

Smart Devices

Wireless Charging Technology

Wireless Charging Technology

❖ WPC (Wireless Power Consortium)

- Established on December 17, 2008
- WPC Objective
 - Create a universal wireless power charging standard
 - Enables various mobile electronic devices to be placed on top of a single power transfer pad
 - Recharges by magnetic induction
- Uses the Qi standard



Wireless Charging Technology

❖ Qi (氣 = Natural Energy [in Chinese])

- WPC (Wireless Power Consortium)
standard for inductive electrical power
transfer over distances up to 4 cm
- Qi System
 - Power Transmission Pad
 - Power Receiver (commonly
in a Mobile Device)



Wireless Charging Technology

❖ Qi (氣 = Natural Energy [in Chinese])

- Qi Low Power Standard
(Baseline Power Profile)
 - Power transfer up to 5 W
- Qi Medium Power Standard
(Extended Power Profile)
 - Power transfer up to 15 W



Wireless Charging Technology

❖ PMA (Power Matters Alliance)

- Global non-profit industry organization
- Founded by Procter & Gamble and Powermat Technologies in March 2012
- Characteristics
 - Inductive coupling
 - Digital transceiver communication
 - Cloud based power management



Wireless Charging Technology

❖ A4WP (Alliance for Wireless Power)

- Founded in 2012
- Developed the Rezence standards
 - Interface standard for wireless electrical power transfer
 - Based on magnetic resonance
 - Power transfer up to 50 W
 - Power transfer distances up to 5 cm



Wireless Charging Technology

❖ AirFuel Alliance

- Founded by the merger of A4WP (Alliance for Wireless Power) and PMA (Power Matters Alliance) in January 2015
- Developed AirFuel Resonant and AirFuel RF for wireless charging technologies



Wireless Charging Technology

❖ Inductive vs. Resonant

Type		Inductive	Resonant
Frequency	Power transmission (Charging)	100~250 kHz (WPC) 232~278 kHz, 205~300 kHz (PMA)	6.78 MHz ± 15 kHz (A4WP)
	Power control (Communication)	In-band (Packet)	Out-band (BLE 2.4 GHz)
Standardization		WPC, AirFuel (PMA)	AirFuel (A4WP)
Characteristics		Compliant with Qi & PMA	Compliant with Rezence Multi device charging Free positioning

Smart Devices References

References

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