Description - 2.4GHz CPE Release 1

General Information

EUT NAME: Navini Networks RipWave 2400

MODEL NUMBER: 2400E (Ethernet), 2400U (USB)

CPE ASSEMBLY PART NUMBER:
92-00078-00 (Ethernet), 92-00077-00 (USB)

HIGH LEVEL PART NUMBER (includes power adapter and packaging):
95-21200-00 (Ethernet), 95-22200-00 (USB)

POWER ADAPTERS:
PHIHONG Model PSA10A-050   5V @ 2A
PHIHONG Model PSC15A-050S   5V @ 3A
ACHME CORP Model AM13B05S10   5V @ 2A

RF Section

1. Introduction

The CPE RF portion consists of four major sub-circuits:
- Transmitter
- Receiver
- Local Oscillator
- Antenna Switch

Figure 1 shows the block diagram of the CPE.

2. Transmitter Sub-circuit

The I & Q modulator mixes the baseband I & Q modulating signals with the 700MHz IF LO signal to generate a modulated IF out signal at 350MHz. The modulated IF signal is filtered and amplified before it is mixed with an RF LO signal by a mixer to up-convert to an RF signal. The RF modulated signal is again filtered and amplified to a desired output power level at the Antenna Switch Sub-circuit.

3. Receiver Sub-circuit

The receiver receives an RF signal from the Antenna Switch Sub-circuit. This RF signal is amplified and filtered before it is mixed with an RF LO signal by the mixer to down-convert to a 350MHz IF. The received IF signal is again filtered and amplified before it is mixed with the 700MHz IF LO by the I & Q demodulator to generate the demodulated I & Q signals. These I & Q signals are then sent to the baseband circuit for signal processing.

4. Local Oscillator (LO) Sub-circuit

The LO Sub-circuit is phase-locked to a stable 16MHz reference oscillator to generate the 700MHz IF LO and the RF LO. The 700MHz LO is used for the I & Q modulator/demodulator and the RF LO is used for the up-converting/down-converting mixer.

5. Antenna Switch Sub-circuit

The Antenna Switch Sub-circuit switches the transmitter and the receiver to one of the three antennas.

6. Antennas

The CPE contains three antennas: 1 X 2dBi omni-directional antenna and 2 X 7dBi directional (patch) antennas. Photos of these antennas can be seen in the document "Photos.doc".
Note: Only one antenna is transmitting at any instant of time.

7. Output Power

The CPE output power limit is defined in Part 15.247. Due to the 2dBi omni-directional antenna the device, in this configuration, should be considered a point to multipoint transmitter.   The highest gain antenna (patch = 7dBi), although directional, is used for the calculation such that no transmission whether through the omni or the patch will exceed the point to multipoint 36dBm EIRP limit defined in Part 15.247. The maximum transmitter output power for this CPE is 28.3dBm as can be seen in the test report.

8. Other Clock Frequencies

Ethernet: 16MHz, 80MHz, 100MHz
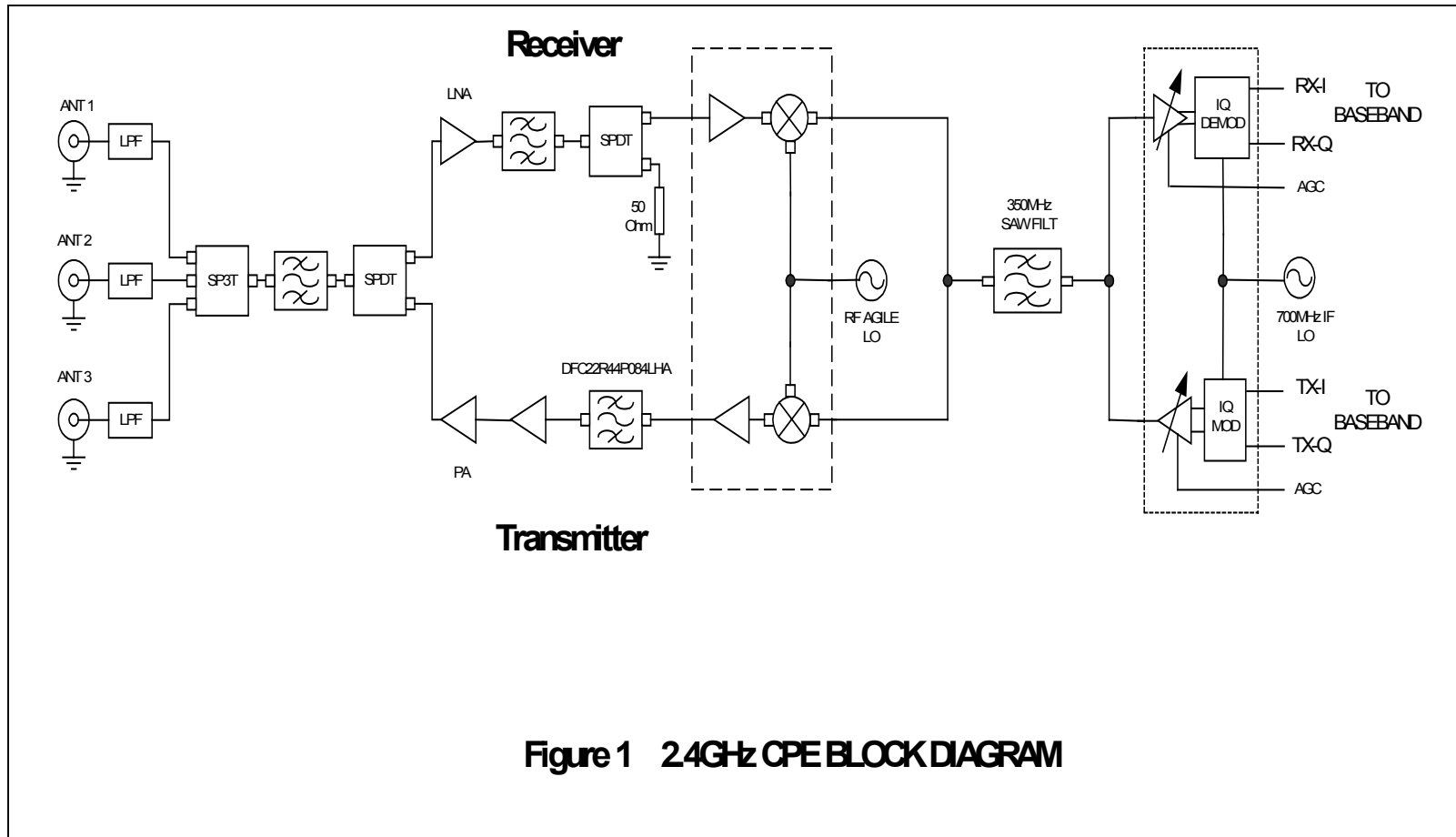USB: 12MHz, 16MHz, 80MHz, 100MHz,

Figure 1   2.4GHz CPE BLOCK DIAGRAM