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MINI-LINK High Capacity

Product Catalog

MINI-LINK™

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MINI-LINK High Capacity

Product Catalog

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1 Introduction

This catalog comprises microwave radio link products from the MINI-LINK High Capacity product family, supplied by Ericsson AB. It is intended to be an aid when compiling an order or just to give an overview of the available products.

For more information, please contact your Ericsson representative.

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1.1 How to Use this Catalog

Chapter 1 includes recommended terminal configurations and required equipment for setting up a terminal or a site. The information can be used as checklists to make sure that all necessary equipment is ordered.

The following chapters include ordering information for all orderable products.

MINI-LINK High Capacity is designed for both the ETSI and ANSI markets. Due to different market requirements for cables, there are two different product numbers for the same type of orderable object when cables are included.

The MINI-LINK High Capacity Technical Description (EN/LZT 712 0050) may be a useful complement to this catalog.

1.2 System Overview

MINI-LINK High Capacity offers microwave based point-to-point transmission at 155 Mbit/s, SDH STM-1 and SONET OC-3, and represents a new generation of MINI-LINK products.

A terminal consists of an indoor part and an outdoor part connected with a single coaxial cable. The indoor part holds traffic, modem, service and switching functions while the outdoor part comprises a radio unit and antenna. Apart from the main units, the system offers a number of well-adapted accessories, both hardware and software.

Two types of terminal configuration are possible:

- Unprotected 1+0 terminal, see section 1.3
- Protected 1+1 terminal, see section 1.4

Each terminal has an embedded web server for supervision and control functions. Local configuration and setup is carried out using a Local Craft Terminal (LCT) by accessing the web server from a browser.

Remote supervision from MINI-LINK Netman can be accomplished through a LAN/WAN connection. A standard SNMP interface enables communication with any Element Manager or Network Management System.

1.3 1+0 Terminal

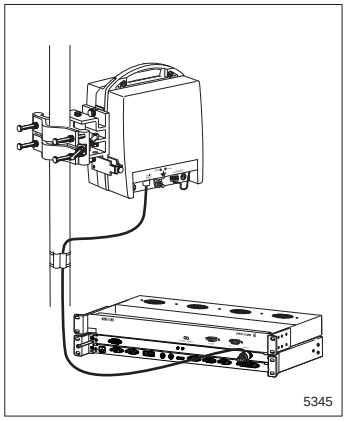

Figure 1-1. A 1+0 terminal using an AMM 1U-1

The 1+0 terminal uses one radio unit and one antenna at each end of a hop. The radio unit is fitted directly to the antenna as standard (integrated installation). As an alternative, the radio unit and the antenna can be installed separately.

The indoor part is connected to the radio unit by a single coaxial cable.

Two types of AMM can be used to house the indoor plug-in units:

- AMM 1U-1 is generally used for a 1+0 terminal.
- AMM 2U-4 provides space for expansion to a 1+1 terminal. It can also be used to house the plug-in units for two 1+0 terminals, that is 2x(1+0).

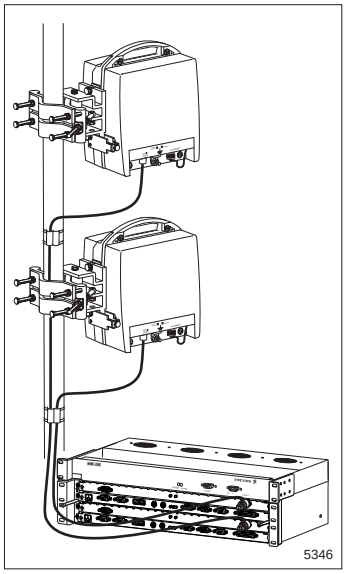

Figure 1-2. Two 1+0 terminals, 2x(1+0), using an AMM 2U-4

1.3.1 Indoor Units

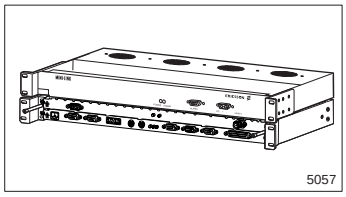

Figure 1-3. Indoor units of a 1+0 terminal in an AMM 1U-1

The required equipment comprises:

- One Access Module Magazine (AMM)
- One Modem Unit (MMU)
- One Traffic Unit (TRU)
- One fan unit

1.3.2 Outdoor Units

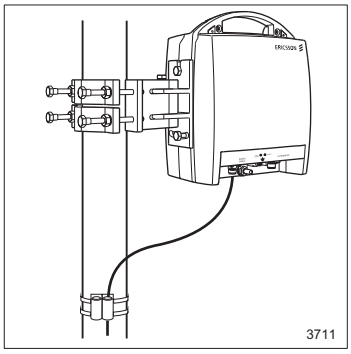

Figure 1-4. Outdoor units of a 1+0 terminal in integrated installation

Integrated Installation

The required equipment comprises:

- One Radio Unit (RAU)
- One antenna
- One radio cable for connecting the radio unit to the indoor parts

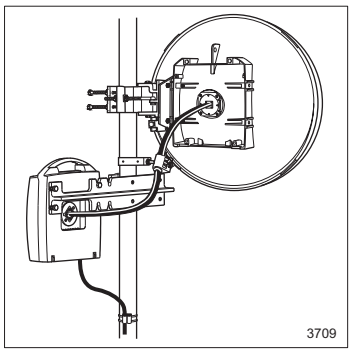

Figure 1-5. Outdoor units of a 1+0 terminal in separate installation

Separate Installation

The required equipment comprises:

- One RAU
- One antenna
- One kit for separate installation
- One radio cable for connecting the radio unit to the indoor parts

1.4 1+1 Terminal

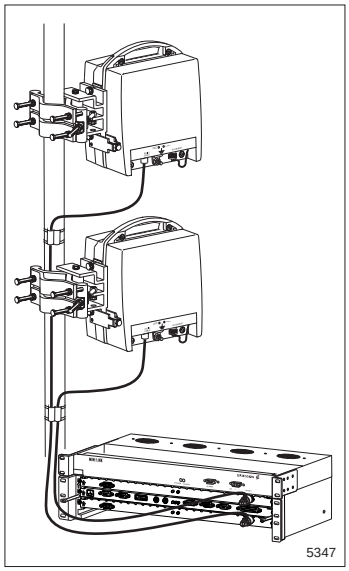

Figure 1-6. 1+1 terminal

The 1+1 terminal uses two radio units at each end of the hop. The radio units are fitted directly to the antennas as standard (integrated installation). As an alternative, one antenna and a power splitter fitted separately from the radio units can be used.

Each radio unit is connected to the indoor part via a single coaxial cable.

1.4.1 Indoor Units

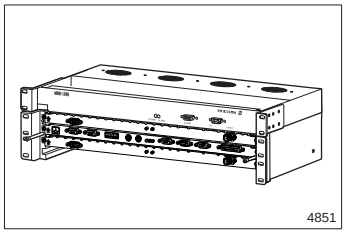

Figure 1-7. Indoor units of a 1+1 terminal

The required equipment comprises:

- One AMM 2U-4
- Two MMUs
- One TRU
- One fan unit

1.4.2 Outdoor Units

Integrated Installation

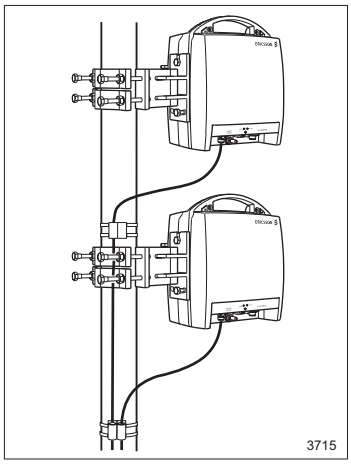

Figure 1-8. Outdoor units of a 1+1 terminal in integrated installation

The required equipment comprises:

- Two RAUs
- Two antennas
- Two radio cables for connecting the radio units to the indoor parts

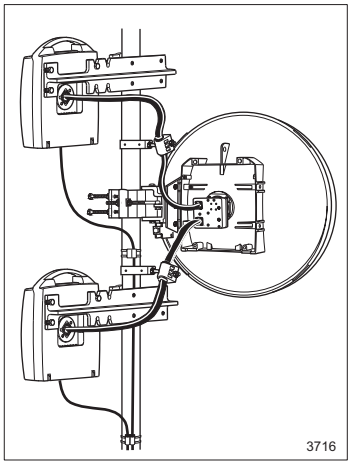

Figure 1-9. Outdoor units of a 1+1 terminal in separate installation with one antenna

Separate Installation with one Antenna

The required equipment comprises:

- Two RAUs
- One antenna
- One power splitter
- Two kits for separate installation
- Two radio cables for connecting the radio units to the indoor part

2 Radio Units

The Radio Unit (RAU) generates and receives the Radio Frequency (RF) signal. The RAU is a weatherproof box with a handle for lifting and hoisting. It is normally fitted directly to a compact antenna where it is connected to the RF port. A separate installation is also possible using a flexible waveguide to connect the RAU and antenna.

If the RAU is installed separately, make sure to add a kit for separate installation, see section 6.1.7.

There are two types of radio unit design, RAU1 L and RAU2 L. They have the same functionality, but different mechanical design and microwave technology. RAU2 L has a higher integration of microwave circuits.

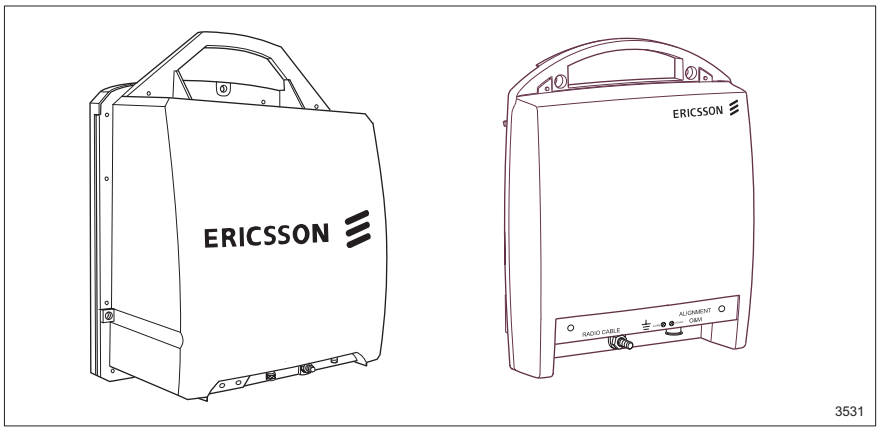

Figure 2-1. RAU1 L and RAU2 L

The available RAUs are described in the following sections.

2.1 RAU1 L 18

RAU1 L 18 works within the 18 GHz frequency band.

The two RAUs required for a hop are presented in pairs in Table 2 and Table 3. To select the appropriate pair of sub-bands, see the frequency plan in Table 1.

Each item in Table 2 and Table 3 includes:

- RAU
- Earthing cable 2.0 m (80")
- Connector kit for radio cable Ø10 mm (Ø3/8"), (holds two N-type connectors)
- Mounting bracket for radio cable Ø10 mm (Ø3/8"), used when connecting the radio cable to the station radio cable which is delivered together with the MMU.

  Note: *If the mounting bracket is fitted without connection to ground, for example on a wall or on a painted metallic surface, an extra one-meter earthing cable should be ordered, see Table 47.*

The items above can be ordered as spare parts as well.

RAU1 L 18 can be equipped with a fixed RF attenuator if the electronically adjustable output power range is not enough, see section 6.1.1.

Table 1: Frequency plan for RAU1 L 18

Standard	Sub-band	Duplex [MHz]	Lowest/Highest Tx center frequency [MHz] 0.25 MHz step	
			MMU 155/16	MMU 155/128
ETSI	11	1010	17734.25 / 17981.75	17720.50 / 17995.50
	15	1010	18744.25 / 18991.75	18730.50 / 19005.50
	12	1010	17961.25 / 18208.75	17947.50 / 18222.50
	16	1010	18971.25 / 19218.75	18957.50 / 19232.50
	13	1010	18181.25 / 18428.75	18167.50 / 18442.50
	17	1010	19191.25 / 19438.75	19177.50 / 19452.50
	14	1010	18401.25 / 18648.75	18387.50 / 18662.50
	18	1010	19411.25 / 19658.75	19397.50 / 19672.50
ANSI	31	1560	17727.50 / 17975.00	17713.75 / 17988.75
	35	1560	19287.50 / 19535.00	19273.75 / 19548.75
	32	1560	17865.00 / 18112.50	17851.25 / 18126.25
	36	1560	19425.00 / 19672.50	19411.25 / 19686.25

Table 2: Product numbers for RAU1 L 18 - ETSI

Sub-band	Product number
11	NTM 203 08/11
15	NTM 203 08/15
12	NTM 203 08/12
16	NTM 203 08/16
13	NTM 203 08/13
17	NTM 203 08/17
14	NTM 203 08/14
18	NTM 203 08/18

Table 3: Product numbers for RAU1 L 18 - ANSI

Sub-band	Product number
31	NTM 203 08/31
35	NTM 203 08/35
32	NTM 203 08/32
36	NTM 203 08/36

2.2 RAU2 L 23

RAU2 L 23 works within the 23 GHz frequency band.

The two RAUs required for a hop are presented in pairs in Table 5 and Table 6. To select the appropriate pair of sub-bands, see the frequency plan in Table 4.

Each item in Table 5 and Table 6 includes:

- RAU
- Earthing cable 2.0 m (80")
- Connector kit for radio cable Ø10 mm (Ø3/8"),
  (holds two N-type connectors)
- Mounting bracket for radio cable Ø10 mm (Ø3/8"), used when connecting the radio cable to the station radio cable which is delivered together with the MMU.

  Note: *If the mounting bracket is fitted without connection to ground, for example on a wall or on a painted metallic surface, an extra one-meter earthing cable should be ordered, see Table 47.*

The items above can be ordered as spare parts as well.

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Table 4: Frequency plan for RAU2 L 23

Standard	Sub-band	Duplex [MHz]	Lowest/Highest Tx center frequency [MHz] 0.25 MHz step	
			MMU 155/16	MMU 155/128
ETSI	76	1008	22036.00 / 22260.00	22022.00 / 22274.00
	78	1008	23044.00 / 23268.00	23030.00 / 23282.00
	77	1008	22316.00 / 22561.00	22302.00 / 22575.00
	79	1008	23324.00 / 23569.00	23310.00 / 23583.00
	91	1200	21246.00 / 21490.00	21232.00 / 21504.00
	95	1200	22484.00 / 22722.00	22470.00 / 22736.00
	92	1200	21532.00 / 21770.00	21518.00 / 21784.00
	96	1200	22764.00 / 23002.00	22750.00 / 23016.00
	93	1200	21812.00 / 22050.00	21798.00 / 22064.00
	97	1200	23044.00 / 23282.00	23030.00 / 23296.00
	94	1200	22092.00 / 22330.00	22078.00 / 22344.00
	98	1200	23324.00 / 23562.00	23310.00 / 23576.00
ANSI	81	1200	–	21225.00 / 21475.00
	85	1200	–	22470.00 / 22675.00
	82	1200	–	21525.00 / 21775.00
	86	1200	–	22725.00 / 22975.00
	83	1200	–	21825.00 / 22075.00
	87	1200	–	23025.00 / 23275.00
	84	1200	–	22125.00 / 22375.00
	88	1200	–	23325.00 / 23575.00

Table 5: Product numbers for RAU2 L 23 - ETSI

Sub-band	Product number
76	NTM 203 09/76
78	NTM 203 09/78
77	NTM 203 09/77
79	NTM 203 09/79
91	NTM 203 09/91
95	NTM 203 09/95
92	NTM 203 09/92
96	NTM 203 09/96
93	NTM 203 09/93
97	NTM 203 09/97
94	NTM 203 09/94
98	NTM 203 09/98

Table 6: Product numbers for RAU2 L 23 - ANSI

Sub-band	Product number
81	NTM 203 09/81
85	NTM 203 09/85
82	NTM 203 09/82
86	NTM 203 09/86
83	NTM 203 09/83
87	NTM 203 09/87
84	NTM 203 09/84
88	NTM 203 09/88

2.3 Accessories

- RF attenuators for RAU1 L 18, see section 6.1.1
- Kit for separate installation, see section 6.1.7

3 Antennas

3.1 Introduction

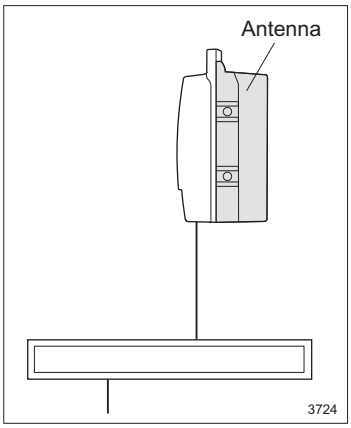

Figure 3-1. Antenna

The available antennas range from 0.2 m up to 1.8 m in diameter. Antennas of 1.8 m diameter are offered with high and standard performance while smaller antennas are offered only in high performance versions.

A high performance antenna has better side lobe suppression than the standard performance version and is used in dense networks. It always includes a radome, which protects against water, sand, snow and ice.

Integrated Installation

All antennas are normally used in integrated installation where the radio unit is fitted directly to the rear of the antenna.

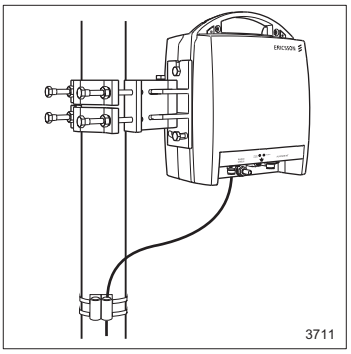

Figure 3-2. Integrated installation

Separate Installation

All antennas can be fitted separately from the radio unit. The radio unit is then connected to the antenna with a flexible waveguide. For separate installation, any antenna with an IEC 154 type B waveguide interface can be used.

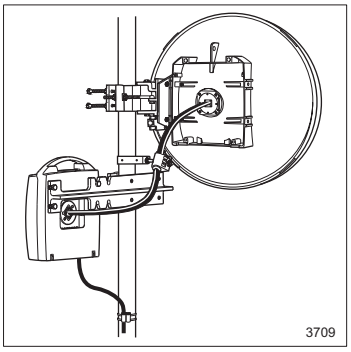

Figure 3-3. Separate installation

3.2 0.2 m Compact Antenna (9")

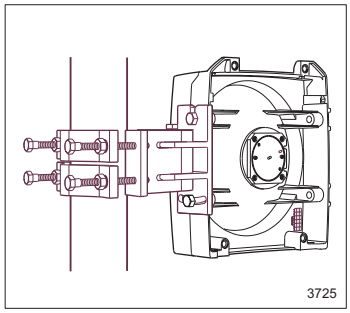

Figure 3-4. 0.2 m compact antenna for RAU2 L

The 0.2 m compact antenna is delivered including a mounting kit for poles of 50 – 120 mm (2" – 4¾") diameter and L-profiles between 40 x 40 x 5 mm (1½" x 1½" x ¼") and 80 x 80 x 8 mm (3" x 3" x ½").

The radio unit is fitted directly to the antenna as standard. If the radio unit is fitted separately, make sure to add a kit for separate installation when ordering, see section 6.1.7.

Table 7: 0.2 m compact antenna for RAU2 L

Description	Product number
23 GHz high performance	UKY 210 60/SC15

3.3 0.3 m Compact Antennas (1 ft)

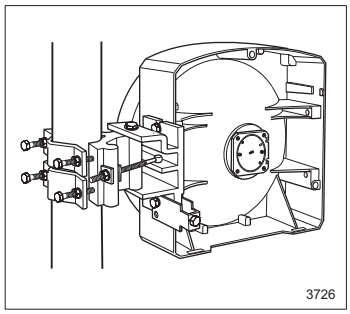

Figure 3-5. 0.3 m compact antenna for RAU1 L

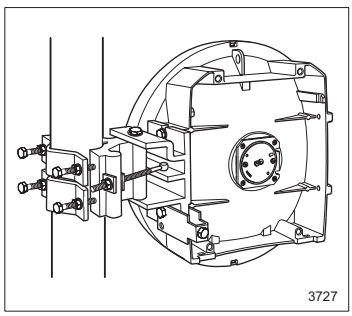

Figure 3-6. 0.3 m compact antenna for RAU2 L

The 0.3 m compact antenna is delivered including a mounting kit for poles of 50 – 120 mm (2" – 4¾") diameter and L-profiles between 40 x 40 x 5 mm (1½" x 1½" x ¼") and 80 x 80 x 8 mm (3" x 3" x ½").

The radio unit is fitted directly to the antenna as standard. If the radio unit is fitted separately, make sure to add a kit for separate installation when ordering, see section 6.1.7.

Table 8: 0.3 m compact antenna for RAU1 L

Description	Product number
18 GHz high performance	UKY 210 72/SC11

Table 9: 0.3 m compact antenna for RAU2 L

Description	Product number
23 GHz high performance	UKY 210 73/SC15

3.4 0.6 m Compact Antennas (2 ft)

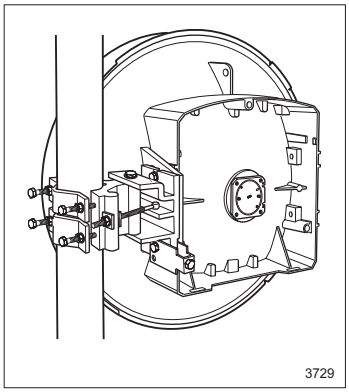

Figure 3-7. 0.6 m compact antenna for RAU1 L

The 0.6 m compact antenna is delivered including a mounting kit for poles of 50 – 120 mm (2" – 4¾") diameter and L-profiles between 40 x 40 x 5 mm (1½" x 1½" x ¼") and 80 x 80 x 8 mm (3" x 3" x ½").

The radio unit is fitted directly to the antenna as standard. If the radio unit is fitted separately, make sure to add a kit for separate installation when ordering, see section 6.1.7.

Table 10: 0.6 m compact antenna for RAU1 L

Description	Product number
18 GHz high performance	UKY 210 77/SC11

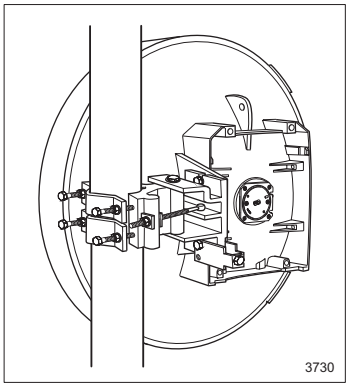

Figure 3-8. 0.6 m compact antenna for RAU2 L

Table 11: 0.6 m compact antenna for RAU2 L

Description	Product number
23 GHz high performance	UKY 210 78/SC15

3.5 1.2 m Compact Antennas (4 ft)

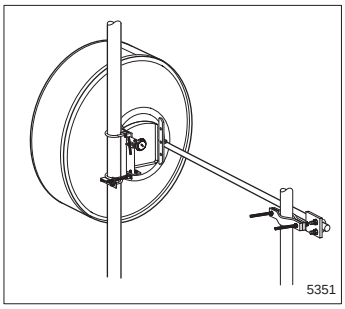

Figure 3-9. 1.2 m compact antenna for RAU1 L

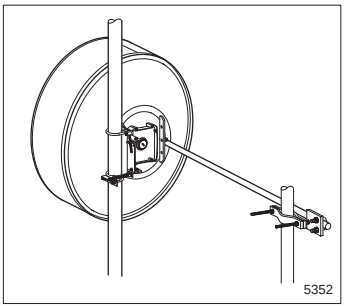

Figure 3-10. 1.2 m compact antenna for RAU2 L

The 1.2 m compact antenna is delivered as a kit, which must be assembled before the installation. It includes a mounting kit for poles of 90 – 114 mm (3½" – 4½") diameter and a side strut for stabilization.

The radio unit is fitted directly to the antenna as standard. If the radio unit is fitted separately, make sure to add a kit for separate installation when ordering, see section 6.1.7.

> **Note:** *The 1.2 m compact antenna is delivered directly from the Precision factory in England or Brazil (product number ending with a "D"). Should delivery from the Ericsson factory in Borås be required ("D" omitted in the product number), an extra charge will be added to the antenna price. Please contact your Ericsson representative for further information.*

Table 12: 1.2 m compact antenna for RAU1 L

Description	Product number
18 GHz high performance	UKY 210 43/SC11D

Table 13: 1.2 m compact antenna for RAU2 L

Description	Product number
23 GHz high performance	UKY 210 44/SC15D

3.6 1.8 m Compact Antennas (6 ft)

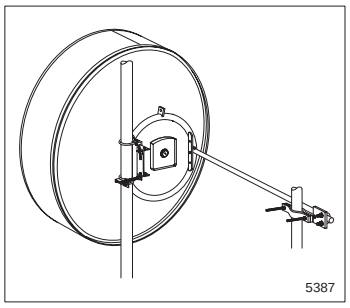

Figure 3-11. 1.8 m compact antenna for RAU1 L

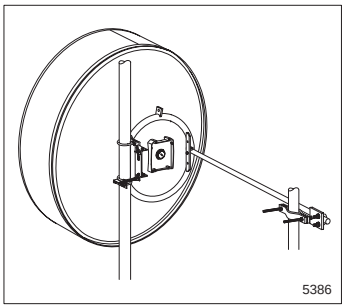

Figure 3-12. 1.8 m compact antenna for RAU2 L

The 1.8 m compact antenna is delivered as a kit, which must be assembled before the installation. It includes a mounting kit for poles of 90 – 114 mm (3½" – 4½") diameter and a side strut for stabilization.

The radio unit is fitted directly to the antenna as standard. If the radio unit is installed separately, make sure to add a kit for separate installation when ordering, see section 6.1.7.

> **Note:** *The 1.8 m compact antenna is delivered directly from the Precision factory in England or Brazil (product code ending with a "D").*
> *Should delivery from the Ericsson factory in Borås be required ("D" omitted in the product code), an extra charge will be added to the antenna price. Please contact your Ericsson representative for further information.*

Table 14: 1.8 m compact antennas for RAU1

Description	Product number
18 GHz high performance	UKY 210 53/SC11D
18 GHz standard performance	UKY 210 53/SC31D

Table 15: 1.8 m compact antennas for RAU2

Description	Product number
23 GHz high performance	UKY 210 54/SC15D
23 GHz standard performance	UKY 210 54/SC35D

3.7 Accessories

- Universal installation kit, see section 6.1.2
- Tripod, see section 6.1.3
- Lightning rod, see section 6.1.4
- Power splitter for 1+1 systems, see section 6.1.5
- Mounting kit for power splitter, see section 6.1.6
- Kit for separate installation, see section 6.1.7

3.8 Antenna Product Number

Each position in the product number has a specific signification. The figure below explains the digits and letters used in the antenna product numbers in this catalog.

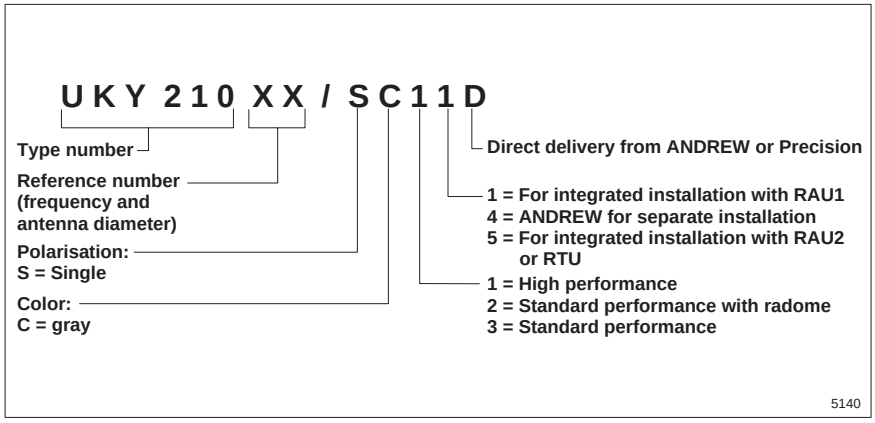

Figure 3-13. Antenna product number explanation

4 Indoor Units

4.1 Introduction

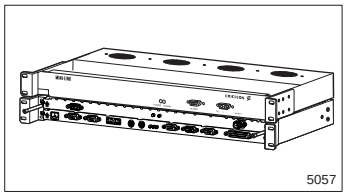

Figure 4-1. AMM 1U-1 and a fan unit

The following indoor units are available:

- Modem Unit (MMU), which is the interface with the radio unit.
- Traffic Unit (TRU), which terminates and generates the STM-1 or SONET OC-3 signal. It also contains a switching function used for protected (1+1) terminal configurations.
- Access Module Magazine (AMM), which holds the MMU and TRU and provides interconnection through its backplane.
- Fan unit, always installed on top of the AMM which guarantees sufficient cooling.
- An optional DC Distribution Unit (DDU) can be used for distribution of primary DC power to the MMU and fan unit.

4.2 Modem Unit – MMU

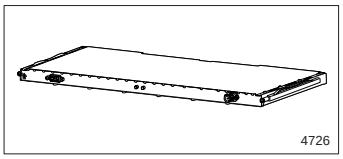

Figure 4-2. MMU

The MMU is the indoor interface with the radio unit. One MMU is required per radio unit. It is fully frequency independent and provides traffic capacity of 155 Mbit/s along with a 1.5/2 Mbit/s wayside channel.

The MMU is available in two types providing different bandwidth.

Each item in Table 16 and Table 17 includes:

- MMU
- Station radio cable 2.0 m (80"), used as an interface with the radio cable
- DC connector

The items above can be ordered as spare parts as well.

Table 16: MMU - ETSI

Description	Product number
MMU 155/16	NTM 203 22/1
MMU 155/128	NTM 203 23/1

Table 17: MMU - ANSI

Description	Product number
MMU 155/16	NTM 203 22/2
MMU 155/128	NTM 203 23/2

4.3 Traffic Unit – TRU

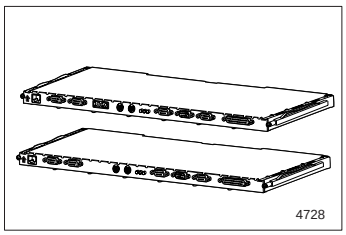

Figure 4-3. TRU EL./OPT. and TRU EL.

The main function of the TRU is to terminate and generate an SDH STM-1 or SONET OC-3 signal and transmit it to/receive it from the MMU. Connection of traffic, service channels, O&M and user I/O is made at the front of the TRU.

The TRU also provides 1+1 protection switching.

Each item in Table 18 includes:

- TRU
- Two SMZ connectors for STM-1 electrical traffic
- 25-pin D-sub connector for User I/O
- Three 9-pin D-sub connectors for 64 kbit/s service channels (V.11 and G.703) and wayside traffic.
  (Also possible to use in a modem cable assembly connected to the O&M port)

The items above can be ordered separately as well.

Table 18: TRU

Description	Product number
TRU EL. with electrical traffic interface	NTM 203 24/1
TRU EL./OPT. with electrical and optical traffic interfaces	NTM 203 24/2

4.4 Access Module Magazine – AMM

The indoor plug-in units are installed in an AMM. The AMM fits directly into 19" racks or cabinets.

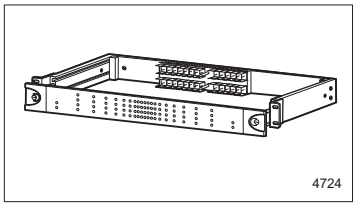

Figure 4-4. AMM 1U-1

There are two types of AMM, see Table 19 and Table 20.
AMM 1U-1 is used for 1+0 terminals while AMM 2U-4 is mainly used for 1+1 terminals.

AMM 2U-4 is also an alternative for a 1+0 terminal providing space for expansion to a 1+1 terminal. It can also be used to house two 1+0 terminals, that is 2x(1+0).

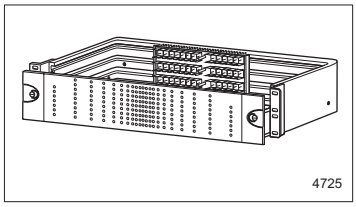

Figure 4-5. AMM 2U-4

Each item in Table 19 and Table 20 includes:

- Assembled AMM
- Screw kit for installation in a 19" rack
- Earthing cable 1.0 m (40")

The items above can be ordered as spare parts as well.

Note: *Installation manual must be ordered separately, see section 9.1.*

Table 19: AMM - ETSI

Description	**Product number**
AMM 1U-1	NTM 203 20/1
AMM 2U-4	NTM 203 21/1

Table 20: AMM - ANSI

Description	**Product number**
AMM 1U-1	NTM 203 20/2
AMM 2U-4	NTM 203 21/2

4.5 Fan Kit

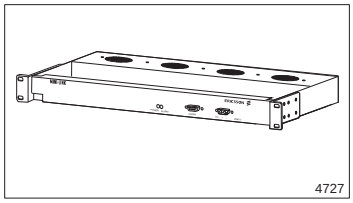

Figure 4-6. Fan unit

To guarantee sufficient cooling, a fan unit is always fitted on top of the AMM.

Each item Table 21 and Table 22 includes:

- Fan unit
- Screw kit for installation in a 19" rack
- Earthing cable 1.0 m (40")
- Fan alarm cable 0.5 m (20")
- DC connector

The items above can be ordered as spare parts as well.

Table 21: Fan kit - ETSI

Description	Product number
Fan kit	SXK 111 619/1

Table 22: Fan kit - ANSI

Description	Product number
Fan kit	SXK 111 619/3

4.6 DC Distribution Unit - DDU

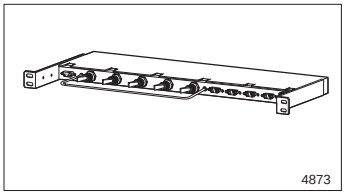

Figure 4-7. DDU

The DC Distribution Unit (DDU) is used for distribution of primary DC power to a maximum of five indoor units.

Each item in Table 23 and Table 24 includes:

- DDU
- Screw kit for installation in a 19" rack
- Five DC distribution cables 2.0 m (80")
- Earthing cable 1.0 m (40")
- DC connector
- Installation instruction

The items above can be ordered as spare parts as well.

Table 23: DDU - ETSI

Description	Product number
DDU, negative earth *	BMG 907 003/1
DDU, positive earth **	BMG 907 013/1

* *The positive pole is connected to the DDU and the negative pole is connected to ground (for +24 V DC).*

** *The negative pole is connected to the DDU and the positive pole is connected to ground (for –48 V DC).*

Table 24: DDU - ANSI

Description	Product number
DDU, positive earth *	BMG 907 013/2

* *The negative pole is connected to the DDU and the positive pole is connected to earth (for –48 V DC).*

4.7 Accessories

- BYB and ETSI installation sets, see section 6.2.1

www.tt-telecom.ru

5 Cables

5.1 Overview

The figures and tables in section 5.1 show which cables to use for different hardware interfaces. The tables also state if the cables and required connectors are included in hardware deliveries. For more information about different cable types, see section 5.2 - 5.6.

Figure 5-1 and Table 25 show all available cables that can be connected to the units.

Note: *Some cables are optional.*

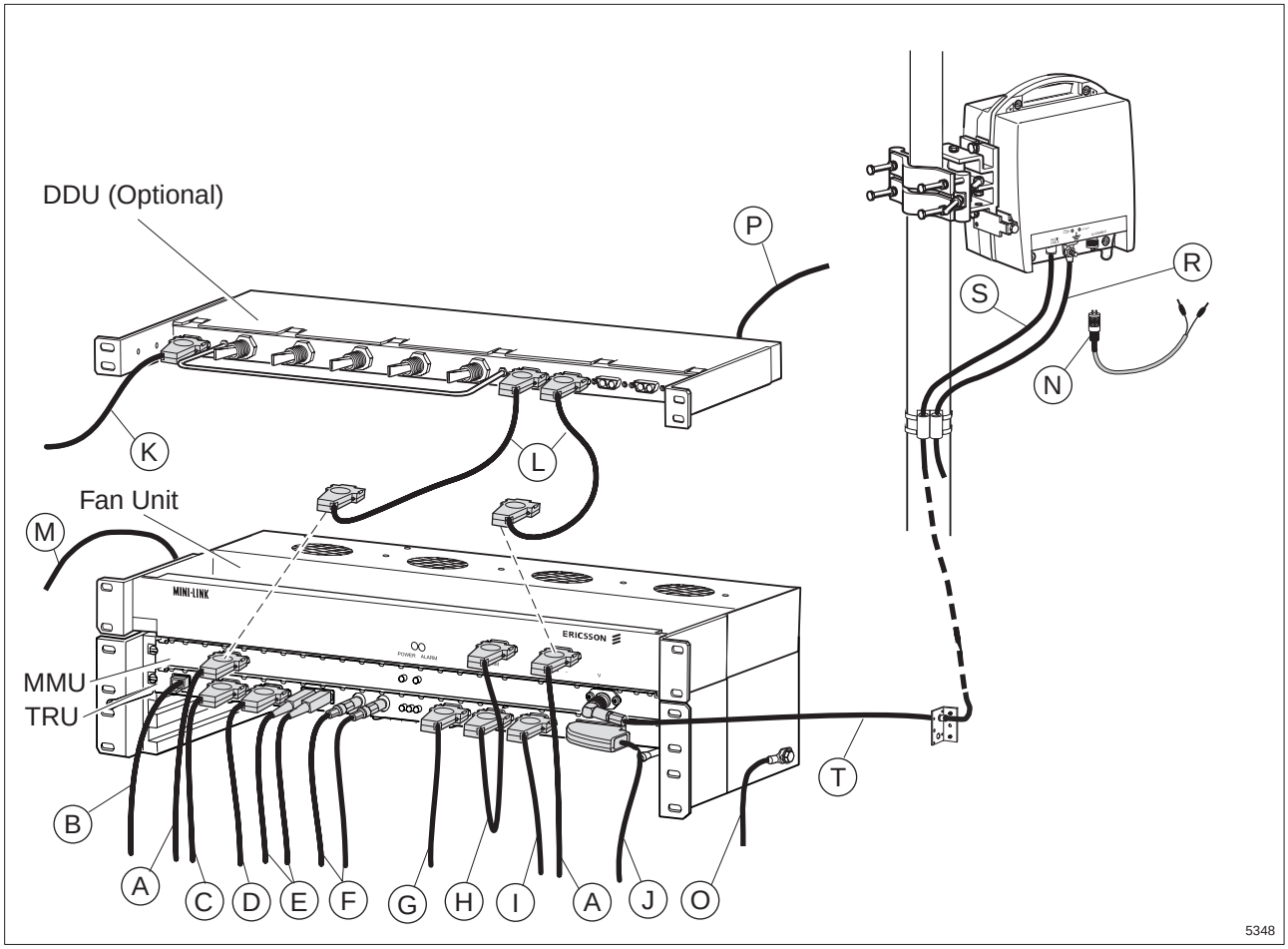

Figure 5-1. Overview of cables

Table 25: Cable overview

Description		Pre-assembled	Unassembled
A	DC cable		x
B	Ethernet cable	x	
C	Modem cable PC cable	x x	x
D	Service channel cable (V.11)		x
E	Optical traffic cable	x	
F	Electrical traffic cable Test traffic cable	 x	x
G	Wayside traffic cable		x
H	Fan alarm cable	x	
I	Service channel cable (G.703)		x
J	User I/O cable		x
K	DC cable		x
L	DC distribution cable (Replacing **A** when a DDU is used.)	x	
M	Earthing cable	x	
N	Alignment test cable	x	
O	Earthing cable	x	
P	Earthing cable	x	
R	Earthing cable	x	
S	Radio cable		x
T	Station radio cable	x	

5.1.1 Cables for RAU

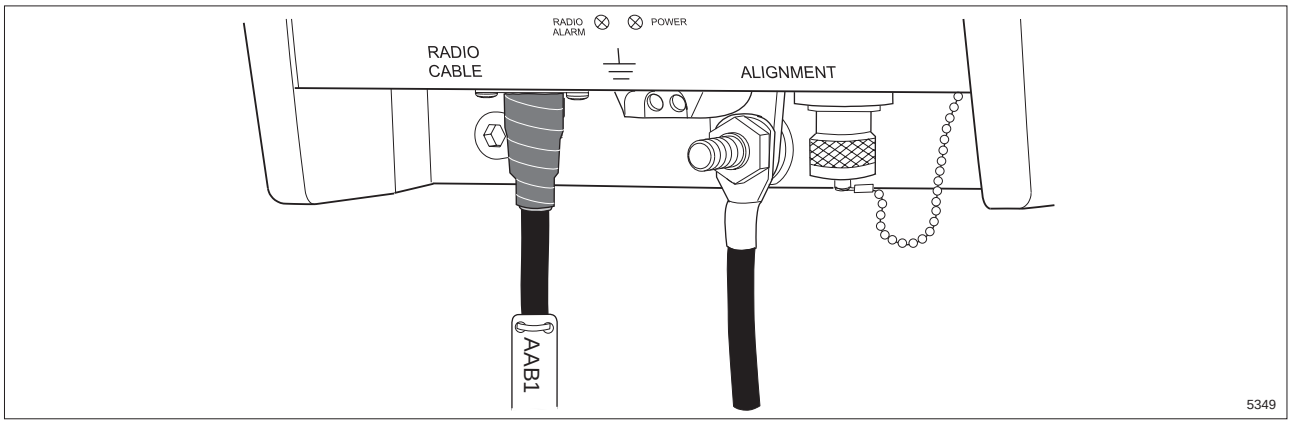

Figure 5-2. RAU connections

Cables for the RAU are listed in Table 26.

Table 26: Cables for RAU

Connection	Standard	Product number	Description	Connector
RADIO CABLE	ETSI	TZC 500 32	Radio cable Ø10 mm ≤ 200 m	Included in RAU delivery (SXK 111 511/1)*
		TZC 500 32/500	Radio cable Ø10 mm 500 m on a reel	Included in RAU delivery* (SXK 111 511/1)
		TZC 501 26	Radio cable Ø16 mm ≤ 400 m	SXK 111 511/2**
	ANSI	TZC 500 82	Radio cable Ø3/8" ≤ 220 yd	Included in RAU delivery (SXK 111 511/4)*
		TZC 500 80	Radio cable Ø1/2" ≤ 440 yd	SXK 111 511/2**
GROUND	ETSI/ANSI	SXK 111 514/3	Earthing cable 2.0 m (80") Pre-assembled Included in RAU delivery	NA (Not Applicable)
ALIGNMENT	ETSI/ANSI	RPM 214 100/1	Alignment test cable Pre-assembled Included in installation tool kit	NA

* *2 pcs N-type connectors*

** *2 pcs N-type connectors. A 2 m (80") pre-assembled interface 10 / 16 mm (*3/8" / 1/2") *jumper cable is included.*

5.1.2 Cables for MMU

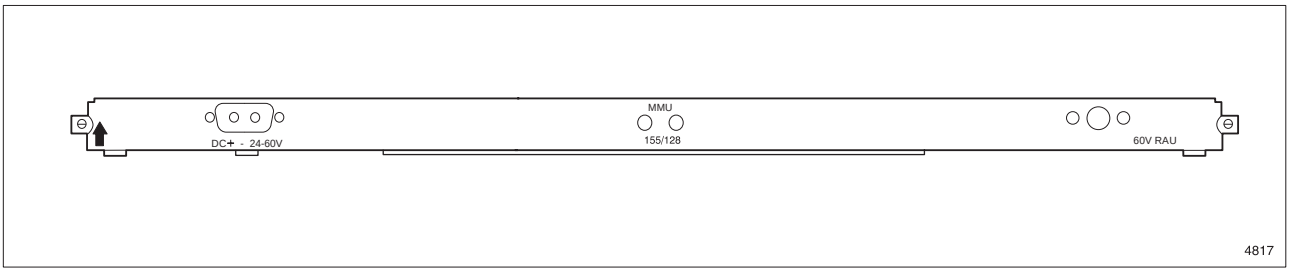

Figure 5-3. MMU connections

Cables for the MMU are listed in Table 27.

Table 27: Cables for MMU

Connection	Standard	Product number	Description	Connector
DC+ - 24-60V	ETSI	TFL 424 02	DC cable	Included in MMU delivery (SXK 111 516/1)
		TSR 632 190/1	DC distribution cable 2.0 m Pre-assembled 5 pcs included in DDU delivery	NA (Not Applicable)
	ANSI	TFL 424 06	DC cable	Included in MMU delivery (SXK 111 516/1)
		TSR 632 286/1	DC distribution cable 80" Pre-assembled 5 pcs included in DDU delivery	NA
60V RAU	ETSI	RPM 517 6906/01	Station radio cable 2.0 m. Pre-assembled Included in MMU delivery	NA
	ANSI	RPM 517 6906/04	Station radio cable 80" Pre-assembled Included in MMU delivery	NA

5.1.3 Cables for TRU

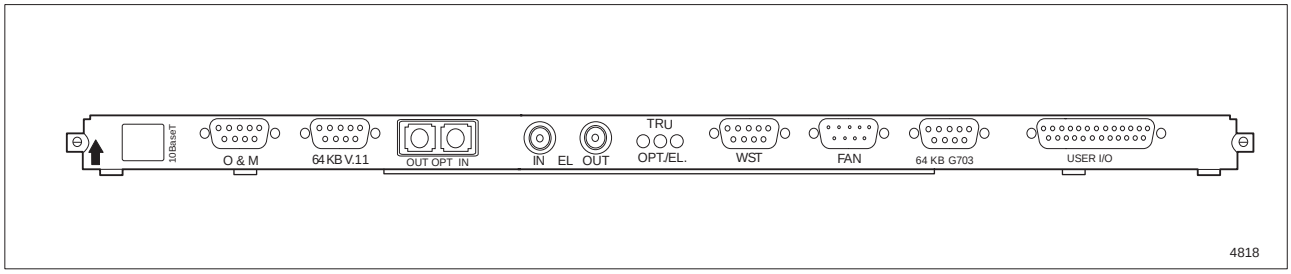

Figure 5-4. TRU connections

Cables for the TRU are listed in Table 28.

Table 28: Cables for TRU

Connection	Standard	Product number	Description	Connector
10BASE-T	ETSI/ANSI	TSR 482 0204/2600	Ethernet cable 2.6 m (8' 8") Pre-assembled	NA (Not Applicable)
		TSR 482 0204/5000	Ethernet cable 5.0 m (16' 5") Pre-assembled	NA
		TSR 482 0204/15000	Ethernet cable 15.0 m (50 ft) Pre-assembled	NA
O&M	ETSI	RPM 119 433/5000	Modem cable 5.0 m Pre-assembled	NA
		RPM 517 54/2	PC cable 2.0 m, temporary use Pre-assembled	NA
		RPM 119 218/7000	PC cable 7.0 m, permanent use Pre-assembled	NA
		TFL 481 54	Shielded twisted pair cable, 4 pairs	SXK 111 519/1
	ANSI	RPM 119 434/5000	Modem cable 16' 5" Pre-assembled	NA
		RPM 517 54/2	PC cable 80", temporary use Pre-assembled	NA
		RPM 119 409/7000	PC cable 23 ft, permanent use Pre-assembled	NA
		TFL 424 08/04	Shielded twisted pair cable, 4 pairs	SXK 111 519/1
64 KB V.11	ETSI	TFL 481 54	Shielded twisted pair cable, 4 pairs	Included in TRU delivery (SXK 111 519/1)
	ANSI	TFL 424 08/04	Shielded twisted pair cable, 4 pairs	Included in TRU delivery (SXK 111 519/1)

Connection	Standard	Product number	Description	Connector
OUT_OPT_IN	ETSI/ANSI	TSR 311 9173/2000	Optical fibre cable, 2.0 m (80") Pre-assembled SC-SC connectors	NA
		TSR 311 9173/5000	Optical fibre cable, 5.0 m (16' 5") Pre-assembled SC-SC connectors	NA
		TSR 311 9173/10000	Optical fibre cable, 10.0 m (33 ft) Pre-assembled SC-SC connectors	NA
		TSR 311 9174/2000	Optical fibre cable, 2.0 m (80") Pre-assembled SC-FC connectors	NA
		TSR 311 9174/5000	Optical fibre cable, 5.0 m (16' 5") Pre-assembled SC-FC connectors	NA
		TSR 311 9174/10000	Optical fibre cable, 10.0 m (33 ft) Pre-assembled SC-FC connectors	NA
IN_EL_OUT	ETSI	TZC 750 24	Coaxial cable	Included in TRU delivery (SXK 111 520/1)*
		RPM 517 6908/01	Traffic test cable 2.0 m Pre-assembled Included in installation tool kit	NA
WST	ETSI	TFL 481 54	Shielded twisted pair cable, 4 pairs	Included in TRU delivery (SXK 111 519/1)
	ANSI	TFL 424 08/04	Shielded twisted pair cable, 4 pairs	Included in TRU delivery (SXK 111 519/1)
FAN	ETSI	RPM 517 500/2	Fan alarm cable 0.5 m Pre-assembled Included in fan unit delivery	NA
	ANSI	RPM 517 503/2	Fan alarm cable 20" Pre-assembled Included in fan unit delivery	NA
64 KB G.703	ETSI	TFL 481 54	Shielded twisted pair cable, 4 pairs	Included in TRU delivery (SXK 111 519/1)
	ANSI	TFL 424 08/04	Shielded twisted pair cable, 4 pairs	Included in TRU delivery (SXK 111 519/1)
USER I/O	ETSI	TFL 481 53	Shielded twisted pair cable, 8 pairs	Included in TRU delivery (SXK 111 517/1)
	ANSI	TFL 424 08/08	Shielded twisted pair cable, 8 pairs	Included in TRU delivery (SXK 111 517/1)

** 2 SMZ connectors*

5.1.4 Cables for AMM

Cables for the AMM are listed in Table 29.

Table 29: Cables for AMM

Connection	Standard	Product number	Description	Connector
GROUND	ETSI	SXK 111 514/2	Earthing cable 1.0 m Included in AMM delivery Pre-assembled	NA (Not Applicable)
	ANSI	SXK 111 699/1	Earthing cable 40" Included in AMM delivery Pre-assembled	NA

5.1.5 Cables for Fan Unit

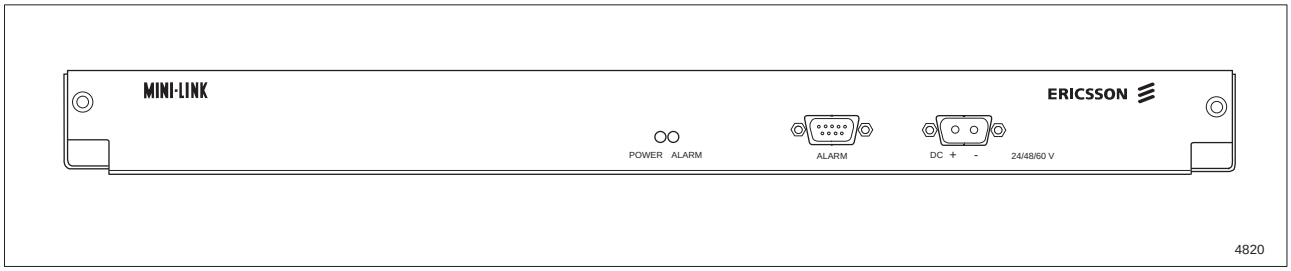

Figure 5-5. Fan unit connections

Cables for the fan unit are listed in Table 30.

Table 30: Cables for fan unit

Connection	Standard	Product number	Description	Connector
ALARM	ETSI	RPM 517 500/2	Fan alarm cable 0.5 m Included in fan unit delivery Pre-assembled	NA (Not Applicable)
	ANSI	RPM 517 503/2	Fan alarm cable 20" Included in fan unit delivery Pre-assembled	NA
DC	ETSI	TFL 424 02	DC cable	Included in fan unit delivery (SXK 111 516/1)
		TSR 632 190/1	DC distribution cable 2.0 m Pre-assembled Included in DDU delivery	NA
	ANSI	TFL 424 06	DC cable	Included in fan unit delivery (SXK 111 516/1)
		TSR 632 286/1	DC distribution cable 80" Pre-assembled Included in DDU delivery	NA
GROUND	ETSI	SXK 111 514/2	Earthing cable 1.0 m Pre-assembled Included in fan unit delivery	NA
	ANSI	SXK 111 699/1	Earthing cable 40" Pre-assembled Included in fan unit delivery	NA

5.1.6 Cables for DDU

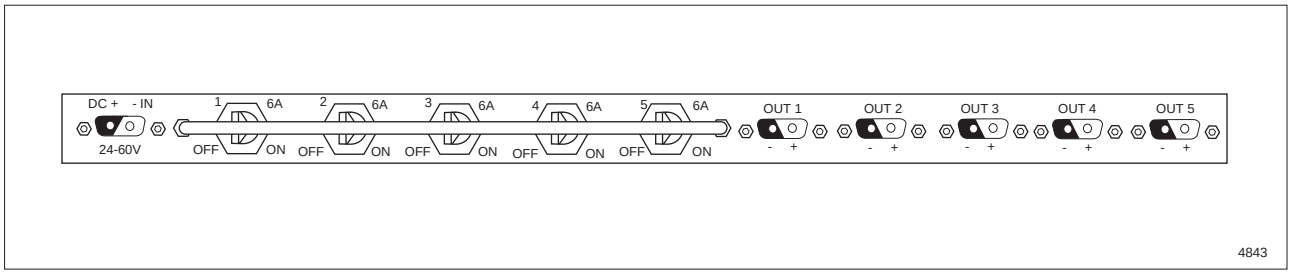

Figure 5-6. DDU connections

Cables for the DDU are listed in Table 31.

Table 31: Cables for DDU

Connection	Standard	Product number	Description	Connector
DC + - IN	ETSI	TFL 424 03	DC cable	Included in DDU delivery (SXK 111 516/2)
	ANSI	TFL 424 07	DC cable	Included in DDU delivery (SXK 111 516/2)
OUT 1 – 5	ETSI	TSR 632 190/1	DC distribution cable 2.0 m Pre-assembled 5 pcs included in DDU delivery	NA (Not Applicable)
	ANSI	TSR 632 286/1	DC distribution cable 80" Pre-assembled 5 pcs included in DDU delivery	NA
GROUND	ETSI	SXK 111 514/2	Earthing cable 1.0 m Pre-assembled Included in DDU delivery	NA
	ANSI	SXK 111 699/1	Earthing cable 40" Pre-assembled Included in DDU, pos earth delivery	NA

5.2 Radio Cables

5.2.1 Radio Cables

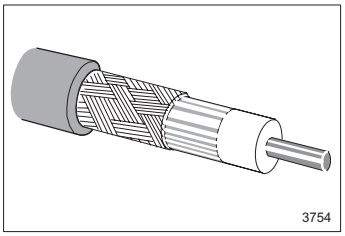

Figure 5-7. Radio cable Ø10 mm (3/8")

The radio cable is a 50 Ω coaxial cable used for connecting the radio unit to the MMU, via the station radio cable.

The standard jacket is weatherproof and UV-stabilized for outdoor applications. The radio cable can be used outdoors and for shorter distances indoors.

The Ø10 mm (3/8") cable has a solid copper inner conductor. The polyethylene foam dielectric is wrapped with foil and has an outer shield and a black polyethylene jacket. Maximum cable length between the MMU and the radio unit is 200 m (220 yd).

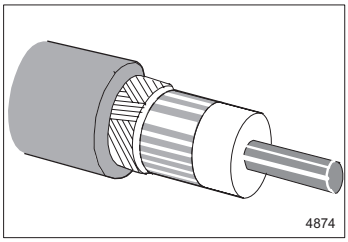

Figure 5-8. Radio cable Ø16 mm (1/2")

The Ø16 mm (1/2") cable has a solid copper clad aluminum inner conductor. It has a polyethylene foam dielectric and a copper outer conductor with annular corrugations. Maximum cable length between the MMU and the radio unit is 400 m (440 yd) for the Ø16 mm cable.

A Ø28 mm cable, with a maximum cable length of 700 m, is available on request (only ETSI market). For more information about the Ø28 mm cable and its accessories please contact your Ericsson representative.

Table 32: Radio cables - ETSI

Description	Product number
Radio cable Ø10 mm	TZC 500 32
Radio cable Ø10 mm, 500 m on a reel	TZC 500 32/500
Radio cable Ø16 mm	TZC 501 26

Table 33: Radio cables - ANSI

Description	Product number
Radio cable Ø3/8"	TZC 500 82
Radio cable Ø1/2"	TZC 500 80

5.2.2 Station Radio Cable

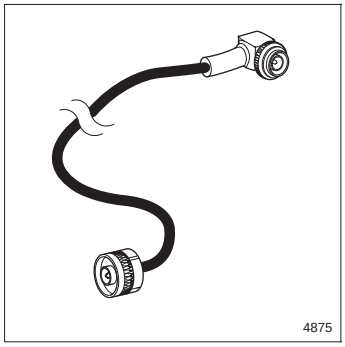

Figure 5-9. Station radio cable

The station radio cable is a pre-assembled 50 Ω coaxial cable for connecting the MMU to the radio cable at the mounting bracket. The station radio cable is designed for indoor applications.

Table 34: Station radio cable

Description	Product number
Station radio cable (ETSI) 2.0 m	RPM 517 6906/01
Station radio cable (ANSI) 80"	RPM 517 6906/04

5.3 DC Cables

The DC cables are used for distributing power supply to indoor equipment. Power supply can either be connected directly to the fronts at the MMU and fan unit or to an optional DDU.

5.3.1 DC Cable for MMU and Fan Unit

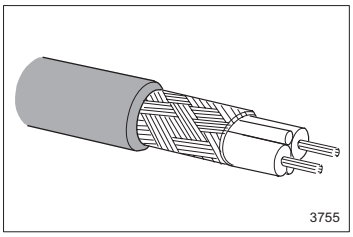

Figure 5-10. DC cable for MMU and fan unit

The cable is connected at the front of the MMU or fan unit. It has one twisted pair of AWG16 conductors, a shield consisting of braided tin-plated copper, and a gray LS0H-material jacket (LS0H = Low Smoke Zero Halogen).

Table 35: DC cable for MMU and fan unit

Description	Product number
DC cable (ETSI)	TFL 424 02
DC cable (ANSI)	TFL 424 06

5.3.2 DC Cable for DDU

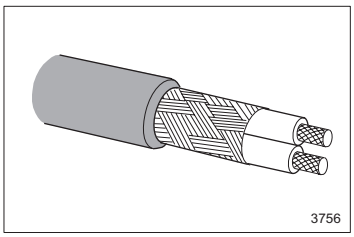

Figure 5-11. DC cable for DDU

The cable is connected at the front of the DDU. It has one twisted pair of AWG10 conductors, a shield consisting of braided tin-plated copper, and a gray LS0H-material jacket.

Table 36: DC cable for DDU

Description	Product number
DC cable (ETSI)	TFL 424 03
DC cable (ANSI)	TFL 424 07

5.3.3 DC Distribution Cable

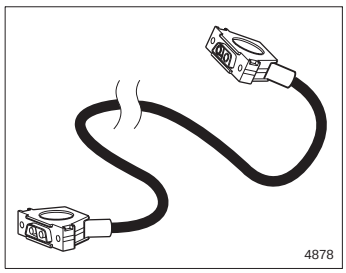

Figure 5-12. DC distribution cable

The DC distribution cable is used for connecting the DDU to the MMU and fan unit. It is has both ends pre-assembled with DC 2-pin connectors.

Table 37: DC distribution cable

Description	Product number
DC distribution cable (ETSI) 2.0 m	TSR 632 190/1
DC distribution cable (ANSI) 80"	TSR 632 286/1

5.4 Cables for SDH STM-1 and SONET OC-3 Traffic

5.4.1 Optical Fibre Cables

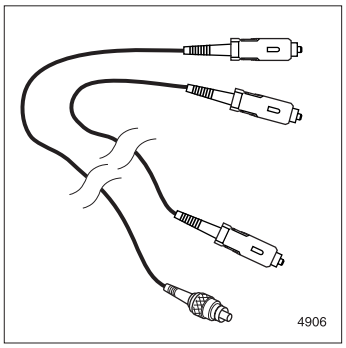

Figure 5-13. Optical fibre cables

Pre-assembled optical fibre cables for SDH STM-1 or SONET OC-3 optical interface on the TRU.

Table 38: Optical fibre cables

Description	Product number
Optical fibre cable 2.0 m (80") SC-SC connectors	TSR 311 9173/2000
Optical fibre cable 5.0 m (16' 5") SC-SC connectors	TSR 311 9173/5000
Optical fibre cable 10.0 m (33 ft) SC-SC connectors	TSR 311 9173/10000
Optical fibre cable 2.0 m (80") SC-FC connectors	TSR 311 9174/2000
Optical fibre cable 5.0 m (16' 5") SC-FC connectors	TSR 311 9174/5000
Optical fibre cable 10.0 m (33 ft) SC-FC connectors	TSR 311 9174/10000

5.4.2 Coaxial Cable

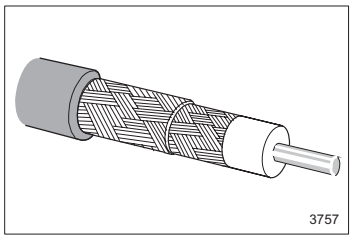

Figure 5-14. Coaxial cable

The 75 Ω coaxial cable is used to connect the electrical STM-1 traffic at the TRU front.

Table 39: Coaxial cable

Description	Product number
Coaxial cable	TZC 750 24

5.5 Cables for Auxiliary Channels and O&M

5.5.1 Shielded twisted pair cables

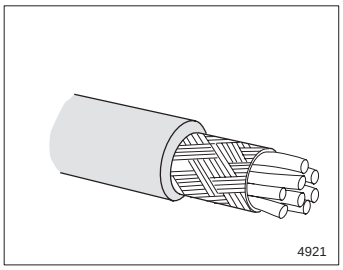

Figure 5-15. Shielded twisted pair cable, 4 pairs

The cables are used to connect to ports for service channels, wayside traffic and O&M at the TRU.

The cables have stranded conductors of insulated, tin-plated copper wires, and an aluminum foil. It has a tin-plated copper wire outer shield and a gray LS0H-material jacket.

The cables are available with four or eight twisted pairs of AWG26 conductors.

Table 40: Shielded twisted pair cables - ETSI

Description	Product number
Shielded twisted pair cable 120 Ω, 4 pairs	TFL 481 54
Shielded twisted pair cable 120 Ω, 8 pairs	TFL 481 53

Table 41: Shielded twisted pair cables - ANSI

Description	Product number
Shielded twisted pair cable 100 Ω, 4 pairs	TFL 424 08/04
Shielded twisted pair cable 100 Ω, 8 pairs	TFL 424 08/08

5.5.2 Ethernet cables

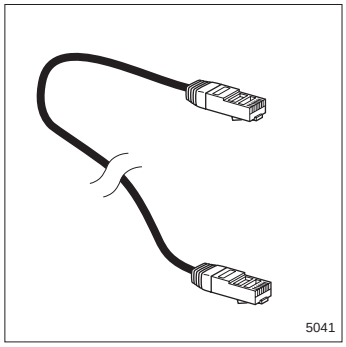

Figure 5-16. Ethernet cable

The cables are used for connection of a PC or a TCP/IP network to the 10BASE-T port on the TRU. The cables are of type unshielded twisted pair CAT 5, with embedded RJ-45 connectors in both ends.

Table 42: Ethernet cables

Description	Product number
Ethernet cable 2.6 m (8' 8")	TSR 482 0204/2600
Ethernet cable 5.0 m (16' 5")	TSR 482 0204/5000
Ethernet cable 15.0 m (50 ft)	TSR 482 0204/15000

5.5.3 PC Cables

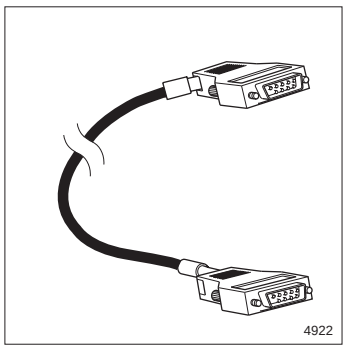

Figure 5-17. PC cable

Pre-assembled PC cables for connecting a PC to the O&M port on the TRU. The cables have two 9-pin D-sub connectors.

Table 43: PC cables

Description	Product number
PC cable (ETSI/ANSI) 2.0 m (80"), temporary use*	RPM 517 54/2
PC cable (ETSI) 7.0 m, permanent use	RPM 119 218/7000
PC cable (ANSI) 23 ft, permanent use	RPM 119 409/7000

* *One cable is included in the installation tool kit*

5.5.4 Modem Cable

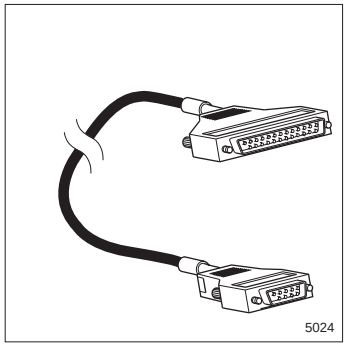

Figure 5-18. Modem cable

A pre-assembled modem cable for connecting a modem to the O&M port on a TRU. The cable has a 9-pin D-sub connector in one end and a 25-pin D-sub connector in the other end.

Table 44: Modem cable

Description	Product number
Modem cable (ETSI) 5.0 m	RPM 119 433/5000
Modem cable (ANSI) 16' 5"	RPM 119 434/5000

5.6 Other cables

5.6.1 Alignment Test Cable

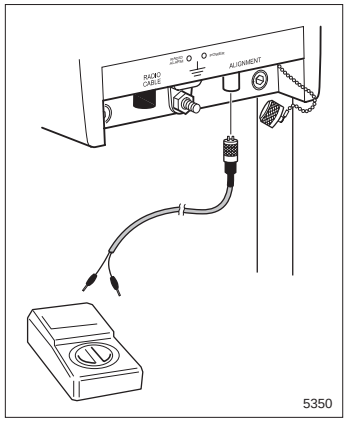

Figure 5-19. Alignment test cable

The cable is required for the alignment of the antenna and is connected to the test port on the radio unit.

Table 45. Alignment test cable

Description	Product number
Alignment test cable	RPM 214 100/1

5.6.2 Traffic Test Cable

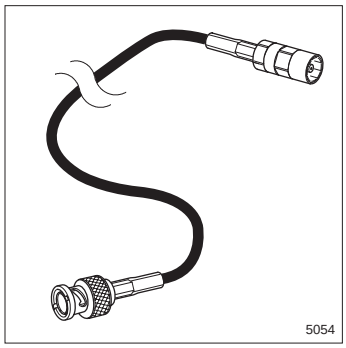

Figure 5-20. Traffic test cable

A pre-assembled 75 Ω coaxial cable for connection of STM-1 test traffic at the TRU front. The cable has an SMZ connector at the TRU end and a BNC connector at the other end.

Table 46: Traffic test cable

Description	Product number
Traffic test cable 2.0 m	RPM 517 6908/01

5.6.3 Earthing Cables

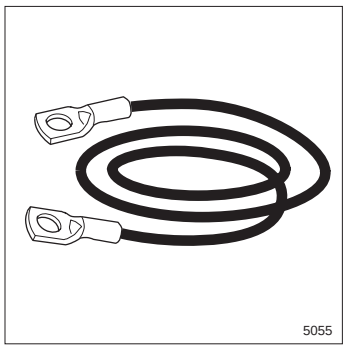

Figure 5-21. Earthing cable

Pre-assembled cables for grounding the RAU, AMM, DDU and fan unit. See section 5.1 to find out which cable that is used for a specific unit.

Table 47: Earthing cables

Description	Product number
Earthing cable (ETSI) 1.0 m	SXK 111 514/2
Earthing cable (ETSI/ANSI) 2.0 m (80")	SXK 111 514/3
Earthing cable (ANSI) 40"	SXK 111 699/1

5.6.4 Fan Alarm Cable

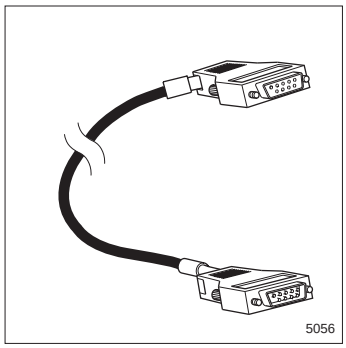

Figure 5-22. Fan alarm cable

A pre-assembled cable for alarm connection between the fan unit and the TRU. The cable has 9-pin D-sub connectors in both ends.

Table 48: Fan alarm cable

Description	Product number
Fan alarm cable (ETSI) 0.5 m	RPM 517 500/2
Fan alarm cable (ANSI) 20"	RPM 517 503/2

5.7 Accessories

5.7.1 Cable Clamp Kit

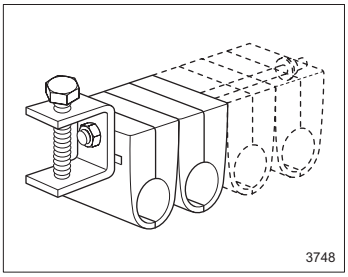

Figure 5-23. Cable clamp kit

The cable clamp kit is used to fasten the cables. It can be fitted directly to an L-profile or to a pole by using straps. One clamp per maximum 0.8 m (31") is recommended.

Table 49: Cable clamp kit

Description	Product number
Clamp kit, radio cable Ø10 mm (3/8"), two clamps	6/NTM 201 230/42
Clamp kit, radio cable Ø10 mm (3/8"), four clamps	6/NTM 201 230/44
Clamp kit, radio cable Ø16 mm (1/2"), two clamps	NTM 201 215/2
Clamp kit, radio cable Ø16 mm (1/2"), four clamps	NTM 201 215/4
Strap 680 mm (27") for installation of cable clamp kit on poles Ø ≤ 180 mm (7") *	SET 125 06/1

* *Two straps per cable clamp are required.*
Use tool LSD 349 20/1 for clamping, see section 6.3.

5.7.2 Earthing kit

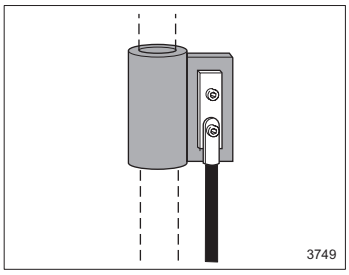

Figure 5-24. Earthing kit

The earthing kit is used for lightning protection of outdoor cables.

Table 50: Earthing kit – ETSI

Description	Product number
Earthing kit, radio cable Ø10 mm	NGT 211 04/7
Earthing kit, radio cable Ø16 mm	NGT 211 04/2

Table 51: Earthing kit – ANSI

Description	Product number
Earthing kit, radio cable Ø3/8"	NGT 211 04/3
Earthing kit, radio cable Ø1/2"	NGT 211 04/2

5.7.3 Wall Gland

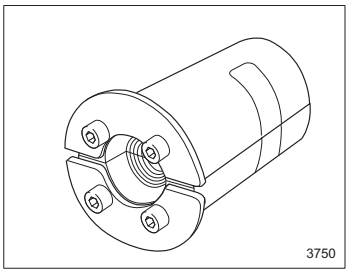

Figure 5-25. Wall gland for one cable

The wall gland is used when the radio cable passes through a wall.

Table 52: Wall gland

Description	Product number
Wall gland for one cable Ø ≤ 23 mm (15/16'')	NDM 125 14/1

5.7.4 Indoor Cable Straps

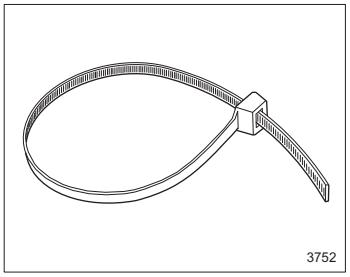

Figure 5-26. Indoor cable strap

The cable straps are used for tying up cables indoors. The cable straps can be used for cables with diameter 5 – 100 mm (¼" – 4").

Table 53: Indoor cable straps

Description	Product number
50 indoor cable straps, black, 376 x 7.6 mm (14¾" x 9/32")	SXK 111 574/1

5.7.5 Radio Cable Panel

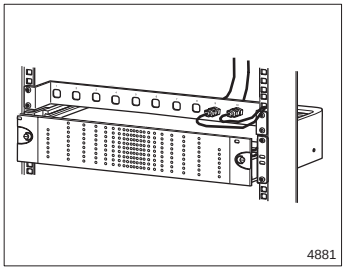

Figure 5-27. A radio cable panel and an AMM in a 19" rack

This 1U, 19" panel can be used when connecting several radio cables (max 12) to indoor units in a 19" rack or cabinet. The radio cable panel includes one earthing kit.

Table 54: Radio cable panel

Description	Product number
Radio cable panel (ETSI)	SXK 111 564/1
Radio cable panel (ANSI)	SXK 111 564/2

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6 Accessories

6.1 Outdoor Accessories

6.1.1 RF Attenuators

RAU1 L 18 can be equipped with fixed attenuators for reduction of the output power level.

Table 55: RF attenuators for RAU1 L 18

Product number	Nominal attenuation [dB]
UMF 101 204/1	7.5 ±2.0
UMF 101 204/2	15.0 ±2.0
UMF 101 204/3	22.5 ±2.0

6.1.2 Universal Installation Kit

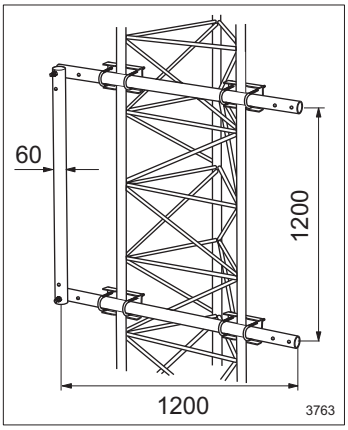

Figure 6-1. Kit for mast mounting

Installation kits for mounting the outdoor equipment on roofs, walls etc. or on mast structures where the standard installation kit cannot be used.

The installation kit can be fitted to masts with a diameter of 25 – 130 mm (1" – 5").

Table 56: Universal installation kits

Description	Product number
Kit for mast mounting, pole Ø60 mm (2 3/8"), length 1200 mm (4 ft)	SXK 111 512/1
Kit for roof/wall mounting, pole Ø60 mm (2 3/8")	SXK 111 512/2

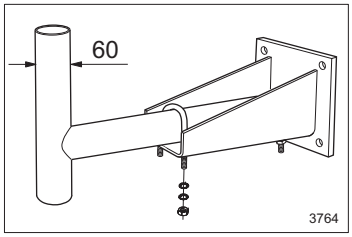

Figure 6-2. Kit for roof/wall mounting

6.1.3 Tripod

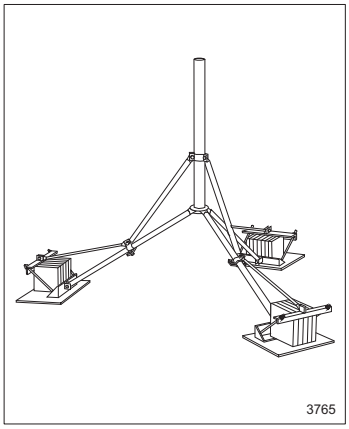

Figure 6-3. Tripod

Tripod for fast and easy installation of units on roofs, hilltops, parking lots, etc., without damaging the surface.

The tripod is available in two sizes, see table below. It can easily be disassembled for convenient transportation. The tripod is held in place by weights placed on the antenna leg brackets.

Table 57: Tripods

Description	Product number
Tripod for 0.2 m, 0.3 m and 0.6 m compact antennas (9", 1 ft and 2 ft)	SXK 111 0254/S
Tripod for 1.2 m and 1.8 m compact antennas (4 ft and 6 ft))	SXK 111 0254/L

6.1.4 Lightning Rod

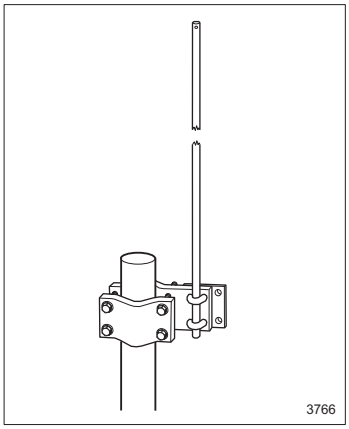

Figure 6-4. Lightning rod

Lightning rod for mounting on the mast head.

Table 58: Lightning rod

Description	Product number
Lightning rod	SXK 111 515/1

6.1.5 Power Splitter

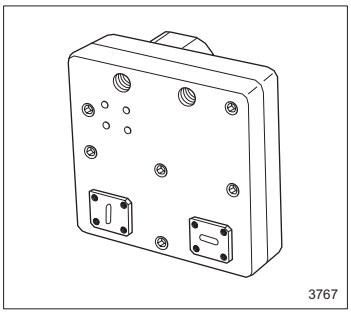

Figure 6-5. Power splitter

The power splitter is used in 1+1 systems, connecting two radio units to one antenna. The power splitter is available in a symmetrical and asymmetrical version.

The power splitter is fitted directly to the compact antenna.
Order the following:

- One power splitter
- Two kits for separate installation, see section 6.1.7

Table 59: Power splitters

Description	Attenuation [dB])	Product number
18 GHz, asymmetrical	1.6 / 7	UPA 101 015/1
18 GHz, symmetrical	3.5 / 3.5	UPA 101 015/2
23 GHz, asymmetrical	1.6 / 7	UPA 101 010/1
23 GHz, symmetrical	3.5 / 3.5	UPA 101 010/2

6.1.6 Mounting Kit for Power Splitter

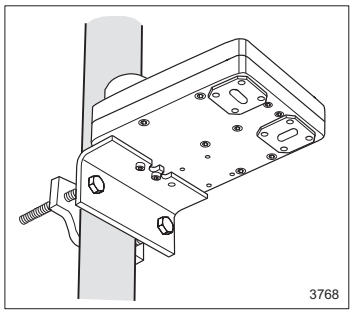

Figure 6-6. Mounting kit for power splitter

Table 60: Mounting kit

Description	Product number
For mounting on poles Ø50 – 114 mm (2" – 4½")	SXK 111 0340

6.1.7 Kit for Separate Installation

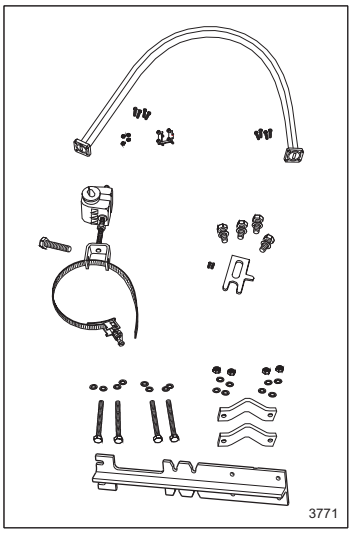

Figure 6-7. Kit for separate installation of RAU1 L

The antenna delivery includes a mounting kit for installation of the antenna. The compact antennas can be fitted directly to the radio unit. If the radio unit is installed separately, a kit for separate installation is required.

The kit for separate installation comprises a mounting kit for installation of the radio unit on 50 – 120 mm (2" – 4¾") poles, a flexible waveguide and all material required for fitting it to the radio unit, to the antenna and to the pole.

The parts included in the kit can also be ordered separately, see section 7.1.4 – 7.1.8.

Table 61: Kit for separate installation of RAU1 L

Type	Waveguide	Waveguide interface	Product number
18 GHz	0.65 m (25")	154 IEC-PBR 220	SXK 111 0402/1
	0.90 m (35")	154 IEC-PBR 220	SXK 111 0402/2

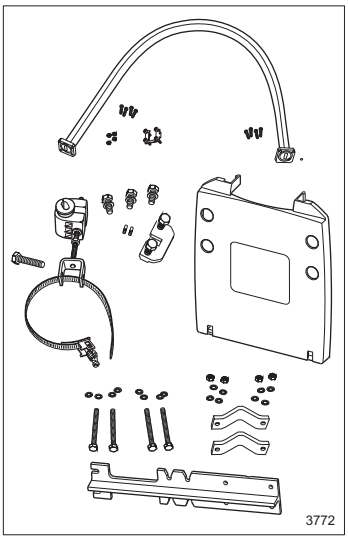

Figure 6-8. Kit for separate installation of RAU2 L

Table 62: Kit for separate installation of RAU2 L

Type	Waveguide	Waveguide interface	Product number
23 GHz	0.65 m (25")	154 IEC-PBR 220	SXK 111 609/1
	0.90 m (35")	154 IEC-PBR 220	SXK 111 609/2

6.2 Indoor Accessories

6.2.1 BYB and ETSI Installation Sets

For installation of the AMM in BYB and ETSI standard racks.

Table 63: BYB and ETSI installation sets

Description	Product number
BYB installation set for two AMM 2U-4 and a fan unit	SXK 111 569/1
ETSI 1U-1 installation set	SXK 111 572/1
ETSI 2U-4 installation set	SXK 111 572/5
ETSI fan unit installation set	SXK 111 572/4

6.2.2 Dummy Front

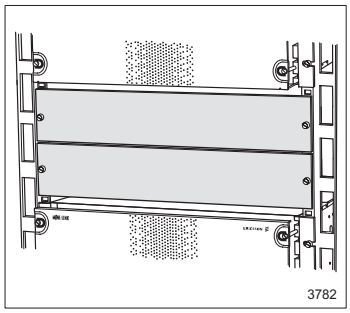

Figure 6-9. Dummy front 2U-4

Dummy front kits can be used to cover empty spaces above and below an AMM in a rack or cabinet.

Table 64: Dummy front

Description	Product number
Dummy front 1U-1	SXK 111 548/1
Dummy front 2U-4	SXK 111 548/2

6.3 Installation Tools

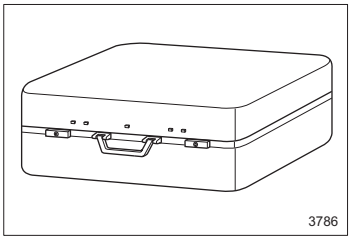

Figure 6-10. Installation tool kit

An installation tool kit is available, which contains tools required for installation of the equipment and standard antennas.

Table 65: Installation tool kit

Description	Product number
Installation tool kit	LTT 237 13

The installation tool kit comprises the tools listed in Table 66. All items with product numbers can also be ordered separately.

Table 66: Tools included in the installation tool kit

Description	Product number
Cutter for radio cable jacket	LTX 102 17
Extended T-handle 6 mm hex key	LSB 903 36
Band tensioner used when clamping radio cables	LSD 349 20/1
Crimping tool kit for SMZ connectors. LTT 237 17/1 comprises the following two tools:	LTT 237 17/1
- Crimping tool for the SMZ center conductor	LSD 319 86/1
- Crimping tool for the SMZ outer conductor	LSD 319 87/1
Crimping tool for DC wires	LSD 319 80
Pin extraction tool for DC wires	LSY 141 12
Chamfering tool for the radio cable (Ø10 mm), middle pin	LDK 901 02/1
Tool for IDC D-sub connectors	LSD 319 83
Crimping tool for pair cable braid	LSD 319 84/1
Pin extraction tool for IDC D-sub connectors	LSY 120 10/1
Preset plug for restoring the MMU to the configuration delivered from factory	RNT 860 900/1
Alignment test cable	RPM 214 100/1
Hex keys	NA (Not Applicable)
Cap keys (8, 9, 10, 13, 14 and 16 mm)	NA
Special keys (18, 21, 26 and 27 mm)	NA
Screwdrivers	NA
Adjustable spanner	NA
Digital multimeter	NA
Traffic test cables	NA
Sliding calliper	NA
Knife	NA
Saw	NA
Measuring tape	NA
Compass	NA
MINI-LINK Service Manager (MSM) including two PC cables	NA

The following tool is available for the Ø16 mm radio cable.

Table 67: Crimping and cable stripping tool for Ø16 mm radio cable

Description	Product number
Crimping and cable stripping tool for Ø16 mm radio cable	LDK 901 01/1

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7 Spare Parts

For spare cables, see chapter 5.

7.1 Outdoor Spare Parts

7.1.1 Radio Units

The spare radio units are delivered without any accessories like connector and earthing cable.
For frequency sub-bands, see section 2.1 and 2.2.

Table 68: RAU1 L 18 spare parts

Description	Sub-band	Product number
RAU1 L 18 - ETSI	11	UKL 601 101/11
	15	UKL 601 101/15
	12	UKL 601 101/12
	16	UKL 601 101/16
	13	UKL 601 101/13
	17	UKL 601 101/17
	14	UKL 601 101/14
	18	UKL 601 101/18
RAU1 L 18 - ANSI	31	UKL 601 101/31
	35	UKL 601 101/35
	32	UKL 601 101/32
	36	UKL 601 101/36

Table 69: RAU2 L 23 spare parts

Description	Sub-band	Product number
RAU2 L 23 - ETSI	76	UKL 601 102/76
	78	UKL 601 102/78
	77	UKL 601 102/77
	79	UKL 601 102/79
	91	UKL 601 102/91
	95	UKL 601 102/95
	92	UKL 601 102/92
	96	UKL 601 102/96
	93	UKL 601 102/93
	97	UKL 601 102/97
	94	UKL 601 102/94
	98	UKL 601 102/98
RAU2 L 23 - ANSI	81	UKL 601 102/81
	85	UKL 601 102/85
	82	UKL 601 102/82
	86	UKL 601 102/86
	83	UKL 601 102/83
	87	UKL 601 102/87
	84	UKL 601 102/84
	88	UKL 601 102/88

7.1.2 Connector Kits

Table 70: Connector kits for RAU

Description	Product number
Connector kit for radio cable Ø10 mm (holds 2 pcs N-type connectors)	SXK 111 511/1
Connector kit for radio cable Ø3/8" (holds 2 pcs N-type connectors)	SXK 111 511/4
Connector kit for radio cable Ø16 mm (1/2")* (holds 2 pcs N-type connectors)	SXK 111 511/2
Mounting bracket for radio cable Ø10 mm (3/8")**	SXK 111 524/1
Sealing kit for radio cable***	NTM 101 01/1

* *An interface 10 / 16 mm (3/8" / 1/2") jumper cable is included*

** *When the mounting bracket is fitted without connection to ground, for example on a wall or on a painted metallic surface, an extra one-meter earthing cable should be ordered, see Table 47.*

*** *Included in connector kit SXK 111 511/1*

7.1.3 Antenna Mounting Kit

Antenna mounting kits for poles of 50 – 120 mm (2" – 4¾") diameter and L-profiles between 40 x 40 x 5 mm (1½" x 1½" x ¼") and 80 x 80 x 8 mm (3" x 3" x ½").

Table 71: Antenna mounting kit

Description	Product number
For 0.2 m compact antenna (9")	SXK 111 582/1
For 0.3 m and 0.6 m compact antennas (1 ft and 2 ft)	SXK 111 0278/1

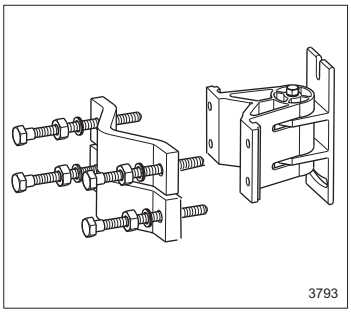

Figure 7-1. Antenna mounting kit for 0.2 m compact antenna

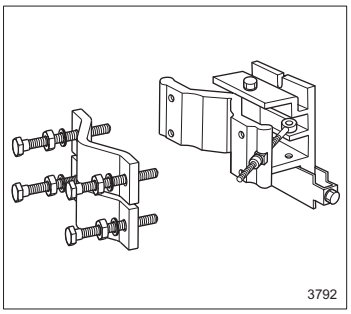

Figure 7-2. Antenna mounting kit for 0.3 m and 0.6 m compact antennas

7.1.4 Flexible Waveguide Kit

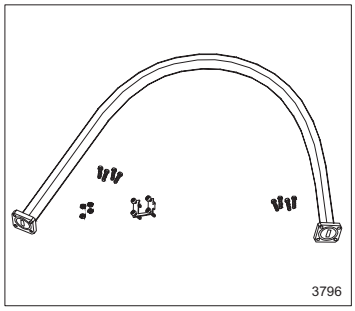

Figure 7-3. Flexible waveguide kit

Flexible waveguide kit including a flexible waveguide, washer, screws and nuts.

Table 72: Flexible waveguide kit

Description	Product number
Flexible waveguide kit for 18/23 GHz, 0.65 m (25")	SXK 111 0323/1
Flexible waveguide kit for 18/23 GHz, 0.90 m (35")	SXK 111 0323/2

7.1.5 Waveguide Clamp Kit

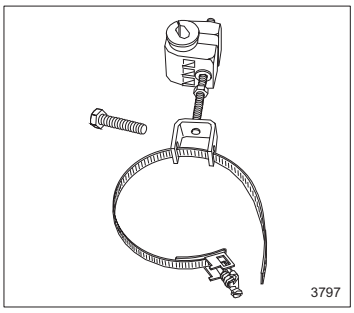

Figure 7-4. Waveguide clamp kit

Kit for clamping the flexible waveguide to a pole.

Table 73: Waveguide clamp kit

Description	Product number
Waveguide clamp kit for 18/23 GHz	SXK 111 0312/1

7.1.6 Radio Mounting Kit

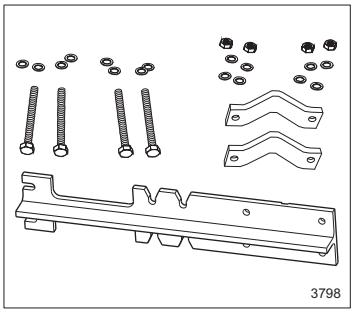

Figure 7-5. Radio mounting kit

Kit for separate installation of the radio, including screws, washers and nuts.

Table 74: Radio mounting kit

Description	Product number
For poles of 50 – 120 mm (2" – 4¾") diameter	SXK 111 0321/1

7.1.7 Waveguide Lock Kit

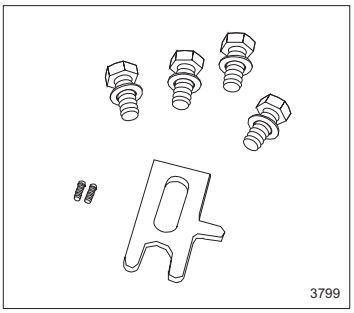

Figure 7-6. Waveguide lock kit for RAU1 L

The waveguide lock kit includes a waveguide lock, screws and two guide pins for fitting the flexible waveguide to the radio unit and the radio unit to the radio mounting support.

Table 75: Waveguide lock kit for RAU1 L

Description	Product number
For 18 GHz	SXK 111 0329

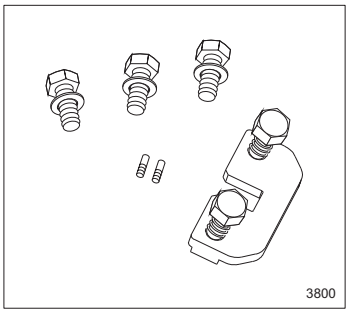

Figure 7-7. Waveguide lock kit for RAU2 L

Table 76: Waveguide lock kit for RAU2 L

Description	Product number
For 23 GHz	SXK 111 593/1

7.1.8 Sun Protection Plate for RAU2 L

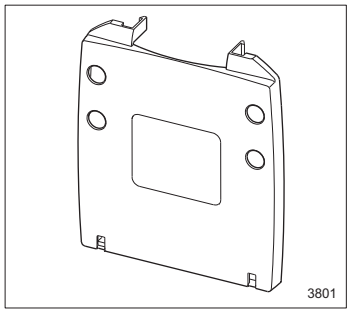

Figure 7-8. Sun protection plate for RAU2 L

To be fitted on RAU2 L when installed separately.

Table 77: Sun protection plate for RAU2 L

Description	Product number
Sun protection plate	SXK 124 1732/1

7.2 Indoor Spare Parts

The indoor spare parts are delivered without accessories, such as connectors.

7.2.1 AMM

Table 78: AMM spare parts

Description	Product number
AMM 1U-1	BFL 901 29/1
AMM 2U-4	BFL 901 30/1

7.2.2 MMU

Table 79: MMU spare parts

Description	Product number
MMU 155/16	HRY 901 03/1
MMU 155/128	HRY 901 03/2

7.2.3 TRU

Table 80: TRU spare parts

Description	Product number
TRU EL. with electrical interface	HRY 901 02/1
TRU EL./OPT. with electrical and optical interface	HRY 901 02/2

7.2.4 Fan Unit

Table 81: Fan unit spare parts

Description	Product number
Fan unit	BKV 175 50/1

7.2.5 DDU

Table 82: DDU spare parts

Description	Product number
DDU, neg. earth	BMG 907 003/4
DDU, pos. earth	BMG 907 013/4

7.2.6 Rack Screw Kit

Table 83: Rack screw kit

Description	Product number
Four screws and captive nuts for fitting an AMM, fan unit and DDU in a 19" rack	SXK 111 539/1

7.2.7 Connector Kits

Table 84: Connector kits

Description	Product number
D-sub 9-pin connector for 64 Kbit/s service channels (G.703 and V.11), WST and O&M	SXK 111 519/1
D-sub 25-pin connector for User I/O	SXK 111 517/1
DC 2-pin connector for DC cable TFL 424 02 and TFL 424 06	SXK 111 516/1
DC 2-pin connector for DC cable TFL 424 03 or TFL 424 07	SXK 111 516/2
SMZ connector kit (includes two SMZ connectors for traffic)	SXK 111 520/1
BNC connector kit (includes two BNC connectors for traffic)	SXK 111 520/2

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8 Software

8.1 MINI-LINK High Capacity Software

The integrated software is factory loaded in all MINI-LINK High Capacity units.

The equipment has to be upgraded with the latest software version, which is available on CD-ROM. The CD-ROM also includes the MINI-LINK High Capacity Operation Manual.

Table 85: MINI-LINK High Capacity software

Description	Product number
MINI-LINK High Capacity software CD-ROM	LZJ 214 0586

8.2 MLPERF Software

The MLPERF software (LZY 202 334) for PC is used for performance and availability predictions for MINI-LINK paths. The latest version is available on Ericsson's Intranet. Please contact your Ericsson representative for further information.

9 Manuals and Training

9.1 Manuals

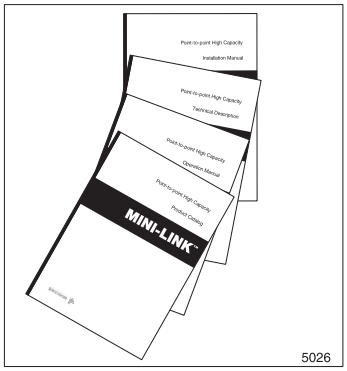

Figure 9-1. Manuals

Available manuals and installation instructions are listed in Table 86.

The Technical Description contains detailed technical descriptions, block diagrams and data.

The Installation Manual is used for installation and commissioning of the equipment.

The Operation Manual describes how to set up and configure the equipment, using a Local Craft Terminal (LCT).

The installation instructions describe installation of the equipment and are included in the deliveries.

Table 86: Manuals

Description	Product number
MINI-LINK High Capacity Product Catalog	EN/LZT 712 0049
MINI-LINK High Capacity Technical Description	EN/LZT 712 0050
MINI-LINK High Capacity Installation Manual	EN/LZT 712 0051
MINI-LINK High Capacity Operation Manual	EN/LZT 712 0058
1.2 m Compact Antenna Installation Instruction	AE/LZT 712 0095
1.8 m Compact Antenna Installation Instruction	EN/LZT 712 0101
DC Distribution Unit (DDU) Installation Instruction	EN/LZT 110 2049

9.2 Training

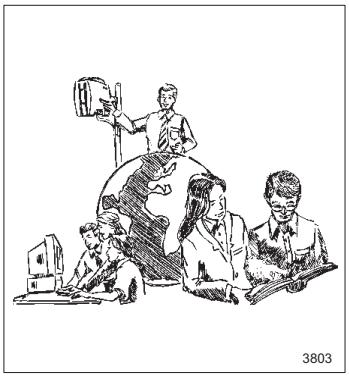

Figure 9-2. MINI-LINK training courses

A MINI-LINK training course can be held at any MINI-LINK Training Center or on any customer premises.

More details about the MINI-LINK training courses and application forms are available on Ericsson´s Intranet as well as Internet. Please contact your Ericsson representative for information.

10 Order, Delivery and HW Services

10.1 Order and Delivery

Please place your order with your Ericsson representative.

For more information on how to compose your order, the delivery time, etc. please contact your Ericsson representative.

10.2 HW Services

Standard HW services, spare parts replacement and spare parts management are available. Please contact the local representative at Global Services within Ericsson for prices and details.

Glossary

AMM
Access Module Magazine

ANSI
American National Standards Institute

DDU
DC Distribution Unit

ETSI
European Telecommunications Standards Institute

Hop
A radio-link connection with a pair of communicating terminals

HW
Hardware

ITU-R
International Telecommunication Union, Radiocommunication sector

LAN
Local Area Network

LCT
Local Craft Terminal, a PC with a web browser used for setup and configuration of a terminal

LS0H
Low Smoke Zero Halogen

MINI-LINK Netman
Element manager for remote supervision of MINI-LINK point-to-point products

MLPERF
MINI-LINK Performance and Availability Prediction Software

MMU
Modem Unit

NA
Not Applicable

OC-3
Optical Carrier level 3

O&M
Operation and Maintenance

RAU
Radio Unit

RAU1 L
Version 1 of the radio unit

RAU2 L
Version 2 of the radio unit

RF
Radio Frequency

SDH
Synchronous Digital Hierarchy

SONET
Synchronous Optical Network

STM-1
Synchronous Transmission Module 1

TCP/IP
Transmission Control Protocol/Internet Protocol

Terminal
One side of a radio-link connection

TRU
Traffic Unit

WAN
Wide Area Network

WST
Wayside Traffic

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