

BROADCAST COMPONENTS

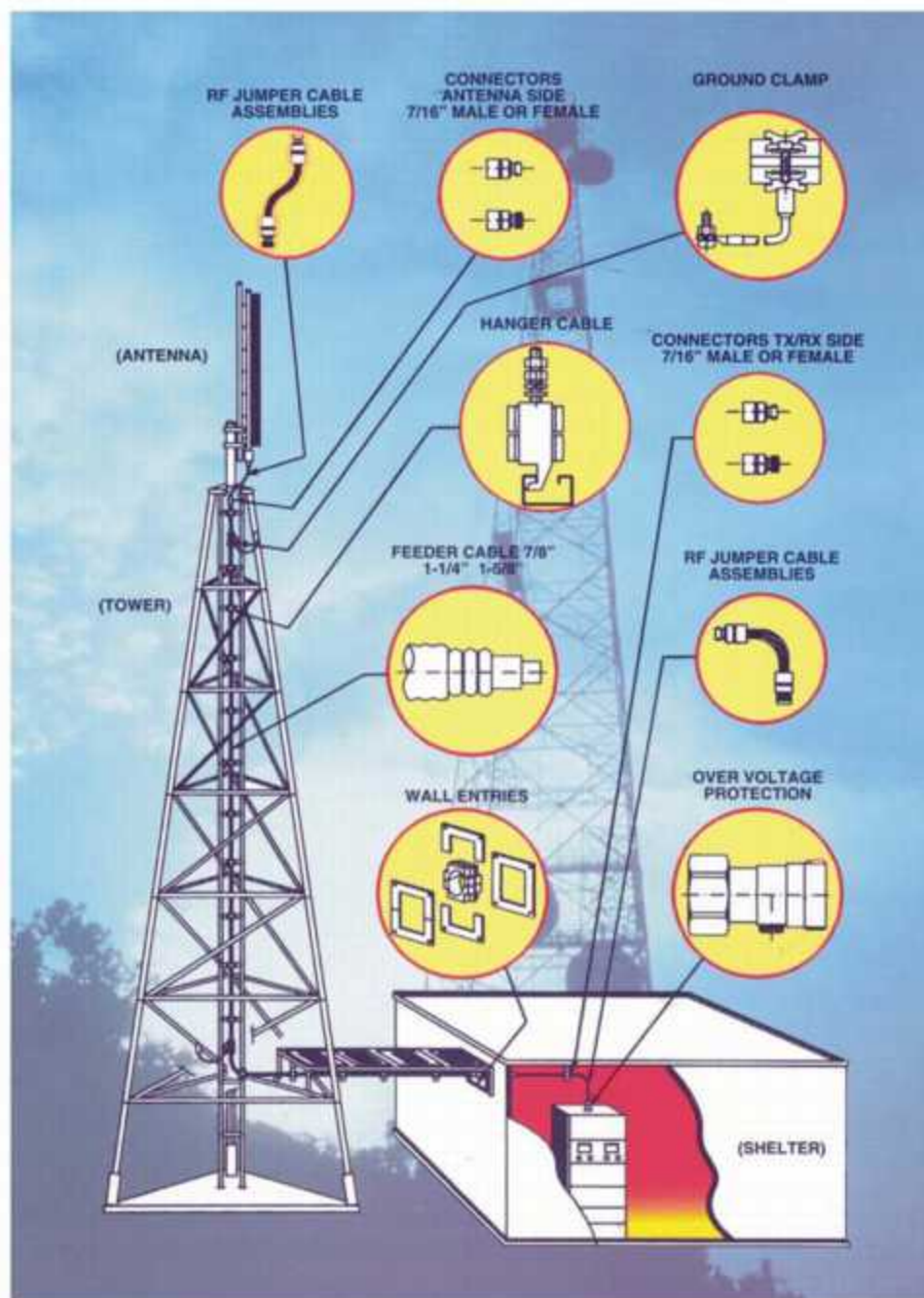


CPE ITALIA S.p.A. - Componenti Professionali per l'Elettronica

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BASE STATION: GSM-UMTS-VHF-UHF-FM

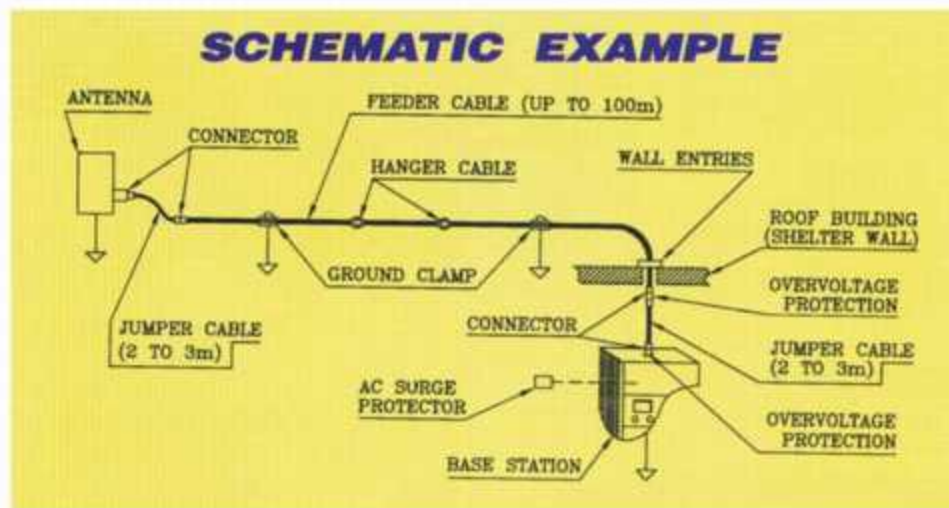


CPE Italia can supply all what it is necessary to set-up a correct RF link between antenna and base station in telecommunication systems (GSM, radio link, broadcast, military, etc.) with the guarantee of maximum performances for:

- Low RF loss
- Low VSWR
- Feeder cables
- Connectors
- Shielding
- RF emission
- Over voltage protection
- Lighting protection
- Rugged construction

This thanks to the high electromechanical characteristics of the components confirmed by the optimum results of the test that were carried out on:

- Connectors intermodulation products
- Saline atmosphere
- Lightning
- Burn-in
- Shock/vibration



obtained by strict quality controls during the manufacturing process and the good material employed.

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N COAXIAL CONNECTORS

N connector is probably the most used connector in the telecommunication field, since many years, for general applications in carrying RF signals, with high reliability, between equipments and inside them.

CPE Italia has developed a line of N connectors for a large range of RF coaxial cables, from the **semirigid** and **flexible** up to the **corrugated** copper tube types (medium and large size) mainly used to interconnect equipments and for feeder line, all with good electrical characteristics up to 10 GHz.

For all cables entry versions is with solder center contact and clamp, crimp, or solder outer contact, to fulfill the different user necessities, except for the corrugated types cables, where the interconnection is completely done by direct soldering of the connector body and the inner contact onto the cable due to the fact that for the "base station" of radiotelephone digital cellular network the elimination of intermodulation products is of the utmost importance.

Specific connectors for the "**hiflex**" corrugated cable, having the possibility to be assembled with no soldering parts and with electrical performances in agree with the custom request, have been also developed to solve some installation problems.



"N" TYPE CONNECTORS

FOAM DIELECTRIC CABLES	PLUG		JACK
	STRAIGHT	RIGHT ANGLE	STRAIGHT
1/4" FOAM SOLDER	20.300.191-324	20.300.391-325	20.300.091-323
3/8" FOAM SOLDER	20.300.191-317	20.300.391-318	20.300.091-319
1/2" FOAM SOLDER	20.300.191-314	20.300.391-313	20.300.091-315
1/2" FOAM SOLDER	20.300.130-043		20.300.030-044
7/8" FOAM CLAMP	20.300.130-048		20.300.030-047
1 1/4" FOAM CLAMP	20.300.130-049		20.300.030-050
1 5/8" FOAM CLAMP	20.300.130-080		20.300.030-081

7/16 connector is one of the most popular connector in telecommunication systems. In fact it is widely used in the "feeders line" to guarantee the greatest reliability in the interconnection between transmission equipments and antennas and between antennas, in the array systems, thanks to his mechanical ruggedness together with high electrical performances up to 5 GHz.

CPE Italia has designed a complete line of types to fulfill all user needs. Connectors for RF cables employed in telecommunication systems, with very low VSWR to optimize feeder and jumper cables performances are available, with very low intermodulation products values, well knowing the importance of this parameter in the multi-channel/transmitter configurations services.



Moreover for the largely used 1/4", 3/8", and 1/2" coaxial cables "**monolithic**" connectors have been designed in order to avoid intermodulation products normally caused by mechanically most complex connectors.

Finally to solve one problem often arising during installation, connectors with direct assembly onto the cables, with no soldering parts, always assuring good electrical characteristics are availables.

"7/16" TYPE CONNECTORS

FOAM DIELECTRIC CABLES	PLUG		JACK
	STRAIGHT	RIGHT ANGLE	STRAIGHT
1/4" FOAM SOLDER	20.500.131-280	20.500.331-274	20.500.031-276
3/8" FOAM SOLDER	20.500.131-281	20.500.330-338	20.500.031-277
1/2" FOAM CLAMP	20.500.130-061		20.500.030-062
7/8" FOAM CLAMP	20.500.130-073		20.500.030-074
1 1/4" FOAM CLAMP	20.500.130-071		20.500.030-075
1 5/8" FOAM CLAMP	20.500.130-072		20.500.030-076

In Television and Radio Broadcast systems very high RF power is present and specific cables (often air-dielectric) are to be used to realize reliable "feeder lines" interconnecting the transmission equipments to the antenna systems, able to carry hundreds of kW with very low loss, considering that in these installation loss means not only waste of power but, also, heating problems to manage.

Consequently suitable connectors must be employed and, since long time, EIA flange types represent "the best" to match, either for the ruggedness or for the good electrical performances up to 3 GHz, depending upon the type of connectors, the different cables used in the high power RF transmission systems realizing an unbeatable solution for the "feeder-lines".

Moreover the "one version" connector with a common and secure coupling elements for the inner conductor, simplifies the installation activity and improve the reliability of the interconnections.

CPE Italia present since from the beginning of his activity on the Radio and TV broadcast market, can provide a complete range of cables and connectors.

All EIA 7/8", 1 5/8" and 3 1/8" flanges are designed and manufactured according to EIA rs-225 standards, with strictly controlled production process to guarantee the required electrical and mechanical parameters, with the necessary high quality level. With this approach stock availability is insured for connectors usually requested and it is possible to satisfy, with short delivery time, and kind of demand for specific cable version.

All the users requirements are satisfied by a large version of 7/8" flange (for RG 213/214, to 1 5/8" cables, foam, hiflex and air-dielectric) and 1 5/8", while a wide range of adapters, able to make interconnection between different flange types or to the connector types most used to link equipments in TV systems (N, 7/16, BIRD) are available, solving any installation problem.



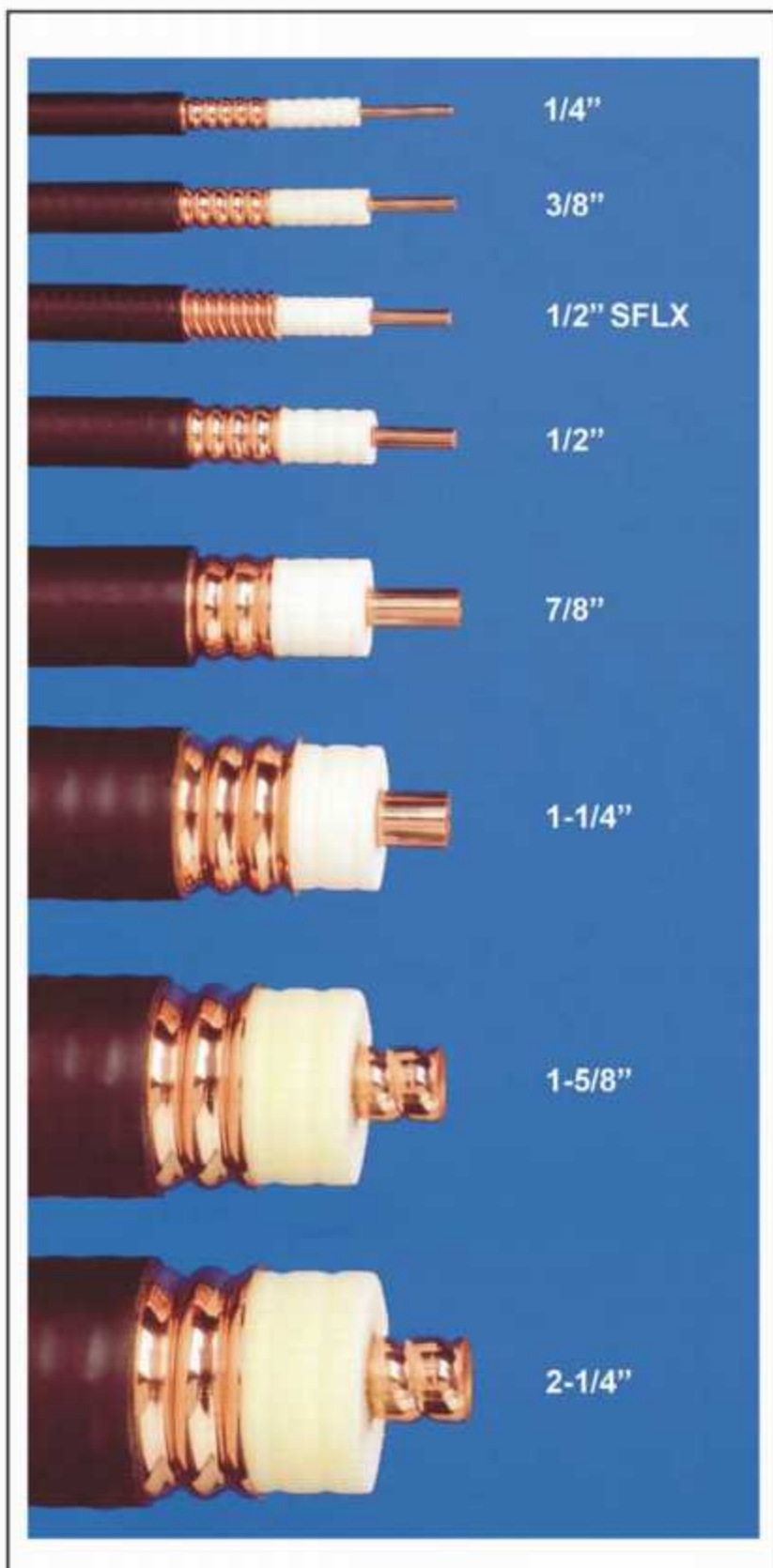
"EIA" TYPE CONNECTORS

EIA TYPE	CABLES	STRAIGHT	RIGHT ANGLE
7/8" CLAMP	RG 103	25.000.730-009	
	1/2" Foam	25.000.030-014	
	1/2" Foam		25.020.030-002
	1/2" Hiflex	25.000.130-003	
	7/8" Foam	25.000.230-010	
	7/8" Foam	25.101.150-021	
1 5/8" CLAMP	1 5/8" Foam	25.000.450-020	
	1 5/8" Foam	25.101.080-017	

Antennas in mobile, cellular, microwave and broadcast systems require high quality coaxial cables, with very low loss and high power signal transmission capability, to realize the interconnection with transmission equipments with the high efficiency and reliability require by these services and, usually, has to be installed in condition where weather and corrosion resistance are essential features to offer a high level of safety as well as long service life.

CPE Italia can supply a large range of coaxial cables able to fulfill all strictly mechanical and electrical characteristics require by the telecommunication system and to meet all installation problems.

- Inner conductor of copper wire, copper tube or corrugated copper tube depending on the cable size.
- Outer conductor of a corrugated copper tube with annular or spiral corrugation depending on the flexibility required.
- Weather resistant PE outer sheath suitable for indoor, outdoor or underground installation. Also available with flame retardant halogen free material.
- Dielectric in cellular polyethylene foam manufactured by a unique insulation process using ozone friendly expansion gas.
- Low VSWR
- Low attenuation
- High power capability
- High screening efficiency
- Easy and reliable installation of connectors
- Very good corrosion resistance



GROUND CLAMPS



These grounding clamps represent the best solution to ground cable to the antenna tower in order to improve protection against lightnings. In fact the "one-piece" construction (clamp + ground cable) make easy and fast to install the kit without any possibility to loose parts while the rugged construction and the good materials employed assure continuous electrical and mechanical reability in any environmental conditions.

Features:

- available for 1/4", 3/8", 1/2", 7/8", 1 1/4", 1 5/8", RG214, RG223 cables
- 200 kA lightning tested (MIL/STD-1757)
- conforming to IEC 61312-1
- degrees of protection IP66/IP67 (according to IEC 529)
- low contact and ground resistance

CABLE	MASS CONDUCTOR						
	STRAIGHT	90°	45°	16mm ²	25mm ²	BLACK	YELLOW-GREEN
1/4" LCF+3/8" SFLX	X			X		11.020.603-165	11.020.603-208
1/4" LCF+3/8" SFLX		X		X		11.120.603-166	11.120.603-209
1/4" LCF+3/8" SFLX			X	X		11.500.603-169	11.500.603-207
3/8" LCF	X			X		11.000.100-170	11.000.100-212
3/8" LCF		X		X		11.100.100-249	11.100.100-251
3/8" LCF			X	X		11.500.100-252	11.500.100-253
1/2" LCF	X			X		11.000.200-172	11.000.200-214
1/2" LCF		X		X		11.100.200-173	11.100.200-215
1/2" LCF			X	X		11.500.200-176	11.500.200-218
1/2" SFLX	X			X		11.000.002-254	11.000.002-255
1/2" SFLX		X		X		11.100.002-256	11.100.002-257
1/2" SFLX			X	X		11.500.002-258	11.500.002-259
7/8" LCF/SFLX	X			X		11.000.304-179	11.000.304-221
7/8" LCF/SFLX		X		X		11.100.304-180	11.100.304-222
7/8" LCF/SFLX			X	X		11.500.300-260	11.500.300-261
1 1/4" LCF	X				X	11.010.400-184	11.010.400-226
1 1/4" LCF		X			X	11.110.400-185	11.110.400-227
1 1/4" LCF			X		X	11.510.400-188	11.510.400-230
1 5/8" LCF	X				X	11.010.500-189	11.010.500-231
1 5/8" LCF		X			X	11.110.500-190	11.110.500-232
1 5/8" LCF			X		X	11.510.500-193	11.510.500-235
2 1/4" LCF	X				X	11.010.700-194	11.010.700-236
2 1/4" LCF		X			X	11.110.700-195	11.110.700-237

The family of overvoltage protectors is designed to provide for general protection (AC and RF) to the communication RF equipments from damage due to external transient and surges caused by lightning discharges, induction, switching sources and, even to some degree, EMP.

To fulfill all the user's needs either "gas discharge" or "1/4 stub" types are available with the most used connectors interconnection up to 2,5 GHz.

Features:

- instantaneous and reliable response in any environment
- easy and fast installation
- completely sealed and weatherproof construction
- very low VSWR to avoid insertion mismatches

CON STUB

Centre frequency: 1920 MHz
Bandwidth: +/-70MHz



P/N 38.005.107-021
assembly instruction: 93.100.909-059

Centre frequency: 925 MHz
Bandwidth: +/-70MHz



P/N 38.005.007-003
assembly instruction: 93.100.909-059

GAS TUBE PROTECTOR

7/16 M/F



P/N 38.102.207-018
assembly instruction: 93.100.909-059

7/16 F/F



P/N 38.105.207-011
assembly instruction: 93.100.909-059

7/16 F/F



P/N 38.105.207-008
assembly instruction: 93.100.909-059

Standard connectors *part-number*

ELECTRICALS

Impedance:	50 Ohm
Frequency range:	DC to 2.5GHz
VSWR:	<1.2
Insertion loss:	0.2 dB max
D.C. Sparkover voltage:	see table
Dynamic voltage:	see table
Residual voltage:	see table

ENVIRONMENTAL

Temperature:	-40 to +100 C°
RH range:	up to 100%
Humidity and salt spray test conforming to MIL-STD 202F method 106E/101D	

NOTE: *) Optalloy is equivalent to SUCOPLATE

MATERIALS and SURFACE FINISH

Body:	Brass	Optalloy*
Connector:		
Center contact:	Spring Bronze	Silver Plated
Outer contact	Brass	Silver Plated
Insulator:	PTFE	
Gasket:	Silicone rubber	

GAS - TUBE SURGE PROTECTORS

P/N	Uzstat (V)	Uzdyn (V)	Is 8/20 (kA)	Ui (V)	Uarc (V)
2027-09-A	90+/-25%	800	10	<100	<20
2027-23-A	230+/-20%	850	5	<100	<20
2027-35-A	350+/-20%	900	5	<100	<20
2029-47-A	470+/-20%	1000	20	<100	<20
2031-60-A	600+/-15%	1500	5	<180	<30
2031-90-A	900+/-20%	1800	5	<170	<25
732-0-0-454	1500+/-15%	3500	15	<90	<10

LOADS



P/N	TYPE	POWER
17-3361	N MALE	12 W
17-3113	N FEMALE	12W
17-3358	N MALE	30W
17-3114	N FEMALE	30W
17-3559	N MALE	50W
17-3255	N FEMALE	50W
17-3111	N MALE	100W
17-3126	N FEMALE	100W
17-3167	N MALE	250W
17-4321	N FEMALE	250W
17-4503	N FEMALE	600W
17-0199	7/16 FEMALE	600W
17-0251	7/16 FEMALE	1000W
17-4580	EIA 7/8	1000W
17-0305	7/16 FEMALE	1200W
17-5240	EIA 7/8	1200W
17-5241	EIA 7/8	2500W VENTILATING FAN WITH FEEDER
17-0073	EIA 1 5/8	5000W VENTILATING FAN WITH FEEDER
17-0066	EIA 1 5/8	10000W VENTILATING FAN WITH FEEDER
17-0067	EIA 3 1/8	10000W VENTILATING FAN WITH FEEDER



ADAPTORS TYPE	P/N
DOUBLE FLANGE EIA 7/8" 90°	35.319.009-077
DOUBLE FLANGE EIA 7/8" PP	30.102.400-010
ADAPTORS EIA 7/8" TO N FEMALE	35.043.003-009
ADAPTORS EIA 7/8" TO LC FEMALE	35.164.105-028
ADAPTORS EIA 7/8" TO 7/16" FEMALE	35.023.103-007
INNER FLANGE FOR EIA 7/8"	32.000.011-001
FLANGE EIA 7/8" BIRD	35.060.103-012
DOUBLE FLANGE EIA 1 5/8" 90°	35.083.118-022
ADAPTOR FLANGE EIA 1 5/8" TO FLANGE EIA 7/8"	35.053.103-011
ADAPTOR FLANGE EIA 1 5/8" TO N FEMALE	35.033.003-008
ADAPTOR FLANGE EIA 1 5/8" TO LC FEMALE	35.174.105-030
ADAPTOR FLANGE EIA 1 5/8" TO N FEMALE	35.033.003-008
INNER FLANGE FOR EIA 1 5/8"	32.000.111-002
ADAPTOR 7/16" FEMALE TO 7/16" FEMALE	30.050.003-006
ADAPTOR 7/16" MALE TO 7/16" MALE	30.050.103-008
ADAPTOR 7/16" MALE TO 7/16" FEMALE 90°	30.050.205-007
ADAPTOR 7/16" FEMALE TO N MALE	35.010.103-003
ADAPTOR 7/16" FEMALE TO N FEMALE	35.013.103-006
ADAPTOR 7/16" MALE TO N FEMALE	35.011.103-004

* OTHER TYPE ON ORDER AVAILABLE

Elliptical WAVEGUIDES

Elliptical waveguides are the optimal choice for most microwave antenna feeder systems. Waveguides are precision-formed from corrugated high-conductivity copper and have an elliptical cross section. The corrugated wall gives the waveguide excellent crush strength and good flexibility for ease of handling. A rugged black polyethylene jacket provides protection during installation. The jacket is waterproof and ultraviolet-stabilized to prevent deterioration. Standard jacketing material is suitable for operation down to -40°C and installation down to -20°C. A range of waveguide sizes is available for applications from 5.6 to 13.25 GHz.

Low loss elliptical waveguides are optimised for lowest loss in specific user bands. Attenuation is significantly lower than that of standard rectangular waveguides for these bands, resulting in highly efficient signal transfer which optimises overall system performance.

The elliptical cross section has HE_{c11} as the principal mode in rectangular waveguide, which is similar to the TE_{10} mode in rectangular waveguides, and propagates below the cut-off frequencies of higher-order modes. Operating in the frequency band where only the principal mode can exist eliminates signal distortion due to dispersion and minimizes VSWR.

All waveguides and factory assemblies are designed to meet our very low stated VSWR specifications. You get the performance you expect. No surprise, no risk.

Optimal crush and pulling strength as well as flexibility are given by the corrugated design of the waveguides. The low bending moment and bending radius provide good flexibility.

Elliptical waveguide and accessories allow for simplified system planning and minimize the installation cost compared to other types of waveguides. Good flexibility of the corrugated copper construction provides easy installation and saves time and labour.

The best choice for flexible transmission lines with superior electrical performance for modern microwave system and other broadband wireless applications.



Waveguide Type	Frequency Range Ghz	Flange types	VSWR
EU 52	5,6-6,425	PDR70-CPR70*	< 1,05
EU 63	5,7-7,75	PDR70-CPR137G UDR70*-CPR137F*	< 1,05
EU 77	8,5-11,7	PDR84-CPR112G UDR100*-CPR90F*	< 1,03
EU 90	7,12-5,85	PDR100-CPR90G UDR100*-CPR90F*	< 1,05
EU 127	7,12-5,85	PDR120-WR75G UBR120*-CPR75F*	< 1,03

* ON REQUEST

Elliptical WAVEGUIDES

ACCESSORIES

**PRESSURE
WINDOWS**



SHIM



**FLARING
TOOL**



**FLEX
TWIST**



**GROUNDING
KITS**



**WAVEGUIDE
BENDS**



**POWER
DIVIDER**



**UPLINK
FILTER**





company capabilities

DESIGN

- Implemented internally by CPE's Technical Office
- According to the appropriate international standards
- Monitoring and verification with the Customer is very much appreciated
- By using the most updated and sophisticated CAD tools.

DEVELOPMENT

- Synergy between Technical Office and Prototype Lab
- Check and result measurements are constantly performed prior to releasing the project for production
- Documentation to production department includes process flow after having been discussed with production specialists
- Special care to documentation updating and security.

MANUFACTURING/ASSEMBLING/INTEGRATION

- Any detailed description of the equipment settings, procedure to be followed, special attention and intermediate checks have to be described in detail on the released document to factory
- Flow of operations must be available to all operators involved
- A check list must be filled in order to allow complete product traceability
- Each product will be recognised by its Lot Number
- When appropriate/requested all products will show the serial number as well.

TEST

- Final tests are performed by skilled specialists and the results obtained are recorded.
- Their frequent assessments are also made in order to constantly ascertain production process effectiveness.

quality certifications

EN ISO 9001:2000
EN ISO 14001:2004
EN ISO 9100

All Company activities must comply with the procedures described by the quality manual.

Audits are performed by internal Quality Assurance People as well as by external Advisors, external certified Centres and CUSTOMERS.



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