Nokia Flexi EDGE Dual Duplexer Module (ERxA) Description

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1 Dual Duplexer Module (ERxA)

The Dual Duplexer Module and the Dual TRX Module create one Sector Module. One Dual Duplexer Module is needed per sector. The Dual Duplexer Module is always attached to the Dual TRX Module, which provides the Dual Duplexer Module with power and O&M link. Extension Dual TRX Modules are installed without the Dual Duplexer Module.

The Dual Duplexer Module provides two antenna connections (configured from 1 or 2 sectors) of Nokia Flexi EDGE BTS for by-pass and wideband combined configurations. The Dual Duplexer Module supports antenna sharing (co-siting) with another BTS as long as the frequency range meets the given Nokia specifications.

The Dual Duplexer Module contains two duplex filters: two Low Noise Amplifiers (LNAs), two Bias-Ts with the voltage standing wave ratio (VSWR) measurement functionality, and a common TRX loop for TRXs in one sector. The TRX loop is controlled through the Sector Module.

As Bias-T and VSWR measurement functionality is now integrated in the Dual Duplexer Module, a separate unit on top of BTS cabinets common in traditional solutions is no longer needed.

The LNAs have high and low gain states for supporting both high gain Nokia Mast Head Amplifiers (MHA) as well as more traditional MHAs.

There is a separate Dual Duplexer Module for each frequency band:

- ERTA – GSM800
- ERGA – GSM900 full band
- ERHA – GSM900 SB-H
- ERJA – GSM900 SB-J
- ERDA – GSM1800 full band
- ERPA – GSM1900 full band

See the following figure for an isometric view of the Dual Duplexer Module.

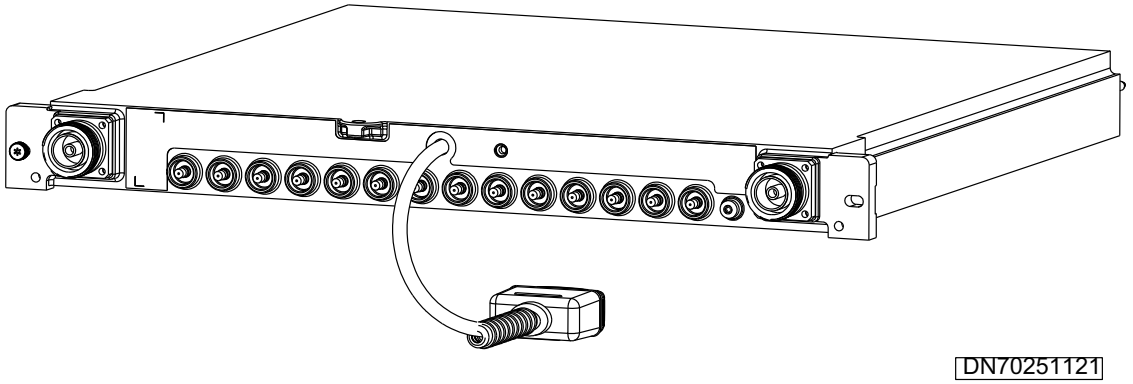

Figure 1. Isometric view of the Dual Duplexer Module

2 Dual Duplexer Module (ERxA) main blocks

The Dual Duplexer Module (ERxA) includes the following functional blocks:

- Duplex Filter
  - RX and TX filtering
  - TX and RX coupling to one antenna interface
- RX Front End
  - RX low-noise amplifier (LNA)
  - RX Multicoupling
  - Support for co-siting (antenna sharing)
- TRX Loop
  - TRX loop path between Dual Duplexer Module's TX input and RX output
  - Signal mixing from TX to RX band
  - Timeslot-based capability to run loops
  - Loop connection capability from either TX input to any RX Output
- Bias-T and voltage standing wave ratio (VSWR) alarm
  - Masthead amplifier (MHA) interface and power supply
  - Antenna supervisory

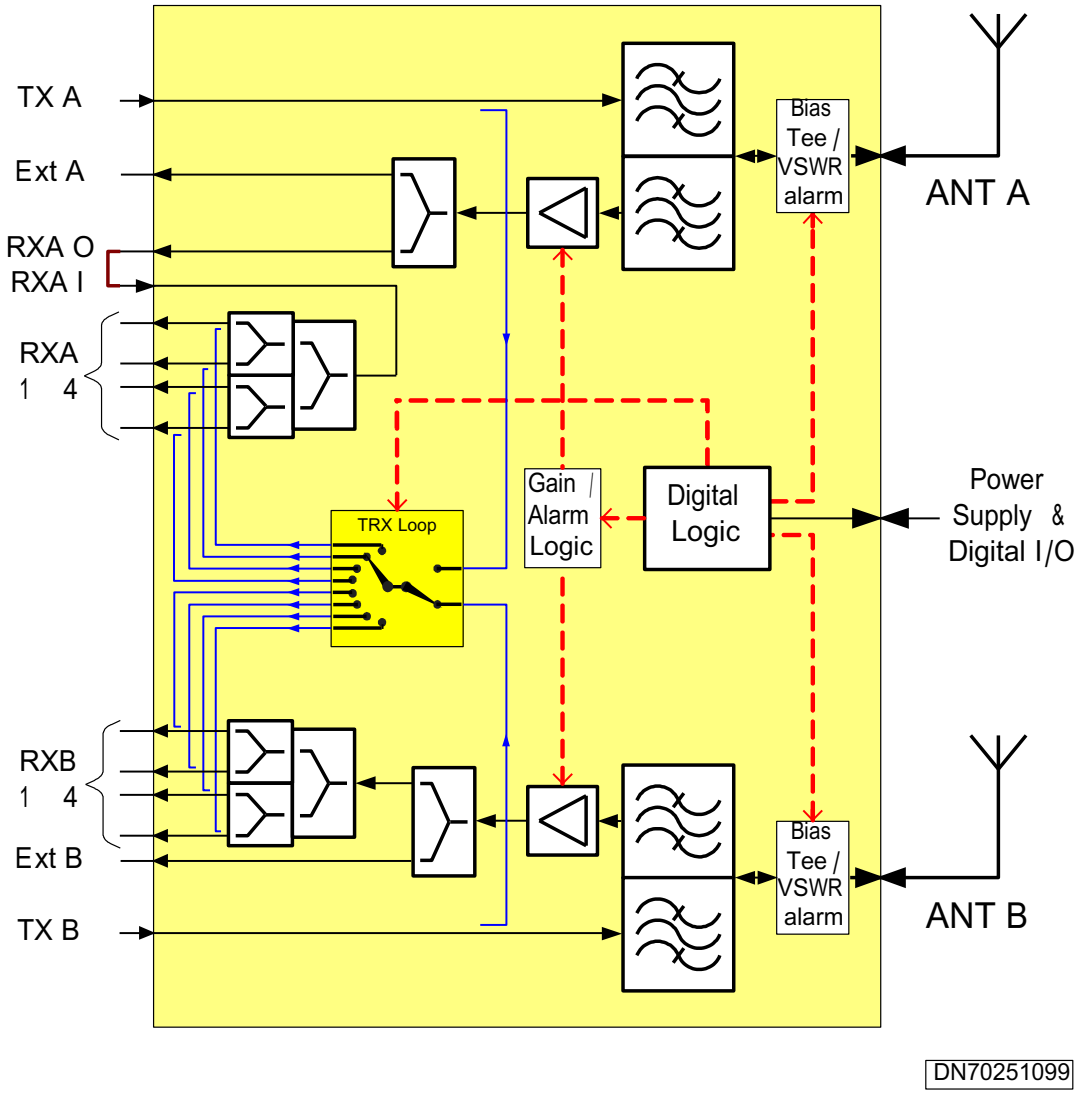

Figure 2. Dual Duplexer Module main blocks

3 Dual Duplexer Module (ERxA) power requirements

Table 1. Dual Duplexer Module (ERxA) power requirements

Property	Value
Nominal system voltage	48 V DC
Input voltage range	40.5 - 57 V DC

Table 2. Dual Duplexer Module power consumption

Property	ERTA/ERGA/ERHA/ ERJA (800/900)	ERDA/ERPA (1800/1900)
Maximum	32.5 W	32.5 W
Nominal	32.5 W	32.5 W

4 Dual Duplexer Module (ERxA) interfaces

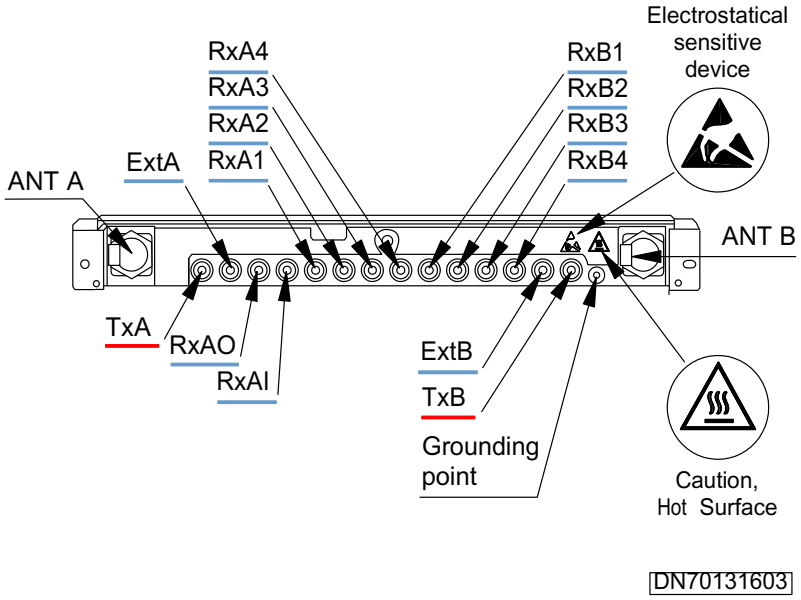

Figure 3. Nokia Flexi EDGE Dual Duplexer Module (ERxA) front panel connectors and labels

Table 3. Nokia Flexi EDGE Dual Duplexer Module (ERxA front panel connectors and interfaces

Label name on module	Description	Connector type	Interface(s)
Ant A, Ant B	Antenna interface	7/16	Antenna jumper or feeder cables
TxA, TxB (red)	2 Tx inputs	QMA	EXxA, EWxA, EWxB
ExtA, ExtB (blue)	2 external Rx outputs	QMA	External receiver
RxAO (blue)	Rx co-siting output	QMA	External BTS cabinet

Table 3. Nokia Flexi EDGE Dual Duplexer Module (ERxA front panel connectors and interfaces (cont.)

Label name on module	Description	Connector type	Interface(s)
RxAI (blue)	Rx co-siting input	QMA	External BTS cabinet
RxA1…RxA4 (blue) RxB1…RxB4 (blue)	8 Rx outputs	QMA	EXxA

5 Dual Duplexer Module (ERxA) dimensions and weight

The dimensions of the Flexi EDGE Dual Duplexer Module are presented in the table below.

Table 4. ERxA dimensions and weight

Property	Value
Width [1)]	447/492 mm (17.6/19.4 in.)
Height	44 mm (1.7 in.)
Depth [2)]	422/560 mm (16.6/22.1 in.)
Weight	10.8 kg (23.9 lbs)

[1)] Width of the casing without front covers/with front covers

[2)] Depth of the casing without front covers/with front covers

6 Dual Duplexer Module (ERxA) LED indications

The Dual Duplexer Module (ERxA) has two tri-colour LEDs on the front panel to indicate the operational status of the module and all fault conditions during operation.

Table 5. Dual Duplexer Module LED indications

Colour	Explanation
Red	Module self-test or reset (LED red for < 5 seconds), or Major alarm
Red, blinking	Minor alarm
Yellow	Stand-by or blocked
Yellow, blinking	SW download or configuration ongoing, module non-operational
Green	Module operational (cell can be locked in BSC)
Green, blinking	Module is loading software or parameters or local maintenance access when modules are operational

7 Contents of the Dual Duplexer Module (ERxA) delivery

Table 6. Nokia Flexi EDGE Dual Duplexer Module (ERxA) delivery contents

Description	Product code	Quantity
EDGE Dual Duplexer Module (ERxA):		1
• EDGE Dual Duplexer Module 800 MHz (ERTA)	• 470249A	
• EDGE Dual Duplexer Module 900 MHz (ERGA)	• 470250A	
• EDGE Dual Duplexer Module 900 MHz SB-J (ERJA)	• 470251A	
• EDGE Dual Duplexer Module 900 MHz SB-H (ERHA)	• 470252A	
• EDGE Dual Duplexer Module 1800 MHz (ERDA)	• 470253A	
• EDGE Dual Duplexer Module 1900 MHz (ERPA)	• 470254A	
M5 screws		2
Cage nuts		2