Why do we do Radar Performance Monitoring and how?

Ranatec Instrument AB has a long record in radar instrumentation. For information about our product range we like to refer you to our catalogue.

In this discussion we will first deal with some general aspects which are connected with the use of radar. Let us first define our area of interest within the broad scope of different radars. Ranatec Instrument is dealing with surveillance radars. Such which are often located in remote places and where the radar site is normally unmanned. Typical radar applications include surveillance of airspace for military purposes, Air Traffic Control, Weather Radar, Coastal and Harbour Surveillance. The radar wave lengths range from 3 to 25 cm with corresponding frequencies from 1 to 10 GHz.

Radar has been of immense interest and use since its invention just before World War II and its development under the war and later. In recent years the technology has been lesser developed for civil applications because other technologies in the radio and satellite areas have become available at lesser costs in development, manufacturing and maintenance. However, the radar has one unique feature, that competing technologies can not match, it does not need a co-operating target or system to receive a signal that can tell something about the unknown. For a long time we have been thinking that in the air traffic control applications we can rely on co-operating targets. This is of course not the case in military applications. From recent terrible experiences we know that we can not trust every target moving in controlled space to be co-operative. Therefore the primary radar is of utmost importance as the ultimate backup for identification of movements whatever other systems we may utilise which are based upon satellite and communication technology and co-operating objects. Another important radar application is the detection of the passive echo coming from radar reflections from rain and other similar precipitation.

Our business is to provide assistance in the audit of radars for the mentioned applications.

By audit we mean an independent control of the radar performance and the automatic on-line calculation of a performance figure. The tools we offer are the radar output power measurement and the receiver noise figure measurement. These performance figures are measured with our radar monitor system RM 9000.

Our expertise is to measure power, very high power from the transmitter and the lowest of power going into the receiver. The dynamic between the highest and lowest level of those powers is tremendous (around 200 dB!!).