

Design Considerations for RF Energy Harvesting Devices

Harry Ostaffe

Director, Marketing & Business Development

What makes an RF harvester efficient?

- RF Matching
 - Harvester is non-linear
- Proper loading (DC match)
 - Generally requires a specific discrete or emulated resistance
- Correct frequency

Deviation results in significantly reduced efficiency

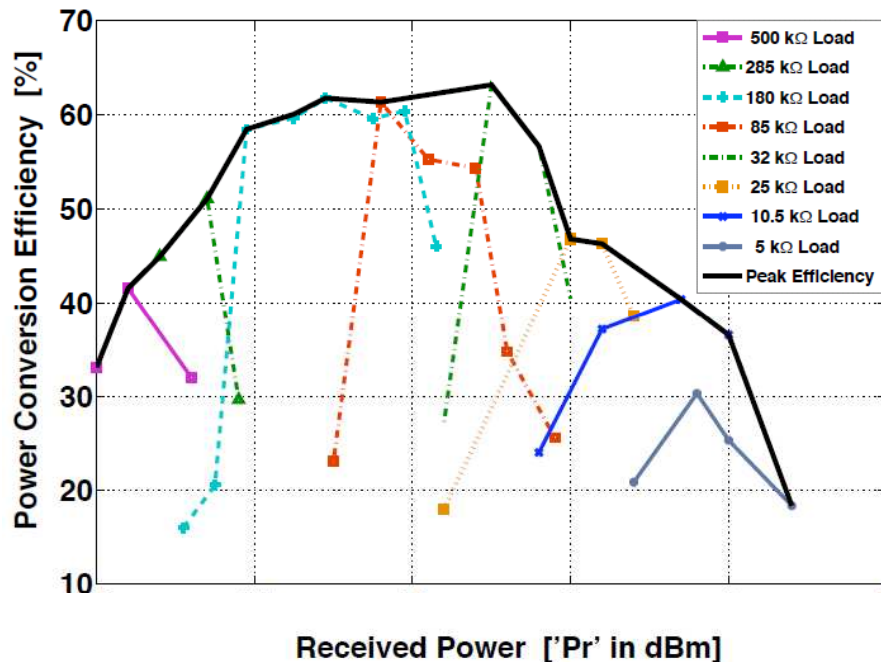


DC Matching Techniques

- Maximum Power Point Tracking (MPPT)
 - Used in many other harvesting technologies
 - Requires monitoring of the DC operating point
 - Requires a voltage converter
 - Uses power (some designs require battery)
- Powercast technology
 - Automatically adjusts to AC and DC operating point
 - No voltage converter required for harvesting
 - Uses no power

DC Matching Technique - MPPT

Example RF Harvester Efficiency



Challenge

- Narrow operating band for each load

Solution: Max. Power Point Tracking

- Used by other harvesting technologies
- Active monitoring of the operating point

Drawback

- Available RF energy is already low
- Active MPPT consumes power