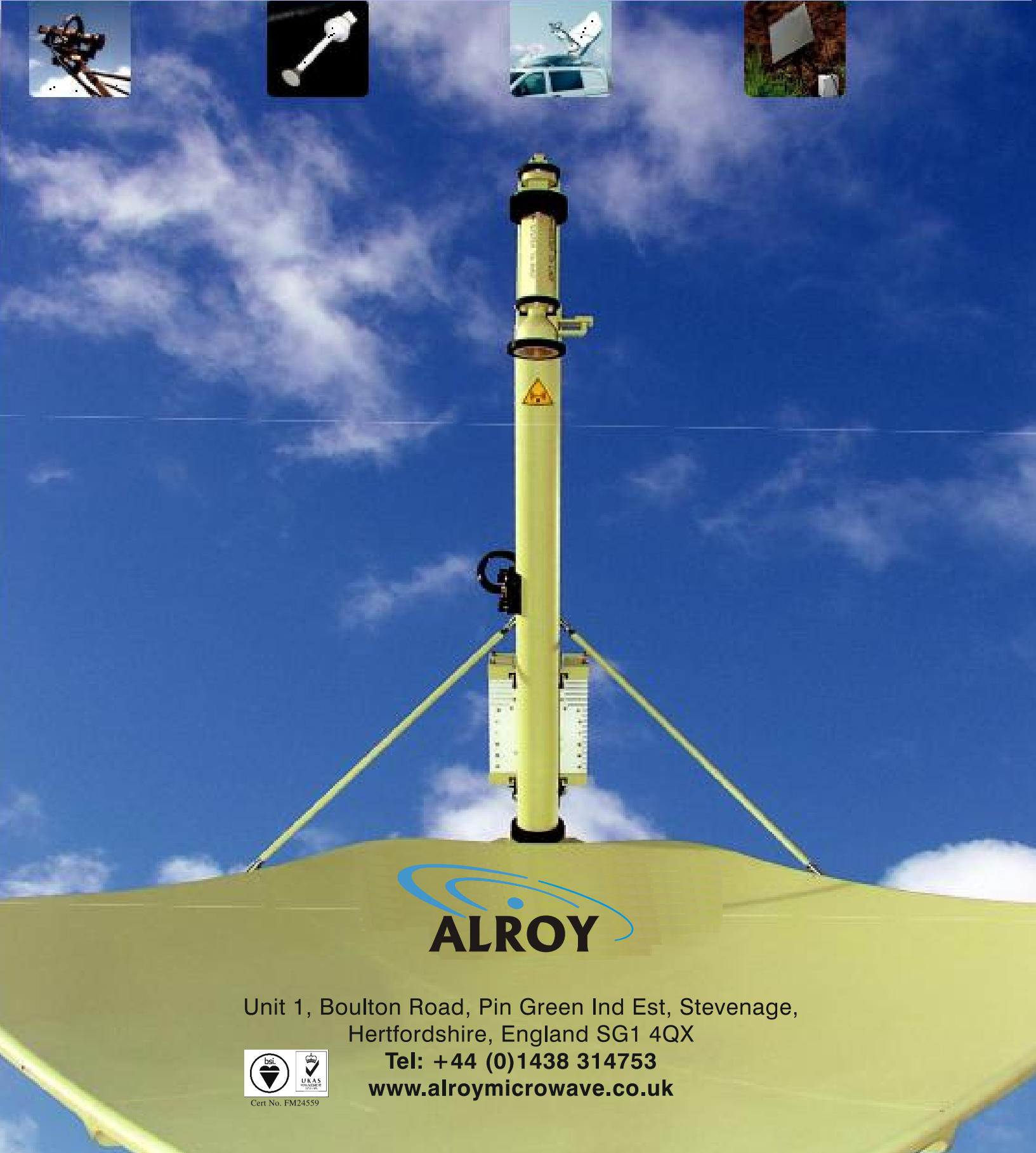




ALROY

Microwave Ltd.



ALROY

Unit 1, Boulton Road, Pin Green Ind Est, Stevenage,
Hertfordshire, England SG1 4QX

Tel: +44 (0)1438 314753

www.alroymicrowave.co.uk



Cert No. FM24559

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» Feed chain systems

Standard Feed Chains - Product Overview

Feed chains

Alroy has bought 40 years of experience that Cobham had, in the design and manufacture of feed chains and still maintains contact with the former Cobham design staff for any new feed requirements. Over this time a range of standard feed chains has been produced and expertise has been built allowing custom configurations to be produced to suit specific customer requirements. All feed chains are precision machined on-site and are supplied as sealed, fully tested assemblies.

Standard feed chains

Alroy manufactures a wide range of state-of-the-art horn-based and splash plate feed systems for prime focus and single and dual offset reflector antennas covering all of the key satellite communication bands. Feed chains are produced with linear and circular polarisations, in 2, 3 and 4-port configurations.

C-band

Circular polarised and linear polarised horn feeds for offset and front fed reflectors covering all the main sub-bands, including "Extended" and "Super-extended" frequencies.

SHF-band

Horn feeds for all the main satellite operators including Skynet, WGS and XTAR applications. A range of splash plate feeds is available for small axi-symmetric reflectors.

Ku-band

Linear polarised horn feeds for offset and front-fed reflectors, covering the standard bands and the unique bands used by Arabsat. These include Alroy's unique mode-matched feeds, designed for use with offset reflectors, which provide ultra-low cross-polarisation. A range of splash plate feeds is available for small axi-symmetric reflectors.

DBS-band

Linear and circular polarised horn feeds for offset and front fed reflectors. Mode matched feeds providing ultra-low cross-polarisation are available for offset configurations.

Ka-band

Linear and circular polarised horn feeds for offset and front fed reflectors. Compact feeds are available with integral transmit reject filters covering the "exclusive" commercial band used by operators including Eutelsat, Inmarsat, Yahsat and Avanti and the military band used by WGS.

Broadband designs covering the extended Ka-band are also available, along with custom designs for Es'hailsat, SES, Viasat and WINDS satellites.



» Splash plate feed



» SHF-band feed chain system

Advanced Feed Chain Systems

Advanced feed chain systems

Alroy's experience in the design and manufacture of feed chain systems has allowed for the development of more complex feed chains and custom development projects are regularly undertaken.

Advanced feed chain systems are built to the customer's exact requirements and accurate results are supplied. Range testing available on request.

Examples of advanced feed chain systems include:

Multi-band designs

- S-band and SHF-band
- C-band and Ku-band
- SHF-band and Ka-band
- Ka-band and EHF

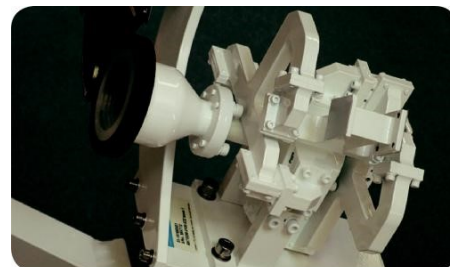
Tracking feeds

Feed chains offering a tracking capability based on the following configurations:

- Four horn static split systems
- Monopulse feeds for linear and circular polarised systems using single slot and multihole couplers
- Electronic lobe switching using Alroy's unique "Beam Squint Tracking" system at frequencies up to 60GHz

Feeds for large ground stations

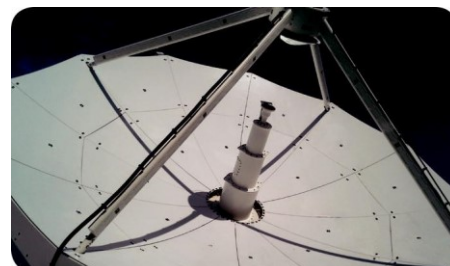
- Custom development projects undertaken to meet customer's requirements



» Multi-band feed chains



» Feed chains with tracking capability



» Feed chains for large ground stations

Global Satellite Frequencies and Operators

Satellite frequencies and operators

The table below provides a list of all the main satellite communications bands, their operating frequencies, polarisation, and some of the key operators which use the relevant bands.

Alroy can provide feed chains for all of the frequency bands below.

Sub-band	Frequency (GHz)		Polarisation	Example operators using this band	Region
	Tx	Rx			
C-band					
Standard	5.850 - 6.425	3.625 - 4.200	Circular	Intelsat, NSS, Chinasat, INSAT, PT Telekom, RSCC, Gazprom, Arabsat, Eutelsat, ABS, Rascom, StarOne, SES	Worldwide
Extended	6.425 - 6.725	3.400 - 3.625	Linear	MEASat, INSAT, ABS	
Super-Extended	6.725 - 7.025	4.500 - 4.800	Circular	INSAT, Rascom	India
LMI	5.725 - 6.025	3.700 - 4.000		KT Telekom	
X-band					
Standard	7.90 - 8.40	7.25 - 7.75	Circular	Skynet, WGS, Star One, Optus C2, XTAR, COMSATBw	Worldwide
Ku-band					
	13.75 - 14.50	10.70 - 12.75	Linear	Eutelsat, Intelsat, and many others	Worldwide
	12.75 - 13.25	10.70 - 11.45	Linear	Arabsat	
DBS-band					
	17.30 - 18.10	11.70 - 12.50	Linear		
	17.30 - 17.80	12.20 - 12.70	Circular		
Ka-band - Commercial					
	18.10 - 18.40	21.40 - 21.70	Linear	Es'Hailsat	Middle East
	17.70 - 18.90	17.70 - 18.90	Linear	WINDS	Japan
	29.50 - 30.00	18.30 - 18.80	Linear	SES	Europe
	29.50 - 30.00	19.70 - 20.20	Circular	Inmarsat GX, Avanti Hylas, Yahsat	Worldwide
	27.50 - 30.00	17.70 - 20.20	Circular	Viasat, Eutelsat, Ka-Sat	Worldwide
Ka-band - Military					
	30.00 - 31.00	20.20 - 21.20	Circular	WGS, Inmarsat GX	Worldwide

Feed Chain Systems

C-Band



C-band

A comprehensive range of linear and circular polarisation C-band feeds, including 2-port and multi-port designs, suitable for prime focus and offset reflector geometries.

Please enquire if your specific feed requirement is not covered below.

Feed Reference (see pages 12-13)	No of Ports	Reflector Type		Polarisation	Frequency (GHz)		Tx Ports		Rx Ports		Notes	Part No.
		Type	F/d		Tx	Rx	No	Type	No	Type		
A	2	Offset	0.78	Linear	5.85 - 6.725	3.4 - 4.2	1	WG	1	SMA	(1)	114-103-001
A	2	Offset	0.78	Linear	5.85 - 6.425	3.6 - 4.2	1	WG	1	WG		114-103-004
B	2	Offset	0.78	Circular	5.85 - 6.425	3.6 - 4.2	1	WG	1	WG	(2)	114-103-006
D	2	Offset	0.78	Linear	5.85 - 6.425	3.6 - 4.2	1	WG	1	WG	(3)	114-103-007
B	2	Offset	0.78	Circular	6.725 - 7.025	4.5 - 4.8	1	WG	1	SMA	(4)	114-103-011
A	2	Front fed	0.38	Linear	5.85 - 6.725	3.4 - 4.2	1	WG	1	SMA	(1)	114-303-001
A	2	Front fed	0.38	Linear	5.85 - 6.425	3.6 - 4.2	1	WG	1	WG		114-303-002
A	2	Front fed	0.38	Linear	5.85 - 6.425	3.6 - 4.2	1	WG	1	WG		114-303-005
B	2	Front fed	0.38	Circular	5.85 - 6.425	3.6 - 4.2	1	WG	1	WG		114-303-006
G	3	Offset	0.78	Linear	5.85 - 6.425	3.6 - 4.2	1	WG	2	SMA	(5)	114-103-003
G	3	Front fed	0.38	Linear	5.85 - 6.425	3.6 - 4.2	1	WG	2	SMA	(5)	114-303-003
H	3	Front fed	0.38	Linear	5.85 - 6.425	3.6 - 4.2	1	WG	2	WG		114-303-008
K	4	Offset	0.78	Circular	5.85 - 6.425	3.6 - 4.2	2	WG	2	SMA	(5)	114-103-002

Notes

1. Covers Extended C-band
2. Tx and RX polarisations can be swapped by manual rotation of the polariser and horn
3. Includes rotary joint on rear port
4. Special feed for INSAT band
5. The 4 SMA ports on these feeds require an external coaxial combining network to realise the two Rx output ports. Combining networks are available as optional extras. Please enquire for more details.

Feed Chain Systems

SHF-Band



SHF-band

Two-port circular polarisation SHF-band feeds, suitable for prime focus and offset reflector geometries, with multiple interface options.

Please enquire if your specific feed requirement is not covered below.

Feed Reference (see pages 12-13)	No of Ports	Reflector Type		Polarisation	Frequency (GHz)		Tx Ports		Rx Ports		Notes	Part No.
		Type	F/d		Tx	Rx	No	Type	No	Type		
B	2	Offset	0.78	Circular	7.9 - 8.4	7.25 - 7.75	2	WG	1	SMA	(1), (2)	114-104-006
B	2	Front fed	0.38	Circular	7.9 - 8.4	7.25 - 7.75	2	WG	1	WG	(1), (2)	114-304-001
B	2	Centre fed displaced parabola		Circular	7.9 - 8.4	7.25 - 7.75	2	WG	1	SMA	(1), (3)	114-304-002
B	2	Centre fed displaced parabola		Circular	7.9 - 8.4	7.25 - 7.75	2	WG	1	WG	(1), (3)	114-304-004

Notes

1. All ports operate over the full Tx and Rx bands
2. This design needs separate waveguide bifurcation to access ports. Different bifurcation options are available. Please enquire for more details
3. Splash plate design

Feed Chain Systems

Ku-Band



Ku-band

Two-port linear polarisation Ku-band feeds suitable for prime focus and offset reflector geometries, in fixed configurations and with rotating joint.

Feeds incorporate cross-polar compensation using mode matching.

Please enquire if your specific feed requirement is not covered below.

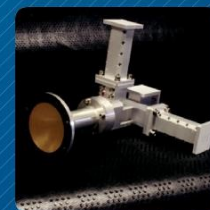
Feed Reference (see pages 12-13)	No of Ports	Reflector Type		Polarisation	Frequency (GHz)		Tx Ports		Rx Ports		Notes	Part No.
		Type	F/d		Tx	Rx	No	Type	No	Type		
C	2	Offset	0.78	Linear	13.75 - 14.5	10.95 - 12.75	1	WG	1	WG	(1), (2)	114-105-001
C	2	Offset	0.78	Linear	13.75 - 14.5 or 12.75 - 13.25	10.95 - 12.75	1	WG	1	WG	(1), (2), (3), (4), (5)	114-105-002
A	2	Offset	0.78	Linear	13.75 - 14.5	10.95 - 12.75	1	WG	1	WG	(1)	114-105-003
C	2	Offset	0.78	Linear	13.75 - 14.5	10.95 - 12.75	1	WG	1	WG	(1), (2), (6)	114-105-005
C	2	Offset	0.78	Linear	12.75 - 13.25	10.95 - 12.75	1	WG	1	WG	(1), (2), (4)	114-105-009
A	2	Front fed	0.38	Linear	13.75 - 14.5	10.95 - 12.75	1	WG	1	WG	(7)	114-305-001
C	2	Centre fed displaced parabola, 120cm diameter		Linear	13.75 - 14.5	10.95 - 12.75	1	WG	1	WG	(8)	114-305-005
C	2	Centre fed displaced parabola, 60cm diameter		Linear	13.75 - 14.5	10.95 - 12.75	1	WG	1	WG	(2), (8)	114-305-006

Notes

1. Includes mode matched feed for low cross-polarisation
2. Includes rotary joint with toothed gear
3. Dual band feed, manually reconfigurable to give low cross-polarisation in two different TX bands
4. Special design for ARABSAT band
5. Feed horn can be mechanically reconfigured to operate with a TX band of 13.75 - 14.5GHz or 12.75 - 13.25GHz
6. Lightweight version
7. Versions available with TX or RX side port
8. Splash plate design

Feed Chain Systems

DBS-Band



DBS-band

A comprehensive range of two-port linear polarisation DBS-band feeds suitable for prime focus and offset reflector geometries.

Please enquire if your specific feed requirement is not covered below.

Feed Reference (see pages 12-13)	No of Ports	Reflector Type		Polarisation	Frequency (GHz)		Tx Ports		Rx Ports		Notes	Part No.
		Type	F/d		Tx	Rx	No	Type	No	Type		
C	2	Offset	0.78	Linear	17.3 - 18.1	10.95 - 12.75	1	WG	1	WG	(1), (2)	114-106-001
D	2	Dual offset		Linear	17.3 - 18.1	10.95 - 12.75	1	WG	1	WG		114-206-001
B	2	Front fed	0.78	Linear	17.3 - 18.1	10.95 - 12.75	1	WG	1	WG		114-306-001
J	4	Offset	0.78	Circular	17.3 - 18.1	10.95 - 12.75	1	WG	1	WG		114-106-002
I	4	Offset	0.78	Linear	17.3 - 18.1	10.95 - 12.75	1	WG	1	WG		114-106-003

Notes

1. Includes mode matched feed for low cross-polarisation
2. Includes rotary joint with toothed gear

Feed Chain Systems

Ka-Band



Ka-band

A wide range of linear and circular polarisation Ka-band feeds are available, including two-port and multi-port designs, suitable for prime focus and offset reflector geometries. Two port circular polarisation designs can be configured to cover the extended commercial Ka-band (27.5 - 30.0 GHz Tx & 17.7 - 20.2 GHz Rx) or military Ka-band (30.0 - 31.0 GHz Tx & 20.2 - 21.2 GHz Rx) frequency bands.

Please enquire if your specific feed requirement is not covered below.

Feed reference (see pages 12-13)	No of Ports	Reflector Type		Polarisation	Frequency (GHz)		Tx Ports		Rx Ports		Notes	Part No.
		Type	F/d		Tx	Rx	No	Type	No	Type		
F	2	Offset	0.78	Circular	29.5 - 30.0	19.7 - 20.2	1	WG	1	WG	(1), (2)	114-107-001
F	2	Offset	0.78	Circular	29.5 - 30.0	19.7 - 20.2	1	WG	1	WG	(1), (3)	114-107-003
E	2	Offset	0.78	Linear	29.5 - 30.0	19.2 - 20.2	1	WG	1	WG	(1)	114-107-006
B	2	Offset	0.78	Circular	27.5 - 30.0	17.7 - 20.2	1	WG	1	WG		114-107-008
A	2	Offset	0.78	Linear	18.1 - 18.4	21.4 - 21.7	1	WG	1	WG	(4)	114-107-101
B	2	Offset	0.78	Circular	27.5 - 30.0	N/A	2	WG	N/A	N/A	(5)	114-107-102
B	2	Offset	0.78	Circular	N/A	17.7 - 22.2	N/A	N/A	2	WG	(6)	114-107-104
B	2	Offset	0.78	Circular	25.5 - 27.45	23.1 - 23.55	N/A	N/A	2	WG	(7)	114-107-108
F	2	Offset	0.78	Circular	30.0 - 31.0	20.2 - 21.2	1	WG	1	WG	(1), (2)	114-108-001
F	2	Offset	0.78	Circular	30.0 - 31.0	20.2 - 21.2	1	WG	1	WG	(1), (3)	114-108-003
A	2	Front fed	0.38	Linear	27.5 - 28.6	17.7 - 18.9	1	WG	1	WG	(8)	114-307-001
A	2	Front fed	0.38	Linear	27.5 - 30.0	17.7 - 20.2	1	WG	1	WG		114-307-002
A	2	Front fed	0.38	Linear	N/A	17.7 - 20.2	N/A	N/A	2	WG	(6)	114-307-003
B	2	Front fed	0.38	Circular	N/A	17.7 - 21.2	N/A	N/A	2	WG	(6)	114-307-004
A	2	Front fed	0.38	Linear	30.0 - 31.0	20.2 - 21.2	1	WG	1	WG		114-308-001
L	4	Offset	0.78	Circular	27.5 - 31.0	17.7 - 21.2	2	WG	2	WG	(1), (9)	114-100-002

Any of the above feeds can be used with any reflector of any material as long as the F/D is correct

Notes

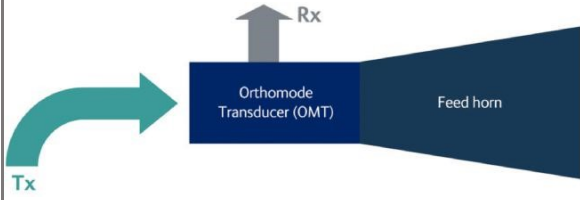
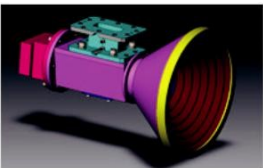
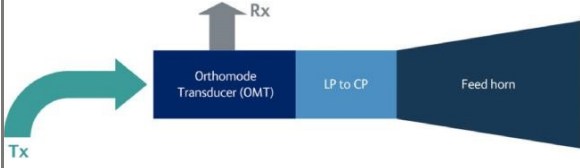

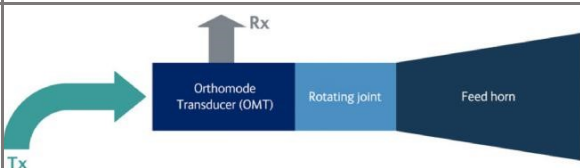
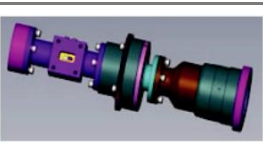
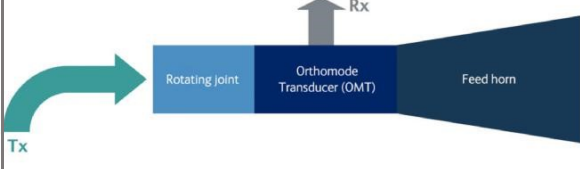
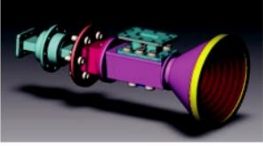
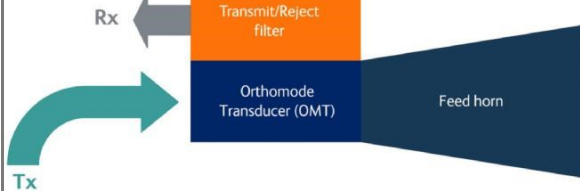
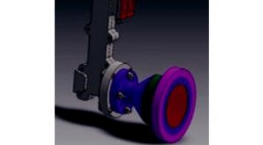
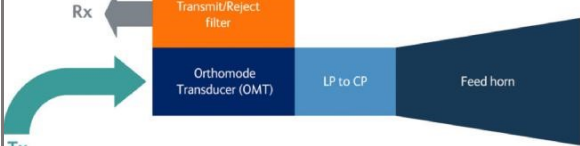
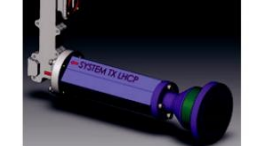
1. With integral transmit reject filtering
2. With tool-free polarisation reconfiguration
3. Polarisation reconfiguration by unbolting and rotating polariser
4. Special design for Es'Hailsat - TX rear port. Version with TX side also available
5. Tx only, 2 port design
6. Rx only, 2 port design
7. Special design for Artemis satellite
8. Special design for WINDS satellite
9. Simultaneously covers extended commercial Ka-band and military Ka-band

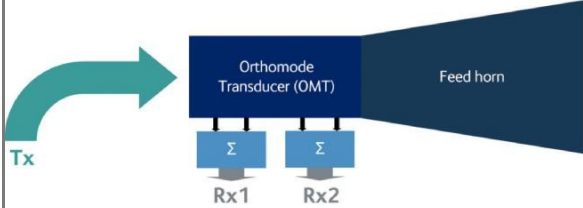
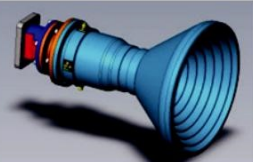
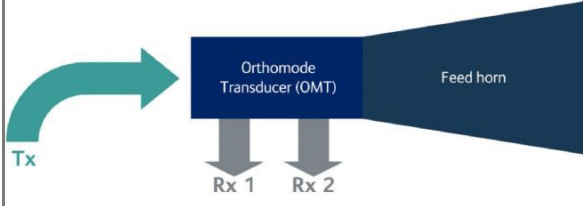
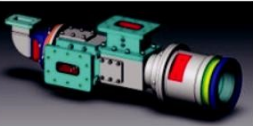
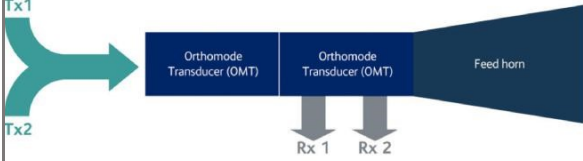
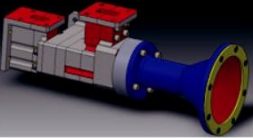
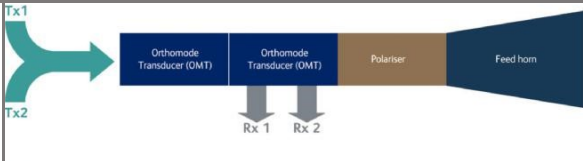
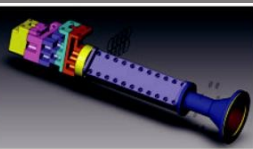
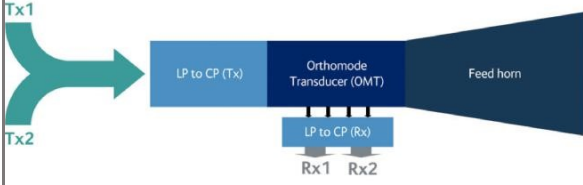
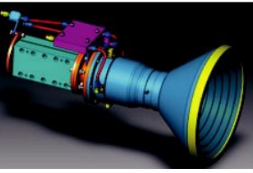
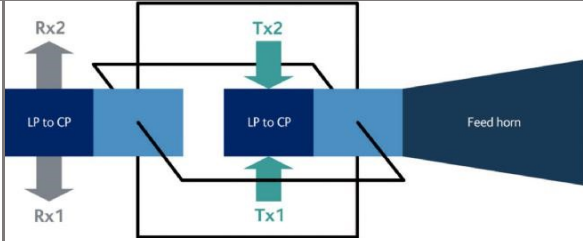
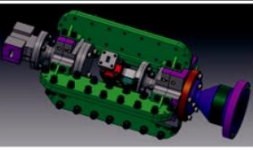
Feed Chain Configurations

The tables below and opposite show examples of Alroy's standard feed chain configurations.

Each configuration has a representative diagram in the Example Feed column and the Alroy part numbers that take this configuration are shown in the final column.

Please enquire if your specific feed requirement is not covered below.

Ref.	Feed Type	Feed Configuration	Example Feed	Relevant Alroy Part No's	
A	2 port linear polarisation			114-100-001 114-103-001 114-103-004 114-105-003 114-206-001 114-303-001 114-303-002 114-303-005	114-305-001 114-306-001 114-107-101 114-307-001 114-307-002 114-307-003 114-308-001
B	2 port circular polarisation			114-103-006 114-103-011 114-104-006 114-303-006 114-304-001 114-304-002	114-304-004 114-107-008 114-107-102 114-107-104 114-107-108 114-307-004
C	2-port linear polarisation with rotating joint			114-105-001 114-105-002 114-105-005 114-105-009	114-106-001 114-305-005 114-305-006 114-306-001
D	2-port linear polarisation with rotating joint			114-103-007	
E	2 port linear polarisation with integral Transmit Reject Filter			114-107-006	
F	2 port circular polarisation with integral Transmit Reject Filter			114-107-001 114-107-003 114-108-001 114-108-003	

G	3 port linear polarisation			114-103-003 114-303-003
H	3 port linear polarisation			114-303-008
I	4 port linear polarisation			114-300-002 114-306-002
J	4 port circular polarisation			114-106-002
K	4 port circular polarisation			114-103-002
L	4 port circular polarisation			114-100-002