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Theory of Operation

1. Transfer format and rate

Access method	FDMA-TDD
Number of channel	23
Channel spacing	750KHz
Modulation method	FSK
Base band transfer rate	720kbps
Spread method	Direct Sequence Spread Spectrum
Chip Rate	15 chips/bit
Data transfer rate	48kbps

2. Channel number & frequencies

Channel number	Frequency	Channel number	Frequency
1	906.75MHz	11	914.25MHz
2	907.50MHz	12	915.00MHz
3	908.25MHz	13	915.75MHz
4	909.00MHz	14	916.50MHz
5	909.75MHz	15	917.25MHz
6	910.50MHz	16	918.00MHz
7	911.25MHz	17	918.75MHz
8	912.00MHz	18	919.50MHz
9	912.75MHz	19	920.25MHz
10	913.50MHz	20	921.00MHz
		21	921.75MHz
		22	922.50MHz
		23	923.25MHz

3.Operation

3.1 Transmit

In the transmit direction, it combines a 32 kbps ADPCM data input with a 4 kbps data channel input, encapsulates the data in a TDD frame with a preamble and sync word, and uses direct sequence spreading to create a binary TX chipping sequence for output to the RF transmitter block. The RF transmitter accepts the spread data from the BMC block and FSK modulates an internal ISM band synthesizer. The FSK signal is power amplified and sent out of the RF I/O port.

3.2 Receive

For reception, the spread spectrum received signal is amplified, down converted and demodulated. It de-spreads, de-frames, stores and reproduces continuous 32Kbps voice encoded data.

In the receive direction, the BMC block accepts a binary 1.5Mchip/s output from the RF receiver block, which is then de-spread, and demultiplexed into the 32 kbps ADPCM voice data and 4kbps data channel signals.

It provides radio link diagnostic information to the uC for active link management capabilities (adaptive power control and channel hopping algorithms)

4.Protocol

4.1 Initialization

In order to establish the RF link between BS and HS, both of BS and HS need to have the same system ID. When power is applied to this system, the system has to read the product own security code from its nonvolatile memory.

4.2 Link establishment

For the link establishment, the requested side is master.(Another one is slave.)

Before sending a data, the master checks the channel if it empty or not. If the channel is empty, the master starts to send data. The system has to exchange the security code each other at the first. Then other command like link request, ringer on etc. are available.