection
	Sensitivity	-90 dBm
	Bandwidth	8 MHz
Transmit Antenna	Type	Dipole
	Beamwidth	360 degrees azimuth, 60 degrees elevation
	Antenna Gain	2 dB
Receive Antenna - Option 1	Type	2 omni directional antennas
	Beamwidth	360 degrees azimuth, 20 degrees elevation
	Gain	6 dB
Receive Antenna - Option 2	Type	4 planar sector antennas
	Beamwidth	Each antenna 90 degrees azimuth and elevation
	Gain	6 dB
Video	Quality	DVB-T Digital Video Broadcast – Terrestrial
	Input / Output	25 Hz frame rate PAL or NTSC 1Volt 75 ohm
	Bandwidth	5.6 MHz
	Compression	MPEG2
Controls	Transmitter	On or Off / External Power and Channel Select
	Receiver	On or Off and Channel Select
Connectors	Transmit Antenna	SMA
	Transmitter	SMA to Antenna
		BNC for video
		Audio and Data (option)
		External mains power
	Receive Antenna	N Type
	Receiver	4 N Types to Receive Antennas
		BNC for video
		Audio and Data (option)
		2 pole for DC power
Prime Power	Transmitter	Rechargeable Lithium Ion battery pack providing 2 hours continuous running
	Receiver Voltage	9 to 18 Volts DC from the vehicle battery via a stabilised supply that we assume is fitted
	Receiver Current	1.4 Amps at 15 Volts DC
Sealing	Transmitter	IP65
	Receiver	IP20
	Antennas	IP66
Dimensions	Transmit Antenna	1 unit 150 mm x 10 mm dia
	Transmitter	200 x 90 x 60 mm including battery pack
	Receive Antenna	Option 1 2 units 300 mm x 10 mm dia
		Option 2 4 units 155 x 125 x 35 mm
	Receiver	1U 19 inch tray (483 x 310 x 44 mm)
Mass	Transmit Antenna	0.1 kg
	Transmitter	1.3 kg including battery pack
	Receive Antenna	Option 1 2.0 kg each
		Option 2 1.0 kg each
	Receiver	6.0 kg
Temperature Range	-20 to +50 C	
Life	15 Years	
Radiation Hazard	None	0.08 mW/square cm 10 cm from omni antenna
Routine maintenance	None required	

Ogier Electronics Mobile-T Vehicle

The equipment is the high power version of the digital Mobile-T (the Mobile-T-HP). It provides broadcast quality video in line of sight and non line of sight conditions. Like the lower power version it can be configured for a number of different applications. Here, the transmitter is configured as a vehicle equipment and the receiver is configured for a static ground based configuration. The specifications below apply to the 1.4 GHz band, but other frequencies can be used.

Video Channels	1 in one direction	
Frequency	Centre frequency	Selectable between 1,000 and 2,800 MHz
	Bandwidth	8 MHz per channel
Range	Line of Sight	30 km
	Non Line of Sight	3 km, up to 5 km
	Availability	99.95% all weathers
Transmitter	Power	30 dBm (1 Watt)
	EIRP	Up to 36 dBm (4 Watts)
	Modulation	OFDM with 2,000 QPSK modulated carriers
	Polarisation	Linear
Receiver	Frequency stability	30 ppm
	Space diversity	Automatic antenna selection
	Sensitivity	-90 dBm
	Bandwidth	8 MHz
Transmit Antenna	Type	Dipole
	Beamwidth	360 degrees azimuth, 20/10 degrees elevation
	Antenna Gain	2 dB or 6 dB
Receive Antenna	Type	2 planar sector antennas
	Beamwidth	Each antenna, 90 deg azimuth, 60 deg elev
	Gain	12 dB
Video	Quality	DVB-T Digital Video Broadcast – Terrestrial
	Input / Output	25 Hz frame rate PAL or NTSC 1Volt 75 ohm
	Bandwidth	5.6 MHz
	Compression	MPEG2
Controls	Transmitter	On / Off
	Receiver	On / Off
Connectors	Transmit Antenna	N Type
	Transmitter	N Type to Transmit Antenna BNC for video Audio and Data (option) 2 pole for DC power
	Receive Antenna	N Type to Receiver
	Receiver	2 N Types to Receive Antennas BNC for video Audio and Data (option) 2 pole for AC mains power
Prime Power	Transmitter Voltage	9 to 18 Volts DC from the vehicle battery via a stabilised supply which we assume is fitted
	Transmitter Current	4 Amps at 15 Volts DC
	Receiver Voltage	200 to 240 Volts AC
	Receiver Power	25 Watts
Sealing	Transmitter	IP20
	Receiver	IP20
	Antennas	IP66
Dimensions	Transmit Antenna	300 x 20 mm
	Transmitter	(2U) 483 x 310 x 87 mm
	Receive Antenna	2 units each 155 x 125 x 35 mm
	Receiver	(1U) 483 x 250 x 44 mm
Mass	Transmit Antenna	0.2 kg
	Transmitter	7.2 kg
	Receive Antenna	1.0 kg each
	Receiver	6.0 kg
Temperature Range	-20 to +50 C	
Life	15 Years	
Radiation Hazard	None	0.004 mW/square cm 3 m from antenna
Routine maintenance	None required	