# 2023 General meeting – Harmonics WG (519 & 519.1)

## Meeting Location and Time

Hyatt Regency Orlando, Bayhill 20

2023 July 19, 10:00 AM – 12:00 PM ET

## MEEting Minutes

### Attendees

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| Kevin Kittredge | Gaurav Singh |
| Roberto Langella | Gian Paramo |
| Matt Norwalk | Bill Howe |
| Chris Mullins | Sep Boshoff |
| Gerald Scheuer | Mikael Yalonen |
| Feng Dong | Yugi Zhao |
| William Gee | Rob Arritt |
| Anthony Murphy | Antonia Bracale |
| Grace Piercy | Kaylan Sen |
| Chandra Pallem | Anders Bostroem |
| Pierre-Luc Martel | Jason Philhower |
| Eric Hy | Humayun Tariq |
| Stephane Do | Joseph DeB eau |
| Nick Nakamura | Alexandre Naves |
| Randy Collins | Eugeu Starschich |
| Jiri Drapela | Ricardo Torquato |
| Farahd Omar | Steve Tatum |
| Vong Chan | Jordan Orillaza |
| Joe Grappe | Jan Meyer |
| Andrew Steffen | Jason David |
| Grazia Todeschini | Wilson Xu |
| David Mueller | Dan Sabin |
| Mark Halpin | Paulo Ribeiro |

The meeting was called to order by Mark Halpin at 10:00 AM. Mark hosted both 519 and the 519.1 meetings, in the absence of the 519 chair. Minutes were recorded by Chris Mullins, in the absence of the group secretary.

### Old Business

IEEE legal slides were reviewed by Mark. No patents were identified by the attendees. There is no active PAR for the group, and no quorum requirements.

### New Business

Robust discussion on draft PAR contents. There was no consensus or straw polling. Some dominant thoughts or comments:

* Discussion on IBRs, especially HVDC - expand "load" to installations? corner cases: HVDC - do we want to cover this, or push it to some other standard? seems to not fit into any existing standard (519, 2800, 1547).
* What to do with battery systems that are both loads and IBRs, but at different times of day?
* STATCOM or other grid device - what standard covers their emissions?
* may need to defer scope to upper committees, to discuss which standard would be best for HVDC, etc.
* Limit scope to 9 kHz, with 3-9kHz treated separately -suggestion from Dave Mueller
* Seems to be no desire to go over 9kHz now
* Need to have an upper frequency limit on total distortion - may differ from definition in 1547
* Move away from "harmonic" terms above kHz? call it distortion or noise
* In the PAR “need for project” section - don't mention settings limits explicitly - just mention that frequencies above harmonics need to be addressed. Otherwise, may be forced to determine limits when they may not be desired
* Interharmonic levels in the 0.3 - 0.5%range - seeing these consistently
* don't forget that the focus for 519 is PCC
* if interharmonic limits will be created in 519, would need to create an impedance model for determing current limits from voltage limits
* how to do interharmonic allocation?

Transitioned from 519 to 519.1 meeting around 10:55 AM. Three presentations were given:

Roberto Langella on interharmonics:

* types of generators, effects
* interharmonic subgroup limits on even and odd subgroups designed to limit flicker
* field trials show interharmonic subgroup metrics matches actual flicker better than traditional Pst - using test LED 7.5W bulb

Jiri Drapela on Surevy of LED lamps for residential applications - flicker immunity

- survey of 31 different LED lamps - 4 different driver types, showed relationship between driver type and flicker results from interharmonics



Jan Meyer - Survey of Interharmonic equipment emission and network disturbance levels

* information on actual interharmonic levels



Meeting adjourned at 12:00 PM