

NOKIA

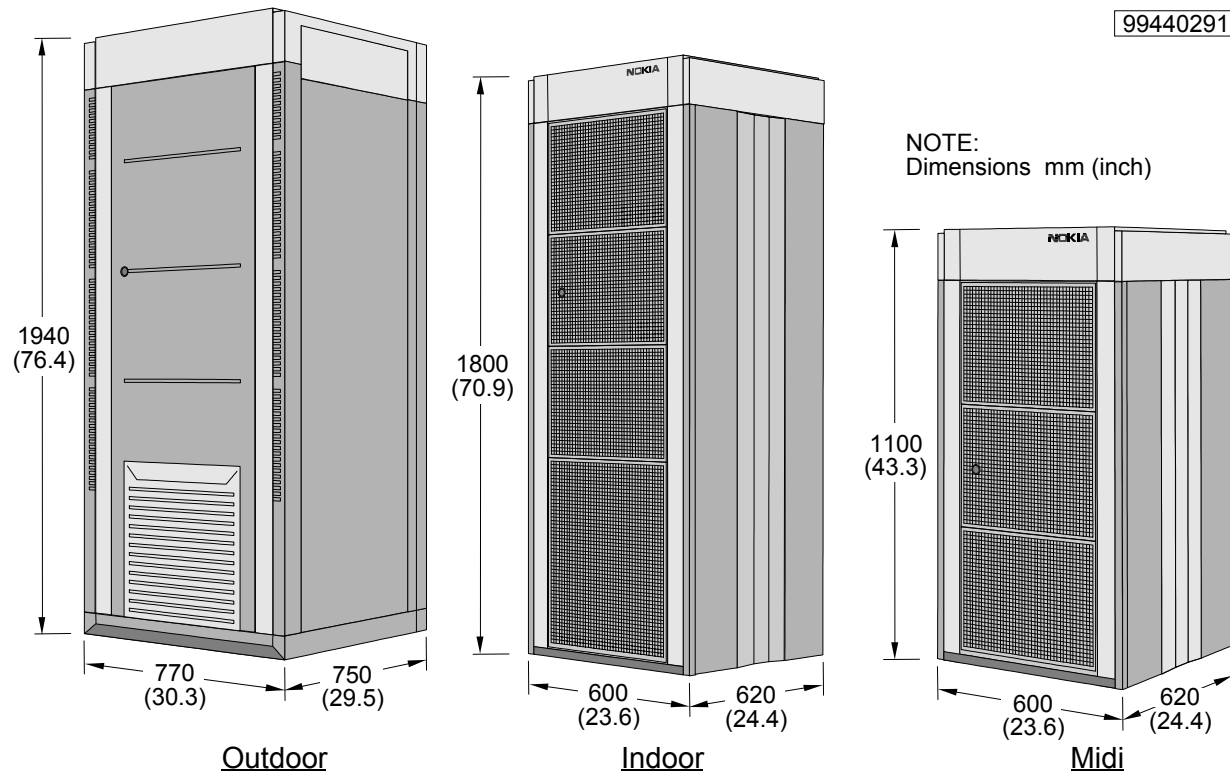
CONNECTING PEOPLE

NOKIA ULTRASITE EDGE BASE STATION

Product Description



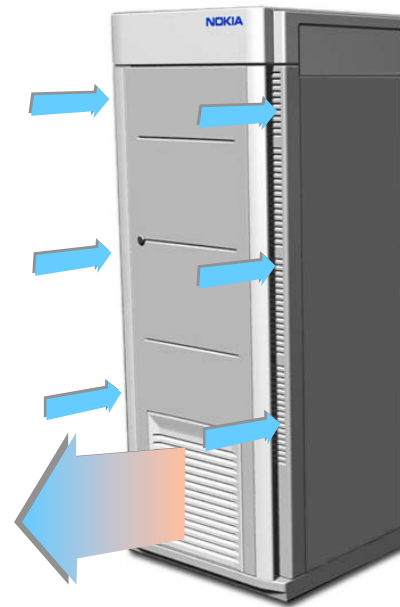
BTS CABINET TYPES



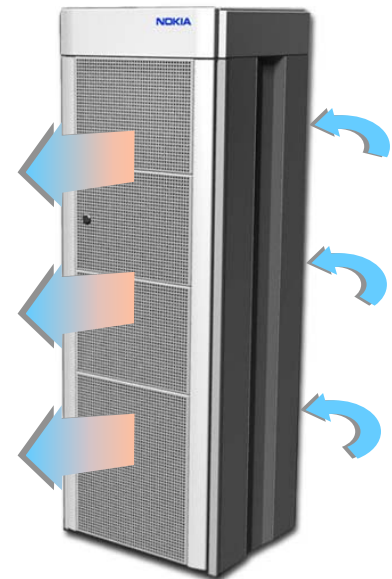
Nokia UltraSite BTS Outdoor, Indoor, and Midi Indoor Cabinets

BTS CABINET COOLING

- SW controlled cooling with variable speed fans
 - 11 unit cooling fans
 - 1 cabinet cooling fan in UltraSite GSM BTS Outdoor
- No heat exchanger or air-conditioner required
- Heater unit
 - For cold start ($< -10^{\circ}\text{C}$)
 - Optional for UltraSite GSM Outdoor BTS

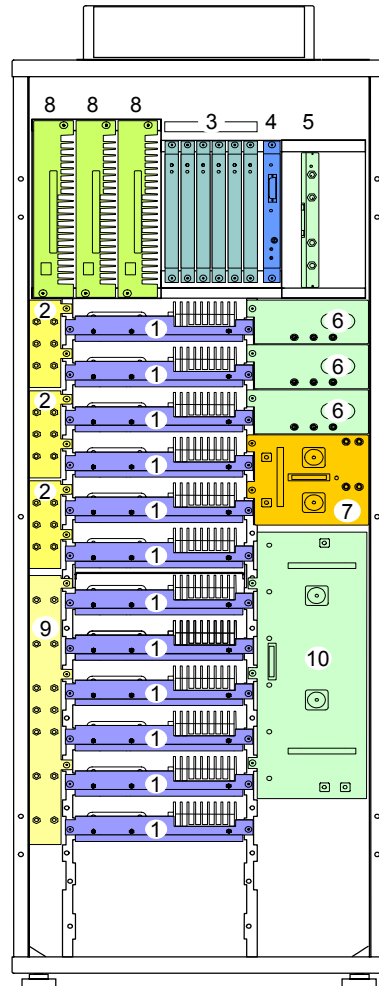


Outdoor Cabinet



Indoor Cabinet

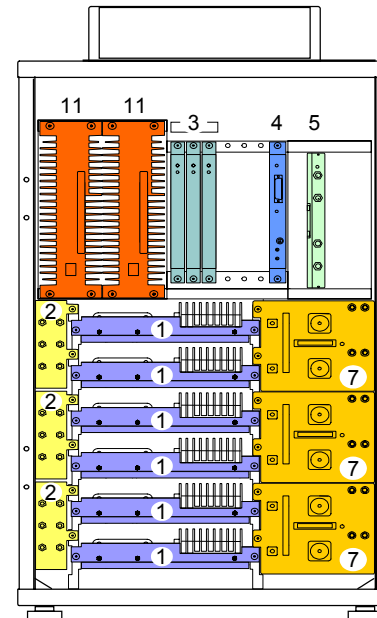
ULTRASITE CABINET TYPES



UltraSite Indoor/Outdoor BTS

KEY:

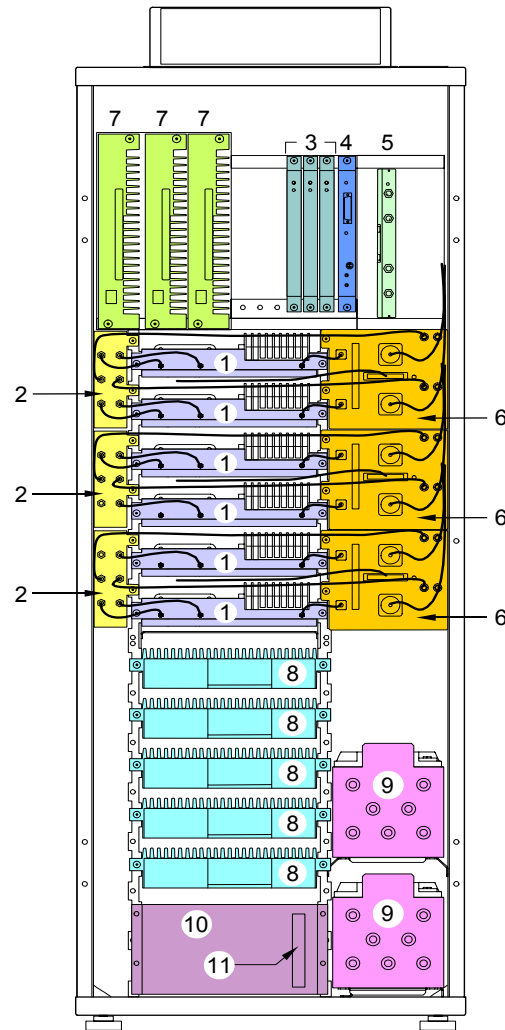
- 1 Transceiver Unit
- 2 2-way Receiver Multicoupler Unit
- 3 Transceiver Baseband Unit
- 4 Base Operation and Interface Unit
- 5 Transmission Unit
- 6 Wideband Combiner Unit
- 7 Dual Duplex Unit
- 8 DC/DC Power Supply Unit
- 9 6-way Receiver Multicoupler Unit
- 10 Remote Tune Combiner
- 11 AC/DC Power Supply Unit



UltraSite Midi Indoor BTS

99440361

ULTRASITE BTS with IBBU



UltraSite BTS with IBBU

KEY:

- 1 Transceiver RF Unit
- 2 2-way Receiver Multicoupler Unit
- 3 Transceiver Baseband Unit
- 4 Base Operation and Interface Unit
- 5 Transmission Unit
- 6 Dual Duplex Unit
- 7 DC/DC Power Supply Unit
- 8 Rectifier
- 9 Battery Unit for IBBU
- 10 Distribution Unit for IBBU
- 11 Cabinet Control Unit

ULTRASITE UNITS DESIGNATION

Power Supply Units

- DC (0-3)
- AC (0-2)

TRX Baseband Units

- GSM (0-6)
- EDGE GSM (0-6)

TRX RF Units

- GSM (0-12)
- EDGE GSM (0-12)
- Booster (0-6)

Receive Multicoupler Units

- 2-way (0-6)
- 6-way (0-2)

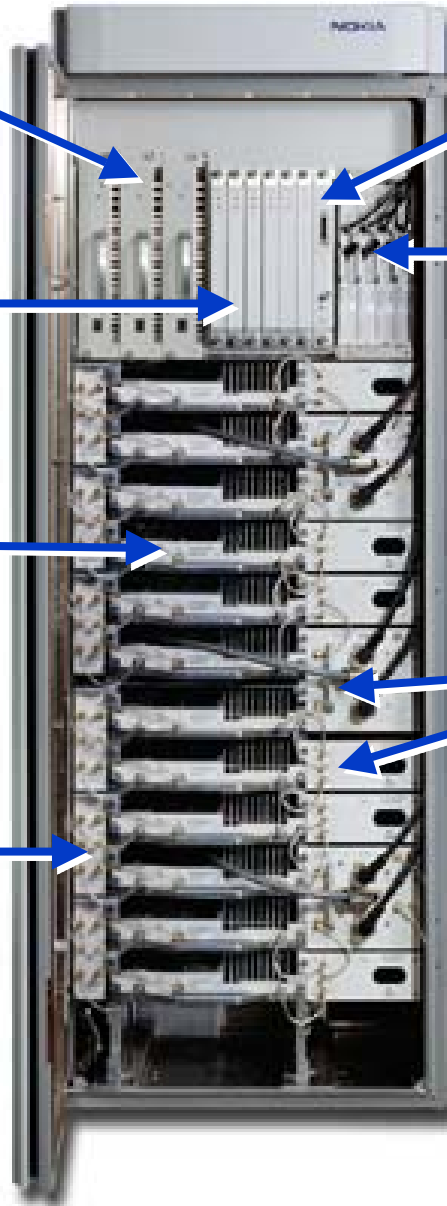
Base Operations and Interface Unit (1)

Transmission Units (1-4)

- FC E1/T1
- FXC E1
- FXC E1/T1
- FXC RRI

Combiners & Duplex Filters

- Dual Duplex Unit (0-6)
- Wide Band Combiner (0-9)
- Remote Tune Combiner (0-2)



INTEGRATED BATTERY BACKUP

BTS parts

Optional IBBU for

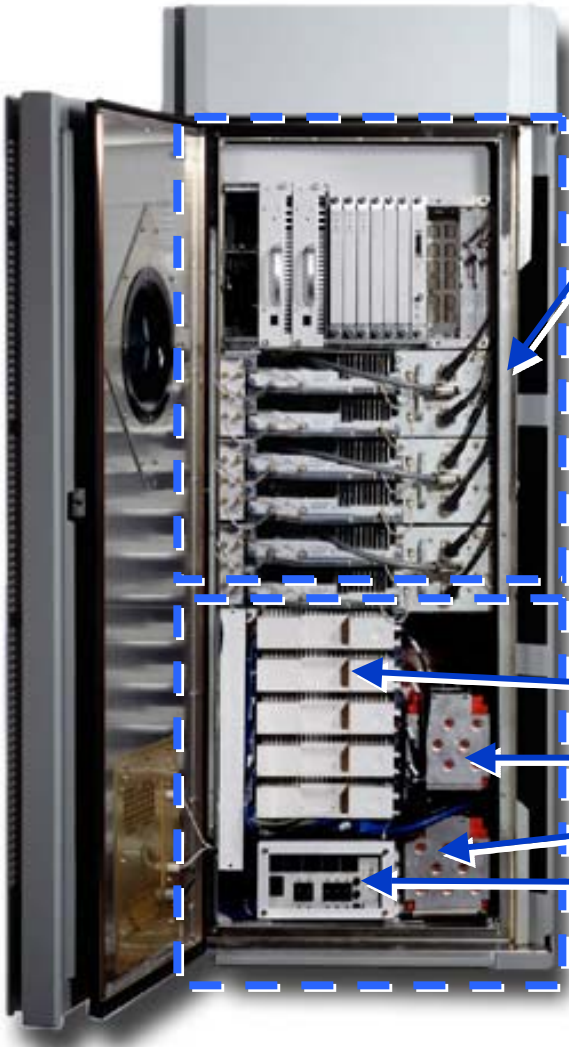
- brief power shortages
- reduced site space
- fast roll-out

Support for small configurations

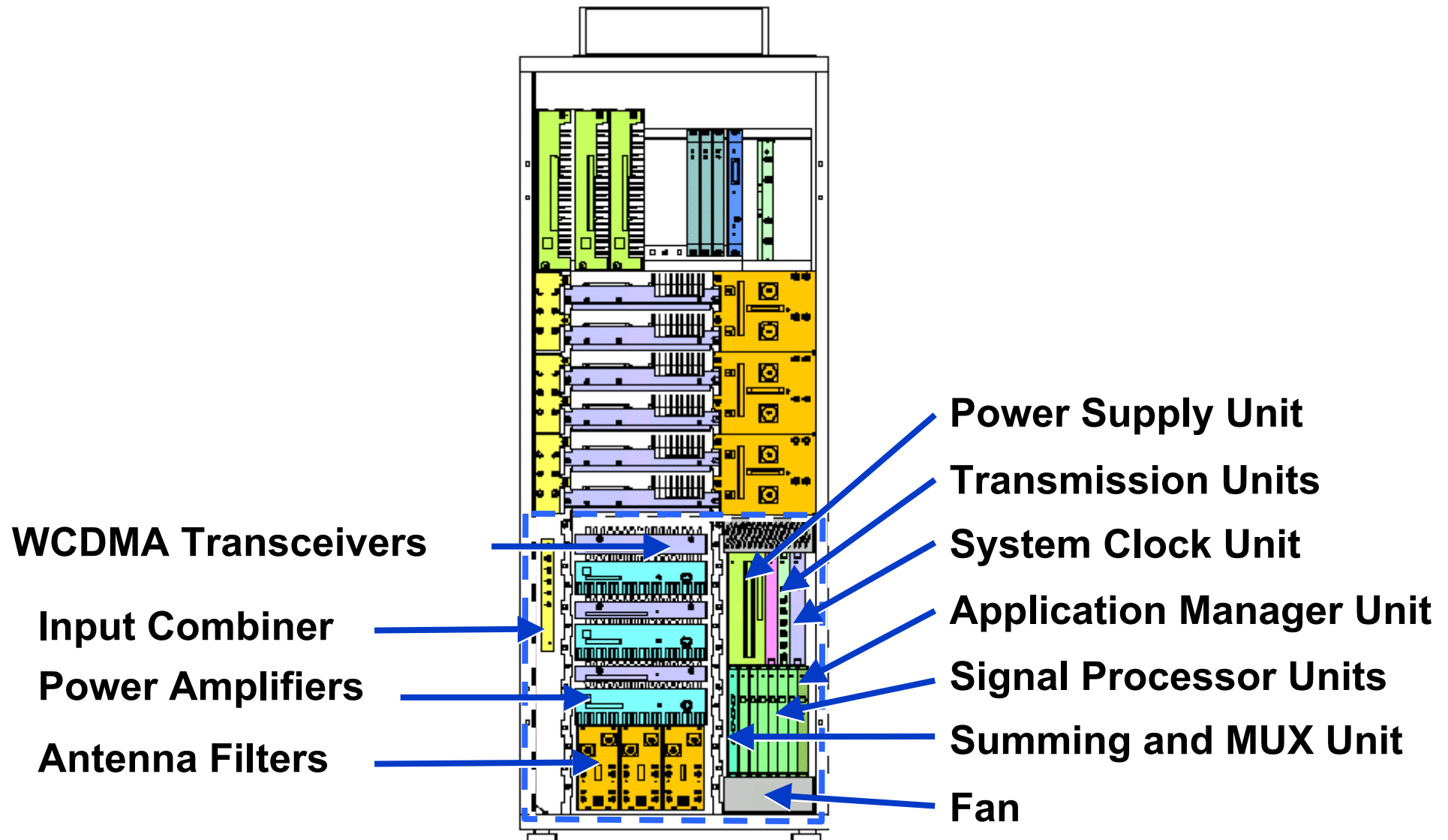
- up to 18 TRXs in 2 BTS cabinets

IBBU parts

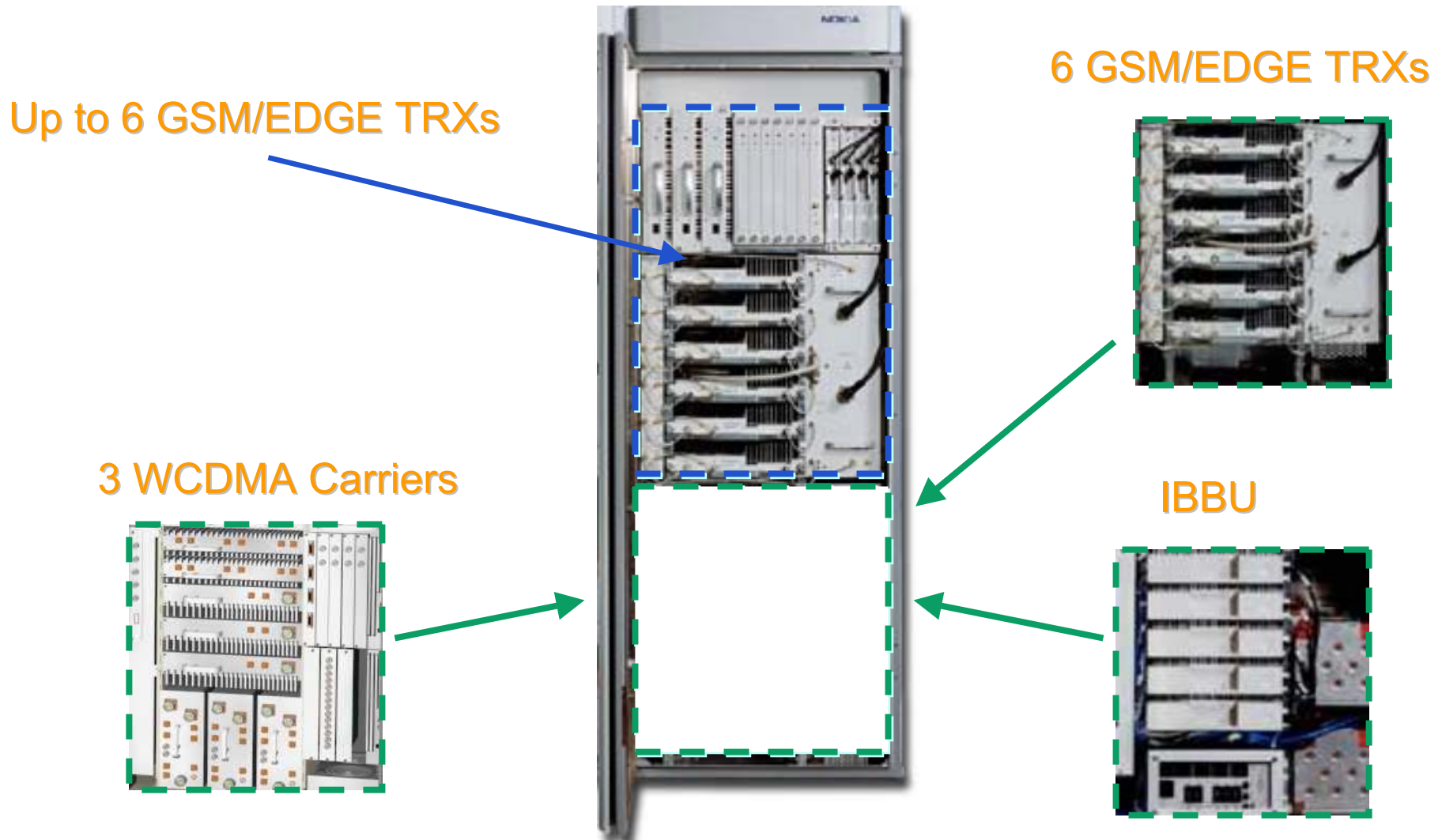
- Rectifiers (1-5)
- Battery string (0-1)
- Control Unit (1)
- AC/DC unit (1)



GSM/EDGE/WCDMA CABINET



POSSIBLE COMBINATION



This flexibility is available in both Indoor and Outdoor cabinets

TRXs PER CABINET

Max # of TRX / cabinet	BTS	BTS with WCDMA or IBBU
Basic	12	6
Basic with 4-way diversity	6	3

SECTORS

Configuration	Max # of sectors / cabinet	BTS with WCDMA or IBBU
Combiner By-pass	6	3
WBC 2:1	3	1
WBC 4:1	1	1
RTC	2	1

Additional maximum configurations

1-12 TRX/cell (with BSS10 even higher)
1-108 TRX/site

RF PERFORMANCE IN EDGE 900 AND 1800 BTS

Nominal TX output power at antenna connector

	Output power		Max # of TRXs Per Antenna	Frequency hopping
	dBm	W		
Combiner by-pass	44.5	28.2	1	RF & BB
WBC 2:1	41.0	12.6	2	RF & BB
WBC 4:1	37.5	5.6	4	RF & BB
RTC	42.0	15.8	6	BB

RF PERFORMANCE IN EDGE 900 AND 1800 BTS

Receiver sensitivity (static channel)

	GSM 900	GSM 1800
Single branch w/o MHA	-110.5 dBm	-111.0 dBm
Single branch with MHA	-111.0 dBm	-112.0 dBm

- Support
 - 2-way diversity
 - 4-way diversity (available later)
- Above parameters are with sub-band receiver filters

NOTE! Full-band and sub-band filters are available in GSM 1800

CONFIGURATIONS

- By-pass Combining
- 2-way Wideband Combining
- 4-way Wideband Combining
- Remote Tune Combining

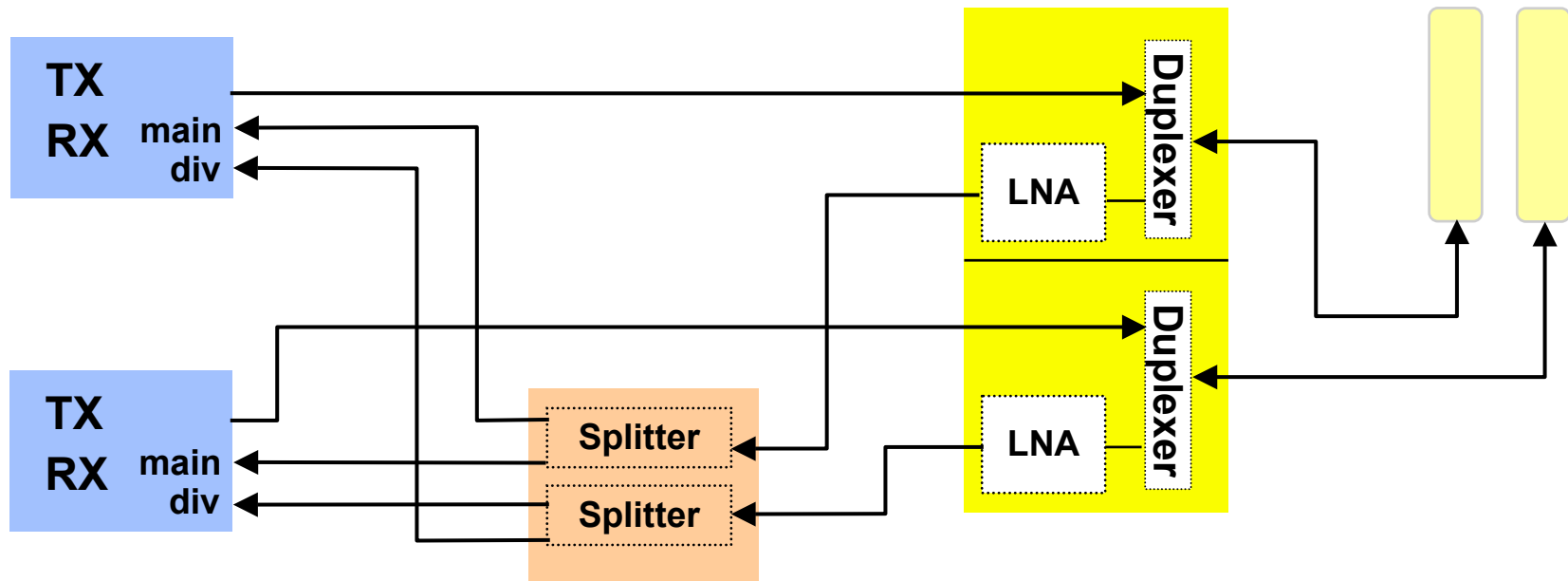
COMBINING BY-PASS

TRX RF Units

Receive
Multicoupler

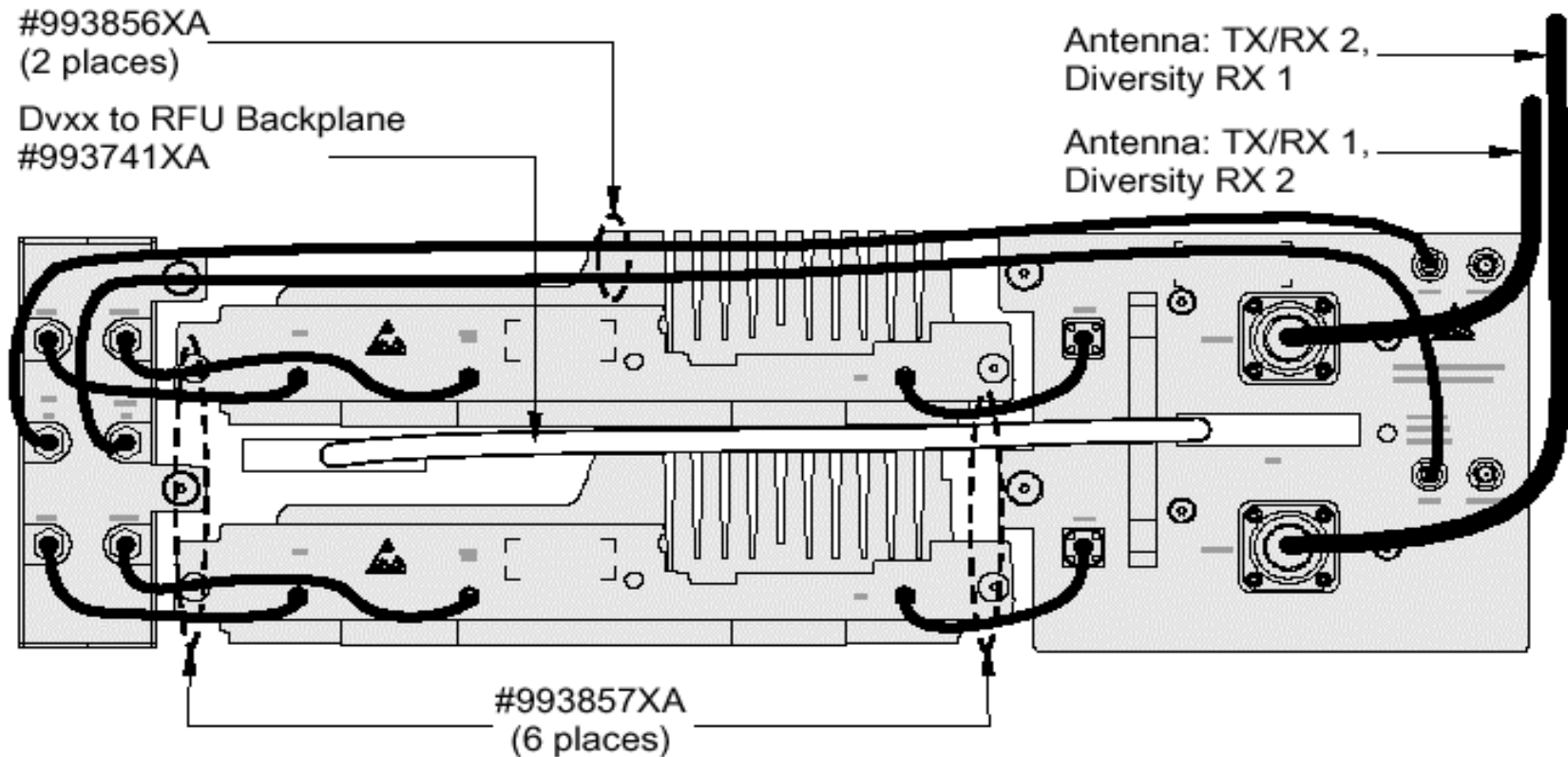
Dual Duplex
Unit

Antennas



Example: 2 TRX/Cell

COMBINING BY-PASS CONFIGURATION CABLING



NOTE: Antenna cables may be: 993744XA,
993937XA or 993936XA, depending on Dvxx location

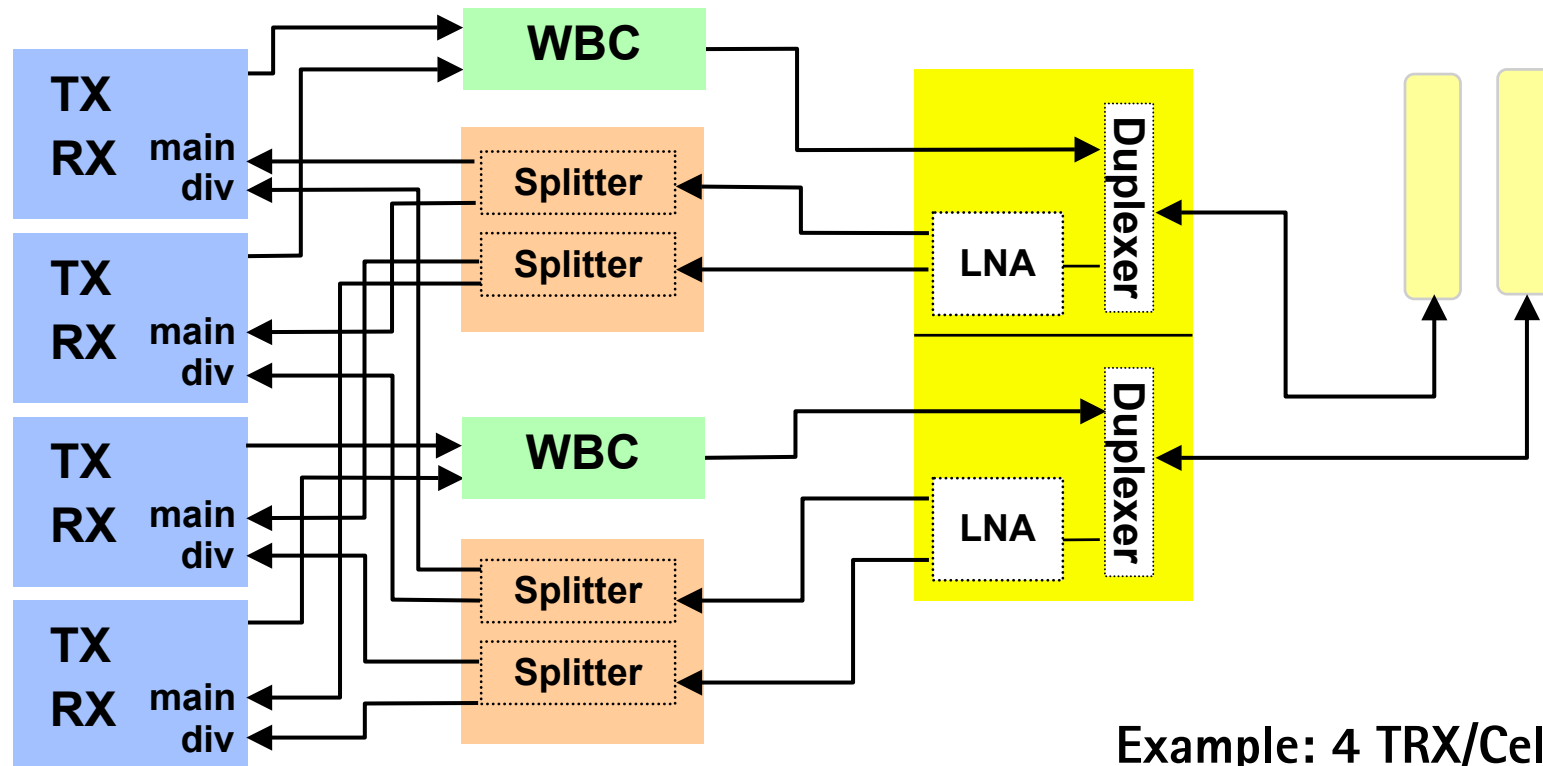
2-WAY Wideband Combining

Receive Multicouplers
& Wideband Combiners

Antennas

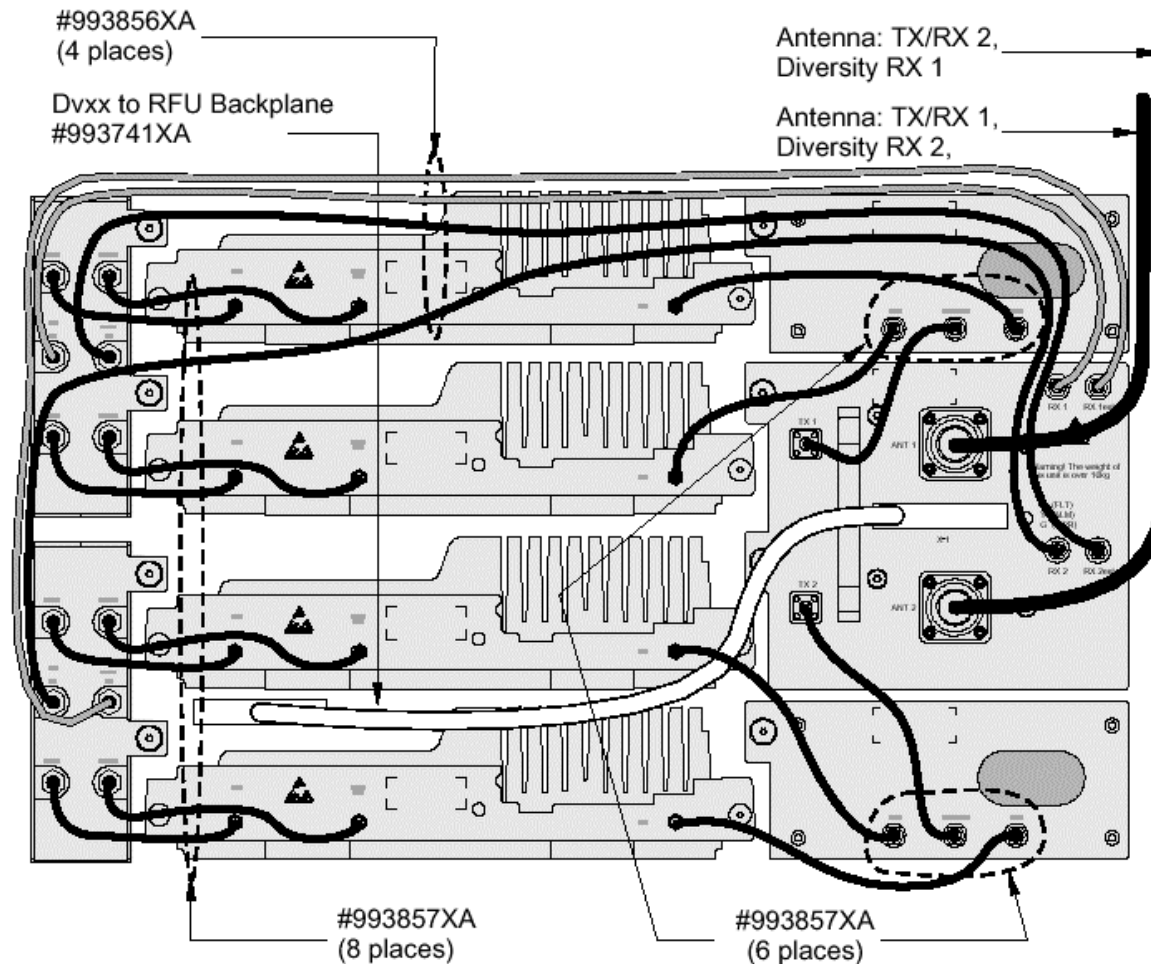
TRX RF Units

Dual Duplex
Unit



Example: 4 TRX/Cell

2-WAY WBC CONFIGURATION CABLING



NOTE: Antenna cables may be: 993744XA, 993937XA or 993936XA, depending on Dvxx location

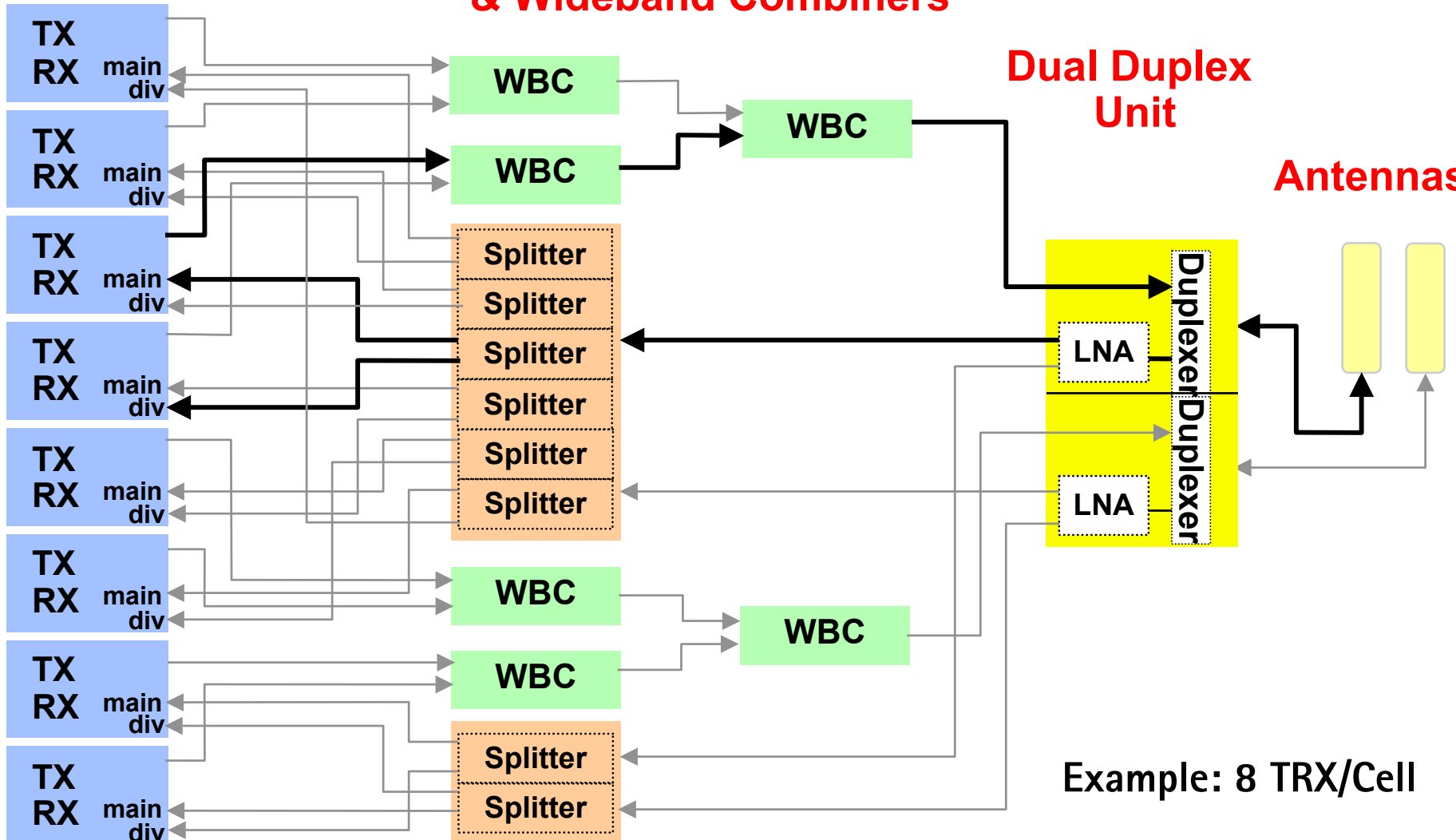
4-WAY Wideband Combining

TRX RF
Units

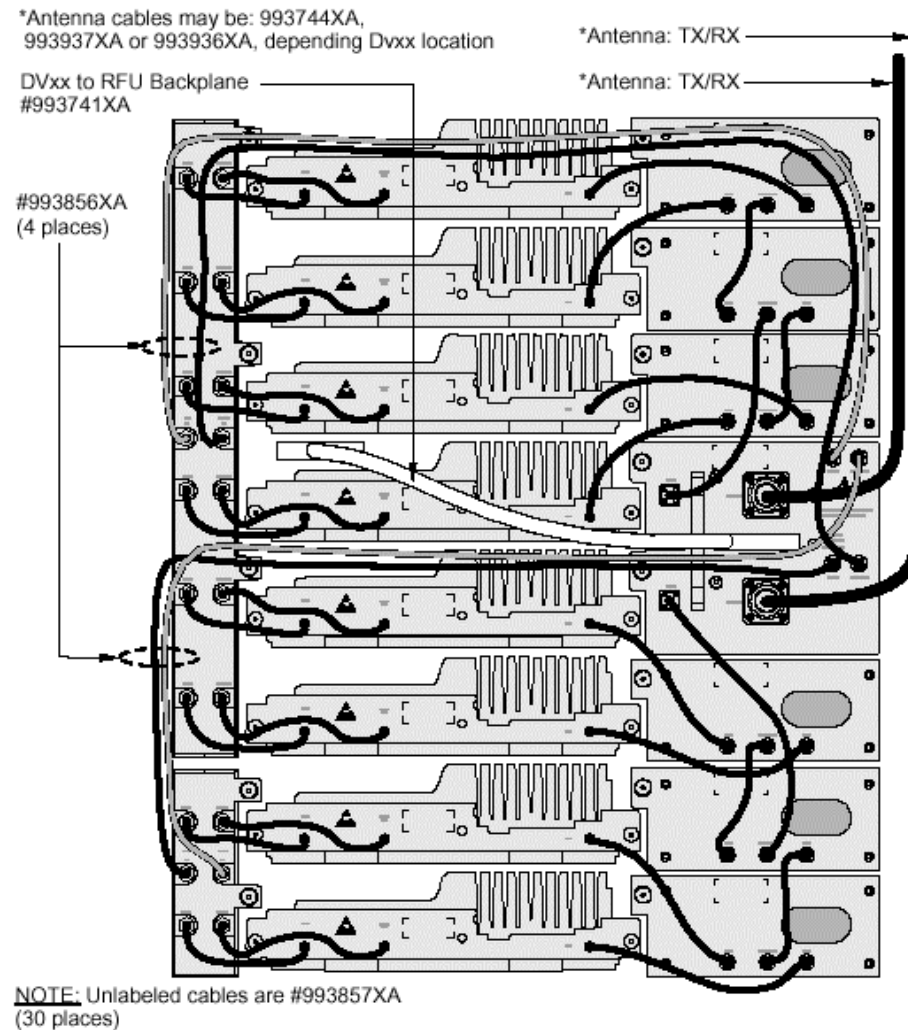
Receive Multicouplers
& Wideband Combiners

Dual Duplex
Unit

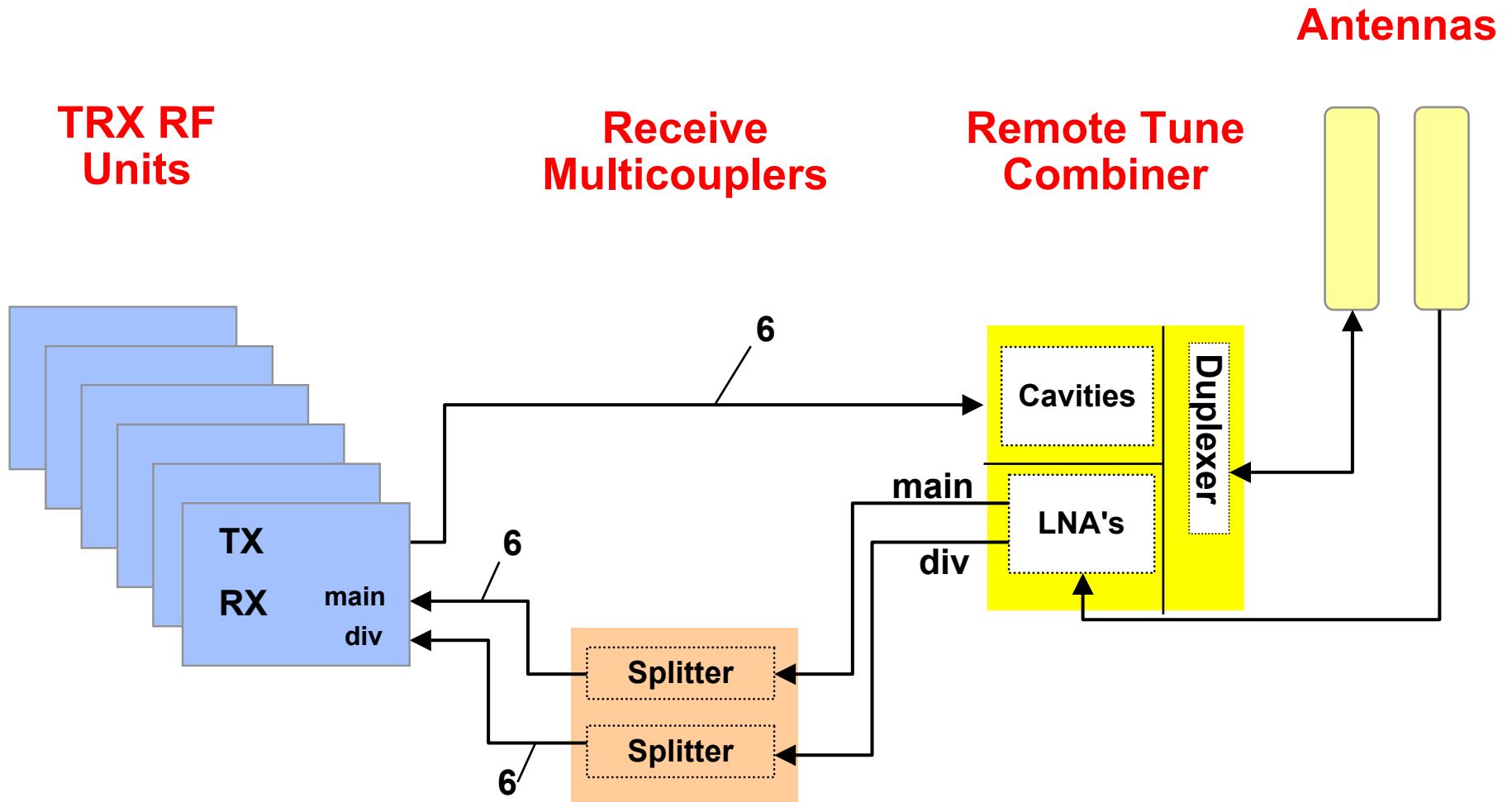
Antennas



4-WAY WBC CONFIGURATION CABLING



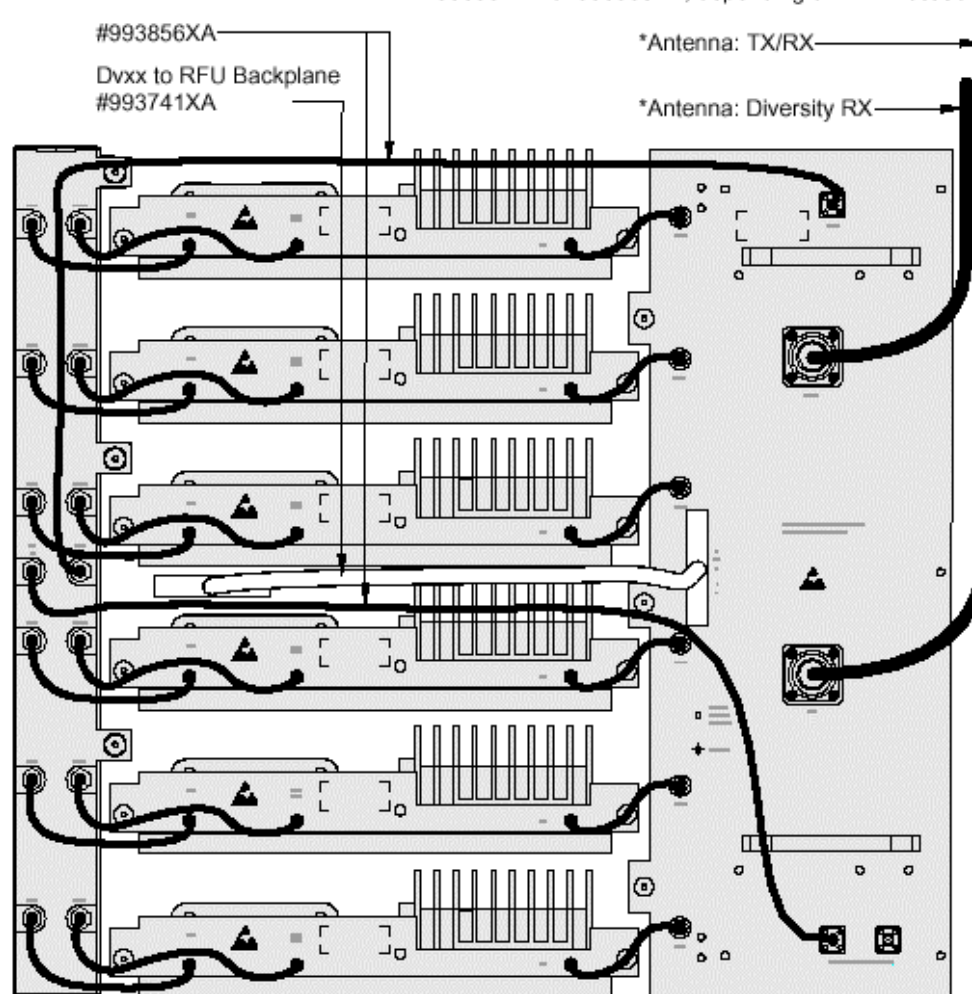
REMOTE TUNE COMBINING



Example: 6 TRX/Cell

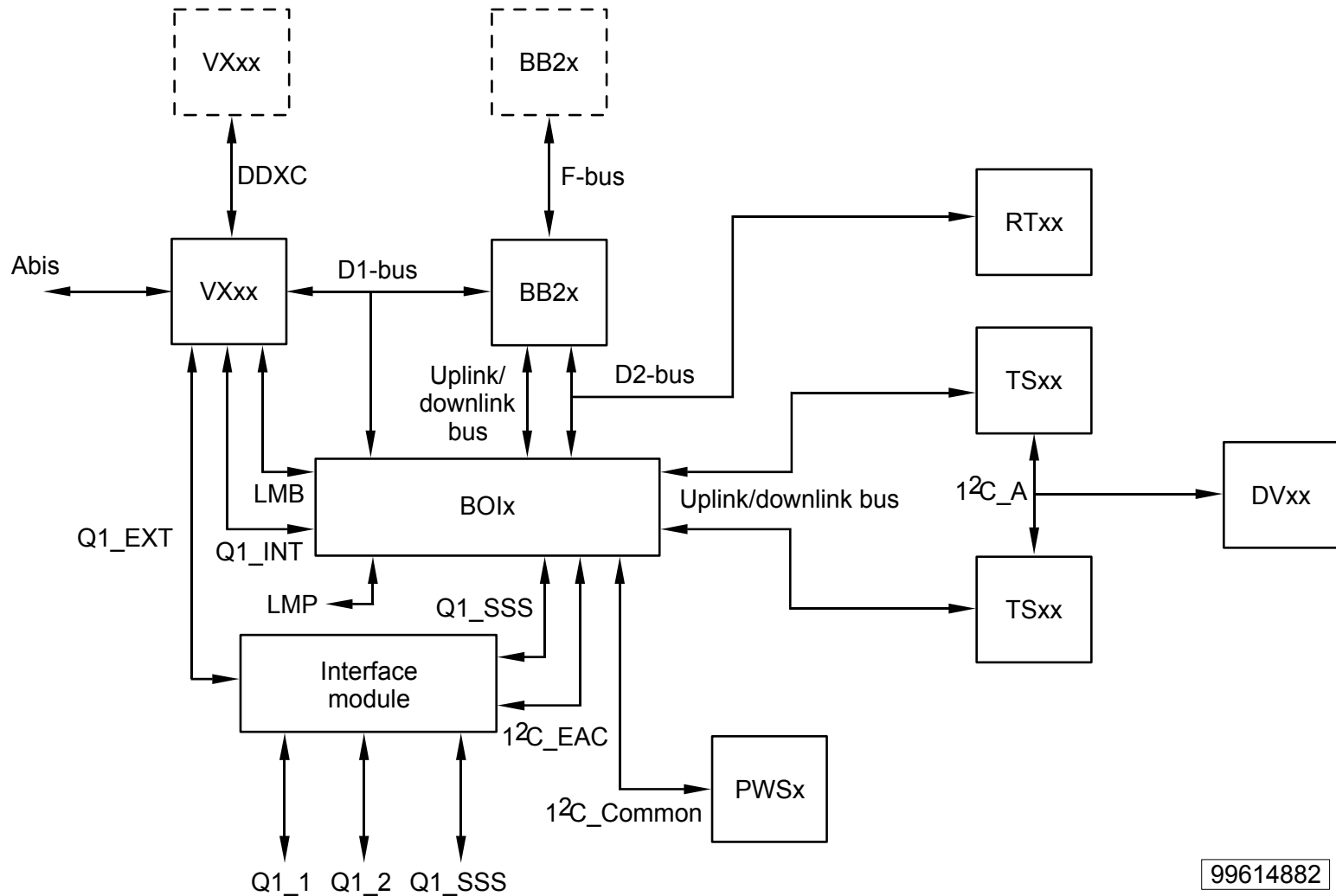
REMOTE TUNE COMBINER CONFIGURATION CABLING

*Antenna cables may be: 993744XA,
993937XA or 993936XA, depending on Dvxx location



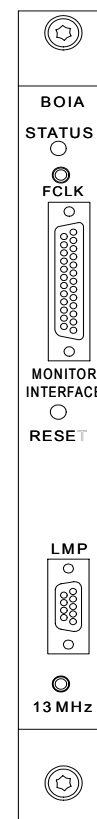
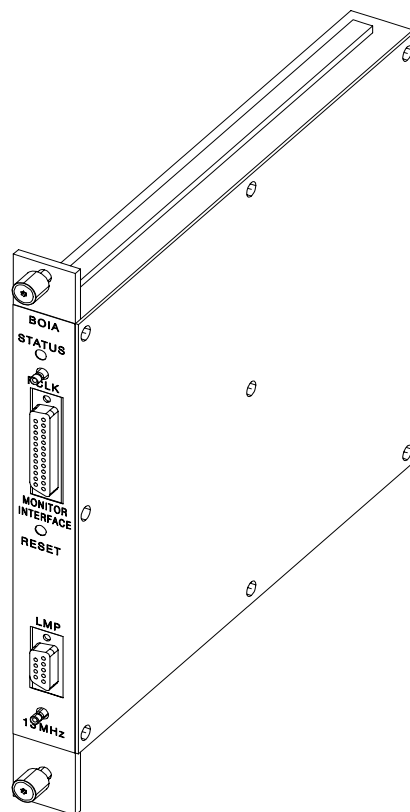
NOTE: Unlabeled cables are #993857XA
(18 places)

BTS INTERNAL FUNCTION



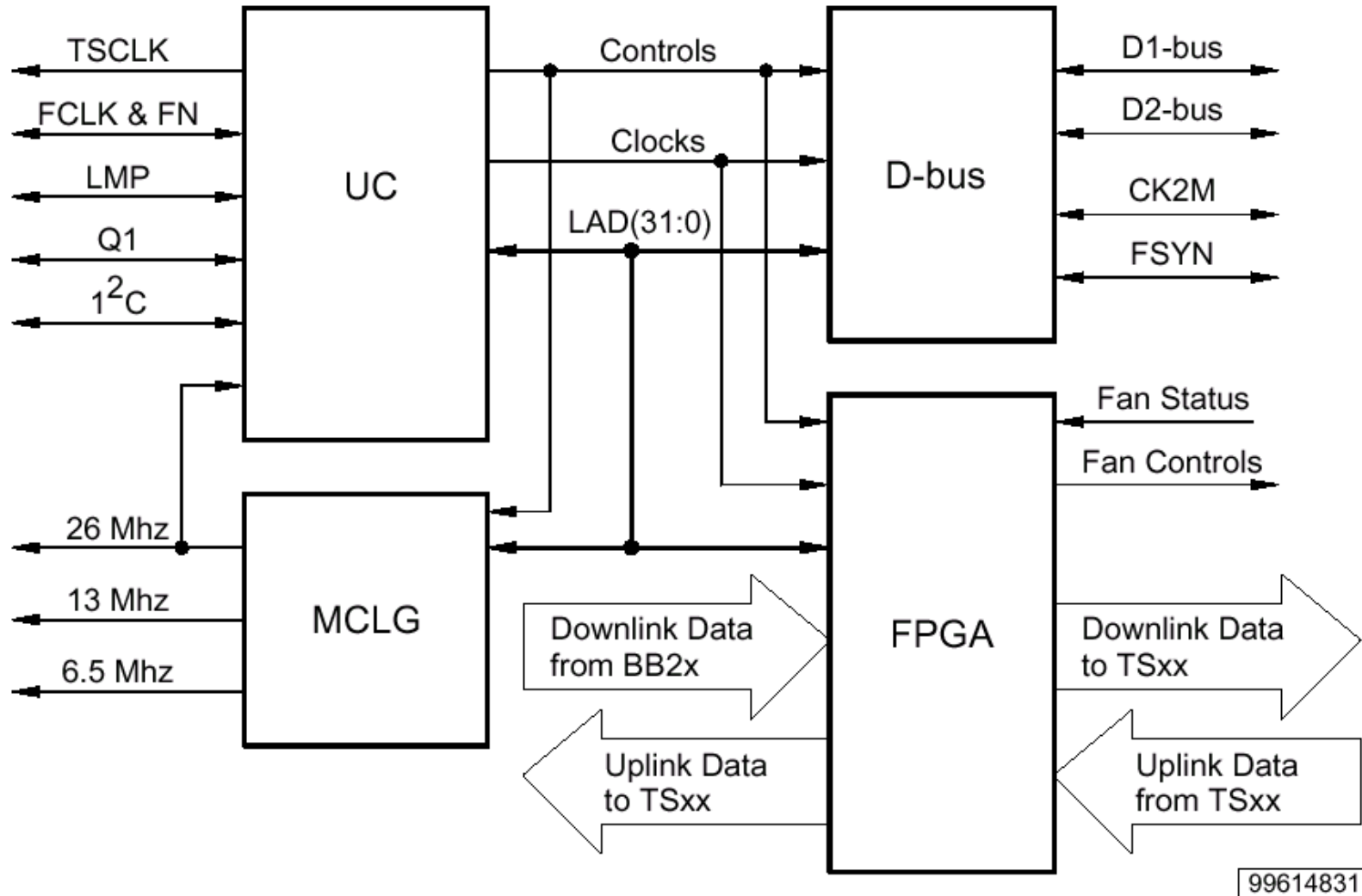
99614882

BASE OPERATION AND INTERFACE UNIT



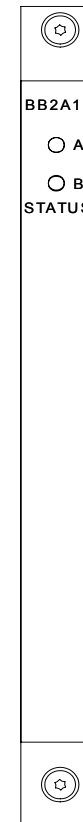
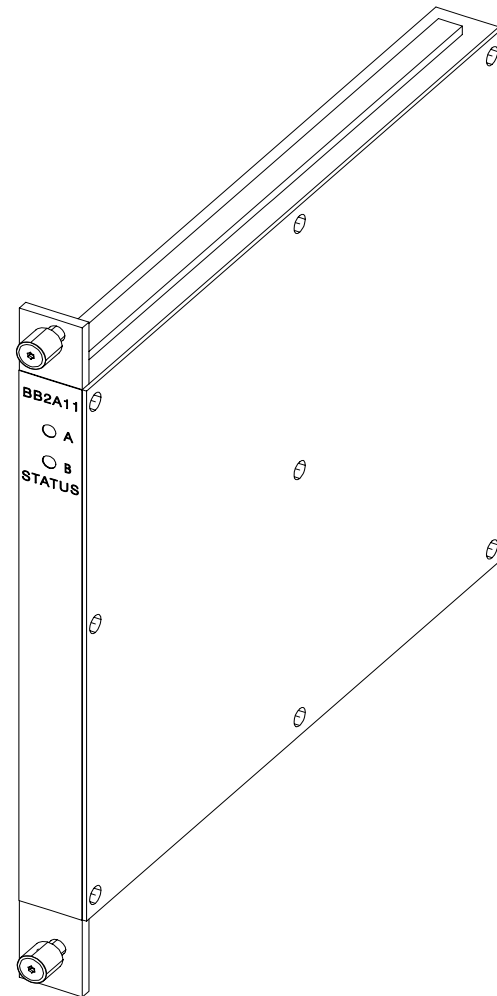
00129021

BOI - BLOCK DIAGRAM



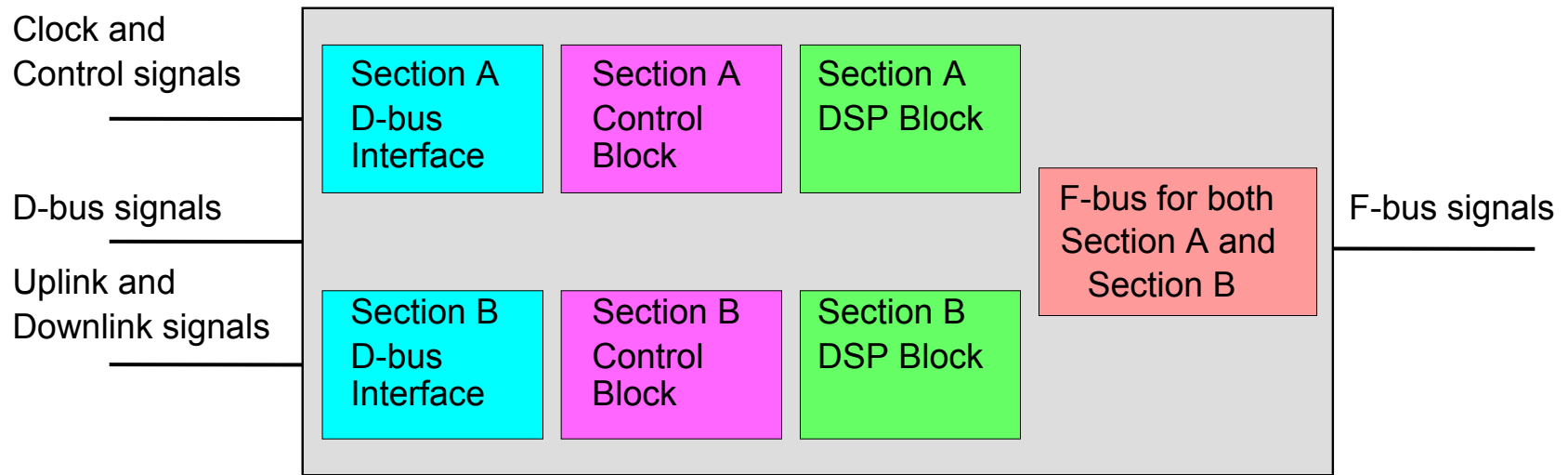
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DUAL BASEBAND UNIT



99584316

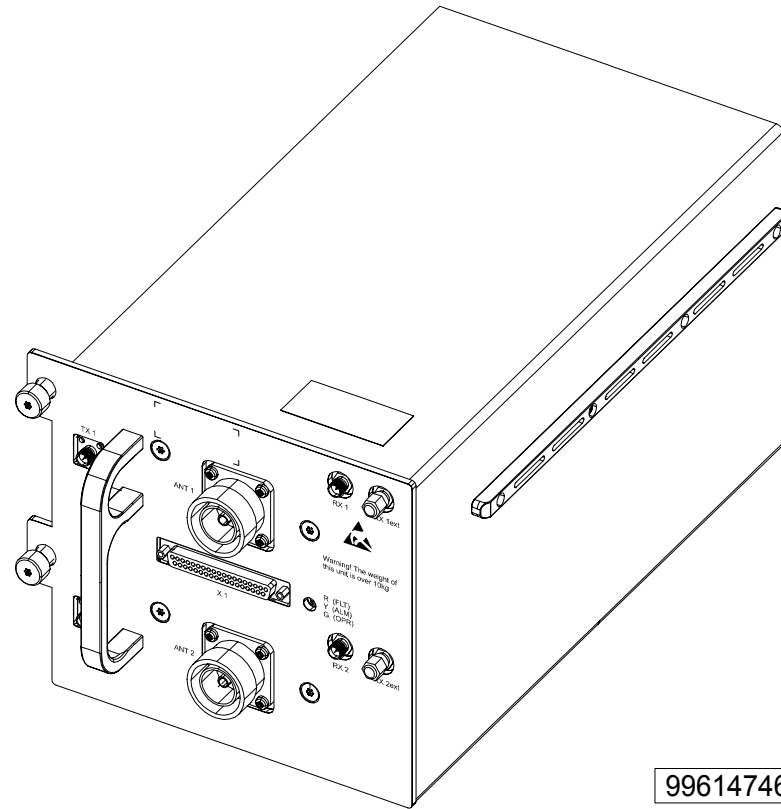
DUAL BASEBAND UNIT



99627445

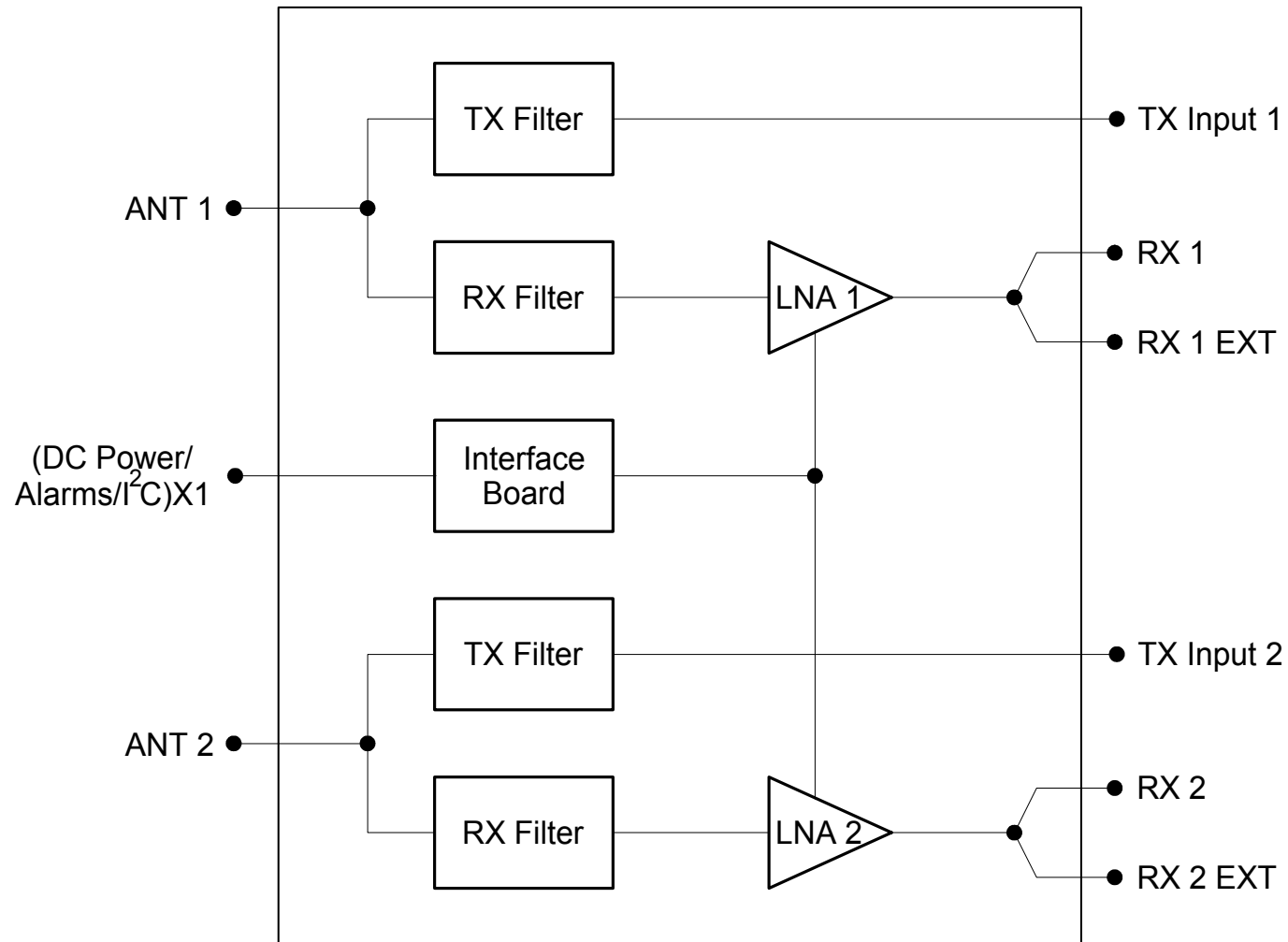
BASEBAND MODULE BLOCK DIAGRAM

DUAL DUPLEX UNIT



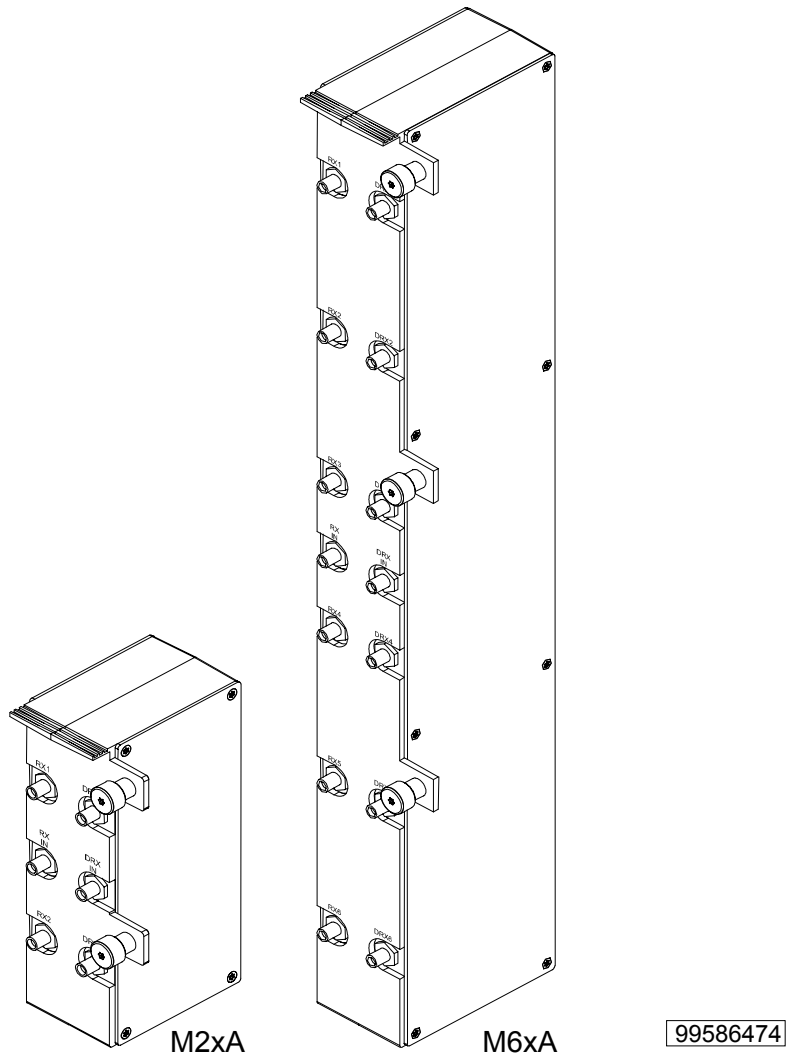
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DUAL DUPLEX UNIT – Block diagram

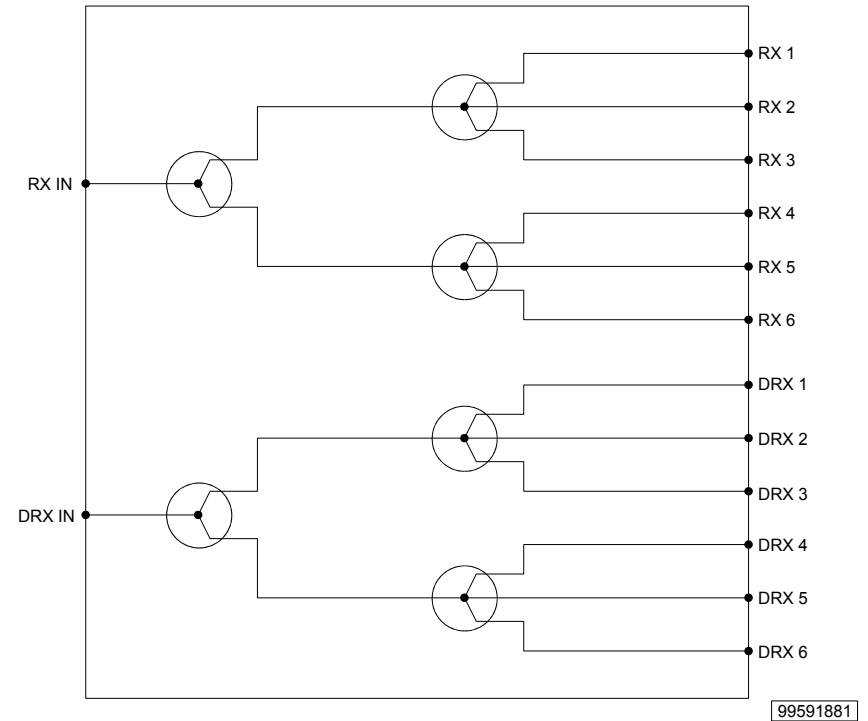
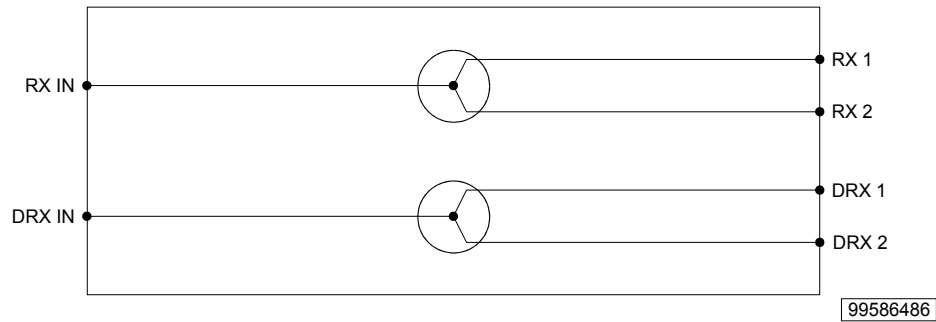


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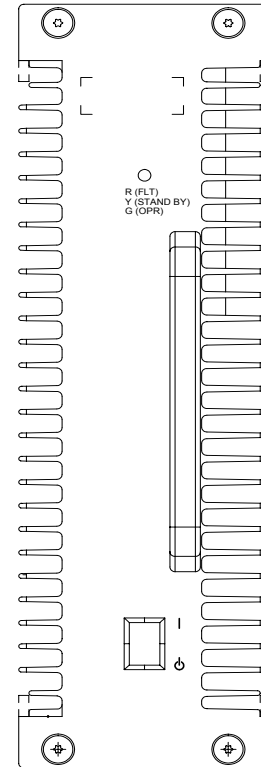
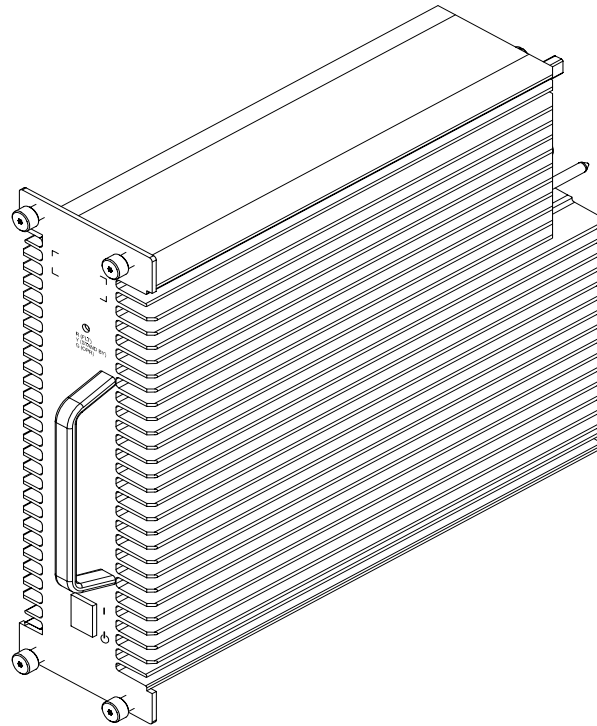
MULTICOUPLER



RMC - Block diagram

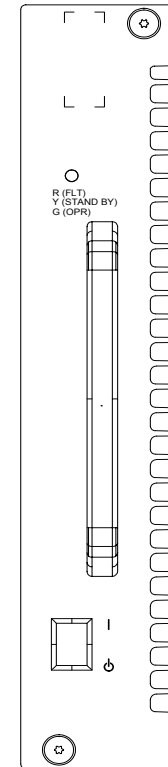
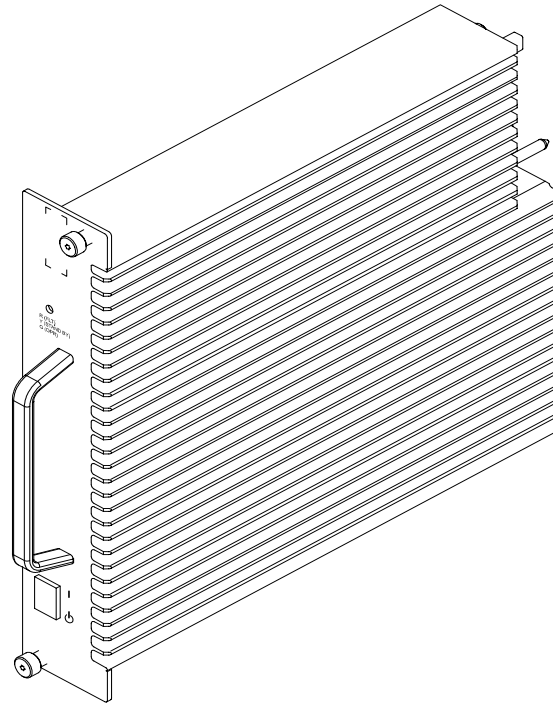


AC POWER SUPPLY UNIT



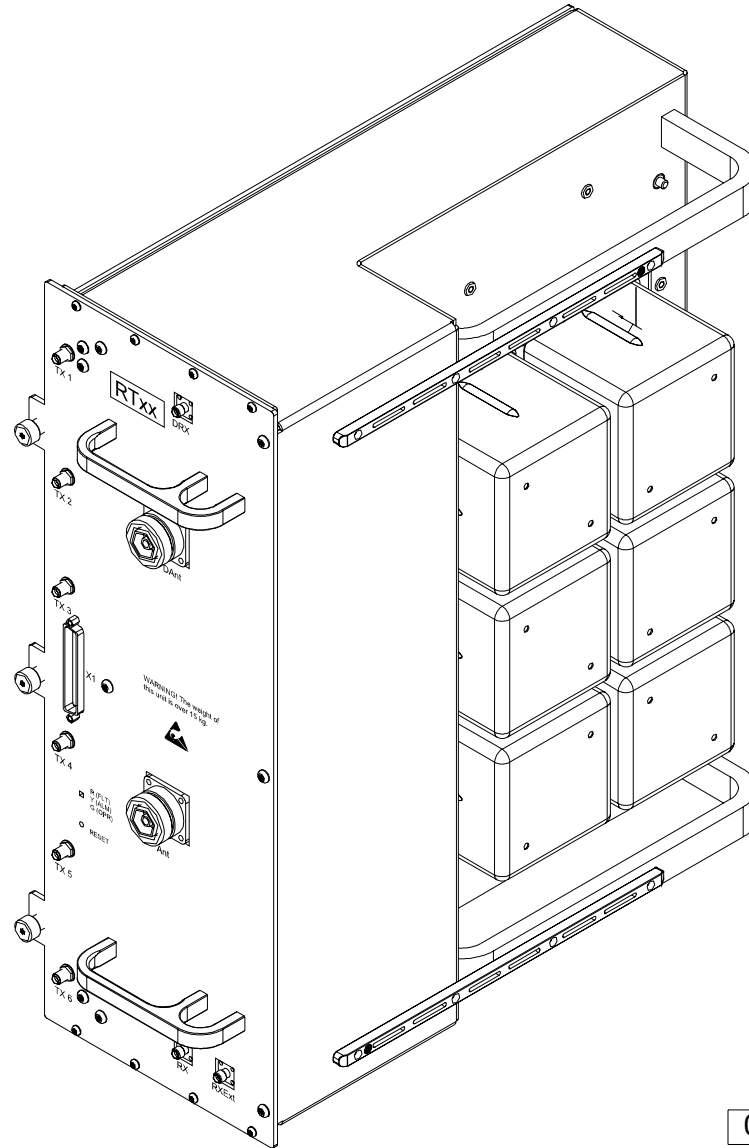
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DC POWER SUPPLY UNIT



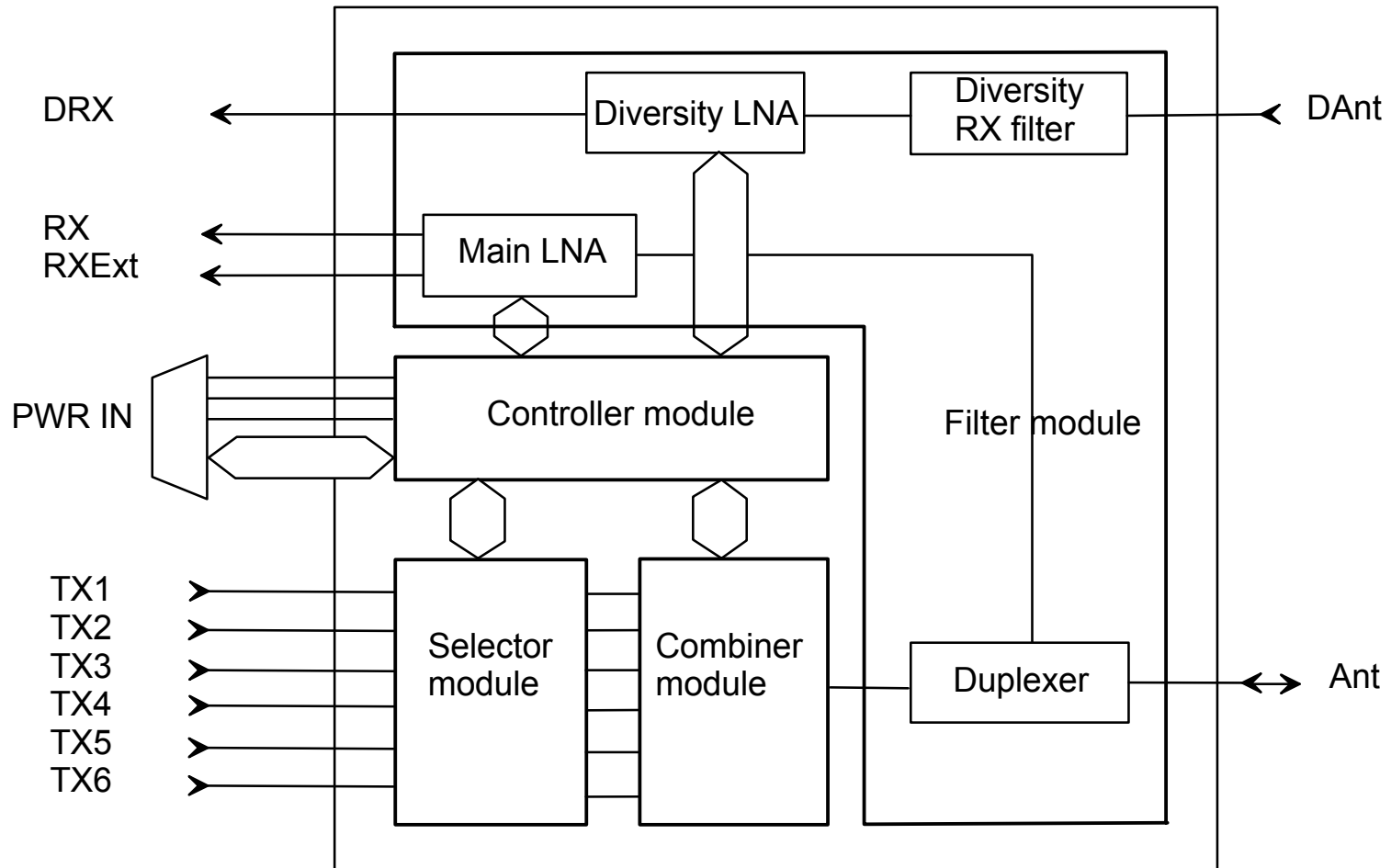
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REMOTE TUNE COMBINER



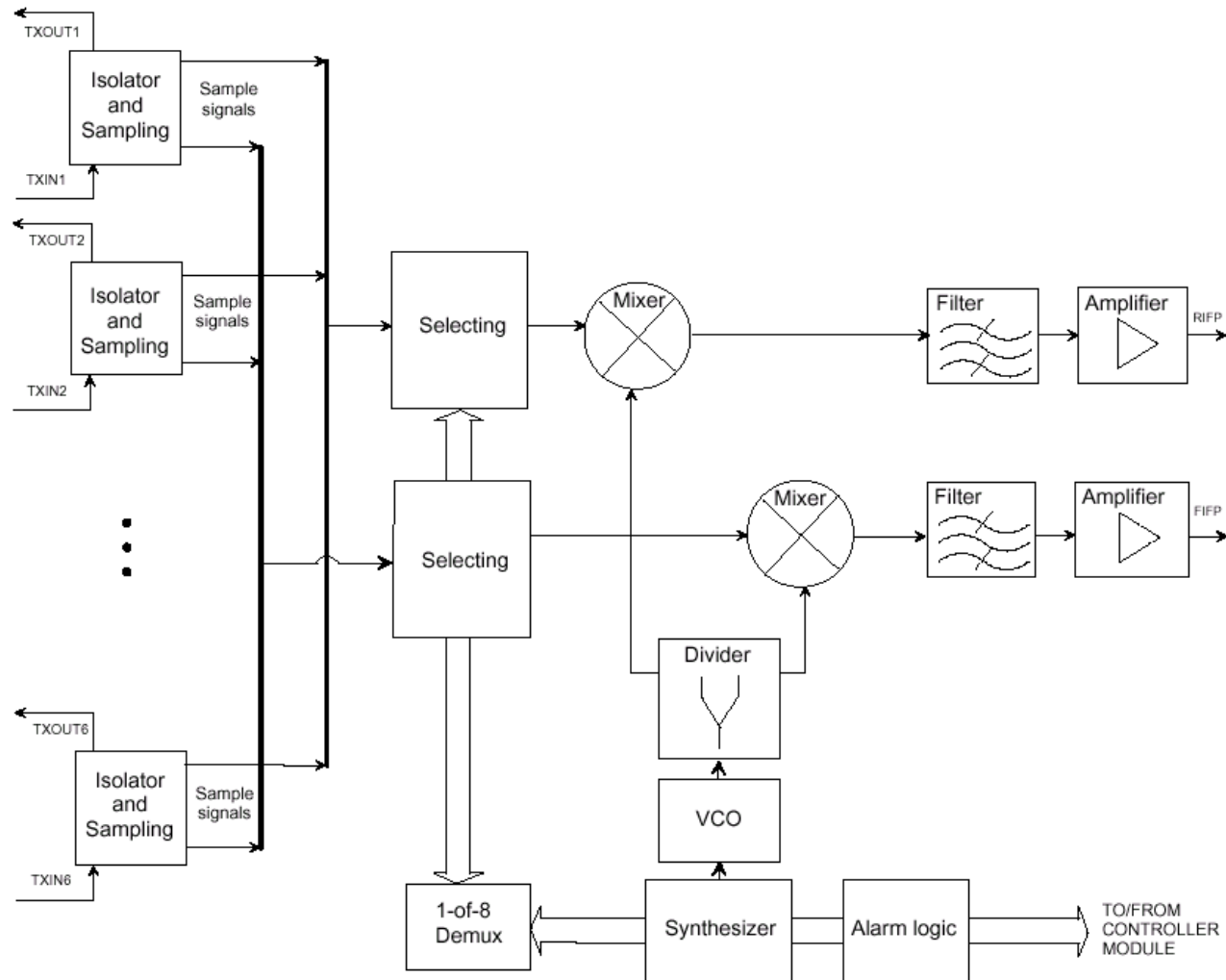
00217117

RTC - Main functional parts



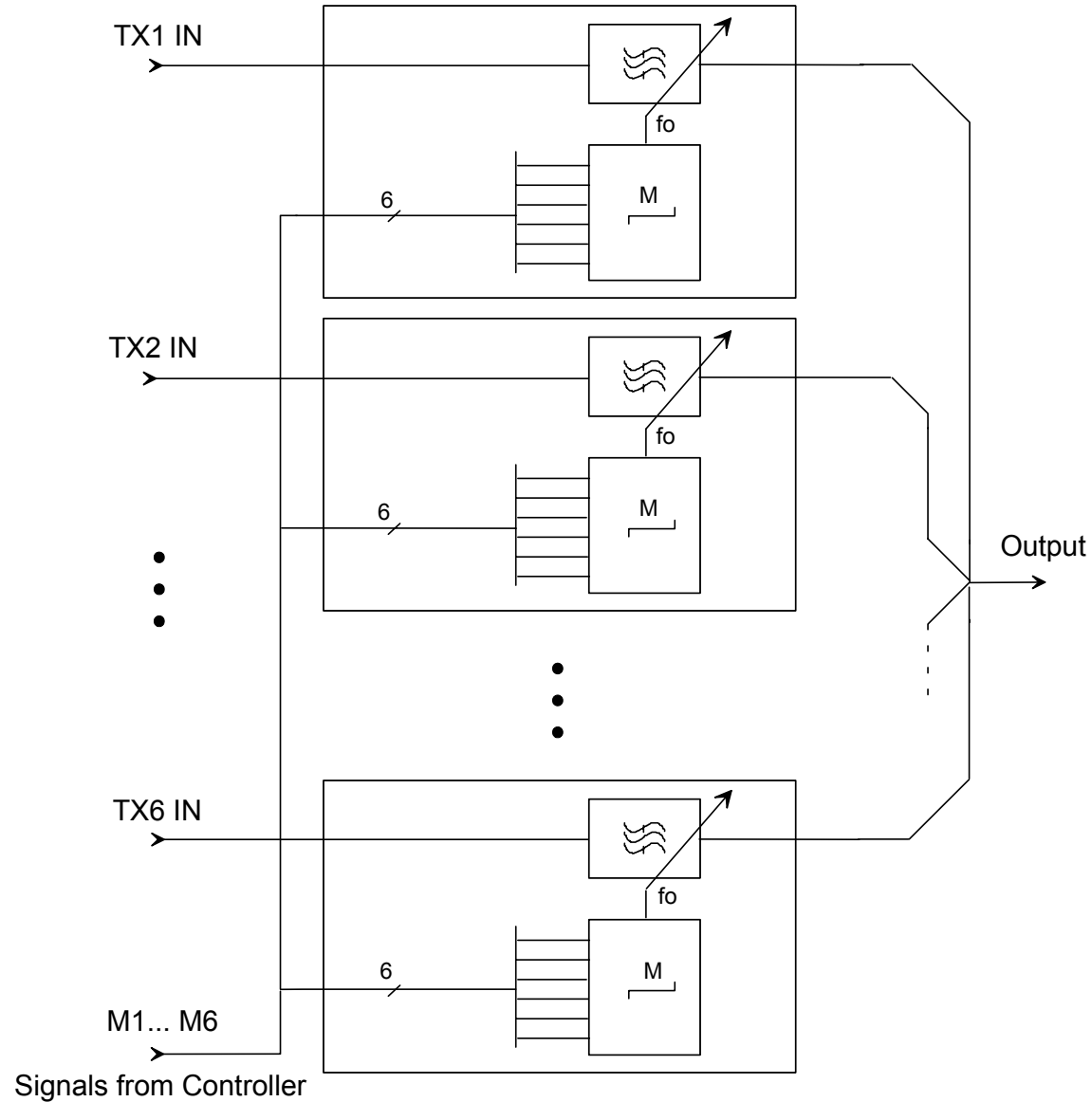
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RTC - Selector module



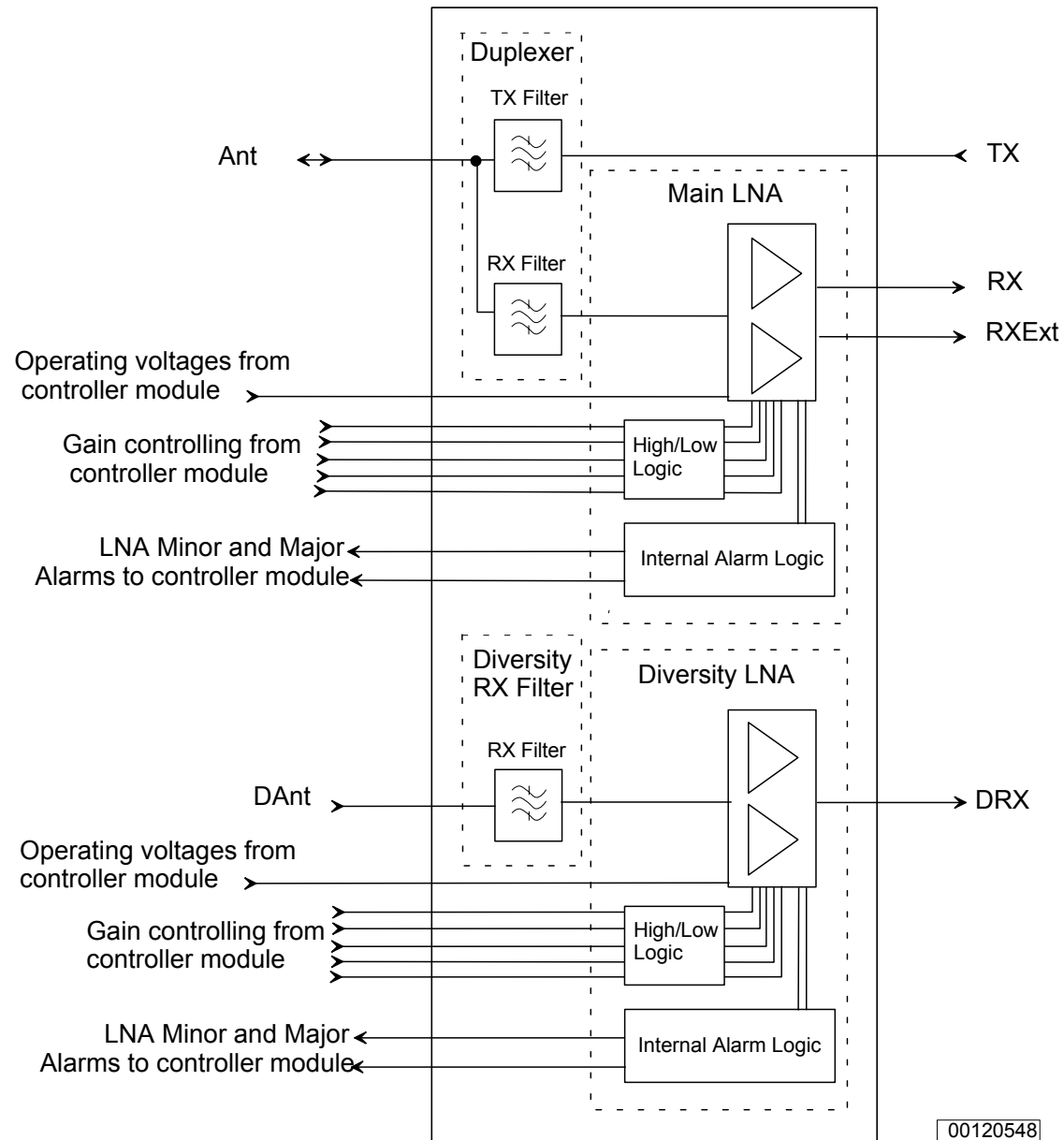
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RTC - Combiner module



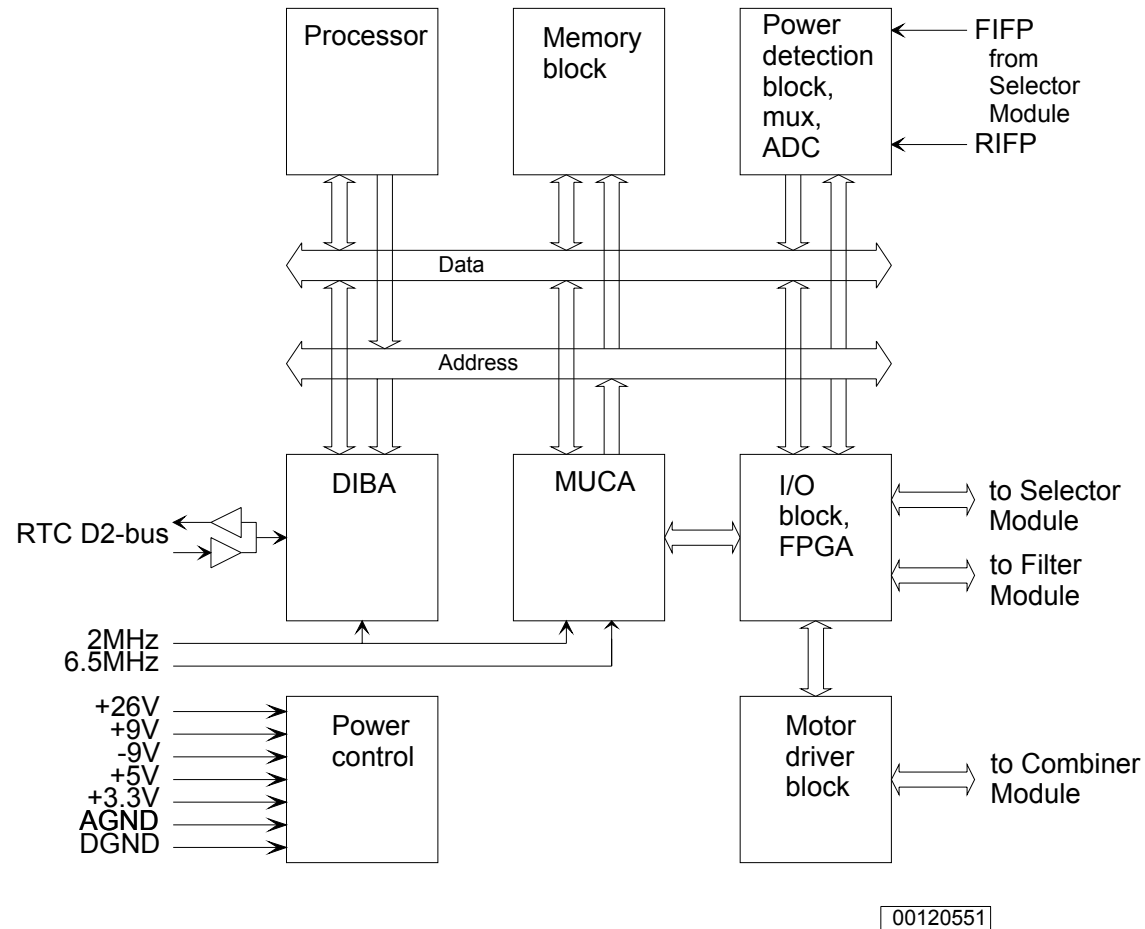
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RTC - Filter module

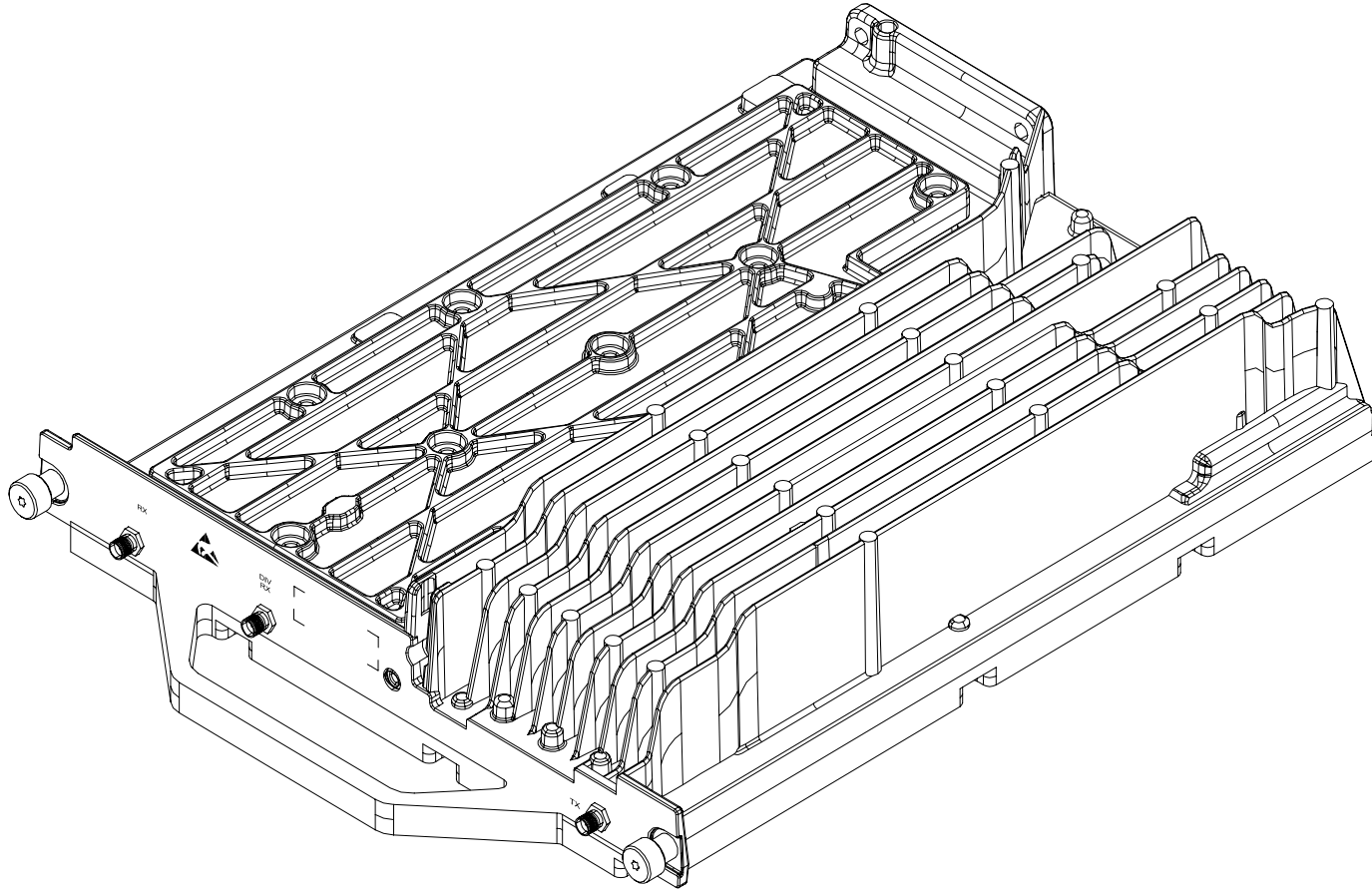


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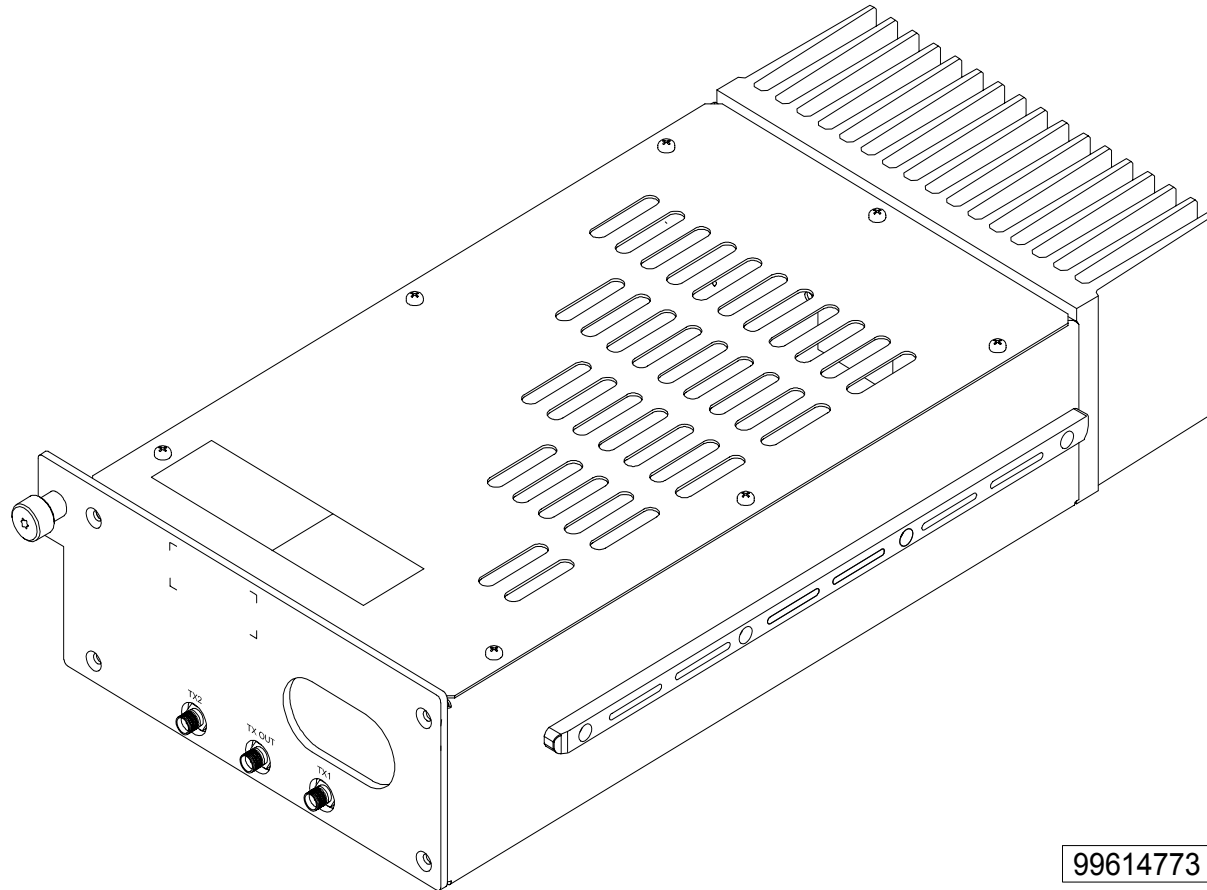
RTC - Controller module



TRANSCEIVER RF UNIT

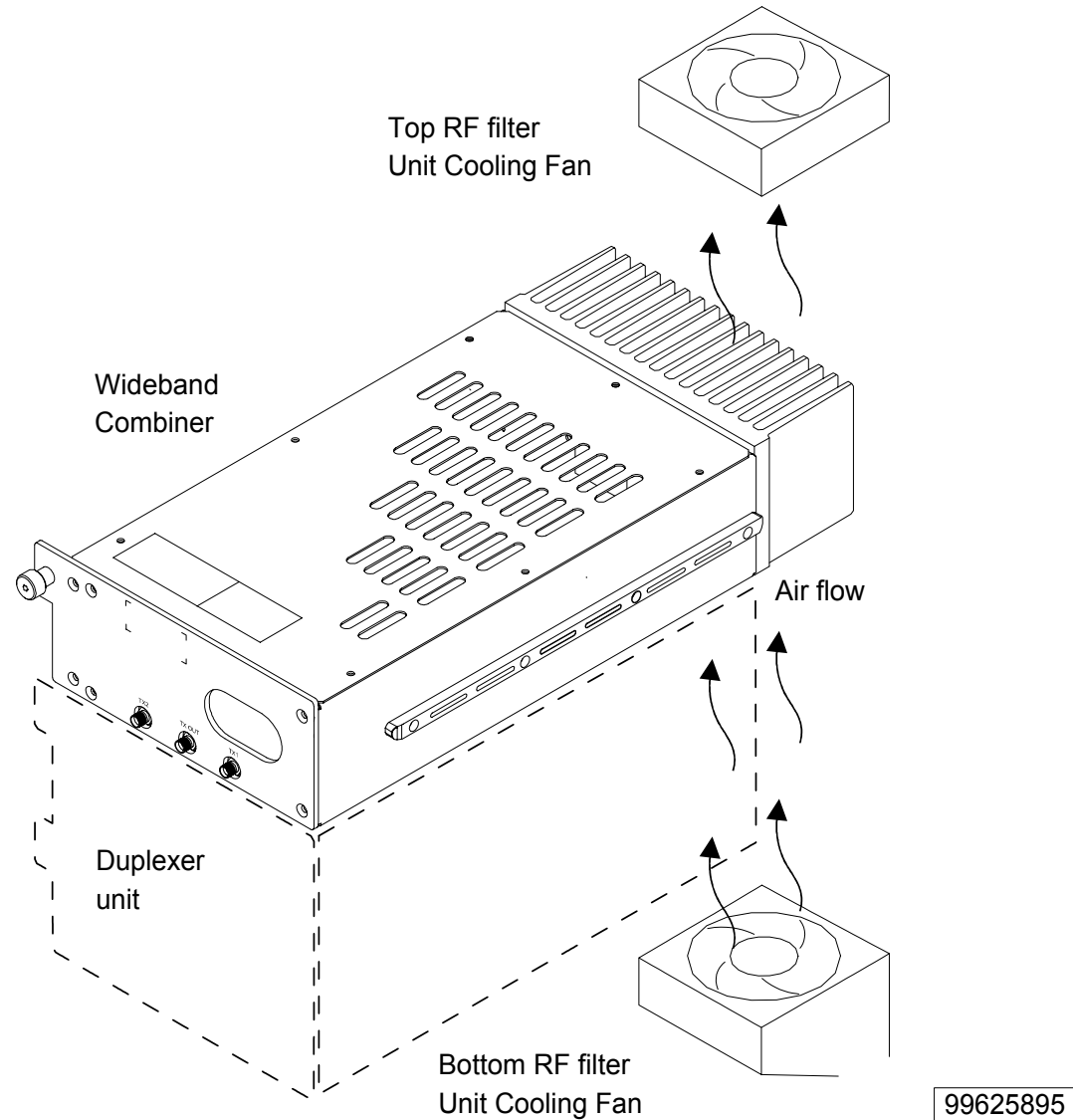


WIDEBAND COMBINER

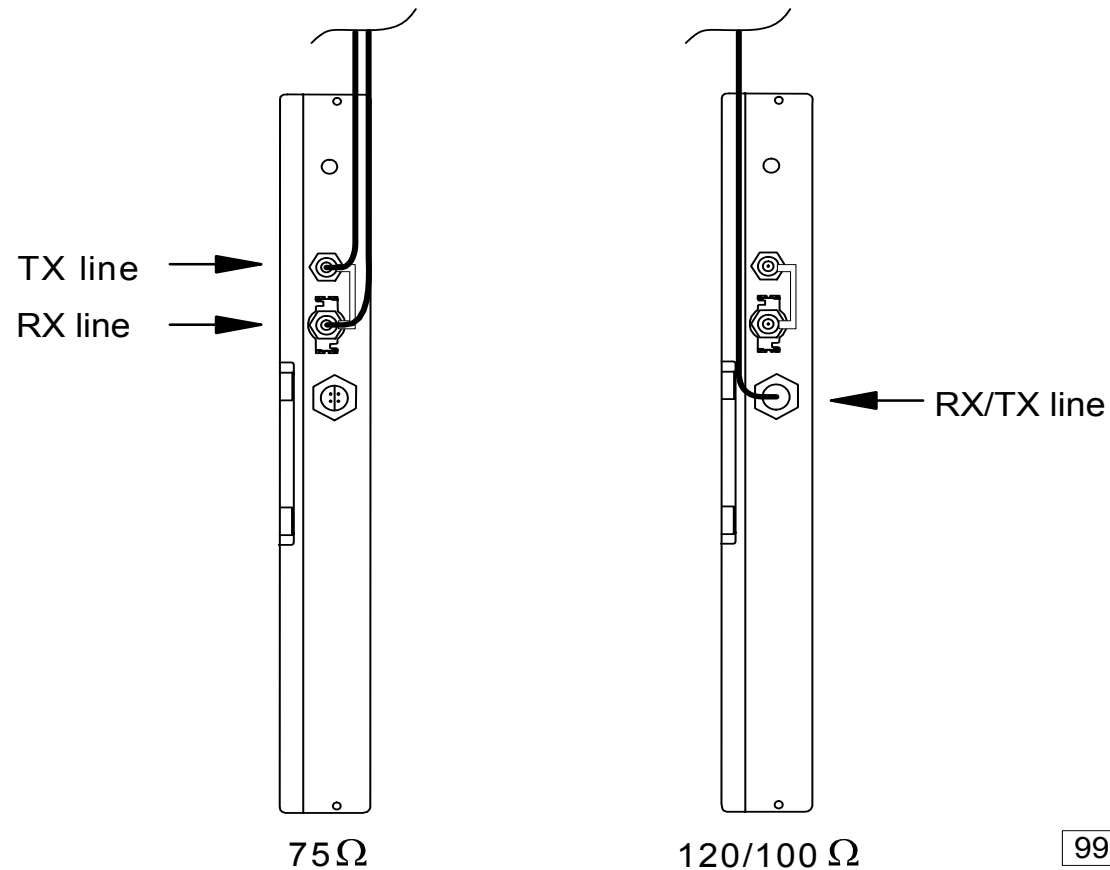


99614773

WCxx - Air flow

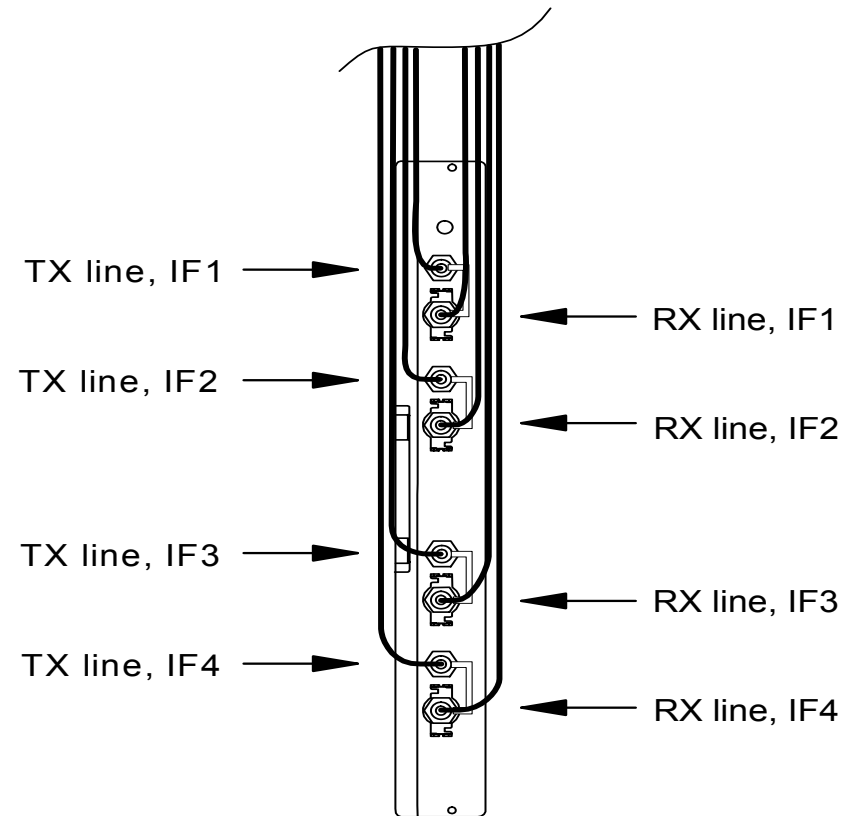


FC E1/T1 TRANSMISSION UNIT



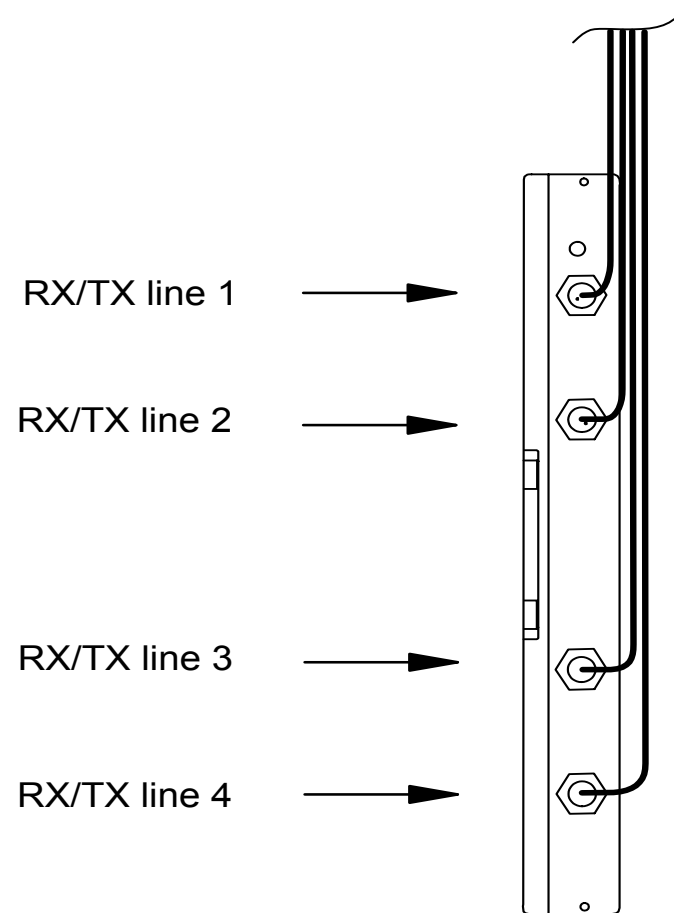
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FXC E1 TRANSMISSION UNIT



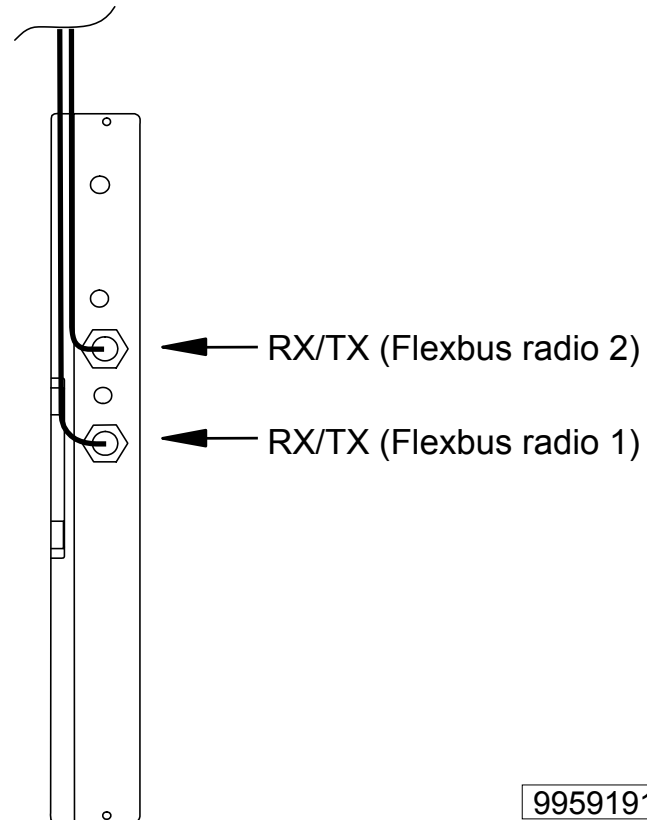
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FXC E1/T1 TRANSMISSION UNIT

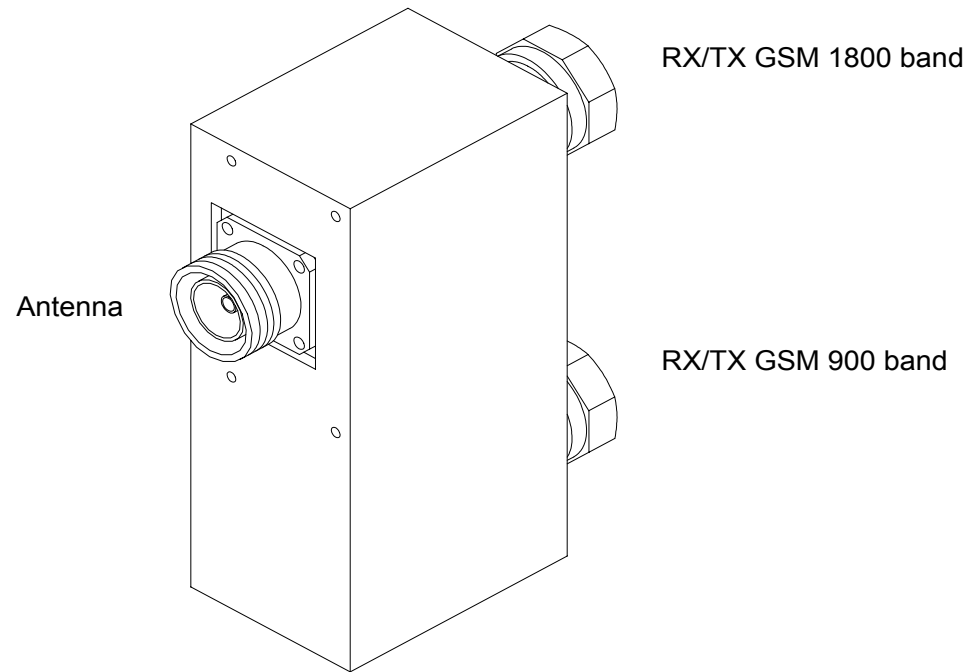


99591924

FXC RRI TRANSMISSION UNIT



DUALBAND DUPLEX UNIT



UltraSite/Talk BTS Comparison

Parameters/Features	UltraSite EDGE BTS	Talk Family BTS
Number of TRX per cabinet	12	6
Airconditioning	No	Yes
Masthead Amplifier Gain (GSM 1800)	33 dB	12 dB
Static RX Sensitivity, single branch (GSM 1800)	-111.0 dBm (with MHA)	-106.0 dBm (with MHA)
Static RX Sensitivity, single branch (GSM 1800)	3 dB improvement with 2-way Diversity	-109 dBm with 2-way Diversity
Static RX Sensitivity, single branch (GSM 1800)	6 dB improvement with 4-way Diversity	N/A
Max RF Output Power at BTS Ant. Connector	44.5 dBm (GSM 1800, By-pass)	41.0 dBm (GSM 1800, By-pass)
Max RF Output Power at BTS Ant. Connector	41.0 dBm (GSM 1800, 2-way WBC)	38.0 dBm (GSM 1800, 2-way WBC)
Max RF Output Power at BTS Ant. Connector	37.5 dBm (GSM 1800, 4-way WBC)	36.5 dBm (GSM 1800, 4-way WBC)
Max RF Output Power at BTS Ant. Connector	42 dBm (GSM 1800, RTC)	40.0 dBm (GSM 1800, RTC)
BTS Traffic Capacity per Cabinet	Twice of the Talk Family with 12 TRX	Half of the UltraSite with 6 TRX
Auto Detection of Installed Units	Yes	No
Transmission Media	E1/T1 Wireline, MWR Link, Optical Fiber	E1/T1 Wireline & MWR Link
Multi-purpose Platform for GSM/EDGE/WCDMA	Yes	No
High Voice and Data Capacity	Yes	No
Chaining and Expansion	Yes	No
Space Requirements for 12 TRX Cabinet	Almost half required of the Talk Family	More space for 12 TRX Cabinets
Weight and Dimensions	Light Weight and More Compact	Heavy Weight

LED STATUS INDICATION TABLE

Plug-in Units	Switched On or Reset	Power On and Waiting	SW Downloading	Waiting for Configuration / Configuration Ongoing	Operational Status
BOI	Red	Yellow	Blinking Green	Blinking Yellow	<u>Red</u> – Unit Faulty <u>Yellow</u> – No LapD Connection <u>Green</u> – Unit On and Working <u>Blinking Green</u> – SW Background Loading
DTRU			Blinking Green (Later SW Release)		<u>Red</u> – Unit Faulty, Critical Alarm, Incoming Signal Fault (Abis I/F) or Active Test disturbing traffic <u>Yellow</u> – Major or Minor Alarm or Test Mode <u>Green</u> – Unit On and Working <u>Blinking Green</u> – Unit Access
DTRU RRI LED					<u>Green</u> – Outdoor Unit TX Signal Active <u>Blinking Green</u> – DC Power to Cable I/F
BB2	Red	Yellow	Blinking Green	Blinking Yellow	<u>Red</u> – Unit Faulty <u>Yellow</u> – No LapD Connection <u>Green</u> – Unit On and Working <u>Blinking Red</u> – Loop Test
TSx	Red	Yellow			<u>Red</u> – Unit Faulty or No BB2 Connection <u>Yellow</u> – Unit On, Working, and not Transmitting (TX Off) <u>Green</u> – Unit On and Working <u>Blinking Red</u> – Loop Test

LED STATUS INDICATION TABLE

Plug-in Units	Switched On or Reset	Power On and Waiting	SW Downloading	Waiting for Configuration / Configuration Ongoing	Operational Status
BTx					
RTx	Red		Blinking Green	Blinking Yellow	<u>Red</u> – Unit Faulty <u>Blinking Yellow</u> – Tuning Cavities <u>Green</u> – Unit On and Working
DVx					<u>Red</u> – LNA Faulty <u>Yellow</u> – Minor LNA Failure <u>Green</u> – LNA On and Working
PWS					<u>Red</u> – Power Supply Alarm <u>Yellow</u> – Standby or Remote Control <u>Green</u> – Unit Switched On and Working
BATA				Blinking Yellow (Address Switch at Broadcast, not allowed)	<u>Red</u> – Unit Faulty <u>Yellow</u> – Unit Plugged-in but Mains Power is Off or No CCUA Connection <u>Green</u> – Unit On and Working
CCUA					<u>Red</u> – Unit Faulty <u>Yellow</u> – Support Cabinet Alarm, No Q1-SSS Connection <u>Green</u> – Unit On and Working