

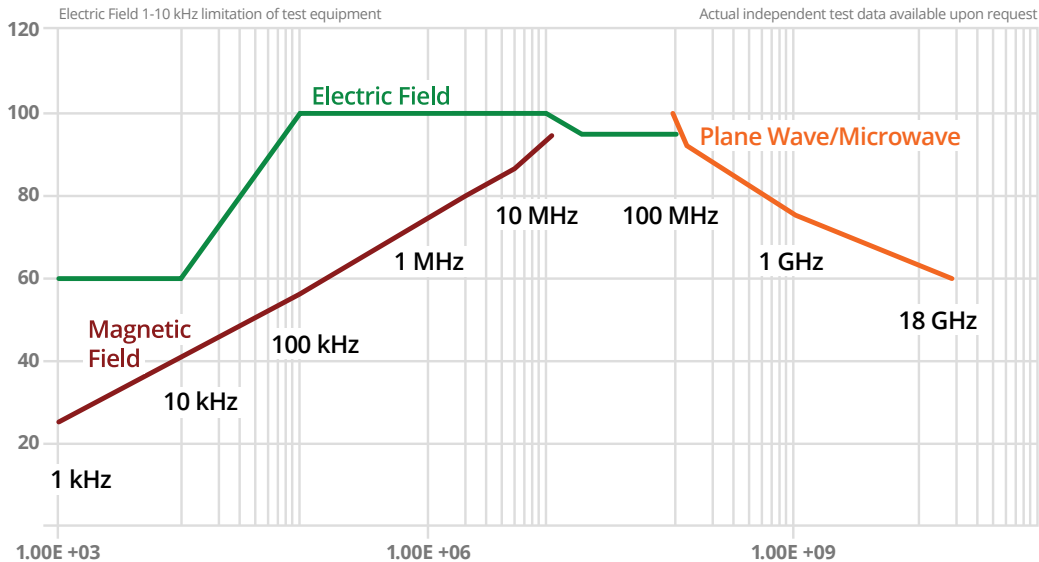
Radio Frequency Performance Guarantee

Every Radio Frequency (RF) “rated” door assembly and RF window provided by Krieger Specialty Products is guaranteed to be fabricated in conformance to its IEEE-299 lab tested design(s). RF “constructed” door assemblies and windows are designed based on RF shielding principles and comparable laboratory testing, but do not have laboratory testing which represents its custom design configuration. Each RF rated door assembly and RF window is capable of meeting its laboratory measured level of RF SE dB performance provided the following items are in conformance:

1. Only Krieger Specialty Products components as specified by the manufacturer are utilized.
2. Krieger Specialty Products installation instructions are followed in strict accordance with product installation, and all hardware components are properly adjusted. RF doors and windows installation requires precise techniques and close attention to detail, far exceeding what is required for non-performance hollow-metal door and window standards. Best practices for RF shielded enclosures and all shielding material manufacturer installation guides must be followed.
3. Doors and frames are not modified in any way so as to degrade the RF performance. Refer to Krieger IG 321 RF Installation Tips and Common Problems to Avoid, which summarizes best practices and other technical advice which must be followed.
4. The field test performed complies with all provisions of IEEE-299. Shielded enclosures are defined in section 3.2.5, which prescribe seamless RF shielding integration to the door assembly which includes the walls, ceiling and floor. RF door and window openings without complete 4-sided shielding integration will not perform to the performance capability achieved in Krieger Specialty Products laboratory testing and Krieger Specialty Products RF performance guarantee excludes these installation environments.
5. The assemblies field environment influences RF SE dB performance. If issues arise during RF testing, a formal IEEE-299 field test report must be submitted to KSP for review and include the following information: Test instruments used and calibration records, antennas used including polarity, frequencies tested, shielding effectiveness measurement results, troubleshooting observations, probing diagnostics with location of hot spots, pictures of the assembly and suspect area of RF leakage, surrounding enclosure and enclosure shielding integration points on all four sides of the door frame or window, including the threshold and frames trim piece.
6. Should it be determined that an installation problem exists, the frame must be taken out of the opening after its original installation during troubleshooting to inspect the integrity of the enclosure shielding and connection points with the frame. Krieger Specialty Products can provide installation inspection support, as product warranties will not be enacted without a thorough, formal assessment of the installation and integration to the shielded enclosure.
7. The hollow-metal industry does not yet have an established performance drop or differential between laboratory RF SE dB versus field testing RF SE dB. If the door is installed into a laboratory grade shielded enclosure in the field, the performance of our laboratory testing is repeatable. However, the cumulation of minor installation deviations and differences in shielded enclosure construction methods and materials used can create performance effects which are often impractical and

sometimes impossible to diagnose in the field; especially if the enclosure is not a six-sided faraday shield or the RF door frame is not continuously electrically bonded at the header, jamb and threshold. Krieger’s field experience indicates for planewave and microwave frequencies, a minor RF SE dB drop may be observed for 60 dB doors paired with mortise locks, and non-operable 80dB/60dB windows. A significant RF SE dB drop may be observed for 60 dB doors utilizing hardware paired with roller strikes mounted onto Z-brackets. A minor RF SE dB drop may be observed for 40dB doors utilizing mortise/ cylindrical locks or roller strikes mounted onto Z-brackets. Note that the specific frequencies tested can have significant impact on the laboratory RF SE dB shown in the graph below (60 dB door) as well, microwave frequencies are more directional and reflective versus planewave which couple onto the enclosure skin as compared with others. Electric Field laboratory results are expected to be repeatable given the interaction of this field are well understood in both laboratory and field environments. Magnetic Field laboratory test should be repeatable however, materials used during installation can affect performance if non-ferrous or low permeability materials are used, or enclosure shielding materials of insufficient mass. Please consult the factory prior to fabrication of any products if the projects test plans do not specify an allowable drop, or specific frequencies are of concern.

Worst Case Measurement Antenna Polarization Test Location
 (Krieger RF SE 60dB Door Assembly Data)



8. Radio Frequency doors may require periodic adjustments, due to the operable nature of the assembly and the effect of repeated cycling on hardware. We recommend that the seals are inspected every 6 months, adjusted and replaced as required. The seals must be inspected and re-adjusted properly prior to RF testing if the door has been in use since the initial RF testing. The assembly must be free of rust, corrosion and other conditions which may degrade the performance of the assembly.
9. Krieger door frames, doors and window frames must interface with the faraday enclosure constructed with the appropriate materials. Bonding Krieger assemblies with incorrect shielding materials can result in galvanic corrosion and degraded performance over time. Please contact the factory with the details of your enclosures shielding materials for review and for more information.



If any Krieger Specialty Products meeting the above conditions fail to meet the specified performance, due to manufacturer's defect, for 10 years from date of approved installation, we will repair or replace the defective product at no cost to the owner.

For more information read our Manufacture's Guarantee.

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