



**XceedID Corporation
MT20w
Access Control Reader
FCC Part 11, 15, 18 Certification
2.1033(b) (4)
08/30/2015**



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1. Device and circuit Operation (2.1033(b) (4)):

The XceedID Corporation MT20w Credential Enrollment reader is a multi-frequency device that operates at 125kHz, 13.56 MHz, and 2.4 GHz. The readers operate by emitting an AC magnetic field at the specified frequency.

When a transponder designed to operate with the reader enters either the 125kHz or 13.56MHz field, the reader and transponder antenna coils become mutually inductively coupled. The energy transfer resulting from this mutual coupling provides a power source to an integrated circuit attached to the transponder antenna. This power source is used to power the transponder chip.

For example, a 13.56 MHz transaction, the reader modulates the interrogation field to send commands to the transponder chip. The transponder chip then responds by load modulating the antenna coil to transmit the identification data from the transponder to the reader.

The MT20w device will send approximately 8 polls per second at 13.56 MHz and 8 polls per second at 125 kHz, while in normal operating mode. It alternates which is polled. The timing of these polls is fixed at 125 ms intervals for each frequency. The duration of each poll without a transponder in the field at 13.56MHz is approximately 68 milliseconds and at 125 kHz it is 24 milliseconds. Example: 13.56 MHz polls at 0ms, 125ms, 250ms, 375ms... and 125 kHz polls at 72ms, 197ms, 322ms...

The 13.56 MHz antenna is a balanced 3 turn antenna. The antenna is floating when not being driven by the RF chip. The antenna is tuned to minimum impedance of 40 ohms at a frequency of 14.675 MHz. The antenna is constructed from a pcb trace around the perimeter of the antenna pcb.

All readers are constructed with a dual pcb subassembly. The ground system on the base board consists of several ground planes. To these planes, the reader ground is terminated.



There are also two modules on the design, one a BLE module and the second a Wi-Fi module. Each module operates according to the standards of their respective technologies, Bluetooth LE 4.0 and 802.11 respectively. Only one module is transmitting at a time.