



Rail Communications **Wireless connectivity**

Edition 02/2024



Connecting – today and beyond

Light rail antennas

SENCITY TRAM antennas are developed to provide an all-in-one wireless solution for trams, metros and other vehicles requiring railway certifications such as EN50155, EN45545 and NFPA-130. They are multi-application antennas for cellular, Wi-Fi, Tetra, UHF and GNSS.

SENCITY Tram MIMO

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SENCITY Tram MIMO antennas offer support for 2x2 MIMO systems by use of several radiating elements within one common housing or support 4x4 MIMO systems by installing multiple antennas apart from each other for an optimised performance.

SENCITY Rail in-carriage antenna portfolio

HUBER+SUHNER offers a comprehensive portfolio of antennas for installation inside trains, covering all Wi-Fi bands, as well as cellular services.

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SENCITY Tram

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The SENCITY Tram portfolio offers different combinations of radiating elements efficiently designed to fit into a single compact housing.

SENCITY Tram MULTI

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The SENCITY Tram MULTI is designed for 4x4 MIMO operation in cellular, 8x8 MIMO in Wi-Fi networks. It also offers a variety of combinations of up to 9 radiators within one housing and comes with an GNSS option for L1, L2, L5 operation.



SENCITY Tram

Product name	SENCITY Tram with cellular, Wi-Fi, L1 GNSS and Stick-option
Product ID.	1399.99.0201
Description	Rugged vehicle rooftop multi-band antenna for Light Rail. Meets specific requirements of light rail market. Can be used as the wireless interface for multi-band communication on light rail trains and trams. • Supports 2G/3G/4G/5G cellular and Wi-Fi 2.4/5 GHz, Wi-Fi 6E bands and GNSS. • Stick antenna option for Tetra, VHF, etc • Embedded GNSS antenna with integrated low-noise amplifier • 3 elements in one housing plus one stick antenna option and single hole mounting. • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Works without a metal ground plane.
Item no.	85174992

Technical Data	Band 1	Band 2	Band 3	Band 4
Band name	Cellular	Cellular	Cellular	Wi-Fi
Frequency (MHz)	694 – 790	790 – 960	1710 – 2690	1710 – 2690
VSWR	2.1	1.8	2	1.8
Gain (dBi)	5	5	4	6
Port Isolation (dB)	25	25	25	25
	Band 5	Band 6	Band 7	Band 8
Band name	Cellular	Wi-Fi	GNSS	Stick antenna socket
Frequency (MHz)	3400 – 3800	4900 – 7125	1559 – 1610	
SWR	2	2	1.8	
Gain (dBi)	6	7		
Port Isolation (dB)	25	20		

Electrical data	
Impedance	50 Ohms
Number of Ports	4
Composite power max.	30 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (Cellular and Wi-Fi) and Circular right (GNSS)

Mechanical data	
Dimensions (height × width × depth)	82 × 83 × 208 mm
Weight	0.41 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

Light rail
SENCITY Tram



Product name	SENCITY Tram with Cellular, Wi-Fi and L1 GNSS
Product ID.	1399.99.0202
Description	Rugged vehicle rooftop multi-band antenna for Light Rail. Meets specific requirements of light rail market. Can be used as the wireless interface for multi-band communication on light rail trains and trams. • Supports 2G/3G/4G/5G cellular and Wi-Fi 2.4/5 GHz, Wi-Fi 6E bands and GNSS. • Embedded GNSS antenna with integrated low-noise amplifier • 3 elements in one housing and single-hole mounting • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Works without metal ground plane.
Item no.	85177259

Technical Data	Band 1	Band 2	Band 3	Band 4
Band name	Cellular	Cellular	Cellular	Wi-Fi
Frequency (MHz)	694 – 790	790 – 960	1710 – 2690	1710 – 2690
VSWR	2.1	1.8	2	1.8
Gain (dBi)	5	5	4	6
Port Isolation (dB)	25	25	25	25
	Band 5	Band 6	Band 7	
Band name	Cellular	Wi-Fi	GNSS	
Frequency (MHz)	3400 – 3800	4900 – 7125	1559 – 1610	
SWR	2	2	1.8	
Gain (dBi)	6	7		
Port Isolation (dB)	25	20		

Electrical data	
Impedance	50 Ohms
Number of Ports	3
Composite power max.	30 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (Cellular and Wi-Fi) and Circular right (GNSS)

Mechanical data	
Dimensions (height × width × depth)	82 × 83 × 208 mm
Weight	0.41 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

Light rail
SENCITY Tram



Product name	SENCITY Tram with Tetra, Wi-Fi and L1 GNSS
Product ID.	1399.99.0207
Description	Rugged vehicle rooftop multi-band antenna for Light Rail. Meets specific requirements of light rail market. Can be used as the wireless interface for multi-band communication on light rail trains and trams. • Supports Tetra and Wi-Fi 2.4/5 GHz, Wi-Fi 6E bands and GNSS. • Stick antenna option for Cellular, VHF, etc. • Embedded GNSS antenna with integrated low-noise amplifier • 3 elements in one housing plus one stick antenna option and single hole mounting. • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Works without metal ground plane.
Item no.	85180564

Technical Data	Band 1	Band 2	Band 3
Band name	Tetra	Wi-Fi	Wi-Fi
Frequency (MHz)	410 – 430	2400 – 2690	4900 – 7125
VSWR	2	1.8	1.8
Gain (dBi)	4	7	7
Port Isolation (dB)	20	20	20
	Band 4	Band 5	
Band name	GNSS	Stick antenna socket	
Frequency (MHz)	1559 – 1610		
SWR	1.8		
Gain (dBi)			
Port Isolation (dB)			

Electrical data	
Impedance	50 Ohms
Number of Ports	4
Composite power max.	30 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (Tetra and Wi-Fi), Circular right (GNSS)

Mechanical data	
Dimensions (height × width × depth)	82 × 83 × 208 mm
Weight	0.41 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

SENCITY Tram MIMO

Product name	SENCITY Tram MIMO with 3×3 Wi-Fi
Product ID.	1399.99.0203
Description	Rugged vehicle rooftop multi-band antenna for Light Rail. Meets specific requirements of light rail market. Can be used As the wireless interface for multi-band communication on light rail trains and trams. • Supports MIMO for Wifi 2.4/5 GHz, Wifi 6E bands in 3×3 configuration. • 3 elements in one housing and single-hole mounting • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Works without metal ground plane.
Item no.	85197331

Technical Data	Band 1	Band 2
Band name	Wi-Fi	Wi-Fi
Frequency (MHz)	2500 – 2690	4900 – 7152
VSWR	2.0	2.0
Gain (dBi)	6	7
Port Isolation (dB)	14	22

Electrical data	
Impedance	50 Ohms
Number of Ports	3
Composite power max.	30 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (Wi-Fi)

Mechanical data	
Dimensions (height × width × depth)	82 × 83 × 208 mm
Weight	0.41 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

SENCITY Tram MIMO

Product name	SENCITY Tram MIMO with 2x2 Cellular
Product ID.	1399.99.0204
Description	Rugged vehicle rooftop multi-band antenna for Light Rail. Meets specific requirements of light rail market. Can be used as the wireless interface for multi-band communication on light rail trains and trams. • Supports 2G/3G/4G/5G cellular in 2x2 MIMO configuration. • 2 elements in one housing and single-hole mounting • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Works without metal ground plane.
Item no.	85180413

Technical Data	Band 1	Band 2	Band 3
Band name	Cellular	Cellular	Cellular
Frequency (MHz)	694 – 790	790 – 960	1710 – 2170
VSWR	1.8	1.8	1.8
Gain (dBi)	4	4.5	5
Port Isolation (dB)	12	12	15
	Band 4	Band 5	Band 6
Band name	Cellular	Cellular	Cellular
Frequency (MHz)	2400 – 2690	3400 – 3800	4900 – 7125
SWR	1.8	1.6	1.6
Gain (dBi)	5	6	6.5
Port Isolation (dB)	16	18	19

Electrical data	
Impedance	50 Ohms
Number of Ports	2
Composite power max.	20 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (cellular)

Mechanical data	
Dimensions (height × width × depth)	98 × 83 × 208 mm
Weight	0.5 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

SENCITY Tram MIMO

Product name	SENCITY Tram MIMO with 2×2 Cellular and L1 GNSS
Product ID.	1399.99.0205
Description	Rugged vehicle rooftop multi-band antenna for Light Rail. Meets specific requirements of light rail market. Can be used As the wireless interface for multi-band communication on light rail trains and trams. • Supports 2G/3G/4G/5G cellular in 2×2 MIMO configuration plus GNSS. • Embedded GNSS antenna with integrated low-noise amplifier • 3 elements in one housing and single-hole mounting • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Works without metal ground plane.
Item no.	85176492

Technical Data	Band 1	Band 2	Band 3	Band 4
Band name	Cellular	Cellular	Cellular	Cellular
Frequency (MHz)	694 – 790	790 – 960	1710 – 2170	2400 – 2690
VSWR	1.8	1.8	1.8	1.8
Gain (dBi)	4	4.5	5	5
Port Isolation (dB)	12	12	15	18
	Band 5	Band 6	Band 7	
Band name	Cellular	Cellular	GNSS	
Frequency (MHz)	3400 – 4200	4900 – 7125	1559 – 1610	
SWR	1.7	1.6	1.8	
Gain (dBi)	6	6.5		
Port Isolation (dB)	15	19		

Electrical data	
Impedance	50 Ohms
Number of Ports	3
Composite power max.	20 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (cellular) and circular right (GNSS)

Mechanical data	
Dimensions (height × width × depth)	98 × 83 × 208 mm
Weight	0.5 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

SENCITY Tram MIMO

Product name	SENCITY Tram MIMO with 2×2 Cellular, 2×2 Wi-Fi and L1 GNSS
Product ID.	1399.99.0206
Description	Rugged vehicle rooftop multi-band antenna for Light Rail. Meets specific requirements of light rail market. Can be used as the wireless interface for multi-band communication on light rail trains and trams. • Supports 2×2 MIMO for 2G/3G/4G/5G cellular and Wi-Fi 2.4/5 GHz, Wi-Fi 6E bands plus offers GNSS. • Embedded GNSS antenna with integrated low-noise amplifier • 5 elements in one housing and single-hole mounting • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Works without metal ground plane.
Item no.	85163180

Technical Data	Band 1	Band 2	Band 3	Band 4
Band name	Cellular	Cellular	Cellular	Wi-Fi
Frequency (MHz)	694 – 790	790 – 960	1710 – 2170	2400 – 2690
VSWR	1.8	1.7	1.7	2
Gain (dBi)	4	4	5	6
Port Isolation (dB)	10	10	12	10
	Band 5	Band 6	Band 7	Band 8
Band name	Cellular	Cellular	Wi-Fi	GNSS
Frequency (MHz)	2400 – 2690	3400 – 3800	4900 – 7125	1559 – 1610
SWR	2	1.7	1.8	1.8
Gain (dBi)	4	4	5	6
Port Isolation (dB)	10	10	12	10

Electrical data	
Impedance	50 Ohms
Number of Ports	5
Composite power max.	20 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (Cellular and Wi-Fi), Circular right (GNSS)

Mechanical data	
Dimensions (height × width × depth)	98 × 83 × 208 mm
Weight	0.5 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

SENCITY Tram MULTI

Product name	SENCITY Tram MULTI with 4x4 Cellular and 4x4 Wi-Fi MIMO and Dualband GNSS
Product ID.	1399.99.0233
Description	Rugged multi-element and multi-band rooftop antenna for Light Rail. Meets specific requirements of light rail market. Omnidirectional radiation with 4x4 MIMO operation in cellular and 4x4 MIMO in Wi-Fi networks with integrated GNSS for L1, L2, L5. More variants as described on page 123. • Supports 2G/3G/4G/5G cellular, Wi-Fi 2.4/5 GHz, Wi-Fi 6E. • Includes dual band GNSS antenna & integrated LNA covering GPS L1+L2+L5/Galileo E1+E5a+E5b/BeiDou B1+B2+B3/GLONASS G1+G2 • 9 separate ports for 4x4 cellular MIMO and 4x4 Wi-Fi MIMO plus dual band GNSS. • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Single-hole mounting, easy cabling feed-through. • Works without metal ground plane.
Item no.	85185407

Technical Data	Band 1	Band 2	Band 3	Band 4
Band name	Cellular	Cellular	Cellular	Cellular
Frequency (MHz)	617 – 960	1350 – 2700	3300 – 4200	4900 – 7125
VSWR	2	2.1	2	2
Gain (dBi)	2	4	4	5
Port Isolation (dB)	9	18	15	18
	Band 5	Band 6	Band 7	Band 8/9
Band name	Wi-Fi	Wi-Fi	GNSS	GNSS
Frequency (MHz)	2400 – 2500	4900 – 7125	1164 – 1279	1164 – 1279 / 1559 – 1610
SWR	2	2	1.5	1.5 / 1.8
Gain (dBi)	6	6		
Port Isolation (dB)	24	24		

Electrical data	
Impedance	50 Ohms
Number of Ports	9
Composite power max.	30 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (Cellular and Wi-Fi), Circular right (GNSS)

Mechanical data	
Dimensions (diameter × height)	210 × 60 mm
Weight	1.1 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

SENCITY Tram MULTI

Product name	SENCITY Tram MULTI with 8×8 Wi-Fi and Dualband GNSS
Product ID.	1399.99.0237
Description	Rugged multi-element and multi-band rooftop antenna for Light Rail. Meets specific requirements of light rail market. Omnidirectional radiation with 8×8 MIMO operation in Wi-Fi networks with integrated GNSS. More variants as described on page 123. • Supports Wi-Fi 2.4/5 GHz, Wi-Fi 6E • Includes dual band GNSS antenna & integrated LNA covering GPS L1+L2+L5/Galileo E1+E5a+E5b/BeiDou B1+B2+B3/GLONASS G1+G2 • 9 separate ports 8×8 Wi-Fi MIMO plus dual band GNSS. • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Single-hole mounting, easy cabling feed-through. • Works without metal ground plane.
Item no.	85185419

Technical Data	Band 1	Band 2	Band 3	Band 4
Band name	Wi-Fi	Wi-Fi	GNSS	GNSS
Frequency (MHz)	2400 – 2500	4900 – 7125	1559 – 1610	1559 – 1610
VSWR	2	2	1.8	1.8
Gain (dBi)	6	6		
Port Isolation (dB)	24	24		

Electrical data	
Impedance	50 Ohms
Number of Ports	9
Composite power max.	30 Watts (see datasheet for specific bands)
Polarisation	Vertical (Wi-Fi), Circular right (GNSS)

Mechanical data	
Dimensions (diameter × height)	210 × 60 mm
Weight	1.1 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

Light rail
SENCITY Tram MULTI



Product name	SENCITY Tram MULTI with 2x2 TETRA, 4x4 Wi-Fi MIMO and Dualband GNSS
Product ID.	1399.99.0253
Description	Rugged multi-element and multi-band rooftop antenna for Light Rail. Meets specific requirements of light rail market. Omnidirectional radiation with 2x2 TETRA, 4x4 MIMO operation in Wi-Fi networks and with integrated GNSS. More variants as described on page 123. • Supports TETRA, LTE450, 2G/3G/4G/5G cellular, Wi-Fi 2.4/5 GHz, Wi-Fi 6E. • Includes dual band GNSS antenna & integrated LNA covering GPS L1+L2+L5/Galileo E1+E5a+E5b/BeiDou B1+B2+B3/GLONASS G1+G2 • 7 separate ports for 2x2 TETRA/cellular and 4x4 Wi-Fi MIMO plus dual band GNSS. • Meets EN50155 and fire retardant according to EN45545 and NFPA-130. • Single-hole mounting, easy cabling feed-through
Item no.	85185041

Technical Data	Band 1	Band 2	Band 3	Band 4
Band name	TETRA/LTE450	Cellular	Cellular	Cellular
Frequency (MHz)	380 – 470	694 – 960	1350 – 2700	3300 – 4200
VSWR	2.5	2.0	2.0	2.0
Gain (dBi)	3	2	4	4
Port Isolation (dB)	3	8	15	20
	Band 5	Band 6	Band 7	Band 8/9
Band name	Cellular	Wi-Fi	Wi-Fi	GNSS
Frequency (MHz)	4900 – 7125	2400 – 2500	4900 – 7125	1164 – 1279 / 1559 – 1610
SWR	2.0	2.0	2.0	1.5 / 1.8
Gain (dBi)	5	6	6	
Port Isolation (dB)	20	20	20	

Electrical data	
Impedance	50 Ohms
Number of Ports	7
Composite power max.	30 – 40 Watts (see datasheet for specific bands)
Polarisation	Vertical (Tetra and Wi-Fi), Circular right (GNSS)

Mechanical data	
Dimensions (diameter × height)	210 × 60 mm
Weight	1.1 kg

Environmental data	
Environmental conditions	outdoor
IP rating	IP68, IP69k
RoHS 2011/65/EU	compliant
Certifications	EN50155, EN45545-2, NFPA-130

Material data	
Radome colour	RAL 9017 (black)
Radome material	PC (Polycarbonate)
Back plate / base plate material	Aluminium

For more detailed information, please visit our website "Products" section.

Light rail

The SENCITY Tram MULTI portfolio is designed for 4x4 MIMO operation in cellular, 8x8 MIMO in Wi-Fi networks and in addition comes with 2x2 TETRA options. It offers a variety of combinations of up to 9 radiators within one housing and comes with an GNSS option for L1, L2, L5 operation. The standard versions are listed below:

Product ID	Article No.	Cellular	Wi-Fi	TETRA	GNSS
1399.19.0208	85185402	2			
1399.99.0209	85185403	2			L1+L2+L5
1399.99.0208	85185404	2			L1
1399.19.0210	85185371	2	2		
1399.99.0211	85185373	2	2		L1+L2+L5
1399.99.0210	85185374	2	2		L1
1399.19.0212	85185375	2	3		
1399.99.0213	85185379	2	3		L1+L2+L5
1399.99.0212	85185381	2	3		L1
1399.19.0214	85185382	2	4		
1399.99.0215	85185383	2	4		L1+L2+L5
1399.99.0214	85185384	2	4		L1
1399.19.0216	85185385	4			
1399.99.0217	85185386	4			L1+L2+L5
1399.99.0216	85185387	4			L1
1399.19.0218	85185388	4	2		
1399.99.0219	85185389	4	2		L1+L2+L5
1399.99.0218	85185390	4	2		L1
1399.19.0220	85185391	4	3		
1399.99.0221	85185395	4	3		L1+L2+L5
1399.99.0220	85185397	4	3		L1
1399.19.0232	85185406	4	4		
1399.99.0233	85185407	4	4		L1+L2+L5
1399.99.0232	85185408	4	4		L1
1399.19.0234	85185409		6		
1399.99.0235	85185416		6		L1+L2+L5
1399.99.0234	85185417		6		L1
1399.19.0236	85185418		8		
1399.99.0237	85185419		8		L1+L2+L5
1399.99.0236	85185420		8		L1
1399.19.0238	85185512			1	
1399.99.0239	85185513			1	L1+L2+L5
1399.99.0238	85185514			1	L1
1399.19.0240	85185515		2	1	
1399.99.0241	85185516		2	1	L1+L2+L5
1399.99.0240	85185517		2	1	L1
1399.19.0242	85185518		3	1	
1399.99.0243	85185523		3	1	L1+L2+L5
1399.99.0242	85185524		3	1	L1
1399.19.0244	85185525		4	1	
1399.99.0245	85185526		4	1	L1+L2+L5
1399.99.0244	85185527		4	1	L1
1399.19.0246	85185528			2	
1399.99.0247	85185529			2	L1+L2+L5
1399.99.0246	85185533			2	L1
1399.19.0248	85185534		2	2	
1399.99.0249	85185535		2	2	L1+L2+L5
1399.99.0248	85185536		2	2	L1
1399.19.0250	85185038		3	2	
1399.99.0251	85185037		3	2	L1
1399.99.0250	85185036		3	2	L1
1399.19.0252	85185039		4	2	
1399.99.0253	85185041		4	2	L1+L2+L5
1399.99.0252	85185042		4	2	L1

Outline drawing and mounting instruction are the same for every antenna.

