SONY Corporation

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Theory of Operation(1/2)

1.Transfer format and rate

Access method	FDMA-TDD
Number of channel	40
Channel spacing	1.5MHz
Modulation method	FSK
Spread method	Direct Sequence Spread Spectrum
Chip Rate	15 chips/bit
Data transfer rate	100kbps

2. Frequencies & Channel number

Frequencies MHz	Channel number	Frequencies MHz	Channel number	Frequencies MHz	Channel number
2400.0	Not used	2427.0	12	2454.0	29
2401.5	Not used	2428.5	13	2455.5	30
2403.0	Not used	2430.0	14	2457.0	31
2404.5	Not used	2431.5	15	2458.5	32
2406.0	Not used	2433.0	16	2460.0	33
2407.5	Not used	2434.5	17	2461.5	34
2409.0	1	2436.0	18	2463.0	35
2410.5	2	2437.5	19	2464.5	36
2412.0	3	2439.0	20	2466.0	37
2413.5	4	2440.5	21	2467.5	38
2415.0	5	2442.0	22	2469.0	39
2416.5	6	2443.5	23	2470.5	40
2418.0	7	2445.0	24	2472.0	Not used
2419.5	8	2446.5	25	2473.5	Not used
2421.0	9	2448.0	Not used	2475.0	Not used
2422.5	10	2449.5	26	2476.5	Not used
2424.0	Not used	2451.0	27	2478.0	Not used
2425.5	11	2452.5	28	2479.5	Not used

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.

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Theory of Operation(2/2)

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 commands like link request, ringer on etc. are available.