

4.17.3. Измерения параметров в СВЧ диапазоне (на английском языке)

Жан –Пьер Тесьер, 20 часов, на английском языке

- Chapter 1 Introduction to ‘simple’ RF measurements (Freq. Domain)
 - General definitions
 - Reference planes, voltage, current, waves, SWR, gain...
 - S-Parameters, Smith chart
 - Power measurements of unknown signals
 - Couplers, reflectometers
 - Power meter absolute measurements
 - Sensor technologies (diode detector, thermocouple, thermistance)
 - Spectrum analysis of unknown signals
 - Spectrum Analyzer (SA) absolute technologies
 - Parameters of SA
 - Vector Network Analyzers (VNA)
 - Principle of relative measurements
 - Calibration (error terms, Mason graphs)
 - Accuracy of VNAs
 - Receiver mode of VNAs
- Chapter 2 Measurement of RF Active Devices, simple test signals (2/2)
 - Transistor or PA Large Signal (LS) RF measurements
 - Load-Pull, Source-Pull setups
 - Active, passive, multi-harmonic load-pulling
 - Acquisition technologies (power meter, SA, VNA, NVNA)
 - Results at fundamental frequency
 - $P_{Out}(P_{In})$, P1dB, PAE, gain, Smith areas
 - Nonlinear Vector Network Analyzers (NVNA)
 - Context, principle, phase and absolute calibration
 - Mixer-based NVNAs
 - Sampler-based NVNAs
 - Pulsed mode of NVNAs
 - Time domain waveforms
 - Effects of harmonic loads on transistors or PAs
- Other Measurement topics
 - On-Wafer measurements
 - Context, description

	Limits of probes
	Thermal chucks
	Reciprocity for absolute calibrations
	Low-frequency measurements of RF devices
	Description
	Memory effects detection
	Bias tees issues for transistor measurements
	Low frequency and high frequency paths requirements
	Available technologies and limits
	Software for measurement setups
	Increase of accuracy and repeatability of measurement processes
	Embedded software, communication interfaces
	High level and/or interactive frameworks
Chapter 5	Introduction to nonlinear modeling of active devices
	Circuit simulation algorithms
	Time domain integration (Spice)
	Harmonic Balance
	Transient Envelope
	Time domain equivalent scheme for transistor models
	Equation or look-up table models
	Extraction process
	Examples (FET, BT) with breakdown, temperature, memory effects
	Frequency domain models of transistors or PA: X-Parameters
	Definitions, details of implementation (Agilent / Jan Verspecht talk)
	Strengths and Limits of black box models
	Tendency

4.17.4. Power Amplifiers. Large-signal models for nonlinear circuit analysis (Усилители мощности. Моделирование нелинейных цепей при больших сигналах) – на английском языке

Паоло Колантонио (Prof. Paolo Colantonio, Università degli Studi di Roma “Tor Vergata” - Dip.to Ing. Elettronica) – чтение лекций и проведение семинара в октябре 2010 г.