LHC2 Inc.

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Wireless Equipment Design Engineering Services

LHC2 Development Engineering

Overview

Contract Design, Test and Certification Engineering Services

Background

LHC2 offers wireless network equipment and component developers a unique set of engineering skills to assist in product development.

Specific focus end markets include high coverage networks supporting strategic workforces:

- Military
 - o Bases
 - Proving grounds
- Natural Resources
 - o Mining
 - Forestry
 - Gas and Oil
- Utilities
- Public Works
- First Responders
- Homeland Security

LHC2 offers highly skilled wireless engineering services to assist the client in designing, characterizing and certifying their WLAN and WMAN equipment.

A Unique Set of Skills

Multi Disciplined Team

Product Life Cycle

LHC2 skills can be applied throughout the product and system life cycle.

- Requirements Capture
- Initial technology
 Investigation
- Make/Buy Investigation
- Design Capture and/or Analysis
- Prototype Fabrication and Software System Integration
- DVT (Design Verification Test)
- DFT (Design For Test)
- DFM (Design For Manufacturability)
- SQA (System Quality Assurance)
- Customer Support Structure and Training
- Network Management
 Integration
- Deployment Engineering
- Manufacturing
 Engineering Support
- EOL (End of Life) component and subsystem management

WIRELESS EQUIPMENT DESIGN ENGINEERING SERVICES V1.4

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LHC2 PROVIDES WIRELESS NETWORK CONSULTING AS WELL AS END TO END, STANDARDS BASED PRIVATE BROADBAND WIRELESS DATA AND VOICE COMMUNICATIONS SYSTEMS. SYSTEMS COVER HUNDREDS OF SQUARE MILES, TO ENABLE UNPARALLELED LOGISTICAL EFFICIENCIES FOR THE MILITARY AND IN NATURAL RESOURCE EXPLORATION AND PRODUCTION.

Summary of Wireless Development Engineering Services

Software Engineering:----

- 1. Embedded Platform Development
 - 0 Linux
 - NetBSD 0
 - Windows XP/CE/Mobile 0
 - BSP 0
 - Xscale
 - Power PC
 - MIPS
- 2. Device Driver Development
 - 802.11 a/b/g/n 0
 - 802.16 d/e 0
 - Radio Chip Sets 0
 - Atheros
 - Prism
 - Agere
 - Marvell
 - Broadcom
 - Intel

Hardware Engineering:--

- 1. System Design and Integration
- **Applications Requirements Capture**
- System Requirements Document
- Radio Performance Characterization
 - **Receiver Sensitivity** 0
 - Power & Modulation Accuracy 0
 - Antenna Pattern Measurements 0
 - Interference Rejection 0
 - Network Bandwidth \cap
 - **Roaming Characteristics** \cap
- 2. Hardware Design
- Extended Environmental Range Design and Packaging
- Low Power Budget Design
- Surge Suppression
- RF Circuit Design
 - 802.11 and 802.16 Physical 0
 - Layer Design
 - Microwave Amplifiers 0
 - PLL and Direct Digital 0
 - Low Noise
 - Fast Tuning
 - Noise Figure Analysis 0
 - Sensitivity Analysis 0
- **Digital Circuit Design**
 - FPGA and ASIC design 0
 - VHDL Verilog and Schematic 0
 - Processor and Memory System 0
 - Baseband processing 0
 - **Digital Baseband Beamforming** 0
- SQA (System Quality Assurance):----
 - **Test Requirements**
 - Test Planning and Execution
 - Automation •
 - Regression .

PRODUCTION.

- Pre-certification Testing .
- Certifications
- WIRELESS EQUIPMENT DESIGN ENGINEERING SERVICES V1.4

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- 3. Base Station Platform
 - Tx Power Control 0
 - **Dynamic Frequency Selection** 0
 - **Clear Channel Assessment** 0
 - Mesh Protocol 0
 - QoS/WMM/802.11e 0
 - WPA2/802.11i 0
- 4. **Client Development**
 - WPA Supplicant 0
 - Scanning/Roaming 0
 - Network Management Software
- 5. 0 Command Line Interface
 - SNMP Agent/MIBs/Traps 0
 - EMS 0
 - Java/XML/SNMP 0
 - NMS Integration 0
- Electro Magnetic Design 3.
- Antenna Array Design •
 - Reduced Wind Loading
 - Beamforming
 - Fine resolution
 - Fixed and Dynamic
 - Lens
 - Butler Matrix
 - Multi Polarization .
- Antenna Design
 - Embedded Antennas
 - Reduced Electrical Size 0
 - PCB Integration 0
 - MIMO arrays 0
 - Frequency Independent
 - Reflectors
 - Low Profile
 - Diversity
 - Mechanical Design
- **3D Solids Modeling**
- Sheet Metal
- Castings

Radomes

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Bug Tracking

Release Process

Plastics

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Modern Fabrication Techniques

Anti Icing Techniques

Reduced Wind Loading

WECA

FCC

CSA

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Thermal Analysis and Management