(curve **21**). Likewise, as can be seen in **Fig. 3B**, the IR transmission of a regular ultra high density polyethylene film (curve ~~11~~ 13) is increased by about 3% to 8% for an ultra high density polyethylene film which were sprinkled with an antistatic spray (curve ~~21~~23).

Referring to **Fig. 4**, five polyolefin film samples were evaluated for RF transmission in the range of 1GHz to 18GHz. **Fig. 4** shows a graph of insertion loss versus frequency for the following film samples that were treated with 3M Antistatic Electronic Equipment Cleaning spray: high density polyethylene having thickness of 0.32 mm (curve **41**); low density polyethylene having thickness of 2mm (curve **42**); low density polyethylene (under condition: additive free polymer) having thickness of 2.4 mm (curve **43**); low density polyethylene (with an antistatic additive that was added during the production process) having thickness of 0.8 mm (curve **44**), and polypropylene copolymer having thickness of 2.88 mm (curve **45**). As can be seen in **Fig. 4**, all the selected samples illustrate great transmission to RF radiation, and the RF insertion losses do not exceed -0.82 dB in the range of 1 GHz through 18 GHz.

Thus, it is proposed by the inventors to use polymers selected from a family of polyolefins as materials for manufacturing an electromagnetic detection system including both IR seeker and RF radar with a common aperture.

In view of the fact that the IR transparency of the material can be enhanced when an antistatic additive is added to the polyolefin polymers, while RF transparency of the material with antistatic additive does not deteriorates, it is also proposed by the inventors to use polyolefin polymers with an antistatic additive as materials for manufacturing such an electromagnetic detection system.

Referring to **Fig. 5**, a schematic cross-sectional view of a dual mode electromagnetic detection system **50** is illustrated, according to one embodiment of the present invention. The dual mode electromagnetic detection system **50** includes an IR seeker **51** having an IR camera **510**, an RF radar **52** having an antenna arrangement **520**, and a protective dome **53** housing the IR camera **510** and the antenna arrangement **520**.

It should be noted that the subject of this invention is not limited to any particular implementation of the IR camera **510** and the arrangement **520**. Hence, in the embodiment shown in **Fig. 5** and also in other embodiments described herein below, the IR camera **510** can, for example, be a camera operating in the long-wavelength infrared (LWIR) region. Likewise, the antenna arrangement **520** may be implemented in various alternatives. Examples of the antenna elements of the antenna arrangement **520** include,