

SYSTEM TEST PLAN / TEST RESULTS
SPEM Class 1.0

Project Name		SYSTEM TEST PLAN / TEST RESULTS										STANDARDS			
RS version		1.4										Ver2.2			
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.					Test bench Details/Configuration Details		Pulsar source, LNG reference meter, DSO, Multimeter						
System Test Cases													STANDARDS		
Test No.	Test ID	Test Date	Req. ID	Test Case Scenario Description	Input Test Values		Test Case Designed For	Expected Result			Actual Result	Inference on the acceptability of the results	Remarks (if any)		
					Data Element	Input Values		Output Parameter	UOM	Lower Limit				Upper Limit	
1	T1		H01	Power Consumption of System	Voltmeter across input supply and ammeter in series with supply	Phase Voltage	240V	SV	Volt-Ampere	VA	As low as possible	8	0.9VA	OK	
2	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11,H19	Accuracy Test of KWh	The system is operated at voltage which is -20% below the nominal operating voltage which will be applied between 1S and 2S. At this voltage, six different current values are specified for testing which will be adjusted by observing the reading on the ammeter connected to 1S. Each of these combinations of Phase current and Phase voltage are measured at 50Hz for accuracy. PF is varied between 0.5 lag and unity throughout these tests. Under these conditions, KWh is measured and checked for accuracy as per International Standard specifications. The test will commence when the enter key is pressed thereafter exactly after one minute the enter key would be pressed again. During this duration, the EUT and a calibrated meter shall be given the same inputs and their readings will be compared to measure accuracy. The data from the meter will be read-out through the RS232 port.	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	0.08%	OK	CBIP88 IS13779
						Phase Current	500mA								
						Frequency	50Hz								
						PF	1								
3	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	0.17%	OK	CBIP88 IS13779
						Phase Current	500mA								
						Frequency	50Hz								
						PF	0.5lag								
4	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	-0.10%	OK	CBIP88 IS13779
						Phase Current	1A								
						Frequency	50Hz								
						PF	1								
5	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 +3.0%	0.30%	OK	CBIP88 IS13779
						Phase Current	1A								
						Frequency	50Hz								
						PF	0.5lag								
6	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 +2.1%	-0.30%	OK	CBIP88
						Phase Current	2A								
						Frequency	50Hz								
						PF	1								
7	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 +3.0%	0.08%	OK	CBIP88
						Phase Current	2A								
						Frequency	50Hz								
						PF	0.5lag								
8	T3		R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 +2.1%	-0.35%	OK	CBIP88
						Phase Current	10A								
						Frequency	50Hz								
						PF	1								
9	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 +3.0%	0.15%	OK	CBIP88
						Phase Current	10A								
						Frequency	50Hz								
						PF	0.5lag								
10	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 +2.1%	0.15%	OK	CBIP88
						Phase Current	30A								
						Frequency	50Hz								
						PF	1								
11	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 +3.0%	0.10%	OK	CBIP88
						Phase Current	30A								
						Frequency	50Hz								
						PF	0.5lag								
12	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	-0.34%	OK	CBIP88
						Phase Current	60A								
						Frequency	50Hz								
						PF	1								
13	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	192V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 +3%	-0.01%	OK	CBIP88
						Phase Current	60A								
						Frequency	50Hz								
						PF	0.5lag								
14	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11,H19	Accuracy Test of KWh	The system is operated at voltage which is +15% above the nominal operating voltage which will be applied between 1S and 2S. At this voltage, six different current values are specified for testing which will be adjusted by observing the reading on the ammeter connected to 1S. Each of these combinations of Phase current and Phase voltage are measured at 50Hz for accuracy. PF is varied between 0.5 lag and unity throughout these tests. Under these conditions, KWh is measured and checked for accuracy as per International Standard	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	0.33%	OK	CBIP88
						Phase Current	500mA								
						Frequency	50Hz								
						PF	1								
15	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 + 3%	0.50%	OK	CBIP88
						Phase Current	500mA								
						Frequency	50Hz								
						PF	0.5lag								
16	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	-0.10%	OK	CBIP88
						Phase Current	1A								
						Frequency	50Hz								
						PF	1								
17	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 +3%	0.10%	OK	CBIP88
						Phase Current	1A								
						Frequency	50Hz								
						PF	0.5lag								
18	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	-0.05%	OK	CBIP88
						Phase Current	2A								
						Frequency	50Hz								
						PF	1								
19	T3		R01,R02,R04,R05,R06,R07,R10,H04,H05,H07,H08,H11	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 + 3%	0.20%	OK	CBIP88
						Phase Current	2A								
						Frequency	50Hz								
						PF	0.5lag								

SYSTEM TEST PLAN / TEST RESULTS

SPEM Class 1.0

Project Name		SYSTEM TEST PLAN / TEST RESULTS										STANDARDS			
RS version	1.4	Firmware /Software version					Ver2.2								
Test Environment Details	A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.					Test bench Details/Configuration Details		Pulsar source, LNG reference meter, DSO, Multimeter							
System Test Cases															
Test No.	Test ID	Test Date	Req. ID	Test Case Scenario Description	do	Input Test Values		Test Case Designed For	Expected Result				Actual Result	Inference on the acceptability of the results	Remarks (If any)
						Data Element	Input Values		Output Parameter	UOM	Lower Limit	Upper Limit			
20	T3		R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Frequency	50Hz	BVA	Active Energy	% Error	of test no.59 - 2.1%	of test no.59 + 2.1%	0.23%	OK	CBIP88
21	T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 + 3%	0.35%	OK	CBIP88
22	T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	0.50%	OK	CBIP88
23	T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 + 3%	-0.45%	OK	CBIP88
24	T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11, H19	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 - 2.1%	Test result of test no.59 + 2.1%	0.28%	OK	CBIP88
25	T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	276V	BVA	Active Energy	% Error	Test result of test no.59 -3%	Test result of test no.59 + 3%	-0.13%	OK	CBIP88
26	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11, H19	Accuracy Test of KWh	The system is operated at a voltage which is -10% below the nominal operating voltage which will be applied between 1S and 2S. At this voltage, six different current values are specified for testing which will be adjusted by observing the reading on the ammeter connected to 1S. Each of these combinations of Phase current and Phase voltage are measured at 50Hz for accuracy. PF is varied between 0.5 lag and unity throughout these tests. Under these conditions, the KWh and PF is measured and checked for accuracy as per International Standard specifications. The test will commence when the enter key is pressed thereafter exactly after one minute the enter key would be pressed again. During this duration, the EUT and a calibrated meter shall be given the same inputs and their readings will be compared to measure accuracy. The data from the meter will be read-out through the RS232 port.	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 - 0.7%	Test result of test no.59 + 0.7%	0.10%	OK	CBIP88 IS13779
27	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	NA	NA	0.55%	OK	CBIP88
28	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11, H19	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 - 0.7%	Test result of test no.59 + 0.7%	-0.08%	OK	CBIP88 IS13779
29	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 -1%	Test result of test no.59 + 1%	0.38%	OK	CBIP88
30	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 - 0.7%	Test result of test no.59 + 0.7%	-0.20%	OK	CBIP88
31	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 -1%	Test result of test no.59 + 1%	-0.33%	OK	CBIP88
32	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 - 0.7%	Test result of test no.59 + 0.7%	0.38%	OK	CBIP88
33	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 -1%	Test result of test no.59 + 1%	-0.12%	OK	CBIP88
34	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 - 0.7%	Test result of test no.59 + 0.7%	-0.12%	OK	CBIP88
35	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 -1%	Test result of test no.59 + 1%	-0.35%	OK	CBIP88
36	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 - 0.7%	Test result of test no.59 + 0.7%	-0.33%	OK	CBIP88
37	T2		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11.	Accuracy Test of KWh	do	Phase Voltage	216V	BVA	Active Energy	% Error	Test result of test no.59 -1%	Test result of test no.59 + 1%	-0.55%	OK	CBIP88 IS13779
38	T2		R01.R02, R04.R05, R06.R07, R10.H04	Accuracy Test of KWh	The system is operated at a voltage which is +10% above the nominal operating voltage which will be applied between 1S and 2S. At this voltage, six different current values are specified for testing which will be adjusted by observing the reading on the ammeter connected to 1S. Each of these combinations of Phase current and Phase voltage are measured at 50Hz for accuracy. PF is varied between 0.5 lag and unity throughout these tests. Under these conditions, the KWh and PF is	Phase Voltage	264V	BVA	Active Energy	% Error	Test result of test	Test result of test no.59		OK	CBIP88 IS13779

SYSTEM TEST PLAN / TEST RESULTS

SPEM Class1.0

Project Name		SYSTEM TEST PLAN / TEST RESULTS										STANDARDS			
RS version		1.4										Ver2.2			
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.					Test bench Details/Configuration Details		Pulsar source, LNG reference meter, DSO, Multimeter						
Test No.	Test ID	Test Date	Req. ID	Test Case Scenario Description		Input Test Values		Test Case Designed For	Expected Result				Actual Result	Inference on the acceptability of the results	Remarks (if any)
						Data Element	Input Values		Output Parameter	UOM	Lower Limit	Upper Limit			
56	T2.T3		R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Current	2A	BVA	Active Energy	% Error	-1%	+1%			
						Frequency	50Hz						-0.05%	OK	CBIP88
						PF	1								
						Time	1min								
57	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1.5%	+1.5%			
						Phase Current	2A						-0.50%	OK	CBIP88
						Frequency	50Hz								
						PF	0.5 lag								
						Time	1min								
58	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1.5%	+1.5%			
						Phase Current	2A						-0.76%	OK	CBIP88
						Frequency	50Hz								
						PF	0.8 lead								
						Time	1min								
59	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	10A						-0.25%	OK	CBIP88
						Frequency	50Hz								
						PF	1								
						Time	1min								
60	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	10A						-0.25%	OK	CBIP88
						Frequency	50Hz								
						PF	0.5 lag								
						Time	1min								
61	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	10A						-0.02%	OK	CBIP88
						Frequency	50Hz								
						PF	0.8 lead								
						Time	1min								
62	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	30A						-0.15%	OK	CBIP88
						Frequency	50Hz								
						PF	1								
						Time	1min								
63	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	30A						-0.50%	OK	CBIP88
						Frequency	50Hz								
						PF	0.5 lag								
						Time	1min								
64	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	30A						0.50%	OK	CBIP88
						Frequency	50Hz								
						PF	0.8 lead								
						Time	1min								
65	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	60A						-0.32%	OK	CBIP88
						Frequency	50Hz								
						PF	1								
						Time	1min								
66	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	60A						-0.73%	OK	CBIP88
						Frequency	50Hz								
						PF	0.8 lead								
						Time	1min								
67	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	-1%	+1%			
						Phase Current	60A						0.31%		
						Frequency	50Hz								
						PF	1								
						Time	1min								
68	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	The system is operated at the nominal operating voltage which will be applied between 1S and 2S. At this voltage, six different current values are specified for testing which will be adjusted by observing the reading on the ammeter connected to 1S. Each of these combinations of Phase current and Phase voltage are measured at 52.5Hz and 47.5Hz for accuracy. PF is varied between 0.5 lag and unity throughout these tests. Under these conditions, the KWh is measured and checked for accuracy as per International Standard specifications. The test will commence when the enter key is pressed thereafter exactly after one minute the enter key would be pressed again. During this duration, the EUT and a calibrated meter shall be given the same inputs and their readings will be compared to measure accuracy. The data from the meter will be read-out through the RS232 port.	Phase Voltage	240V	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%			IS13779
						Phase Current	500mA								
						Frequency	52.5Hz								
						PF	1								
						Time	1min								
69	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	NA	NA			IS13779
						Phase Current	500mA						0.25%	OK	IS13779
						Frequency	52.5Hz								
						PF	0.5 lag								
						Time	1min								
70	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%			IS13779
						Phase Current	500mA						0.13%	OK	IS13779
						Frequency	47.5Hz								
						PF	1								
						Time	1min								
71	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	NA	NA			IS13779
						Phase Current	500mA						0.13%	OK	IS13779
						Frequency	47.5Hz								
						PF	0.5 lag								
						Time	1min								
72	T2.T3		R01,R02, R04,R05, R06,R07, R10,H04, H05,H07, H08,H11, H19	Accuracy Test of KWh	do	Phase Voltage	240V	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%			IS13779
						Phase Current	1A						0.50%	OK	IS13779
						Frequency	52.5Hz								
						PF	1								
						Time	1min								

SYSTEM TEST PLAN / TEST RESULTS

Project Name		SPEM Class 1.0										STANDARDS			
RS version		1.4													
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.				Firmware /Software version		Ver2.2							
		Test bench Details/Configuration Details				Pulsar source, LNG reference meter, DSO, Multimeter									
System Test Cases															
Test No.	Test ID	Test Date	Req. ID	Test Case Scenario Description		Input Test Values		Test Case Designed For	Expected Result			Actual Result	Inference on the acceptability of the results	Remarks (if any)	
						Data Element	Input Values		Output Parameter	UOM	Lower Limit				Upper Limit
73	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 1A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 1%	-0.20%	OK	IS13779
74	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 1A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	-0.40%	OK	IS13779
75	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 1A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.12%	OK	IS13779
76	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 2A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	0.25%	OK	IS13779
77	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 2A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.20%	OK	IS13779
78	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 2A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	-0.10%	OK	IS13779
79	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 2A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.15%	OK	IS13779
80	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 10A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	0.33%	OK	IS13779
81	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 10A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.45%	OK	IS13779
82	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 10A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	-0.45%	OK	IS13779
83	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 10A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.33%	OK	IS13779
84	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 30A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	0.15%	OK	IS13779
85	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 30A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.32%	OK	IS13779
86	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 30A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	-0.15%	OK	IS13779
87	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 30A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.20%	OK	IS13779
88	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 60A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	0.35%	OK	IS13779
89	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 60A 52.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.32%	OK	IS13779
90	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 60A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 0.8%	Test result of test no.59 + 0.8%	-0.20%	OK	IS13779
91	T2.T3		R01.R02, R04.R05, R06.R07, R10.H04, H05.H07, H08.H11	Accuracy Test of KWh	do	Phase Voltage Phase Current Frequency PF Time	240V 60A 47.5Hz 1 1min	BVA	Active Energy	% Error	Test result of test no.59 - 1%	Test result of test no.59 + 1%	-0.35%	OK	IS13779
92	T6		R03.R19	Accuracy Test of RMS Current	The system will be operated at nominal voltage and nominal current. The operating frequency will be maintained at 50Hz throughout the test. Only the power factor will be varied and will be observed over a duration of one minute.	Phase Voltage Phase Current Frequency PF	240V 0.5A 50Hz 0.5lag	BVA	AMPERE	A	0.49	0.51	0.504	OK	IEC62053-21
93	T6		R03.R19	Accuracy Test of RMS Current	do	Phase Voltage Phase Current Frequency PF	240V 0.5A 50Hz 1	SV	AMPERE	A	0.49	0.51	0.502	OK	IEC62053-21
94	T6		R03.R19	Accuracy Test of RMS Current	do	Phase Voltage Phase Current Frequency PF	240V 0.5A 50Hz 0.8lead	BVA	AMPERE	A	0.49	0.51	0.508	OK	IEC62053-21
						Phase Voltage Phase Current	240V 4A							OK	IEC62053-21

SYSTEM TEST PLAN / TEST RESULTS

SPEM Class 1.0

Project Name		SYSTEM TEST PLAN / TEST RESULTS										STANDARDS			
RS version		1.4										Ver2.2			
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.					Test bench Details/Configuration Details		Pulsar source, LNG reference meter, DSO, Multimeter						
System Test Cases												Actual Result	Inference on the acceptability of the results	Remarks (if any)	
Test No.	Test ID	Test Date	Req. ID	Test Case Scenario Description	Input Test Values		Test Case Designed For	Expected Result							
					Data Element	Input Values		Output Parameter	UOM	Lower Limit	Upper Limit				
95	T7		R03,R19	Accuracy Test of RMS Current	do	Frequency	50Hz	BVA	AMPERE	A	3.92	4.08	3.98		
						PF	0.9lag								
96	T7		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	SV	AMPERE	A	3.92	4.08	3.97	OK	IEC62053-21
						Phase Current	4A								
						Frequency	50Hz								
						PF	1								
97	T7		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	BVA	AMPERE	A	3.92	4.08	4.01	OK	IEC62053-21
						Phase Current	4A								
						Frequency	50Hz								
						PF	0.8lead								
98	T8		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	BVA	AMPERE	A	9.8	10.2	10.03	OK	IEC62053-21
						Phase Current	10A								
						Frequency	50Hz								
						PF	0.9lag								
99	T8		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	SV	AMPERE	A	9.8	10.2	10.1	OK	IEC62053-21
						Phase Current	10A								
						Frequency	50Hz								
						PF	1								
100	T8		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	BVA	AMPERE	A	9.8	10.2	10.04	OK	IEC62053-21
						Phase Current	10A								
						Frequency	50Hz								
						PF	0.8lead								
101	T9		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	BVA	AMPERE	A	58.8	61.2	59.99	OK	IEC62053-21
						Phase Current	60A								
						Frequency	50Hz								
						PF	0.9lag								
102	T9		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	SV	AMPERE	A	58.8	61.2	60.2	OK	IEC62053-21
						Phase Current	60A								
						Frequency	50Hz								
						PF	1								
103	T9		R03,R19	Accuracy Test of RMS Current	do	Phase Voltage	240V	BVA	AMPERE	A	58.8	61.2	59.97	OK	IEC62053-21
						Phase Current	60A								
						Frequency	50Hz								
						PF	0.8lead								
104	T21		R21,H13	Test for Autoscroll	The System will be operated at nominal voltage and nominal current and the display sequence will be checked. The display shall scroll through the specified sequence for every 10 sec and repeat after the last parameter of the sequence has been displayed. The sequence of the parameters is as follows: 1. Cumulative Active Energy of tariff 1. 2. Cumulative Active Energy of tariff 2. 3. Cumulative Active Energy of tariff 3. 4. Cumulative Active Energy of tariff 4. 5. Cumulative Apparent Energy of tariff 1 6. Cumulative Apparent Energy of tariff 2 7. Cumulative Apparent Energy of tariff 3 8. Cumulative Apparent Energy of tariff 4 9. Total Cumulative Energy (resolution 1 decimal points) 10. Instantaneous Power Factor. 11. Maximum Demand (resolution 3 decimal points) Please refer to REN0144UG01 (User Guide) for further details.	Up Scroll key Down Scroll Key MD reset key Display	Released Released Released ON	IOD	The display will be checked if the sequence of parameters is in accordance with the sequence specified.		NA	NA	Tested Ok.	OK	
105	T12		R14,R21, U01	Test of Scrolling Keys, MD reset.	Several combinations of these keys will be pressed to validate the proper operation of the system without letting the system enter into any invalid state of operation.	Up Scroll key Down Scroll Key MD reset key Display	Depressed Released Released ON	IOD	The display will be checked whether the		NA	NA	Tested Ok.	OK	
106	T13		R14,R21, U01	<-do->	do	Up Scroll key Down Scroll Key MD reset key Display	Released Depressed Released ON	IOD	The display will be checked whether the		NA	NA	Tested Ok.	OK	
107	T14		R14,R21, U01	<-do->	Press the MD Reset key. Then MD value from the EEPROM will be read-out through the RS232 port and verified.	Up Scroll key Down Scroll Key MD reset key Display	Released Released Depressed ON	IOD	The back-up of the present MD value will be stored in the EEPROM		NA	NA	Tested Ok.	OK	
						Time	2sec								
108	T15		R14,R21, U01	<-do->	Several combinations of these keys will be pressed to validate the proper operation of the system without letting the system enter into any invalid state of operation.	Up Scroll key Down Scroll Key MD reset key Display	Released Released ON ON	IOD	The specified keys will not perform any of their assigned task and the		NA	NA	Tested Ok.	OK	
						Time	2sec								
109	T16		R14,R21, U01	<-do->	do	Up Scroll key Down Scroll Key MD reset key Display	Depressed Depressed Depressed ON	IOD	The specified keys will not perform any of their assigned task and the		NA	NA	Tested Ok.	OK	
						Time	2sec								
110	T16		R14,R21, U01	<-do->	do	Up Scroll key Down Scroll Key MD reset key Display	Depressed Depressed Released ON	IOD	The specified keys will not perform any of their assigned task and the		NA	NA	Tested Ok.	OK	
						Time	2sec								
111	T16		R14,R21, U01	<-do->	do	Up Scroll key Down Scroll Key MD reset key Display	Depressed Released Depressed ON	IOD	The specified keys will not perform any of their assigned task and the		NA	NA	Tested Ok.	OK	
						Time	2sec								
112	T16		R14,R21, U01	<-do->	do	Up Scroll key Down Scroll Key MD reset key Display	Released Depressed Depressed ON	IOD	The specified keys will not perform any of their assigned task and the		NA	NA	Tested Ok.	OK	
						Time	2sec								
113	T16		R14,R21, U01	<-do->	do	Up Scroll key Down Scroll Key MD reset key Display	Depressed Released Depressed ON	IOD	The specified keys will not perform any of their assigned task and the		NA	NA	Tested Ok.	OK	
						Time	2sec								
114	T16		R14,R21, U01	<-do->	do	Up Scroll key Down Scroll Key MD reset key Display	Released Depressed Depressed ON	IOD	The specified keys will not perform any of their assigned task and the		NA	NA	Tested Ok.	OK	
						Time	2sec								
115	T17		R25,R10, R26,H11	Test of functionality of RS232 Optical port	Transmit the header of the frame for the protocol followed to the energy meter via the optical port. In response to this, the acknowledgement transmitted by the energymeter shall be compared with the "acknowledgement format" as specified in the protocol. (REN0144SCF01 "Serial Communication Procedure")	Data transmitted to energymeter Phase Voltage	Header (??x0dx0a) 240V	IOD	Data received shall match with the specified acknowledgement format.		NA	NA	Tested Ok.	OK	
116	T18		H08,H21, H23,R13, R12,R08	LED Indication and Fault Indication Tests	The system shall be operated at the nominal operating voltage which will be applied between 1S and 2S. Starting current shall be fed to the system.	Phase Voltage Phase Current Neutral Current Frequency PF Time	240V 0.04A 0.04A 50Hz 1 1min	IOD	The kWh LED shall blink at a rate proportional to the power consumed.		NA	NA	Tested Ok.	OK	
						Phase Voltage Phase Current	240V 10A(reverse)							OK	

SYSTEM TEST PLAN / TEST RESULTS

SPEM Class 1.0

Project Name		SYSTEM TEST PLAN / TEST RESULTS										STANDARDS			
RS version		1.4										Ver2.2			
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.					Firmware /Software version		Pulsar source.LNG reference meter.DSO,Multimeter						
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.					Test bench Details/Configuration Details		Pulsar source.LNG reference meter.DSO,Multimeter						
System Test Cases													STANDARDS		
Test No.	Test ID	Test Date	Req. ID	Test Case Scenario Description	Input Test Values	Test Case Designed For	Expected Result			Actual Result	Inference on the acceptability of the results	Remarks (if any)			
							Output Parameter	UOM	Lower Limit				Upper Limit		
					Data Element	Input Values									
117	T19		H23,R13, R12,R08	Current reversal indication	The Phase current is made to flow in opposite direction,ie.1L 1S. Nominal phase voltage shall be applied to the system.	EB,IOD	Neutral Current	10A(reverse)	Reversal LED	NA	NA	Tested OK.			
					Frequency	50Hz						OK			
					PF	1									
					Time	1min									
					Phase Voltage	240V									
118	T20		H09,H21, H23,R13, R12,R08	Earth Leakage indication	The neutral current connection will be removed (ZL) and the load will be connected to earth (1L).	EB,IOD	Phase Current	10A	ELT LED	NA	NA	Tested OK.			
					Neutral Current	0A									
					Frequency	50Hz									
					PF	1									
					Time	1min									
119	T22		R12,R13, H20,H21, H22,H23	Anti-Tampering and Anti-Fraud Testing	The meter shall operate at nominal voltage and current.During these tests, the various methods of tampering will be simulated on the meter and simultaneously the meter functionality will be tested for proper operation.	EB	Incoming Phase	Connected to incoming neutral	The meter should be operational.			The meter is operational			
					Incoming Neutral	Connected to incoming Phase									
					Outgoing Phase	Connected									
					Outgoing Neutral	Connected									
					Phase Voltage	240V									
					Phase Current	10A									
					Incoming Phase	Connected									
					Incoming Neutral	Disconnected									
120	T23		R12,R13, H20,H21, H22,H23	<-do->	do	EB	Outgoing Phase	Connected to earth via load	The meter should not be powered ON.			The meter is not powered ON.			
					Outgoing Neutral	earthed									
					Phase Voltage	240V									
					Phase Current	1A									
					Incoming Phase	Connected									
					Incoming Neutral	Disconnected									
121	T23		R12,R13, H20,H21, H22,H23	<-do->	do	EB	Outgoing Phase	Connected to earth via load	The meter should not be powered ON.			The meter is not powered ON.			
					Outgoing Neutral	earthed									
					Phase Voltage	240V									
					Phase Current	2A									
					Incoming Phase	Connected									
					Incoming Neutral	Disconnected									
122	T23		R12,R13, H20,H21, H22,H23	<-do->	do	EB	Outgoing Phase	Connected to earth via load	The meter should be operational, powered up by the third CT.			The meter is operational powered up by the neutral missing CT			
					Outgoing Neutral	earthed									
					Phase Voltage	240V									
					Phase Current	3A									
					Incoming Phase	Connected									
					Incoming Neutral	Connected									
123	T24		R12,R13, H20,H21, H22,H23	<-do->	do	EB	Outgoing Phase	Connected to earth via load	The meter should be operational.			The meter is operational			
					Outgoing Neutral	Connected to earth via resistor									
					Phase Voltage	240V									
					Phase Current	10A									
					Incoming Phase	Connected									
					Incoming Neutral	Disconnected									
124	T25		R12,R13, H20,H21, H22,H23	<-do->	do	EB	Outgoing Phase	Connected to earth via load	The meter should not be powered ON.			The meter is not powered ON.			
					Outgoing Neutral	Disconnected									
					Phase Voltage	240V									
					Phase Current	1A									
					Incoming Phase	Connected									
					Incoming Neutral	Disconnected									
125	T25		R12,R13, H20,H21, H22,H23	<-do->	do	EB	Outgoing Phase	Connected to earth via load	The meter should not be powered ON.			The meter is not powered ON.			
					Outgoing Neutral	Disconnected									
					Phase Voltage	240V									
					Phase Current	2A									
					Incoming Phase	Connected									
					Incoming Neutral	Disconnected									
126	T25		R12,R13, H20,H21, H22,H23	<-do->	do	EB	Outgoing Phase	Connected to earth via load	The meter should be operational, powered up by the third CT.			The meter is operational powered up by the neutral missing CT			
					Outgoing Neutral	Disconnected									
					Phase Voltage	240V									
					Phase Current	3A									
					Incoming Phase	Connected									
					Incoming Neutral	Disconnected									
127	T26		R10,R11, H19,H20, H21,H22	<-do->	do	EB	Outgoing Phase	Connected to incoming Phase	The meter should be operational and the "Reversal" LED shall glow.			The meter is operational and REV led glows.			
					Outgoing Neutral	Connected									
					Phase Voltage	240V									
					Phase Current	10A									
					Incoming Phase	Connected									
					Incoming Neutral	Connected									
128			R10,R11, H19,H20, H21,H22	Meter Bypass Test	The meter shall be bypassed using a low resistance wire between 1S and 1L.	EB	Outgoing Phase	Connected	The meter should be operational and the "ELT" LED shall glow.			The test could not be simulated.	OK	This goes to show that the meter is difficult to be tampered.	
					Outgoing Neutral	Connected									
					Phase Voltage	10A									
					Phase Current	6KV									
129			H06	Impulse voltage test	The impulse of 6KV is applied 10 times with one polarity and then repeated with the other polarity. The minimum time between the impulses shall be 3s.Impulse voltage test of electric circuits relative to earth. This shall be only a functional test.	Functionality						The system is stable and no malfunctioning after test.	OK	CBIP88	
130			H06	AC Voltage Test	For Protective Class 1 Meters:Points of application of test voltage: a.) Between: On one hand, all the current and voltage circuits as well as the auxiliary circuits whose reference voltage is over 40V, connected together and on the other hand, earth. b.) Between circuits not intended to be connected together in service.The test voltage shall be substantially sinusoidal, having a frequency between 45Hz and 65Hz and applied for 1 min.	Insulation	Test Voltage R.M.S.:	4KV					The test is successful	OK	IEC62052-11 IEC62053-21 CBIP88 IS13779
131			H06	Meter Constant	The relation between the test output and the indication on the display shall comply with the marking on the nameplate.	Conformity						Not performed		The enclosure should contain the following details IEC62052-11 IEC62053-21 CBIP88 IS13779	
132			H06	Test of no-load condition	The current circuit must be open circuit and a voltage of 115 % of Un shall be applied to the voltage circuit. The test output of the meter shall not produce more than one output pulse count.The minimum test period will be $Dt * (600 * X / 106) / (k * X * m * X * Un * X \text{max})$ min where k = number of pulses emitted by the output device of the meter		Phase Voltage	276V				The test is successful	OK	IEC62052-11 IEC62053-21 CBIP88 IS13779	
							Time	3 Hr							
133			H06	Test of power consumption	The active and apparent power consumption in each voltage circuit of a meter at sinusoidal reference voltage (240V + 1%), reference temperature (27 C±2%), reference frequency (50Hz ±0.3%) and zero magnetic induction shall not exceed 1.5W and 8VA and for each current circuit at Ib shall not exceed		Phase Voltage	240V				The test is successful	OK	CBIP88 IS13779	
							Frequency	50Hz							
							Voltage Variation	+10% of Un							
							Power Factor	1							

SYSTEM TEST PLAN / TEST RESULTS

SPEM Class 1.0

Project Name		SPEM Class 1.0										STANDARDS		
RS version		1.4				Firmware /Software version		Ver2.2						
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.				Test bench Details/Configuration Details		Pulsar source, LNG reference meter, DSO, Multimeter						
System Test Cases		Input Test Values		Test Case Designed For	Expected Result			Actual Result	Inference on the acceptability of the results	Remarks (if any)				
Test No.	Test ID	Test Date	Req. ID		Test Case Scenario Description	Data Element	Input Values				Output Parameter	UOM	Lower Limit	Upper Limit
147			H06	Fast Transient Burst Test	Test Voltage on the current and voltage circuit	4K(Common Mode)	EB	During the test a temporary degradation or loss of function or performance is acceptable.				Test performed successfully with no malfunction.	OK	CBIP8
					Duration	60s at each polarity								
					Cable length between	1m								
					Limits of Variation in Percentage error	4%								
148			H06	Test of immunity to electromagnetic RF fields	Carrier modulated within 80% AM at 1KHz sine wave a) Test with current Unmodulated Test Field Strength: 10V/m During the test, the behavior of the equipment shall not be perturbed and the variation of error shall be within 2% b.) Test without any current Unmodulated Test Field Strength: 30V/m	Frequency Band: 80MHz to 2000MHz Cable length exposed to the field: 1m Test Field Strength 10V/m	EB	The application of RF field shall not produce a change in the register of more than 0.01 KWh and the test output shall not produce a			Test performed successfully with no malfunction.	OK	IEC62052-11 IEC62053-21	
149			H06	<-do->	<-do->	Frequency Band: 80MHz to 2000MHz Cable length exposed to the field: 1m Test Field Strength 30V/m	EB	The application of RF field shall not produce a change in the register of more than 0.01 KWh and the test output shall not produce a			Test performed successfully with no malfunction.	OK	IEC62052-11 IEC62053-21	
150			H06	Test of immunity to electrostatic discharge	Meter in operating condition- Voltage circuit energized with reference voltage (Un)- Without any current in the current circuits and the current circuit shall be open circuit The application of the electrostatic discharge test voltage shall not produce a change in the register of more than 0.01 KWh and the test output shall not produce a signal equivalent to more than 0.01 KWh. Meter in non-operating condition- Voltage and current circuit shall be unenergized	Test voltage: 8KV Test severity level: 4 Number of discharges: 10 Type of Discharge Contact	EB	application of the electrostatic discharge the meter shall show no damage or change of information and shall stay within the accuracy			Not Performed (depends on the type of enclosure)	OK	CBIP8	
151			H06	Radio Interference Measurement	The test will be carried out according to CISPR22, under the following conditions:- For Class B equipment- Tested as table-top equipment: For connection to the voltage circuits, an unshielded cable length of 1m to each connector shall be used. Voltage circuits energized with reference voltage (Un)- With a current between 0.1lb and 0.2lb respectively. (Connected by unshielded cable length of 1m)		EB	The test results shall comply with the requirements given in CISPR22			Test performed successfully with no malfunction.	OK	IEC62052-11 IEC62053-21	
152			H06	Surge Immunity Test	Cable length between Surge generator and EUT: 1m Phase angle: pulses to be applied at 60 deg. and 240deg. after zero-crossing of AC Test voltage: 4KV Generator impedance: 2W		EB	The application of the surge immunity test voltage shall not produce a			Test performed successfully with no malfunction.	OK	IEC62052-11 IEC62053-21	
153	T27		R11,R14, UI01	MD test	The meter shall operate at a phase voltage of 240V and a Phase current of 10A and unity PF. Initially, a MD reset shall be done then the meter is operated for 30min at the same operating condition.	Phase Voltage 240V Phase Current 10A Power Factor 1 Time 30min	SV	Verify whether the corresponding KW value is stored in MD register.	KW	2.376	2.424	2.418	OK	
154	T28		R11,R14, UI01	<-do->	The meter shall now be operated at a relatively higher KW. The MD register shall be updated at the end of this test duration.	Phase Voltage 240V Phase Current 20A Power Factor 1 Time 30min	SV	The corresponding KW value is overwritten the previous value in MD	KW	4.752	4.848	4.785	OK	
155	T29		R11,R14, UI01	<-do->	The meter shall now be operated at a relatively lower KW. The MD register shall not be updated at the end of this test duration	Phase Voltage 240V Phase Current 10A Power Factor 1 Time 30min	SV	The MD register shall retain its previous MD value without being	KW	4.752	4.848	4.805	OK	
156	T27		R11,R14, UI01	MD test	The meter shall operate at a Phase current of 240V and a Phase current of 10A and unity PF. Initially, a MD reset shall be done then the meter is operated for 60min at the same operating condition.	Phase Voltage 240V Phase Current 10A Power Factor 1 Time 60min	SV	Verify whether the corresponding KW value is stored in MD register.	KW	2.376	2.424	2.386	OK	
157	T28		R11,R14, UI01	<-do->	The meter shall now be operated at a relatively higher KW. The MD register shall be updated at the end of this test duration.	Phase Voltage 240V Phase Current 20A Power Factor 1 Time 60min	SV	The corresponding KW value is overwritten the previous value in MD	KW	4.752	4.848	4.805	OK	
158	T29		R11,R14, UI01	<-do->	The meter shall now be operated at a relatively lower KW. The MD register shall not be updated at the end of this test duration. After each of the above tests, the	Phase Voltage 240V Phase Current 10A Power Factor 1 Time 60min	SV	The MD register shall retain its previous MD value without being	KW	4.752	4.848	4.783	OK	
159			R22	Power-Failure Interrupt	The power supply to the energymeter is switched off. The value of all the energies are noted before the commencement of this test to be compared with the data after the power is switched ON again with no current.	Phase Voltage 240V Phase Current 10A Power Factor 1	SV	The back-up data will be read from the EEPROM and shall be found equal to the values before the power failure.			Tested OK.	OK		
160			R15	Monthly Auto Reset	The RTC will be programmed to a suitable time very near to a month change-over. At the instant the month change-over occurs a back-up of the following parameters are taken in the EEPROM: (1) Cumulative Active & Apparent Energy (2) Maximum Demand in KW. (3) Date and Time from RTC (4) Type of Reset (5) Total Cumulative active energy	Phase Voltage 240V Phase Current 10A Power Factor 1	SV	The values of the specified parameters at the time of RESET shall be read through serial port in the data collection mode.			Tested OK.	OK		
161			R17,R10	Tariff update test	The meter shall be operated at the nominal voltage and current during the entire period of a specified tariff. During this period the energy consumed shall be updated in the respective tariff at the end of slot.	Phase Voltage 240V Phase Current 10A PF 1 Frequency 50Hz	SV	The LCD displays the respective tariff energies.			Tested OK.	OK		
162			R10, R17, R24, R25	Programming parameters	Refer F716for programming various parameters	Phase Voltage 240V Phase Current 10A PF 1 Frequency 50Hz	SV	The result should as per the document			Tested OK.	OK		
163			R21,H13	Manual scrolling to auto scrolling	Press the up or down key to switch the meter to manual scrolling mode and after 5 min the meter will again start scrolling in auto	Phase Voltage 240V Phase Current 10A PF 1 Frequency 50Hz Time 5Min		The switch over from manual to auto scroll will be 5 min			Tested OK.	OK		

SYSTEM TEST PLAN / TEST RESULTS													STANDARDS	
Project Name		SPEM CLass1.0												
RS version		1.4				Firmware /Software version			Ver2.2					
Test Environment Details		A voltmeter is connected across 1S and 2S and two ammeters, one in series with 1S and 1L and other in series with 2S and 2L. The serial port is connected to the PC via cables for checking parameter values.					Test bench Details/Configuration Details		Pulsar source,LNG reference meter,DSO,Multimeter					
System Test Cases														
Test No.	Test ID	Test Date	Req. ID	Test Case Scenario Description	Input Test Values		Test Case Designed For	Expected Result				Actual Result	Inference on the acceptability of the results	Remarks (if any)
					Data Element	Input Values		Output Parameter	UOM	Lower Limit	Upper Limit			
					scrolling mode.									