HomeRF Working Group

Shared Wireless Access Protocol
[SWAP]
HomeRF and SWAP

Enabling Interoperable Home Wireless Products

- Unprecedented broad cross industry support
- Universal specification for home wireless voice & data
- Extends reach of Home PCs and enables a new class of consumer products
HRFWG Members

- Butterfly Communications
- Compaq Computer Corporation
- Ericsson Enterprise Networks
- Harris Semiconductor
- Hewlett-Packard Company
- IBM
- Intel
- Intellon
- LG Electronics
- Microsoft

- Motorola
- National Semiconductor
- Philips Consumer Communications L.P. (PCC)
- Proxim
- Rockwell Semiconductor Systems
- Samsung Electronics
- Symbionics
- WebGear Inc.
Today’s Home Environment

- Cordless phone
- PC
- Laptop
- Satellite
- Notebook pad
- PSTN
- Cable
HRFWG Vision

- Phone communicator
- Baby monitor
- Talking Teddy
- Wireless headset
- 2nd PC
- PSTN/xDSL
- Fridge data pad
- Handheld Organizer
- PSTN/xDSL
- Cable/Cable Modem
- Baby monitor
- Talking Teddy
- Wireless headset
- 2nd PC
Requirements Tradeoffs

1) Availability
   - Early PC wireless products already available; multi-industry standards needed now.

2) Cost
   - Must be roughly equivalent to existing wireless products
   - PC association may command higher prices if perceived benefits and quality exist

3) Features
   - Easy to use
   - Safe to use
   - Unlicensed Band
   - Secure
   - Performance
Resulting Features & Capabilities

• Operates in the 2400 MHz band with 100 mW Transmit Power at 50 Hops/s
• Up to 6 Near-Wireline Quality Voice Connections (based on 32 Kb/s ADPCM and DECT Call Processing)
• 1 Mb/s and 2 Mb/s Modes as in IEEE 802.11 (supports >1.2 Mb/s data throughput)
• Paging Modes for Handheld Clients to Maximize Battery Life
• Specifically Designed to Perform Well in the Presence of Microwave Ovens
• Excellent Security Using Encryption Methods Employed in Digital Cellular Phones
System Architecture Overview

- Control Point
- Stereo
- Camcorder
- VCR
- TV
- Power Line
- Phone
- Cable
- Lamp
- Smoke Detector
- Thermostat
- Security System
- Grandma's Brownies
  - 3 cups flour
  - 1 cup grated chocolate
  - 1 cup sugar
  - 1 stick butter
- 1394
- USB
- Printer
- Phone
- Cable
Technical Summary

• Hybrid TDMA/CSMA frame
  – If no connection point (CP), ad hoc CSMA
  – Base station required for DECT voice
• Beacon from connection point sets frame structure
• Frequency hopping, 50 hops/sec
• 2 or 4 FSK yields 1 or 2 Mb/s
• Also supports TCP/IP voice
Technical Summary - Voice

• DECT with re-transmission
• Uses DECT calling stack
• Uses DECT A/B fields
• 32kb/s ADPCM
• 20 ms frames - retransmit in beginning, outbound at end
• Up and down link packets interleaved
Technical Summary - Data

• Relaxed PHY specs from 802.11
  – Lowers radio cost significantly
  – Same hop sequences
    • Localized for France, Spain, Japan, US, EC
    • Different BW for Japan, France, Spain
• Same back-off, packet structure, and ad-hoc capabilities
Status

• MAC & PHY sections well underway
  – Initial demo of MAC+PHY by Symbionics

• PC software interface definition started
  – Initial Connection Point interface probably USB
  – NT 5.0 & Win 98 support in later releases

• Signing up Participants and early Adopters

• Product plans beginning now