



# Communications Man Portable Digital Radio



Pulsed Load



Rugged



Low Profile



Low EMI

## The Customer's Challenge

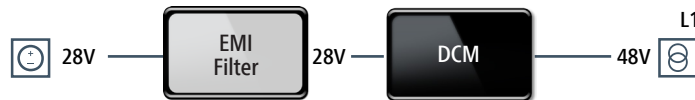
This project was a performance upgrade to an existing vehicle-mounted radio system providing voice and data communications across the battlefield. This frequency hopping radio operated across multiple frequency bands in order to provide secure, encrypted communication to minimize espionage. Size and weight were critical as variants of this design were to be portable, yet the peak RF output power of the radio needed to be over 1 kW and should have a wide bandwidth for data transmission.



## The Solution

The RF section of the radio required a well regulated 48V power rail to maintain the transmit bandwidth, and a large capacitor was used to support the peak transmit load requirement. This arrangement allowed a lower power rating for the power supply. The widely fluctuating 28V system input voltage was boosted to 48V by a MIL-COTS DCM DC-DC Converter module, rated at 320W, which maintained the charge in the output capacitor driving the RF stage.

[Link to Whiteboard »](#)



## The Results

Cold-wall cooling was used to remove heat from the low profile (7.26 mm) DCM converter, which helped further reduce the size of the solution. The DCM's high efficiency reduced waste heat and improved reliability. The high operating frequency of the DCM meant that only a small input EMI filter was required to meet the stringent conducted noise specifications. The wide operating temperature specification (-55°C – +125°C) and rugged construction of the DC-DC converter helped meet the tough environmental requirements of this application.

### Product Family Key Specifications

#### MIL-COTS DCM™ DC-DC Converter

|                |                       |
|----------------|-----------------------|
| Input Voltages | 28V (16 – 50V)        |
| Output Voltage | 48V                   |
| Output Power   | 320W                  |
| Efficiency     | 93% peak              |
| Dimensions     | 38.7 x 22.8 x 7.26 mm |