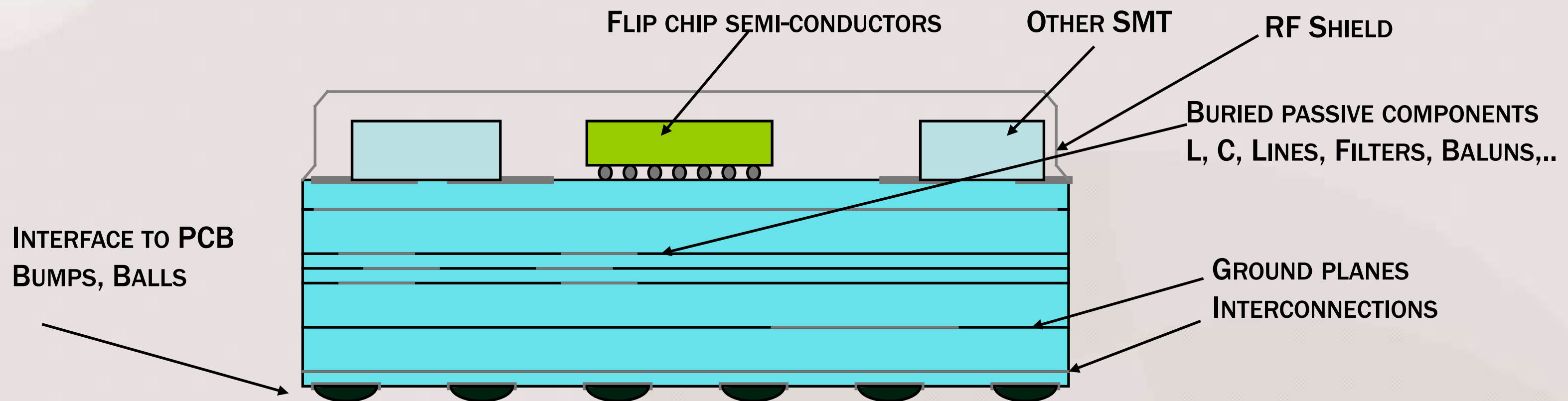
Insight SiP
It's all in the package

INSIGHT SIP

SHORT FORM

RF System in Package ?



Complete 3D RF System Including

- Multiple Semiconductors Dies, Systems-on-Chip (SOC), Analog Functions, Digital & RF Functions, Passive Functions, Clocking, Power Management, Interface to Application on PCB, ...
- Made of Heterogeneous Technologies – CMOS, RF-CMOS, GaAs, SiGe, Quartz, Advanced Packaging Techniques, 3D packaging, IPD, Passive SMD, Organo-Metallic Substrates, Multilayer Ceramic Substrates, ...

Promise of SiP

- More Function in Less Space
- Optimized Cost and Reduced Design Cycles

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Company Profile

Company

- Established in 2005
- Fabless RF System-in-Package (SiP) Company
- Providing Turn-Key Design Services and Creative Packaging Solutions
- Design Team – 9 Permanents - 5 PHD & 4 MSc
- Experts in RF System-in-Package Design
- France – Technical Team at Sophia-Antipolis
- North America – Subsidiary in Denver since 2008
- Asia – Sales Office in Tokyo since 2008

Goal

- Become a Key player in Miniaturized Wireless Technology
- Become a Leading Supplier of Highly Integrated Custom Solutions for Wireless Communications using System-in-Package (SiP) Approach

Business Model

Ready-to-use RF Modules / Antenna Design IPs

Design In-House

Production with Module Maker / Assembly Partner

2.4 GHz Modules (Proprietary, Bluetooth Low Energy, ...), ...

HD Video (WHDI), ...

Design Services

Feasibility Study

Detailed Design

Test and Debug

System-In-Package

Combination Modules

Antenna-In-Package

READY-TO-USE RF MODULES

TO BRING RAPIDLY INNOVATIVE PRODUCTS TO MARKET

MODULE DESIGN ADAPTED TO YOUR MANUFACTURING PROCESS

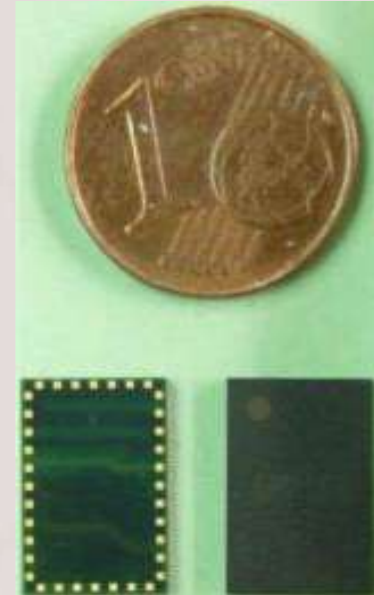
EASIER CERTIFICATION PROCESS (FCC/IC, TELEC, ETSI, ...)

FULL SUPPORT DURING YOUR QUALIFICATION & PRE-PRODUCTION PHASES

Bluetooth® Low Energy Module

BLE module ISP091201x

- Single Mode Bluetooth® Low Energy v4.0 Slave
- Based on Nordic Semiconductor nRF800x Family
- Includes Transceiver, Baseband and Software Stack
- Fully Integrated RF Matching and Antenna
- Ultra Low Power Consumption
- Single 1.9V to 3.6V Supply
- Smallest BLE Module on the Market
- 12mm x 8mm x 1.5mm
- Temperature -40°C to 85°C



Market

- All Devices Requiring Low Power Wireless Connectivity

WHDI™ Modules

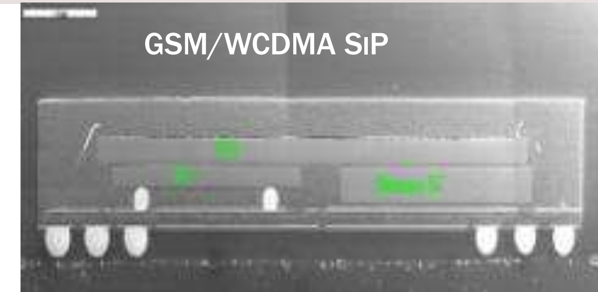
Need to Replace HDMI Cable?

- Solution for High Definition Video Transmission
- Miniature RX and TX Modules
- Any Source to Any Display Device
- No Video/Audio Compression-Decompression
- No Latency
- Transmission with 30 Meter Range
- Baseband Chip - Amimon (Israel)
- 5GHz Radio Chip - Maxim (US)

WHDI Transmitter Display Mini Card
ISP091204 - 44.4 x 26.8 x 5 mm

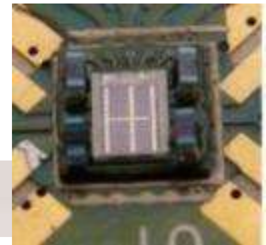
WHDI Receiver Module -
ISP100903 - 47 x 41 x 4.5mm

Design Services



Core Competencies

- Any Wireless Connectivity to Fit Any Device Space
- System-in-Package (SIP) Design Approach
- Highly Integrated Antenna Design Expertise
- Unique Methods to Estimate Package Size and Performance
- Optimization Size/Cost/Time to Market
- Multiple Technologies : BT, FR4, LTCC, HTCC, Thick Film, PCB, IPD,…
- Multiple Assembly Methods: SMT, Wirebond, Flipchip, Embedded Dies…



Technical Successes

3G, ANT, BLE, Bluetooth®, GSM/W-CDMA, GPS, ISM, LTE, NFC, RFID, UMTS, UWB, WHDI™, WiFi, WLan, Zigbee ® …

THE STANDARD SIP DESIGN APPROACH

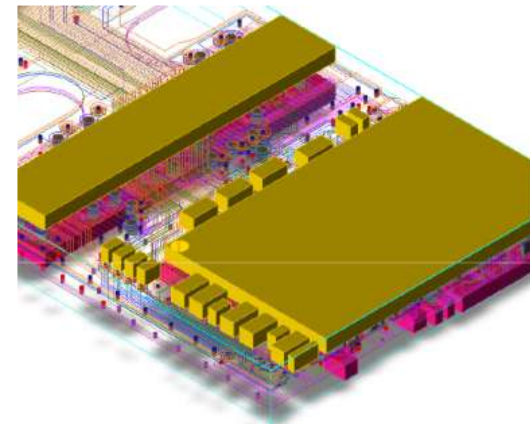
- BASED ON TRIAL AND ERROR ➔ TIME CONSUMING AND UNCERTAIN
- BASED ON CLASSICAL LAY-OUT METHODOLOGY COMING FROM LOW END PCB DESIGNS
  ➔ NOT USABLE FOR COMPLEX RF SIP DESIGN

➢ "MOST SIP DESIGNS ARE JUST SMALL SURFACE MOUNT ASSEMBLIES USING CHIP AND WIRE FOR ICS AND CONVENTIONAL PASSIVES"
(DR LEONARD SCHAPPER - UNIVERSITY OF ARKANSAS – IEEE WORKSHOP COMO, JAN. 2007)

INSIGHT SIP HAS A UNIQUE DESIGN METHODOLOGY

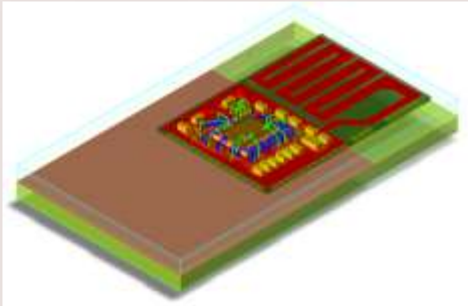
FROM A REFERENCE DESIGN TO A HIGHLY INTEGRATED CUSTOM (RF) MODULE:

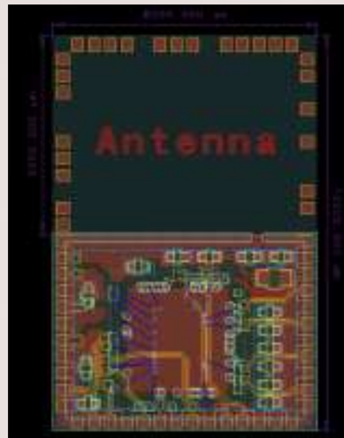
- PROPRIETARY SOFTWARE BRIDGES : CAD LAYOUT VS CAD RF SIMULATORS
- PROPRIETARY EMBEDDED COMPONENT MODELLING ROUTINES
- EXTENSIVE 2.5D AND 3D RF SIMULATION
- SUBSTRATE DESIGN WITH COUPLING/MATCHING ANALYSIS
- MANUFACTURING AND SUPPLY CHAIN IMPLEMENTATION
- RF TEST, SYSTEM TEST, DEBUG AND CHARACTERIZATION



AiP / SiP Examples

Antenna In Package (AiP)





- Laminate Substrate
- MCU & RF Transceiver
- Embedded Antenna
- 8x12 mm² QFN

Application:

- Wireless USB

Highly Integrated SiP

4 Chip SiP :

- 12 x 12 mm
- 2 Memories
- 1 RF IC
- 1 Digital & Analog ASIC
- 3 Wirebonded Chips
- 1 Flip-chip Device