Comment #385 suggests to remove the parts that define requirements for Iport_RMS
by claiming that Iport_DC requirements are sufficient and if we accept this approach
the error resulted from deleting Iport_RMS compare to Iport_DC is small.

Discussion

1) When we specify requirements, we need to guarantee that we can test it in a reliable way.

2) Due to the fact that we have DC component and AC component for Iport, this will require us to consider its RMS value
which is the source for power loss at the PSE and the PD.

3) As long as Iport_DC, Ipeak and duty cycle limits IN THE CURRENT SPEC are met then the error between Iport_RMS and Iport_DC
will be small. The problem is how we can measure it and ensure that this is the case?

4) If PD use higher Ipeak than allowed the RMS content will increase significantly while
the average current Iport_DC may remain unchanged. As a result, Iport_DC and Ipeak measurements are not sufficient.

5) If Iport_RMS<=Iport_DC than we approaching to significantly better test for verifying PD compliance to the spec.

6) If Iport_RMS<=Iport_DC and we measure Ipeak as well then the problem is 100% solved.
Iport_RMS, Iport_DC and Ipeak are easily testable with a single measurement (Not 3 measurements).

7) Measuring Ipeak and duty may be not possible in many applications due to the random nature of Ipeak and Duty.

8) This is why the RMS term was invented many years ago; to make the wave shape
transparent to the measurement for power loss considerations.

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Calculation

Input Data

Vpse [V]		52.000	50.000	50.000	52.000	50.000	50.000
Pclass		90.000	51.000	30.000	90.000	51.000	30.000
k	=Ppeak_PD/Pclass_PD	1.050	1.050	1.110	2.000	2.000	2.000
Ppeak	=k*Pclass [W]	94.500	53.550	33.300	180.000	102.000	60.000
Duty cycle=duty		0.050	0.050	0.050	0.050	0.050	0.050

Spec: Iport_dc [A]	=Pclass/Vport	1.731	1.020	0.600	1.731	1.020	0.600
Actual: Iport_dc [A]	=duty*Ipeak+(1-duty)*Iport_DC	1.735	1.023	0.603	1.817	1.071	0.630
Ipeak	=k*Pclass/Vpse	1.817	1.071	0.666	3.462	2.040	1.200
Iport_rms [Arms]	=(duty*Ipeak^2+(1-duty)*Actual_Iport_dc^2).5	**1.735**	**1.023**	**0.603**	**1.856**	**1.094**	**0.643**
PD PASS/FAIL	=IF (Iport_rms-Iport_DC)<0.01 then PD PASS else PD FAIL.	**PASS**	**PASS**	**PASS**	**FAIL**	**FAIL**	**FAIL**
Increase in power loss	=(Iport_rms/Iport_dc)^2	**0.51%**	**0.51%**	**1.16%**	**15.00%**	**15.00%**	**15.00%**
(Iport_rms-Iport_dc) [A]		0.004	0.003	0.003	0.125	0.074	0.043
(Iport_rms-Iport_dc) /Iport_dc		**0.26%**	**0.26%**	**0.58%**	**7.24%**	**7.24%**	**7.24%**

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Conclusions:

1) The spec today is accurate and is legacy text

2) The spec forces that the RMS current value will be lower or equal to the DC current value to prevent power loss in PSE if PD doesn't meet the spec for Ipeak and the duty cycle

3) Power loss in PSE or PD is function of the RMS value only =(DC^2+AC^2)^0.5.

4) The power loss is a function of the DC component, duty cycle and peak current or the AC content which in most cases is a complex wave form. The only way to verify compliance to Ipeak and duty cycle is by measuring Irms.

5) The only way to verify PD behaves correctly is to measure its Ipeak and Irms value. Measuring Idc and Ipeak alone is not sufficient. Measuring duty cycle in most cases is not possible due to its random nature or the AC waveform complexity.

6) The small error that we get between Irms and Idc is when we obey the spec. If we don't, there is no way to test it without measuring Irms to be <=Idc_max and measuring Ipeak.

6) Measuring Irms, Idc and Ipeak is done with a single measurement.

Proposed remedy: Copy the 6 points above as the response for this comment and reject the comment.

Proposed remedy for comment #385 D2.2. Darshan Yair January 2017