

VCCI DAYORI

No.151 2024.1

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New Year's Greetings

President, VCCI Council
Atsuo Hirai



I would like to begin 2024 by wishing everyone a happy new year.

Last year on June 27, I was appointed President of VCCI Council. I look forward to continuing to work with you all in the year of 2024.

It has already been four years since the outbreak of the COVID-19 pandemic. The pandemic was an opportunity for new lifestyles to flourish, including work from home, online conferencing, and the cashless economy. As these new lifestyles take root, we find ourselves in the midst of an increasingly sophisticated social transformation driven by digital technologies.

The IT and electronics industries, which have close ties with VCCI Council, show great potential in leveraging their technical capabilities cultivated amidst the rapid advancement of digital technologies and severe global competition. I expect these industries to contribute to solving the many challenges we face in Japan, an “advanced” country in terms of social issues, and help realize our vision of Society 5.0.

In October last year, the comprehensive digital-innovation exhibition CEATEC 2023 was held. Its mission was to bring together people, technologies, and information from a variety of industries and occupations to “co-create” our envisioned future with the aim of building Society 5.0, a two-pronged solution to economic-development and social issues. Attendees were not limited to IT and electronics companies; many were from startups and global enterprises, including young engineers. The exhibition was an opportunity to educate and familiarize people with digital technologies, and practice a collaborative effort to build social implementations.

An essential part of this effort to achieve Society 5.0 will be the use of radio and wireless communication that allows us to connect anywhere, anytime, and with anybody. To use these valuable radio-wave resources and increasingly advanced digital devices safely, securely, and efficiently, it is imperative that we ensure clean electromagnetic environments. VCCI Council's roles and responsibilities are growing by the day, and with that in mind, we must push forward in our duties with a sense of responsibility toward the future.

Since VCCI Council's inauguration as the Voluntary Control Council for Interference by Information Technology Equipment (VCCI) in 1985, we have been engaged in activities to prevent interference

caused by information technology devices, and to protect the interests of users and consumers of electrical and electronic devices. Compared to those early days, CPU operating frequencies have improved from the order of MHz to the order of GHz, and high-speed wireless internet connections are spreading from offices to regular households. As technology rapidly advances, giving rise to an endless stream of new digital devices, the VCCI Council's activities remain driven by the trust inspired by the VCCI mark. Specifically, we have defined three "pillars" of regulation: our system for registering measurement facilities, our system of self-declaration and filing of conformity verification reports by members, and our fair market sampling tests. We have made securing trust the highest priority of our operations. The VCCI mark is now widely recognized in society. For this, we owe our thanks to the support and dedication of relevant government agencies, organizations, and VCCI members.

2015 marked the publication of CISPR 32 Edition 2, an international standard for electromagnetic emission from multimedia equipment. Based on an endorsement by the Information and Communications Council of the Ministry of Internal Affairs and Communications in December of that year, this standard is now also being applied within Japan. Since the November 2016 publication of our new VCCI rules and regulations based on this EMC standard for new multimedia equipment, we at VCCI Council have also been working to implement this standard. We are thankful to our members for gaining a proper understanding of these rules and regulations and working steadily to apply them. The number of conformity verification reports remains strong, and we are seeing more new members from countries that previously had none. Our current membership spans 30 countries and regions.

Starting in 2020, most VCCI Council events were held online through our website, but since FY 2022, we have been able to resume some of our hands-on education and training seminars, as well as our overseas business trips. In FY 2023, we were able to make local presentations at relevant academic conferences held in Europe, the USA, and the Asia-Pacific, and hold our first in-person conference with ANAB in four years. We were also able to hold information-sharing events with the three US laboratory accreditation bodies including A2LA and NVLAP.

We also exhibited at Computex TAIPEI 2023 for the first time in five years, and began activities that embrace the post-pandemic "new normal". Examples include seminars for local startups and a collaborative seminar with the government agency BSMI and the industry group CTCA.

This year, we aim to continue our efforts toward building "Society 5.0" with the collaboration of relevant parties. We will contribute to the formation of clean electromagnetic environments, and engage in activities that will prove meaningful to our members, and by extension, Japanese consumers. We will also continue to promote the transition of various conferences to online or hybrid format. I ask all of you for your continued understanding and support for the VCCI Council, and wish you all a bright, productive, and promising year of 2024.

The Future of Wireless Power Transfer (WPT)

Telecom Engineering Center

Fumito Kubota

Today's discourse on WPT began in 2007, when a team at MIT presented their magnetic-resonance-coupling method. The new method shattered common-sense notions about electromagnetic induction maintaining that transmitter and receiver coils spaced at intervals exceeding a centimeter would cause rapid loss of efficiency. And so the method so far has not had many useful applications. The team showed that if resonance conditions were properly adjusted, power transfer across several meters was achievable in practice. This discovery had a resounding impact on both academic and industrial sectors, sparking competition amongst R&D projects across the world, and resulted in the founding of a consortium and relevant standardization activities. Looking back, the roughly five years since 2007 could be aptly named the "Period of Development Competition," and the seven years since around 2012 and the years since 2020 the "First Period" and "Second Period of International Standardization" respectively.

WPT can be broadly categorized into two types: the electromagnetic-field-coupling type (hereinafter, "coupling type") and the radio beam type (hereinafter, "beam type"). The coupling type uses a physical coupling phenomenon between transmitter and receiver on the order of tens of MHz or less. The beam type consists of a transmitter and receiver akin to what we might call a wireless-communication system, and is being considered for use with microwave frequencies and above. Both types are the same in function- they are both "WPT" - but technically speaking, they are different. The focus of the "First Period of International Standardization" was the standardization of the coupling type and associated legal regulatory systems. Additionally, coupling-type WPT can be further categorized into three different application groups.

The first group is for electric-vehicle (EV) chargers. Conductive chargers, which were the first to be standardized, resulted in multiple sets of standards existing alongside each other. To avoid repeating this mistake, standardizers have been careful to emphasize international interoperability to establish a single set of standards for WPT chargers for EVs. The first hurdle they faced was determining which frequencies to use. The higher the frequency used below 150 kHz, the smaller and more lightweight the receiver coil could be. Unfortunately, vehicles themselves already used the 124- and 134-kHz frequencies for keyless entry and immobilizers, and thus the 79- to 90-kHz range was adopted instead. The international debate on which frequencies to use was sparked by

the 2013 joint recommendation from 12 of the world's major automobile companies to the Society of Automotive Engineers (SAE). The debate reached a definitive conclusion in 2019 when the ITU Radiocommunication Sector (ITU-R), who was defining the international rules on frequency use, approved a new Recommendation on frequencies to be used in WPT for EVs in 2019. Although IEC and ISO product standards for EV WPT were completed in 2022 and ready for commercialization at any time, market needs have not lived up to expectations.

The second group is for charging the mobile devices such as mobile phones. Numerous consortiums have been launched, competing over the use of bands from 100 kHz to several MHz. Due to the adoption of those bands by a certain "company A," use of those bands has become relatively commonplace in Japan. ITU-R also has recommended frequencies to be used for mobile and portable devices in 2019, somewhat earlier than those for EVs. Deliberations between SC-B and SC-I on the CISPR emission standard for WPT in the aforementioned "First Period" and "Second Period" are still ongoing.

The third group is for IPT devices introduced in CISPR 14-1 Edition 7 (2020). Standards for this group were debated and approved within CISPR SC-F as an extension of the standards for electromagnetic-induction cookers. This is an example of an emission standard preceding the development of industry product standards and ITU-R's frequency considerations.

Meanwhile, research on beam-type WPT has been a major challenge in the "Second Period of International Standardization". Issues in the legal system relating to this type of WPT still need to be addressed. The US and Japan are currently leading in development of the beam type, while other countries are still in the early stages. ITU-R issued a Recommendation on frequencies to be used in 2022, and is considering frequencies to be added in the future. The US has proposed that the emission standard for the beam type fall under CISPR 11, and after some deliberation, the formulation of PAS (Publicly Available Specifications) 38 is now underway.

I would like to add here that countries differ in their approaches to which legal systems apply to WPT. From 2015 to 2019, ITU performed research on the necessity of revising the Radio Regulations (RR) as a matter of great urgency. However, this revision to the RR was not debated because the two aforementioned Recommendations did not reach the 2019 World Radiocommunication Conferences (WRC) in time. Still, legal issues clarified in past research will need to be resolved in the future.

In the case of the coupling type, WPT equipment may be thought of as a type of ISM equipment. At the same time, communication will be required between transmitters and receivers to monitor and control charge states of the battery for safety purposes. In European countries, devices associated with this kind of communication are classified as "short-range communication devices (SRDs)" in the Radio Equipment Directive. Harmonized standards for WPT in SRDs rather than ISM equipment are expected to be formulated in the future. Either way, most coupling types will not use

frequencies in the so-called ISM band, so deployment of such devices will depend on approval from the country in question's regulatory authorities. In the case of the beam type, ITU-R's recommended frequencies fall under the ISM bands. The RR stipulates radio communications in the ISM bands must accept harmful interference which may be caused by these ISM equipment. And CISPR 11 does not define limits for the ISM bands. In some countries, the handling of ISM equipment poses a risk of being unable to protect low-power radio communications such as WiFi operating on the ISM band. Even within the ISM band, limits will surely need to be defined for beam WPT. Furthermore, in Japan, the beam type WPT are considered as a type of radio communications whose operation requires a radio-station license or certification of conformity to technical standards.

WPT represents a new way of using radio for the purposes of energy transfer, and could be seen as intruding upon the spectrum already being fully used by existing radio communications. This could be the reason for the difficulties still faced when considering the sharing of the spectrum with existing forms of radio communications. However, that does not change the fact that radio communications are essentially a form of energy transfer; the transmission of electromagnetic energy to a receiver that extracts information. Changing social needs and advancing technologies are in turn changing the importance of frequency bands. In my work on WPT, I am starting to feel that some bands that are falling out of use could be freed up for purposes outside radio communications.



Fumito Kubota

- 1974 Joined the Communications Equipment Dept. of the Radio Research Laboratory of the Ministry of Posts and Telecommunications; assigned to performance-testing methods for radio facilities
- 1987 While there, worked to establish the Comprehensive Telecommunications Network Laboratory
- 2000 Obtained a Ph.D. (engineering) from the Kyushu Institute of Technology
- 2001 Appointed Network Architecture Group Leader at the incorporated administrative agency Communications Research Laboratory
- 2002 While there, served concurrently as Ultra-High-Speed Photonic Network Group Leader
- 2006 Appointed Director of the New Generation Network Research Center at the National Institute of Information and Communications Technology
- 2009 Appointed Senior Research Associate at the National Institute of Information and Communications Technology
- 2012 Joined Telecom Engineering Center (until present)
- 2014 Appointed Leader of TF-WPT at CISPR SC-B (currently the AHG4 Convenor)
- 2015 Appointed Liaison Rapporteur at ITU-R Study Group 1 (on WPT issues)

Committee Activities

●Steering Committee

Date	July 19 and September 20, 2023	
Agenda items	<ul style="list-style-type: none"> ● Agenda item 1 ● Agenda item 2 ● Agenda item 3 ● Agenda item 4 ● Agenda item 5 ● Agenda item 6 	<p>Selection of the Chair of the Steering Committee</p> <p>Method of selecting the Chair of the Steering Committee for next fiscal year onward</p> <p>Nomination of the Vice Chair of the Steering Committee</p> <p>Approval of the Chair of the Technical Subcommittee</p> <p>Guidance for Rules for Voluntary Control Measures revision (draft)</p> <p>APEMC 2024 Okinawa</p>
Continuing agenda items	<ul style="list-style-type: none"> ● Agenda item 5 	
Decisions and reported items	<ul style="list-style-type: none"> ● Agenda items 1, 2, 3, 4, and 6 ● Reported item 1 ● Reported item 2 ● Reported item 3 ● Reported item 4 ● Reported item 5 ● Reported item 6 ● Reported item 7 ● Reported item 8 	<p>Approved</p> <p>Meetings of the Board of Directors and Council (June)</p> <p>Activities performed by the dedicated subcommittees (Technical, International Relations, Market Sampling Test, Public Relations, and Education) for the period from July to September</p> <p>Secretariat work (member entry and withdrawal trends, the number of compliance verification reports, income and expenditure, etc.)</p> <p>On-demand distribution of 2023 Rules Briefing and Technical Symposium</p> <p>Report on the VCCI seminar as the 2023 Info-Communication Promotion Month Event for MIC</p> <p>Report on participation in the 2023 IEEE EMC+SIPI (see page 24)</p> <p>Report on the FY 2022 Business Report Meeting (see page 19)</p> <p>Report on the VCCI seminar at Gifu Prefectural Industrial Technology Center (see page 21)</p>

● Technical Subcommittee

Date	September 11, 2023	
Agenda items	<ul style="list-style-type: none"> ● Agenda item 1 ● Agenda item 2 ● Agenda item 3 ● Agenda item 4 ● Agenda item 5 ● Agenda item 6 	<p>Technical Subcommittee’s planned activities for FY 2023</p> <p>Creation of guidance documents on uncertainty in hybrid antennas</p> <p>Assessment of whether the voltage-to-current conversion ratio and EUT impedance affect transformer-type AANs during measurement of conducted emissions</p> <p>Discussing evaluation methods for test sites (18 GHz to 40 GHz)</p> <p>Activities for promoting standardization of mains cable termination conditions</p> <p>Tutorial by VCCI held at APEMC 2024 Okinawa</p>
Continuing agenda items	● Agenda items 1, 2, 3, 4, 5, and 6	
Decisions and reported items	<ul style="list-style-type: none"> ● Reported item 1 ● Reported item 2 	<p>Presentation of submitted papers and report on participation in the 2023 IEEE EMC+SIPI (held from July 31 to August 4)</p> <p>Report on participation by CISPR experts in SC-A/Plenary, WG1, WG2, AHG7, AHG8, A/I JAHG6, and A/I JTF at the CISPR international conference (London) (held from September 25 to 29)</p>

● International Relations Subcommittee

Date	July 12 and September 15, 2023	
Agenda items	<ul style="list-style-type: none"> ● Agenda item 1 ● Agenda item 2 ● Agenda item 3 	<p>Survey of trends in EMC regulations</p> <p>Confirmation of the International Relations Subcommittee’s FY 2022 activity report (draft)</p> <p>Preparation for the FY 2023 International Forum</p>
Continuing agenda items	● Agenda items 1 and 3	
Decisions and reported items	<ul style="list-style-type: none"> ● Decision 2 ● Reported item 1 ● Reported item 3 	<p>The website was updated with surveys of trends in world EMC regulations on September 15.</p> <p>The FY 2023 International Forum held on March 8, 2024 (Fri) at United Nations University</p>

●Market Sampling Test Subcommittee

Date	July 13 and September 14, 2023	
Agenda items	<ul style="list-style-type: none"> ● Agenda item 1 ● Agenda item 2 ● Agenda item 3 	<p>Market sampling test report</p> <p>Document inspection report</p> <p>Report on further surveys regarding the FY 2022 market sampling test</p>
Decisions and reported items	<ul style="list-style-type: none"> ● Agenda item 1 ● Agenda item 2 ● Agenda item 3 	<p>For the FY 2023 market sampling tests, products (bought and borrowed) are being selected and tests are underway. The results show that three products have failed so far, and are being investigated by the applicable members. Of these, a member report was received confirming the failure of one product.</p> <p>For the FY 2023 document inspection, up to 26 documents have been selected so far, for which inspection is underway.</p> <p>In the FY 2022 market sampling tests, one product failed and was investigated, resulting in a report from the member confirming the failure of the product.</p>

●Public Relations Subcommittee

Date	July 14 and September 8, 2023	
Agenda items	<ul style="list-style-type: none"> ● Agenda item 1 ● Agenda item 2 ● Agenda item 3 ● Agenda item 4 ● Agenda item 5 	<p>TECHNO-FRONTIER 2023</p> <p>2024 desktop (for Japan) and wall (for overseas) calendars</p> <p>Materials presented at the Business Report Meeting</p> <p>Vision for Regional Cities</p> <p>CEATEC 2023</p>
Continuing agenda items	<ul style="list-style-type: none"> ● Agenda item 5 	
Decisions and reported items	<ul style="list-style-type: none"> ● Reported item 1 ● Reported item 2 ● Reported item 3 ● Reported item 4 	<p>Report on Participation in TECHNO-FRONTIER 2023</p> <p>Desktop and wall calendars were completed, and the desktop calendars were distributed to booth visitors at the October CEATEC. Calendars are planned to be distributed to attendees at future in-person events. Wall calendars are planned to be sent to existing members overseas.</p> <p>The Chair checked and presented the content of the Public Relations Subcommittee's presentation materials at the VCCI Council FY 2022 Business Report Meeting held on July 19.</p> <p>The Public Relations Subcommittee reported that it broadcast a 30-second PR video for the VCCI Council for one to two weeks in June at Machikuru Vision in Sendai, July at NAGY in Nagoya, and August at Ashibi Company Vision in Naha. The PR video is being broadcast from September 7 to 13 at Machinaka Vision in Katamachi Kirara, Kanazawa.</p>

●Education Subcommittee

Date	August 24, 2023	
Agenda items	<ul style="list-style-type: none"> ● Agenda item 1 Seminar preparation status for FY 2023 ● Agenda item 2 Confirmation of task force progress in FY 2023 ● Agenda item 3 Results of FY 2023 education and training 	
Continuing agenda items	● Agenda items 1, 2, and 3	
Decisions and reported items	<ul style="list-style-type: none"> ● Agenda item 1 <ul style="list-style-type: none"> - Upon soliciting participation in “The basic technique of EMI measurement” (held on October 6), the target number of participants was reached, and the event was approved to be held. - Revisions to classroom lectures and textbooks for hands-on training, and rehearsals for hands-on training, were completed successfully for the following: “The basic of electromagnetic waves, EMI measurement technique” (held from November 30 to December 1 and December 7 to 8) and “The basic of electromagnetic waves, EMI measurement technique” (held from November 30 to December 1 and December 14 to 15). Afterwards, solicitations began, successfully attracting the target number of participants. ● Agenda item 2 <ul style="list-style-type: none"> Promotion of three task forces (TFs) and their introduction in lectures TF 1: The lecture “EMI measurement technique above 1 GHz” was integrated with the lecture “The basic of electromagnetic waves, EMI measurement technique below 1 GHz” TF 2: Discussing the enhancement of calculation exercises and explanations of “EMI measurement instrumentation uncertainty (MIU)” TF 3: Discussing the implementation of comprehension checks in education and training ● Agenda item 3 <ul style="list-style-type: none"> No events were held during the reporting period. 	

●Registration Committee for Measurement Facilities

Date	July 18, 2023
Agenda items	● Reviewed the results of deliberations by the Measurement Facility Examination WG.
Decisions and reported items	<p>Conformity certified (including cases certified with qualification comments after checking of supplementary papers): 18 companies</p> <p>Radiated emission measurement facilities below 1 GHz: 10</p> <p>AC-mains-ports-conducted emission measurement facilities: 11</p> <p>Wired-telecommunication-port-conducted emission measurement facilities: 10</p> <p>Radiated emission measurement facilities above 1 GHz: 8</p> <p>Applications returned with comments: None</p> <p>Applications carried over to the next meeting: None</p>
Date	September 4, 2023
Agenda items	● Reviewed the results of deliberations by the Measurement Facility Examination WG.
Decisions and reported items	<p>Conformity certified (including cases certified with qualification comments after checking of supplementary papers): 21 companies</p> <p>Radiated emission measurement facilities below 1 GHz: 10</p> <p>AC-mains-ports-conducted emission measurement facilities: 12</p> <p>Wired-telecommunication-port-conducted emission measurement facilities: 8</p> <p>Radiated emission measurement facilities above 1 GHz: 11</p> <p>Applications returned with comments: None</p> <p>Applications carried over to the next meeting: None</p>

● Report on Committee Activities: List of Acronyms

Abbreviation	Full Name
AAN	Asymmetric Artificial Network
AMN	Artificial Mains Network
ANSI	American National Standards Institute
APD	Amplitude Probability Distribution
APAC	Asia Pacific Accreditation Corporation
AQSIO	General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China
BSMI	Bureau of Standards, Metrology and Inspection
CALTS	Calibration Test Site
CB	Certification Body
CB	Competent Body
CCC	China Compulsory Product Certification
CD	Committee Draft
CDN	Coupling Decoupling Network
CDNE	Coupling Decoupling Network for Emission
CDV	Committee Draft for Vote
CEMC	China Certification Center for Electromagnetic Compatibility
CEN	European Committee for Standardization
CENELEC	European Committee for Electro Technical Standardization
CISPR	International Special Committee on Radio Interference
CMAD	Common Mode Absorbing Device
CQC	China Quality Certification Center
CSA	Classical (Conventional) Site Attenuation
CSA	Canadian Standards Association
DAF	Dual Antenna Factor
DC	Document for Comment
DoC	Declaration of Conformity
DOW	Date of Withdrawal
DTI	Department of Trade and Industry
DUT	Device Under Test
Ecma	Ecma International
EICTA	European Information, Communications and Consumer Electronics Technology Industry Association
EMCC	Electro Magnetic Compatibility Conference
EMCAB	Electromagnetic Compatibility Advisory Bulletin
EMF	Electromagnetic Field
ETSI	European Telecommunication Standards Institute
EUANB	European Union Association of Notified Bodies
EUT	Equipment Under Test
FAR	Fully Anechoic Room
FDIS	Final Draft International Standard
GB	guo jia biao zhun (National Standard of China)
GSO	Gulf Cooperation Council Standardization Organization

Abbreviation	Full Name
ICES	Interference-Causing Equipment Standard
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IS	International Standard
ISM	Industrial Scientific and Medical
ITE	Information Technology Equipment
LCL	Longitudinal Conversion Loss
MIC	Ministry of Information and Communication
MME	Multimedia Equipment
MOU	Memorandum of Understanding
MP	Magnetic Probe
MRA	Mutual Recognition Agreement/Arrangement
NCB	National Certification Body
NICT	National Institute of Information and Communications Technology
NIST	National Institute of Standards and Technology
NP	New Work Item Proposal
NSA	Normalized Site Attenuation
OFDM	Orthogonal Frequency Division Multiplex
PAS	Publicly Available Specification
PLT	Power Line Telecommunication
R&TTE	Radio & Telecommunications Terminal Equipment
RBW	Resolution Band Width
REF	Reference
RRA	Radio Research Agency
RRT	Round Robin Test
RSM	Reference Site Method
RVC	Reverberation Chamber
SAC	Semi Anechoic Chamber
SDPPI	Semangat Disiplin Profesional ProcuKtif Integritas
S/N	Signal to Noise ratio
TF	Task Force
TG	Tracking Generator
UPS	Uninterruptible Power Supply
VBW	Video Band Width
VHF-LISN	Very High Frequency-Line Impedance Stabilization Network
VSWR	Voltage Standing Wave Ratio
WG	Working Group
WP	Working Party

EMC-Related Recommendations Created by ITU-T SG5 (Part 2)

Masamitsu Tokuda

1. Foreword

ITU-T (Telecommunication Standardization Sector) is creating recommendations for electronic telecommunication installations. ITU-T is a permanent institution of the ITU (International Telecommunication Union), an organization of the United Nations. WP1 (Working Party) of the SG5 (electromagnetic fields, the environment, addressing climate change, sustainable digitalization, and the circular economy) is creating EMC-related K-series recommendations^{1), 2)}. About 140 K-series recommendations have been created at SG5, and can be classified into the following five categories:

1. Methods of installing communication equipment in a building
2. Overvoltage resistibility in communication equipment and characteristics of overvoltage-resistibility components
3. Lightning protection and overvoltage and overcurrent measures for telecommunication installations and systems
4. EMC in communication and network devices
5. Impact of particle radiation on communication and system devices
6. Exposure of the human body to electromagnetic fields

Of the preceding categories, this document shows recommendations relating to categories 4 to 6.

2. EMC in communication and network devices

Table 1 shows the EMC-related recommendations for communication and network devices.

Table 1 EMC-related ITU-T/SG5 recommendations for communication and network devices
(as of September 2023)

Recommendation number	Latest edition	Recommendation name
K.7	11/1988	Protection against acoustic shock
K.10	10/1996	Low frequency interference due to unbalance about earth of telecommunication equipment
K.18	11/1988	Calculation of voltage induced into telecommunication lines from radio station broadcasts and methods of reducing interference
K.23	11/1988	Types of induced noise and description of noise voltage parameters for ISDN basic user networks
K.24	11/1988	Method for measuring radio-frequency induced noise on telecommunications pairs
K.34	12/2020	Classification of electromagnetic environmental conditions for telecommunication equipment- Basic EMC Recommendation
K.37	02/1999	Low and high frequency EMC mitigation techniques for telecommunication installations and systems- Basic EMC Recommendation
K.38	10/1996	Radiated emission test procedure for physically large systems
K.42	05/1998	Preparation of emission and immunity requirements for telecommunication equipment- General principles
K.49	12/2005	Test requirements and performance criteria for voice terminal telephones subject to disturbance from digital mobile telecommunications systems
K.54	12/2004	Conducted immunity test method and level at fundamental power frequencies
K.60	07/2023	Emission levels and test methods for wireline telecommunication networks to minimize electromagnetic disturbance of radio services
K.62	02/2004	System level radiated emissions compliance using mathematical modelling
K.63	02/2004	Maintaining the suitability of production telecommunications equipment to its intended electromagnetic environment
K.76	08/2022	Electromagnetic compatibility requirements for DC power ports of telecommunication network equipment in frequencies below 150 kHz
K.78	12/2020	High altitude electromagnetic pulse immunity guide for telecommunication centres
K.79	03/2015	Electromagnetic characterization of the radiated environment in the 2.4 GHz ISM band
K.80	12/2022	EMC requirements for telecommunication network equipment in the frequency range 1 GHz- 40 GHz
K.81	06/2016	High-power electromagnetic immunity guide for telecommunication systems
K.84	01/2011	Test methods and guide against information leaks through unintentional electromagnetic emissions
K.86	11/2011	Method for measuring longitudinal conversion loss (9 kHz- 30 MHz)
K.87	08/2022	Guide for the application of electromagnetic security requirements- Overview
K.92	05/2012	Conducted and radiated electromagnetic environment in home networking
K.93	07/2023	Immunity of home network devices to electromagnetic disturbances
K.94	05/2012	Mutual disturbance test method for evaluating performance degradation of converged terminal devices

K.106	03/2015	Techniques to mitigate interference between radio devices and cable or equipment connected to wired broadband networks and cable television networks
K.114	08/2022	Electromagnetic compatibility requirements and measurement methods for digital cellular mobile communication base station equipment
K.115	11/2015	Mitigation methods against electromagnetic security threats
K.116	07/2019	Electromagnetic compatibility requirements and test methods for radio telecommunication terminal equipment
K.123	08/2022	Electromagnetic compatibility requirements for electrical equipment in telecommunication facilities
K.127	07/2017	Immunity requirements for telecommunication equipment in close proximity use of wireless devices
K.132	01/2018	Electromagnetic compatibility requirements of electromagnetic disturbances from lighting equipment located in telecommunication facilities
K.133	01/2018	Electromagnetic environment of body-worn equipment in the 2.4 GHz and 13.56 MHz industrial, scientific and medical band
K.136	11/2022	Electromagnetic compatibility requirements for radio telecommunication equipment
K.137	11/2022	Electromagnetic compatibility requirements and measurement methods for wireline telecommunication network equipment
K.141	07/2019	Electromagnetic compatibility requirements for information perception equipment
K.146	06/2020	Interference management for telecommunication transmissions over copper lines for signals other than speech
K.149	12/2020	Passive intermodulation test methods of array antenna systems in mobile communication systems
K.152	08/2022	Electromagnetic compatibility requirements for power equipment in telecommunication facilities

3. Impact of particle radiation on communication and system devices

Table 2 shows the recommendations relating to the impact of particle radiation on communication and system devices.

Table 2 ITU-T/SG5 recommendations relating to the impact of particle radiation on communication and system devices (as of September 2023)

Recommendation number	Latest edition	Recommendation name
K.124	01/2022	Overview of particle radiation effects on telecommunication systems
K.130	01/2022	Neutron irradiation test methods for telecommunication equipment
K.131	01/2022	Design methodologies for telecommunication systems applying soft error measures
K.138	01/2022	Quality estimation methods and application guidelines for mitigation measures based on particle radiation tests
K.139	01/2022	Reliability requirements for telecommunication systems affected by particle radiation
K.150	12/2020	Information of semiconductor devices required for the design of telecommunication equipment applying soft error mitigation measures

4. Exposure of the human body to electromagnetic fields

Table 3 shows recommendations relating to the exposure of the human body to electromagnetic fields.

Table 3 ITU-T/SG5 recommendations relating to the exposure of the human body to electromagnetic fields (as of September 2023)

Recommendation number	Latest edition	Recommendation name
K.52	06/2021	Guidance on complying with limits for human exposure to electromagnetic fields
K.61	01/2018	Guidance on measurement and numerical prediction of electromagnetic fields for compliance with human exposure limits for telecommunication installations
K.70	12/2020	Mitigation techniques to limit human exposure to EMFs in the vicinity of radiocommunication stations
K.83	01/2022	Monitoring of electromagnetic field levels
K.90	07/2018	Evaluation techniques and working procedures for compliance with exposure limits of network operator personnel to power-frequency electromagnetic fields
K.91	01/2022	Guidance for assessment, evaluation and monitoring of human exposure to radio frequency electromagnetic fields
K.100	06/2021	Measurement of radio frequency electromagnetic fields to determine compliance with human exposure limits when a base station is put into service
K.113	11/2015	Generation of radiofrequency electromagnetic field level maps
K.121	12/2016	Guidance on the environmental management for compliance with radio frequency EMF limits for radiocommunication base stations
K.122	12/2016	Exposure levels in close proximity of radiocommunication antennas
K.145	12/2020	Assessment and management of compliance with radio frequency electromagnetic field exposure limits for workers at radiocommunication sites and facilities

5. TTC standards for EMC recommendations created by ITU-T/SG5

The TTC (Telecommunication Technology Committee) has been creating standards for Japan based on a subset of recommendations created by ITU-T/SG5 deemed to be of priority for standardization within Japan. Table 4 lists TTC standards that have been created thus far. TTC standards are defined to have the same content as the international recommendations.

Table 4 TTC standards for EMC recommendations created by ITU-T/SG5 (as of September 2023)

JT number	Edition number: Date of publication	Standard name	Cited international standard
JT-K43	Edition 3: 02/2016	Immunity requirements for telecommunication equipment	K.43: 07/2009
JT-K48	Edition 3: 08/2015	EMC requirements for each telecommunication network equipment	K.48: 09/2006
JT-K58	Edition 1: 06/2005	EMC, resistibility and safety requirements and procedures for co-located telecommunication Installations	K.58: 07/2003
JT-K59	Edition 1: 06/2005	EMC, resistibility and safety requirements and procedures for connection to unbundled cables	K.59: 07/2003
JT-K66	Edition 1: 11/2006	Protection of customer premises form overvoltages	K.66: 12/2004
JT-K124	Edition 1: 11/2018	Overview of particle radiation effects on telecommunication systems	K124: 12/2016
JT-K130	Edition 1: 02/2019	Neutron irradiation test methods for telecommunication equipment	K130: 01/2018
JT-K131	Edition 1: 02/2019	Design methodologies for telecommunication systems applying soft error measures	K131: 01/2018
JT-K138	Edition 1: 05/2019	Quality estimation methods and application guidelines for mitigation measures based on particle radiation tests	K138: 11/2018
JT-K139	Edition 1: 05/2019	Reliability requirements for telecommunication systems affected by particle radiation	K.139: 11/2018

Acknowledgement

Of the five categories relating to ITU-T SG5's K-series recommendations, "2. Overvoltage resistibility in communication equipment and characteristics of overvoltage-resistibility components" and "3. Lightning protection and overvoltage and overcurrent measures for telecommunication installations and systems" reference a document¹⁾, "Handbook on EMC Designs and Measurement Tests (Kagakujiyoho Shuppan Co)"; in their content. However, the referenced information has been extensively updated based on information provided to us by Mr. Mitsuo Hattori of NTT Advanced Technology Corporation. We would like to express our deepest gratitude to Mr. Hattori, who was Chair of ITU-T SG5WP2 in the 2001 to 2016 sessions.

[References]

- (1) Masamitsu Tokuda: "Handbook on EMC Designs and Measurement Tests", Kagakujiyoho Shuppan Co., Ltd., pp. 157-161, July 2021
- (2) Masamitsu Tokuda: "History of ITU-T/SG5 (Environment and Climate Change)", VCCI Dayori, No.124, pp. 9-11, April 2017



Masamitsu Tokuda

- 1967 Graduated from Electronics Engineering Department of Hokkaido University
 - 1969 Completed Electronics Engineering, Faculty of Engineering, Graduate School of Hokkaido University
Joined NTT, assigned to the Electrical Communications Laboratories
 - 1987 Leader of EMC Study Group, NTT Telecommunication Networks Laboratories
 - 1996 Professor of Electric Engineering Department, Kyushu Institute of Technology
 - 2001 Professor of Electronic Communication Department, Musashi Engineering University
 - 2010 Professor emeritus of Tokyo City University
Visiting co-researcher of the Graduate School of Frontier Sciences, The University of Tokyo
- Major prizes received
- 1986 Merit award – IEICE
(on the design theory and evaluation method for optical fiber cables)
 - 1997 Information communication merit award by MPT
(on EMC technology development)
 - 2003 Industrial standard merit award by the minister of METI
 - 2004 IEICE fellow
 - 2007 Promoted to IEEE fellow

Report on the FY 2022 Business Report Meeting

Steering Committee

After a prolonged delay since FY 2019 due to the COVID-19 pandemic, restrictions were lifted, allowing us to hold our first Business Report Meeting in four years. Here, we present an outline of the Business Report Meeting. Note that because measures to prevent the spread of COVID-19 were still necessary, the meeting was held for a shorter time on a smaller scale.

1. Date and time: July 19 (Wed), 2023 15:00- 17:00
2. Venue: Conference room 6D-4, Kikai Shinko Kaikan 6F
3. Attendees: About 30, including the Secretariat (also including membership applicants, Steering Committee members from various companies, and Subcommittee Chairs)
4. Presentation topics: FY 2022 business (activity) reports
5. Presenters: Akira Oda, Executive Director of the VCCI Council
Yasuhiro Usui, former Chair of the Steering Committee (Fujitsu Limited)
Kazuyuki Hori, former Chair of the Technical Subcommittee (Sony Group Corporation)
Yukio Uchida, Chair of the International Relations Subcommittee (Panasonic Operational Excellence Co., Ltd.)
Hiroaki Suzuki, Chair of the Market Sampling Test Subcommittee (Casio Computer Co., Ltd.)
Jiro Iizuka, Chair of the Public Relations Subcommittee (Oki Electric Industry Co., Ltd.)
Shinichi Okuyama, Chair of the Education Subcommittee (NEC Platforms, Ltd.)
6. Special lecture: "Trends in Revisions to the CISPR Limit Determination Model"
Yukio Yamanaka, Research Fellow at the Electromagnetic Compatibility Laboratory, Electromagnetic Standards Research Center, Radio Research Institute, National Institute of Information and Communications Technology (NICT)

After the presentations, VCCI President Mr. Hirai awarded letters of commendation to last fiscal year's Steering Committee members and Subcommittee Chairs.



Special lecture by Mr. Yamanaka, Research Fellow at NICT



VCCI President Mr. Hirai with last fiscal year's Steering Committee members and Subcommittee Chairs

Report on the VCCI Seminar at the Gifu Prefectural Industrial Technology Center

Sponsor: Gifu Prefectural Industrial Technology Center

1. Date and time: July 21 (Fri), 2023 13:30- 16:40
2. Venue: Multipurpose Hall, Laboratory Building A 2F, Gifu Prefectural Industrial Technology Center
3. Attendees: 15 (including those from the Gifu Prefectural Industrial Technology Center)
4. Lectures: Conductor: Masahiro Hoshino, VCCI Council Secretary General

	Lecture topics	Lecturer
1	Introducing the VCCI Council's activities and future regulatory trends	Akira Oda, Executive Director
2	The VCCI Council's technical requirements - "Technical requirements": Overview of VCCI-CISPR 32:2016 standards - New measurement methods (WPT) under consideration for standardization	Hidenori Muramatsu, Technical Manager
3	Notes on performing measurements based on the technical requirements - Overview of emission measurement - Introduction of a guidance document for creators of test reports and notes on report creation	Shinichi Okuyama, Chair of the Technical Subcommittee
4	Notes from the standpoint of test-report document inspections - Content analysis results and countermeasures	Minoru Hirahara, Technical Adviser
5	Results and scope of market sampling test Details of inquiries received by the VCCI Council	Minoru Hirata, Technical Counsel
*	General Q&A	All lecturers

5. Overview

The Gifu Prefectural Industrial Technology Center has been a member (supporting member) of VCCI since 2019. After delays due to the COVID-19 pandemic, restrictions were lifted, allowing the Center to request a VCCI seminar. The seminar attracted enthusiastic attendees from Nagano Prefecture, including affiliates of the sponsor, Gifu Prefectural Industrial Technology Center.

The VCCI Council has been holding events at industrial technology centers in prefectures of Japan since 2006. Events included introductions to the VCCI Council's activities and technical seminars relating to EMC. Going forward, VCCI plans to continue holding such events while taking requests from each prefecture and region. We are deeply grateful to Mr. Umemura (Director of the Gifu Prefectural Industrial Technology Center), Mr. Asai (Chief Researcher at the Technical Support Division), and all other associates of the Center for giving us the opportunity to hold this seminar.



Lecturers



Lecture

Report on Participation in TECHNO-FRONTIER 2023

Public Relations Subcommittee

This is a report on TECHNO-FRONTIER 2023.

Exhibition name: TECHNO-FRONTIER 2023

<https://www.jma.or.jp/tf/>



In-person exhibition period : July 26 (Wed) to July 28 (Fri), 2023

Number of exhibitor companies : 432 (of which 12 companies only exhibited online)

Number of visitors : 16,643

Venue : Tokyo Big Sight

Online exhibition period : August 1 (Tue) to August 25 (Fri), 2023

Number of exhibitor companies : 432 (of which 12 companies only exhibited online)

[TECHNO-FRONTIER]

TECHNO-FRONTIER is a mechatronics and electronics exhibition sponsored by the Japan Management Association for manufacturing engineers to promote development and create markets. The exhibition is made up of ten sub-exhibitions.

Alongside the show and conference exhibiting a wide range of products and technologies for product design, including element technologies (such as motors, power supplies, and sensors), a symposium is held where attendees can learn about trends in cutting-edge technologies.

[In-person exhibition at Tokyo Big Sight]

The booth showcased documents advertising membership along with two types of display panels showing introductory videos by the VCCI Council.

● Documents

- Introduction to the VCCI Council (triple-folded pamphlet)
- Information on VCCI enrollment
- Annual Report 2021
- Guide to the VCCI Council's education and training
- Scope of the international standard CISPR 32



The VCCI Council booth

- Introductory videos

Three themes: “Do you know this mark?”, “Acquiring the VCCI mark”, and “Scope of VCCI” (approx. 7 minutes)

- Number of booth visitors

Over 100 people visited the booth. Among these, 85 gave us business cards and were given novelty goods in return. Of those who gave us business cards, 43 were VCCI members and 42 were non-members. Days later, we sent emails to each group thanking them for their attendance.

[Online exhibition]

In accordance with the sponsor’s online exhibition format, we published an overview of VCCI Council, introductory videos, and downloadable materials in both Japanese and English on our online booth.

- Introductory videos (Japanese and English)

- Three themes: “Do you know this mark?”, “Acquiring the VCCI mark”, and “Scope of VCCI” (approx. 7 minutes)

- Documents (Japanese, English, and some in Chinese (simplified and traditional))

- Do you know this mark?
- Introduction to the VCCI Council
- Japanese electromagnetic regulations
- Scope of the international standard CISPR 32



Appearance of the online booth

- Number of booth visitors: 54 (number of repeat visitors: 107)

[Impressions]

The in-person exhibition attracted many visitors. Due to the nature of the exhibition, only a few visitors had not heard of the VCCI mark, and many asked questions about trends in VCCI standards and VCCI education and training seminars. Many visitors said they had not attended the exhibition venue in a while, giving us the impression that the exhibition was returning to pre-pandemic levels of activity.

While the exhibition was a good PR opportunity to present the VCCI Council’s activities and the VCCI mark, the venue provided a valuable opportunity to communicate directly with visitors. For this reason, we plan to continue participating in this exhibition.

Report on Participation in IEEE EMC+SIPI 2023

Steering Committee/Technical Subcommittee

The following is a report on our participation in the 2023 IEEE International Symposium on Electromagnetic Compatibility, Signal/Power Integrity (EMC+SIPI 2023).

- Venue : DEVOS PLACE, Grand Rapids, Michigan, USA
- Period of participation : August 1 (Tue) to 3 (Thu), 2023
- Period of symposium : July 31 (Mon) to August 4 (Fri), 2023
- Participants : Fuminori Kanahara, member of the Technical Subcommittee
(Sony Global Manufacturing & Operations Corporation)
Akira Oda, Executive Director of the VCCI Council
Masahiro Hoshino, Secretary General of the VCCI Council
Kunihiro Osabe, Technical Adviser of the VCCI Council
Yoko Inagaki, Program Manager of the VCCI Council

I. Overview of IEEE EMC+SIPI 2023

We participated in this symposium to present papers submitted by the VCCI Council at technical sessions and poster sessions, listen to other paper presentations, and collect information through observation.

A total of 161 papers were presented during the event period, of which 137 (of which 11 were from Japan) were presented at technical sessions and 24 were presented at poster sessions (of which 4 were from Japan). In addition, 26 workshop and tutorial sessions, and 23 experiments and demonstration sessions were held.

As for the total number of countries and regions presenting papers, the following 19 countries and 1 region presented papers at sessions including poster sessions: The US, China, Japan, South Korea, Italy, France, the Netherlands, Germany, India, Czechia, Taiwan, the UK, Spain, Switzerland, Canada, Poland, Austria, the United Arab Emirates, Romania, and Brazil.

The number by country and region was as follows: 73 from the US, 17 from China, 15 from Japan, and 10 from South Korea (in that order).

Of the 11 papers from Japan, 3 were from the Nara Institute of Science and Technology and 2 were from the Nagoya Institute of Technology. Each of the following presented 1 paper: Okayama University, Kyushu Institute of Technology, Shizuoka University, The University of Fukuchiyama, Panasonic Connect, and the VCCI Council. At the four Japanese poster sessions, each of the following presented 1 paper: Nagoya Institute of Technology, Okayama University, SOKEN, and the VCCI Council. The

presentation by the Kyushu Institute of Technology was given by Prof. Nobuo Kuwabara, who is Chair of the VCCI Registration Committee for Measurement Facilities, a Technical Subcommittee member, and Visiting Professor at the Kyushu Institute of Technology.

94 companies exhibited at the event (the accreditation bodies A2LA, ANAB, and NVLAP, and Japanese companies held a PR exhibit on the 2024 EMC JAPAN/APEMC Okinawa.

1. Presentation of a paper from the VCCI Council

- Date and time: August 3 (Thu) 11:30- 12:00

- Session: Technical Papers Session: (EMC measurements, Techniques, Test Instrumentation and Facilities, Standards and Regulations and Measurement Uncertainty)

- Thesis title: Issues on AC Mains Cable Termination by CMAD

- Authors: Osabe (VCCI Council), Kuwabara (Kyushu Institute of Technology), Muramatsu (VCCI Council)

- Presenter: Osabe (VCCI Council)

- Presentation overview:

In radiated emissions testing, more and more emission standards stipulate the termination of cables of measurement-target equipment with a CMAD (Common Mode Absorption Device). In response to this, many issues have been pointed out in mains cable termination, from which it was concluded that each mains cable must terminate at a stipulated impedance in order to improve measurement reproducibility.

- Presenter impressions:

The VCCI Council has been presenting papers at the US-based IEEE EMC Symposium for six years running since the 2018 event held in Long Beach, California. Now that the standardization of VHF-LISN is finally becoming a reality, it is important to clarify issues with CMADs, which are currently being standardized as termination devices. We felt that session participants gained an adequate understanding of this topic.

- Q&A: The following questions were asked at the presentation:

Q1: In the case of equipment with two mains cables and a separate protective grounding wire, is it acceptable for the mains cables to terminate with a CMAD?

A1: That is effective from a reproducibility standpoint provided that both cables are fitted with a CMAD.



Scene of Committee member Mr. Osabe's presentation at the Technical Papers Session

- Date and time: August 2 (Wed) 13:30- 15:30
- Session: Technical Poster Session
- Thesis title: Influence of Antenna Height Scan in Radiated Emission Measurement above 1 GHz
- Authors: Kanahara (Technical Subcommittee member from Sony Global Manufacturing & Operations Corporation),
Osabe (VCCI Council), Kuwabara (Kyushu Institute of Technology), Muramatsu (VCCI Council)
- Presenter: Kanahara (Technical Subcommittee member from Sony Global Manufacturing & Operations Corporation)
- Presentation overview:

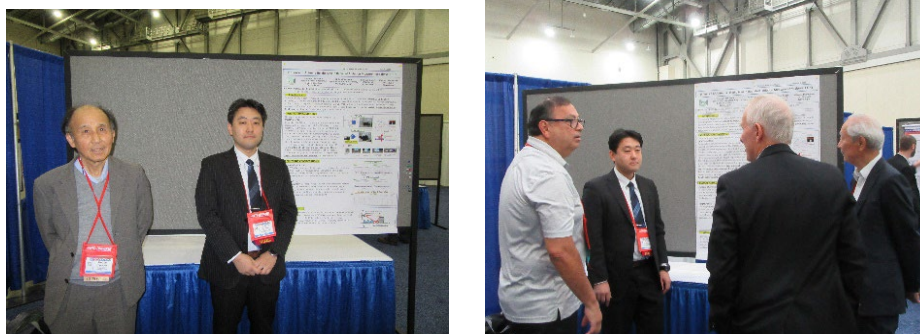
The impact of changing the measurement method on emission levels was verified with regard to the antenna height scan requirements for radiated emission (above 1 GHz) measurement introduced in CISPR 32 Ed.2.1:2019. The presentation mentioned that emissions might increase by 5 dB or more due to reflections off the floors of FSOATs that meet the site VSWR requirements, showing the need for more absorbers in order to obtain equivalent results to FAR.
- Presenter impressions:

Attendees commented that the results were interesting, affirming for us the significance of this verification. The claims of this paper were also submitted in an article contributed to CISPR SC-I by an expert member from Japan. We believe this helped confirm and establish a shared awareness of the importance of this topic with expert members from the US attending the presentation.
- Q&A: The following questions were asked at the presentation:

Q1: Why do the emission levels increase?
A1: Because height patterns are generated by the reflections off the floor.

Q2: Do radiated emission levels differ depending on the height? Do emission levels increase when the antenna is higher?

A2: High emission levels are observed when scanning the antenna. Height patterns are observed due to the reflections off the floor.



Scene of Committee member Mr. Kanahara's presentation at the Technical Poster Session

2. Key paper presentations attended at the technical session

- Date and time: August 2 (Wed) 9:30- 10:00
- Session: EM Interference Control, Shielding, Gaskets, Cables, Connectors, Grounding and PCB Layout
- Thesis title: Near Field Scanning-Based EMI Radiation Root Cause Analysis in an SSD
- Presenter: Xiangrui Su
- Affiliation: EMC Laboratory, Missouri University, USA

- Presentation overview:

Solid-state drives (SSDs) generally used in the latest mobile electronic devices are considered a source of noise producing electromagnetic interference (EMI) that causes problems in RF circuits. This paper reported that upon identifying emissions from SSD modules as a wave source by using near-field magnetic scanning, analysis of the emissions found that optimized printed-circuit-board layouts reduced emission levels by around 10 dB.

- Date and time: August 2 (Wed) 14:30- 15:00
 - Session: EMC Measurements, Techniques, Test Instrumentation and Facilities, Standards and Regulations and Measurement Uncertainty (WE-PM-F)
 - Thesis title: Examination of the SVSWR methods using the Monte Carlo Method
 - Presenter: Alexander Kriz
 - Affiliation: EMC and Optics, Seibersdorf Laboratories, Austria
- ### - Presentation overview:

This paper concerned the SVSWR (from 1 GHz to 18 GHz) test-site evaluation methods. Specifically, the paper reported the result of simple ray-tracing simulations performed using the Monte Carlo method. Results were shown on the simulations of three SVSWR measurement methods. In addition to the SVSWR measurement method currently standardized in CISPR 16-1-

4, the TD (Time Domain) SVSWR method and MF (Mode Filtering) SVSWR method were also simulated. The simulations were performed based on assumptions of laboratory size and return loss of the radio-wave absorbers. Results showed that the margin of error across the three methods was caused by the SVSWR method itself, and was improved by applying the post-processing filtering proposed by the MF SVSWR method. The paper also reported that increasing the number of measurements could improve the reproducibility of each measurement method.

Currently, Japan is proposing that conformity validation from 18 GHz to 40 GHz is not necessary for measurement sites conducting measurements above 18 GHz if those sites satisfy SVSWR for 6 GHz to 18 GHz. We will keep an eye on this trend going forward.

- Date and time: August 3 (Thu) 9:30- 10:30
- Session: EMC Measurement, Techniques, Test Instrumentation and facilities, Standards and Regulations and Measurement Uncertainty
- Thesis name: Analysis on Extraction of Potential Radiated Emission Limit line for Data Center Equipment from 10 GHz to 40 GHz
- Presenter: Zhekun Peng
- Affiliation: EMC Laboratory, Missouri University, USA
- Presentation overview:
 - FCC CFR Title 47, Part 15 defines EMI limit values for 9 kHz to 40 GHz, but these values are based on old multi-module device equipment. For this reason, new limit values were derived based on CISPR TR 16-4-4 for current equipment operating at high speeds. Wireless services to be protected were considered as 5G NR while referencing the sensitivities stipulated by 3GPP. This resulted in the proposal of limit values for data center equipment that increase linearly; 65.4 dBuV/m for 10 GHz, and 73.9 dBuV/m for 40 GHz.

3. Demonstration

Date and time: August 1 (Tue) 14:00- 16:00

Venue: Exhibit Hall Exp Demo 3

Sponsor: Zhong Chen

Affiliation: ETS-Lindgren, USA

Demonstration name: A Novel Cylindrical Mode Filtered SVSWR Method for Above 18 GHz EMC Test Site Evaluation

Demonstration overview:

Upon clarifying that conventional SVSWR measurement methods cannot be applied to frequencies at 18 GHz or above, this demonstration showed what was being proposed by the ANSI C63.25 and CISPR SC-A as a new SVSWR measurement method using cylindrical mode

filtering. In the new method, an antenna (usually omnidirectional) is placed on one end of a turntable, and a single-vector pattern measurement is performed. A cylindrical spectrum is obtained by rotating the turntable at each frequency and processed by an appropriate filter, resulting in the SVSWR. In this demonstration, a real-time measurement process was performed to show that compared to conventional SVSWR acquisition methods, the mode-filtering SVSWR method is easier, faster, and more repeatable, and allows evaluation of a wider range of bands.

4. Impressions

The symposium was held at a convention center in the second largest city in Michigan, Grand Rapids. Our impression was that this was a city of culture and education, nurtured by its natural environment centered around the Grand River. Although the symposium's technical sessions featured largely the same number of papers as last year, we found this year's topics particularly helpful. There were many papers about test-site evaluation methods from 1 GHz to 18 GHz, whose EMC standards are relevant to VCCI. Among the experimental demonstrations, we were impressed to find that the demo session for site evaluation above 1 GHz attracted many participants, showing a high level of interest. We believe this is a sign that the symposium is starting to be recognized as part of Standards Week, which began in 2019.

II. Reports on meetings with US accreditation bodies

1. A2LA meeting report

Date and time: August 1 (Tue), 2023 13:30- 14:10

Venue: Exhibit Hall at the academic conference venue

Participants: A2LA: Ms. Megan Riebau; EMC Program Manager

Mr. Ryan Kidwiler; Accreditation Officer

VCCI: Akira Oda (Executive Director), Masahiro Hoshino (Secretary General), and Yoko Inagaki (Program Manager)

Objective: To use IEEE EMC+SIPI 2023 as an opportunity to meet face to face and share the latest news and exchange opinions with A2LA (American Association for Laboratory Accreditation), who has signed an MOU with VCCI Council

Agenda:

1. Speech from the VCCI Council on our latest news

- Document: VCCI Update (August 2023)

Mr. Oda gave a business overview and latest news regarding VCCI Council, focusing on the following topics:

- Appointment of Mr. Hirai as President of the VCCI Council, number of members (including overseas members), trends in the number of conformity verification reports, market sampling test results,

guidance documents, presentations at academic conferences, and the international forum (in on-demand format)

2. Speech from A2LA on their latest news

Ryan Kidwiler spoke on the latest accreditation news and the latest topics. A2LA celebrated its 45th anniversary as a US agency for accrediting testing laboratories that meet the ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories) standard. Among the latest accreditation trends was the news that there were 4,242 EMC-related accreditation sites in electronics departments, of which 156 were accredited testing laboratories that conformed to VCCI standards. Of these, 129 conformed to the VCCI-CISPR 32 Technical Requirements.

3. Main opinion exchange

A2LA accredits not only electronic devices but also items pertaining to numerous other areas. Among the latest trends, we were told that accreditation relating to ANSI C63.4:2014 and CISPR 32 is on the rise, and that 5G-related accreditation is gradually becoming more popular. We were also told that A2LA viewed footage of the previous international forum (in on-demand format). We expressed our gratitude for the signing of this year's MOU, and confirmed that the next MOU would be signed in 2025. We also received a document titled "VCCI Update" from A2LA.



At the A2LA exhibition booth

2. ANAB meeting report

Date and time: August 1 (Tue), 2023 14:15- 15:00

Venue: Exhibit Hall at the academic conference venue

Participants: ANAB: Mr. Randy Long; Accreditation Manager

VCCI: Akira Oda (Executive Director), Masahiro Hoshino (Secretary General), and Yoko Inagaki (Program Manager)

Objective: To use IEEE EMC+SIPI 2023 as an opportunity to meet face to face and share the latest news and exchange opinions with ANAB (ANSI National Accreditation Board), who has signed an MOU with VCCI Council. This was our first meeting with ANAB in four years; the last meeting was in 2019.

Agenda:

1. Speech from the VCCI Council on our latest news

- Document: VCCI Update (August 2023)

Mr. Oda gave a business overview and latest news regarding VCCI Council, focusing on the following topics:

- Appointment of Mr. Hirai as President of the VCCI Council, number of members (including overseas members), trends in the number of conformity verification reports, market sampling test results, guidance documents, presentations at academic conferences, and the international forum (in on-demand format)

2. Speech from ANAB on their latest news

The international standard “General requirements for the competence of testing and calibration laboratories” was revised from ISO/IEC 17025:2005 to ISO/IEC 17025:2017, and the deadline for transitioning to this new standard was October 2020. ANAB is currently accrediting testing laboratories based on ISO/IEC 17025:2017, and while the 2017 requirements have become significantly more detailed, testing laboratories have sufficiently conformed to this standard. ANAB has also restructured and revamped their website.

3. Main opinion exchange

ANAB asked about the quality of test reports. At the VCCI Council, the failure rate of market sampling test results is low. We believe this is largely thanks to the 11 types of guidance documents that have currently been released to complement the standards and interpretations of the standards, helping laboratories prepare to create test reports. We heard that conformity with the aforementioned ISO/IEC 17025:2017 is also going smoothly in the US. We expressed our gratitude for the signing of this year’s MOU, and confirmed that the next MOU would be signed in 2025.



At the ANAB exhibition booth

3. NVLAP meeting report

Date and time: August 1 (Tue), 2023 15:15- 16:00

Venue: Ballroom C at the academic conference venue

Participants: NVLAP: Ms. Amanda McDonald; Program Manager

Ms. Janneth I. Marcelo; Program Manager

VCCI: Akira Oda (Executive Director), Masahiro Hoshino (Secretary General), and Yoko Inagaki (Program Manager)

Objective: To use IEEE EMC+SIPI 2023 as an opportunity to meet face to face and share the latest news and exchange opinions with NVLAP (National Voluntary Laboratory Accreditation Program), who has signed an MOU with VCCI Council

Agenda:

1. Speech from the VCCI Council on our latest news

- Document: VCCI Update (August 2023)

Mr. Oda gave a business overview and latest news regarding VCCI Council, focusing on the following topics:

- Appointment of Mr. Hirai as President of the VCCI Council, number of members (including overseas members), trends in the number of conformity verification reports, market sampling test results, guidance documents, presentations at academic conferences, and the international forum (in on-demand format)

2. Speech from NVLAP on their latest news

NVLAP is an organization within NIST (National Institute of Standard and Technology) under the umbrella of U.S. Department of Commerce. Federal stakeholders also include computer and security-related organizations. NVLAP is a member of the three organizations ILAC, APLAC, and IAAC. There are a variety of managed programs such as those for asbestos countermeasures in schools, and quality control of electronic voting machines and fasteners. NVLAP conducts a various accreditations including those relating to EMC, and accreditations have been on the rise recently in countries such as China and Taiwan. Accreditations are also expected to rise in India. NVLAP also performs electromagnetic-disturbance accreditation relating to energy and medical equipment.

3. Opinion exchange

The VCCI Council's guidance documents can be viewed from our website. An NB (Notified Body) will handle cybersecurity labels on IoT products in the US. We expressed our gratitude for the signing of this year's MOU, and confirmed that the next MOU would be signed in 2025.

We also received a document titled "The National Voluntary Laboratory Accreditation Program and Its Laboratory Accreditation Programs (LAPs)" from NVLAP.



NVLAP exhibition booth

Status on FY2023 Market Sampling Tests

Market Sampling Test Subcommittee

As of September 29, 2023

Planned number of market sampling tests	Loan-based	35	100
	Purchase-based	65	

Terms of sampling tests	Selected samples	Cancelled (Not shipped, etc.)	Testable samples	Test completed (breakdown below)	Judgment			
					Passed	Failed- tentative		
						Finally passed	Finally failed	Pending
Grand total	54	3	49	41	36	0	1	2

Loan-based testing total		28	2	24	16	14	0	0	1
Term (breakdown)	1 st Quarter	9	2	7	6	6	—	—	—
	2 nd Quarter	9	—	9	9	8	—	—	1
	3 rd Quarter	10	—	8	1	—	—	—	—
	4 th Quarter	—	—	—	—	—	—	—	—

Purchase-based testing total		26	1	25	25	22	0	1	1
Term (breakdown)	1 st Quarter	10	—	10	10	9	—	1	—
	2 nd Quarter	16	1	15	15	13	—	—	1
	3 rd Quarter	—	—	—	—	—	—	—	—
	4 th Quarter	—	—	—	—	—	—	—	—

Passed	Failed	Pending
36	1	2

Document inspection	Selected samples	Cancelled (withdrawal, etc.)	Inspectable samples	Pre-check completed	Judgment completed	Judgment	
						Cleared	Problems identified
	26	—	25	25	21	20	1

Report from the Secretariat

● List of Members (July 2023 - September 2023)

New members

Membership	Member No.	Company Name	Country
Regular	4315	Ascon Co., Ltd.	JAPAN
Regular	4317	HuMANDATA LTD.	JAPAN
Regular	4323	SANDEN KOGYO CORPORATION	JAPAN
Regular	4329	Y'S corporation	JAPAN
Regular	4314	Dynaview Technology Corporation	TAIWAN
Regular	4318	Wooting Store B.V.	THE NETHERLANDS
Regular	4319	DapuStor Corporation	CHINA
Regular	4320	Shenzhen 8k-link Optoelectronics Technology Co., Ltd.	CHINA
Regular	4322	Arira Platforms, LLC	USA
Regular	4325	Ahead, Inc.	USA
Regular	4326	Proto, Inc.	USA
Regular	4328	Biamp Systems, LLC	USA
Regular	4330	Beijing Xiaomi Electronics Co., Ltd.	CHINA
Regular	4331	SIG Co., Ltd.	KOREA
Regular	4332	AIMobile Co., Ltd.	TAIWAN
Regular	4333	BRITZMEDI	KOREA
Supporting	4324	TÜV SÜD Asia Ltd., Taiwan Branch	TAIWAN
Supporting	4327	Guangdong Global Testing Technology Co., Ltd.	CHINA

Company name change

Membership	Member No.	Company Name	Country	Old company name
Regular	126	NCR Commerce Japan Ltd.	JAPAN	NCR Japan, Ltd.
Regular	457	NTT Innovative Devices Corporation	JAPAN	NTT Electronics Corporation
Regular	1882	Adtran Networks Japan	JAPAN	ADVA Optical Networking Corp.
Regular	4024	RAKUS HR Tech Co., Ltd.	JAPAN	HOYA CORPORATION MD DIVISION
Regular	3965	Luxshare Precision Limited	HONG KONG	Luxshare Precision Industry Company Limited
Regular	4291	EXPRESS LUCK INDUSTRIAL (ZHONGSHAN) LIMITED	CHINA	EXPRESS LUCK INDUSTRIAL (SHENZHEN) LIMITED
Supporting	4100	Guangdong Dongdian Testing Service Co., Ltd.	CHINA	Dongguan Dongdian Testing Service Co., Ltd.
Supporting	4143	KSIGNTESTING CO., LTD.	CHINA	Zhejiang Kezheng Electronic Information Product Testing Co., Ltd.

Note: Please fill out and submit "Form 9 Change Notification" on the website when a company name has been changed.

● FY 2023 schedule of VCCI events and training seminars

<p>April</p>	<p>May The basic technique of EMI measurement COMPUTEXTAIPEI 2023 (from May 30 through June 2)</p>	<p>June Release VCCI Dayori No. 149</p>
<p>July TECHNO-FRONTIER 2023</p>	<p>August Release Annual Report</p>	<p>September Release VCCI Dayori No. 150</p>
<p>October The basic technique of EMI measurement CEATEC 2023</p>	<p>November The basic of electromagnetic waves, EMI measurement</p>	<p>December The basic of electromagnetic waves, EMI measurement Release VCCI Dayori No. 151</p>
<p>January The level up of the EMI measurement technique</p>	<p>February EMI measurement instrumentation uncertainty (MIU) Rules Briefing and Technical Symposium</p>	<p>March Release VCCI Dayori No. 152 International Forum</p>

● Status of Compliance Test Notifications

July 2023—September 2023 (Product names are examples and are not limiting)

Classification of MME (Product types are not limited to only the following examples.)			Classification code		July 2023			August 2023			September 2023			
			Class A	Class B	Class A	Class B	Total	Class A	Class B	Total	Class A	Class B	Total	
ITE	Computer	Large	Super computer, Server, etc.	A 2	a 2	25	1	26	15	0	15	16	2	18
		Stationary	Workstation, Desktop PC, etc.	B 2	b 2	0	6	6	2	7	9	5	9	14
		Portable	Laptop PC, Tablet PC, etc.	C 2	c 2	0	18	18	1	10	11	0	32	32
		Other computers	Wearable computers, Wearable device, Smart watch, Smart glass, etc.	E 2	e 2	1	5	6	1	0	1	5	5	10
	Peripheral / Terminal	Memory device	HDD, SSD, USB Memory, Media drive, Disk device, NAS, DAS, SAN, etc.	G 2	g 2	11	28	39	5	26	31	5	8	13
		Printer device	Printer including multifunction machine, etc. (portable)	H 2	h 2	1	1	2	3	3	6	3	2	5
		Display device	CRT display, Monitor, Projector, etc.	J 2	j 2	7	49	56	5	62	67	6	49	55
		Other I/O devices	Image scanner, OCR, Pen tablet, Stylus pen, etc.	M 2	m 2	0	2	2	1	3	4	1	4	5
		General purpose terminal	Display controller terminal, etc.	N 2	n 2	1	0	1	0	0	0	5	0	5
		Special purpose terminal	POS, Terminal for finance, insmance, etc.	Q 2	q 2	0	1	1	4	1	5	4	0	4
		Other peripheral	PCI Card, Graphics Card, Mouse, Keyboard, Cradle, etc.	R 2	r 2	6	34	40	6	32	38	7	50	57
		Copying machine/Multifunction copying machine	Copying machine, Multifunction copying machine, etc. (Stationary)	S 2	s 2	0	1	1	0	0	0	0	1	1
	Communications equipment	Terminal equipment	Mobile phone, Smart phone, PHS phone, etc.	T 2	t 2	0	4	4	0	1	1	0	9	9
			Telephone device such as PBX, FAX, Key telephone systems, Cordless phone, etc.	U 2	u 2	1	0	1	0	0	0	0	0	0
		Network-related equipment	Communication line connecting device including Modem, Digital transmission unit, DSU, TA, Media converter, etc.	V 2	v 2	2	1	3	4	1	5	3	1	4
			LAN-related device, including Router, HUB, etc. Local switch, etc.	W 2	w 2	46	17	63	63	23	86	70	19	89
	Other communication equipment	Other communication equipment	X 2	x 2	5	4	9	11	6	17	16	2	18	
	Broadcast receiver equipment	TV, Radio, Tuner, Video recorder, Set-top box, etc.	/	k 2	/	0	0	/	0	0	/	1	1	
	Audio equipment	Speaker, Amplifier, IC recorder, Digital audio player, Headset, DTM, AI speaker, etc.	L 2	l 2	0	8	8	0	6	6	1	9	10	
	Video equipment	Video equipment	Digital video camera, Web camera, Network camera, Video player, Photo frame, Digital camera, Drive recorder, etc.	I 2	i 2	3	10	13	3	9	12	9	15	24
		Other video equipment	VR goggles, Scan converter, etc.	P 2	p 2	0	0	0	0	0	0	1	0	1
	Entertainment lighting control equipment	Entertainment lighting control equipment, etc.	Z 2	z 2	0	0	0	0	0	0	0	0	0	
	Other MME	Entertainment / Education equipment	Electronic stationery	Electronic dictionary, e-book reader, Translator, Calculator, etc.	D 2	0	0	0	0	0	0	0	0	0
			Electronic toy	Game console, Game pad, toy drone, etc.	Y 2	0	0	0	0	2	2	0	0	0
Other Entertainment / Education equipment			Navigator, AI robot, etc.	F 2	0	0	0	0	0	0	0	0	0	
Other MME		MME other than the above		o 2	0	7	7	11	1	12	11	2	13	
Total						197	306	135	193	328	168	220	388	

● Registration Status of Measurement and Other Facilities

The following table indicates the status on registration of measuring facilities in the most recent three months.

Facilities listed here are only those made open by registering members in principle. Members with those facilities whose valid period expired are kindly advised to contact VCCI to inform of the status they are in. Status to choose from are, renewal application being filed, new application being filed, waiting for the next issue to carry, or terminating the registration (all facilities are posted in the Web site).

Facilities in Japan are listed in Japanese.

List of newly registered or renewed facilities (July 2023 – September 2023)

R: Radiated EMI measurement facilities below 1GHz C: AC-mains-ports-conducted EMI measurement facilities

T: Telecommunication-port-conducted EMI measurement facilities G: Radiated EMI measurement facilities above 1GHz

Company name	Equipment name	3 m	10 m	30 m	Dark 3m	Dark 10m	Registration number	Effective date	Location	Contact to:
BTF Testing Lab (Shenzhen) Co., Ltd.	BTF Testing Lab (Shenzhen) Co., Ltd.	-	-	-	-	-	T-20149	2026/7/17	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China	+86-0755-23146130
Intertek Testing Services Taiwan Ltd.	966-3 SAC	-	-	-	○	-	R-20195	2026/7/17	No. 17, Ln 246, Niupu S Rd., Xiangshan Dist., Hsinchu City 300075, Taiwan (R.O.C)	+886-3-5191411 #302
Intertek Testing Services Taiwan Ltd.	Shielded room	-	-	-	-	-	T-20150	2026/7/17	No. 17, Ln 246, Niupu S Rd., Xiangshan Dist., Hsinchu City 300075, Taiwan (R.O.C)	+886-3-5191411 #302
Intertek Testing Services Taiwan Ltd.	Shielded room	-	-	-	-	-	C-20149	2026/9/3	No. 17, Ln 246, Niupu S Rd., Xiangshan Dist., Hsinchu City 300075, Taiwan (R.O.C)	+886-3-5191411 #302
Intertek Testing Services Taiwan Ltd.	966-3 SAC	-	-	-	-	-	G-20189	2026/9/3	No. 17, Ln 246, Niupu S Rd., Xiangshan Dist., Hsinchu City 300075, Taiwan (R.O.C)	+886-3-5191411 #302
Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch	3 m Chamber-2	-	-	-	-	-	G-20190	2026/9/3	No. 122, Houjie Avenue, West Houjie Town, Dongguan City, Guangdong, China	+86-768-89982098-8810
Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch	3 m Chamber-2	-	-	-	○	-	R-20196	2026/9/3	No. 122, Houjie Avenue, West Houjie Town, Dongguan City, Guangdong, China	+86-768-89982098-8810
Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch	443 Conduction Shielding Room	-	-	-	-	-	C-20150	2026/9/3	No. 122, Houjie Avenue, West Houjie Town, Dongguan City, Guangdong, China	+86-768-89982098-8810
Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch	443 Conduction Shielding Room	-	-	-	-	-	T-20151	2026/9/3	No. 122, Houjie Avenue, West Houjie Town, Dongguan City, Guangdong, China	+86-768-89982098-8810
Kiwa Netherlands B.V.	Kiwa Netherlands B.V.	-	-	-	-	-	T-20152	2026/9/3	Wilmersdorf 50, The Netherlands	+31-88-998-3600

Closing words

By the time this issue is released, I expect that the Azabudai Hills complex will have been completed, and that the nearest station to the VCCI Council office, Kamiyacho, will be bustling with increasing numbers of commuters and tourists. Kamiyacho Station always used to feel quiet, sandwiched as it was between Kasumigaseki Station and Roppongi Station, but redevelopment in the area has been attracting attention of late. In this article, I would like to introduce some of the tourist attractions around Kamiyacho Station.

- Nishikubo Hachiman Shrine

This shrine is about four minutes' walk from Kamiyacho Station in the direction of Tokyo Tower. The main hall has just been rebuilt, and is sparkling clean. I was surprised when I first discovered that the *omikuji* (fortune-telling slips) here cost only 10 yen. Fun fact: Apparently, only three shrines in the city have 10-yen *omikuji* (according to sources online).

- Minato Science Museum

This science museum opened in June 2020 under the slogan "Discover and explore the living, breathing science of the city". The museum even has a planetarium, and stays open until 8 p.m., making it an attractive option for working professionals to stop and enjoy some leisure time on their way home.

- Tokyo Tower

This famous tourist attraction needs no introduction. During its special illumination periods, the tower

changes from its usual orange lighting to a dazzling variety of other colors. For some reason, though - maybe because it's close to the office - I mostly just view the tower from outside, and I've only been inside a handful of times.

- The NOA Building


This isn't a tourist attraction per se, but it's the building where the VCCI office is located. There are few windows, and the outer walls are mostly black and cylindrical, giving it a distinctively bulky exterior. I often see people taking photos of the building. According to my research, the building was designed by the architect Seiichi Shirai and completed in 1974. Some people might be curious about the interior, but I'm afraid to say it's just a perfectly normal(?) office building on the inside.

Other buildings in the area include the NHK Museum of Broadcasting, Atago Shrine, Seishoji Temple, and many embassies.

I did a lot of reading when writing this article, and found that there are quite a few historic locations here. I was reminded that long ago, the land where Azabudai Hills now stands used to be lined with shops. It's too late now, but I wish I'd chosen a spot to take some time-lapse photography of the area.

If you ever happen to stop by Kamiyacho Station, might I suggest you take a walk around the neighborhood? (N.H.)

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	<h1>VCCI Dayori</h1> <h2>No.151 (2024.1)</h2> <p>Not for sale</p> <p>Published on: December 20, 2023</p> <p>Edited and published by: VCCI Council</p> <p>Address: NOA Bldg. 7th Floor, 3-5 Azabudai 2-chome, Minato-ku Tokyo 106-0041 TEL +81-3-5575-3138 FAX +81-3-5575-3137 https://www.vcci.jp/</p>
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