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Engineering

Electrical and Computer Engineering

Paul E. Mayes Papers, 1931-97

Box 1:

PATENT CORRESPONDENCE AND DISCLOSURE OF INVENTIONS

General Patent Information and Index

General Correspondence: Antennas and Diagrams, 1959-1967

Unidirectional Broadband Antennas 823,998, 1959

Circularly Polarized Omnidirectional Cone Mounted Spiral Antenna 79,432-3,188,643,
1959-1964

Multi-Band Log Periodic Antenna 357,226 - 3,150,376, 1959-1964

Log Periodic Backward Wave Antenna Array 59,671 - 3,108,280, 1960-1964

LP Patent Correspondence, 1960-1964

Log-Periodic Zig-Zag Antenna 190,624, 1962

D.E Isbell Patent 3,210,767, 1962-1965

Antenna Structure 238,666, 1964

Dipole Antenna Arrays 390,952, 1964

Log Periodic Backward Wave Antenna Array 363,315-25,740, 1964-1965

Greenberg Patent 242,863 - 3,163,864, 1965

Copeland et al. Patent 54,891 - 3,162,855, 1965-1966

Paul Ingerson Patent 513,781, 1965-1969

Antenna Structure 549,084, 1966

Directive Helical Dipole Antenna 687,414 - 3,521,289, 1967-1969

Frequency Independent Antenna with Parasitic Elements, 1966

Log-Periodic Scaled Directional Coupler Feed Line for Antennas 792,398, 1968-1971

Antenna with Distributed Active Elements 63,910, 1969-1972

JFD Grant Patent 3,550,143, 1970

Wide-Band Dipole Antenna, 1971

Small Broadband Unidirectional Antenna, 1971

Modulated Impedance Feeding System for Log-Periodic Antennas 792,399 - 3,633,207,
1972

PATENT LITIGATION

Patent Suits, 1962-1967

University of Illinois Foundation v. Blonder-Tongue v. JFD Civil Action No. 66 c567,
1968 (6 folders)

Box 2:

_____ University of Illinois Foundation v. Blonder-Tongue v. JFD Civil Action No.66 c567,
1968 (6 folders)

University of Illinois Foundation vs. Winegard Co. Civil Action 3-695-D, 1966-1967 (4
folders)

Finney Co. v. JFD and University of Illinois Foundation, 1965-1968 (2 folders)
 JFD Insulator and Take-off Drawings
 University of Illinois Foundation v. Jerrold Electronics Corporation, 1966
 Dwight E. Isbell v. Kravis, 1962-1964
 Winegard v. Channel Master, 1964
 JFD c. Channel Master, 1964
 Channel Master v. Kay Townes, 1964
 Channel Master v. Trio, 1963

Box 3:

ANTENNA PATENTS WITH DESIGN INVENTED AND FILED BY PEOPLE OTHER
 THAN MAYES

Antenna Patents, 1949-1965
 Antenna Correspondence, 1966-1967
 Antenna Patents, 1931-1971 (72 folders) (Note: Each folder has attached a label with the
 serial and patent number written by Mayes)
 Directive Helical D

Box 4:

RESEARCH NOTES AND DATA

Slot Radiators, 1950
 Correlation, December 1951 Impedance Measurements, ca. 1952 2M-15 Cover Res.
 Cavity, ca. 1957 LPV-1, 1959
 LPV-2, 1959
 LPV-3, 1959
 LPV 5-6, 1959
 Z-Taper, ca. 1962
 UPM (11), E. Hudock, 1962 UPM (9), E. Hudock, 1962
 UPM (8), E. Hudock, 1962
 UPM (12), E. Hudock, 1962
 LPM (1) - (1A), 1962
 LPM (2), 1962
 LPM (3), 1962
 HF UPM (6), ca. 1962
 UPM (1) - (2), 1962
 UPM (3), E. Hadock, 1962
 Laboratory Notebooks
 UPM 4, 8, 9, 10, 1962
 E. Hadock, No. 1, 1961
 Measurement of 100 to 25 R Tapered Line, 1962
 E. Hadock and R. C. Griswold, Supplement to Book No. 1, 1961

Impedance Data, 1960-66
 "Impedance Measurements," 1962
 CMCA (Conical Magnetic Current Antenna), 1962
 Conical log-spiral monopole, 1963
 Log-spiral, radiating-line antenna, 1960-84

Box 5:

HFUPM (1)-(2), 1962
 Simple Wire, ca. 1962
 UPM (2-C), E. Hadock, ca. 1962 UPM (15), 1962
 UPM (14), ca. 1962
 UPM (13), ca. 1962
 Cap Dipole Project, 1964
 IEEE Paper, 1964
 Impedance of Admittance Coordinates, 1942
 Project I Conical Monopole, 1964-1965
 Electrical System Helical Dipole, 1964-1966
 Wave Guide Impedance, 1966
 Helical Monopoles, HM-41, 42, 43, also 30-37 Shunt-fed, 2-wire, 1966
 LPMDA- 7, 8, 9, 10, 11, 12; LPD-13 Patterns, 1966
 Diagram of Space Filter with One Parasitic Element, 1966
 Avanti CB Antenna, ca. 1968
 Avanti Industrial Testing, ca. 1971
 Slot Center Impedance
 Notes, ca. 1960s
 Phase Error Effects Open-Ended Wave Guide, ca. 1960s
 Hertz Potential Functions Open-Ended Wave Guide, ca. 1960s Antenna Arrays;
 Impedance, ca. 1971
 Antenna Patterns, 1989
 Measurements-Microwave Field
 Radiating Systems & Antennas
 Microwave Horn Antenna
 Cylindrical Dipole, ca. 1972
 Duntech Programs, 1974
 Linear Spaces, ca. 1980s
 Andrews Antenna, 1982
 Near Field Measurements A365, ca. 1985
 Justification of Use of Thin-Wire Kernel-Extended Boundary Condition,
 ca. 1986
 Incident Theta, 1987
 A1 through A20, Informal Seminar Viewgraphs, February-June 1987
 (2 folders)
 TRW Low Profile Antenna Study, 1989

Branch Line Coupler Theo/Exp.
 Antenna 1.0
 Antenna 2.0
 Antenna 2.1
 Antenna 3.1
 Antenna 4.0
 Antenna 4.1
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 Antenna 5.1
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Box 6:

Low-profile Conical Monopole, $f=20-150$ MHZ, 1991-1992
 Digitizing Data, ca. 1992-1994
 Realized Gain on Spiral, 1994
 Archimedian Spiral, 1992
 Cellular Conical Monopole (800-900 MHZ), 1992
 Spiral Smith Charts, 1992
 T2 Arm, 1991-1992
 T2 Arm, 1993-1994
 GTech, 1992-1993
 Conductor-backed CPW (CBCPW) Notes and Data, July 12-23, 1991
 Log-spiral backed with Absorbitive Film, $f=1-18$ GHZ, July-November 1991
 Single Arm Spiral, ca. 1990s
 Data: Backside Patch, May 10-29, 1991
 Post-Mode Data, May 29-July 12, 1991
 Cavity-backed Slot-fed Patch Notes and Data, July 23-31, 1991 Data: CPW1 Boards
 (Early CPW Boards), March 10, 1991 Cellular Phone Antenna, 1991-1993
 Spiral Antennas, 1992
 Solutions, Statemen, and Thiele, 1992-1993
 JPL Array
 Microwaves
 Application of Matrix Optics
 Radio Influence due to HV Power Lines (Noise)
 Calculating Antenna Radiation Patterns and Directive Gain

PUBLICATIONS AND MANUSCRIPTS

Albert, G. E. and J. L. Synge, "The General Problem of Antenna Radiation and the

- Fundamental Integral Equation," 1948
- Duhamel, R. H., "Determination of the Radiation Characteristics of an Antenna by Measurements in the Fresnel Diffraction Region," 1952
- Schelkunoff, S. A., "Conversion of Maxwell's Equations into Generalized Telegraphists' Equations," The Bell System Technical Journal, September 1955
- Imbriale, W. A., J. E. Heller, R. Mittra and J. B. Cruz, "Pattern Synthesis of Linear Arrays using Fourier Coefficient Matching," ca. 1950s
- Louisell, W. H., Coupled Mode and Parametric Electronics, (New York: John Wiley and Sons, 1960) .
- Thal, H. L. and C. B. Mayer, "Feasibility of Log-Periodic Microwave Amplifiers," International Electron Devices Meeting, 1966
- Lyon, J. A. M., D. L. Smith, and J. C. Parker, Jr., "The Role of Loading for Physically Small Antenna Elements," Seventeenth Annual Symposium on USAF Antenna Research and Development, RL-403, 1966
- Lee, W. C.-Y., "Statistical Analysis of the Level Crossings and Duration of Fades of the Signal from an Energy Density Mobile Radio Antenna," The Bell System Technical Journal, 1967
- Lee, W. C.-Y., "An Energy-Density Antenna for Independent Measurement of the Electric and Magnetic Field," The Bell System Technical Journal, 1967
- Lyon, J. A. M., C. J. Digenis, and W. W. Parker, "The Reduction of Coupling between Antennas on an Aerospace Vehicle," Radiation Laboratory, Department of Electrical Engineering, University of Michigan, 1967
- Leonard, J. D. and E. T. Roland, "High Power Antenna Development," Seventeenth USAF Symposium, 1967
- Roland, E. T. and W. F. Patterson, "A Slow Wave Flat Spiral Antenna," Seventeenth USAF Symposium, 1967
- Shanklin, Jr., J. P., "Empirical Parameters for Antennafiers and the SIA," Air Force Avionics Laboratory, ca. 1960s
- Mayes, P. E. and R. L. Carrel, "Logarithmically Periodic Resonant-V Arrays," ca. 1960s
- Mayes, P. E. and J. D. Dyson, "A Note on the Difference between Equiangular and Archimedes Spiral Antennas," ca. 1960s
- Beisner, H. M., "Numerical Calculation of Normal Modes for Underwater Sound Propagation," Underwater Sound Propagation, 1974
- Yang, F. C. and K. S. H., "Impedance of a Two-Conical-Plate Transmission Line," 1976
- Gopinath, A. "Microstrip Discontinuity Equivalent Circuits," MIT Lincoln Laboratory Workshop, 1979
- Electrical Engineering Alumni Association News (Pictures of Electromagnetics Individual Affiliation Program Workspace), 1979
- "Adaptive Multibeam Phased Array," Eaton Corporation, 1980
- "AMPA Experimental Communications System Ground Experiment Test Procedures," Eaton Corporation, 1980
- Wilton, D. R. and C. M. Butler, "Effective Methods for Solving Integral and Integro-Differential Equations," Electromagnetics 3, 1981

Mayes, P. E., "Very Wide Band Antennas for Missile Fuze Applications,"
Electromagnetics Laboratory, Electrical Engineering Department, University of
Illinois, (Req. No. 3313-0052-00-81), September 25, 1981-September 24, 1982

Box 7:

Rao, S. M. And D. R. Wilton, "Electromagnetic Scattering by Surfaces of Arbitrary
Shape," IEEE Transactions on Antennas and Propagation, 1982

Boyles, J. W., "Swept Frequency Radar Cross-Section Measurements with the HP8510
Network Analyzer," 1984

Boyles, J. W. "Using HP 8510 Network Analyzer to Measure the Radiation Pattern
of a Dipole Antenna using Time Domain and Grating to Remove the Effects
of Ground Clutter," 1984

"High Efficiency Multibeam Antenna Design"

Veruttipong, T., V. Galindo-Israel, and W. Imbriale, "Low Loss Symmetric Off
Axis Feeds for Symmetric Dual Reflector Antennas"

Campbell, D. V., P. Dubowicz, and R. Hoverter, "Reduction of Coupling between Cosited
Antennas by Separation of Near Fields"

Mayes, P., D. Tanner, R. Waller, J. Drewniak, T., "Some Broadband, Low-Profile
Antennas"

Kuo, Sam C., H. Cook, and H. Hochman, "Traveling-wave Dipole Array for HF-VHF-
UHF Tactical of Systems"

Klock, P. W., D. Sall, and P. E. Mayes, "Efficient Numerical Evaluation of
Electromagnetic Fields due to Rectangular Patches of Electric Current"

Coe, Richard J. and D. E. Young, "A Network Formulation for Phased Arrays-
Application to Log-periodic Arrays of Monopoles on Curved Surfaces"

Wright, S. M. and P. W. Klock, "The Impedance of the Guyed Quarter Wave Monopole"

Ou, J. D. and W. F. Richards, "An Analysis of Annular, Annular Sector, and Circular
Sector Microstrip Antennas"

Wiegard, G., "Derivation of Possible Basis Functions for the Representation of iz and iy
on the Center Conductor of a Boxed Stripline"

"Blaze: A High-Level Libraru for Drawing Axes and Graphs, An Application Library for
DI-3000"

Hu, A. Y. And C. D. Lunden, "Snake-Feed Microstrip Slot Array," Transport Division of
the Boeing Company

Lee, S. W., R. Mittra, and V. Galindo-Israel, "Calculating Efficiency of Dual-Reflector
Antenna by Reciprocity"

Untitled manuscript

RESEARCH PROPOSALS

Proposal to NSF, "Active Matching of Small Antennas," 1972

Proposal to NSF, "New Techniques for the Rapid Numerical Evaluation of Scattering of
Electromagnetic Waves, 1973

Proposal to RCA, 1972-1973, "Development of Accurate Methods for Calculating

Scattering Parameters of Discontinuities in Microwave Transmission Lines," 1984

COURSE MATERIALS

- "Instructions for Preparation of Theses," 1966
- Elliot's Antenna Course, P. W. Klock, 1964 University of Oklahoma
 - E.E. 83, 1948 (**Restricted: Access only with permission of the University Archivist**)
- Northwestern Technological Institute, Department of Electrical Engineering
 - E.E. 208 Electromagnetics Syllabus and Notes, 1948
- E.E. 208 Electromagnetics Quizzes, 1952 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)
- Physics 52 and 122, ca. 1948 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)
- E.E. 514 Transistors, 1952 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)
- E.E. 661 Communication Networks, ca. 1950s
- E.E. 355 Final Exam, 1955 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)
- E.E. 355 Quizzes, 1955 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)
- E.E. 229
 - Exam File, 1955-1956
 - Final Exams, 1956
 - Quizzes, 1956
 - Notes, 1956
 - Outlines and Memos, 1958
 - Special Problems, 1956
 - Problems and Solutions, ca. 1976-1977
 - Quizzes and Notes, 1976
 - Exams, 1977 (2 folders)
 - Exam and Notes, 1976 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)
- E.E. 497
 - Problem Notebook, ca. 1950s
 - Rumsey's Notes, 1954
- E.E. 352
 - Exams, 1971
 - Exams, 1974

Exams, 1970-1982

E.E. 350 Final, 1973

E.E. 279 Exam, 1973 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)

E.E. 350 Class Notes, 1980

E.E. 354 Class Notes, 1983

E.E. 477

Notes and class lecture material, ca. 1985

Overhead notes and syllabus, 1986

Box 8:

E.E. 477, cont.

Overhead notes, part 2, 1985

Part 4, 1985 (2 folders)

Part 5, 1985

R. Waller Term Project, 1984

Literature, ca. 1985 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)

Chapters 1-9 (7 folders), 1993

Analysis of Systems with Antennas, 1993

Calculating Antenna Radiation Patterns and Directivity, 1993

E.E. 420

Notes, 1971-1988 (**Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student**)

Exams, 1988

E.E. 497 PM Time Domain Analysis of N-Conductor Transmission Line Terminated with Non-linear Loads, 1985

E.E. 497 PM Course Packet, 1989

E.E. 354 Handouts, 1992

E.E. 355 Electrostatics Vector and Scalar Integration for Charge Distributions

STUDENTS PAPERS (Restricted: Access only with permission of the University Archivist, and for living students, also only with written approval of the student)

E.E. 497 and 498, 1963, 1974

E.E. 477, ca. 1977-1985 (7 folders) E.E. 420, 1984 (2 folders)

E.E. 477 and 498, ca. 1987

E.E. 497, 1987

Array Factors, ca. 1974

Box 9:

Untitled papers
Thesis, Chapter 2, 1991
Thesis, Chapter 2 (revised by Mayes), 1991
Thesis Outline & Chapter 3 - incomplete, ca. 1991-1992

End of restricted material.

PHD QUALIFYING EXAMINATIONS (blank)

1966-1986

1987-1991

1979

Parametric Coupling Notes

Stateman and Thiele book chapters Magnetic Field of Infinite Solenoid Notes Aerospace Industry
in Arizona Correspondence, 1989

Antenna and Electromagnetics Lab History, ca. 1960s

Box 10:

Slides, undated

3.5 and 5.25-inch floppy disks (260 total), 1979-1997

ELECTRONIC RECORDS

Online Electronic Content:

Contains research notes and quantitative data; diagrams; graphs; event programs; agendas; and biographic notes; concerning Paul E. Mayes research and developments about antennas, his career as professor of Electrical Engineering, and as Director of the Electromagnetics Laboratory. Materials refer to antenna research; the Antenna Application Symposiums (1987-1993); and workshops led by Paul Mayes.

Processing Note: These files have been re-arranged from their original order by archival staff, in order to facilitate access in the online environment. This work was completed in May 2015.

Nearline Electronic Content:

Contains containing papers by Mayes and by other researchers; source code for specialized research software; software files and system files; computer applications; software manuals; research and funding proposals; institutional correspondence; institutional agreements records; students' papers; and student records. Includes contracts and proposals to Federal Agencies (including NASA, US Air Force, and the U.S. Department of Defense) and private companies. Correspondence refers to departmental events, courses offered and meetings; student and faculty recommendations, faculty candidacy; and research sponsorship.

Specialized software include programs developed by Mayes and his research team (e.g., circuit models), as well as commercial software as AXUM; FORTRAN; AutoCAD; SlideWrite; AIToolbox; .CEL; GenePix Array List (GAL) format; .MCD; MathCad Demonstration System; and GAUSS Programming Language.

Processing Note: In May 2015, archives staff took the following actions to prepare a nearline access version of Paul Mayes' electronic records: (1) Ran virus-scan program on the files; (2) Used Identity Finder, TreeSize Pro, and DROID to extract metadata in order to facilitate appraisal and processing decisions; (3) Used TrID file extension identifier to analyze and append missing file extensions on a number of files during processing.