Near Field Radar Imaging by both Frequency Domain and Impulse Time Domain

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ABSTRACT

In general, the RCS (Radar Cross Section Area) of target is measured by far field range to meet the quadratic phase error 22.5 ° ,i.e ,R≧4D^2/λ .For larger site of target the test range will be large. The compact range can provide larger site of quite for larger size of target RCS measurement. The radar image can be generated by ISAR (Inverse Synthetic Aperture Radar) techniques inside anechoic chamber with compact range. For the compact range with high performance, and larger site of quiet zone area, the cost is very high. In this paper, a low cost near field range will be used to measure the RCS of corner reflector and metal board. And the reason why the corner reflector and metal board have the same result in radar image. Besides, it can be measured in time domain by Impulse Time Domain System at Da-Yeh University. In fact, this system will replace the network vector analyzer in frequency domain. The Impulse Time Domain System can gate the reflection signal I want form the target. Because of the gating function, it can gate out the multipath and noise form environment. And the results of radar image from Frequency Domain and Tome Domain will be discussed. The characteristic of R-Card is applied to reduce the edge diffraction of reflection points. Besides, use R-Card to design a microwave absorber wall, and to reduce the multipath. The experimental precision will be promoted.

Keywords : RCS、ISAR

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