



# **ANTENNAS & FEEDS 2022 PRODUCT PORTFOLIO**





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**Antennas  
& Feeds**

01

WE LISTEN TO YOUR  
NEEDS TO MAKE  
THEM REAL

Thanks to a unique engineering team with years of expertise. The Aerospace division of EOSOL Group offers high performance antennas and feeds for space, ground and SATCOM applications.

SPACE

State of the art antenna solutions for a challenging environment. Our antennas and feeds deliver an outstanding performance to meet more stringent requirements. Over the years our team has developed custom solutions for different types of spacecrafts delivering space qualified hardware. Our product portfolio includes feeds solutions for GEO, LEO and deep space spacecrafts.

GEO SATELLITES

Corrugated horns for payload reflector antenna systems for telecommunications satellites. These antennas can operate in main frequency bands of interest (X-/Ku-/Ka-band).

X BAND FEED

Parameter	Units	Value
Frequency	GHz	7.25-8.40
Directivity	dB	> 20
Return loss	dB	> 30
Crosspolar	dB	< -35

Dual circular polarization feed. It includes, under request, polarizer and diplexers.

Very estable phase center over frequency







KA BAND FEED

Parameter	Units	Value
Frequency	GHz	RX: 20.2 - 21.2 TX: 30.0 - 31.0
Directivity	dB	> 20
Return loss	dB	> 30
Crosspolar	dB	< -35
Dual circular polarization feed.		

Very estable phase center over frequency



NGSO SATELLITES

Corrugated horns for payload reflector antenna systems for telecommunications satellites. These antennas can operate in main frequency bands of interest (X-/Ku-/Ka-band).

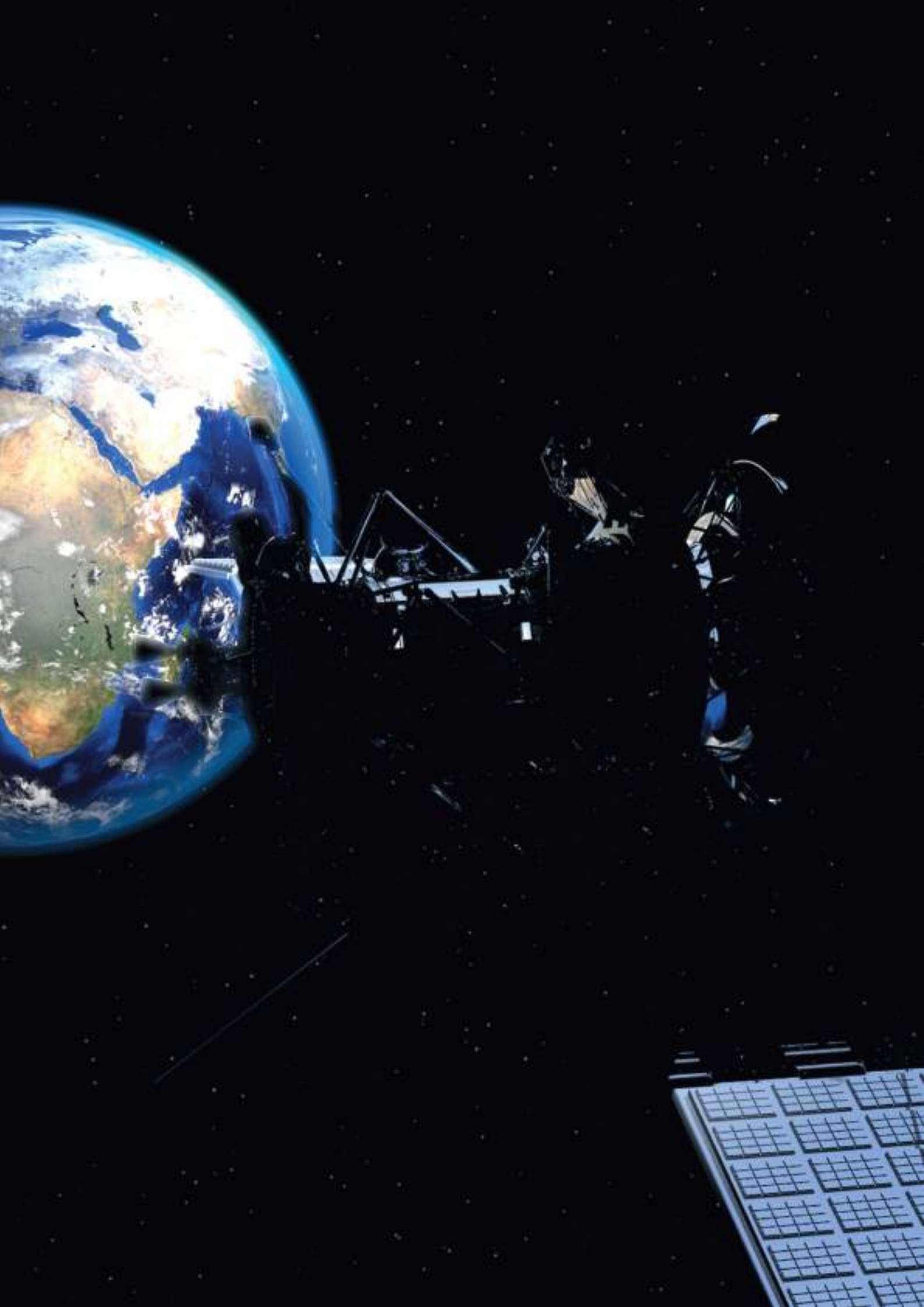
2U KA BAND ANTENNA

Parameter	Units	Value
Frequency	GHz	RX: 17.3 - 22.2 TX: 27.0 - 31.0
Directivity	dB	18 (@17GHz)   24 (@31GHz)
Return loss	dB	> 20
Crosspolar	dB	< -25
Axial Ratio	dB	< 1
Dual circular polarization.		
Simultaneous Tx and Rx		

Very compact design (2U standard)







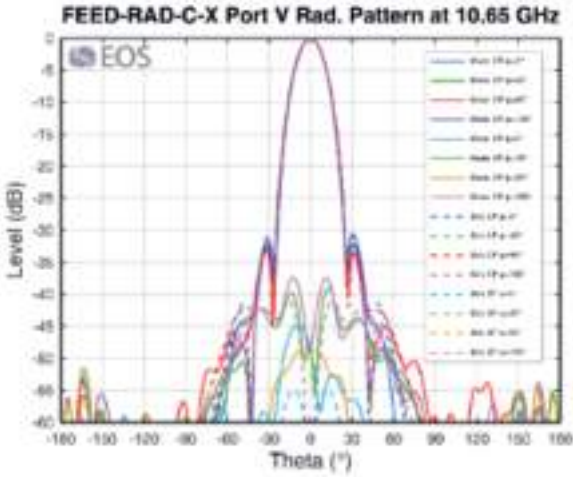
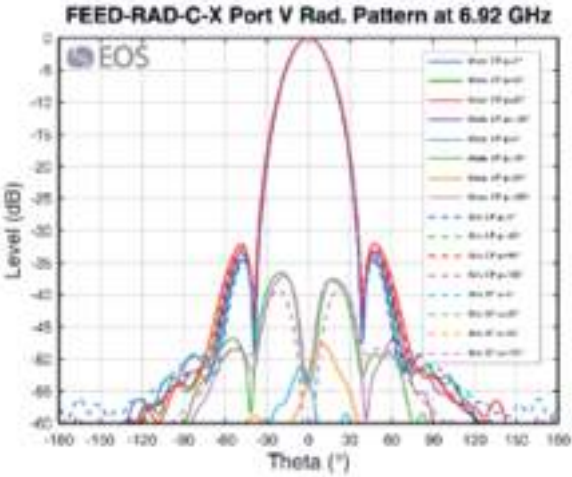
### REMOTE SENSING

EOSOL provides a wide range of antennas and feeds for remote sensing applications. Our antennas and feeds are suitable for ultra-wide band or multi-frequency microwaves radiometers.

Based on our experience though the years, we can also offer antennas and feeds solution for different Remote Sensing applications (SAR, radiometry or altimetry).

### C-X BAND FEED FOR RADIOMETRY

Frequency	6.6 - 7.25 GHz 10.6 - 10.7 GHz
Directivity	17.5 dB @ 6.6 GHz 20.75 dB @ 10.6 GHz
Return loss	25 dB
Crosspolar levels	Lower than -35 dB





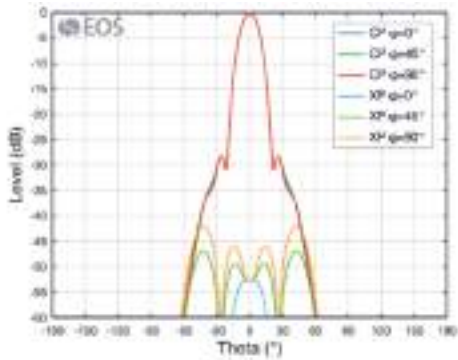


### K-KA BAND FEED FOR RADIOMETRY

Frequency	18.6 - 18.8 GHz 36 - 37 GHz
Directivity	18.8 dB @ 18.7 GHz 22 dB @ 36.5 GHz
Return loss	25 dB
Crosspolar levels	Lower than -30 dB



FEED-RAD-K-KA RADIATION PATTERN AT 36.50 GHz

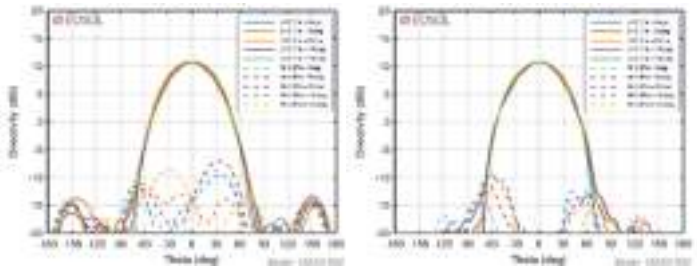


### UHF ULTRA-WIDEBAND FEED FOR RADIOMETRY

Frequency	0.4 - 0.9 GHz
Return loss	20 dB
Crosspolar level	Typical -20 dB
Axial ratio	Lower than 1 dB
Dimensions	990 x 320 mm



RADIATION PATTERN AT 0.4 GHz AND 0.9 GHz

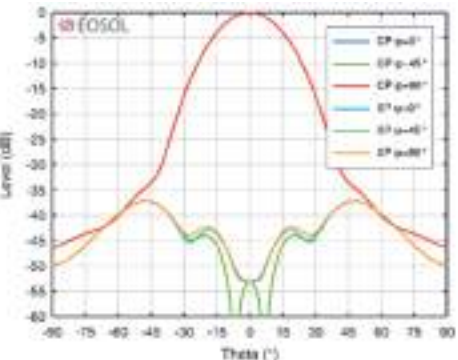


### K-KA BAND FEED FOR RADIOMETRY AND ALTIMETRY

Frequency	35 - 36.0 GHz
Return loss	30 dB
Crosspolar levels	Lower than -30 dB
Isolation	Lower than -26 dB



DERE 102A01R03 RADIATION PATTERN AT 35.50 GHz

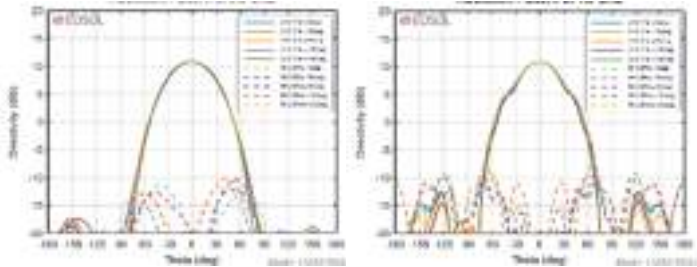


### K-KA BAND FEED FOR SAR AND RADAR ALTIMETRY

Frequency	0.9 - 2.0 GHz
Return loss	15 dB
Crosspolar level	Typical -20 dB
Axial ratio	Lower than 1.5 dB
Dimensions	455 x 150 mm



RADIATION PATTERN AT 0.9 GHz AND 1.9 GHz







**DEPLOYABLE REFLECTOR ANTENNA FOR CUBESATS AND SMALLSATS (X-/KA-BAND)**

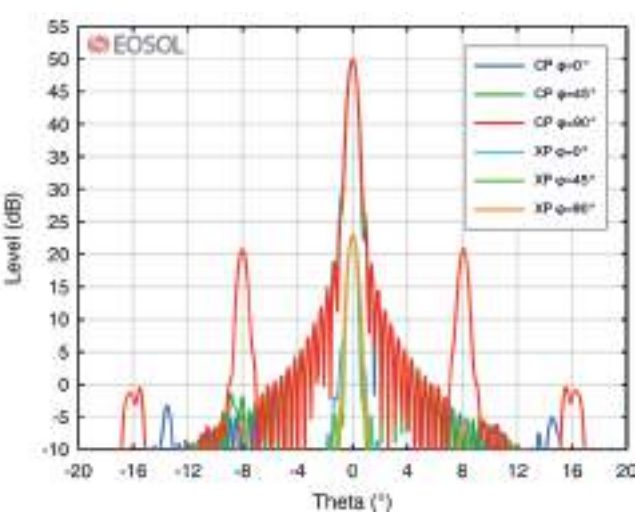
EOSOL is committed to develop new space antenna solutions. In partnership with COMET Ingeniería and PROSIX, the companies are working to develop new deployable antenna solutions providing cubesats and small satellites with communications and observation capabilities unprecedented to date.



**MODULAR DEPLOYABLE ANTENNA REFLECTOR**

Parameter	Value
Frequency	L-band to Ka-band
Diameter	1m (up to 3m)
Focal distance	Depending on application
Taper	Depending on application
Directivity	> 45 dB
Polarization	Linear or circular
Offset reflector configuration	
Very compact design (3U standard)	

RADIATION PATTERN AT 35.5 GHz



*\*Currently under development under ESA contract.*



WE CAN BE YOUR  
PARTNER IN THE WAY  
TO CONNECT AND  
EXPLORE THE SPACE



## B. GROUND

Antennas and feeds solutions for various applications such as Ground Control Stations or radio telescopes. We can be your partner in the way to connect and explore the space.

### GROUND CONTROL STATIONS (S-/X-/KA-BAND)

Over the years the aerospace division at EOSOL has developed complex feeds systems to illuminate reflectors up to 18m class antennas for application such as TT&C, gateway or EO downlink.

#### KA BAND FEED WITH TRACKING MONOPULSE

Parameter	Units	Value
Frequency	GHz	RX: 17.3 - 18.1 TX: 25.5 - 27.0
Polarization	-	Single Circular RX: LHCP/RHCP TX: RHCP/LHCP
Return loss	dB	> 20
Crosspolar	dB	< -30
Dual circular polarization feed (6 ports).		
Max Tx power 200W		
Different versions (with and without monopulse) for 5m up to 13m class antennas.		







## C. SATCOM TERMINALS

Our product portfolio includes different standard feeds or we can adjust them to your needs. Based on our experience we can adapt our products to your final application whether for terrestrial, for aerial or for naval applications.

### FEEDS FOR SATCOM TERMINALS (X-/KU-/KA-BAND)

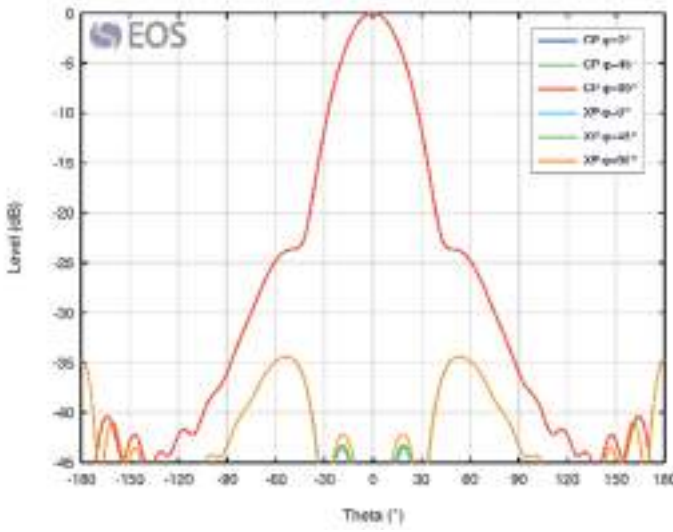
Our team counts with vast experience designing, manufacturing and testing different feeds and antennas for SATCOM applications (including military). Our capabilities include the development of corrugated feed horns, (conical) log spiral antennas, horn array antennas, etc. Our product portfolio includes a wide range of COST solutions for SATCOM terminals.

#### X BAND FEED

Fixed Satcom terminals | Flyaway Satcom terminals

Parameter	Value
Frequency	7.25 - 7.75 GHz & 7.9 - 8.4 GHz
Directivity	16 dB (typical).
Return loss	18 dB
Axial ratio	< 0.5 dB
Dimensions	281 x 118 x 118mm
Single circular polarization (RHCP or LHCP) in each frequency band.	

FEED-COMS-X-TX-RX-SCP RADIATION PATTERN AT 7.50 GHZ





**KU BAND FEED**  
Fixed Satcom terminals | Flyaway Satcom terminals

Parameter	Units	Value
Frequency	GHz	RX: 10.95 - 12.75 TX: 13.75 - 14.50
Polarization	-	Single Circular RX: LHCP/RHCP TX: RHCP/LHCP
Return loss	dB	> 20 (typ.)
Directivity	dB	16 (typ.)
FoV	°	29
Tapper level @FoV	dB	-12 (typ.)
Axial ratio	dB	RX: < 1.5 TX: < 1
Insertion loss	dB	< 0.5
Dimensions	mm	220 x 65 x 130
Ports	-	2 ports, V a H TX interface: WR75 RX interface: WR75



**KA BAND FEED**  
Fixed Satcom terminals | Flyaway Satcom terminals

Parameter	Units	Value
Frequency	GHz	RX: 20.2 - 21.2 TX: 30.0 - 31.0
Polarization	-	Single Circular RX: LHCP/RHCP TX: RHCP/LHCP
Return loss	dB	> 18
Directivity	dB	16 (typ.)
FoV	°	31
Tapper level @FoV	dB	.12 (typ.)
Axial ratio	dB	RX: < 1.5 TX: < 1
Insertion loss	dB	< 0.5
Dimensions	mm	190 x 55 x 45
Ports	-	2 ports, RHCP and LHCP TX interface: WR28 RX interface: WR42





**Engineering  
services**

02



YOU CAN TRUST  
ON US FOR YOUR  
RF AND ANTENNA  
DEVELOPMENTS

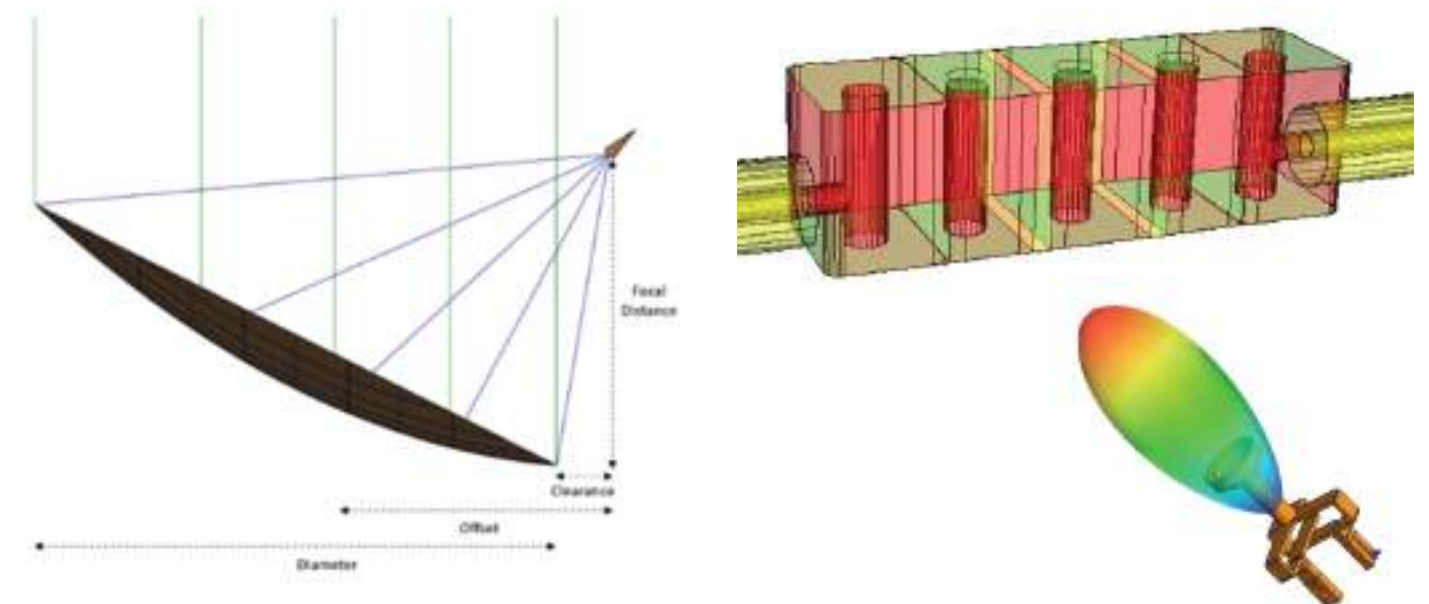
## A. ANTENNA, FEEDS AND RF COMPONENTS DESIGN

Our team has wide experience developing custom RF components and antenna solutions for different applications and sectors such as space, defense or science.

We can give you consultancy services or turn key solutions with the reliability of EOSOL Group. Our services include: RF and mechanical design/analysis, prototyping, manufacture and, test and qualification.

### RF DESIGN

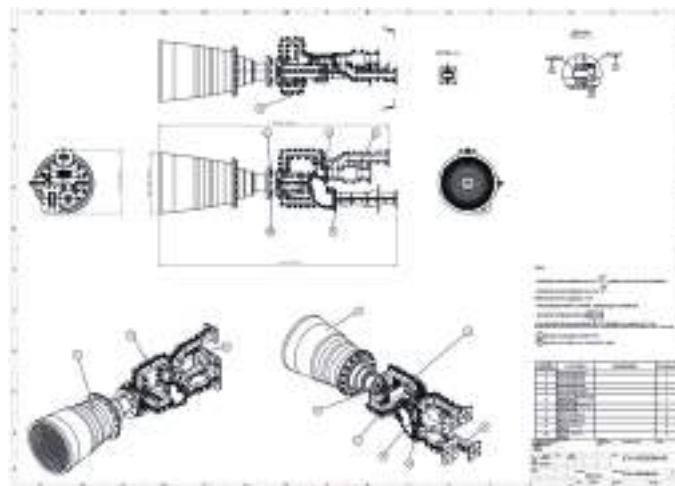
Electromagnetic simulation and analysis using advance SW tools such as FEKO, Microwave Wizard or GRASP. We count with senior RF and antenna engineers with years of experience designing antennas (including high performance and complex feeds) and RF components (filters, OMTs, diplexers, feeding and matching networks) for challenging applications (communications satellites, cryogenic applications, scientific radiometers or radio links).





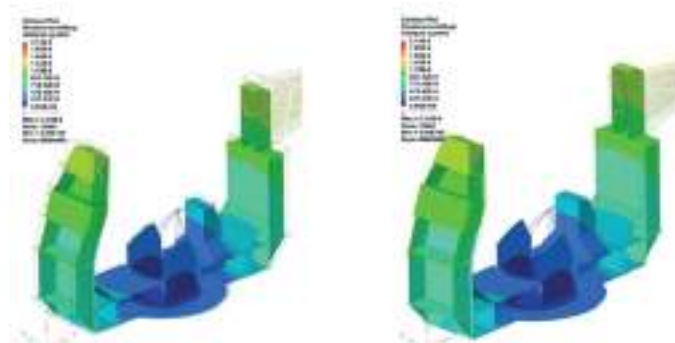
### MECHANICAL DESIGN

3D model and drawings generation with CAD software, we work with SolidWorks.



### THEMO-MECHANICAL ANALYSIS

We can accomplish structural and thermal finite elements, computational fluids dynamic (CFD), environmental or mechanisms simulations. To perform these analyses, SW tools such as Altair HyperWorks, Nastran or Patran are used.



### PROTOTYPING

Rapid prototype to speed up design process and to validate RF and mechanical aspects. We take advantage of additive manufacturing and other advance manufacture techniques in order to manufacture conceptual and functional prototypes previous to final manufactures.



### MANUFACTURING AND TEST

After all the development phase and once the product is ready for manufacturing, we accomplish the whole process, including the qualification test campaign of first units, as well as the manufacture and test of recurrent units.





## B. REFLECTOR ANTENNAS

With more than 10 years of experience, our team has the expertise developing reflector antenna solutions from scratch. We accomplish the whole design. Among our solutions are reflectors made of aluminum, fiber (CFRP) or even mesh deployable.

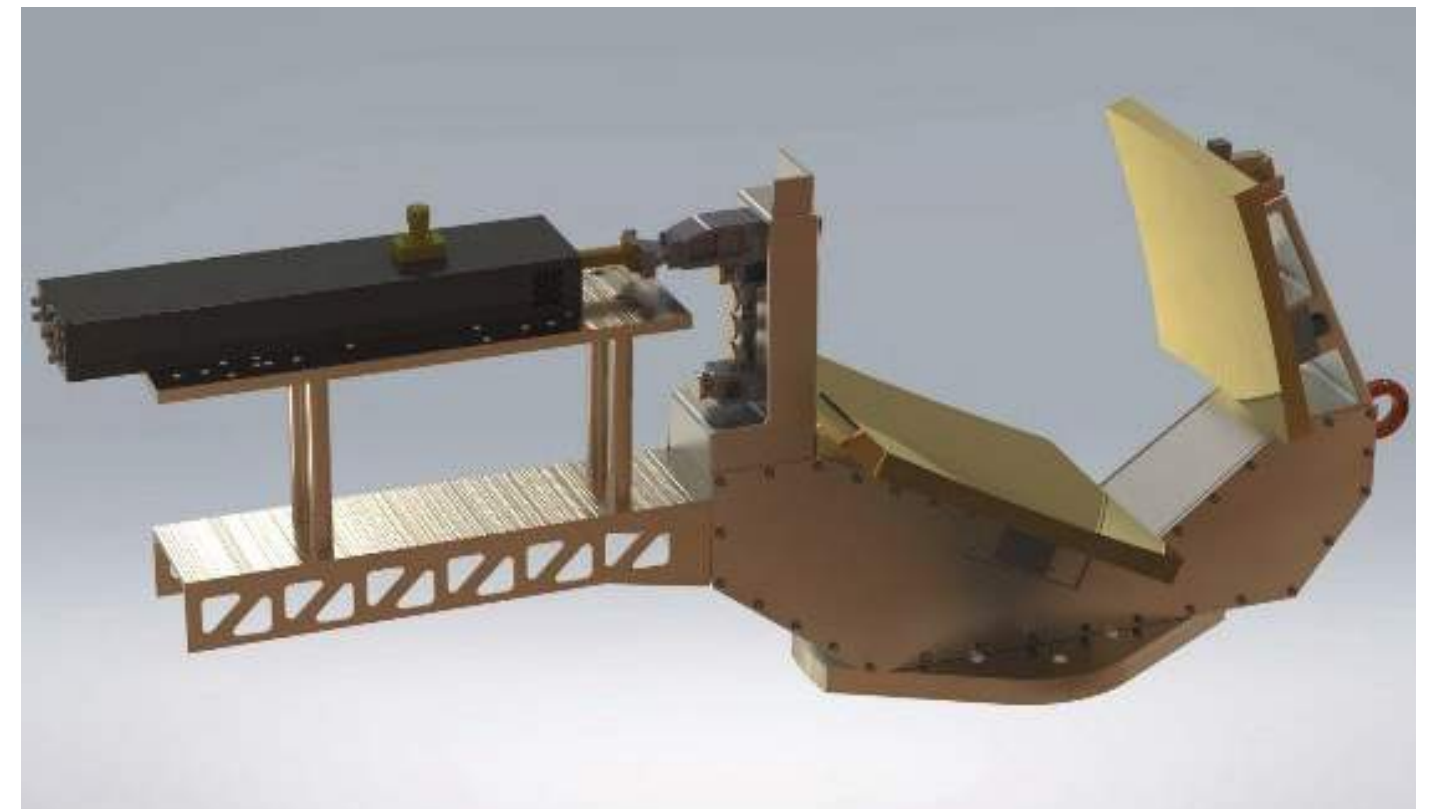
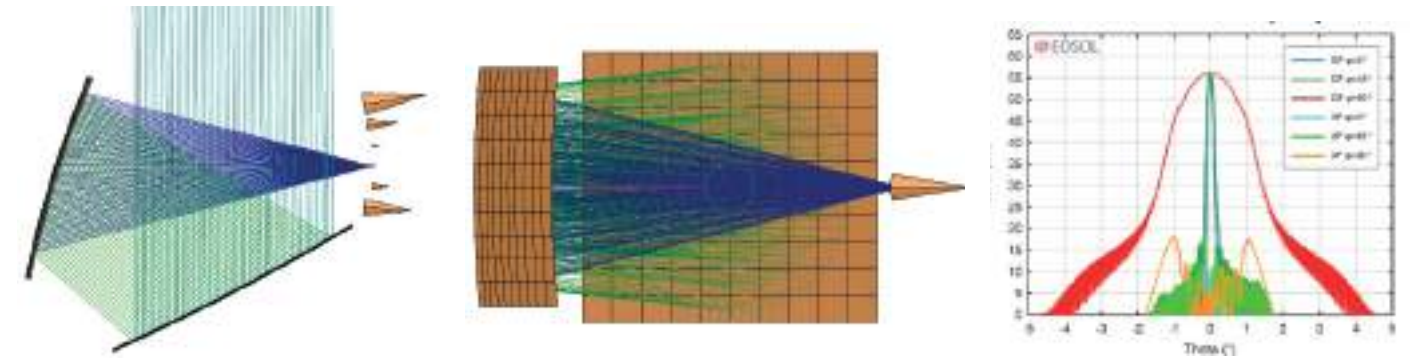
### APPLICATIONS

#### Space

- Data downlink
- Communications
- Remote sensing

#### Ground

- Ground Control Stations
- SATCOM terminals
- Science



Sub-mmW VAST antenna for anechoic chamber .



**Offices**

03





## OFFICES

### SPAIN

**Pamplona, Spain - headquarters**  
C/Camino de Labiano 45A Bajo, 31192  
Pamplona, Spain  
Tel. +34 948 32 69 72

**Madrid, Spain**  
Avenida Manoteras 24, 28050,  
Madrid, Spain  
Tel. +34 918 04 96 74

**Murcia, Spain**  
C/ Fernando Alonso Navarro, nº 12  
4ª Pta (Edf. MBC) 30009  
Murcia, Spain

**Tarragona, Spain**  
Calle Pau Claris nº2 43005  
Tarragona, Spain  
Tel. +34 977 43 68 11

### MEXICO

**Mexico City, Mexico**  
Av. Presidente Masaryk 17, int. 301  
Col. Polanco – Del. Miguel Hidalgo 11560  
Mexico City, Mexico  
Tel. +52 (55) 5545 7753

**Durango, Mexico**  
Ave. Las Águilas No. 532, Col. Miraflores  
– Durango 34030  
Durango, Mexico  
Tel. +52 (618) 811 0961

### OTHERS

**Houston, TX, USA**  
609 Main Street, 25th Floor, 77002  
Houston, TX. Tel. +1 (832) 444-4260

**Giza, Egypt**  
3 A Ahmed Orabi St., Sphinx  
Sq., Mohandeseen  
Giza, Egypt

**Cape Town, South Africa**  
Cube Workspace, The Icon Building,  
24 Hans Strijdom Avenue  
Cape Town, South Africa

**Le Barp, France**  
1 Avenue du Medoc Espace Sonora,  
33114  
Le Barp, France

**Barranquilla, Colombia**  
Calle 77B, No. 59-61 Of. 301, Edificio  
Las Américas II  
Barranquilla, Colombia

**Chile**  
Padre Mariano 391, office 904  
Providencia, Santiago

**Lisboa, Portugal**  
Rua Luciano Cordeiro, 123, 2ºD  
1050-139, Lisboa

**Casablanca, Morocco**  
59 Boulevard Zerktouni, 6º nº18  
Casablanca, Morocco

**Kuwait City, Kuwait**  
Al Soor Building, 16th Floor, Al Soor Street  
Kuwait City, Kuwait





