Abstract  One of the major advantages of GLRT-based methodologies for detection-estimation is that they suggest a “quality metric” for a particular result, without a priori knowledge on the underlying scenario. Naturally, the “quality assessment” property of this technique requires practical validations, where some (or all) of the ideal model assumptions may not be sufficiently accurate. In this paper, we report on our attempts to validate this methodology for some direction-finding applications in the HF-band (5–30 MHz), using the Australian OTHR (the Jindalee Operational Radar Network, or JORN) facility in Laverton, Western Australia. Recent experimentation has involved using an L-shaped aperture with 240 elements in each "arm." Data has been recorded from each of the 480 elements in radar format, whereby the digital receiver output signals first undergo the so-called "range-processing" which is matched processing with an FMCW radar waveform.