PROGRAM AT A GLANCE

11/18 (MON) Registration (4:00 p.m. - 8:00 p.m.)

11/19 (TUE)		Room B-1	Room B-2	Room C-1	Room C-2	Room J	Room K
8:30	a.m.	Short Course 1 Design of Zero- and Low-IF Wireless Receivers in CMOS	Workshop 1 RF/Microwave Oscillators and PLL Technologies	Workshop 2 Smart Antenna : Key Technology to Enhance Next Generation Wireless Systems	Workshop 9 Space Solar Power Station/Satellite (SPS) and Microwave Power Transmission Technology (Note : The workshop schedule has been changed)	Workshop 4 Millimeter-wave Commercial Applications and Related Circuit/Module Technologies	Workshop 5 Fabless RFIC Development
11:30	LUNCH TIME						
0:30	p.m.	Short Course 2 Antennas for Small Mobile Terminals; Theory, Design and Measurements	Workshop 6 Si RFIC Processes and Related Circuit Techniques	Workshop 7 RF Technologies for Wireless Terminals	Workshop 8 RF MEMS Switches and Switch Circuits	Workshop 3 Microwave Circuit Simulation Technologies (Note : The workshop schedule has been changed)	Workshop 10 Superconductive Filters for RF Wireless Communications
3:30							

Welcome Reception (4:00 p.m. - 7:00 p.m.) "Heian Jingu Shrine"

11/20 (WED)		Room B-1	Room B-2	Room C-1	Room C-2	Room I+J+ K
8:50	a.m.	WE1A Ultra-Wideband MMICs for Wireless and Optical Communications	WE1B Analyses and Applications of Waveguides and Striplines	WE1C Optical Fiber System	WE1D Electromagnetic Simulation Technique	
10:30		COFFEE BREAK				
10:50		WE2E-Room A Opening Ceremony Keynote Address				
0:30	LUNCH TIME					
2:00	p.m.	WE3A Linearization Technique for Power Amplifiers	WE3B Dielectric Filters	WE3C Active & Adaptive Array Antennas (1)	WE3D Microwave Superconductivity Filter	
3:40		COFFEE BREAK				
4:00		WE4A Dielectric and Waveguide Filters	WE4B Sensing Technology (1)	WE4C Modulation Technology (1)	WE4D Optimization Technique of Electromagnetic Simulation	WEOF Open Forum-1
6:00						

Microwave Exhibition (10:30 a.m. - 5:30 p.m.) "Event Hall, Rooms D, E, G, H"

11/21 (THU)		Room B-1	Room B-2	Room C-1	Room C-2	Room I+J+ K
8:50	a.m.	TH1A Circuit Techniques for Silicon Transceiver IC	TH1B Miniaturized RF ICs for High Efficiency and Low Distortion	TH1C New Design of Microwave Filters	TH1D Broad Band Antennas	
10:30		COFFEE BREAK				
10:50		TH2A Microwave Oscillators	TH2B Microwave Planar Filters (1)	TH2C SPS and Microwave Applications	TH2D New Planar Antennas	
0:30	LUNCH TIME					
2:00	p.m.	TH3A Frequency Converters and Phase Shifters	TH3B Microwave Planar Filters (2)	TH3C Microwave Medical Applications and EMC Techniques	TH3D Circuit and Field Measurement	
3:40		COFFEE BREAK				
4:00		TH4A Ultra Wideband Amplifier Technology for Communication Systems	TH4B Advanced Packaging Technologies	TH4C Modulation Technology (2)	TH4D Materials Measurement	THOF Open Forum-2
6:00						

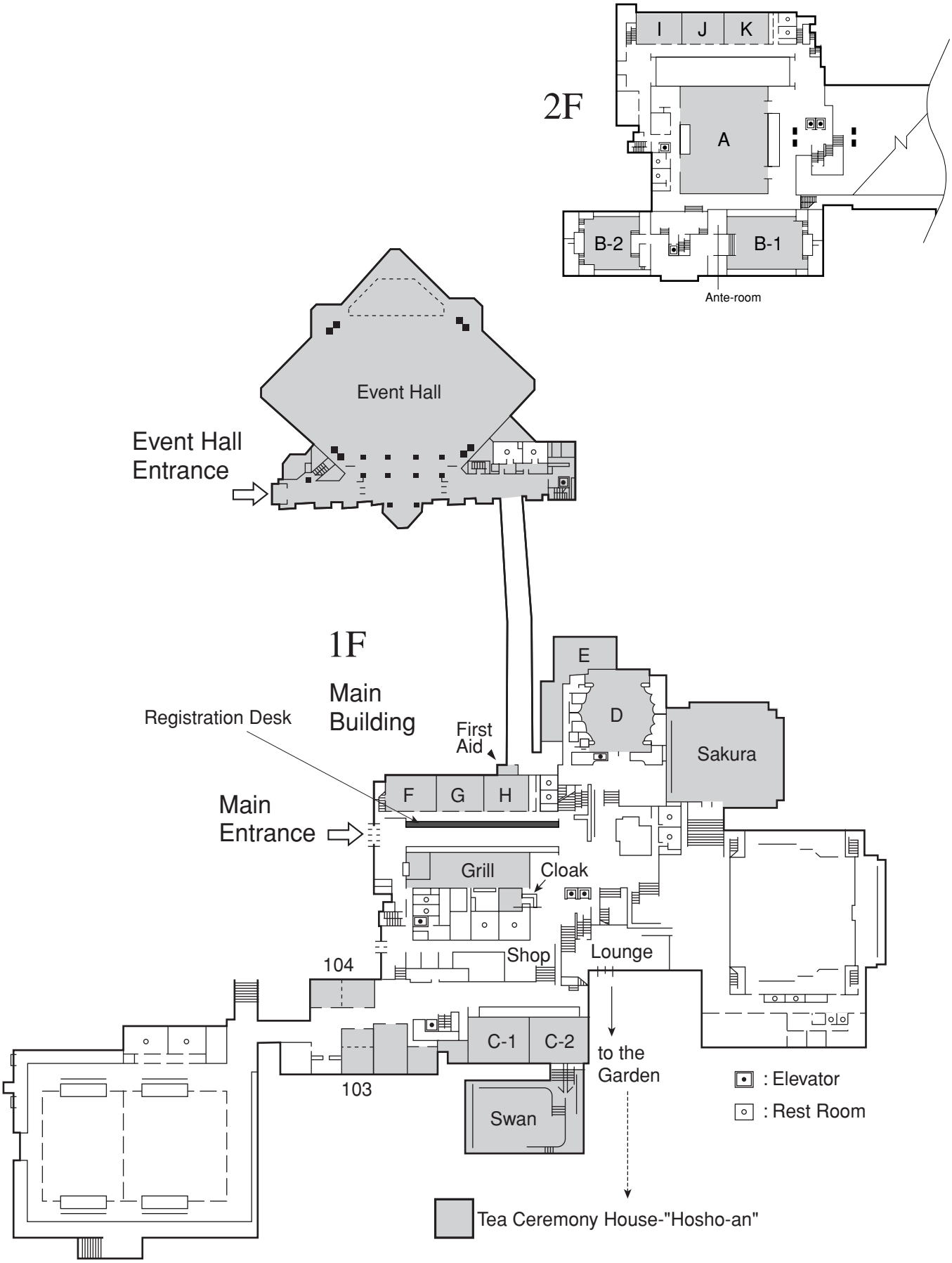
Tea Ceremony (11:00 a.m. - 4:00 p.m.) "Hosho-an" / Banquet (6:30 p.m. - 8:30 p.m.) "Kyoto Takaragaike Prince Hotel" /

Microwave Exhibition (10:30 a.m. - 5:30 p.m.) "Event Hall, Rooms D, E, G, H"

11/22 (FRI)		Room B-1	Room B-2	Room C-1	Room C-2	Room I+J+ K
8:50	a.m.	FR1A Millimeter-Wave MMICs for Wireless LAN Applications	FR1B Couplers, Dividers and Baluns	FR1C Active & Adaptive Array Antennas (2)	FR1D Scattering and Propagation (1)	
10:30		COFFEE BREAK				
10:50		FR2A Si-based Voltage-Controlled Oscillators	FR2B Frequency and Mode Selective Techniques	FR2C Dual Band Antennas	FR2D Scattering and Propagation (2)	
0:30	LUNCH TIME					
2:00	p.m.	FR3A High Power Amplifier Technology	FR3B Integrated Passives and Materials for Microwave Applications	FR3C Array Antennas	FR3D Antenna Theory	
3:40		COFFEE BREAK				
4:00		FR4A Low Noise Receivers for System on Chip	FR4B Ferrite and Surface Wave Components	FR4C Microwave Modules and Components	FR4D Sensing Technology (2)	
6:00						

Microwave Exhibition (10:30 a.m. - 5:00 p.m.) "Event Hall, Rooms D, E, G, H"

FLOOR PLAN


2F
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Event Hall
Event Hall
Entrance
1F
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Registration Desk
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: Elevator
: Rest Room
Tea Ceremony House-"Hosho-an"

TABLE OF CONTENTS

GREETINGS FROM THE STEERING COMMITTEE CHAIR

Welcome to APMC 2002

On behalf of the Steering Committee, I welcome you to the 2002 Asia-Pacific Microwave Conference (APMC 2002), which will be held in Kyoto, Japan, on November 19 through 22, this year.

APMC 2002 is the first APMC conference held outside of the Tokyo area, and has been planned and organized since 1999. We believe you will enjoy the conference and have fruitful discussions in ancient Kyoto.

Kyoto is an old and historical city, but it is continuously progressing with new blood of culture and technology, which are found in the city's Temples, shrines and gardens, and also in the new ceramics and material industries for microwave components. The many blossoms of technical innovations in microwave technology are being called the "Microwave Renaissance". We hope to inspire your deep and earnest discussions both on the new innovative technologies, and on culture in the Renaissance City of Kyoto.

The conference site, Kyoto International Conference Hall is located in the northern area of Kyoto City area and has excellent and comfortable facilities. It also has many beautiful sightseeing places around it. Please enjoy both.

At the neighboring Exhibition Hall, an international microwave exhibition called Microwave Exhibition 2002 will be held for 3 days as a part of APMC 2002. More than 300 firms in the microwave and related industries, mainly from Japan and the United States as well as other countries all over the world will participate in this exhibition. Technical Seminars by the exhibitors will be also held on the new technologies and products. In addition, an exhibition of Japanese microwave history and another exhibition by universities and colleges will be held at the same hall.

As you may know, a financial support program for authors from developing countries was established at APMC '98. We have selected 8 speakers for APMC 2002. I hope they all will be able to participate.

Kyoto is a world-wide famous tourist spot surrounded by the world heritage city of Nara and industrial and gourmet city of Osaka. November is the seasons of colorful autumn leaves, so hotels may be fully booked during the conference period. We request that you register and make hotel reservations early. We have prepared a list of suitable hotels that offten reasonable and low rates.

I would like to express my sincere appreciation to the members of the Steering Committee for the outstanding job they have done in planning APMC 2002.

Finally, I wish that many of you will participate in APMC 2002, and hope to meet you in the beautiful city of Kyoto.

Shozo Komaki
APMC 2002 Steering Committee Chair

MESSAGE FROM THE TECHNICAL PROGRAM COMMITTEE CHAIR

On behalf of Technical Program Committee, I cordially welcome you to APMC 2002 in Kyoto. The 2002 APMC Technical Program Committee has organized a highly qualified and exciting program covering wide varieties of microwave technologies.

This year, a total of 511 papers from 31 countries were submitted to APMC 2002, which is the highest number in APMC's history. Due to the high professional quality of these papers, it was an extremely difficult task for the Technical Program Committee to select the 372 papers (208 for oral presentations, 164 for open forums), the maximum allowable number in this location and this period. This time, by developing the electronic paper submission /review/program-coordinate system, 416 reviewers around the world participated the paper review and selection processes.

The technical activities begin Tuesday morning November 19, at 8:30 am, with workshops and short courses, which have been selected from the most exciting topics in our fields. This year there are 10 workshops and 2 short courses. APMC regular sessions commence Wednesday morning November 20, at 8:50 am, with four parallel sessions. Totally 44 oral presentation sessions and 2 open forum sessions are scheduled for paper presentations. The plenary session is scheduled on Wednesday morning, at 10:50 am. At that time, Dr. Makoto Nagao, President of Kyoto University, will present the keynote address entitled "Communication Technology and Culture". This year we have also invited 12 speakers who are very active in their field.

The Technical Program Committee has worked hard to make APMC 2002 successful and memorable. I would like to express my sincere appreciation to the members and reviewers of the Technical Program Committee for their dedication in organizing the technical program. We are looking forward to meeting you at the conference.

Kazuhiko Honjo
Technical Program Committee Chair

GENERAL INFORMATION

CONFERENCE SITE

The 2002 Asia Pacific Microwave Conference will be held on November 19 to 22 at Kyoto Kokusai Kaikan, the Kyoto International Conference Hall. The hall was built as the first national conference facility in Japan, and is a state-of-the-art complex for meetings and exhibitions.

The Kyoto Kokusai Kaikan is located in the north of Kyoto City, at the foot of Mt. Hiei, and nestled quietly on the clear waters of Lake Takaragaike. It takes about 20 minutes by subway from JR Kyoto station to the Kokusai Kaikan terminal (See the map on the back cover).

The Japanese Garden, surrounded by rolling hills covered with pine trees and overlooking beautiful Lake Takaragaike, makes an unforgettable site.

KYOTO

Kyoto is one of the most famous historical sites in Japan. It was the capital of Japan for more than 1000 years, from 794 to 1868. The Imperial Palace at that time was centered in the city. In addition, you can see a myriad of Buddhist temples, shrines, gardens, and historical architectures throughout Kyoto. UNESCO has recognized the treasures of Kyoto by designating seventeen separate locations within Kyoto Prefecture as World Cultural Heritage Sites.

Kyoto is also the heart of Japanese traditional culture. Master artisans gathered in Kyoto to serve the Imperial court, and the fruits of their labors grew into schools of tradition. Kyoto pottery, ornate fabrics and kimonos, cloisonne, tea ceremony, dance, cuisine, and calligraphy are highly appraised throughout Japan.

Kyoto's historical traditions have by no means hindered its growth into a modern city. No less than 48 institutions of higher education are located here. Kyoto is also home to many giants of information technology and is developing into Japan's answer to Silicon Valley.

Further, November is the most beautiful month in Kyoto. As the colors of the leaves rearch full luster, the Kyoto autumn reaches its culmination.

REGISTRATION

You are encouraged to register in advance for your own convenience. You can take advantage of the reduced rate and can save time at the conference registration.

You can register via Web site (http://www.apmc-mwe.org/apmc2002/), or Conference Registration Forms attached to this brochure.

Conference Fee

Pre-registration fee for the conference is ¥40,000 on and before September 30, 2002, Japanese standard time. After this date, including on-site registration, the fee will be ¥45,000. The registration fee includes admission to all technical program sessions held on November 19-22, the Banquet on November 21, and a copy of the Conference Proceedings, but excludes admission to the Workshops and the Short Courses.

The registration fee for Students and Retirees is ¥10,000, which includes admission to all technical program sessions, admission to the Banquet, and a copy of Conference Proceedings, but excludes admission to the Workshops and the Short Courses.

Workshop and Short Course Fee

10 Workshops and 2 Short Courses are scheduled to be held on November 19. The registration fee is ¥5,000 for Workshops and Short courses, which includes a copy of the Workshop Digest and the Short Course Digest.

Payment

Payment of the registration fee can be made by one of the followings;

a) A bank transfer to the APMC 2002 accounts at the Mizuho Bank, Hongo Branch, Tokyo.
A/C No. 075-2389012
Note: We would appreciate receiving a copy of the bank transfer receipt, or a substitute.

b) Credit Cards: Payment by Credit Cards is not available for Japanese participants

c) Cash: On-site registration

Note: All payments are only acceptable in Japanese yen.

Cancellation

In the event of cancellation, written notification should be sent to Prof. Shozo Komaki, Chair, Steering Committee before October 31. A ¥5,000 cancellation fee will be deducted from the refund. After October 31, no refund can be made and a copy of the Conference Proceedings will be sent after the conference.

Prof. Shozo Komaki / Chair, Steering Committee
c/o SIPEC Corp., 4-1-4 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan
Phone : +81-3-815-8590, Fax : +81-3-3815-8529
E-mail: mweapmc@blue.ocn.ne.jp

Registration Desk

The registration and information desk will be open during the following hours:

November	18	(Monday)	16:00 - 20:00
	19	(Tuesday)	9:00 - 18:00
	20	(Wednesday)	9:30 - 18:00
	21	(Thursday)	9:30 - 18:00
	22	(Friday)	9:30 - 13:00

GENERAL INFORMATION

OFFICIAL LANGUAGE

The official language is English which will be used for all printed materials, presentations, and discussion.

SERVICES FOR PARTICIPANTS

Some refreshments will be available at the foyer on the 1st and 2nd floor during the 20 minute session breaks. The morning break will be served at 10:30 a.m. to 10:50 a.m., and the afternoon break from 3:40 p.m. to 4:00 p.m.

SOCIAL PROGRAM

Welcome Reception

All conference attendees are invited to the Welcome Reception held from 4:00 p.m. to 7:00 p.m. on Tuesday, November 19, in "*Heian Jingu Shrine*" with the famous giant red gate "*Ootorii*", To enjoy a walk in the beautiful garden of "*Heian Jingu Shrine*" in advance of the Welcome Reception at the "*Heian Jingu Kaikan*" located near the exit of the garden, every attendee must get an APMC 2002 ID item at the desk in front of the red gate of "*Ootenmon*", which is behind "*Ootorii*", and enter the garden of the shrine. The entrance to the garden is at the left side of the shrine.

Bus transportation from the conference place of "*Kyoto Kokusai Kaikan*" to "*Heian Jingu Shrine*", will be available for all of the attendees. After the reception, there will be buses returning to "*Kyoto Kokusai Kaikan*" that stop at several major hotels.

Heian Jingu Shrine:

"*Heian Jingu Shrine*" is the most representative Shinto shrine in Kyoto. The Shrine, erected in 1895 in commemoration of Kyoto's 1,100th anniversary, was dedicated to "*Kammu*", the 50th Emperor who established Kyoto as the capital of Japan at the end of the 8th century. It was patterned after Emperor Kammu's Imperial Palace. "*Heian*", which literally means "peace and tranquility", was the ancient name of Kyoto. The vermilion structures with their green roofs reflect the influence of Chinese palace architecture of the T'ang Dynasty, which flourished in the 8th century. The garden at the rear of the shrine is well known for its weeping cherry trees, maple trees, azaleas, irises and waterlilies.

Opening Ceremony

Celebrating the successful start of the APMC 2002, the Opening Ceremony will be held from 10:50 a.m. to 0:30 p.m. in Room A on Wednesday, November 20. A declaration and brief report by the APMC 2002 Steering Committee Chairperson and congratulatory addresses by invited representatives of sponsoring organizations as well as IEEE MTT-S President and representatives from many countiries are scheduled at the beginning of the ceremony. Then, we will immediately move to the Keynote Address given by Dr. Makoto Nagao, President of Kyoto University. The title is "Communication Technology and Culture", being fit for the ancient capital, Kyoto.

Tea Ceremony

Would you like to enjoy a tea ceremony between your busy sessions or booths? The tea ceremony will be held for all APMC 2002 attendees and exhibitors.

Ladies wearing traditional Japanese-kimonos will serve you a bowl of green tea "*maccha*" and a Japanese-style confection "*okashi*". You can enjoy the atmosphere of the tea ceremony: the gentle bubbling sound of water in a teakettle, the fragrance of incense, the lovely flower arrangements, and the artistic calligraphy on a scroll hanging in the alcove.

The way of the tea ceremony "*Chado*" is a Japanese cultural tradition. In the 16th century, Mr. Rikyu Sen established the foundations of "*Chado*", where one should respect everyone without the distinction of status or rank. That is, the spiritual aspect is most important in "*Chado*". The culture of "*Chado*" has greatly influenced various aspects of Japanese culture such as architecture, gardening, textiles, food and cooking. We have good quality green tea and excellent confections in the Kyoto area. It is our pleasure that we provide you with everything you need.

Date: Thursday, November 21, 2002
Time: 11:00 a.m. - 4:00 p.m.
Place: Tea ceremony house "*Hosho-an*" in the Garden of Kyoto International Conference Hall
Tickets : 500 yen per person at the registration desk.

Tea Ceremony House- "*Hosho-an*"

Banquet

The APMC 2002 Banquet will be held on Wednesday, November 21 in the Prince Hall of the Kyoto Takaragaike Prince Hotel from 6:30 p.m. to 8:30 p.m. with a wonderful buffet style dinner and memorable traditional entertainment performed in the authentic Kyoto style. The Banquet will provide the occasion for all the conference participants to meet and enjoy themselves in a relaxed and friendly setting. Celebrating the success of APMC 2002, a greeting by the Conference Chairperson, will be made, followed by the ceremony of "*Kagamiwari*", in which a large barrel of "*Sake*" (Japanese rice-wine) is opened by wooden hammers. The APMC 2002 Microwave Prize will be given to the winners, who will be selected by the Prize Committee from all the presented papers. As a special entertainment, the Banquet features traditional Japanese dances performed by professional female entertainers, called "*Geiko*" and "*Maiko*" (apprentice "*Geiko*"), who are magnificently dressed in traditional silk "*Kimono*" (native Japanese costume). After dinner, a variety of classical and modern songs will be played on the "*Koto*", a traditional 13-string musical instrument with an elegant sound. So, join us for an unforgettable wonderful evening!

INTERNATIONAL STEERING COMMITTEE MEETING

The APMC International Steering Committee Meeting will be held on Wednesday, November 20, 2002, from 12:00 pm to 2:00 pm at Room 103.

IEEE MTT-S REGION 10 CHAPTER CHAIR'S MEETING

The IEEE MTT-S Region 10 Chapter Chair's Meeting will be held on Thursday, November 21, 2002, from 12:00 pm to 2:00 pm at Room 103.

VISA REQUIREMENT FOR INTERNATIONAL ATTENDEES

Citizens of other countries may have to carry a passport (valid for at least 6 months) and visa to enter Japan. Foreign participants should contact the Japan Embassy, Consulate, or Agency of Tourism in their home country AS SOON AS POSSIBLE to determine their particular visa requirements. Participants requiring visas must initiate the application process well in advance of their departure date.

NOTE: The APMC 2002 Committees CANNOT contact or intervene with any Japan Embassy or Consulate office abroad on your behalf.

OTHER INFORMATION

Electricity

Electricity supply is 100V/60Hz in western Japan including Kyoto, and 100V/50Hz in eastern Japan. Please be careful about using electrical appliances brought from overseas which may not meet Japanese requirements.

Climate and Clothing

Kyoto will be felt cool during the holding of the Conference.

The average temperature in November is 11.5ºC (52.7ºF), the average high temperature is 16.6ºC (61.9ºF) and the average low temperature is 7.0ºC (44.6ºF). Accordingly, light coat or jacket should be appropriate.

The Conference Hall and all major hotels are air-conditioned.

No Smoking Policy

Smoking is prohibited at the conference site except at limited smoking corners.

Currency

Japanese yen is the only currency which is used at stores and restaurants.

You can exchange foreign currencies for Japanese yen at foreign exchange banks and other authorized money exchangers by showing your passport. The exchange rate fluctuates daily.

Traveller's Checks and Credit Cards

Since traveller's checks are not popular in Japan, you may use them only at major hotels and leading banks. Major credit cards, e.g. VISA, Master Card, AMEX, and JCB, can be used at restaurants, hotels, souvenir shops, etc.

Tipping

Tipping is not a common practice in Japan. To obviate the need for individual tipping, a 10 to 15% service charge will be added to your bill in some hotels and restaurants. But for the most part, no gratuity is required.

GENERAL INFORMATION

HOTEL ACCOMMODATIONS

JTB, the official travel agent for the Conference, has blocked 17 hotels in Kyoto during the conference period.

Hotel reservation must be made through the official travel agent, JTB Corp., using the attached application form, {or via Web site (http://www.apmc-mwe.org/apmc2002/)}. Application should be accompanied by the remittance covering the hotel deposit of 5,000 yen and the handling charge of 500 yen per person. No reservation will be confirmed in the absence of the payment.

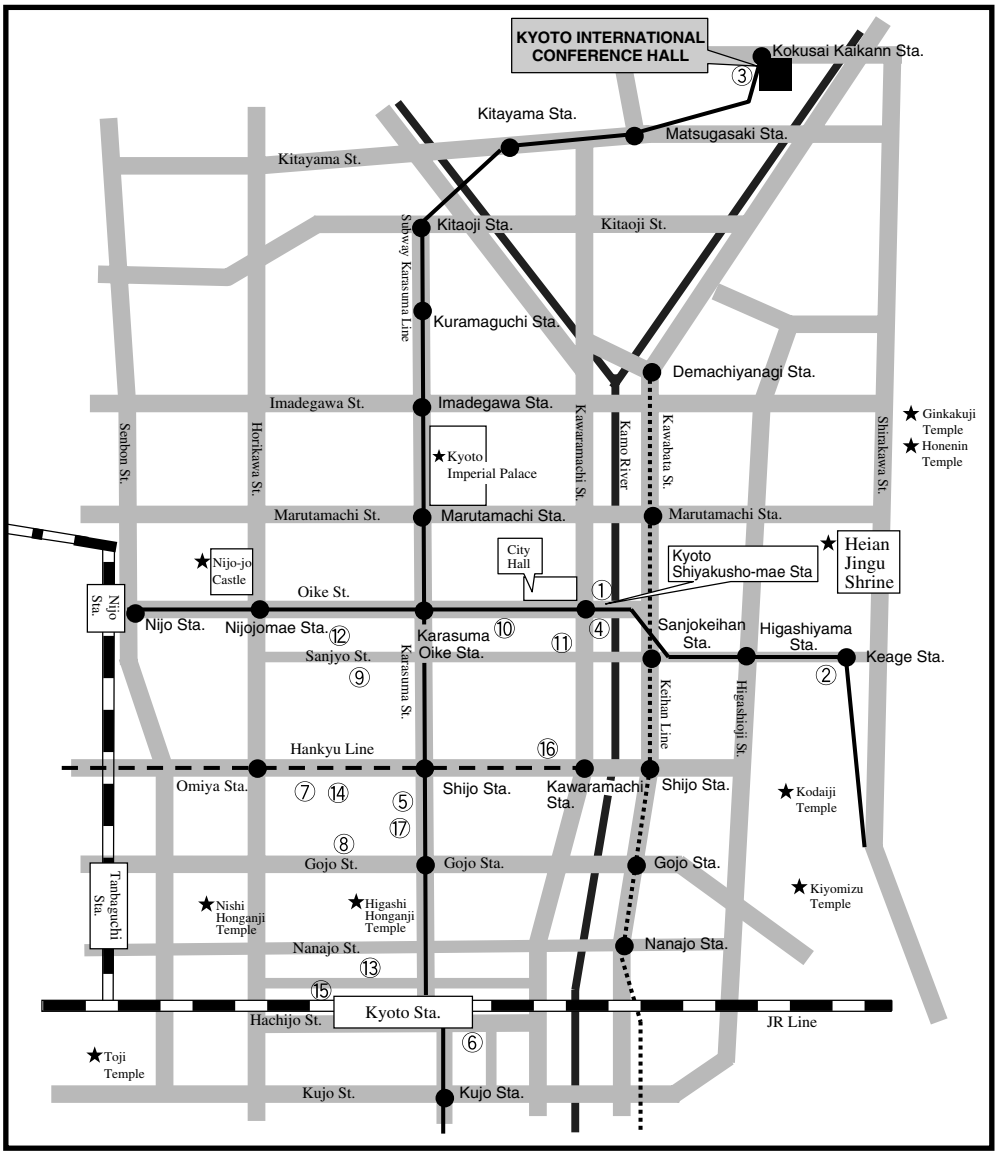
Do not mail hotel accommodation form to Prof. Shozo Komaki, Chair, Steering Committee.

OFFICIAL TRAVEL AGENT

Japan Travel Bureau Inc. (JTB) has been appointed as the official travel agent for the Conference and will handle hotel accommodations. Applications and Inquiries concerning hotel accommodations should be addressed to;

JTB Kyoto office
Higashi-shiokoji-cho, Shimogyo-ku,
Kyoto 600-8216, Japan
Phone:+81-75-361-7241 Fax:+81-341-1028
E-mail:kyoto_ei3b@kns.jtb.co.jp

Hotel Location



① Kyoto Hotel Okura
② Westin Miyako Hotel Kyoto
③ Takaragaike Prince Hotel
④ Kyoto Royal Hotel
⑤ Karasuma Kyoto Hotel
⑥ Hotel Keihan Kyoto
⑦ Mitsui Garden Hotel Kyoto Shijo
⑧ Aranvert Hotel Kyoto
⑨ Sanjo Karasuma Hotel
⑩ Hotel Gimmond
⑪ Hotel Alpha Kyoto
⑫ Kyoto Garden Hotel
⑬ Hotel Hokke Club Kyoto
⑭ Maruko Inn Kyoto
⑮ APA Hotel Kyoto Ekimae
⑯ Kyoto Central Inn
⑰ Toyoko Inn Gojo Karasuma

APMC 2002 PRIZE

The APMC 2002 prize will be awarded to the authors of the papers judged by the APMC 2002 Award Committee to contain the most outstanding contributions to the microwave field among those presented at APMC 2002. The awards will be given at the banquet to be held during the APMC 2002 on Thursday, November 21, 2002. Certificates and rewards will be presented to all recipients.

TECHNICAL SESSION

Wednesday, November 20 8:50 a.m. - 10:30 a.m.

Room B-1

Session WE1A

Ultra-Wideband MMICs for Wireless and Optical Communications

Chairs : Y. Itoh, *Mitsubishi Electric Corp., JAPAN*
M. Kimishima, *Advantest Corp., JAPAN*

WE1A-1 Highly Integrated MMIC Beamformer for Ultra-Wideband Phased Array Antennas

A. Ouacha, M. Alfredson, T. Holmgren, and R. Jonsson, *FOI, Swedish Defence Research Agency, SWEDEN*

WE1A-2 A 15-80 GHz MMIC SPDT Switch Using Traveling Wave Concept

W.-H. Tu, P.-Y. Chen, K.-Y. Lin, H. Wang, and R. B. Wu, *Nation Taiwan Univ., TAIWAN*

WE1A-3 A 45-90 GHz BPSK Modulator Using HBT Technology

H.-Y. Chang, H. Wang, Y.-C. Wang*, P.-C. Chao*, C.-H. Chen*, and D.-C. Niu**, *Nation Taiwan Univ., *WIN Semiconductors Corp., **Chung-Shan Institute of Science and Technology, TAIWAN*

WE1A-4 An Integrated Frequency Doubler

A. Chenakin, Y. Fu, and D. Lee*, Nextec Microwave & RF, Inc., U.S.A.*

WE1A-5 A Broadband 120-GHz Schottky-Diode Receiver for 10-Gbit/s Wireless Links

T. Minotani, A. Hirata, and T. Nagatsuma, *NTT, JAPAN*

Room B-2

Session WE1B

Analyses and Applications of Waveguides and Striplines

Chairs : T. Shibata, *NTT, JAPAN*
Z.-H. Feng, *Tsinghua Univ., CHINA*

WE1B-1 An Efficient Analysis of Lossy Discontinuities in Waveguide by Using Extended Spectral Domain Approach Combined with Mode Matching Method

T. Kitazawa, K. Wakino, T. Nishikawa, and T. Shiraishi, *Ritsumeikan Univ., JAPAN*

WE1B-2 Investigation on Conductor and Dielectric Losses of Striplines from the Coupled Transmission Line Parameters Extracted by Using the Method of Lines

G.-L. Li and Z.-H. Feng, *Tsinghua Univ., CHINA*

WE1B-3 Fast Inductance Extraction of Microstrip Lines using Adaptive PEEC Grid

C.-H. Ahn and H. Kim, *Yeungnam Univ., KOREA*

WE1B-4 A Simple Technique of Enclosed Subregions for CAD Models of Shielded Multilayer/Multiconductor Coplanar Coupled Lines

A. N. Sytchev, *Tomsk State Univ. of Control Systems and Radioelectronics, RUSSIA*

WE1B-5 Tapered Microstrip Lines for Filter Application

M. Tsuji, M. Katsumata, and H. Shigesawa, *Doshisha Univ., JAPAN*

Wednesday, November 20 10:50 a.m. - 0:30 p.m.

Room A

Session WE2E Opening Ceremony

Opening Ceremony

Keynote Address : The Communication System and Culture

Speaker : Dr. Makoto Nagao, *President of Kyoto Univ., Japan*

Dr. Nagao was born on October 4, 1936. After completing undergraduate studies at Kyoto University, Department of Electrical Engineering in 1959, he obtained MS and PhD degrees from Kyoto University in 1961 and 1966, respectively. He was an assistant professor of Electrical Engineering at Kyoto University from 1961-1968, an associate professor from 1968-1973, and a full professor of Electrical Engineering, at Kyoto University from 1973-1997. He has served as Director of the Computing Center, Director of the Central Library, and Dean of the Faculty of Engineering. He has been President of Kyoto University since 1997. Professor Nagao also held a Chair in Ethnological Study by Computer at the National Museum of Ethnology from 1976-1994. His research activities are in the areas of pattern recognition, image processing, natural language processing, machine translation, and artificial intelligence in general. He has acted as a program chairman, and a general chairman of more than ten international conferences, symposiums and workshops. He is currently an editor of several international journals, including Computer Vision, Graphics and Image Processing, and Artificial Intelligence. He is often invited to give talks at international conferences, and has received numerous awards, including the IEEE Emanuel R.Plore Award, the Medal of Honour of the International Association of Machine Translation, the Purple Ribbon Medal (by Japanese Government), and the honorary degree of Doctor of Science from the University of Nottingham. He has been President of the Japan Association of National Universities since April 2001.

TECHNICAL SESSION

8:50 a.m. - 10:30 a.m. Wednesday, November 20

Room C-1

Session WE1C

Optical Fiber System

Chairs : K. Inagaki, *ATR, JAPAN*
K. Utsumi, *Matsushita Communication Indeustrial Co., Ltd., JAPAN*

WE1C-1 30 kHz-40 GHz Amplifier for Optical Application

B. S. Virdee and A. Virdee*, *Univ. of North London, *Filtronic Components Ltd, U.K.*

WE1C-2 An Improved Broadband and High-Power Erbium-doped Superfluorescent Source

L. Yang, *Univ. of Science and Technology of China, CHINA*

WE1C-3 Impact of Optical Link Noise on the Performance of Ubiquitous Antenna System

S. Okamura, K. Tsukamoto, S. Komaki, and M. Okada*, *Osaka Univ., *Nara Institute of Science and Technology, JAPAN*

WE1C-4 Dispersion-Effect-Free Dense WDM Millimeter-Wave-Band Radio-on-Fiber Signal Transmission with Photonic Downconversion

T. Kuri, H. Toda*, and K. Kitayama*, *Communications Research Laboratory, *Osaka Univ., JAPAN*

WE1C-5 Design of the Dual Circular Polarized Microstrip Patch Antenna with Modified Cross Slot for PCS Handset

H. Lee, *DongKang College, KOREA*

Room C-2

Session WE1D

Electromagnetic Simulation Technique

Chairs : A. Dreher, *German Aerospace Center (DLR), GERMANY*
N. Morita, *Chiba Institute of Technology, JAPAN*

WE1D-1 Implementing 3-D Envelope Finite Element (EVFE) with Perfectly Matched Layer (PML)

W. Yao, H.-P. Tsai, Y. Wang, and T. Itoh, *Univ. of California, Los Angeles, U.S.A.*

WE1D-2 Implement New Transmission Equations into Microstrip Low-Pass Filters

Y. Liu, *City Univ. of Hong Kong, CHINA*

WE1D-3 Efficient CAD of Asymmetrical Waveguide Bandpass Filters

D. Budimir and G. Goussetis, *Westminster Univ., U.K.*

WE1D-4 Improved Conformal FDTD Algorithm for CAD Software on Planar Microwave Structures

X. Zhong, *City Univ. of Hong Kong, CHINA*

WE1D-5 The Analysis of Conformal Microstrip Couplers with the GSDMM-Method

M. Thiel and A. Dreher, *German Aerospace Center (DLR), GERMANY*

10:50 a.m. - 0:30 p.m. Wednesday, November 20

***Abstract* :**

The telecommunication system has been developed to cover the world by metal wire-, optical wire-, wireless-systems and finally by the satellite system, so that everybody can communicate with each other, anywhere and any time. This is really true as billions of mobile phones are being used in the world, and will soon have the capacity to transmit video information.

The result is that the telecommunication and internet systems have expanded all over the world. Everybody recognizes that human communication requires not only technology but understanding, particularly "language understanding", because communication is usually done by language, and an appropriate response or answer cannot be given without understanding. One difficulty in understanding is the so-called "language barrier", and another is the lack of background knowledge for understanding. Both language and background knowledge are essential for communication in the globalized world.

Therefore, we have to study language, language understanding, and knowledge and culture, which help to form the foundation of communication, and without which understanding is impossible.

In this presentation, I will explain how we can handle language by computer, and how much machine translation systems are actually used. Machine translation is still incomplete, but it is used widely nowadays for the translation of technical documents and for the translation of internet information; for example, from English into Japanese. Speech translation is being developed in laboratories for limited topical domains such as hotel reservations, and will soon be used in other areas. The roles of knowledge and culture are very important for the improvement of machine translation quality.

In the future, communication will be expanded to human-machine communication as well as human-human communication with many different languages. Speech command is accepted nowadays, for example, in car navigation systems. In such a system, flexible command and response on flexible question and answering must be realized between the human being and the system. Human-like communication is also essential for future robotic systems, particularly pet robots whose primary purpose is to provide amusement. In this way, a telecommunication system will evolve from information transmission to conversation and understanding system, which is a true realization of communication.

TECHNICAL SESSION

Wednesday, November 20 2:00 p.m. - 3:40 p.m.

Room B-1

Session WE3A

Linearization Technique for Power Amplifiers

Chairs : Y. Takayama, *Himeji Institute of Technology, JAPAN*
Y. Akaiwa, *Kyushu Univ., JAPAN*

WE3A-1 Feedforward Power Amplifier Control Method Using Weight Division Adaptive Algorithm

K. Horiguchi, A. Okamura, M. Nakayama, Y. Ikeda, T. Takagi, and O. Ishida, *Mitsubishi Electric Corp., JAPAN*

WE3A-2 Error Amplifier Performance in a Feedforward System for Varying Levels of Main Signal Cancellation

A. B. Kouki and D. Messaili, *Ecole de Technologie Superieure, CANADA*

WE3A-3 Diminished Sensitivity to Phase Variation in Injected Second Harmonic Linearization Technique for Multychannel Amplifiers

N. Males-Ilic, B. Milovanovic, and D. Budimir, *Westminster Univ., U.K.*

WE3A-4 Design of A New Predistorter using Low Frequency Second Order Intermodulations of a Harmonic Generator

H. S. Jang, Y.Kim, S.-U. Kim, I.-S. Chang, and Y.-C. Jeong*, *Sogang Univ., *Chonbuk national Univ., KOREA*

WE3A-5 Design of a Predistorter Controlling Each Individual Order of Intermodulation using New Harmonic Generators

S. W. Kim, H. Y. Cho, Y. Kim, I. S. Chang, and W. W. Lee*, *Sogang Univ., *Korea Military Academy, KOREA*

Room B-2

Session WE3B

Dielectric Filters

Chairs : S.-W. Yun, *Sogang Univ., KOREA*
I. Awai, *Yamaguchi Univ., JAPAN*

WE3B-1 A Varactor-Tuned RF Tunable Band-Pass Filter with Constant Bandwidth and Improved Pass-Band Flatness

B.-W. Kim, D.-I. Yun, and S.-W. Yun, *Sogang Univ., KOREA*

WE3B-2 Synthesis of the Harmonic-Suppressed LTCC Filter Using the Combinational Method

C.-Y. Chang and C.-W. Tang, *National Chiao-Tung Univ., TAIWAN*

WE3B-3 Racetrack Type Ring Resonator Loaded Channel Dropping Filter Based on the NRD Guide Technology at 60 GHz

F. Kuroki, K. Wada, and T. Yoneyama*, *Kure National College of Technology, *Tohoku Institute of Technology, JAPAN*

WE3B-4 High-Q Planar Type Dielectric Resonator and Filter Using Thin Film Fine Line Electrodes

S. Hidaka, Y. Kitagawa, S. Abe, and J. Hattori, *Murata Manufacturing Co., Ltd., JAPAN*

WE3B-5 Dielectric Combline BPF Excited at the Shorted Ends

I. Awai, C. Jo, K. Endo*, Y. Yasukawa*, and Y. Yamashita*, *Yamaguchi Univ., *TDK Corp., JAPAN*

Wednesday, November 20 4:00 p.m. - 6:00 p.m.

Room B-1

Session WE4A

Dielectric and Waveguide Filters

Chairs : J. Bornemann, *Univ. of Victoria, CANADA*
J. Hattori, *Murata Manufacturing Company, JAPAN*

WE4A-1 On the Equivalent Circuits of Microwave Coupled Cavities and Coupled Cavity Filters

J.-F. Liang, *BenQ Wireless Technology Center, U.S.A.*

WE4A-2 Inline Waveguide Filters with Arbitrarily Located Attenuation Poles

U. Rosenberg, S. Amari, and J. Bornemann, *Univ. of Victoria, CANADA*

WE4A-3 Equivalent-Circuit Analysis of Probe-Coupled Dielectric Resonators for Attenuation Poles in Bandpass Filters

H. Uchida, T. Itaya, N. Yoneda, and M. Miyazaki, *Mitsubishi Electric Corp., JAPAN*

WE4A-4 Improvement of Microwave Property of a Dielectric Resonator by its Division

I. Awai, W. Koga, H. Kubo, A. Sanada, and K. Iwashita*, *Yamaguchi Univ., *Ube Industries Ltd, JAPAN*

WE4A-5 *(INVITED)*
Microwave Filters for Satellite Communications

J. Fiedziuszko, *Space Systems/LORAL, U.S.A.*

Room B-2

Session WE4B

Sensing Technology (1)

Chairs : P. H. Siegel, *California Institute of Technology, U.S.A.*
Y. Takimoto, *JAPAN*

WE4B-1 High Resolution Algorithms Applied to Velocity and Length-of-Travel Measurements in Radar Sensors

A.Stelzer, M. Pichler, and R. Weigel, *Univ. of Linz, AUSTRIA*

WE4B-2 Simulation of GPR Profiles for Mine-Like Targets Buried in Rough Ground Surface and Clutter Removal by Similarity Measurement Methods

G. Fang and M. Sato, *Tohoku Univ., JAPAN*

WE4B-3 A Design of Antenna for Passive Millimeter-Wave Imaging Arrays

M. K. Joung, Y. Suzuki, K. Kanari, N. Arai, H. Sato, Y. Wagatsuma, K. Mizuno, Y. Yamanaka*, and S. K. Kim**, *Tohoku Univ., JAPAN, *CRL, JAPAN, **Dongguk Univ., KOREA*

WE4B-4 T/R Module For 76GHz FMCW Radar Using Dielectric Waveguide Interfaced Signal Source with Excellent Modulation Linearity

A. Saitoh, S. Tamura, S. Yamashita, T. Kato, T. Tanizaki, and H. Tanaka, *Murata Manufacturing Co., Ltd., JAPAN*

WE4B-5 *(INVITED)*

Terahertz Technology and Applications

P. H. Siegel, *California Institute of Technology, U.S.A.*

TECHNICAL SESSION

2:00 p.m. - 3:40 p.m. Wednesday, November 20

Room C-1

Session WE3C

Active & Adaptive Array Antennas (1)

Chairs : T. Ohira, *ATR, JAPAN*
C. Sun, *Nanyang Technological Univ., SINGAPORE*

WE3C-1 Blind Aerial Beamforming Based on a Higher-Order Maximum Moment Criterion (Part I: Theory)

T. Ohira, *ATR, JAPAN*

WE3C-2 Blind Aerial Beamforming Based on a Higher-Order Maximum Moment Criterion (Part II: Experiments)

J. Cheng, K. Iigusa, M.Hashiguchi, and T. Ohira, *ATR, JAPAN*

WE3C-3 Spotted Null Forming of Electronically Steerable Parasitic Array Radiator Antennas in Indoor Multipath Propagation

A. Hirata and T. Ohira, *ATR, JAPAN*

WE3C-4 Adaptive Beamforming of Espar Antenna Based on Simultaneous Perturbation Stochastic Approximation Theory

C. Sun and N. C. Karmakar, *Nanyang Technological Univ., SINGAPORE*

WE3C-5 A DOA Estimation Technique Based on A Single-Port Smart Antenna for Position Location Services

C. Sun, *Nanyang Technological Univ., SINGAPORE*

Room C-2

Session WE3D

Microwave Superconductivity Filter

Chairs : K. Suzuki, *ISTEC, JAPAN*
Z. Ma, *Saitama Univ., JAPAN*

WE3D-1 Measurements of Frequency Dependence of Surface Resistance of YBCO Films using Four Modes in a Sapphire Rod Resonator

T. Hashimoto and Y. Kobayashi, *Saitama Univ., JAPAN*

WE3D-2 High Temperature Superconducting Coplanar Waveguide Matching Circuit for RF Front -End

H. Kanaya, Y. Koga, G. Urakawa, and K. Yoshida, *Kyushu Univ., JAPAN*

WE3D-3 Design and Measurement of a Miniaturized High Temperature Superconductor Microstrip Spiral Resonator Filter

Z. Ma, E. Sakurai, K. Nomiyama, and Y. Kobayashi, *Saitama Univ., JAPAN*

WE3D-4 Electrically Tunable Compact High-Tc Superconducting Coplananar Waveguide Resonator

M. Misra, K. Kotani, T. Kiwa, I. Kawayama, H. Murakami, and M. Tonouchi, *Osaka Univ., JAPAN*

WE3D-5 2 GHz Band Superconducting Tunable Quasi-Elliptic Function Filter on Sapphire Substrate

H. Kayano, Y. Terashima, F. Aiga, H. Fuke, M. Yamazaki, and T. Hashimoto, *Toshiba Corp., JAPAN*

4:00 p.m. - 6:00 p.m. Wednesday, November 20

Room C-1

Session WE4C

Modulation Technology (1)

Chairs : F. Jondral, *Univ. of Karlsruhe, GERMANY*
T. Nakagawa, *NTT, JAPAN*

WE4C-1 Design of A Secure Software Download Algorithm in Software Defined Radio Terminals Using Quantum Cryptography

A. A. Mahimkar, *Univ. of Mumbai, INDIA*

WE4C-2 Performance of Adaptive Modulation Scheme using Doppler Spread Compensator

T. Wada, M. Okada*, and H. Yamamoto*, *Wakayama Univ., *Nara Institute of Science and Technology, JAPAN*

WE4C-3 Tracking Ability Enhancement for OFDM Based Adaptive Modulation with Multilevel Transmit Power Control for High Mobility Terminals in Broadband Wireless Communication Systems

T. Yoshiki, *Osaka Univ., JAPAN*

WE4C-4 Constructing Software Radio on Distributed Systems

C. Zhang, X. Sun, and Y. Yao, *Tsinghua Univ., CHINA*

WE4C-5 *(INVITED)*
Software Defined Radio - A European`s Point of View

F. Jondral, *Univ. of Karlsruhe, GERMANY*

Room C-2

Session WE4D

Optimization Technique of Electromagnetic Simulation

Chairs : C. Phongcharoenpanich, *King Mongkuts Institute of Technology Ladkrabang, THAILAND*
T. Anada, *Kanagawa Univ., JAPAN*

WE4D-1 *(INVITED)*
Applications of Neural Networks to RF Design and Web-Based Education

K.C. Gupta, *Univ. of Colorado, U.S.A.*

WE4D-2 Efficient Diagnosis and Optimization of Microwave Filters using Em-Solvers and Surrogate Models

P. Harsche and R. Vahldieck, *Swiss Federal Institute of Technology, SWITZERLAND*

WE4D-3 Full-Wave Optimization by EM3D Technology and Genetic Algorithm

T.-Y. Huang, Y.-H. Pang, and R.-B. Wu, *National Taiwan Univ., TAIWAN*

WE4D-4 Scallable Parallel Optimisation using Fast Messy Genetic Algorithm

WP. Kostka and Z. Skvor*, *CTU - Prague, FEE, *Czech Technical Univ., CZECH REPUBLIC*

WE4D-5 Design Consideration of a Polarization-Transformation Transmission Filter with Genetic Algorithm

A. Kusunoki and M. Tanaka, *Oita Univ., JAPAN*

TECHNICAL SESSION

Thursday, November 21 8:50 a.m. - 10:30 a.m.

Room B-1

Session TH1A

Circuit Techniques for Silicon Transceiver IC

Chairs : M. Madihian, *NEC USA Inc, U.S.A.*
T. Tsukahara, *NTT, JAPAN*

TH1A-1 Fully-Integrated 5 GHz U-NII Band 0.18-µm CMOS VCO for 802.11a WLAN Application

Y.-K. Chu, and H.-R. Chuang, *National Cheng Kung Univ., TAIWAN*

TH1A-2 Understanding and Enhancing CMOS Monolithic Image Rejection Mixers

F. S. Azevedo, M. J. Rosário, and J. C. Freire, *Instituto Superior de Engenharia de Lisboa, PORTUGAL*

TH1A-3 The Capacitive Noise Effect of CMOS Gilbert Mixer

W. Guo and D. Huang, *Zhejiang Univ., CHINA*

TH1A-4 2 GHz Direct-Conversion CMOS Up-Mixer

C.-W. Kim, S.-B. Shin, S.-M. Oh, and S.-G. Lee, *Information and Communications Univ., KOREA*

TH1A-5 Temperature Dependence Characteristic of the Self Base Bias Controlled SiGe HBT Driver Amplifier

S. Shinjo, K. Mori, H. Joba, and N. Suematsu, *Mitsubishi Electiric Corp., JAPAN*

Room B-2

Session TH1B

Miniaturized RF ICs for High Efficiency and Low Distortion

Chairs : T. Sawai, *SANYO Electric Co., Ltd., JAPAN*
Y. Tateno, *Fujitsu Quantum Devices Ltd., JAPAN*

TH1B-1 1-V Operation High-frequency Broadband Si 3-D MMICs

K. Nishikawa, K. Kamogawa, B. Piernas, T. Nakagawa, and K. Araki, *NTT, JAPAN*

TH1B-2 A 2.4 GHz CMOS Power Amplifier with Output Power 20 dBm for Bluetooth and WLAN Applications

C.-C. Yen and H.-R. Chuang, *National Cheng Kung Univ., TAIWAN*

TH1B-3 Switched-Mode Tuned Class E Power Amplifiers with Parallel Circuit

A. V. Grebennikov, H. Jaeger*, and R. Weigel*, *M/A-COM, Cork, IRELAND*, **Univ. of Linz, AUSTRIA*

TH1B-4 A 1.8 GHz InGaP/GaAs HBT Class-E Power Amplifier

Y.-M. Hsin, Y. L. Ho, H. T. Hsu, and W. B. Tang, *National Central Univ., TAIWAN*

TH1B-5 SiGe BiCMOS Direct Conversion Receiver Front-Ends for IEEE802.11a

S. Chakraborty, S. K. Reynolds*, T. Beukema*, H. Ainspan*, and J. Lasker, *School of ECE, *IBM T. J. Watson Research Center, U.S.A.*

Thursday, November 21 10:50 a.m. - 0:30 p.m.

Room B-1

Session TH2A

Microwave Oscillators

Chairs : K. Itoh, *Mitsubishi Electric Corp., JAPAN*
T. Tokumitsu, *Fujitsu Quantum Devices Ltd., JAPAN*

TH2A-1 A 1.8 V 4.3 GHz SiGe Tunable Synchronous Oscillator

J.-B. Begueret, Y. Deval, T. Taris, P. Hellmuth, O. Mazouffre, and P. Fouillat, *Univ. of Bordeaux, FRANCE*

TH2A-2 A Push-Push Oscillator Using Double-Sided MIC

K. Kawahata, T. Tanaka, and M. Aikawa, *Saga Univ., JAPAN*

TH2A-3 A Ku-Band Push-Push Oscillator Using Ring Resonator

H. Xiao, T. Tanaka, and M. Aikawa, *Saga Univ., JAPAN*

TH2A-4 All-Planar Waveguide-Cavity-Stabilized Ku-Band Oscillator and Doubler at Ka-Band

W.-C. Lee , S.-C. Lin , and C. C.-K. Tzuang, *National Chiao Tung Univ., TAIWAN*

TH2A-5 A Low Phase Noise Local Oscillator for Ka-Band Satellite Transponder

K.-K. Ryu, M.-Q. Lee*, I.-B. Yom, and S.-P. Lee, *Electronics and Telecommunications Research Institute (ETRI), *Univ. of Seoul, KOREA*

Room B-2

Session TH2B

Microwave Planar Filters (1)

Chairs : L. Zhu, *Nanyang Technological Univ., SINGAPORE*
T. Ishizaki, *Matsushita Electric Industrial Co., Ltd., JAPAN*

TH2B-1 Stub-Tapped Line Resonator for Innovative Design of Compact Microstrip Bandpass Filter with Double Transmission Zeros

L. Zhu and W. Menzel*, *Nanyang Technological Univ., SINGAPORE, *Univ. of Ulm, GERMANY*

TH2B-2 New Compact Microstrip Slow-Wave Resonator Filter with A Wide Upper Stopbnad

H.-S. Song, K.-H. Park, and J.-K. Kim, *Korea Electronics Technology Institute, KOREA*

TH2B-3 Corrugated Structures for Harmonic Suppression of Microstrip Bandpass Filters

J.-T. Kuo, W.-H. Hsu, W.-C. Lee, and W.-T. Huang, *National Chiao Tung Univ., TAIWAN*

TH2B-4 Ka-Band All-Planar Inductive Dual-Mode Filters

H.-C. Chen and C.-K. C. Tzuang, *National Chiao Tung Univ., TAIWAN*

TH2B-5 Study on Characteristics of Folded Comb-Line Filter

K. Yoshida, T. Kitamura, M. Geshiro, and T. Ishizaki*, *Osaka Prefecture Univ., *Matsushita Electric Industrial Co., Ltd., JAPAN*

TECHNICAL SESSION

8:50 a.m. - 10:30 a.m. Thursday, November 21

Room C-1

Session TH1C

New Design of Microwave Filters

Chairs : M. Guglielmi, *ESA/ESTEC, NETHERLANDS*
Z. Ma, *Saitama Univ., JAPAN*

TH1C-1 A Mapping Transformation from Coupling Matrices to Topologies of Chebyshev Filters with Cross Couplings

W. J. He, B. Cao, and B. Gao, *Tsinghua Univ., CHINA*

TH1C-2 High Selectivity Wideband Bandpass Filter Using Hybrid Technology

C. Person, D. L. H. Tong*, G. Piel, and C. Howson*, *LEST/ENST Bretagne, *Thomson Multimedia R&D, FRANCE*

TH1C-3 Design of Four-Stage Millimeter Wave BPF using the Whispering-Gallery Mode Resonators

Y. Sato, Y. Kogami, K. Shiraishi, Y. Tomabechi, and K. Matsumura, *Utsunomiya Univ., JAPAN*

TH1C-4 A New Class of Dual-Mode Microwave Filters

P. Jarry, E. Kerherv, O. Roquebrun, M. Guglielmi*, and J.-M. Pham, *IXL Laboratory, FRANCE, *ESA/ESTEC, NETHERLANDS*

TH1C-5 CAD of High Power Microwave Filters with Resonating Bend Using the Genetic Algorithm

M. Lecouve, P. Jarry, E. Kerherv, N. Boutheiller, J.-M. Pham, and C. Zanchi*, *IXL Laboratory, *CNES, FRANCE*

Room C-2

Session TH1D

Broad Band Antennas

Chairs : C. H. Chan, *City Univ. of Hong Kong, CHINA*
H. Nakano, *Hosei Univ., JAPAN*

TH1D-1 A Two-Arm Spiral Antenna Fed by Helices

H. Nakano, Y. Nakamura, H. Mimaki, and J. Yamauchi, *Hosei Univ., JAPAN*

TH1D-2 A Board Band Antenna Fed by Coplanar Waveguide

Q. Xue, *City Univ. of Hong Kong, CHINA*

TH1D-3 Design of Wideband Microstrip Antenna

H.-J. Lee, J.-Y. Lee, and J.-K. Kim, *Korea Electronics Technology Institute, KOREA*

TH1D-4 Wideband Printed Fat Dipole with Folded Balun

J. Kim, Y. Yoon*, and J. Choi, *Electronics and Telecommunications Research Institute, *Yonsei Univ., KOREA*

TH1D-5 Bandwidth Enhancement of Rectangular Patch Antenna with Shorting Pins

R. Chair, L. K. Man, and L. K. Fong*, *City Univ. of Hong Kong, CHINA, *Univ. of Mississippi, U.S.A.*

10:50 a.m. - 0:30 p.m. Thursday, November 21

Room C-1

Session TH2C

SPS and Microwave Applications

Chairs : W. Mahler, *Univ. of Stuttgart, GERMANY*
H. Matsumoto, *Kyoto Univ., JAPAN*

TH2C-1 Solar Power Station/Satellite (SPS) with Phase Controlled Magnetrons

N. Shinohara, H. Matsumoto, and K. Hashimoto, *Kyoto Univ., JAPAN*

TH2C-2 Development of Cavity-Backed Slot Antenna for Spacetenna of Space Solar Power Satellite at the Frequency of 5.8 GHz

T. Hikage, T. Nojima, M. Omiya, and K. Itoh*, *Hokkaido Univ., *Tomakomai National College of Technology, JAPAN*

TH2C-3 Study of Microwave Power Transmitting Antenna for Solar Power Station/Satellite

K. Tsujimoto, H. Yashiro, E. Fujiwara, N. Tanaka, T. Fujiwara, Y. Takahashi, K. Sudo*, M. Ando*, H. Matsumoto**, K. Hashimoto**, and N. Shinohara**, *IHI AeroSpace Co., ltd, *Tokyo Institute of Technology, **Kyoto Univ., JAPAN*

TH2C-4 A New Planar Method of TE_{01}-Excitation in a Circular Waveguide

W. Mahler, M. Leibfritz, F. Landstorfer, and J. Motzer, *Univ. of Stuttgart, GERMANY*

TH2C-5 Comparative Analysis of Atmospheric Pressure Microwave Plasma Sources: TM_{013} Resonance Cavity and Waveguide-type

A. L. Taube, *Swinburne Univ. of Technology, AUSTRALIA*

Room C-2

Session TH2D

New Planar Antennas

Chairs : Y. Hao, Queen Mary, *Univ. of London, U.K.*
K. Li, *CRL, JAPAN*

TH2D-1 Tunable Microstrip Patch Antenna using Partially Loaded Dielectric

K. Kitatani, H. Kani, and S. Yamamoto, *Osaka Univ., JAPAN*

TH2D-2 Design and Development of Novel Micromachined Patch Antennas for Wireless Applications

E. Y. Tsai, A. M. Bacon, M. Tentzeris, and J. Papapolymerou, *Georgia Institute of Techology, U.S.A.*

TH2D-3 Microstrip Antennas on Various UC-PBG Substrates

Y. Hao and C. G. Parini, *Queen Mary, Univ. of London, U.K.*

TH2D-4 A Novel Magnetic Loop Antenna for Microwave Applications

K. Tanaka, A. Yamamoto, H. Morimoto, and Y. Horii, *Kansai Univ., JAPAN*

TH2D-5 Millimeter-Wave Coplanar Patch and Array Antenna

K. Li, C. H. Cheng, K. F. Tong, T. Matsui, and M. Izutsu, *CRL, JAPAN*

TECHNICAL SESSION

Thursday, November 21 2:00 p.m. - 3:40 p.m.

Room B-1

Session TH3A

Frequency Converters and Phase Shifters

Chairs : H. Kondoh, *Hitachi, Ltd., JAPAN*
K. Nishikawa, *NTT, JAPAN*

TH3A-1 60-GHz Band and 5-GHz Band Demodulator MMICs for more than 1-Gbps FSK Transceivers

T. Nakagawa, K. Nishikawa, and K. Araki, *NTT, JAPAN*

TH3A-2 A Ka-band Sub-Harmonic Mixer Utilizing New Planar Waveguide Filter

C. W. Yi, C. H. Chung, and T. C. Kuang, *National Chiao Tung Univ., TAIWAN*

TH3A-3 31 GHz Monolithic Integrated Quadrature Demodulator in SiGe Bipolar Technology

S. Hackl and J. Böck, *Infineon Technologies, GERMANY*

TH3A-4 Silicon Based High Performance Subharmonic Mixing for Multigigahertz Wireless Receivers

Sudipto, B. Matinpour, and J. Laskar, *Georgia Institute of Technology, U.S.A.*

TH3A-5 L-band SiGe-MMIC Vector Synthesis Type Analog Phase Shifter using Polyphase Filter

K. Nakajima, A. Funakoshi, D. Ito, M. Kagano, M. Nakane, and N. Suematsu, *Mitsubishi Electric Corp., JAPAN*

Room B-2

Session TH3B

Microwave Planar Filters (2)

Chairs : R.-B. Wu, *National Taiwan Univ., TAIWAN*
K. Takei, *Hitachi, Ltd., JAPAN*

TH3B-1 CPW-Based Comb-Line Filters with Coupling Windows on the Grounding Conductor

K. Kikuchi, T. Kitamura, Y. Horii*, and M. Geshiro, *Osaka Prefecture Univ., *Kansai Univ., JAPAN*

TH3B-2 Flip-Chip Characterization of Ferromagnetic Ultrathin Iron Films for Microwave Bandstop Filtering

H. J. Yoo, H. Shimasaki*, S.-H. Tseng, and C. S. Tsai**, *Univ. of California, U.S.A.,*Kyoto Institute of Technology, JAPAN, **Institute for Applied Science and Engineering Research, TAIWAN*

TH3B-3 A Simple Idea for Realizing a Sharp Bandpass Filter with Two Types of Microstrip Ring Resonators

C.-J. Tsai, C.-L. Wang, and R.-B. Wu, *National Taiwan Univ., TAIWAN*

TH3B-4 2-D PBG Structures with Improved Ripple Characteristic in Passband and Wideband Band-Stop Filter Design

C. Lee, C. C. Shin, I. M. Park, and S. T. Kim*, *Ajou Univ., *Korea Institute of Industrial Technology Evaluation and Planning, KOREA*

TH3B-5 Couplings' Offset Control for Cross-Coupled Planar Microwave Filter Using Coupled Microstrip Hexagonal Open-Loop Resonators

K. F. Chang and K. W. Tam, *Univ. of Macau, CHINA*

Thursday, November 21 4:00 p.m. - 6:00 p.m.

Room B-1

Session TH4A

Ultra Wideband Amplifier Technology for Communication Systems

Chairs : K. Murata, *NTT Corp., JAPAN*
K. W. Kobayashi, *Sirenza Microdevices, U.S.A.*

TH4A-1 *(INVITED)*
Design and Technology Trades of 10 Gb/s and 40 Gb/s Transimpedance Amplifiers

K. W. Kobayashi, *Sirenza Microdevices, U.S.A.*

TH4A-2 Highly Stable 6-18 GHz 2.3 dB Low-Noise GaAs pHEMT Amplifier with Resistive-Loaded Series Feedback Circuits

H. Yukawa, Y. Tarui, K. Kanaya, H. Uchida, M. Nakayama, and Y. Itoh, *Mitsubishi Electric Corp., JAPAN*

TH4A-3 Cascaded Single-Stage Distributed Amplifier with Enhanced Performance

B. S. Virdee, A. Virdee*, and B. Banyamin**, *Univ. of North London, *Filtronic Components Ltd, **NEC Technologies U.K. Limited, U.K.*

TH4A-4 Bandwidth Enhancement for Distributed Amplifier

M. M. Taheri and M. I. Elmasry, *Univ. of Waterloo, CANADA*

TH4A-5 On the Feasibility of Cascaded Single-Stage Distributed Amplifier Topology in Digital CMOS Technology

A. Worapishet, M. Chongcheawchamnan, and S. Srisathit, *Mahanakorn Univ. of Technology, THAILAND*

Room B-2

Session TH4B

Advanced Packaging Technologies

Chairs : J. Laskar, *Georgia Institute of Technology, U.S.A.*
M. Nakajima, *Motorola Ltd., JAPAN*

TH4B-1 *(INVITED)*
Mode Leakage and Crosstalk in Millimeter-Wave Packages

A. A. Oliner, *Polytechnic Univ., U.S.A.*

TH4B-2 Stacked Liquid Crystal Substrate and µBGA Technology for 3D Integrated C-Band RF Front-End Module

J. Laskar, G. White, and R. Tummala , *Georgia Institute of Technology, U.S.A.*

TH4B-3 An Innovative Concept of Millimeter-Wave Modulewith High-Dielectric Substrate and Surface Wave Mode Transmission Line

K. Sakamoto, S. Mikami, and Y. Ishikawa, *Murata Manufacturing Co., Ltd., JAPAN*

TH4B-4 HeraLock™ 2000 Self-Constrained LTCC for Microwave Application

P. Barnwell, F. Lautzenhiser, E. Amaya, and J. Wood, *Heraeus CMD, U.S.A.*

TH4B-5 Production Oriented Post-Process 3-D Inductors for RFIC's

V. M. Lubecke, *Bell Labs, Lucent Technologies, U.S.A.*

TECHNICAL SESSION

2:00 p.m. - 3:40 p.m. Thursday, November 21

Room C-1

Session TH3C

Microwave Medical Applications and EMC Techniques

Chairs : D. I. Kim, *Korea Maritime Univ., KOREA*
K. Ito, *Chiba Univ., JAPAN*

TH3C-1 Numerical Simulations for Heating of Actual Neck Tumor by using a Coaxial-Slot Antenna

W. Miyamoto, S.-Y. Okabe, K. Saito, H. Yoshimura, K. Ito, Y. Aoyagi*, and H. Horita*, *Chiba Univ., *Ichikawa General Hospital, Tokyo Dental College, JAPAN*

TH3C-2 Design of an Expanded Tip Wire Antenna for Microwave Cardiac Ablation

A. S. Mohan and H. M. Chiu, *Univ. of Technology, Sydney, AUSTRALIA*

TH3C-3 Measurement of Transmission and Reflection Coefficient in Human Model to Obtain Blood Sugar Level by Millimeter Waves

Y. Guan, Y. Nikawa, and E. Tanabe*, *Kokushikan Univ., *AET JAPAN, INC., JAPAN*

TH3C-4 Design and Fabrication of Broad-Band EM Wave Absorber in New Type for Anechoic Chamber

D. I. Kim, Y. S. Weon, J. Y. Son, J. M. Song, and D. H. Choi, *Korea Maritime Univ., KOREA*

TH3C-5 Optimum Design for the Door Corner of a Microwave Oven

K. Matsumoto, O. Hashimoto, and M. Makida*, *Aoyama Gakuin Univ., *SHARP Corp., JAPAN*

Room C-2

Session TH3D

Circuit and Field Measurement

Chairs : T. Iwasaki, *The Univ. of Electro-Communications, JAPAN*
A. Widarta, *AIST, JAPAN*

TH3D-1 Microfabricated Planar Shielded Loop Coils for High Frequency Magnetic Near Field Measurements

M. Yamaguchi, J. C. Bu, K.-I. Arai, N. Tamaki*, N. Masuda*, and T. Kuriyama*, *Tohoku Univ., *NEC Laboratories Inc., JAPAN*

TH3D-2 Broadband Waveform Reconstruction of Electric Fields using Log-Periodic Dipole Array Antenna

L. Hamada, H. Nakata, G. Nakanishi, and T. Iwasaki, *The Univ. of Electro-Communications, JAPAN*

TH3D-3 On Transition Characterization Using TRL Calibration Method

H.-C. Lu, and T.-H. Chu, *National Taiwan Univ., TAIWAN*

TH3D-4 Development of a Five-Band Microwave Radiometer System for Non-Invasive Measurement of Deep Brain Temperatures in New-Born Babies

T. Sugiura, G. Mukumoto, H. Hirata, K. Ohashi, Y. Okita, S. Mizushina*, G. V. Leeuwen**, and J. W. Hand**, *Shizuoka Univ., JAPAN, *TAO Hamamatsu Lifeline Research Center, JAPN, **Imperial College School of Medicine, U.K.*

TH3D-5 Ground Height Detection Sensor for Control of Harvesting Equipment

G. S. Woods, R. L. Page, and D. L. Maskell, *James Cook Univ., AUSTRALIA*

4:00 p.m. - 6:00 p.m. Thursday, November 21

Room C-1

Session TH4C

Modulation Technology (2)

Chairs : U. Langmann, *Ruhr-Universitat Bochum, GERMANY*
M. Okada, *Nara Institute of Science and Technology, JAPAN*

TH4C-1 A Homodyne and a Low-IF CMOS Inductorless Receiver for Bluetooth Application

C. Duerdodt, A. Hanke, S. Heinen, and U. Langmann, *Infineon Technologies, GERMANY*

TH4C-2 A Simple Diversity Receiver for COFDM Based on Mutual Coupling Amongst Antenna Elements

M. Okada, N. Aoyama, M. Saito, and H. Yamamoto, *Nara Institute of Science and Technology, JAPAN*

TH4C-3 RF System Planning of Direct Conversion Receiver (DCR) for 802.11a WLAN

L.-H. Li, F.-L. Lin*, and H.-R. Chuang, *National Cheng Kung Univ., *Southern Taiwan Univ. of Technology, TAIWAN*

TH4C-4 A Multi-Band Direct Conversion Transceiver for Software-Defined Radios

M. Kawashima, T. Nakagawa, H. Hayashi, K. Nishikawa, and K. Araki, *NTT, JAPAN*

TH4C-5 *(INVITED)*
An Important Issue In Radio Administrations

T. Fujii, *Hitachi Kokusai Electric Inc., JAPAN*

Room C-2

Session TH4D

Materials Measurement

Chairs : Y. Nikawa, *Kokushikan Univ., JAPAN*
D. Xu, *Shanghai Univ., CHINA*

TH4D-1 *(INVITED)*
Recent Advance on Open-Ended Coaxial Probe Measurement Techniques

D. Xu and M. Niu, *Shanghai Univ., CHINA*

TH4D-2 An Improved Perturbation Method Using a TM_{010} Mode Cylindrical Cavity

H. Kawabata, H. Tanpo, and Y. Kobayashi, *Saitama Univ., JAPAN*

TH4D-3 Precise Evaluation of Complex Permittivity for Dielectric Materials in Millimeter Wave Region using a Whispering Gallery Mode Method

H. Tamura, Y. Kogami, and K. Matsumura, *Utsunomiya Univ., JAPAN*

TH4D-4 Accuracy Comparison of Multifrequency and Three Frequencies Computations of Loss Tangent and Relative Permittivity of Low Loss Dielectric Materials using the Dielectric Resonator

J. E. Mazierska, J. Mcgrath, and M. V. Jacob, *James Cook Univ., AUSTRALIA*

TH4D-5 Design of a Grooved Circular Cavity for Separating Degenerate TE and TM Modes in Dielectric Substrate Measurements

T. Shimizu, Z. Ma, and Y. Kobayashi, *Saitama Univ., JAPAN*

TECHNICAL SESSION

Friday, November 22 8:50 a.m. - 10:30 a.m.

Room B-1

Session FR1A

Millimeter-Wave MMICs for Wireless LAN Applications

Chairs : K. Maruhashi, *NEC Corp., JAPAN*
M. G. Stubbs, *Communications Research Centre, CANADA*

FR1A-1 Cost-Effective 60-GHz Modules with Novel Self-Heterodyne Scheme for Gigabit Home-Link Systems

H. Nakano, H. Yamawaki, and Y. Hirachi, *Fujitsu Quantum Devices Ltd., JAPAN*

FR1A-2 A 44 GHz SSB Subharmonic Direct Upconverter MMIC in Coplanar Technology

K. Hettak, T. Laneve, C. J. Verver, and M. G. Stubbs, *Communications Research Centre, CANADA*

FR1A-3 MMIC Chip Set for 44 GHz Wireless Communication Systems

K. Kawakami, K. Shigenaga, T. Kato, Y. Isota*, T. Takagi, and O. Ishida, *Mitsubishi Electric, *Tohoku Univ., JAPAN*

FR1A-4 K-Band Monolithic GaAs HEMT Driver Amplifiers

N. Ono, K. Onodera, K. Arai, K. Yamaguchi, and Y. Iseki, *Toshiba Corp., JAPAN*

FR1A-5 Low Phase Noise and High Output Power K-Band MMIC VCO Utilizing a Miniaturized Hairpin Resonator and a Three-terminal p-HEMT Varactor

C. G. Hwang, J.-S. Lee, and J.-I. Song, *Kwangju Institute of Science and Technology, KOREA*

Room B-2

Session FR1B

Couplers, Dividers and Baluns

Chairs : K. Wu, *Ecole Polytechnique de Montreal, CANADA*
I. Toyoda, *NTT, JAPAN*

FR1B-1 An Enhanced All-Ports Perfectly Matched Impedance-Transforming Marchand Balun and Its Mixer Applications

M. Chongcheawchamnan, K. Bandudej, A. Worapishet, C. Ng*, and I. D. Robertson*, *Mahanakorn Univ. of Technology, THAILAND, *Microwave Systems Research Group, U.K.*

FR1B-2 A New High-Directivity Microstrip Spurline Coupler

J.-L. Chen, S.-F. Chang, and C.-T. Wu, *National Chung Cheng Univ., TAIWAN*

FR1B-3 Substrate Integrated Waveguide Directional Couplers

Y. Cassivi, D. Deslandes, and K. Wu, *Ecole Polytechnique de Montreal, CANADA*

FR1B-4 Traveling-Wave Power Divider/Combiner with High Isolation between Coplanar Branching Ports

M. Sanagi, R. Omori, and S. Nogi, *Okayama Univ., JAPAN*

FR1B-5 An Integration Design of Compact E-Plane Multi-Way Waveguide Power Dividers with Very Flat Power-Split

M. Kishihara, I. Ohta*, T. Kawai*, and K. Yamane, *Okayama Prefectural Univ., *Himeji Institute of Technology, JAPAN*

Friday, November 22 10:50 a.m. - 0:30 p.m.

Room B-1

Session FR2A

Si-based Voltage-Controlled Oscillators

Chairs : H. Tokuda, *Fukui Murata Mfg. Co., Ltd., JAPAN*
T. Matsui, *CRL, JAPAN.*

FR2A-1 32 GHz Monolithic VCO with Static Frequency Divider in SiGe Bipolar Technology

G. Ritzberger and J. Boeck, *Infineon Technologies, GERMANY*

FR2A-2 Design of a 1.5 V, 1.1mA Fully Integrated LC-tuned Voltage Controlled Oscillator in the 4 GHz Band using a 0.12 um CMOS-Process

G. Konstanznig, *Univ. of Linz, AUSTRIA*

FR2A-3 A Fully Integrated 1.5V 1.5 GHz Low-Noise CMOS VCO for Wireless Applications

K.-F. Yip and K.-K. M. Cheng, *The Chinese Univ. of Hong Kong, CHINA*

FR2A-4 A 1.8 GHz Low Noise CMOS Voltage-Controlled Oscillator Using Bond-Wire and Printed Circuit Board Trace Inductor

J.-K. Cho and B.-H. Park, *Samsung Electronics, KOREA*

FR2A-5 An Effective Method for Low Phase Noise CMOS VCO Design

Y.-H. Kao, M. C. Hsu, and M. T. Hsu, *National Chiao-Tung Univ., TAIWAN*

Room B-2

Session FR2B

Frequency and Mode Selective Techniques

Chairs : M. Krairiksh, *King Mongkuts Institute of Technology Ladkrabang, THAILAND*
J.-P. Hsu, *Kanagawa Univ., JAPAN*

FR2B-1 Coplanar Waveguide-to-Coplanar Stripline Transition-Filter Structures

Y.-S. Lin and C. H. Chen, *National Taiwan Univ., TAIWAN*

FR2B-2 A Triple-Band Antenna Switch Filter Comprising Unbalanced to Balanced CSP-SAW Filters on an LTCC Substrate

K. Uriu, T. Ishizaki, T. Yamada, K. Onishi, and A. Namba, *Matsushita Electric Industrial Co., Ltd., JAPAN*

FR2B-3 Three-Dimensional Filter Design by Genetic Algorithms with a Tightly Coupled Multiconductor Transmission Line Model

T. Nishino, *Mitsubishi Electric Corp., JAPAN*

FR2B-4 Transmission Characteristics of Left-Handed(LH) Non-Uniform Transmission Lines(NTL)

I.-H. Lin, C. Caloz, and T. Itoh, *Univ. of California, Los Angeles, U.S.A.*

FR2B-5 New NRD Guide Mode Suppressors Using Hybrid Multilayer Technique

Y. Cassivi and K. Wu, *Ecole Polytechnique de Montreal, CANADA*

TECHNICAL SESSION

8:50 a.m. - 10:30 a.m. Friday, November 22

Room C-1

Session FR1C

Active & Adaptive Array Antennas (2)

Chairs : Y. Konishi, *Mitsubishi Electric Corp., JAPAN*
J. Bae, *Tohoku Univ., JAPAN*

FR1C-1 Performance of Multibeam Adaptive Array SDMA/PHS Base Station at Three-Space Multiplex

S. Nakao, Y. Doi, T. Ito, J. Kitakado, T. Miyata*, T. Ohgane**, and Y. Ogawa**, *SANYO Electric Co., Ltd., *SANYO Telecommunications Co., Ltd., **Hokkaido Univ., JAPAN*

FR1C-2 A Frequency Agile Retrodirective Array Using a Phase-Locked Loop Local Oscillator

K. Leong, R. Y. Miyamoto, S.-S. Jeon, C.-C. Chang, and T. Itoh, *Univ. of California, Los Angeles, U.S.A.*

FR1C-3 A New Architecture for AlGaN/GaN HEMT Frequency Doubler Using Active Integrated Antenna Design Approach

Y. Chung and T. Itoh, *Univ. of California, Los Angeles, U.S.A.*

FR1C-4 A 1 W, V-Band Compact Overmoded-Waveguide Oscillator with Gunn Diodes

J. Bae, T. Yamashita, H. Kanno, and K. Mizuno, *Tohoku Univ., JAPAN*

FR1C-5 X-Band Shipboard Phased Array Antenna System and its Satellite Tracking Control

S. H. Son, S. I. Jeon, J. I. Choi, and J. S. Chae, *Electronics and Telecommunications Research Institute, KOREA*

Room C-2

Session FR1D

Scattering and Propagation (1)

Chairs : K. Kobayashi, *Chuo Univ., JAPAN*
L.-W. Li, *National Univ. of Singapore, SINGAPORE*

FR1D-1 Gaussian Beam Scattering from a Hemispherical Boss on a Conducting Plane

H. Sakurai, M. Ohki*, K. Motojima**, and S. Kozaki**, *Gunma College of Technology, *Shonan Institute of Technology, **Gunma Univ., JAPAN*

FR1D-2 Solution of Scattering by Mixed Conducting and Dielectric Objects

J. Li, Z.-Z. Oo and L.-W. Li, *National Univ. of Singapore, SINGAPORE*

FR1D-3 E- and H-Polarized Plane Wave Scattering and Absorption by an Impedance Strip Grating

T. L. Zinenko, A. I. Nosich, Y. Okuno*, and A. Matsushima*, *Institute of Radiophysics and Electronics NAS Ukraine, UKRAINE, *Kumamoto Univ., JAPAN*

FR1D-4 Axial Symmetric Wave Diffraction by a Circular Waveguide Cavity

D. B. Kuryliak, K. Kobayashi*, S. Koshikawa**, and Z. T. Nazarchuk, *National Academy of Sciences of Ukraine, UKRAINE, *Chuo Univ., JAPAN, **Antenna Giken Co., Ltd., JAPAN*

FR1D-5 Scattering by Conducting Sphere Coated with Chiral Media

B.-J. Hu, E. K.-N. Yung, and W.-Q. Che, *City Univ. of Hong Kong, CHINA*

10:50 a.m. - 0:30 p.m. Friday, November 22

Room C-1

Session FR2C

Dual Band Antennas

Chairs : K. M. Luk, *City Univ. of Hong Kong, CHINA*
Y. Horii, *Kansai Univ., JAPAN*

FR2C-1 A Compact Dual-Band Dual-Polarization Microstrip Patch Antenna

J.-S. Row, *Chien Kuo Institute of Technology, TAIWAN*

FR2C-2 Printed Dual-Band Double-T Monopole Antenna

Y.-L. Kuo, S.-T. Fang*, and K.-L. Wong, *Electrical Engineering Department, *Computer and Communications Research Laboratories, TAIWAN*

FR2C-3 A Small Dual Band Patch Antenna with an Irregular Shape Slot

H. W. Lai and L. K. Man, *City Univ. of Hong Kong, CHINA*

FR2C-4 Dual-band Square Patch Antenna with T-probe and L-probe Feeds

Y. H. Shum and K.-M. Luk, *City Univ. of Hong Kong, CHINA*

FR2C-5 A 900/1800 MHz Dual-Band LTCC Chip Antenna for Mobile Communication Applications

Y.-J. Chang and H.-R. Chuang, *National Cheng Kung Univ., TAIWAN*

Room C-2

Session FR2D

Scattering and Propagation (2)

Chairs : T. Yamasaki, *Nihon Univ., JAPAN*
D. B. Kuryliak, *National Academy of Sciences of Ukraine, UKRAINE*

FR2D-1 Diffraction by a Periodically-Apertured Conducting Sheet on a Uniaxial Chiral Slab

M. Asai, J. Yamakita*, and H. Wakabayashi*, *Kinki Univ., *Okayama Prefecture Univ., JAPAN*

FR2D-2 Bistatic Cross-Section of a Conducting Cylinder in a Continuous Random Medium

M. Tateiba, Z. Q. Meng*, and M. Nakashima**, *Kyushu Univ., *Fukuoka Univ., **Mitsubishi Electric Corp., JAPAN*

FR2D-3 Radar Cross-Section of Conducting Targets in Random Media

H. El-Ocla and M. Tateiba*, *Lakehead Univ., CANADA, *Kyushu Univ., JAPAN*

FR2D-4 Numerical Analysis of Scattering Cross Section of Two Layers of Random Medium Containing Dielectric Particles for Application to the Detection of Water Content in Moist Soil

T. Matsuoka and M. Tateiba, *Kyushu Univ., JAPAN*

FR2D-5 Achieving LP to CP Polarization Transformation without Reflection by Using a Uniaxial Anisotropic Dielectric Wave Plate

H. L. Su and K.-H. Lin, *National Sun Yat-Sen Univ., TAIWAN*

TECHNICAL SESSION

Friday, November 22 2:00 p.m. - 3:40 p.m.

Room B-1

Session FR3A

High Power Amplifier Technology

Chairs : H. Sato, *Sharp Corp., JAPAN*
J. Laskar, *Georgia Institute of Technology, U.S.A.*

FR3A-1 Dispersion Effects in AlGaN/GaN HFETs and Impact Upon Large-Signal Models

S. Nuttinck, E. Gebara, S. Pinel, J. Laskar, and M. Harris, *Georgia Institute of Technology, U.S.A.*

FR3A-2 An Advanced Power Amplifier Module for Quad-Band Wireless Applications

S. Zhang, P. Bretchko, J. Mokoro, and R. Mcmorrow, *Analog Devices Inc., U.S.A.*

FR3A-3 SiGe-Based Power HBTs for High-Frequency Microwave Power Amplification

Z. Ma, S. Mohammadi, P. Bhattacharya, L. Katehi*, S. A. Alterovitz**, G. E. Ponchak**, K. M. Strohm***, and J.-F. Luy***, *Univ. of Michigan, U.S.A., *Univ. of Purdue, West Lafayette, U.S.A., **NASA Glenn Research Center, U.S.A., ***DaimlerChrysler Research Center, GERMANY*

FR3A-4 Performance Degradation in RF LDMOSFET Power Amplifier Devices due to Device Width Effects

C. Ito, T. Fujioka*, I. Yoshida*, and R. W. Dutton, *Stanford Univ., U.S.A., *Hitachi, Ltd., JAPAN*

FR3A-5 Power Control of a Switching Amplifier for GSM Handsets

R. Koller, A. Stelzer, K. H. Abt*, K. Freudenthaler, and R. Weigel, *Univ. of Linz, Austria, AUSTRIA, *Infineon Technologies AG, GERMANY*

Room B-2

Session FR3B

Integrated Passives and Materials for Microwave Applications

Chairs : K.-L. Wu, *Chinese Univ. of Hong Kong, CHINA*
M. Miyazaki, *Mitsubishi Electric Corp., JAPAN*

FR3B-1 A Novel Planar Transition from Microstrip to Waveguide

D. Dawn, Y. Ohashi*, and S. Nakamura*, *Fujitsu Quantum Devices Ltd., *Fujitsu Laboratories Ltd., JAPAN*

FR3B-2 S-Band Ferroelectric Phase Shifters with Continuous 180º and 360º Phase Shift Range

D. Kim, Y. Choi, M. Ahn, M. G. Allen, J. S. Kenney, and D. Kiesling*, *Georgia Institute of Technology, *Microcoating Technologies, U.S.A.*

FR3B-3 Coplanar Waveguide-Spiral Inductors for MMIC Applications on Low Resistivity CMOS Grade Silicon Using Micromachined SU8 Negative Resist

K. Elgaid, D. A. Mccloy, S. Ferguson, and I. G. Thayne, *Univ. of Glasgow, U.K.*

FR3B-4 An Artificial Dielectric Composed of Metal Strips and Evaluation of its Permittivity and Loss

H. Kubo, T. Iribe, A. Sanada, and I. Awai, *Yamaguchi Univ., JAPAN*

FR3B-5 Development of Transparent Wave-Absorbing Glass

K. Harakawa, K. Yamanaka, K. Kageyama, M. Masakage*, M. Togashi**, and Y. Hashimoto***, *TAKENAKA Corp., *Nippon Sheet Glass Co., Ltd., **Nippon Sheet Glass Environment Amenity Co., Ltd., ***TDK Corp., JAPAN*

Friday, November 22 4:00 p.m. - 6:00 p.m.

Room B-1

Session FR4A

Low Noise Receivers for System on Chip

Chairs : N. Suematsu, *Mitsubishi Electric, JAPAN*
R. Magoon, *Conexant Systems Inc., U.S.A.*

FR4A-1 NF Degradation Characteristics of Dual Bias Feed Low Noise Amplifier due to Tx Signal Power Leakage

E. Taniguchi, T. Ikushima, K. Sadahiro, K. Maeda, K. Itoh, and N. Suematsu, *Mitsubishi Electric Corp., JAPAN*

FR4A-2 25 dBm OIP3 Low-Noise Amplifiers Fully Integrated in 0.25 µm CMOS

O. Boric-Lubecke, *Bell Labs, Lucent Technologies, U.S.A.*

FR4A-3 Temperature-Dependent RF-Characterization and Analysis of SOI FETs, and Their Applications to C-Band WLAN

S. Nuttinck, S. Pinel, R. Bhatia, B. Larson, and J. Laskar, *Georgia Institute of Technology, U.S.A.*

FR4A-4 Narrowband Blocker Effects in CDMA Receivers

B. Ramachandran, J. Vasa, and A. Loke, *Conexant Systems Inc., U.S.A.*

FR4A-5 *(INVITED)*
Reconfigurable Si-RF Front-End Chips for Software Defined Radio

M. Madihian, *NEC USA Inc., U.S.A.*

Room B-2

Session FR4B

Ferrite and Surface Wave Components

Chairs : M. Tsutsumi, *Fukui Univ. of Technology, JAPAN*
N. Kumar, *Solid State Physics Laboratory, INDIA*

FR4B-1 *(INVITED)*
SAW Devices and Their Key Technologies for Mobile Communications

M. Hikita, N. Shibagaki, A. Isobe, K. Asai, and K. Sakiyama*, *Hitachi, Ltd., *Hitachi Media Electronics Ltd., JAPAN*

FR4B-2 On the Hollow Ferrite Waveguide

K. Okubo and M. Tsutsumi*, *Okayama Prefectural Univ., *Fukui Univ. of Technology, JAPAN*

FR4B-3 Microwave and Millimeter-Wave Y-Junction Planar Circulators with a Novel Ferrite Configuration

F. Ji, E. K.-N. Yung*, C. Ru-Shan*, X.-Q. Sheng*, and W.-B. Dou*, *South China Univ. of Technology, *City Univ. of Hong Kong, CHINA*

FR4B-4 Some Aspects of Cobalt Substituted Li-Ti Ferrites for Phase Shifter Applications

N. Kumar and P. Kishan, *Solid State Physics Laboratory, INDIA*

FR4B-5 Microwave Absorber Using Expanded Polypropylene Beads

T. Hayashi, M. Kaneko, and A. Kunimoto, *Riken Corp., JAPAN*

TECHNICAL SESSION

2:00 p.m. - 3:40 p.m. Friday, November 22

Room C-1

Session FR3C

Array Antennas

Chairs : T. Teshirogi, *Anritsu Corp., JAPAN*
M. Yamamoto, *Hokkaido Univ., JAPAN*

FR3C-1 A Strip Grid Array Antenna

H. Nakano, H. Irie, H. Mimaki, and J. Yamauchi, *Hosei Univ., JAPAN*

FR3C-2 A Slot Pair Array Having an Invariant Main Beam Direction with a Cosecant Radiation Pattern a Post-Wall Waveguide

T. Ohno, K. Ogawa, T. Teraoka*, and J. Hirokawa**, *Matsushita Electric Industrial Co., Ltd., *Matsushita Communication Industrial Co., Ltd., **Tokyo Institute of Technology, JAPAN*

FR3C-3 Integration of Meander Antenna on Cavity-Down Ceramic Ball Grid Array Package

W. Li and Y. Zhang, *Nanyang Technological Univ., SINGAPORE*

FR3C-4 Millimeter-Wave Broadband Tapered Microstrip Leaky-Wave Antenna Array

W. Hong and Y.-D. Lin, *National Chiao Tung Univ., TAIWAN*

FR3C-5 Dielectric Slab-Guide Leaky-Wave Antenna using Waveguide Slot Array Feed for Millimeter-Wave Applications

Y. Kawahara, I. Haginowaki, N. Baba, and T. Teshirogi, *Anritsu Corp., JAPAN*

Room C-2

Session FR3D

Antenna Theory

Chairs : K.-S. Min, *Korea Maritime Univ., KOREA*
C.-K. C. Tzuan, *National Chiao Tung Univ., TAIWAN*

FR3D-1 Radially Corrugated Circular Microstrip Patch Antenna

M.-S. Lee and M.-W. Jong, *Chungnam National Univ., KOREA*

FR3D-2 Field Configurations in Aperture-Coupled Microstrip Antenna Structure

J.-W. Ko, J.-K. Kim*, Y.-S. Lee, and Y.-K. Cho*, *Kum-oh National Univ., *Kyungpook National Univ., KOREA*

FR3D-3 Circular Polarized Rectangular Microstririp Array Antenna for DBS Reception

H. Kotani, H. Arai, and K.-S. Min*, *Yokohama National Univ., *Korea Maritime Univ., JAPAN*

FR3D-4 Numerical Analysis of a Tapered Dielectric-Rod Antenna Using the Body-of-Revolution FDTD Method

T. Ando, S. Numata, J. Yamauchi, and H. Nakano, *Hosei Univ., JAPAN*

FR3D-5 38.5 GHz 1-D Leaky-Mode Antenna Array Applying Broadside-Coupled Transmission Lines

C.-L. Lai, K.-F. Huang, and C.-K. C. Tzuang, *National Chiao Tung Univ., TAIWAN*

4:00 p.m. - 6:00 p.m. Friday, November 22

Room C-1

Session FR4C

Microwave Modules and Components

Chairs : T. Itoh, *Univ. of California, Los Angeles, U.S.A.*
S. Nogi, *Okayama Univ., JAPAN*

FR4C-1 Outdoor Units for Ka-Band Satellite User Terminals In Korea

J. L. Fikart and A. Y. Chan, *NORSAT International Inc., CANADA*

FR4C-2 A Uniplanar Design of Integrated Antenna with Even-Harmonic I/Q Mixers for Millimeter-Wave Communications

J.-Y. Park, R. Miyamoto, J. Sor, C. Y. Hang, K. M. K. H. Leong, M. Devincentis, Y. Wang, and T. Itoh, *Univ. of Californica, Los Angeles, U.S.A.*

FR4C-3 PSK Detector with Fuzzy Clustering

M. K. Lee, S. W. Leung, K. M. Chow, Y. M. Siu, J. W. Minett, and W. S. Lee, *City Univ. of Hong Kong, CHINA*

FR4C-4 Ku Band Active Array Antenna Module for Mobile DBS Reception

J. M. Lee, W. K. Choi, C. S. Pyo, and J. I. Choi, *Electronics and Telecommunications Research Institute, KOREA*

FR4C-5 *(INVITED)*
Advanced System-on-Package RF Front-Ends for Emerging Wireless Communications

J. Laskar, M. Tentzeris, K. Lim, S. Pinel, M. Davis, A. Raghavan, M. Maeng, S. Yoon, and R. Tummala, *Georgia Institute of Technology, U.S.A.*

Room C-2

Session FR4D

Sensing Technology (2)

Chairs : F. T. Ulaby, *Univ. of Michigan, U.S.A.*
T. Teshirogi, *Anritsu Corp., JAPAN*

FR4D-1 Estimation of ISAR Reflectivity Density Function by Visual Image and Wavelet Transform

H. Shimizu, N. Shimizu, K. Sasaki, and Y. Watanabe, *Nippon Institute of Technology, JAPAN*

FR4D-2 AR Model-Based Data Extrapolation Techniques and Their Effect on Target Recognition Performance

J.-H. Bae, K.-T. Kim*, and H.-T. Kim**, *Electronics and Telecommunications Research Institue, *Yeungnam Univ., **POSTECH, KOREA*

FR4D-3 Superresolution Polarimetric SAR Interferometry for Forest Analysis

H. Yamada, K. Sato, and Y. Yamaguchi, *Niigata Univ., JAPAN*

FR4D-4 Direct Use of SSM/I Data For Analysis of Long-Term Variability of Surface Heat Fluxes In Active Zones of The North Atlantic

A. G. Grankov, *IRE RAS, RUSSIA*

FR4D-5 *(INVITED)*
Radar Systems for Measuring Bistatic Scattering from Terrain

F. T. Ulaby, Y. Du, and A. Nashashibi, *Univ. of Michigan, U.S.A.*

OPEN FORUM

Wednesday, November 20 2:00 p.m. - 6:00 p.m.

Room I+J+K

Session WEOF

WEOF01 L-Band Low Noise Amplifier Assembly For Inmarsat4 Satellite

T. Moriguchi, K. Ueki, and M. Igarashi, *NEC TOSHIBA Space Systems, Ltd, JAPAN*

WEOF02 The Influence of Electrode Loading on Signal and Noise Performances of A 3*4 Matrix Amplifier

G. Moradi and A. Abdipour*, *Amir-Kabir Univ. of Technology, *Tehran Polytechnic Univ., IRAN*

WEOF03 W-band InP Based HEMT MMIC Low Noise Amplifiers

Y.-L. Tang, K.-Y. Lin, P.-S. Wu, H. Wang, and T. Gaier*, *N. T. Univ., *California Institute of Technology, TAIWAN*

WEOF04 A CPW Balanced Amplifier with New Branch-line Coupler

J.-C. Lee, B.-S. Yun , T.-S. Yun , J.-H. Kim , J.-H. Kim , B. Lee , and N.-Y. Kim, *Kwangwoon Univ., KOREA*

WEOF05 Cascode Low Noise Amplifiers with Coplanar Waveguide Structure for Wireless LAN Application

J.-H. Kim, K.-B. Kim, J.-C. Lee, J.-H. Kim, B. Lee, and N.-Y. Kim, *Kwangwoon Univ., KOREA*

WEOF06 Determination of Small-Signal Parameters and Noise Figures of MESFET's by Physics-Based Circuit Simulator Employing Monte Carlo Technique

H. I. Fujishiro and T. Ishii, *Tokyo Univ. of science, JAPAN*

WEOF07 The Experimental Study of Phase Noise in CMOS VCO

Y.-H. Kao, P. A. Wu, and M. K. Sheng, *National Chiao-Tung Univ., TAIWAN*

WEOF08 Calculation of CDMA ACPR from Two-Tone Performance Based on Envelope Power Probability Distribution Function

Y. Yu, *Motorola, U.S.A.*

WEOF09 An Adaptive Compensation Method for High-Power Amplifiers

C. Liu and J. Wang, *Shanghai Bell Company, CHINA*

WEOF10 Modified VBIC-model for InGaP/GaAs HBTs

C. Wei, J. Gering, S. Sprinkle, and G. Tkachenko, *Alpha Industries Inc. (Leader Co.), U.S.A.*

WEOF11 Parallel Diode Linearized Distributed Amplifier

K. T. Mok, W. S. Chan, and C. K. Leung, *City Univ. of Hong Kong, CHINA*

WEOF12 Built-in Phase Shifter for Electromagnetically Coupled Power Divider

H. Izumi and H. Arai*, *Kisarazu National College of Technolgy, *Yokohama National Univ., JAPAN*

WEOF13 Direct Extraction of InGaP/GaAs HBT Large Signal Model

A. Raghavan, S. Venkataraman, B. Banerjee, and J. Laskar, *Georgia Institute of Technology, U.S.A.*

WEOF14 Linear Amplifier with Adaptive Feedforward Compensation for W-CDMA

Y.-H. Kao and W.-C. Chen, *National Chiao-Tung Univ., TAIWAN*

WEOF15 A Novel Method for a Direct Extraction of HBT Small-Signal Parameters Using Analytical Expressions

D. Dousset, A. Issaoun, A. B. Kouki, and F. GhannouchI, *Ecole Polytechnique de Montreal, CANADA*

WEOF16 Intermodulation Distortion Analysis of InGaP-Channel MESFETs using T-CAD

T. Fujita, Y. Takayama, and K. Maenaka, *Himeji Institute of Technology, JAPAN*

WEOF17 Design of a Compact S-band Power Amplifier Using Bare Dies Transistors for Radar T/R modules

P. Bertram and P. Eudeline, *Thales Air Defence, FRANCE*

WEOF18 A Circuit Reduction Method for Class-F Ultra-High-Efficiency Amplifier with Reactance-Compensation Circuits

Y. Kobayashi and K. Honjo, *The Univ. of Electro-Communications, JAPAN*

WEOF19 Low Impedance, Low Frequency Drain Termination for Improving the Linearity and 2-tone PAE of Microwave High Power Amplifiers

J. N. Wong and C. S. Aitchison, *Univ. of Surrey, U.K.*

WEOF20 Design of Amplifier using Defected Ground Structural DC Block

K.-H. Lee, H.-A Lee*, J.-H. Kim*, Y.-C. Jeong*, and C.-D. Kim**, *Electronic and Communications Research Institute, *Chonbuk National Univ., **Sewon Teletech, KOREA*

WEOF21 A Novel Low Inserted Phase Shift DC-50GHz MMIC Variable Attenuator

Y.-S. Dai, *Nanjing Z-Com Wireless Co., Ltd., CHINA*

WEOF22 High Isolation Millimeter-Wave CPW MIC SPDT Switch with PIN and NIP Diodes and Single Control Line

C.-Y. Chang and D.-C. Niu*, *National Chiao-Tung Univ., *Chung-Shan Institute of Science and Technology, TAIWAN*

WEOF23 A New Method on Reducing Phase Noise of X-band Dielectric Resonator Oscillator

S. Cha, H.-G. Cho*, T. Matsuoka, and K. Taniguchi, *Osaka Univ., JAPAN, *Kookmin Univ., KOREA*

WEOF24 A Digital Adaptive Feedback Loop for Local Oscillator Leakage Cancellation and DC Offset Compensation

C. Lanschuetzer, A. Springer, L. Maurer, Z. Boos*, and R. Weigel, *Johannes Kepler Univ. Linz, AUSTRIA, *Infineon Technologies AG, GERMANY*

WEOF25 Analytical Analysis of Conversion Gain and Noise Figure in HEMT Gate Mixers

R. Allam, F. Amrouche, J. M. Paillot, and F. Guezzen, *Universite de Poitiers, FRANCE*

WEOF26 A New Approach to Microwave Oscillator Design Based on the Virtual-ground Technique

T. Imaoka, T. Sawai, and Y. Matsushita, *SANYO Electric Co., Ltd., JAPAN*

WEOF27 Multiband Multichannel Six-Port Direct Conversion Receiver for Software Defined Radio Receiver

A. Hond, K. Sakaguchi, J. Takada, and K. Araki, *Tokyo Institute of Technology, JAPAN*

WEOF28 Spiral Inductor Modeling with Improved Prediction on Series Resistance due to Eddy Current Effect

B. O. Leong , *National Univ. of Singapore, SINGAPORE*

WEOF29 100 GHz S-Parameter Measurements at Monolithically Integrated Silicon Impatt Diodes

C. J. Schoellhorn, *Universitaet Stuttgart, GERMANY*

WEOF30 A Millimeter Wave RF Module with a Gain Enhanced Microstrip Patch Antenna by the Dielectric Cover

K. Yokoo, J. Hirokawa*, M. Ando*, H. Nakano**, and Y. Hirachi**, *Fujitsu Laboratories Ltd., *Tokyo Institute of Technology, **Fujitsu Quantum Devices Inc., JAPAN*

WEOF31 High-Gain Low-Power-Consumption Amplifier for Radio Frequency Identification Applications

W. Guangjun, L. Choilook, S. Zhongxiang, S. Aditya, and L. Chao, *Nanyang Technological Univ., SINGAPORE*

WEOF32 An Ultrawideband Millimeterwave Balanced Resistive Mixer, Based on a Double Deltadoped 140nm AlGaAs-InGaAs-GaAs HEMT-MMIC Process

H. H. Zirath and K. Yhland, *Chalmers Univ. of Technology, SWEDEN*

WEOF33 A Three-Chip Single-Stage RF Down-Converter Including Filter, Mixer and VCO for Adaptive X-band Radar Systems

R. J. Malmqvist, A. B. Gustafsson, R. R. Kozhuharov, and H. H. Zirath, *FOI Swedish Defence Research Agency, SWEDEN*

WEOF34 Design of RF Transceiver for Class 1 Bluetooth System

W.-J. Park, S.-M. Lee, J.-C. Lee, J.-H. Kim, B. Lee, and N.-Y. Kim, *Kwangwoon Univ., KOREA*

WEOF35 A Quadrature Direct Conversion Receiver for Digital Wireless Communications

N. C. Karmakar, C. B. Chan, and K. M. Ng, *Nanyang Technological Univ., SINGAPORE*

WEOF36 A New Empirical Large-Signal Model for RF MOSFETs

S. Lee, *Hankuk Univ. of Foreign Studies, KOREA*

WEOF37 Improved Three-step Noise Parameter De-embedding Method Applied in Silicon On-Wafer RF Test-Structures

J.-F. Kuan, G.-W. Huang, D.-Y. Chiu, K.-M. Chen, Y.-M. Teng, and J. Liu*, *National Nano Device Laboratories, *United Microelectronic Corp., TAIWAN*

WEOF38 Silicon on Sapphire CMOS S-Band LNA's for Future Low-Cost S-Band Receivers

R. J. Malmqvist and M. P. Danestig*, *FOI Swedish Defence Research Agency, *Swedish Microelectronic Institute ACREO AB, SWEDEN*

WEOF39 Analytic Determination of Hybrid π Equivalent Circuit Parameters of SiGe HBT's using Admittance Equations

B.-S. Kim, C. Park, I.-H. Park, W.-S. Nah, and Y.-J. Yoon, *Sungkyunkwan Univ., KOREA*

WEOF40 Configuration of Balun using Coupled Striplines for Silicon RFIC

Y. Kaizaki, S. Banba, T. Sawai, and Y. Matsushita, *SANYO Electric Co., Ltd, JAPAN*

WEOF41 RF Model of Differentially Driven Symmetric On-Chip Spiral Inductors

C. Geng, F. Lin, M. A. Do*, S. C. Low, and Y. Qiu, *Transilica Singapore Pte Ltd, *Nanyang Technological Univ., SINGAPORE*

WEOF42 Integrated Differential Preamplifier for 155Mb/S ATM-PON System with Fast Response, High Sensitivity and Wide Dynamic Range

Q. Le, Y.-H. Oh, and S.-G. Lee, *Information and Communications Univ., KOREA*

WEOF43 Half-Ring Microstrip Resonator

B. S. Virdee and C. Grassopoulos*, *Univ. of North London, *Astrium Ltd., U.K.*

WEOF44 Design of a Bandpass Filter using Two Layer Microstrip Structure

D. W. Chun and C. C. Shin, *Ajou Univ., KOREA*

WEOF45 Chebyshev Lowpass Filter Using Radial Stubs

I. Sakagami, Y. Hao, and A. Tokunou*, *Toyama Univ., *Japan Radio Co., Ltd, JAPAN*

WEOF46 Analysis and Applications of Folded Coupled-Line Structures

C.-M. Tsai, S.-Y. Lee, and C.-C. Tsai, *National Cheng Kung Univ., TAIWAN*

WEOF47 Suppression of Spurious Resonance for Microstrip Bandpass Filters via Substrate Suspension

J.-T. Kuo and M. Jiang, *National Chiao Tung Univ., TAIWAN*

WEOF48 Novel Coupled-Line Microstrip Duplexer with High Frequency Isolation and 2nd Spurious Passband Suppression

K. P. Lei, C. P. Chiang, W. W. Choi, and K. W. Tam, *Univ. of Macau, CHINA*

WEOF49 Design of the Reduced-Size CPW Lowpass Filter

S.-S. Liao, P.-T. Sun, H.-K. Chen, K.-T. Li, and Y.-C. Chang, *Feng Chia Univ., TAIWAN*

WEOF50 Ka Band Waveguide Diplexer using E-plane T-junction with Inductive Iris

M. Uhm, J. Lee, D.-G. Baek*, I.-B. Yom, and S.-P. Lee, *Electronics and Telecommunications Reseach Institute, *Telwave, Inc, KOREA*

WEOF51 Development of Ku Band Input Filter Assembly for Satellite Transponder

Y.-H. Lim, M.-S. Uhm, I.-B. Yom, and S.-P. Lee, *Electronics and Telecommunications Reseach Institute, KOREA*

WEOF52 Optimisation of Microwave Filter Using Microstrip to Slotline Transitions

G. Duchamp, P. Gouget, and J. Pistre, *Univ. Bordeaux 1, FRANCE*

WEOF53 Technique for Creating Attenuation Poles by a Bandpass Filter using Short-Ended $\lambda/2$ CPW Resonators

K. Wada, Y. Aihara, T. Kamiyama, and O. Hashimoto, *Aoyama Gakuin Univ., JAPAN*

WEOF54 Methodology of Wide-band Suppression of Spurious Responses for $\lambda/2$ Resonator BPFs

K. Wada, K. Nakagawa, T. Ohno, and O. Hashimoto, *Aoyama Gakuin Univ., JAPAN*

OPEN FORUM

Wednesday, November 20 2:00 p.m. - 6:00 p.m.

WEOF55 New BPF with Multiple Attenuation Poles Based on Mixed SIR's and Its Application to a Duplexer

K. Wada, T. Ohno, and O. Hashimoto, *Aoyama Gakuin Univ., JAPAN*

WEOF56 Compact and Broadband CPW λ/4-Resonator Filters

S. Amari, Q. Shi*, and Y. M. Antar**, *Univ. of Victoria, *Queens Univ., **Royal Military College of Canada, CANADA*

WEOF57 An Analysis on Excitation of Magnetostatic Surface Waves by the Measured Equation of Invariance

Y. Ando and M. Hayakawa, *The Univ. of Electro-Communications, JAPAN*

WEOF58 An Analysis on Edge-Guide Mode Isolator by FDTD Method

T. Kodera, Y. Satomura, and M. Tsutsumi*, *Osaka Institute of Technology, *Fukui Univ. of Technology, JAPAN*

WEOF59 Radiating Slots in a Ferrite-Filled Rectangular Waveguide

X. Shan and Z. Shen, *Nanyang Technological Univ., SINGAPORE*

WEOF60 A Novel X-Band Low Noise Amplifier Utilizing LTCC and FC Technologies

W. Yan and W. Hong, *Southeast Univ., CHINA*

WEOF61 On a New Electrical Unification Technique of Coaxial and Planar Circuit

K. Ichikawa, *Waka Manufacturing Corp., JAPAN*

WEOF62 Analysis of MEMS and Embedded Components in Multi-layer Packages using FDTD/MRTD for System-on-Package Applications

N. A. Bushyager, M. Tentzeris, R. Li, K. Lim, M. Davis, S. Pinel, J. Laskar, E. Zheng, and J. Papapolymerou, *Georgia Institute of Technology, U.S.A.*

WEOF63 Design of Miniature Orthogonal Mode Transducer Wenquan CHE

E. Yung and J. Wen*, *City Univ. of Hong Kong, *Nanjing Univ. of Science and Technology, CHINA*

WEOF64 Withdraw

WEOF65 Full-Wave Analysis of Waveguide T-Junction Loaded with an H-Plane Dielectric Slab

Z. Jiang, X. Shan, and Z. Shen, *Nanyang Technological Univ., SINGAPORE*

WEOF66 A 2-Step Subspace Projection Approach for Generating Compact, Provably Passive, Reduced-Order Macromodels of Interconnect Circuits

G. Steinmair, M. Troescher, A. Stelzer, and R. Weigel, *Univ. of Linz, AUSTRIA*

WEOF67 Effects of Air-Gap on Leakage-Loss of Conductor-Backed Coplanar Waveguide with Air-Gap-Spacing Dielectric Sheets

M. Hotta, A. Karita, S. Nakayama, A. Kohno, and M. Hano, *Yamaguchi Univ., JAPAN*

WEOF68 Development of an Analysis Method and Its Simulation Tool for Multilayer MMIC Elements

K. Ohno, H. Fukushima, and N. Morita, *Chiba Institute of Technology, JAPAN*

WEOF69 Transient Analysis of Coupled Microstrip Lines with Capacitor Compensated

K. Murakami, Y. Noguchii, and N. Okamoto, *Kinki Univ., JAPAN*

WEOF70 Analysis of Low Frequency Noise in Co-Salicided Poly-Si and Poly-SiGe Resistors

K.-M. Chen, G.-W. Huang, D.Y. Chiu, H.-J. Huang*, and C.-Y. Chang*, *National Nano Device Laboratories, *National Chiao-Tung Univ., TAIWAN*

WEOF71 Analysis of Corrugated-Type TE_{0n} Mode Filter Using Mode-Matching Techniques

Y. Aramaki, T. Oshima, N. Yoneda, M. Miyazaki, and H. Asano, *Mitsubishi Electric Corp., JAPAN*

WEOF72 An Efficient PEEC Model for EM Modeling of RF LTCC Circuits with Finite Metal Strip Thickness

L. K. Yeung and K.-L. Wu, *The Chinese Univ. of Hong Kong, CHINA*

WEOF73 A Broadband Rational Interpolation for Accelerating EM Simulation of Microwave Circuits

Y. Ding, K.-L. Wu, and D.-G. Fang, *The Chinese Univ. of Hong Kong, CHINA*

WEOF74 Waveguide to Microstrip Transition Using Hermetic Bead for Satellite Applications

I. Ju, I.-B. Yom, and S.-P. Lee, *Electronics and Telecommunications Reseach Institute, KOREA*

WEOF75 Wideband Microstrip Line 45º Phase Shifter

D. K. Chai, L. Mai*, and Y. W. Yoon*, *Information & Communications Univ., *LG Electronics Institute of Technology, KOREA*

WEOF76 Waveguide Filters for Planar Antennas Feeding

G. Goussetis and D. Budimir, *Westminster Univ., U.K.*

WEOF77 A Study on Hybrid Thin Film Microstrip Line Composed of CoZrNb Metallic Magnetic Film and Polyimide Dielectric Film

T. Sato, S. Ikeda, K. Takizawa, and K. Yamasawa, *Shinshu Univ., JAPAN*

WEOF78 Analysis and Design of a Parallel-Plate Waveguide with a Periodic Through-Hole Structure

T. Shibata, H. Kamitsuna, and T. Kosugi, *NTT, JAPAN*

WEOF79 Loss Reduction Techniques for Transmission Lines Using III-V Compounds on Silicon Substrates

B. A. Bosco, *Motorola Physical Sciences Research Labs, U.S.A.*

WEOF80 Dynamic Switching Characteristics of Waveguide Type Acousto-Optic Separator Using SAW for WDM System

Y. Miyazaki, N. Goto, K. Takei, and K. Takahashi, *Toyohashi Univ. of Technology, JAPAN*

OPEN FORUM

2:00 p.m. - 6:00 p.m. Thursday, November 21

Room I+J+K

Session THOF

THOF01 An Adaptive Turbo Coded Modulation for Rayleigh Fading Channel

W. Shouhao, S. Wentao, and L. Hanwen, *Shanghai Jiaotong Univ., CHINA*

THOF02 A Novel MAC Protocol Supporting Voice/Data Traffic for Mobile Ad Hoc Networks

T. Hui, L. Y. Yang, H. J. Dong, and Z. Ping, *Wireless Technology Innovation Laboratory, CHINA*

THOF04 Radio Wave Propagation in an Automotive Environment

H. Uejima, Y. Saito, J. Sakai*, K. Asaka*, and M. Makino*, *Matsushita Communication Kanazawa R&D Labs. LTD, *Matsushita Communication Industrial Co., Ltd., JAPAN*

THOF05 Noise Predictive DFE for Single Carrier W-LAN Systems with Frequency Domain Equalization

A. Koppler, A. Springer, and R. Weigel, *Univ. of Linz, AUSTRIA*

THOF06 Nonlinear Distortion Compensation of LD using Predistorter

G.-J. Seo, Y.-P. Kwon, Y.-H. Kim, Y.-C. Jeong, and J.-K. Pan, *Chonbuk National Univ., KOREA*

THOF07 Application of Microwave Phase-Locked Loop Phase Shifter in Delay-Time Control of Laser Systems

G.-R. Lin and Y.-C. Chang*, *National Taipei Univ. of Technology, *National Chiao Tung Univ., TAIWAN*

THOF08 A Novel Mach-Zehnder Modulation Technique for High Signal-to-Noise Ratio Millimeter-Wave Radio-on-Fiber Transmission Systems

W. Hu, T. Tanaka, K. Inagaki, and T. Ohira, *ATR Adaptive Communications Research Laboratories, JAPAN*

THOF09 SPS (Solar Power Satellite) and Wireless LAN Interference Assessment by Using Microwave Oven Interference Measurement

T. Hatsuda, A. Inou, and K. Ueno, *Hokkaido Inst. of Tech., JAPAN*

THOF10 Beam Steering of an Active Integrated Amplifier Antenna Array for Microwave Wireless Power Transmission in Space

T. Ohshi, N. Terada, T. Toya, S. Kawasaki, N. Shinohara*, K. Hashimoto*, and H. Matsumoto*, *Tokai Univ., *Kyoto Univ., JAPAN*

THOF11 Measurement of Complex Permittivity of Timber in X-Band Frequency for Grading Application

H. M. A. A.-Mattarneh, *MARA Univ. of Technology, MALAYSIA*

THOF12 Development of Microwave Kilns for Industries

M. Sato, *National Institute for Fusion Science, JAPAN*

THOF13 Beam Control System with Spread Spectrum Pilot Signal for Microwave Power Transmission

K. Hashimoto, K. Tsutsumi*, H. Matsumoto, and N. Shinohara, *Kyoto Univ., *Mitsubishi Electric Corp., JAPAN*

THOF14 Improvement of Noises Generated from Magnetrons Driven by DC Power Supply after Turning off Filament Current

T. Mitani, N. Shinohara*, H. Matsumoto*, K. Hashimoto*, M. Aiga**, and T. Tsukada**, *Radio Science Center for Space and Atmosphere, *Kyoto Univ., **Matsushita Electronic Instruments Corp., JAPAN*

THOF15 Microwave Studies on the Dielectric Properties of Certain Urinary Crystals

P. Issac, V. George, M. A. Ittyachen, K. T. Mathew*, J. Joe*, L. Anil*, and Y. Jaimon*, *Crystal Physics Division, *Cochin Univ. of Science and Technology, INDIA*

THOF16 A Study of the Human Body Modeling for the Mobile Terminal Antenna Design at UHF Band

K. Kiminami, A. Hirata, H. Wada, Y. Horii*, and T. Shiozawa, *Osaka Univ., *Kansai Univ., JAPAN*

THOF17 A Novel Bent Meander-Line Probe FED Patch Antenna

L.-B. Ooi, L.-C. Lee, and S.-P. Kooi, *National Univ. of Singapore, SINGAPORE*

THOF18 A Study on the Influence of Tissue Conductivity for Microwave Radiometric Weighting Functions in Non-Invasive Measurement of Baby's Brain Temperature

T. Sugiura, H. Hirata, K. Ohashi, Y. Okita, S. Mizushina*, G. V. Leeuwen**, and J. W. Hand**, *Shizuoka Univ., JAPAN, *TAO Hamamatsu Lifeline Research Center, JAPAN, **Imperial College School of Medicine, U.K.*

THOF19 Effect of Mutual Coupling on the Interference Rejection Capabilities of a Linear Array Antenna

S. Durrani, M. E. Bialkowski, and J. Janapsatya, *Univ. of Queensland, AUSTRALIA*

THOF20 Modelling of Microstrip Reflectarrays Employing Multi-Layer Microstrip Patch Structures with PBG Ground Planes

M. E. Bialkowski and F.-C. E. Tsai, *Univ. of Queensland, AUSTRALIA*

THOF21 Variable Beamforming Performance Analysis for Electronically Steerable Parasitic Array Radiator Antennas

A. Akiyama, K. Ito, T. Ohira*, and M. Ando, *Tokyo Institute of Technology, *ATR, JAPAN*

THOF22 A Quasi-millimeter Wave Active Antenna for Broadband Mobile Wireless Access Systems

T. Seki, T. Atsugi, M. Umehira, J. Sato*, U. Sangawa*, N. Adachi*, and T. Enoki**, *NTT Corp., *Matsushita Electric Industrial Co., Ltd., **Matsushita Communication Industrial Co., Ltd., JAPAN*

THOF23 FET Integrated Active Antenna Synchronizing with Reference Signal through Small Aperture

H. Shiomi, S. Ichihara, and S. Yamamoto, *Osaka Univ., JAPAN*

THOF24 An Experimental Study on Three - Dimensional Localization for Impulsive Noise Source

M. S. Soliman, T. Morimoto, A. Hirata, and Z. Kawasaki, *Osaka Univ., JAPAN*

THOF25 Effects of Antenna Position Error and Gain Phase Errors on Performance of Direction-of-Arrival Estimation for Wideband Signals in Direction-Finding Smart Antennas

T. Do-Hong and P. Russer, *Munich Univ. of Technology, GERMANY*

THOF26 Beam-scanning and Polarization-agile Antenna Array Using Mutually Coupled Oscillating Doublers

S.-C. Yen and T.-H. Chu, *National Taiwan Univ., TAIWAN*

THOF27 A Staring 94 GHz Antenna-Integrated Focal Plane Receiver Array Using a Quasi-Optically Pumped Active Gate Mixer MMIC

J. Svedin, *Swedish Defence Research Agency (FOI), SWEDEN*

THOF28 Measurement of the Sea Surface Wind Vector by an Airborne Microwave Radar Altimeter at Low Speed of Flight

A. Nekrassov, *Univ. of Porto, PORTUGAL*

THOF29 Statistical Characteristics of Atmospheric Phase Fluctuations on a Very-Long Baseline

Q. Liu, M. Nishio, K. Yamamura, T. Miyazaki, M. Hirata, T. Suzuyama, S. Kuji*, K. Iwadate*, and O. Kameya*, *Kagoshima Univ., *National Astronomical Observatory, JAPAN*

OPEN FORUM

Thursday, November 21 2:00 p.m. - 6:00 p.m.

THOF30 Dual Frequency Observation Method with Synthesized VHF-receivers to Observe Natural Electromagnetic Phenomena

T. Yoshida, M. Nishi, K. Yabu, K. Mochizuki, and A. Sato*, *Hiroshima City Univ., *NTT Access Service System Laboratories, JAPAN*

THOF31 Diagnosis of Concrete by X-band Synthetic Aperture Imaging

Y. Maruyama, K. Nishimura, and Y. Watanabe, *Nippon Institute of Technology, JAPAN*

THOF32 Brightness Temperature as a Model Function of Forest Canopy at Centimeter and Decimeter Wavelengths

A. A. Milshin and A. G. Grankov, *IRE RAS, RUSSIA*

THOF33 A New Modification of the Method of Discrete Sources and Its Application for Scattering Problems

A. P. Anyutin, A. G. Kyurkchan, and S. A. Minaev, *Russian New Univ., RUSSIA*

THOF34 Efficient Computation of Double Infinite Series Involved in the Spectral Domain Analysis of Frequency Selective Surfaces

R. R. Boix, M. J. Freire, and F. Medina, *Univ. of Seville, SPAIN*

THOF35 Slow-wave and Bandgap Transmission Characteristics of Finite-periodic Coplanar Waveguide

L. Zhu, *Nanyang Technological Univ., SINGAPORE*

THOF36 On a Scattering Model for Field Prediction in Urban Environments

X. Yin, W. Hong, and H. Zhou, *Southeast Univ., CHINA*

THOF37 The Novel Suspending Microstrip Analysis Method (SMAM) for 2D-EBG Structures

M. Fan, *Tsinghua Univ., CHINA*

THOF38 A Precorrected-FFT Method for the Analysis of Scattering by Multilayer Homogeneous Dielectric Objects

X.-C. Nie, L.-W. Li, N. Yuan, T.-S. Yeo, and Y.-B. Gan, *National Univ. of Singapore, SINGAPORE*

THOF39 A Precorrected-FFT Algorithm for Scattering from Composite Conducting/Dielectric Structures

N. Yuan, T.-S. Yeo, X. Nie, L.-W. Li, and Y.-B. Gan, *National Univ. of Singapore, SINGAPORE*

THOF40 Novel Planar Photonic Bandgap Strutures

N. C. Karmakar, M. N. Mollah, and S. K. Padhi, *Nanyang Technological Univ., SINGAPORE*

THOF41 Shared Aperture Photonic Bandgap Assisted Aperture Coupled Microstrip Patch Antenna for Satellite Communication

N. C. Karmakar, M. N. Mollah, and S. K. Padhi, *Nanyang Technological Univ., SINGAPORE*

THOF42 Improved 1-D PBG Structures in CPW Technology

C.-H. Lee, M.-L. Her*, and C.-M. Chang*, *National Changhua Univ. of Education, *Feng Chia Univ., CHINA*

THOF43 Slow wave response of a Fractal PBG on Uni-planar Transmission Line

S. K. Padhi and N. C. Karmakar, *Nanyang Technological Univ., SINGAPORE*

THOF44 Sandwich Photonic Bandgap Structure with H-shape Elements

Y. Pang and B. Gao, *Tsinghua Univ., CHINA*

THOF45 A Novel Theoretical Investigation of Near-Field Microwave Diversity Imaging in Turntable-Mode

J. Ma, N.-H. Mao*, and K. Wu, *Ecole Polytechnique de Montreal, CANADA, *Institute of Antennas and EM Scattering, CHINA*

THOF46 Intrinsic Harmonic Rejection in Active Antennas Using PBG Structures

M. Sorolla, A. González, T. Lopetegi, M. A. G. Laso, and F. Falcone, *Universidad Publica de Navarra, SPAIN*

THOF47 Fast Generation of [Z] Matrix in the Method of Moments over a Wide Frequency Band by Means of Hermite Polynomial Interpolation

H. Zhou, W. Hong, and X. Yin, *Southeast Univ., CHINA*

THOF48 Experimental Verification of Theoretically Revealed Modes on Conductor-Backed Slotline

J. Zehentner, J. Machac, J. Mrkvica, J. Hruska, V. Langer, and P. Zabloudil, *Czech Technical Univ. in Prague, CZECH REPUBLIC*

THOF49 Analysis of Microstrip Slot Coupling to Circular Waveguide

A. J. Parfitt, *CSIRO, AUSTRALIA*

THOF50 A Novel Time-Domain Technique for the Analysis of MEMS-Based Variable Capacitors with Moving Metallic Parts

M. Kuroda, N. Miura, and M. M. Tentzeris*, *Tokyo Univ. of Technology, JAPAN, *Georgia Institue of Technology, U.S.A.*

THOF51 2nd-Order Accurate FDTD Equations at Dielectric Interfaces

Q.-X. Chu, *Xidian Univ., CHINA*

THOF52 Analysis of a Metallic Reflector Grating via Mode Matching Method

S. Kondoh, T. Thumvongskul, A. Hirata, and T. Shiozawa, *Osaka Univ., JAPAN*

THOF53 Rigorous Analysis of Micromachined Coplanar Waveguides

H.-H. Chen and T.-H. Huang, *Huafan Univ., TAIWAN*

THOF54 A Multi-Layer Quasi-Planar Helical Antenna Structure

H. R. Salehi and S. Safavi-Naeini, *Univ. of Waterloo, CANADA*

THOF55 A Planar Antenna with Dual Bands for Mobile Communication

Y. Ukawa, H. Matsui*, and T. Wakabayashi, *Tokai Univ., *Nissan Motor Co., Ltd., JAPAN*

THOF56 Analysis of a 22 GHz Radioastronomic Conical Feed Horn for the New 40m Radiotelescope of Centro Astronómico de Yebes using the Beam Mode Expansion

E. Garcia, *Univ. Politecnica de Madrid, SPAIN*

THOF57 Extrapolation of Near-field Data in Sampling Representations: An Efficient SVD-based Approach

G. Riccio, F. Ferrara, C. Gennarelli, and C. Savarese*, *Univ. of Salerno, *Univ. of Naples "Parthenope", ITALY*

THOF58 Fresnel Zone Plate Antenna Optimization Using Genetic Algorithm

A. Foroozesh, *Iran Telecommunication Research Center, IRAN*

THOF59 Reducing the Height of a Circular Array of Monopoles Using Top Hats

M. E. Bialkowski, J. Janapsatya, and B. Piper, *Univ. of Queensland, AUSTRALIA*

THOF60 Folded Type Microstrip Antenna for Onmidirectional E-plane and H-plane

J.-L. Kim, J.-M. Woo, and S.-H. Oh, *Chungnam National Univ., KOREA*

THOF61 Miniaturized Rectangular Microstrip Patch Antenna Using Lattice Like Corrugation Structure

M.-H. Song and J.-M. Woo, *Chung-nam National Univ., KOREA*

THOF62 A Broadband Dual Polarization Patch Antenna for GSM Base Stations

L. K. Leung, L. Deyun*, and L. K. Man, *City Univ. of Hong Kong, *Tsinghu Univ., CHINA*

THOF63 A Vertically Located Pinpoint Sleeve for Practical Cellular Handsets

T. Minemura, *Toshiba Corp., JAPAN*

THOF64 Dielectric Rod Antenna Based on Image NRD Guide

M. Yamamoto, T. Nojima, and K. Itoh*, *Hokkaido Univ., *Tomakomai National College of Technology, JAPAN*

THOF65 Modal-Expansion Analysis of Electromagnetically Coupled Coaxial Dipole Antennas

Z. Shen and C. Qian*, *Nanyang Technological Univ., SINGAPORE, *Department of Radio Engineering, CHINA*

THOF66 Radiation Characteristics of Modified Microstrip Yagi-Uda Antenna

E. T. Rahardjo and A. G. Wahyudi, *Univ. of Indonesia, INDONESIA*

THOF67 Design of Single-Feed Tri-Band Planar Inverted-F Antenna

C. Y. Chiu, K. M. Shum, C. H. Chan, and Q. Xue, *City Univ. of Hong Kong, CHINA*

THOF68 Considerations of Array Arrangement of a Bidirectional Antenna Using a Probe Excited Rectangular Ring

C. Phongcharoenpanich, S. Lamultree, S. Kosulvit, M. Krairiksh, and T. Wakabayashi*, *King Mongkuts Institute of Technology Ladkrabang, THAILAND, *School of Engineering, JAPAN*

THOF69 An Analysis of Wide Band Strip Loop Antennas

S. Hanafusa and Y. Mitake, *SANYO Electric Co., Ltd., JAPAN*

THOF70 A 2.4 GHz Polarization-Diversity Printed Dipole-Antenna with Integrated Balun and Polarization-Switching Circuit for Wireless LAN Applications

L.-C. Kuo and H.-R. Chuang, *National Cheng Kung Univ., TAIWAN*

THOF71 Rampart Slot Array Fed by Coplanar Waveguide

S.-Y. Chen and P. Hsu, *National Taiwan Univ., TAIWAN*

THOF72 Microstrip Array Antenna using Both-Sided MIC Feed Circuits

K. Egashira, E. Nishiyama, and M. Aikawa, *Saga Univ., JAPAN*

THOF73 A Microstrip-Fed Wide Slot Antenna for RFID System

S. K. Padhi and N. C. Karmakar, *Nanyang Technological Univ., SINGAPORE*

THOF74 A Single- Feed Dual-Band Planar Inverted-F Antenna with U-shaped Slot for Wireless Local Area Network Applications

J.-H. Choi, K.-J. Oh, and J.-I. Choi*, *Hanyang Univ., *Sunwoo Communication Co., Ltd., KOREA*

THOF75 Patch-Antenna with Photonic Bandgap Electromagnetic Shield

K. Matsugatani and M. Tanaka, *DENSO Corp., JAPAN*

THOF76 Pulse Amplification Characteristics of Er-Yb Codoped Garnet Crystal Waveguide-Type Optical Amplifiers

Y. Miyazaki and K. Takei, *Toyohashi Univ. of Technology, JAPAN*

THOF77 Low Cost Fabrication of YBCO Films by the MOD Process for Microwave Applications

A. Sanada, M. Kimura, and I. Awai, *Yamaguchi Univ., JAPAN*

THOF78 Measurement of Electric Field Distributions in Microwave Circuits using Small Probe Antenna and Comparison with FD-TD method

T. Anada, *Kanagawa Univ., JAPAN*

THOF79 Simple Current Waveform Probe for Microwave Amplifiers

N. T. Ali, N. J. Mcewan*, and E.-M. A. El-Khazmi*, *Etisalat College of Engineering, U.A.E, *School of Engineering, U.K.*

THOF80 Some New Techniques Used in the Frequency-Varying Method for Measuring Electromagnetic Parameters with a Flanged Open-Ended Coaxial Probe

Y. Dong, C. Chen, M. Niu, and D. Xu, *Shanghai Univ., CHINA*

THOF81 Accuracy of Dielectric Permittivity Measurements using Whispering Gallery Mode Open Resonators

A. Abramowicz, K. Derzakowski, and J. Krupka, *Warsaw Univ. of Technology, POLAND*

THOF82 On TAN Self-Calibration for On-Wafer S-Parameter Measurements

C.-H. Tseng and T.-H. Chu, *National Taiwan Univ., TAIWAN*

THOF83 Detection of Microwave Emission in Hypervelocity Impact on Aluminum

K. Maki, T. Takano, A. Yamori, and N. Kawashima*, *The Institute of Space and Astronautical Science, *Kinki Univ., JAPAN*

THOF84 Dual Channel IF Substitution System for Microwave Attenuation Standard

A. Widarta, *National Metrology Institute of Japan NMIJ/AIST, JAPAN*

THOF85 Automatic Time Gating for Free-Space Measurements

M. Nakhkash and S. M. Modarresi, *Univ. of Yazd, IRAN*

Tuesday, November 19 8:30 a.m. - 11:30 a.m.

Room B-2

Workshop 1

RF/Microwave Oscillators and PLL Technologies

Organizers: Akihiro Yamagishi, *NTT, Japan*
Hideki Kamitsuna, *NTT, Japan*
Chairs: Akihiro Yamagishi, *NTT, Japan*
Hideki Kamitsuna, *NTT, Japan*

A microwave oscillator is one of the most important devices for wireless systems. It is also a key device as a clock source for optical communication systems. The demands for the oscillator are reducing cost and phase noise. This workshop will present oscillator design techniques and phase-locked loop (PLL) technologies for wireless terminals and optical receivers.

For the wireless terminal application, reducing cost is necessary. Si-based oscillators are most promising for a relatively low-frequency (below ~10 GHz) application, while at higher frequency (up to millimeter-waves), how it is achieved is a critical issue.

A PLL for the wireless application requires low phase noise, fast switching speed and low-power dissipation; however these requirements have a trade-off relationship. For high-speed clock and data recovery (CDR) applications, attaining the low timing jitter and higher tolerance to consecutive identical digits is required. Design techniques for a fully integrated Si-based voltage-controlled oscillator (VCO) and frequency multiplied millimeter-wave VCO will be presented. A PLL analysis based on a transfer function and PLL design techniques for use in CDR applications will also be presented.

WS1-1 PLL Synthesizer for Wireless Terminal
Kenji Itoh, *Mitsubishi Electric Corp., Japan*

WS1-2 PLL Architectures for Clock and Data Recovery Circuits
Hideyuki Nosaka, *NTT, Japan*

WS1-3 Low Power, Low Phase Noise Integrated RF-VCO on Silicon Process
Nobuyuki Itoh, *Toshiba Corp., Japan*

WS1-4 Oscillator Designs for Recent K-Band and Millimeter-Wave Applications
Tsuneo Tokumitsu, *Fujitsu Quantum Devices Ltd., Japan*

Room C-1

Workshop 2

Smart Antenna : Key Technology to Enhance Next Generation Wireless Systems

Organizer: Hiroki Shoki, *Toshiba Corp., Japan*
Chair: Tadahiko Maeda, *Ritsumeikan University, Japan*

Currently, the users of wireless communications are increasing, and are requiring higher data rate services. Also, the new generation wireless communication systems, such as 3G, 4G, WLAN using 5 GHz band and so on, stimulate such users more and more. In this situation, the effective usage of the limited frequency resources becomes the important problem, and the smart antenna (adaptive array antenna) is expected to be the best technology to overcome this problem. The adaptive beam forming realizes desired signal power increase and interferences reduction, and reaches the improvement of the system capacity. Furthermore, smart antennas have other benefits, such as the reduction of the transmit power, the extension of coverage areas and so on. Therefore, the smart antenna technology must be the key technology to enhance the next generation wireless systems. In this workshop, the latest smart antenna technologies and their practical applications will be introduced. Also, the presentation will focus on the embodiment of smart antenna systems and their experimental results, key devices for the development.

WS2-1 A Smart Antenna Base Station Operating in IS2000
SeoungWon Choi and Heung-Jae Im, *Hanyang University, Korea*

WS2-2 From Single to Dual Array Architectures A system Perspective
Mark Beach, *University of Bristol, U.K.*

WS2-3 Latest Signal Processing Technologies for Next Generation Wireless Systems
Nobuyoshi Kikuma, *Nagoya Institute of Technology, Japan*

WS2-4 Ray-oriented Modeling of Spatio-temporal and MIMO Channels: -Superresolution Channel Sounding and Ray-tracing Simulation-
Jun-ichi Takada, Kei Sakaguchi, Houtao Zhu and Kiyomichi Araki, *Tokyo Institute of Technology, Japan*

WS2-5 Adaptive Array Steered by Local Phase Shifters (AA-LPS): -A Low-cost Approach with BiCMOS IC for High Speed FWA and WLAN-
Shuichi Obayashi, *Toshiba America Research, Inc., Japan*

Room C-2

Workshop 9

Space Solar Power Station/Satellite (SPS) and Microwave Power Transmission Technology
(Note : The workshop schedule has been changed)

Organizer: Hiroshi Matsumoto, *Kyoto University, Japan*
Chairs: Hiroshi Matsumoto, *Kyoto University, Japan*
Naoki Shinohara, *Kyoto University, Japan*

The Space Solar Power Station/Satellite (SPS) is a huge solar power station in geostationary orbit, 36,000km above. In Japan, the SPS is currently designed at the SSPS committee in NASDA (National Space Development Agency of Japan) from FY 1998 and also at SSPS committee in METI (Ministry of Economy, Trade and Industry) from FY 2000. In the U.S.A., an SSPS program called SERT (Space solar power Exploratory Research & Technology program) was carried out in FY 2000. The SPS is one hopeful candidate to solve the so-called 3E trilemma of decreasing CO2 emmision (Earth Environment), Economic growth and increasing Energy demand. This workshop will present a microwave power transmission technology for the SPS and for other spin-off applications. An electric power is transferred from the SPS to the ground via microwaves. A diameter of a transmitting antenna array is a few km and a diameter of a receiving antenna array is a few km. Over 90 % of a transmitted microwave power is received in the receiving antenna array, which is called rectenna, rectifying

antenna, array. One goal is to develop an MPT system with over 80 % DC-RF conversion efficiency and with accurate and high speed beam control with huge phased array in order to realize the final SPS system. A light weight MPT system below a few kg/kW should be achieved in order to decrease the cost for launching the SPS. We also have to develop a rectenna array with over 80 % RF-DC conversion efficiency.

WS9-1 Microwave Tubes for Microwave Power Transmission
Yoshiro Takahashi, *IHI Aerospace Co., Ltd., Japan*

WS9-2 SPS Concept with High Efficiency Phase Control Technology
Hiroshi Ikematsu, Tomohiro Mizuno, Hiroyuki Satoh, Kazuyuki Takada and Izumi Mikami, *Mitsubishi Electric Corp., Japan*

WS9-3 Development of Microwave Power Transmission Equipment for SSPS Research Facility
Keiichi Morishita, Chiaki Yasuda, Katsumi Kito, Hiroshi Matsumoto*, Kozo Hashimoto* and Naoki Shinohara*, *Mitsubishi Heaby Industries, Ltd., *Kyoto University, Japan*

WS9-4 Rectenna - Microwave Rectifying Antenna - for Microwave Power Transmission
Yoshiyuki Fujino, *CRL, Japan*

WS9-5 Applications of the Active Integrated Antenna Technique in the Space Solar Power Satellite
Shigeo Kawasaki, *Tokai University, Japan*

Room J

Workshop 4

Millimeter-wave Commercial Applications and Related Circuit / Module Technologies

Organizer: Yasutake Hirachi, *Fujitsu Quantum Devices Ltd., Japan*
Chair: Hiroshi Kondoh, *Hitachi, Ltd., Japan*

Emerging requirements for creating an IT-based society have spurred businesses with millimeter-wave systems such as wireless LANs, Giga-bit Home-Links and ITS. Here, we will survey markets for MMW systems, emphasizing circuits and modules that will bring cost-reduction and, thereby, promote the commercialization of MMW consumer products.

Several RF front-end structures for millimeter wave short-range broadband wireless communication systems are presented. A 60 GHz receiver is based on the self-oscillating sub-harmonic pumping. The ability of the integrated antenna to reject a balanced signal is used to prevent local-power leakage. Design principles and simulated and measured data will be presented.

A compact 156-Mbps radio transceiver with optimizing RF architecture in the 38-GHz band will be presented. Three-dimensional laminated MCMs using plastic materials will be proposed. A DR-VCO fabricated on the MCM structure will enable a compact MSK modulator. A fabricated wireless-LAN system will be also demonstrated in the indoor-environment.

For short-range giga-bit wireless applications, low-cost 60-GHz-band modules have been developed utilizing sophisticated technologies with flip-chip devices and multi-layer ceramic packages.

WS4-1 Overview of Markets and Technologies for mm-wave Commercial Applications
Toshiaki Matsui, *CRL, Japan*

WS4-2 Millimeter-wave Front Ends Integrated with Antennas
Ji-Yong Park and Tatsuo Itoh, *UCLA, U.S.A.*

WS4-3 Millimeter-wave Broadband Wireless-LAN System Using Low-cost MCM Techniques
Kazuaki Takahashi and Masugi Inoue*, *Matsushita Electric Industrial, Co., Ltd., *CRL, Japan*

WS4-4 60 GHz-band Flip-chip Module Technology for Giga-bit Wireless Communication Systems
Kenichi Maruhashi, *NEC Corp., Japan*

Room K

Workshop 5

Fabless RFIC Development

Organizer: Thomas R. Joseph, *RF Micro Devices, Greensboro, NC, U.S.A.*
Chair: Thomas R. Joseph, *RF Micro Devices, Greensboro, NC, U.S.A.*

Successful development of critical RF integrated circuits, RFIC, is important for the success of many products delivered to the market today, particularly in the wireless area. Many new applications are appearing. Designing RFICs and making them into successful products requires skills, which are distinctly different from those needed to establish and maintain high volume production of GaAs, InGaP, SiGe, or InP technologies for RFICs. Instead of developing in-house semiconductor capabilities, many companies have chosen to work with outside foundries to develop their products. We will explore the advantages and disadvantages of working with outside foundries for the development of RFICs.

We have invited speakers that can provide insight from both the perspective of the outside foundry provider and from the perspective of the foundry user.

Topics to be discussed include:
1. How to make the foundry customer successful
2. Design tools needed or provided
3. Minimizing development cycle times
4. Is this approach cost effective?

WS5-1 Introduction to Working With RF Foundries
Thomas R. Joseph, *RF Micro Devices, U.S.A.*

WS5-2 RFIC Product Development Using Foundries - From a Fabless Infrastructure RFIC Company's Perspective
Brad Nelson, *Sirenza Microwaves, U.S.A.*

WS5-3 The New GaAs Foundry: High Performance Technology and Fast Turn-Around Service
S. M. Joseph Liu, *WIN Semiconductors, Taiwan*

WS5-4 Partnering with a Foundry: Support, Service, and Communication are Keys to Success
Rob Hamilton, *TriQuint Semiconductor, U.S.A.*

WS5-5 Reflections on Foundries
Thomas R.Joseph, *RF Micro Devices, U.S.A.*

Tuesday, November 19 0:30 p.m. - 3:30 p.m.

Room B-2

Workshop 6

Si RFIC Processes and Related Circuit Techniques

Organizer: Noriharu Suematsu, *Mitsubishi Electric Corp., Japan*
Chair: Satoshi Tanaka, *Hitachi, Ltd., Japan*

Continued advances in developing Si RFICs for wireless applications requires the process and device development of silicon technologies. This workshop is intended to address the latest progress of Si process/device technology and circuit techniques to realize transceiver system ICs. The first speaker presents the latest SiGe HBT technology and its application for 40 Gbps optical communication. The second speaker reports new SiGe:C HBT technology and discusses the effect of carbon on HBT performances. The third speaker presents the development of RF systems on chip by using BiCMOS process. The last speaker reports some circuitry attempts to realize transceiver ICs by developing RF core circuits having intelligent bias circuits.

WS6-1 SiGe HBTs for Optical Fiber Links
Yukihiro Kiyota, Katsuyoshi Washio, Tsutomu Udo*, and Takashi Hashimoto, *Hitachi Ltd., *Hitachi ULSI Systems Co., Ltd., Japan*

WS6-2 SiGe:C HBT Technology
Teruhito Ohnishi, Toru Saitoh, Ken Idota, Yoshihiko Kanzawa, Takahiro Kawashima, Koichiro Yuki, Akira Asai, Takeshi Takagi, Shigeki Sawada, and Keiichiro Shimizu, *Matsushita Electric Industrial Co., Ltd., Japan*

WS6-3 Si RF-IC Circuit Techniques for Direct-Conversion Receiver
Satoshi Tanaka, Taizo Yamawaki, Norio Hayashi, Masumi Kasahara, Bob Henshaw*, *Hitachi, Ltd., Japan, *TTP Communications, U.S.A.*

WS6-4 Intelligent Bias Circuit Techniques for Si Transceiver System IC's
Noriharu Suematsu, Eiji Taniguchi, and Shintaro Shinjo, *Mitsubishi Electric Corp., Japan*

Room C-1

Workshop 7

RF Technologies for Wireless Terminals

Organizer: Kenji Itoh, *Mitsubishi Electric Corp., Japan*
Chair: Kenji Itoh, *Mitsubishi Electric Corp., Japan*

In wireless terminals, miniaturized terminal implementation is very important for market demands. For this objective, research and development activities on the high integration RF-IC have been in high concentration. Also reduction of number of parts and cost is very important motivation for these activities. Based on these backgrounds, all circuit blocks are going toward integration on one chip. Based on this technical background, this session is organized to present the cutting edge of the technical region. First of all, a historical overview from GaAs, SiGe to CMOS is presented to indicate evolution in semiconductor techniques. In next presentation, integration techniques for hottest target, the GSM/UMTS terminal, is presented. In addition, power amplifiers, direct conversion receivers and VCOs are presented as a typical example of the latest trends in RF circuit technologies.

WS7-1 RF IC Techniques from GaAs to SiGe to CMOS
Christian Kermarrec, *ADI, U.S.A.*

WS7-2 System and Circuit Integration Techniques for GSM and UMTS Mobiles
Robert Weigel, *University of Erlangen-Nurnberg/DICE, Germany*

WS7-3 Withdrawn

WS7-4 Direct Conversion Receiver and its Utilization for Mobile Terminals
Kenji Itoh, *Mitsubishi Electric Corp., Japan*

WS7-5 Optimization of SiGe HBT VCOs for Wireless Applications
Tom K. Johansen and Lawrence E. Larson*, *Technical University of Denmark, Denmark, *UCSD, U.S.A.*

WS7-6 Discussions

Room C-2

Workshop 8

RF MEMS Switches and Switch Circuits

Organizers: Koji Mizuno, *Tohoku University, Japan*
Gabriel Rebeiz, *University of Michigan, U.S.A.*
Chair: Koji Mizuno, *Tohoku University, Japan*

The development of RF microelectromechanical (MEMS) switches has been progressing at a relatively rapid pace since the first practical dc-contact (series) and capacitive (shunt) switches were published in 1995. They offer substantially higher performance than p-i-n or field-effect transistor (FET) diode switches and are expected to be used extensively in MEMS phase shifters and reconfigurable circuits. Several problems related to long-term reliability, packaging, high-power handling, and fabrication cost are being addressed, however, it is expected that practical solutions will be available in the coming 3-5 years. This workshop will present the latest development in RF MEMS switches and their applications.

WS8-1 An Overview of the Failure Mechanisms of MEMS Switches
Gabriel M. Rebeiz, *University of Michigan, U.S.A.*

WS8-2 Development and Packaging of RF MEMS Series Switch
Tomonori Seki, *Omron Corp., Japan*

WS8-3 Millimeter-wave Tunable Circuits Using MEMS Technology
Yongwoo Kwon, *Seoul National University, Korea*

WS8-4 RF MEMS Micro-switch and Its Application to a Phased-Array Antenna
Kenichiro Suzuki, *NEC Corp., Japan*

WS8-5 Tunable RF-MEMS Filters and Future Trend in RF MEMS Technologies
Gabriel M. Rebeiz, *University of Michigan, U.S.A.*

0:30 p.m. - 3:30 p.m. *Tuesday, November 19*

Room J

Workshop 3

Microwave Circuit Simulation Technologies
(Note : The workshop schedule has been changed)

Organizer: Shigeo Kawasaki, *Tokai University, Japan*
Chair: Eikichi Yamashita, *The University of Electo-Communications, Japan*

Generally, the design process is started from choosing between two aspects; how to analyze the object and how to use the simulator. The former weighs on accuracy and/or theoretical progress and the latter seeks for convenience of the simulator as a design tool. Both of them are important for investigation of the characteristics of the microwave circuit.

The topic of this WS is the simulation technologies for microwave circuit design. In order to discuss the theme from the two standing points mentioned above, we have five distinguished speakers to introduce numerical and analytical techniques and simulator technologies. The first three speakers from universities will lead the audience to the world of attractive analytical techniques by way of CAD model extraction and verification by measurement for the transistor, hierarchy of global modeling simulations for the devices and circuits, and global simulation by means of Extended FDTD and Envelop EM for an active integrated antenna. In the second half, the two speakers from software companies will give exciting talks about modern software architecture interplayed with the nonlinear simulation technology and evolution of the commercial EM simulator from the prototype to ABS.

We believe all talks will fascinate the audience who are interested in this field.

WS3-1 Introduction
Shigeo Kawasaki, *Tokai University, Japan*

WS3-2 Conventional Transistor Non-Linear CAD Model Extraction and Verification using a Microwave Large Signal Network Analyser
Paul J. Tasker, *Cardiff University, U.K.*

WS3-3 Hierarchy of Global Modeling Simulations: From Circuit-Based to Physics-Based Models
Samir M. El-Ghazaly, Stephen Goodnick*, Yasser Hussain*, Muhammad Waliullah* and Robert Grondin, *The University of Tennessee, *Arizona State University, U.S.A.*

WS3-4 Full Wave Time Domain Analysis of Microwave Antenna and Active Nonlinear Microwave Circuits
Hsiao-Ping Tsai and Tatsuo Itoh, *UCLA, U.S.A.*

WS3-5 Nonlinear Analysis Techniques and Simulator Architecture
Stephen Maas, *Applied Wave Research, Inc., U.S.A.*

WS3-6 Development of Commercial Electromagnetic Software
James C. Rautio, *Sonnet Software, Inc., U.S.A.*

Room K

Workshop 10

Superconductive Filters for RF Wireless Communications

Organizer: Katsumi Suzuki, *Superconductivity Research Laboratory, ISTEC, Japan*
Chairs: Toshio Nojima, *Hokkaido University, Japan*
Robert B. Hammond, *Superconductor Technologies Inc., U.S.A.*

Advances in modern RF wireless communications are creating a demand for reduction of interference with adjacent channel beyond that available in the conventional receiver front-end system of the mobile base station.

This workshop will present promising technologies for improving the front-end system of the mobile base station by using high-Tc superconducting (THS) filters.

The aim of the workshop is to bring together distinguished researchers, filter designers and carriers involved in the study of microwave HTS filters and systems.

The subject matter ranges from basic material characterizations to commercial applications of HTS, such as "Microwave measurements of HTS films", "Reduction of Interference and Noise", "SuperFilters Enhance Uplink Quality" and "Front End Field Trials in Urban Wireless Networks".

WS10-1 Recent Progress of HTS Films for Microwave Filters
Katsumi Suzuki, S*uperconductivity Research Laboratory, ISTEC, Japan*

WS10-2 Microwave Measurements of HTS Films and Dielectric Substrates for HTS Filter Designs
Yoshio Kobayashi, *Saitama University, Japan*

WS10-3 A 5-GHz Band Coplanar Superconducting Filter
Shoichi Narahashi, Kunihiro Kawai and Kei Satoh, *NTT DoCoMo, Inc., Japan*

WS10-4 HTS Filters for Investigation on Reduction of Interference with Adjacent Channel
Nobuyoshi Sakakibara, *Denso Corp., Japan.*

WS10-5 Measurement and Evaluation for Inter-modulation Interference Using the HTS Filter
Mitsunari Okazaki, *Alps Electric Co., Ltd., Japan*

WS10-6 Withdrawn

WS10-7 SuperFilters® Enhance Uplink Quality, Capacity, and Coverage in Wireless Systems
Robert B. Hammond, *Superconductor Technologies Inc., U.S.A.*

WS10-8 Results of Superconductor Front End Field Trials in Urban Wireless Networks
James P. Simmons, Jr., *Conductus, Inc., U.S.A.*

WS10-9 New HTS Technologies for Advanced 3G and 4G Networks.
Randy W. Simon, *Conductus, Inc., U.S.A.*

SHORT COURSE

Tuesday, November 19 8:30 a.m. - 11:30 a.m.

Room B-1

Short Course 1

Design of Zero- and Low-IF Wireless Receivers in CMOS

Lecturer : Asad A. Abidi, *UCLA, U.S.A.*

The trend for high levels of integration in wireless receivers is now well established. This requires the elimination of as many off-chip elements as is possible, which implies on-chip image rejection and channel-select filtering. These functions must consume low power, which requires that the circuits should operate at low frequencies; thus the need to translate the signals of interest to low or zero IF (intermediate frequency).

This short course will first describe the practical problems associated with translating the various modulation schemes in use today to zero and low IF. Various methods to mitigate these problems will be presented. Circuit techniques associated with zero and low IF receiver sections, such as active and passive polyphase filters, high linearity channel select filters, and DC nulling or cancellation, will be shown. Finally, some case studies will be presented of zero and low-IF receivers that have been developed for demanding applications, and selected performance comparisons with discrete superheterodyne implementations.

Tuesday, November 19 0:30 p.m. - 3:30 p.m.

Room B-1

Short Course 2

Antennas for Small Mobile Terminals; Theory, Design and Measurements

Lecturer : Gert F. Pedersen, *Aalborg University, Denmark*

Antennas for small mobile terminals are well known from mobile and cordless phones and have changed from extractable antennas and small helix to integrated antennas over the last few years. The questions, how does they work on a small terminal and what is the performance of the different antennas will be discussed and exemplified through both theoretical and practical designs using numerical techniques. Performance in terms of size, bandwidth, Total Radiated Power (TRP), Total Isotropic Sensitivity (TIS), Mean Effective Gain (MEG) and peak Specific Absorption Rate (SAR) will be introduced and tradeoffs between the performance parameters will be discussed. Further the influence from nearby objects (often the human operator) on various terminal types will be discussed and results from several investigations presented.

As the performance in terms of TRP, TIR and SAR vary tenfold among commercial phones both the network operators and the users have been concerned. This is the reason why 3GPP recently decided to have a mandatory test including the antenna. The principle of this test and other coming tests for 2G terminals will be discussed and all components in a measurement system including the error budget will be given.

EXHIBITION

An international microwave exhibition, Microwave Exhibition 2002 in association with the 2002 Asia-Pacific Microwave Conference (APMC 2002) will be held at the Event Hall in the Kyoto International Conference Hall, the venue of the conference, from Wednesday November 20 to Friday November 22, 2002.

More than 300 microwave-related companies from countries all over the world will display their latest products and services including systems, sub-systems, components, parts, materials, instruments, and CAD software.

At the same time, the following attractive programs will also be featured:

- Technical seminars on the new technologies and products presented by exhibitors.
- Tutorial lectures related to foundations for microwave semiconductor devices, active and passive circuits, and mobile/ telecommunication systems, provided in Japanese by Japanese authorities.
- The historical exhibition of microwave technologies in Japan, where more than 100 panels with respect to antennas, filters, semiconductors, and systems will be displayed.
- Display of a satellite model and demonstration of Multimedia Mobile Access Systems in the special corner.
- Demonstration of microwave application in the field of ceramics.
- The university exhibition where universities and colleges demonstrate their unique research activities in the field of microwave.

Conference registrants and visitors with complimentary exhibition badges will be admitted free of charge. Each visitor can take an exhibition badge and an exhibition guide at the exhibition registration desk. The price of an optional tutorial lecture textbook is 2,000 yen.

EXHIBITORS

(Following is a list of exhibiting companies as of July 1 and expected exhibitors)

ACCENT OPTICAL TECHNOLOGIES CO., LTD.
ADFOREST INC.
ADVANCED MICROELECTRONICS TECHNOLOGY CORP.
ADVANTEST CORPORATION
AET JAPAN, INC.
AGILENT TECHNOLOGIES JAPAN, LTD.
ALPS ELECTRIC CO., LTD.
AMPHENOL JAPAN LTD.
AMSC CO., LTD.
AMTECHS CORP.
ANRITSU CORP.
ANSOFT JAPAN K.K.
ARUMOTECH CORPORATION
ASTECH CORP.
CASCADE MICROTECH JAPAN., INC.
CHRONIX INC.
COMCRAFT CORP.
COTEAU VERT CO., LTD.
CRC SOLUTIONS CORP.
CYBERNET SYSTEMS CO., LTD.
DAIDO STEEL CO., LTD.
DAIKIN INDUSTRIES, LTD.
DEVICE CO., LTD.
DIGITAL SIGNAL TECHNOLOGY, INC.
ELTECH CO., LTD.
EPCOS K.K.
FARAD CORP.
FDK CORP.
FLOMERICS ELECTROMAGNETICS DIVISION

FUJITSU, LTD.
FUJITSU MEDIA DEVICES LTD.
FUJITSU QUANTUM DEVICES LTD.
FUSOH SHOJI CO., LTD.
G.T. ELECTRONICS CORPORATION
HITACHI CABLE, LTD.
HITACHI METALS, LTD.
HI-TECHNOLOGY TRADING, INC.
JAPAN FINE CERAMICS CO., LTD./JGC CORP.
JAPAN RADIO CO., LTD.
JEPICO CORP.
KAN ELECTRONICS CO., LTD.
KANTOH ELECTRONIC APPLICATION AND DEVELOPMENT INC.
KARL SUSS JAPAN K.K.(SUSS MICROTEC)
KEYCOM CORP.
KMW JAPAN INC.
KNOWLEDGE ON INC.
KYOCERA CORP.
KYOKUTO BOEKI KAISHA, LTD.
LASER MEASUREMENT CORP.
LITTON-WESTREX CO., JAPAN
LPKF JAPAN CO., LTD.
MARUWA CO., LTD.
MATSUSHITA ELECTRIC WORKS, LTD.
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MICRO DENSHI CO., LTD.
MICROWAVE SOLUTIONS INC.
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NIHON MICRON CO., LTD.
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C-MAC QUARTZ CRYSTALS LTD. (Frequency Products)
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COMDEV INTERNATIONAL LTD.
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COMMUNICATION TECHNIQUES, INC.
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COMTECH PST CORP.
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ELCOM TECHNOLOGIES, INC.
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EMS TECHNOLOGIES, INC.
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SPINNER GMBH
SPIREA
SPREA AB
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ST MICRO ELECTRONICS
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