

# C63®

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## Accredited Standards Committee C63®

### Electromagnetic Compatibility

Accredited by the American National Standards Institute, Inc.

Secretariat: Institute of Electrical and Electronics Engineers, Inc.

# NEWSLETTER

Issue 40 July 2016

## MESSAGE FROM THE CHAIR

**Daniel D. Hoolihan, Chairman ANSI-ASC C63®**

The ANSI-ASC C63® Committee and all of its Subcommittees met for four days in the IEEE Operations Center in Piscataway, New Jersey. The four days started on Monday, May 9th, 2016 and finished on Thursday, May 12th. As per our usual schedule, the Working Groups of the Subcommittees started meeting on Monday and concluded on Tuesday. The Subcommittees started meeting on Tuesday and finished on Wednesday. The Main Committee met on Thursday.

For the first time, we had 8 subcommittees meet on Tuesday and Wednesday. Each subcommittee met for approximately 2 hours during the two-day period. The 8th Subcommittee was the new SC-4, which is titled "Wireless and ISM Equipment Measurements" and is chaired by Art Wall. Because of this additional Subcommittee and a larger number of active working groups for all the Subcommittees, we are considering going to a five-day meeting format. This may begin as early as 2017! **Stay tuned for more information on this topic!**

The meeting at the IEEE Operations Center was hosted by Sue Vogel, our main Secretariat contact. She was assisted by Tina Alston since Sue was recovering from a foot operation which was performed the week before the meeting. The facilities and food were excellent for all four days!

The Main Committee was well attended and the meeting on Thursday was run as per the published agenda. One of the first items on the agenda was the awarding of plaques and certificates to a number of Committee members for their work on C63® standards in the past 12 to 15 months. More details on these awards can be found in the latter parts of this newsletter.

General comments were made by Chair and they included an update on the Committee's interactions with the U. S. Federal Communications Commission in 2016. The key point of the Committee's interactions was a recommendation sent to the Commission to adopt ANSI C63.26 - American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services. This recommendation was sent in March of this year.

A short summary of the standards published recently by the ANSI-ASC C63® Committee was shown at the meeting.

The summary is shown below:

2016	C63.16	May - 2016	New Standard
2016	C63.12	January - 2016	Revised Standard
2016	C63.26	January - 2016	New Standard
2015	C63.7	March - 2015	Revised Standard
2014	C63.14	December - 2014	Revised Standard
2014	C63.9	October - 2014	Reaffirmed
2014	C63.18	June - 2014	Revised Standard
2014	C63.4	June - 2014	Revised Standard
2013	C63.17	October - 2013	Revised Standard
2013	C63.10	September - 2013	Revised Standard
2013	C63.23	March - 2013	New Standard
2012		None	

For the titles of these documents, visit this web site:

[http://www.c63.org/documents/misc/matrix/c63\\_standards.htm](http://www.c63.org/documents/misc/matrix/c63_standards.htm)

The Secretary, Jerry Ramie, asked for and received Committee approval for the Minutes of the November - 2015 Committee Meeting. In addition, Jerry produced a summary of interpretation requests since the last meeting of the Committee and he showed a summary of electronic motions passed since November of 2015.

Sue Vogel gave her Secretariat report including a status of C63® standards including those approaching their four-year anniversary and their ten-year anniversary. She also discussed PINS (Project Initiation Notification System) that had been recently published in the ANSI Standards Action.

## ...CHAIR MESSAGE Continued

The recently revised Procedures for the operation of the Committee are at the American National Standards Institute for final approval. All issues have been resolved by Dean Ghizzone and his Task Group and we expect to see them released in the summer of 2016. They are new and improved and will help the Committee members in the future development of our standards.

Editor's note: ANSI approved the new operating procedures on June 21, 2016.

Each Subcommittee Chair then gave a report on their SC activities in the past six months as well as the progress made in their Subcommittee meetings held in the previous two days before the Main Committee meeting.

Extended discussions were held on "dated versus undated standards." Chairman Hoolihan formed a Task Group to explore the issue. Dan Sigouin is the Chair of the Task Group and he is outlining the work of the Task Group.

The Web page was discussed during the Committee meeting as well as other administrative matters from the Steering Committee. A short financial report for the Calendar Year 2015 was presented by the Chair of the Main Committee.

Future Seminars and Workshops were presented by Don Heirman and a Newsletter report was made by Dan Hoolihan in Dave Zimmerman's absence due to business considerations.

Finally, the meeting ended with a discussion of the next meeting scheduled for California, Orange County for the week of November 7-10, 2016. Make sure you check the Committee's web page for all the details on the upcoming meeting ([www.c63.org](http://www.c63.org))!



C63® Main Committee meeting May 12, 2015, IEEE Headquarters, Piscataway, NJ. Chairman Dan Hoolihan presiding.

## The First C63 Standard - C63.1

### **Daniel D. Hoolihan, Chairman ANSI-ASC C63®**

The first standard produced by the C63 Committee was C63.1 - Method of Measuring Radio Interference of Electrical Components and Completed Assemblies of Electrical Equipment for the Armed

Forces from 150 Kilocycles to 20 Megacycles.

It was an American War Standard and its official number was American Standards Association "C63.1 - 1946." The standard was approved 6 August 1946.

The standard was small in size, that is, it had few pages. The title page was followed by a 1-page Foreword.

The Foreword was followed by JAN-I-225 - Joint Army-Navy Specification - Interference Measurement, Radio, Methods of, 150 Kilocycles to 20 Megacycles (For Components and Complete Assemblies).

JAN-I-225 was published 14 June 1945. It was 6 pages long with one diagram.

It included the following chapters:

- A. Applicable Specifications,
- B. Classes,
- C. Material and Workmanship,
- D. General Requirements,
- E. Detail Requirements,
- F. Methods of Sampling, Inspection, and Tests,
- G. Packaging, Packing, and Marking for Shipment, and
- H. Notes.

The Standard Noise Meter recommended in the standard was the Ferris Noise Meter Type 32B. It recommended that the equipment on the ground plane be bonded to it by securing it mechanically or by "means of a copper bonding strap (not braid) having a width to length ratio of 1 to 5." It should be noted that the "1 to 5" ratio for bonding straps is still used today in MIL-STD-461G!

Figure 1 in the standard shows the relationship between the Power Source, the ground plane, the Ferris Meter, and the Sample Under Test.

A more complete story on how the "C63.1" standard was rediscovered can be found in the IEEE Electromagnetic Compatibility Magazine, Volume 3, Quarter 2 ([www.ieee.org](http://www.ieee.org)).

The title of the article is: "The Search for the Elusive C63.1 Standard" by Dan Hoolihan, Associate Editor.

## AWARDS PRESENTED

Awards were presented to the following individuals for their outstanding standards contributions.

All photos below were provided by Jerry Ramie

Bob DeLisi - For his service as chair of Subcommittee 8:



Dan Hoolihan-Hoolihan EMC Consulting (right) presenting to Bob DeLisi--UL(left)

Bob DeLisi for Poul Andersen - For C63.12 WG leadership:



Dan Hoolihan (right) presenting to Bob DeLisi (left)

Mac Elliott – For contributions to C63.26



Dan Hoolihan (right) presenting to Mac Elliot—Advanced Compliance Solutions (left)

Steve Jones – For contributions to C63.26



Dan Hoolihan (right) presenting to Steve Jones-FCC (left)

Steve Whitesell – For his leadership of the C63.16 WG:



Dan Hoolihan (right) presenting to Steve Whitesell-Whitesell Consulting (left)

**...Awards Continued**

Rich Worley - For contributions to C63.16



Dan Hoolihan (right) presenting to Rich Worley-Dell (left)

Jerry Ramie - For contributions to C63.16



Dan Hoolihan (right) presenting to Jerry Ramie-ARC Technical Resources (left)

Don Heirman - For contributions to C63.16



Dan Hoolihan (right) presenting to Don Heirman-Don HEIRMAN Consultants (left)

Art Wall – For his leadership of the C63.26 Working Group



Dan Hoolihan (right) presenting to Art Wall-Radio Regulatory Consultants (left)

Jeff Silberberg - For contributions to C63.16



Dan Hoolihan (right) presenting to Jeff Silberberg-FDA (left)



## Subcommittee 1 Techniques and Development

**Zhong Chen (ETS-Lindgren), Chair**



Subcommittee 1 meeting – Zhong Chen-ETS-Lindgren on the left in the foreground

ANSI ASC C63<sup>®</sup> Subcommittee 1 (SC1) provides the technical expertise and resources necessary for maintaining existing and newly proposed C63<sup>®</sup> approved standards documents.

SC1 consists of technical members in the EMC field and has a total of thirty three members.

SC1 consists several active working groups. Below is the status of the current working groups. Any interested parties wishing to join a working group are encouraged to contact the SC1 chair or the appropriate working group chair as shown below.

### **Project on “Specifications for Electromagnetic Noise and Field Strength Measurement Instrumentation”**

Chair: Werner Schaffer

A draft standard was circulated, and closed on April 21, 2015. There were 19 people in the ballot pool. The ballot passed, although there were 3 negative votes. The reasons for the three negative votes were due to:

- Limitation of the lower frequency end from 10 Hz to 9 kHz (due to reference to C63.2 in MIL-STD 461x)
- Existence of Table 2 in new revision (concern is that test instrument acceptable under CISPR 16-1- 1 to be unacceptable under C63.2)

During the C63.2 working group meeting held on May 5, 2015, it was decided to formally request input from the Tri-Service committee on measuring equipment specifications supporting emission measurements per MIL-STD 461F in the frequency range 30 Hz to 9 kHz. Regarding the concerns about harmonization of test equipment, C63.2-2015 clause 1.2 clearly states that the standard does harmonize the requirements in CISPR 16-1-1. However, it is agreed that an additional explicit statement will be added to clause 3 to stress harmonization.

### **Project on Emissions Measurements, C63.4 (full revision)**

Chair: Don Heirman

The Committee Project Initiation Notification System (PINS-C) was approved by the working group, SC1, and C63 in November 2014. Initially there were 21 work items in the

proposals, and that has since been narrowed down to 9. Those that are not identified as high priority items are not being actively considered, and the reasons were provided in the C63<sup>®</sup> voting document. The PINS-C study question processes are well underway. It presents what should initially be studied for the next edition of C63.4. The objective is to form a PINS to start in earnest revisions. A working group meeting was held on May 9, 2016. The 9 topics to be considered first include:

- Measurement methods above 1 GHz-round robin test
- Use of multiple antenna masts/antennas in semi-anechoic chamber
- Remove absorber “patch” option above 1 GHz
- Way forward with 2 dB “rule”
- Tolerances for dimensional requirements
- Adding phase requirements for LISNs
- Harmonizing visual displays with CISPR 32-or not
- Revisiting antenna bore-sighting requirement
- Handling approved interpretations

The next steps for the C63.4 projects are to continue the research work; form PINS for SC1 with a goal to be approved in third quarter of 2016; draft changes for review by the first quarter of 2017; and ready for balloting process by mid of 2017. It is anticipated the new edition of C63.4 be published by early 2018.

### **Project on amendment of C63.4 (C63.4a)-Limited amendment**

Chair: Don Heirman

PINS for the project was approved at the meeting in Piscataway in May, 2016. The scope of the project is to publish an amendment addressing several immediate and limited changes needed for C63.4:

- Only Annex D on NSA site validation is being modified as a consequence of questions asked by many via the interpretation process
- Equations in Annex D as well as other places in text are being corrected

The steps for the C63.4a project are first to present to SC1 for review and approval, and resolve any comments from SC1. Next, if all major comments are resolved during the SC1 review, SC1 will forward the document to C63 for balloting. The goal is to have the C63 main committee ballot started in August, and resolve any C63 comments in September. According to the working group plan, C63.4a should be published by the next C63 meetings in November, 2016.

### **Project on Antenna Calibration, C63.5**

Chair: Bob DeLisi

The working group is working on an active PINS from October, 2012. A second recirculation ballot was closed in April 22, 2016, and the standard was approved with 2 negative responses. There were 88 comments in total. Most of the comments were editorial comments. The working group decided to make an additional technical change regarding antenna symmetry test. It is currently required biconical, LPDA, and hybrid antennas for 30 – 1000 MHz. It was decided at the May meeting to change the requirements to 30 – 300 MHz for biconical and hybrid antennas only. Due to the technical changes, it was decided to re-circulate the draft standards. This will occur in the June 2016. Both negative comments are directly related to discussion of using dated or undated references in C63 standards. The issue is referred to C63 main committee.

## ... Subcommittee 1 Continued

### **Radiated Emissions Test Sites, C63.25**

Chair: Dan Segouin

The original proposal was to consolidate all site validation requirements in C63.25. It was decided in February 2016 that the C63.4 working group (chaired by Don Heirman) will continue addressing the site validation requirements below 1 GHz, because the C63.4 working group has the core members working on that topic. This was approved by the SC1 chair. Therefore, for the immediate revision, C63.25 is only addressing the frequency range from 1-18 GHz regarding site validation. It is planned to circulate a draft to SC1 in the second quarter of 2016. The Time Domain site VSWR (TD SVSWR) method in the current draft of C63.25 is for all intent and purposes complete.

The scope of the project is:

This standard provides methods of measurement requirements for the validation of radiated emission test sites in the frequency range of 1 GHz to 18 GHz. These requirements are applicable to fully anechoic rooms (FAR) and when spectrally treated on the floor open-area test sites (OATS), fully- and partially-covered OATS, semi-anechoic chambers (SAC).

## Subcommittee 2 Definitions

**Chris Dilay (SPAWAR), Chair.**



Subcommittee 2 meeting – Chris Dilay-SPAWAR/SYSCEN-PACIFIC in immediate foreground

Working Group 1 met with IEEE staff at IEEE Headquarters in Piscataway, NJ, 11 May 2016 to investigate potential efforts to convert ANSI C63.14, "American National Standard Dictionary of Electromagnetic Compatibility (EMC) including Electromagnetic Environmental Effects (E3)," into an online database. IEEE currently examining prospective costs to pursue the collaborative effort and will be discussed during future meetings TBD. Working Group 2 continued work on the new ANSI C63.28 "American National Standard Guide for Best Practices for Electromagnetic Compatibility". Working Group 2 meetings held on a continuing basis via WebEx.

## Subcommittee 3 International Standardization

**Don Heirman (Don Heirman Consultants), Chair**

SC3 (International Standardization) held its meeting in conjunction with the ASC C63 series of meeting the second week in May 2016. This meeting was chaired by Don Heirman who succeeded Poul Andersen. Don thanked Poul for all his work in leading the committee and for getting the C63.12 (American National Standard for Electromagnetic Compatibility Limits-- Recommended Practice) document updated.

There were 13 members in attendance (one on the internet connection). As this was the first meeting of the year with the ASC Series of meetings, the scope, membership, and duties were reviewed and only editorial changes were made. The new scope (that was subsequently approved by the main committee) is

Subcommittee 3 provides a forum for comparing international standards activities to ASC C63® membership standards activities and makes recommendations to the C63® Main Committee on possible US positions on international EMC matters, to facilitate harmonization of national and international standards, considering US regulatory as well as commercial requirements. Subcommittee 3 may make recommendations to the C63® Main Committee about introducing the work of C63® to the US National Committee Technical Advisory Groups for submission to international standards committees.

The meeting focused on reviewing any equivalences between C63 standards and those from the International Electrotechnical Commission (IEC) and the International Special Committee on Radio Interference (CISPR).

Here is the list showing the main agenda item activity analyzing equivalencies.

C63® Document	SC	Subject	International Document	Review Leader (WG Chair)
C63.4	SC1	Measurements	CISPR 16-2-X CISPR 32	Heirman
C63.5	SC1	Antenna Calibration	CISPR 16-1-6	DeLisi
C63.9	SC5	Office Equipment Immunity	IEC 61000-4-3 IEC 61000-4-39	Griffin
C63.15	SC5	Immunity	IEC 61000-4-X CISPR 35	Heirman

C63.16	SC5	ESD	IEC 61000-4-2	Whitesell
C63.23	SC1	Uncertainty	16-4-2	DeLisi
C63.24	SC5	Generic On-Site Measurements	IEEE 473	Heirman
C63.25	SC1	Test Site Validation	CISPR 16-1-4	Sigouin
C63.10 C63.26	SC4 SC4	Unlicensed Transmitters Licensed Transmitters	ETSI wireless requirements	Wall
C63.27	SC7	Co-existence	IEC 62657-2	Berger
C63.28	SC2	Best Practices	No equivalent	Dilay

Here is the list for new projects:

C63® Document	SC	Subject	Status	Review Leader (WG Chair)
C63.29-draft	SC4	Lighting products	New standard. Draft being written.	Mendoza
C63.30-draft	SC4	Wireless Power Transfer Products	New standard. Draft being written.	Thul
C63.31-draft	SC4	ISM equipment (FCC MP-5)	New standard. Draft being written.	Walton

The subcommittee agreed to have planned face to face or virtual meetings every 3 months or so.

The next two are:

- Webinar: 7 September 1500 to 1700 EDT
- Face to Face meeting: 8 November in California

Here is the web site for the subcommittee:

[http://www.c63.org/documents/sc\\_3/sc\\_3.htm](http://www.c63.org/documents/sc_3/sc_3.htm)

If there is any interest in supporting the work of the subcommittee, contact the chair—Don Heirman—at [d.heirman@ieee.org](mailto:d.heirman@ieee.org)

## Subcommittee 4 Wireless and ISM Equipment Measurements

### Art Wall (TCB Council), Chair

Subcommittee 4 is a new subcommittee approved by an email ballot of C63® organizational members in February, 2016. The activities of SC 4 were formerly in SC 1. The membership rosters of the Subcommittee and its five Working Groups may be found at

[http://www.c63.org/documents/rosters\\_public/sc4\\_members.htm](http://www.c63.org/documents/rosters_public/sc4_members.htm) .

The subcommittee is currently responsible for: C63.10 (compliance test procedures for unlicensed transmitters); C63.26 (compliance test procedures for licensed transmitters); C63.29 (compliance test procedures for lighting equipment); C63.30 (compliance test procedure for wireless power transfer equipment; and, C63.31 (compliance test procedures for traditional ISM equipment). A second of C63.10 was published September 2013 and a first edition of C63.26 was published January 2016. A third and second edition of C63.10 and C63.26,

respectively, are currently under development. The Working Groups for Lighting and WPT have been very active and are expected to produce drafts of the Lighting and WPT standards later this year. The activity of C63.31 WG has been a bit slower due to time restraints of participants. Hopefully, that activity will resume soon. The PINS for all these draft standards may be found at [http://www.c63.org/documents/misc/matrix/c63\\_standards.htm](http://www.c63.org/documents/misc/matrix/c63_standards.htm).

Scope -- Subcommittee 4 is responsible for writing and maintaining existing and proposed C63® standards for wireless and ISM devices (lighting, wireless power transfer, Industrial and dielectric heaters, and similar equipment), as assigned by the Main Committee ASC 63®.

## Subcommittee 5 Immunity Testing

### Steve Whitesell (Whitesell Consulting), Chair

Subcommittee 5 met on May 10th with 11 of its 15 members in attendance along with three guests. One of the members and one of the guests participated via WebEx. The membership list, scope, and duties for the subcommittee were reviewed and approved for submission to the main committee.

Work on the C63.16 Guide for Electrostatic Discharge Test Methodologies and Criteria for Electronic Equipment has concluded, and we received very timely notice during our meeting that the document had been published. The Working Group members, all of whom made contributions to the document, were recognized with plaques or certificates during the Main Committee meeting later in the week.

Draft PINS for revising the C6.9 Standard on Immunity of Audio Office Equipment and the C63.15 Recommended Practice on Immunity of Electrical and Electronic Equipment were reviewed, modified, and approved for submission to the Main Committee. Good progress has been made in frequent WebEx meetings on the C63.15 document based on its previously approved PINS-C. The document is anticipated to be ready to submit for ballot by mid to late summer. A couple of individuals have volunteered to work on the C63.9 revision, but additional volunteers are needed.

Don Heirman is heading up the effort to restart work on the C63.24 Recommended Practice for In Situ Immunity Evaluation. He has been in contact with Chad Kiger, Chair of the EMC Society Working Group looking into the revision of their IEEE 473 document that addresses site survey measurements. They are considering working on the two documents as a joint project, with IEEE 473 addressing the measurement of ambient RF signals and C63.24 dealing with testing of equipment for immunity to those signals. A couple of individual have indicated their interest in working with Don on this project.

**The second terms of Chair Steve Whitesell and Vice Chair Ed Hare will be expiring at the end of the year. Individuals willing to take on these roles for new three-year terms beginning in 2017 are requested to make that information known.**

**Subcommittee 6 Laboratory Accreditation/ Conformity Assessment**

**Randy Long (Laboratory Accreditation Bureau),  
Chair**



Subcommittee 6 meeting–Randy Long, L-A-B on left in the foreground

Many laboratories have struggled to effectively convey technical requirements to purchasing staff in order to ensure purchased services or equipment are fit for use or appropriately tested or calibrated meeting their Accreditation/Conformity Assessment obligations. Working Group 4 of Subcommittee 6 is drafting ANSI C63.8 to provide organizations with guidance to effectively communicate their technical requirements to both purchasing staff and selected service providers to ensure the appropriate product or services are received.

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**Subcommittee 7 Spectrum Etiquette**

**Vladimir Bazhanov (Ericsson), Chair**



May 10, 2016 meeting – Subcommittee 7 –Vladimir Bazhanov on right in the medium foreground

No article was submitted for this edition of the newsletter.  
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**Subcommittee 8 Medical Equipment Testing**  
**Stephen Berger (TEM Consulting, LP), Chair**



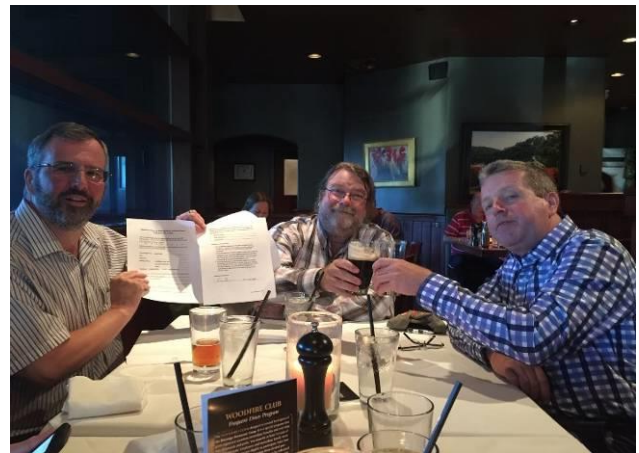
Subcommittee 8 meeting – Stephen Berger, TEM Consulting (right), Secretary David Zimmerman, Spectrum EMC Consulting (left)

No article was submitted for this edition of the newsletter.

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**Application for Membership Received**

During a recent outing, Dan Sigouin worked to recruit two potential new ASC 63<sup>®</sup> members and is shown below holding their membership applications.

The two candidates are David Waitt and Thomas Dickten. Thomas is self-employed, and president of Global Compliance Consulting. David Waitt is also a self-employed consultant and has many years of experience as a regulatory engineer.



Dan Sigouin (left) David Waitt (center) Thomas Dickten (right)



## **ANSI ASC C63<sup>®</sup> 2016 OFFICERS**

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Zhong Chen, Chair SC-1 Techniques and Development ([zhong.chen@ets-lindgren.com](mailto:zhong.chen@ets-lindgren.com))

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Randy Long, Chair SC-6 Accreditation/Conformity Assessment ([rlong@l-a-b.com](mailto:rlong@l-a-b.com))

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**ANSI ASC C63<sup>®</sup> ELECTROMAGNETIC COMPATIBILITY, NEWSLETTER** is published approximately sixty-six days after the spring ANSI ASC C63<sup>®</sup> Committee meetings and is available on the web site [www.c63.org](http://www.c63.org) . That site also contains much information about ANSI ASC C63<sup>®</sup> and its Subcommittees.

Any questions about the Newsletter should be addressed to: David Zimmerman, Editor ([d.j.zimmerman@ieee.org](mailto:d.j.zimmerman@ieee.org))

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