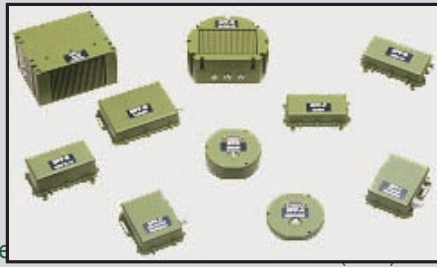




JTRS
HMS
Handheld
Radio



Family

OBJECTIVE / SOLUTION

Ensure that the JTRS HMS meets Size, Weight, and Power and Cost (SWAP-C) requirements for the Brigade Combat Team (BCT) embedded Software Defined Radio (SDR) network communications. In FY05 completed system engineering design and manufacturability analysis and definition of common SDR core transceiver product concept; in FY06 analyzed the manufacturing processes and defined the qualification test methodology design; in FY07 developed Radio Frequency Integrated Circuit (RFIC) manufacturing sub-process and designs; in FY08 demonstrated prototype RFIC, PA common SDR core transceiver product and manufacturing and test methods in laboratory environment; in FY09 completed modeling and simulation analysis and demonstrated system engineering and test validating manufacturing methods and production processes. Supports PM JTRS HMS cost-share strategy through industry teaming with JTRS HMS hardware suppliers supporting low-rate initial production decision by the end of FY10.

ACHIEVEMENTS

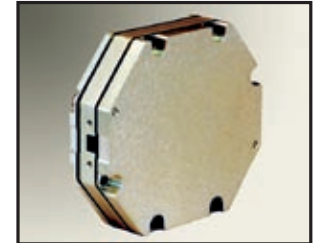
Components include electronically tunable wideband pre-selector filters for the SDR RF Front End utilizing thin-film Barium Strontium Titanate capacitor technology and miniaturized packaging techniques which improve reliability for frequency agility across the entire JTRS RF operating band; RFIC derived from JTRS HMS baseline specifications and architecture through the Trusted Foundry; wideband, highly efficient power amplifier based on Gallium Nitride (GaN) Monolithic Microwave Integrated Circuit (MMIC) technology; Silicon Carbide (SiC) and GaN MMIC technology to reduce SWAP-C of RF Front End switches; miniaturized CSP techniques to increase memory density and reduce SWAP of SDR baseband processors; performed engineering studies to identify Soldier Radio Waveform (SRW) requirements and hardware dependencies resulting from the Communications-Electronics Research, Development and Engineering Center (CERDEC) Soldier Level Integrated Communications Environment (SLICE) Project software programmable radio prototype development.

BENEFITS

- Improves mobility and transportability by significantly reducing the size and weight of embedded JTRS network communications

Affordable Software Defined Radio (SDR) Components for Joint Tactical Radio System (JTRS)

Establish an RF Integrated Circuit (IC) Chipset, Power Amplifier (PA), RF switches and tunable RF filters to ensure JTRS embedded communications affordability.



JTRS HMS Core
Transceiver

- Enhances operational availability of sensor-to-shooter network connectivity with reduced O&S costs
- Delivers low power and affordable SDR components to PM JTRS by FY08
- Ensures that JTRS HMS products will satisfy JTRS Cost as an Independent Variable (CAIV) requirements

STATUS

- Delivered final MRL 7 qualified BST SINCARS filter with Agile RF in LRP and fully qualified manufacturing line providing a 50% size and weight reduction over the baseline design
- Delivered final MRL 7 qualified RF Integrated Circuit with IBM Design Services and fully qualified manufacturing line providing a 72% (est.) size, 15% (est.) power, 70% (est.) weight and 85% (est.) cost reduction over baseline design
- Delivered final MRL 7 qualified core transceiver power amplifier based on GaN MMIC technology with Hittite Microwave and fully qualified manufacturing line providing 96% (est.) size, 30% (est.) power and 85% (est.) cost reduction over baseline design
- Delivered final MRL 7 qualified RF Front End switches based on GaN MMIC technology with Cree, Inc. and fully qualified manufacturing line providing 90% (est.) size, 90% (est.) power, 40% (est.) cost reduction over baseline design
- Leveraging advanced CSP and high density interconnect technologies to deliver a low-power programmable baseband processor with Tessera Inc. Stackable DRAM package delivered, microprocessor/Flash flip-chip and field programmable gate array (FPGA) packages delivered, completed Multi-Package Module, and established MRL 5

WEAPON SYSTEMS / SECONDARY ITEMS IMPACTED

- Land Warrior (LW)
- Unattended Ground Sensors (UGS)
- Non-Line-of-Sight Launch System (NLOS-LS)

POTENTIAL COST AVOIDANCE

- Return on Investment of 15.7:1 with a cost benefit of \$447M