



LIGHTNING DIVERSION SYSTEMS

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SEGMENTED DIVERTER EFFECTS ON RF PATH

Tests were conducted to determine path (transmissivity) loss due to lightning diverter strips. Diverter strips were positioned three to four inches in front of and centered on a 12" antenna transmitting at 9.345 GHz.

Tests were conducted with the diverter strips in several orientations relative to the polarity of the antenna. Some comparison measurements were made with the strip 12" from the antenna to determine the effect of distance from the transmitting antenna. There was no measurable difference in path loss.

Test results, presented below in Table 1, were performed by a major radome manufacturer. Losses reflect worst case application which is with the diverter extending completely across the maximum diameter of the antenna.

Table 1, RF Path Loss Data

Diverter type	Diverter parallel to polarization	Diverter at 20° to polarization	Diverter at 40° to polarization	Diverter perpendicular to polarization	Voltage to ionize 40" strip
0.42" Wide, Heavy-Duty Aluminum	0.95 dB 19.6%	0.7 dB 14.9%	0.7 dB 14.9%	0.5 dB 10.9%	N/A
1/4" Wide Aluminum	0.7 dB 14.9%	0.7 dB 14.9%	0.3 dB 6.7%	0.5 dB 4.5%	N/A
0.060 X 0.200" Oval Segment	0.5 dB 10.9%	0.5 dB 10.9%	0.2 dB 4.5%	0.0 dB 0.0%	20 – 30 kV
0.125" RND Segment	0.1 dB 2.3%	0.1 dB 2.3%	0.1 dB 2.3%	0.0 dB 0.0%	30 – 40 kV
0.100" RND Segment	0.1 dB 2.3%	0.1 dB 2.3%	0.1 dB 2.3%	0.0 dB 0.0%	40 – 50 kV
0.060" RND Segment	0.0 dB 0.0%	0.0 dB 0.0%	0.0 dB 0.0%	0.0 dB 0.0%	40 – 50 kV
0.030" RND Segment	0.0 dB 0.0%	0.0 dB 0.0%	0.0 dB 0.0%	0.0 dB 0.0%	60 – 70 kV

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