

EM injection Clamps for IEC 61000-4-6

Fischer Custom Communications, Inc. offers two EM injection Clamps, model F-2031-23mm and F-2031-32mm. FCC EM Injection Clamps offer unique benefits.



- High efficiency coupling factor, <math><3\text{ dB}</math> from 150 kHz - 500 MHz
- F-2031-32mm is ideal for testing multi-conductor cables
- FCC offers all of the test accessories required for testing with the EM Injection Clamps including clamp-on current monitor probes, calibration fixtures and ferrite tube decoupling networks with 23 mm and 32 mm apertures.

Test Setup Using the EM Clamp and a Ferrite Tube Decoupling Network

The electromagnetic (EM) clamp is a high efficiency broadband clamp-on injection device developed to test the immunity of electronic equipment when the standard IEC 1000-4-6 CDN using the direct capacitive coupling technique is not possible nor appropriate. The EM Clamp is often used to test unshielded multiple conductor cables. The figure below shows a typical test setup using the EM Clamp and a ferrite tube decoupling network.

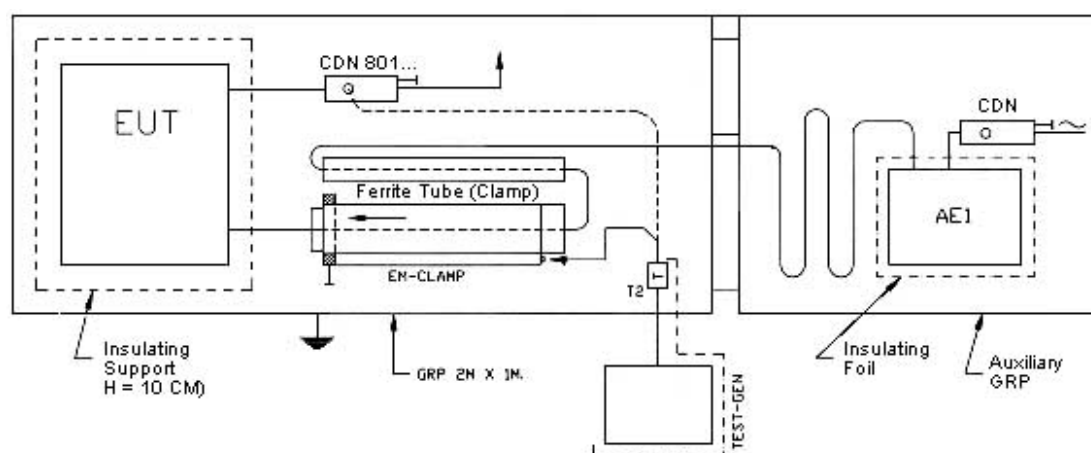


Fig. 1: Test Setup/EM Clamp & Ferrite Tube Decoupling Network

Specifications for Models: F-2031-23mm & F-2031-32mm

Specification	F-2031-23mm	F-2031-32mm
Input Power Rating		
- 10KHz to 100 MHz:	100 watts CW for 15 minutes	125 watts CW for 30 minutes
- 100 MHz to 230 MHz:	100 watts CW for 10 minutes	100 watts CW for 30 minutes
- 230 MHz to 1GHz:	50 watts CW for 10 minutes	100 watts for 15 minutes
Pulse Mode:	Transients of 3 nanosecond rise times and pulse widths of 100 nanoseconds can be coupled into cables up to 5 KV	
Directivity:	>10dB above 20 MHz	>10 dB above 20 MHz
Coupling Aperture:		
- Length	23 mm	32 mm
- Width	610 mm	610 mm
- Height including handle	75 mm	105 mm
- RF connector	N	N

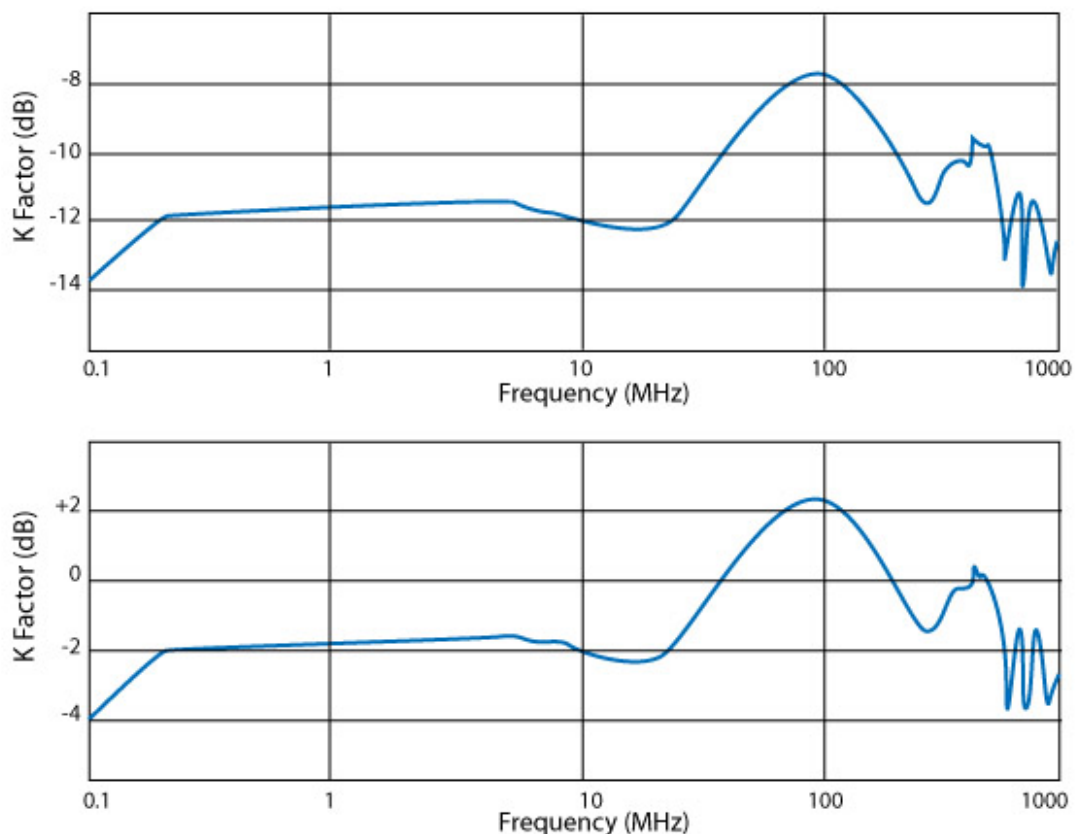


Figure 2: Typical Insertion Loss and K Factor for the F-2031-23mm

RF electromagnetic fields frequently degrade electronic equipment by generating common mode currents on cables. The effect of these E and H fields on the equipment

can be simulated by injecting common mode currents into the cables of the equipment being tested for RF immunity. IEC 1000-4-6 defines the methods for testing the immunity of electronic equipment to conducted mode currents between 150 kHz and 230 MHz.

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For conducted immunity testing from 150 kHz to 230 MHz the increased efficiency can save the user as much as 100% on required CW amplifier power. The F-203I family requires less than 10 watts to develop the 10 volt open circuit level in accord with the IEC 1000-4-6. When an additional ferrite decoupling or ferrite tube is used in the test the F-203I family requires less than 36 watts to develop the 10 volt open circuit level.