

1. Record Nr.	UNINA9910140615903321
Autore	Macnamara Thereza
Titolo	Introduction to antenna placement and installation [[electronic resource] /] / Thereza M. Macnamara
Pubbl/distr/stampa	Chichester, West Sussex, U.K. ; ; Hoboken, NJ, : Wiley, c2010
ISBN	1-282-54960-X 9786612549601 0-470-68687-1 0-470-68688-X
Descrizione fisica	1 online resource (426 p.)
Collana	Aerospace series
Disciplina	621.382/4 629.135
Soggetti	Airplanes - Radio antennas - Installation Antenna radiation patterns
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction to Antenna Placement and Installation; Contents; About the Author; Preface; Series Preface; 1 Basic Antenna and Propagation Theory; 1.1 Introduction; 1.2 Characteristics of Electromagnetic Waves; 1.2.1 Reflection; 1.2.2 Refraction; 1.2.3 Diffraction; 1.3 Interaction between Two Waves; 1.3.1 Waveforms in the Time Domain; 1.3.2 Phasors; 1.4 Polarization; 1.4.1 Linear Polarization; 1.4.2 Circular and Elliptical Polarization; 1.4.3 Axial Ratio; 1.4.4 Measurement of Polarization Purity; 1.5 Characteristics of an Antenna; 1.5.1 Radiation Patterns; 1.5.2 Directivity, Gain and Efficiency 1.5.3 Electrical and Mechanical Boresight 1.5.4 Beamwidth and Gain of the Main Lobe; 1.5.5 Position and Magnitude of the Lobes; 1.5.6 Bandwidth; 1.5.7 Polarization; 1.5.8 Power Handling; 1.6 Propagation; 1.6.1 Power Flux Density; 1.6.2 Guided Waves; 1.6.3 Free Space Waves; References; 2 Aircraft Systems Using Antennas; 2.1 Aircraft Systems; 2.2 Frequencies of the Most Common Aircraft Systems; 2.3 Automatic Direction Finding; 2.4 Distress/SOS; 2.5 Distance Measuring Equipment; 2.6 Electronic Counter Measures; 2.7 Electronic Support Systems; 2.7.1 Frequency; 2.7.2 Positional Information

2.7.3 DOA from Antenna Position; 2.7.4 DOA Using Amplitude Comparison; 2.7.5 DOA Using Phase Comparison; 2.8 Emergency Locator Transmitter/Emergency Position Indicating Radio Beacon; 2.9 Global Positioning System; 2.10 HF; 2.11 Instrument Landing System; 2.11.1 ILS Marker; 2.11.2 ILS Glideslope and Localizer; 2.12 In-Flight Telephony; 2.13 Microwave Landing System; 2.14 Radar; 2.14.1 Doppler Shift; 2.14.2 RadAlt; 2.14.3 Search Radar; 2.14.4 Weather Radar; 2.14.5 Synthetic Aperture Radar (SAR); 2.14.6 Secondary Surveillance Radar; 2.15 SatCom Civilian; 2.15.1 INMARSAT; 2.15.2 Globalstar; 2.15.3 Iridium; 2.15.4 SKYLink; 2.15.5 Teledesic; 2.15.6 SatCom Airborne Antennas; 2.16 Signals Intelligence; 2.16.1 Communications Intelligence; 2.16.2 Electronic Intelligence; 2.17 Tactical Air Navigation; 2.18 Traffic Collision Avoidance System; 2.19 Telemetry; 2.20 UHF; 2.21 VHF Comms; 2.22 VHF Omnidirectional Ranging; 2.23 Equipment Designation; References; 3 The Antenna Siting Process; 3.1 Introduction; 3.2 New Antenna Layouts; 3.3 Optimum Positions for Blades; 3.4 Design Phase; 3.4.1 Initial Paper Design Stage; 3.4.2 Investigative and Computational Modelling Phase; 3.4.3 Verification and Implementation Phase; 3.5 Certification and Qualification Phase; 3.6 Typical Antenna Layouts; 3.6.1 Small Aircraft; 3.6.2 Large Aircraft; References; 4 Frequency and Spatial Coverage Considerations; 4.1 Introduction; 4.1.1 Standard Ground Planes; 4.2 Effect of the Structure on the Spatial Characteristics of the Antenna; 4.2.1 Uninstalled and Installed Patterns; 4.3 Combination of Two Waves; 4.3.1 Combination in the Time Domain; 4.3.2 Combination of Two Waves Using Trigonometry; 4.4 Measurements on Scaled Test Bodies; 4.4.1 Fokker 100 Scaled Model Used for Measurements; 4.4.2 Cylinder Used for Radiation Pattern Measurements

Sommario/riassunto

Introduction to Antenna Placement and Installation introduces the characteristics of antennas and their integration on aircraft. The book covers antenna siting and placement, computational antenna modelling on structures, measurement on sub-scale models of the airframe, full-scale ground measurements and in-flight measurements. The author addresses the different stages in the process of developing an entire antenna layout, as well as covering individual retrofits on existing platforms. She explains the physics of antenna placement qualitatively, thus obviating the requirem
