



# Antenna Array Hidden Power



PCDM



Conduction Cooling



Small Size, Low Profile

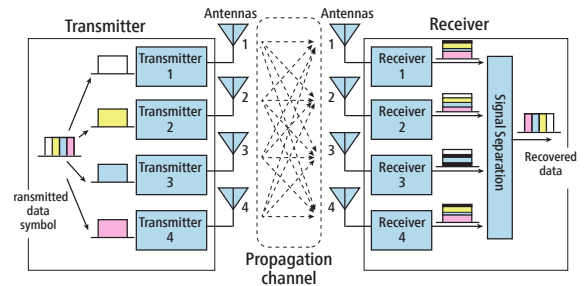


Low EMI

## The Customer's Challenge

As the mobile phone market has matured and smartphones have become an indispensable part of daily life so our expectations for fast, reliable data access have escalated. We expect to be connected reliably wherever we are, whether inside buildings, in car parks, in underground tunnels and even in elevators. While we want 100% coverage, with no blind spots, architects and building owners demand the equipment to be invisible.

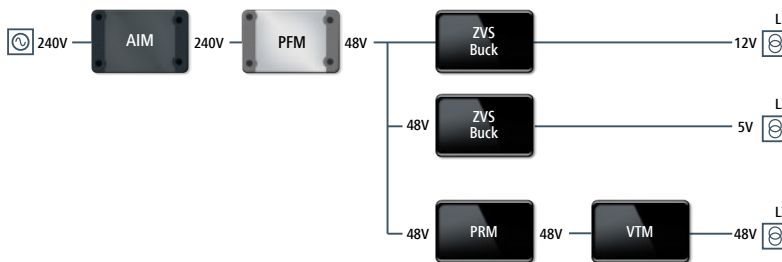
One of our customers needed to power a new, very low profile (<25 mm), physically small, distributed antenna design to be fitted unobtrusively inside buildings. The power solution needed to generate very low conducted and radiated electromagnetic interference to maximize effective signal range. And the requirement for quiet operation meant high efficiencies and conduction cooling (no fans) were required.



## The Solution

A complete solution was developed, with the PFM Isolated AC-DC Converter (9.4 mm high) and its companion AIM taking the universal AC mains voltage and converting it directly to a 24V hub powering three rails. Two of the rails used a ZVS Buck Switching Regulator (2.56 mm high), one to provide a regulated 24V, the other a regulated 5V. The third rail utilized a PRM Regulator to regulate the voltage to 48V, with a VTM Current Multiplier (both 6.73 mm high) providing the isolation to the load.

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## The Results

All five modules used provided the industry's highest density, lowest profile power components, enabling the thin, low visibility solution required. High efficiency, particularly of the PRM/VTM and ZVS Regulators reduced requirements for conduction cooling, further minimizing the form factor. The complete portfolio of scalable power components, from the source to the point of load, provides upgrade capability to the antenna, without the need for an expensive redesign.

### Product Family Key Specifications

#### PFM™ Isolated AC-DC Converters with PFC

<b>Input Voltages</b>	Universal rectified: 85 – 264 VRMS
<b>Output Voltages</b>	24V and 48V isolated and regulated outputs
<b>Output Power</b>	400W
<b>Efficiency</b>	Up to 92%
<b>Dimensions</b>	PFM 4414: 111 x 36 x 9.4 mm PFM 4914: 125 x 36 x 9.4 mm

#### Cool-Power® ZVS Buck Regulator Module

<b>Input Voltages</b>	12V, 24V, 48V (Nominal)
<b>Output Voltage</b>	Wide output range (1 – 16V)
<b>Output Current</b>	8A, 9A, 10A, and 15A versions
<b>Efficiency</b>	Up to 96.5% Light load and full load High efficiency performance
<b>Dimensions</b>	LGA SiP: 10 x 14 x 2.56 mm LGA SiP: 10 x 10 x 2.56 mm

#### PRM™ Regulator Module

<b>Input Voltages</b>	48V, (36 – 75V)
<b>Output Voltage</b>	48V
<b>Output Power</b>	Up to 600W
<b>Efficiency</b>	Up to 97%
<b>Dimensions</b>	32.5 x 22.0 x 6.73 mm

#### VTM™ Current Multiplier

<b>Input Voltages</b>	0 – 60V
<b>Output Voltage</b>	0 – 55V
<b>Output Power</b>	Up to 135A
<b>Efficiency</b>	Up to 96%
<b>Dimensions</b>	32.5 x 22.0 x 6.73 mm