## **Ref. 539.2 EVA**

## CONTENTS

Preface	
Chapter One	
Introduction to Noise Radiometry	1
1.1 Amplitude Resolution Radiometer Sensitivity	
1.2 Noise	
1.3 System Noise Temperature	
1.4 Measuring System Noise Temperature-Y Factor Method	
1.5 System Noise Factor or Noise Figure	
1.6 Cascaded Systems	
1.7 Noise Effects of Attenuates	
1.8 Effect of Lossy Input Line	
1.9 Multiple Input Receiver Noise Temperatures	
1.10Spot Noise Temperatures in Broadband Amplifiers	
1.11Use of Mixers as Radiometer Front Ends	
1.12Conclusion	
Chapter Two	17
Radiometer Systems	
2.1 The Ideal System Sensitivity	
2.2 Practical Radiometers	
2.3 Total Power Radiometer	
2.4 Continuous Calibration in total Power Radiometer	
2.5 The Dicke Switched Radiometer	
2.6 Correlation Technique	
2.7 Summary	
Chapter Three	37
Practical Radiometer Design	
3.1 Basic Microwave Switched Radiometer	
3.2 Choice of Signal Line Directional Coupler	
3.3 Reference Loads	
3.4 Dicke Switches	
3.5 Calibrating and Balancing	
3.6 First RF Stage in High Sensitivity Radiometers	
3.7 RF Detection	
3.8 Synchronous Detection	
3.9 Post Synchronous	
Chapter Four	53

Spectrometry	
4.1 Frequency Resolution	
4.2 Temperature Scaling of Spectra	
4.3 Autocorrelation Spectrometry	
4.4 Filter Spectrometry	
4.5 Summary	
Chapter Five	93
A Radiometer Description	
5.1 4.8 cm (6.25 GHz) Receiver RF Section	
5.2 Signal Processing	
Appendices	105
Appendix A	
Radiometer Sensitivity	
Appendix B	
Bandwidth Definitions	
Appendix C	
Errors in Noise Temperature	
Measurements	
Appendix D	
Continuously Calibrated	
Dicke Switching	
Appendix E	
Statistical Estimates	
Appendix F	
The Effect of Filter on Output Spectrum	
References	147
Index	151