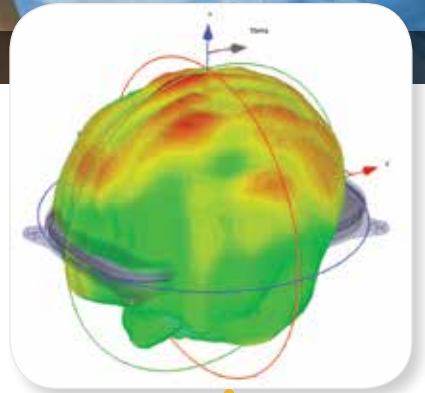




## PCTEL – We Solve Difficult RF Problems

# Embedded Systems



### Ensuring Total RF System Performance

- Wi-Fi access points and client devices
- IoT devices, sensors, gateways, and routers
- Location appliances
- Point-to-point bridges

**PCTEL Offers**

---

Embedded Antenna Design

---

Radio Integration

---

Turnkey Wireless System Design

---

In-House Testing and Modeling

---

Manufacturing in the U.S. and Asia



## Capabilities

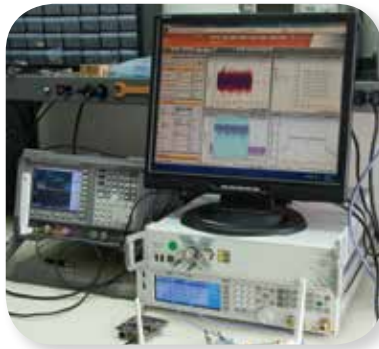
PCTEL's embedded systems team specializes in solving difficult RF problems for enterprise wireless and the Internet of Things (IoT). Our radio and embedded RF design experts use sophisticated tools and state-of-the-art facilities to ensure total RF system performance. We design, test, and manufacture everything from complex external antenna systems to custom embedded antennas to radios and complete embedded systems.

### EXPERIENCED TEAM

- In-house experts in design, production, and engineering testing
- Every team member has 15+ years of experience
- Knowledge of regulatory requirements related to radio and antenna design

### TECHNOLOGY EXPERTISE

- 802.11a/b/g/n/ac/ax
- 802.11ad
- Bluetooth/BLE
- WiHart
- 4G/LTE
- 5G



### COMPLETE RADIO DESIGN VERIFICATION TESTING (DVT) AND PRODUCTION TESTING CAPABILITIES

#### Transmit tests, such as

- Tx output power
- Tx Error Vector Magnitude (EVM)
- Carrier leakage
- Spectral flatness
- Frequency accuracy
- Band-edge and out-of-band emissions



#### Receive tests, such as

- Rx blocking
- Rx sensitivity
- Residual packet error rate

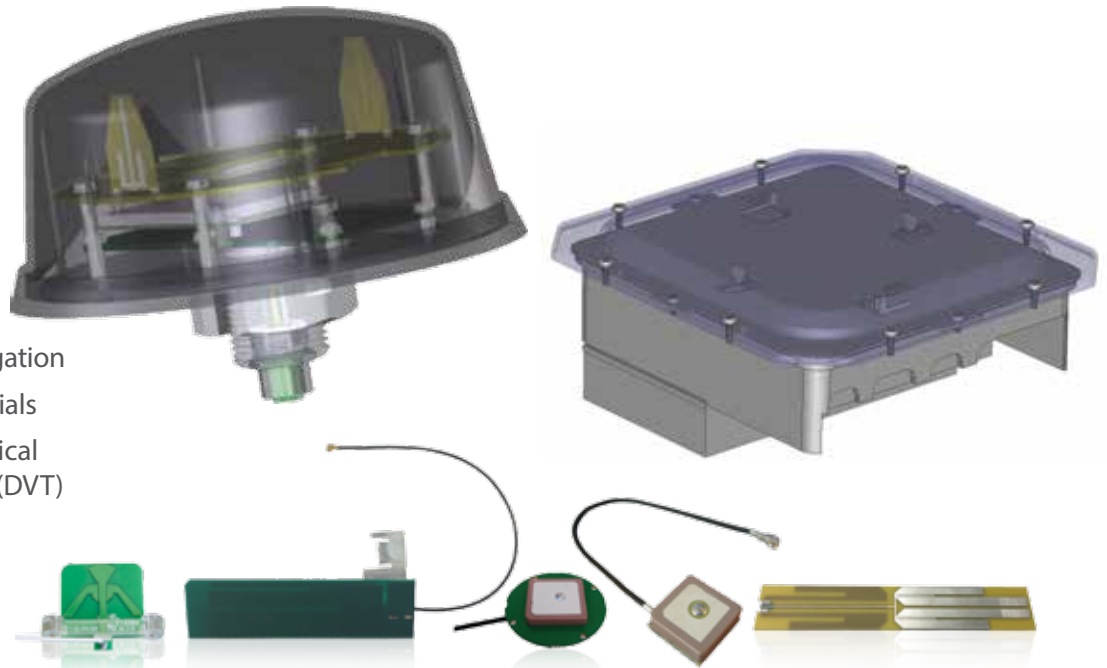
#### System tests, such as

- Throughput
- Range at rate
- Over the air

## Services

### EMBEDDED ANTENNA DESIGN AND RADIO INTEGRATION

- Element design
- Radome design
- Subassembly production and test
- Enclosure design
- Noise and interference mitigation
- Creative approach to materials
- Radio, system, and mechanical Design Verification Testing (DVT)



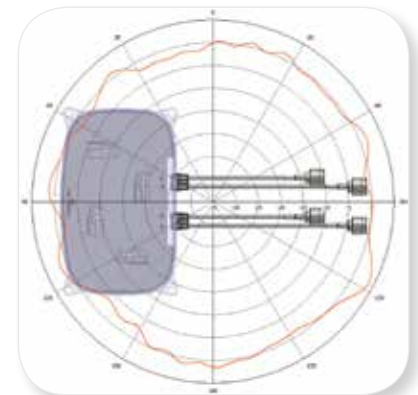
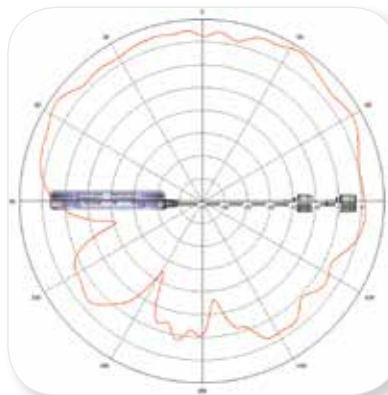
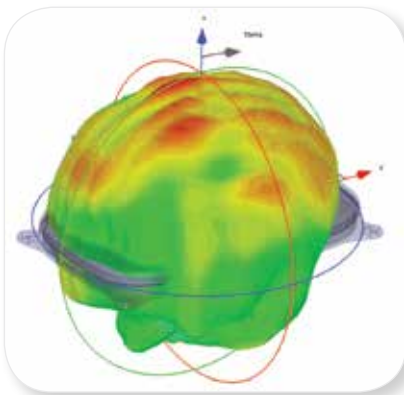
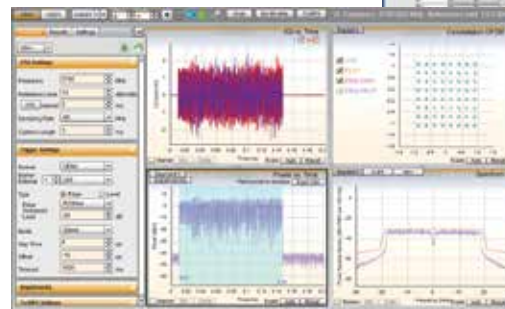
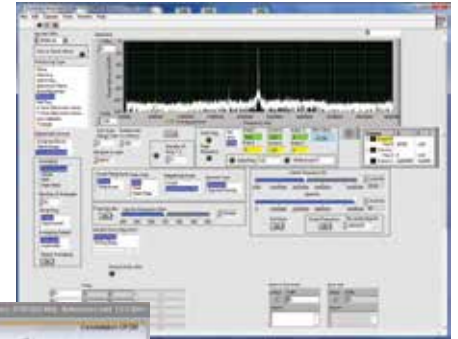
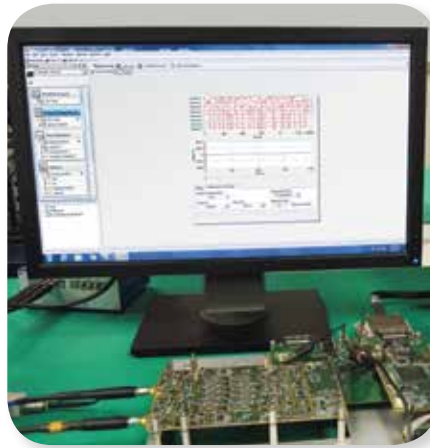
## Services, continued

### TURNKEY WIRELESS SYSTEM DESIGN

- Specification design/prep
- Radio and motherboard design
- Mechanical/enclosure design
- Test plan design and execution

### IN-HOUSE TESTING AND MODELING

- High fidelity 3D electromagnetic modeling RF modeling and testing
- Sophisticated mechanical modeling including FEA and MES analysis
- Radio Design Verification Testing (DVT) and production testing
- Environmental testing
- Pre-certification testing
- Rapid, accurate simulation and measurements



### MANUFACTURING IN THE U.S. AND ASIA

- Packaging test
- LEAN manufacturing
- ITAR and Made in U.S.A. capabilities





## Equipment and Facilities

- Factories in the U.S. and China
- Two Satimo SG 24 near-field test ranges
- ETS-Lindgren tapered antenna test chamber
- CST and IE3D E-Field design software
- Microwave Office® circuit analysis
- Inventor® and SOLIDWORKS mechanical design tools
- Fortus 3D printing/radome prototyping
- Manncorp™ SMT line

