



TECH BULLETIN

IR OPACITY of
Vikuiti™ Clear Card Filter

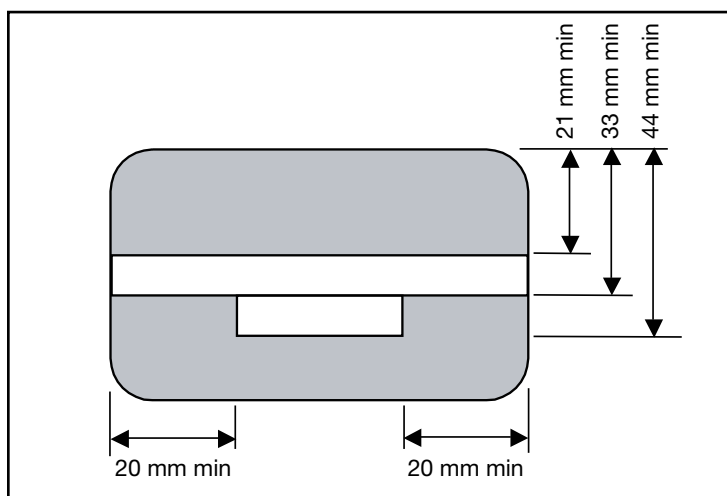
PURPOSE OF BULLETIN:

The purpose of this document is to communicate the two types of test procedures, which are currently used to measure the IR opacity of specified areas of a card test sample that uses the Vikuiti™ Clear Card Filter. An IR opacity test is required for card applications where card detection is based on light transmittance between LED lights emitted at 860 nm and 950 nm and a detector.

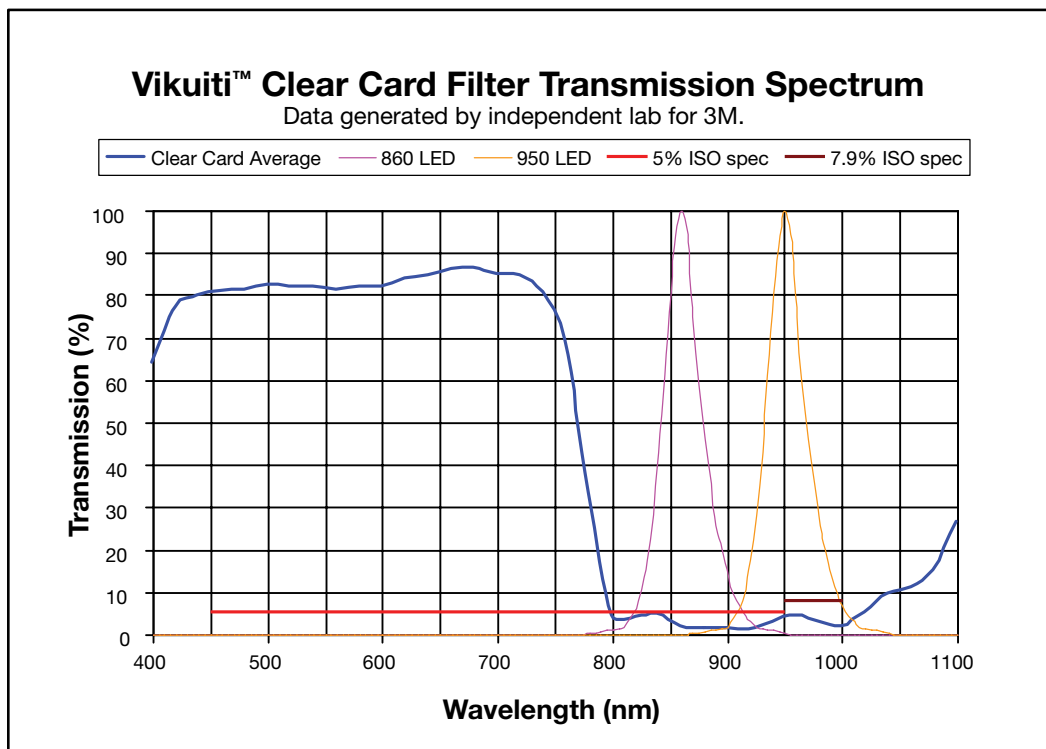
OLD TEST METHOD – OPACITY FOR CONFORMANCE TO EDITIONS OF ISO/IEC 7810 UP TO AND INCLUDING ISO/IEC 7810:2003.

Opacity is measured using a spectrophotometer capable of measuring transmission density in 20 nm increments over a spectral range of 400 nm to 1000 nm.

The ISO requirement is for a minimum transmission density of 1.3 (5% transmission) from 450 to 950 nm, and 1.1 (8% transmission) from 950 to 1000 nm. This test is conducted within the areas of the card shown shaded in the figure below.



A typical IR Transmission spectrum for the Vikuiti clear card filter is shown in the figure below:

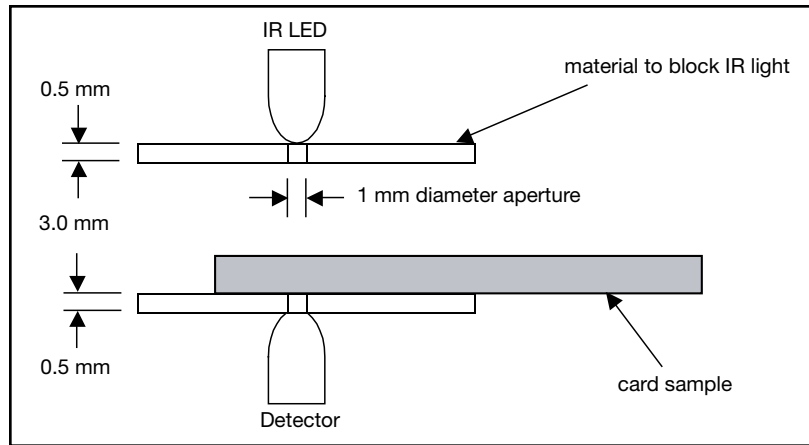


NEW TEST METHOD (PROPOSED) – OPACITY FOR CONFORMANCE TO EDITIONS OF ISO/IEC 7810 LATER THAN ISO/IEC 7810:2003.

This method is intended to provide a more direct representation of the detection means employed in card handling devices such as ATMs and personalization equipment. This test determines the transmission of a card test sample at two different infrared (IR) wavelengths that are representative of those most commonly employed in these card handling devices: 860 nm and 950 nm.

The test equipment consists of IR LED emitter and detector pairs with characteristics as shown in the table below. The IR LED emitter and detector pairs are mounted as shown in the figure and shielded from ambient light. The equipment measures and displays the current through the detector.

	Wavelengths	
	Near IR	Far IR
LED minimum radiant power (mW)	5	5
LED peak emission wavelength (nm)	860 ± 10	950 ± 10
LED spectral half band maximum width (nm)	50	50
Detector nominal wavelength for peak sensitivity (nm)	900	900



PROCEDURE:

Like the old method, this test is conducted within the areas of the card shown shaded in the figure on the previous page. The sample card is placed into the device and a maximum value is recorded for both the 860 LED and the 950 LED. A ratio is calculated of the measured card value and a screen reference. The proposed ISO requirement is for a ratio of 1.0 or less when using a 5% screen reference for both LEDs.

The Vikuiti clear card filter has a specification for an IR transmission density of 1.1 (8% transmission) for both LEDs. This would allow for a ratio of 1.6 or less for cards containing the clear card filter when measured using this proposed ISO test method.

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3M will make commercially reasonable efforts to give notice of the Buyer Patents identified on Exhibit B to any 3M customer buying IR Filters that has indicated to 3M that it will use those IR Filters for financial transaction card(s). 3M hereby notifies you of the following patents: US Patent No. 60/153,112; US Patent No. 60/160,519; US Patent No. 60/167,405; US Patent No. 60/171,689; US Patent No. US 2002/0130186; US Patent No. US 2002/0145049; US Patent No. US 2003/0141373; US Patent No. D436,620; US Patent No. D438,562; US Patent No. D438,563; US Patent No. D442,222; US Patent No. D442,627; US Patent No. D442,628; US Patent No. D442,629; US Patent No. D443,298; US Patent No. D447,515; US Patent No. D449,336; US Patent No. 6,581,839; PCT Patent No. WO 01/18745.



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