# 2019 GM Meeting Minutes – Harmonics WG (519)

## Meeting Location and Time

Hilton Atlanta  
255 Courtland Street NE  
Atlanta, GA 30303  
Room 214

2019 August 7  
10 AM – 12 PM

## MEEting Minutes

### Attendees

David Zech Kenn Sedziol

Nick Zagrodnik Cristian Lazaroiu

Mark Halpin Xavier Young

Steven Johnston Dan Sabin

Kevin Kittredge Eugene Song

Joe Grappe Matt Norwalk

Bill Howe Joseph Sneed

Paul Ortmann Marlin Browning

Dave Mueller Justin Kuhlers

Brooks Glisson Sarah Ronnberg

Bryan Glenn Barry Wong

Andrew Sagl Randy Collins

Chris Mullins Ana Maria Blanco

Jan Meyer Shreyas Zingre

Ahmed Moustafa Tao Yang

Gaurav Singh Tom Nelson

Farhad Omar Surya Santoso

Grazia Todeschini Alfredo Testa

Reigh Walling Ali Arzani

Martin Cameron David Langmer

Anna Davis Anthony Murphy

Harish Sharma Paulo Ribeiro

The meeting was called to order by David Zech at 10:10am. Minutes were recorded by Nick Zagrodnik.

### Old Business

IEEE mandatory legal slides were reviewed by the Chair. No patents were identified by the attendees.

Minutes from 2019 JTCM approved.

Draft 1 of 519 was sent out a few weeks prior to the meeting and received some initial comments already. Par expires 12/2021.

### New Business

Dave presented the question to the group whether to make next revision of 519 strictly harmonic control of loads and let 1547 and 2800 (when it is completed) handle inverter based resources.

* Comments from group are that it would be difficult to delineate loads and generation in applying 519, which is applied at the PCC and could contain a mix of both load and generation.
* 519 can still have information about inverter-based resources, but limits would only apply to PCC with harmonic loads, or a PCC with a mix of harmonic loads, and inverter-based resources generation.

Led to discussion on relationship between harmonic limits in 519 and 1547.

There was a motion to vote, and a second, to apply current limits in IEEE 519 to a PCC with harmonic loads only, or a mix of load and generation (i.e. for inverter-based generation only, current limits would be covered by 1547 or 2800 when it is published). 31 total members and 17 present for quorum.

Yes 13

No 1

Abstain 3

Motion passes.

Request for volunteers to expand the body of 519 to address load generation mix based content

Matt Norwalk volunteered, but more volunteers are needed.

Reviewed Even harmonic current limit revision proposal in D1

Motion to vote on establishing new harmonic current limits for even order harmonics as proposed in D1 of 519 along with including additional wording for justification and rationale.

Yes 16

No 0

Abstain 2

Motion passes

Report from Roberto Langella inter-harmonic distortion sub-group

* Roberto plans to present and share a paper containing proposed limits for inter-harmonic distortion at upcoming ICHQP in Dubai
* Roberto to submit proposal for 519D1

Break for lunch 11:44am. Meeting to reconvene at 1pm.

Meeting started 1:05pm

Reviewed Dave Mueller’s proposal to increase harmonic voltage distortion limits for systems 69kV and above.

This to be more consistent with IEC 61000-3-6 limits, but is only part of the justification. Dave’s observations are that more than 50% of locations already exceed the current limits. Kenn’s point for is that these higher limits will give utilities more flexibility on how to apportion harmonic distortion contribution.

Opposing arguments are that because existing sites currently exceed the limits is not proper justification to raise limits. Harish Sharma and others made it a point that they are not seeing difficulty with adhering to the present distortion limits on their respective transmission systems by strategically converting transmission capacitors to harmonic filters. Also, with the present rate at which inverter based generation sources are being connected and the early evolution in understanding the power quality impacts that result, it may not be a good time to make this revision.

Action item for Dave Zech to send out an e-mail to WG voting members requesting a vote on the proposal to increase harmonic voltage distortion limits for systems 69kV and above per 519D1

Briefly reviewed Larry Conrad’s instance of high frequency 59th harmonic resonance with PV inverter, fed by a relative short run of underground 15 kV. There are a couple cases now where well-known inverter manufacturers are claiming to meet IEEE 519 current limits by making the switching frequency (and thus the characteristic harmonics greater than the 50th harmonic).

Meeting adjourned at 1:45pm

### Summary of Volunteers for Future Activities:

Carryover Action Items from 2019 JTCM

1. Dave Mueller to write justification on raising HV voltage distortion limits.
2. Roberto Langella’s team to write justification on establishing interharmonic limits.
3. Matt Norwalk to write justification on capping distortion limits to 50th order.
4. Gary Nuzzi, Nick Zagrodnik and Mark Halpin to write justification and proposal for new THD definition that would include/take into account integer and interharmonics up to 50th.
5. Gary Nuzzi, Nick Zagrodnik and Mark Halpin to write justification and proposal for TDD that clearly states definition of what type of demand measurement interval to use.
6. Bill Howe volunteered Tom Cooke to write a piece on current state and improving measurement technology to enable PQ monitoring equipment to accurately measure distortion above the 50th. This section should also include difficulties/limitations of accurately measuring harmonic distortion on HV systems due to instrument transformers.
7. Dave Zech to ensure interharmonic distortion graph from annex is moved to a new chapter that will cover interharmonic voltage distortion.
8. Dave Mueller to write justification on adjusting harmonic voltage distortion limits in HV ranges pending the outcome of the vote on that proposal.
9. Scott Peele to start a section on consideration for short term harmonic distortion.