

# P2717

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**Type of Project:** New IEEE Standard

**PAR Request Date:** 13-Dec-2016

**PAR Approval Date:** 17-Feb-2017

**PAR Expiration Date:** 31-Dec-2021

**Status:** PAR for a New IEEE Standard

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**1.1 Project Number:** P2717

**1.2 Type of Document:** Standard

**1.3 Life Cycle:** Trial Use

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**2.1 Title:** Passive Intermodulation Test Methods for Wireless Systems in Low Noise Environments

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**3.1 Working Group:** Working Group for EMC Standards (EMC/SDCom/EMC\_WG)

**Contact Information for Working Group Chair**

**Name:** Edward Hare

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**Contact Information for Working Group Vice-Chair**

None

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**3.2 Sponsoring Society and Committee:** IEEE Electromagnetic Compatibility Society/Standards Development Committee (EMC/SDCom)

**Contact Information for Sponsor Chair**

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**4.1 Type of Ballot:** Individual

**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:** 07/2018

**4.3 Projected Completion Date for Submittal to RevCom**

**Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 02/2019**

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**5.1 Approximate number of people expected to be actively involved in the development of this project:** 8

**5.2 Scope:** The test approaches defined in this standard are intended to quantify the interference of passive intermodulation (PIM) from handheld devices, base stations and satellite earth stations. Current PIM noise tests for communication components/devices/antennas/systems do not work well at extremely low PIM levels or high transmission power levels, for example where PIM noise falls below -150dBc.

**5.3 Is the completion of this standard dependent upon the completion of another standard:** No

**5.4 Purpose:** This document will not include a purpose clause.

**5.5 Need for the Project:** No suitable standard concerning the test framework for extremely low PIM levels exists. Current PIM noise tests for communication components/devices/antennas/systems do not work well at extremely low PIM levels or high transmission power levels, for example where PIM noise falls below -150dBc. The test framework laid out in the standard is defined in four parts as below:

1. Antennas level. Define the test space, maximum testable antenna gain, and the maximum testable input power inside an anechoic chamber.
2. Component level. Define the test environment, maximum test power.
3. System level. Define the test system and environment of inter-system interference due to the PIM noise transmitted between systems.
4. Device level. Define the test setup and methods for measuring PIM interference of the wireless device, and its effect on the device/system capacity and data throughput.

**5.6 Stakeholders for the Standard:** Test organizations, R&D institutes, as well as manufacturers of microwave components, antennas, and wireless devices in which the measurement of extremely low level of PIM noise is required.

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#### **Intellectual Property**

**6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?:** Yes

**If yes please explain:** There is no anticipation of IP from individuals or institutions being required. The copyright permissions will be the usual approvals from mainly IEEE Transactions and Conferences.

**6.1.b. Is the Sponsor aware of possible registration activity related to this project?:** No

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**7.1 Are there other standards or projects with a similar scope?:** No

#### **7.2 Joint Development**

**Is it the intent to develop this document jointly with another organization?:** No

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**8.1 Additional Explanatory Notes:** PIM can significantly affect the data throughput, system capacity and user experience. Current wireless technology design practices call for very low PIM performance. The test framework proposed in this standard for extremely-low PIM noise includes the test methodologies, test set-up, calibration methods as well as the specific designs and materials for such challenging requirements.