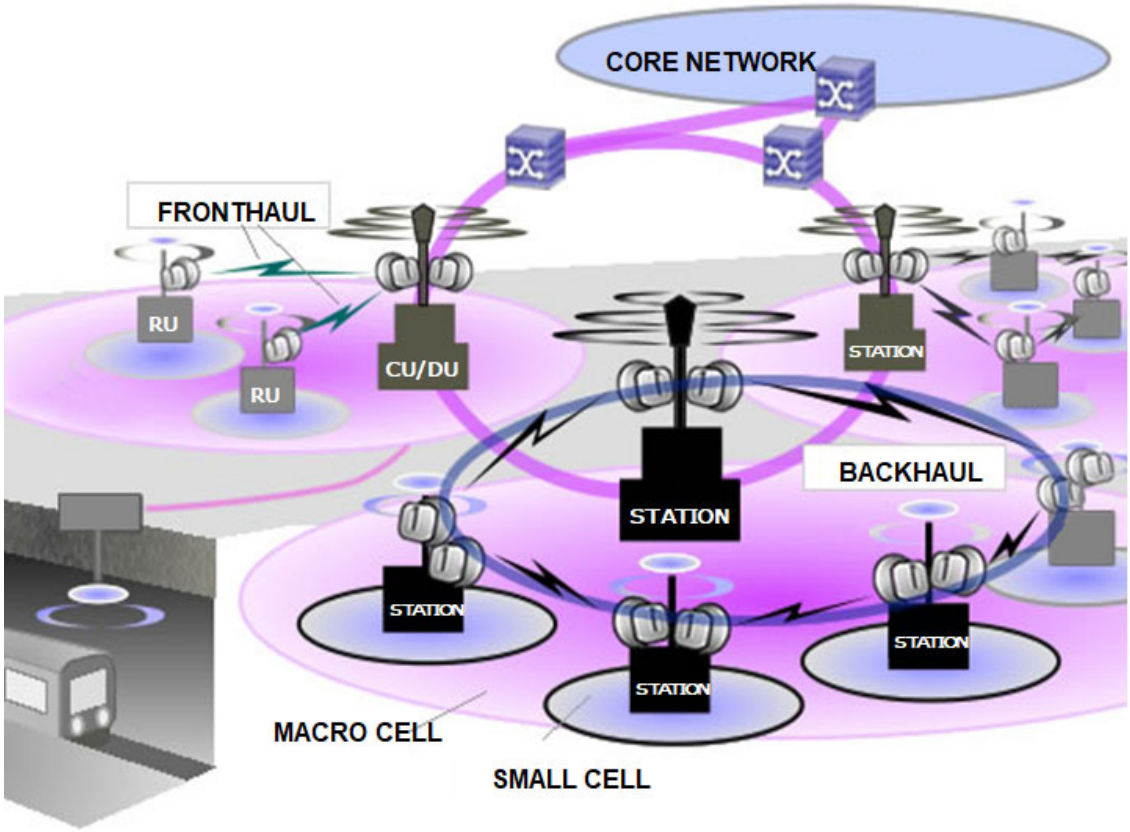
GGS-000545-07E
June 2023

NEC

iPASOLINK EX
Advanced

GENERAL DESCRIPTION



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GENERAL DESCRIPTION

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1. About iPASOLINK EX Advanced

1.1 Overview

iPASOLINK EX Advanced (hereinafter iPASOLINK EX/A), a fixed P-P Radio System installed in the telecommunication station or similar environment, is the outdoor radio access equipment using the E-Band radio frequency of 71 GHz to 86 GHz. With the concepts of the higher-capacity transmission, downsized, and lower power consumptions, comparing to the existing iPASOLINK EX, iPASOLINK EX/A can covers the entire bands, from the narrow band (CS = 62.5 MHz) to the wide band (CS = 2 GHz)[1], which allows to meet the licenses of many countries in variety.

In addition, with the substantial functions of Ethernet and the Clock Synchronization, it accommodates the various types of backhaul environments as well as that of the small cells.

The iPASOLINK EX/A Dual is integrated two modems to one device, making it easy to install and has a high transmission performance up to 20Gbps.

1. CS: Channel Spacing.

1.2 Advantages

◆ Higher Capacity Transmission

☞ Enables the higher capacity of 10 Gbps wireless transmission by commercializing the 2G band.

☞ 10 Gbps interface in Switching mode.

☞ 25 Gbps interface in Transparent mode.

☞ Higher system gain using the high-power type RF.

☞ Extensive packet functions.

☞ Ultra wide band (2000 MHz).

☞ Adaptive Modulation and Bandwidth Radio (AMBR).

☞ Double capacity ring.

☞ Cost effective.

☞ Up to 20Gbps Wireless Transport on EX/A Dual with 2RF.

☞ Up to 25Gbps Wireless Transport with MTA configuration.

☞ Co-channel Dual Polarization with XPIC on EX/A Dual.

◆ Carrier-Grade IP Functionalities

☞ Non-blocking forwarding performance.

☞ Hierarchical QoS (H-QoS).

☞ Superb OAM.

☞ Full Synchronization (SyncE, 1588v2).

◆ Expanding the area to accommodate

☞ Meets more varieties of licenses to cover more countries.

☞ Cover the entire bands, from the narrow band (62.5 MHz) to the wide band (2 GHz).

◆ Easy Installation

☞ Providing Interference Detection.

1.3 Features

iPASOLINK EX/A, the all outdoor type equipment, has the following features.

1.3.1 Functions

- High scheme modulation (QPSK to 512QAM) with adaptive operation.
- In addition to the Hitless AMR (Adaptive Modulation Radio), AMBR (Adaptive Modulation and Bandwidth Radio) is available.
- Multiple 10GbE/GbE ports.
- The channel spacing (10 Gbps at the maximum radio transmission capacity): 62.5, 125, 250, 500, 750, 1000, 1500 and 2000 MHz. See the ***Radio Frequency Planning*** manual in ***Annex*** also.
- For the traffic ports, providing one GbE port and two or three 10 GbE ports in Switching mode. SFP+ is available on 10 GbE port.
- In Transparent mode of EX/A Dual, providing one 10GbE or 25GbE port. SFP+ or SFP28 is available.
- The GbE port supports the PoE also at EX/A (EX/A Dual does not support PoE).
- DCN (Data Communication Network) Port, supporting one FE Port, is used for the connection to the WebLCT or NMS. This port can be used as the traffic port, and for the Power Over Ethernet as well.
- External Packet Buffer (Option).
- Multi Traffic Aggregation (MTA) (EX/A Dual only).
- Co-channel Dual Polarized with XPIC (EX/A Dual only).
- Service Switch function (SSW).

1.3.2 Carrier-Grade Packet Switch

- Carrier Ethernet services by the built-in L2SW.
- Effective network planning via GbE full throughput link.
- Rapid and flexible deployment.
- IEEE 1588v2 TC/BC support.

1.3.3 Security

- Antenna using the highly secured narrow beam-width.
- User-settable Link ID codes.
- Multiple-level password control on M-Plane.
- AES Encryption (Option).

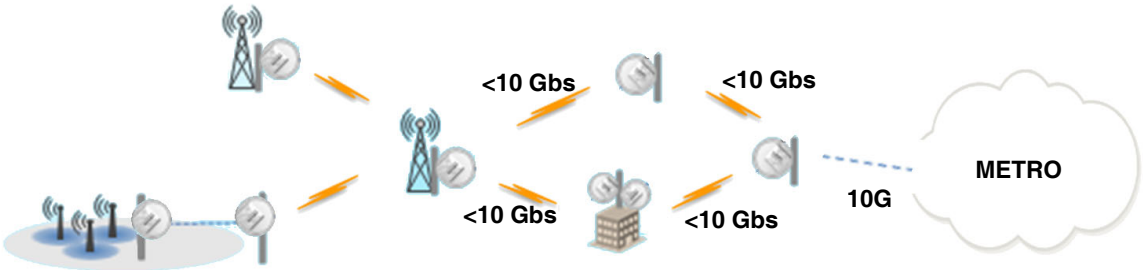
1.3.4 System Flexibility

- Adjustable transmission rate for the link distance at the same equipment.
- Wide input line voltage range.
- Low power consumption.
- PoE port available (LTPoE++) [EX/A Dual does not support PoE].
- SyncE clock synchronization.
- SyncE / PTP Time and Clock synchronization.
- Power / traffic cable bundling reduces tower loading and costs.

1.4 Applications

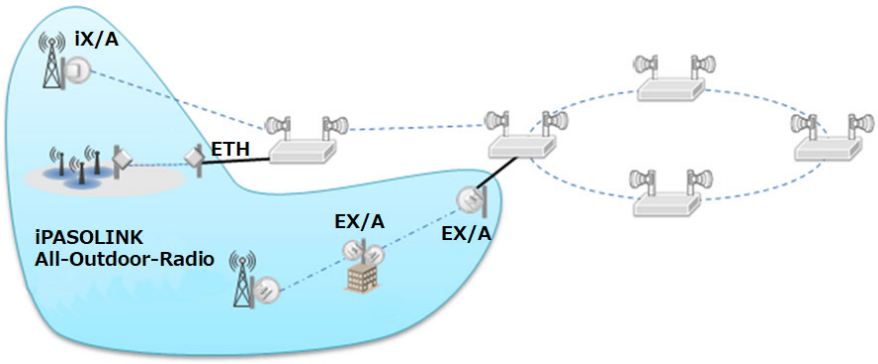
1.4.1 Radio Transmission

Figure 1-1 Example of Radio Transmission Network



1.4.2 Combination with AORs and Split Type Radios

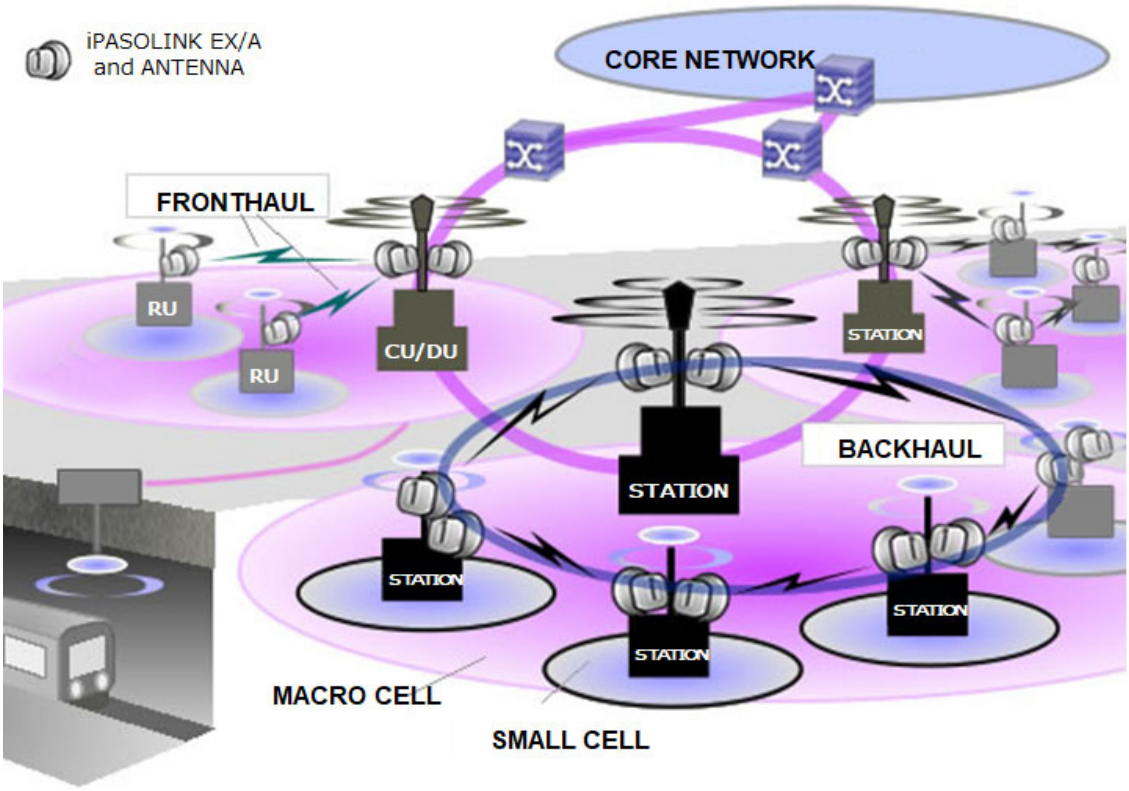
Figure 1-2 Example of Network Using AORs and Split Type Radios



1.4.3 Backhaul and Fronthaul

In the high-density urban area, convergence of the Backhaul and Fronthaul capacity and coverage has been improving.

Figure 1-3 Backhaul and Fronthaul



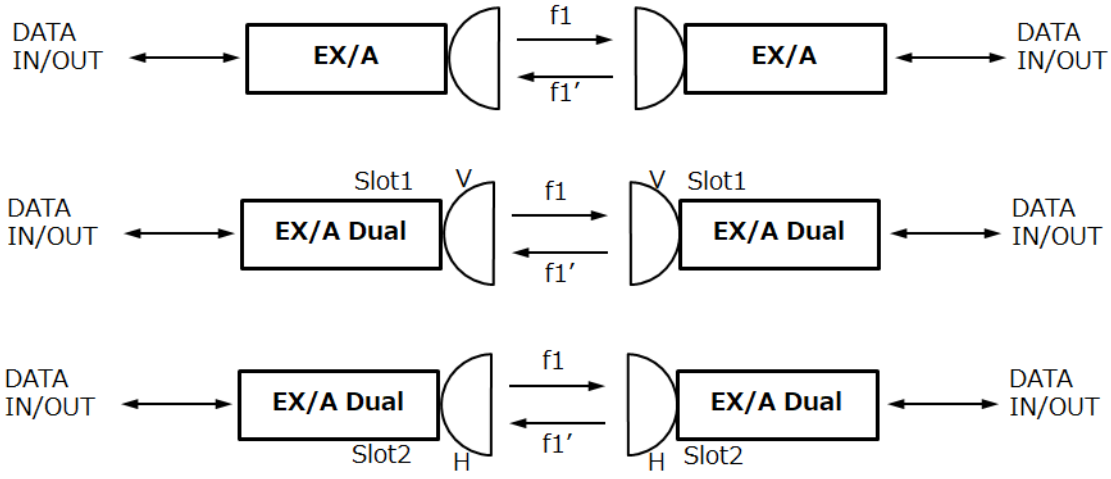
2. SYSTEM CONFIGURATION

2.1 General

The iPASOLINK EX/A can configure only 1+0 system. The iPASOLINK EX/A Dual can configure up to two 1+0 (ACAP), or one 1+0 XPIC(CCDP).

2.2 System Configuration

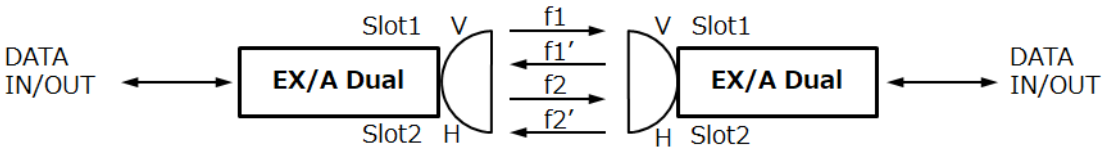
2.2.1 1+0 Configuration



NOTES:

1. *Radio rate depends on CS and modulation setting of each slot (up to 10Gbps per modem slot).*
2. *Ethernet port rate depends on each port setting (GbE or 10GbE).*

2.2.2 2+0 Configuration (ACAP)

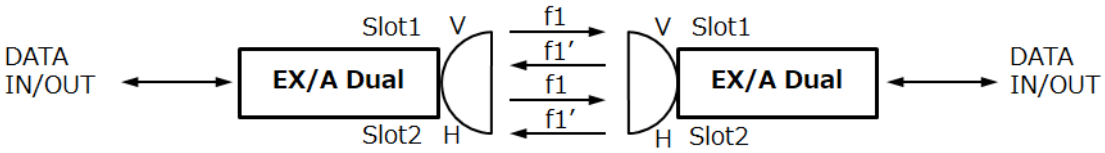


NOTES:

1. *This configuration needs Dual polarization Antenna.*

2. *Radio rate depends on CS and modulation setting of each slot (up to 10Gbps per modem slot).*
3. *Ethernet port rate depends on each port setting (GbE or 10GbE).*

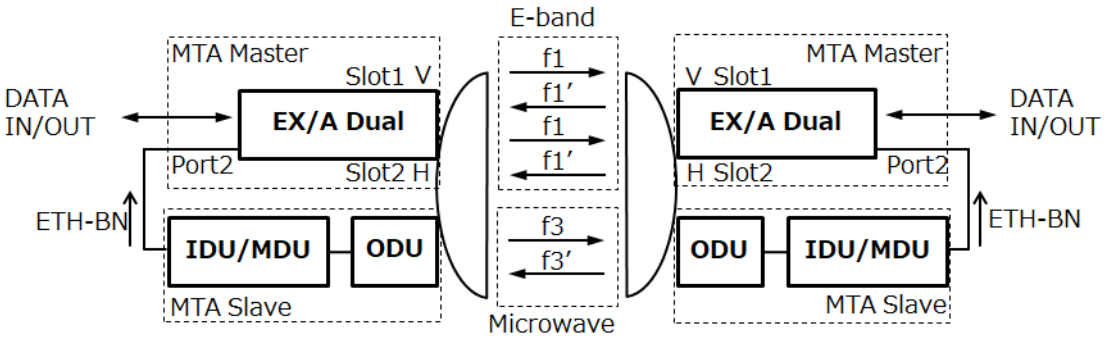
2.2.3 1+0 XPIC Configuration



NOTES:

1. *This configuration needs Dual polarization Antenna.*
2. *Radio rate depends on CS and modulation setting (up to 20Gbps per equipment).*
3. *Ethernet port rate depends on each port setting (GbE or 10GbE).*

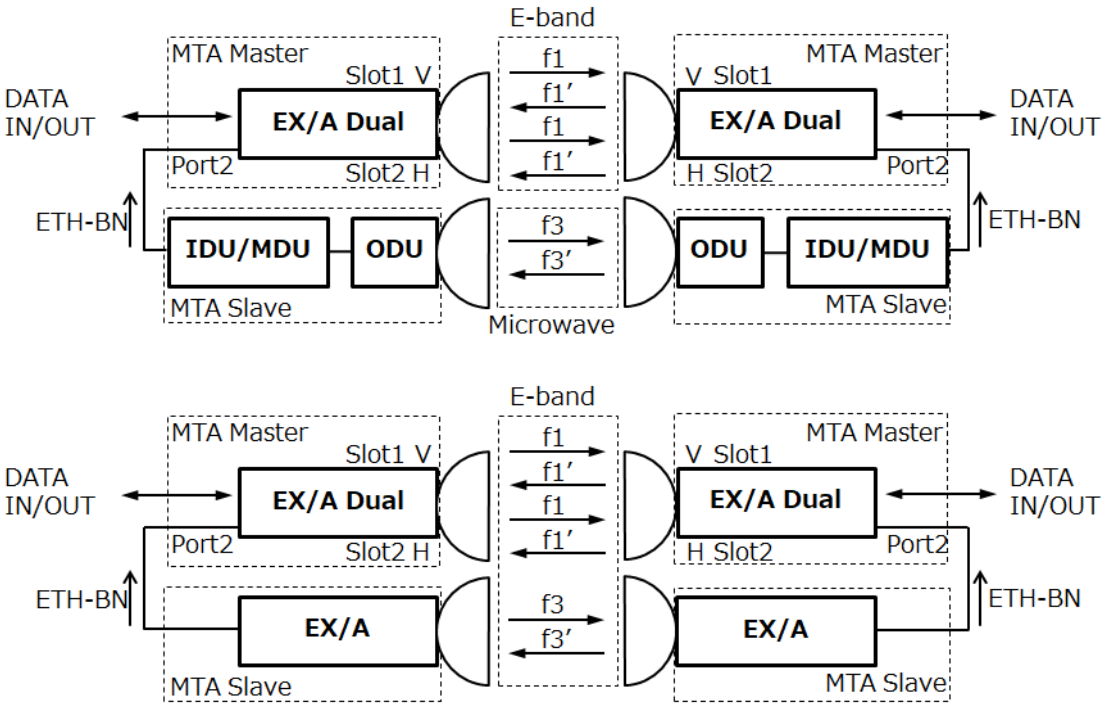
2.2.4 MTA Configuration (with Dual band Antenna)



NOTES:

1. *EX/A Dual configuration should be 1+0 (V or H) or 1+0 XPIC (CCDP).*
2. *Data rate of MTA traffic is sum of the rate of MTA member port, up to 10Gbps in switching mode and up to 25Gbps in transparent mode.*
3. *Ethernet port rate depends on each port setting (GbE, 10GbE or 25GbE).*

2.2.5 MTA Configuration (with Single band Antenna)



NOTES:

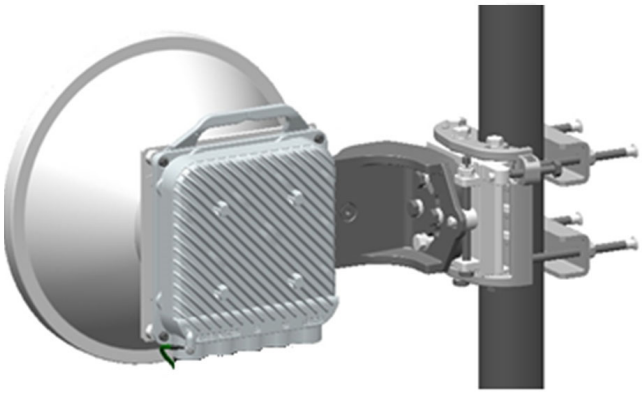
1. *EX/A Dual configuration should be 1+0 (V or H) or 1+0 XPIC (CCDP).*
2. *Data rate of MTA traffic is sum of the rate of MTA member port, up to 10Gbps in switching mode and up to 25Gbps in transparent mode.*
3. *Ethernet port rate depends on each port setting (GbE, 10GbE or 25GbE).*

2.3 System Overview

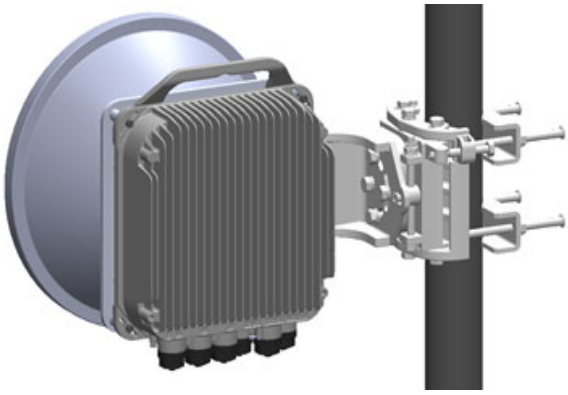
2.3.1 Features

- All outdoor Radio system.
- Direct mount to Antenna.

Figure 2-4 iPASOLINK EX/A and EX/A Dual



iPASOLINK EX/A and 0.3 m dia. Antenna



iPASOLINK EX/A Dual and 0.3 m dia. Antenna

- Small and light-weight EX/A easy to handle and install.
- Wide temperature range operative.
- Nominal rating of input DC voltage: -48V DC

2.3.2 Block Diagram

Figure 2-5 iPASOLINK EX/A Block Diagram

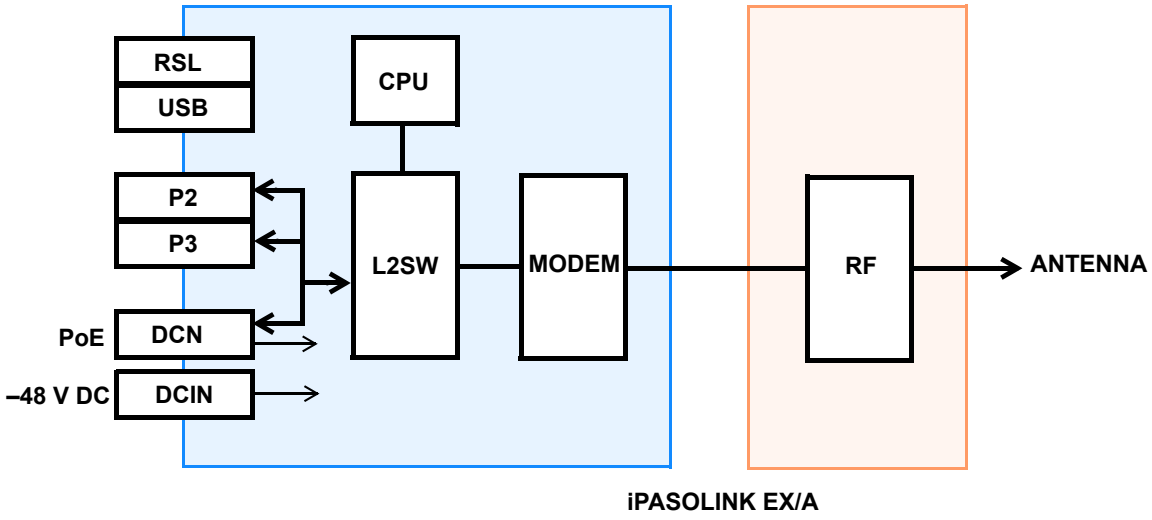


Figure 2-6 iPASOLINK EX/A Dual (Switching Mode) Block Diagram

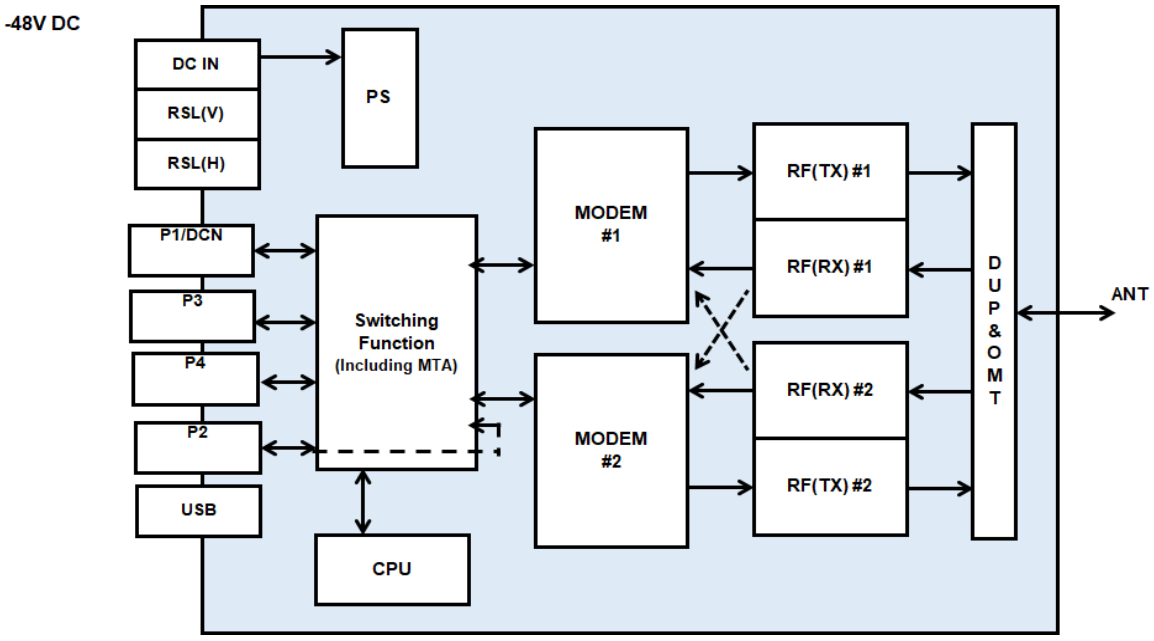


Figure 2-7 iPASOLINK EX/A Dual (Transparent Mode) Block Diagram