

# Designing for EMI / EMC Compliance

12 – 13 March 2009

*An application has been submitted to the New Technology Training Scheme for this program to get endorsed. If successful, eligible participants may obtain up to 50% of training fee refund from NTTS.*

## Introduction

One of the most critical issues to address in the design and manufacturing of electrical or electronic products is Electromagnetic Interference (EMI) / Electromagnetic Compatibility (EMC) compliance. In today's increasingly compressed product life cycle, the capability to 'design right' early in the development cycle for faster EMC compliance becomes a distinctive competitive advantage of a company.

Jointly organized by Hong Kong Productivity Council, Lexiwave Technology (Hong Kong) Ltd., and the Hong Kong Science and Technology Parks Corporation, this 2-day course aims to provide participants with an insightful training on product design for EMI/EMC compliance from a practical, industrial perspective. The training offers practical knowledge on consumer product EMI/EMC approval process, and current and future regulatory trends. Design techniques pertaining to EMI/EMC compliance of wireless products will be presented by industry experts.

In addition to being led through a systematic, theoretical and practical presentation with case studies on commercial products, participants will also take part in measurement demonstrations on the use of state-of-the-art RF equipment inside the EMC Centre of HKPC.

## Who Should Attend

RF Designers, IC Designers, Wireless Product Designers, Field Application Engineers, Design Managers, Business Development Engineers and Managers, and related professionals involved in product EMI/EMC compliance.

## Organizers:



## Co-organizer:



## Supporting Organizations:



The Hong Kong Standards & Testing Centre Ltd

Please circulate this leaflet to those who are interested.

*Advanced & Manufacturing Technology*



## Course Structure

The course will be conducted by RF experts with rich local and overseas industrial experience and consists of both classroom and laboratory demonstration / practical appreciation sessions.

### **DAY 1 – Morning Session**

#### **EMC Product Evaluation and Certification: Regulations, Standards, and Related Issues**

##### **Framework for evaluation and certification of electrical / electronic equipment**

- Purpose
- Product liability
- Framework types
- Compliance

##### **EMC issues**

- Equipment evaluation and certification
- Emission and Immunity
- Signal and signal sources - continuous and transient
- Ports - internal and public
- General EUT system configuration

##### **EMC Regulations and Standards**

- EMC regulations
- EMC standards

##### **EMC tests**

- Emission tests
- Immunity tests
- ESD

##### **Critical issues**

- Interpretation of provisions in standards by different parties
- Limit of emissions
- Performance criteria for immunity tests

### **DAY 1 – Afternoon Session and DAY 2 – Morning Session Product Design Techniques for EMC Compliance**

##### **Unintentional Radiation**

- EMI Source
- EMI prevention and reduction
- Skills in EMI prediction and verification

##### **Intentional Radiation**

- circuit design : to prevent and reduce harmonics and spurious emission
- antenna design: radiation pattern
- data pattern and averaging factor

##### **Surge and ESD protection**

- behavior of surge and ESD transients
- circuit design and component selection
- printed circuit board design
- mechanical design and conductive plating
- earth connection in AC-DC converter

### **DAY 2 – Afternoon Session**

#### **Equipment Authorization and EMI Measurement Demonstration**

##### **Equipment Authorization Process**

- FCC Part 15 Devices
- FCC Regulations
- Telecommunication Certification Bodies (TCB) Listed and accredited laboratories Documentations and labels Grantee Code and FRN Certification Process
- Short range devices for EU market
- Mandatory Rules: - R&TTE Directive and EMC Directive Notified bodies Route of compliance - self-declaration or certification

##### **EMI Measurement Demonstration**

- Conducted emission measurements
- Radiated emission measurements

## About the Instructors

**Dr C.M. Yuen** received his B.Eng. and Ph.D degrees in Electronic Engineering from the City University of Hong Kong. His research interest is mainly in the design of RF and Microwave circuits for low voltage and low power consumption wireless systems. He has twenty years of experience in RF product design and manufacturing in Hong Kong and Mainland China. Dr Yuen is currently an advisory engineer in the field of HDTV and IPTV.

**Mr Henry Lau** received his M.Sc. and MBA degrees from UK and USA respectively. He has more than 20 years of experience in designing RF systems, products and RFICs in both Hong Kong and US. He worked for Motorola and Conexant in US as Principal Engineer on developing RFICs for cellular phone and silicon tuner applications. Mr Lau holds five US patents and has one patent pending. He is currently running Lexiwave Technology Ltd., a fabless semiconductor company in Hong Kong and US designing and selling RFICs.

**Mr Kenneth Cheung** received his B.Eng from the City University of Hong Kong and his M.Sc. from the Chinese University of Hong Kong in both Electronic Engineering. He has been working for more than seven years on EMC & RF testing, consulting services to customers to meet stringent standards on communication products for different countries. He is currently the Assistant Manager of EMC department of the Hong Kong Standards & Testing Centre (HKSTC).

## Medium of Instruction

Cantonese (with English terminology)

## Award of Certificate

A Certificate of Completion will be awarded to participants who have attended all training sessions

## Date

12 – 13 March 2009

## Time

9:30 – 12:30 (a.m. sessions) & 14:00 – 17:00 (p.m. sessions)

## Venue

1/F., HKPC Building, 78 Tat Chee Avenue, Kowloon

## Course Fee (including course materials)

Normal: HK\$2,500 Early Bird: HK\$2,250 (for those who apply to enroll on / before 27/2/2009)

## Application

To enroll, please complete the attached enrolment form and send it together with the appropriate fee to Ms Catherine Lam

PTI, Hong Kong Productivity Council

3/F., HKPC Building, 78 Tat Chee Avenue, Kowloon

(All cheques should be crossed and made payable to 'Hong Kong Productivity Council')

## Enquiries

Hong Kong Productivity Council

Tel: 2788 5563 or 2788 5716

Fax: 2788 5567

Email: [catlam@hkpc.org](mailto:catlam@hkpc.org)

Lexiwave Technology (Hong Kong) Limited

Tel: 2144 2592

Fax: 2144 2595

Email: [henry.lau@lexiwave.com](mailto:henry.lau@lexiwave.com)

## Supporting Organizations

Each participant will receive a souvenir from **Rohde & Schwarz Hong Kong Ltd.**, supporting organization of this course.

