



## CP1261 – redline changes to BSCP601 ‘Metering Protocol Approval and Compliance Testing’ v9.0

Changes are proposed to Sections 1.6.2, 3.1.3, 3.4.1, 3.4.3.3, 3.4.7, 3.4.8, 3.4.9, 3.4.10, 3.4.11, 3.4.12, 3.4.13, 3.4.15, 3.4.17.2, 3.4.21, 3.4.22, 3.4.24, 3.4.25, 3.4.26, 3.4.27.1 and 3.4.27.2.

### 1.6.2 Definitions

Applicant	Person applying for Compliance and/or Protocol approval
BSCCo	The Balancing and Settlement Code Company
Compliance Testing	means the testing of Metering Equipment in accordance with this BSCP601 to determine whether it conforms with the relevant Code of Practice to obtain approval from the Panel.
Compliance Testing Agent	The agent responsible for the testing of Metering Equipment, accredited against an appropriate (as determined by BSCCo) body such as the UK Accreditation Service (UKAS).
Code of Practice One	means Code of Practice One: Issue 2, version 3.0; dated 23 February 2006 - CODE OF PRACTICE FOR THE METERING OF CIRCUITS WITH A RATED CAPACITY EXCEEDING 100MVA FOR SETTLEMENT.
Code of Practice Two	means Code of Practice Two: Issue 4, version 3.0; dated 23 February 2006 - CODE OF PRACTICE FOR THE METERING OF CIRCUITS WITH A RATED CAPACITY NOT EXCEEDING 100MVA FOR SETTLEMENT PURPOSES.
Code of Practice Three	means Code of Practice Three: Issue 5, version 5.0; dated 3 November 2005 - CODE OF PRACTICE FOR THE METERING OF CIRCUITS WITH A RATED CAPACITY NOT EXCEEDING 10MVA FOR SETTLEMENT PURPOSES
Code of Practice Five	means Code of Practice Five: Issue 7, version 5.0; dated 28 February 2008 - CODE OF PRACTICE FOR THE METERING OF ENERGY TRANSFERS WITH A MAXIMUM DEMAND OF UP TO (AND INCLUDING) 1MW FOR SETTLEMENT PURPOSES.

Code of Practice Six	means Code of Practice Six: Issue 4, version 4.20; dated Code Effective Date.
<u>Code of Practice Ten</u>	<u>means Code of Practice Ten: Issue 1, version 1.0; dated 26 February 2009 - CODE OF PRACTICE FOR WHOLE CURRENT METERING OF ENERGY VIA LOW VOLTAGE CIRCUITS FOR SETTLEMENT PURPOSES</u>
Instation	means a computer based system which sends data to, or receives data from Outstation Systems on a routine basis.
Interrogation Unit	means a Hand Held Unit “HHU” (also known as Local Interrogation Unit “LIU”) or portable computer which can program Metering Equipment parameters and extract information from the Metering Equipment and store this for later retrieval.
Metering Equipment	has, for the purposes of this BSCP601, the meaning ascribed to that term in the Balancing and Settlement Code, but excluding voltage and current measurement transformers
person	includes any individual, company, corporation, firm, partnership, joint venture, association, committee, organisation or trust (in each case, whether or not having separate legal personality).
Settlement	has the meaning ascribed to that term in the Balancing and Settlement Code.
Test Laboratory	means the testing body so agreed with BSCCo to perform Compliance Testing to this BSCP601.
Type Approval	means the approval from the Electricity Meter Examination Service of the Office of Gas and Electricity Markets.
UTC	means Co-ordinated Universal Time based on atomic clocks as distinct from Greenwich Mean Time (GMT).

## PROTOCOL APPROVAL AND COMPLIANCE TESTING APPLICATION FORM (PART 1)

Ref. No<sup>7</sup>.....

I wish to apply for Protocol Approval of the Products identified in Section **B** below:  tick as appropriate

I wish to apply for Compliance Testing of the Products identified in Section **C** below:  tick as appropriate

**Section A: DETAILS OF APPLICANT**

Company Name: .....

Address: .....  
.....

Participant Role: .....(e.g. Meter Manufacturer)

Contact Name: .....

Contact Tel. No: .....

Fax. No: .....

E-mail: .....

Signature: .....

Date of Application: .....

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<sup>7</sup> Reference No. obtainable from ELEXON Limited

**Section B: REQUEST FOR PROTOCOL APPROVAL**

Please enter the details of the Metering Equipment type(s) and Data Collector(s) to be Protocol Approved.

Data Collector	Metering Equipment
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

Note:

For Data Collectors seeking Protocol Approval, enter one entry in the left hand column and the Metering Equipment type/s to be tested in the right hand column.

For Manufacturers seeking Protocol Approval, enter the Metering Equipment type in the right hand column and the Data Collector/s to conduct the testing in the left hand column.

Section C: REQUEST FOR COMPLIANCE TESTING					
Metering Equipment Description					
Manufacturer	Type	Serial No.	OFGEM TYPE APPROVAL STATUS		
			APPROVED	IN PROGRESS	NONE
1					
2					
3					
Applicable Codes of Practice for Metering Equipment Testing					
<u>Code of Practice</u> *	<u>Issue</u>		<u>Code of Practice</u> *	<u>Issue</u>	
ONE TWO THREE			FIVE SIX SEVEN <u>TEN</u>		

\* Delete Codes of Practice not applicable.

### 3.4 Compliance Testing of Metering Equipment for Codes of Practice One, Two, Three, ~~and Five~~ and Ten

#### 3.4.1 Scope

a) This Appendix sets out:

- the technical requirements for the Test Laboratory in order for it to carry out its obligations under the terms of the Compliance Testing agreement;
- the testing facilities to be provided by the Test Laboratory; and
- the test procedures to be followed by the Test Laboratory,

to determine the accuracy and functionality of the items of Metering Equipment as conforming, or otherwise, to the requirements of the Balancing and Settlement Code and the relevant Codes of Practice.

b) The Compliance Testing requirements as detailed in this Appendix applies only to parts of the Metering System (i.e. Meters and Outstations) and therefore satisfactory test results from this Compliance Testing do not constitute a compliant Metering System as required by the Code, Balancing and Settlement Code Procedures (“BSCPs”) and the Codes of Practice.

- c) This test applies to Codes of Practice One, Two, Three, ~~and Five~~ and Ten and should be used by the Compliance Testing Agent to confirm compliance with the relevant Code of Practice the Metering Equipment is intended to be approved.
- d) Unless agreement has been received in writing from BSCCo prior to the commencement of any testing to this specification, this specification is applicable only to one CoP at any one time and Metering Equipment requiring compliance with multiple CoPs shall be subject to a full and complete testing schedule for each CoP.

### 3.4.3 Test Constraints

#### 3.4.3.1 Applicable Codes of Practice

Subject to 3.4.1 d) above, the following clauses refer to the Test Procedure solely for Compliance Testing to the requirements of a relevant Code of Practice at any one time and not to any other Code of Practice reference in the Code.

#### 3.4.3.2 Timetable

For each Compliance Testing Application the Test Laboratory shall complete all Compliance Testing within 40 business days of receipt of approval from BSCCo.

Where Compliance Testing can not be completed within the timetable the Test Laboratory shall inform BSCCo prior to the end of the initial 40 business day testing period and obtain agreement to a revised schedule.

#### 3.4.3.3 Test Conditions

To test the metering accuracy requirements in Clause 5.4 below, the test conditions shall be maintained in accordance with BS EN 61036, BS EN 60521, BS EN 62053-11 or BS EN 62053-22 for indoor meters. The appropriate accuracy Class of the Meter Equipment under test will be employed.

For CoP10 Meters, tests for accuracy need not be repeated providing the Meter is approved for use under the Electricity Act 1989.

### 3.4.7 Demand Values {4.1.2}

The following test shall be performed to confirm that Demand values are provided:

(a)	confirm that a kW value is provided for each Demand Period for each Active Energy Measured Quantity;	<b>007</b>
(b)	where Import and Export values are provided confirm that each value is gross	<b>008</b>

	and recorded separately. ( <i>Applies to CoP 5, <del>and 3</del> and 10 only</i> ); and	
(c)	confirm that Demand values are available in both kilo and Mega values. ( <i>CoPs 1 and 2 only</i> )	<b>009</b>

### 3.4.8 Accuracy Requirements {4.2}

#### (a) Active Energy

Meters subject to CoP10 compliance testing shall meet all of the accuracy requirements for Active Energy if the Meter is approved under SI 1998 No 1566 or SI 2006 No 1679.

Tests shall be carried out at fundamental frequency (50Hz) to verify that the Active Energy measurements are within the limits shown in Table 1 below. The measurement uncertainty at fundamental frequency of the measurement system used shall not be greater than: $\pm 0.01\%$ (CoP1); $\pm 0.05\%$ (CoP2); $\pm 0.1\%$ (CoP3); or $\pm 0.2\%$ (CoP5).	<b>010</b>
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Table 1 Active Energy

Value of Current (I)		Power factor (Cos $\phi$ )	Percentage error limits <sup>8</sup> for Meters of Class				
For whole current Meters	For transformer operated Meters <sup>9</sup>		0.2S (CoP1)	0.5S (CoP2)	0.5 (CoP2)	1 (CoP3)	2 (CoP5)
-	$0.01 I_n \leq I < 0.05 I_n$	1	$\pm 0.4$	$\pm 1.0$	-	-	-
-	$0.05 I_n \leq I \leq I_{max}$	1	$\pm 0.2$	$\pm 0.5$	-	-	-
-	$0.02 I_n \leq I < 0.1 I_n$	0.5 ind 0.8 cap	$\pm 0.5$ $\pm 0.5$	$\pm 1.0$ $\pm 1.0$	-	-	-
-	$0.1 I_n \leq I \leq I_{max}$	0.5 ind 0.8 cap	$\pm 0.3$ $\pm 0.3$	$\pm 0.6$ $\pm 0.6$	-	-	-
$0.05 I_b \leq I < 0.1 I_b^{10}$	$0.02 I_n \leq I < 0.05 I_n$	1	-	-	$\pm 1.0$	$\pm 1.5$	$\pm 2.5$
$0.1 I_b \leq I \leq I_{max}$	$0.05 I_n \leq I \leq I_{max}$	1	-	-	$\pm 0.5$	$\pm 1.0$	$\pm 2.0$

<sup>8</sup> Single-phase Meters and polyphase Meters with balanced loads.

<sup>9</sup> BS EN 60521 specifies values of current as 'basic' (i.e. see figures in whole current Meters column)

<sup>10</sup> BS EN 60521 specifies one test point (0.05  $I_b$ )

$0.1 I_b \leq I < 0.2 I_b^{11}$	$0.05 I_n \leq I < 0.1 I_n$	0.5 ind 0.8 cap	-	-	$\pm 1.3$ $\pm 1.3$	$\pm 1.5$ $\pm 1.5$	$\pm 2.5$ -
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.5 ind 0.8 cap	-	-	$\pm 0.8$ $\pm 0.8$	$\pm 1.0$ $\pm 1.0$	$\pm 2.0$ -

Source: BS EN 62053 - 22 for CoP1 and 2 (Class 0.2S and 0.5S), or BS EN 62053 - 11 for CoP2 (Class 0.5), and BS EN 60521 and BS EN 61036 for CoP3 and 5 (Class 1 and 2).

(b) Reactive Energy

Tests shall be carried out at fundamental frequency (50Hz) to verify that the Reactive Energy measurements are within the limits show in Table 2 below. The measurement uncertainty at fundamental frequency of the measurement system used shall not be greater than $\pm 0.4\%$ . <u>Not applicable to CoP10</u>	<b>011</b>
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Table 2 Reactive Energy

Value of Current (I)		Sin $\phi$	Percentage error limits <sup>8</sup> for Meters of Class		Applicable BS EN Standard for Test Criteria
For whole current Meters	For transformer operated Meters		2 (CoP1)	3 (CoP2, 3 and 5)	
$0.05 I_b \leq I < 0.1 I_b$	$0.02 I_n \leq I < 0.05 I_n$	1	$\pm 2.5$	$\pm 4.0$	BS EN 62053 - 23 and BS EN 61268
$0.1 I_b \leq I \leq I_{max}$	$0.05 I_n \leq I \leq I_{max}$	1	$\pm 2.0$	$\pm 3.0$	
$0.1 I_b \leq I < 0.2 I_b$	$0.05 I_n \leq I < 0.1 I_n$	0.5 ind or cap	$\pm 2.5$	$\pm 4.0$	
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.5 ind or cap	$\pm 2.0$	$\pm 3.0$	
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.25 ind or cap	$\pm 2.5$	$\pm 4.0$	BS EN 62053 - 23
$0.2 I_b \leq I \leq I_b$	$0.1 I_n \leq I \leq I_n$	0.25 ind or cap	-	$\pm 10.0$	BS EN 61268
$0.1 I_b \leq I \leq 0.2 I_b$	-	1	-	$\pm 4.0$	BS 5685 Part 4
$0.2 I_b < I \leq I_{max}$	-	1	-	$\pm 3.0$	
$0.2 I_b \leq I \leq I_{max}$	-	0.5 ind and 0.8 cap	-	$\pm 3.0$	

<sup>11</sup> BS EN 60521 specifies one test point (0.1 I<sub>b</sub>)

These limits of error for both Active and Reactive Energy shall apply at the reference conditions defined in the appropriate Meter.

### 3.4.9 Measurement Compensation for Measurement Transformer Error(s) {4.2.2}

Record the available range of measurement transformer compensation adjustment provided for both current and voltage measurements. <u>Not applicable to CoP10</u>	<b>012</b>
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### 3.4.10 Compensation for Power Transformer and Line Losses {4.2.3}

Record the available range of power transformer compensation adjustment provided. (If this adjustment is recorded as part of test 0 above then record that no additional adjustment is available) <u>Not applicable to CoP10</u>	<b>013</b>
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### 3.4.11 Meter {5.3}

Establish the following parameters for the Meter under test:

(a)	record whether the Meter is of a Static or induction disc type;	<b>014</b>
(b)	record whether the Meter has an integral Outstation;	<b>015</b>
(c)	establish that the Active Energy Meter meets the requirements of: i. CoP 1 BS EN 62053-22 Class 0.2S; ii. CoP 2 BS EN 62053-22 Class 0.5S or BS EN 62053-11 Class 0.5; iii. CoP 3 BS EN 61036 Class 1 or BS EN 60521 Class 1; or iv. CoP 5 BS EN 61036 Class 2 or BS EN 7856 Class 2 <u>v. CoP 10 SI 1998 No 1566 or SI 2006 No 1679</u>	<b>016</b>
(d)	establish whether the Import Active Energy Meter meets the requirements of Schedule 7 of the Electricity Act 1989;	<b>017</b>
(e)	establish that the Reactive Energy Meter meets the requirements of; i. CoP 1 BS EN 62053-23 Class 2.0; ii. CoP 2 BS EN 62053-23 Class 3 or BS 5685 Part 4; iii. CoP 3 BS EN 61268 Class 3 or BS 5685 Part 4; or iv. CoP 5 BS EN 61268 Class 3 or BS 5685 Part 4. <u>Not applicable to CoP10</u>	<b>018</b>
(f)	establish whether the number of measuring elements is one less or equal to the number of primary system conductors;	<b>019</b>
(g)	record whether provision has been made for the recording of measurement transformer ratios on the Meters name plate; <u>Not applicable to CoP10</u>	<b>020</b>

(h)	if the Meter is a static Meter with combined display and/or Outstation, then confirm that the ratios can be displayed and downloaded during the interrogation process; <u>Not applicable to CoP10</u>	021
(i)	Also confirm that any compensation factors that have been applied for measurement transformer errors and/or system losses, and where this is a constant factor applied at security level 3, can be similarly displayed and downloaded; <u>Not applicable to CoP10</u>	022
(j)	confirm that the Meter includes a non-volatile Meter register of cumulative energy for each Measured Quantity;	023
(k)	confirm that the Meter Register(s) do not roll-over more than once within the normal reading cycle [90 days at full load]; and <u>Not applicable to CoP10</u>	024
(l)	where the Meter is to be used with an external Outstation, confirm that the Meter is fitted with at least one output pulse facility for each Measured Quantity (two output pulse facilities are required in the case of CoP1). <u>Not applicable to CoP10</u>	025

### 3.4.12 Displays {5.4}

- (a) Confirm that the Metering Equipment is capable of displaying the following primary information (not necessarily simultaneously):

(a)	the total cumulative energy values for each Measured Quantity in actual scaled values can be displayed and stored in non-volatile memory;	026
(b)	the current time and date can be displayed;	027
(c)	the CT and/or VT ratios that have been programmed into the Meter can be displayed; <u>Not applicable to CoP10</u>	028
(d)	any compensation factor applied for measurement transformer errors and/or system losses can be displayed; and <u>Not applicable to CoP10</u>	029
(e)	that, where the Meter is combined with the display and/or Outstation and a constant factor is applied, such factor is applied at security level 3. <u>Not applicable to CoP10</u>	030

- (b) Confirm that the Metering Equipment is capable of enabling the display of the following information:

(a)	the Maximum Demand (“MD”) for kW (or MW as appropriate) per month can be displayed;	031
(b)	the Maximum Demand (“MD”) for kW (or MW as appropriate) for other programmable charging periods can be displayed;	032
(c)	the Maximum Demand (“MD”) for kVA (or MVA as appropriate) per month can be displayed;	033
(d)	the Maximum Demand (“MD”) for kVA (or MVA as appropriate) for other	034

	programmable charging periods can be displayed;	
(e)	twice the kWh (or MWh as appropriate) advance from the commencement of the current Demand period can be displayed;	<b>035</b>
(f)	twice the kVAh (or MVAh as appropriate) advance from the commencement of the current Demand period can be displayed; <u>Not applicable to CoP10</u>	<b>036</b>
(g)	the cumulative Maximum Demand can be displayed;	<b>037</b>
(h)	the number of Maximum Demand resets can be displayed;	<b>038</b>
(i)	the multi rate display sequence, for at least 8 rates selectable over the calendar year, can be displayed;	<b>039</b>
(j)	a reverse running indication for Active Energy is provided (where appropriate). (Required for CoPs 3 and 5 only);	<b>040</b>
(k)	the indicated Maximum Demand is re-settable at midnight of the last day of the selected charging period;	<b>041</b>
(l)	the indicated Maximum Demand is re-settable for a part of a charging period; and	<b>042</b>
(m)	any manual reset button is sealable.	<b>043</b>

### 3.4.13 Facilities {5.4.2}

Not applicable to CoP10

Establish whether the Meter is capable of providing different voltage free pulsed outputs for local use.	<b>044</b>
If test 0434 is confirmed then confirm that the facilities meet the following requirements as shown in Table 3.	<b>045</b>

Table 3 Pulse Output Requirements.

Requirement	Code of Practice			
	1	2	3	5
Number of Outputs	1 per Measured Quantity	1 per Measured Quantity	3 min (See 3.4.13 (a))	3 min (See 3.4.13 (a))
Pulse Rate	Min at full load 1000 per Demand Period	Min at full load 1000 per Demand Period	Between 0.1 and 2/ second	Between 0.1 and 2/ second
Nominal Pulse Duration (mS)	80	80	80	80

(a)	confirm that at least two of the outputs can be allocated to the Measured Quantities identified in {5.4.2}. ( <i>Applies to CoPs 3 and 5 only</i> ); and	<b>046</b>
(b)	confirm that one output can be allocated to the Demand Period reset (usually 30 minutes) within a tolerance of $\pm 0.1\%$ and a duration of between 0.5 and 10 seconds.	<b>047</b>

### 3.4.15 Data Storage {5.5.1}

The Metering Equipment shall be continuously energised at full load for a period of five days and afterwards at a cyclical variable load for a further fifteen days, determine to total number of kWh supplied to the Meter over the whole twenty day period.

During the test cycle establish that:

(a)	from the beginning of the current Demand Period, twice the kWh (or MWh as appropriate) is being registered in the kW (or MW) Maximum Demand register; and	<b>057</b>
(b)	from the beginning of the current Maximum Demand period, twice the kVAh (or MVAh as appropriate) is being registered in the kVA (or MVA) Maximum Demand register.	<b>058</b>

on completion of the twenty day cycle above, the following tests shall be performed and confirm that:

(a)	each Demand Value is identifiable to its respective date and time; and	<b>059</b>
(b)	a storage capacity of 48 periods per day in accordance with Table 4 below is available for all Demand Values as integer multiples of kW (or MW as appropriate);	<b>060</b>

Table 4 Data Storage Periods

Code of Practice	Minimum Storage Period(days)
1	10
2	10
3	20
5	20
<u>10</u>	<u>20</u>

(a)	for each of the initial five days, the sum of the Demand Values for each block of 48 half-hour periods are within 0.1% of the advance of the total cumulative register of the associated Meter for the same interval;	<b>061</b>
(b)	the value of any energy measured in a Demand Period, but not stored in that Demand Period are carried forward to the next Demand Period;	<b>062</b>
(c)	for each of the twenty days under test that the contents of the kW (or MW as appropriate) data stored facility have been stored correctly; and	<b>063</b>
(d)	for separate Meter/Outstation combinations, that the Outstation registers can be	<b>064</b>

set to match and increment with the Meter registers. <u>Not applicable to CoP10</u>	
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One test sample of the Outstation shall be provided by the Applicant with its memory occupied with data to within twenty days of capacity (appropriate for the number of channels configured).

Upon further Energisation, confirm that;

(a)	on reaching maximum memory storage capacity, that any new data overwrites the oldest stored data; and	<b>065</b>
(b)	no other data has been altered or removed.	<b>066</b>

### 3.4.16 Time Keeping {5.5.2}

With the Metering Equipment connected to a supply, note the contents of all energy registers. Ensure that the time and date are correctly set to UTC. Disconnect the Metering Equipment from the supply and after 10 days<sup>12</sup> in the de-energised state verify on reconnection of the supply that:

(a)	all stored data has been correctly stored and is not corrupt;	<b>067</b>
(b)	the Metering Equipment internal clock is accurate to within $\pm 10$ seconds <sup>12</sup> ; and	<b>068</b>
(c)	partial Demand Values in which an Outstation supply failure and/or restoration occurs and any zero values associated with the Outstation supply failure are marked so that they can be identified by the Instation.	<b>069</b>

With the Metering Equipment energised, set the date and time correctly to UTC. Apply a load equivalent to full load (alternatively a high pulse rate of 2,000 pulses per half hour) using a stable power supply. Avoid any communication or time synchronisation with the Outstation for twenty days. At the end of the test and before any time synchronisation occurs, verify that:

(a)	the Metering Equipment internal time clock is accurate to within $\pm 10$ seconds <sup>13</sup> ; and	<b>070</b>
(b)	the duration of each demand period is within $\pm 0.1\%$ of 30 minutes, this being achieved by the comparison of stored energy values or pulse counts in each Demand Period.	<b>071</b>

Set the Metering Equipments internal time clock to five minutes slow with respect to UTC. Then synchronise the internal time clock using the remote Instation and check that the Demand period has been marked with an alarm indication.	<b>072</b>
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<sup>12</sup> For tests to Code of Practice 3 ~~and~~ 5 ~~and~~ 10, period of disconnection is 20 days and the acceptable tolerance is  $\pm 20$  Seconds.

<sup>13</sup> For tests to Code of Practice 3 ~~and~~ 5 ~~and~~ 10, the acceptable tolerance is  $\pm 20$  Seconds.

Repeat the synchronisation test using the Local Interrogation Unit and check that the Demand Period has been marked with an alarm indication	<b>073</b>
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### 3.4.17 Monitoring Facilities {5.5.3}

#### 3.4.17.1 Phase Failure Indication Tests

Ensure that the Metering equipment is connected to a supply and has no alarms or flags set. Undertake the following phase failure tests:

(a)	disconnect one phase from the Metering Equipment and ensure that a phase failure has occurred and is assigned to the relevant Demand Period;	<b>074</b>
(b)	repeat the disconnection process for each of the remaining phases in separate Demand Periods;	<b>075</b>
(c)	repeat the disconnection process for combinations of multiple phase failure; and	<b>076</b>
(d)	verify phase failure alarm resets on restoration of normal supply after each test.	<b>077</b>

#### 3.4.17.2 Battery Monitoring Tests

<u>If battery fitted, E</u> establish the method of battery monitoring and test for alarms and indications tagged to the relevant Demand Periods, if necessary by disconnecting the battery.	<b>078</b>
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Note 1: It may not be possible to test some battery monitoring such as extended shelf life or out of service monitoring or total battery life.

Note 2: Depending on the manufacturer and the type of Metering Equipment under test, it may be necessary to temporarily disconnect the power supply to the Metering Equipment for safety reasons whilst the battery is disconnected.

### 3.4.21 Password Protection

(a)	For separate Outstations establish that a password is required to read or change any data.  <u>Not applicable to CoP10</u>	<b>090</b>
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For integral Outstations establish that **four<sup>14</sup>** discrete password controlled access levels are provided for both local and remote interrogation.

(b)	For alpha character passwords, ensure that passwords are no less than six characters and no more than twelve characters long. Ensure that passwords are formed from case insensitive alpha characters (A to Z) and/or digits (0 to 9) and/or the underscore character (_). <u>Not applicable to CoP10</u>	<b>091</b>
(c)	For hexadecimal character passwords, ensure that passwords are no less than eight characters and no more than twelve characters long. Ensure that passwords are formed from case insensitive hexadecimal characters (0 to F). <u>Not applicable to CoP10</u>	<b>092</b>

<sup>14</sup> For CoP 10 only three are required

### 3.4.22 Level 1 Passwords

Using the Level 1 password, establish that the following data can be retrieved:

(a)	Outstation ID;	<b>093</b>
(b)	all programmable Demand Values;	<b>094</b>
(c)	all programmable cumulative Measured Quantities;	<b>095</b>
(d)	the Maximum Demand for kW and/or kVA per programmable charging period;	<b>096</b>
(e)	the multi-rate cumulative Active Energy values;	<b>097</b>
(f)	the VT and CT transformer ratios, where appropriate; <u>Not applicable to CoP10</u>	<b>098</b>
(g)	(for combined Meter and Outstation only), the VT and CT transformer error correction factor and/or system loss factor applied as a constant factor to the entire dynamic range; <u>Not applicable to CoP10</u>	<b>099</b>
(h)	all alarm indications; and	<b>100</b>
(i)	Outstation time and date	<b>101</b>

Establish that it is **not** possible to change any of the above values at Level 1 Password.

### 3.4.23 Level 2 Passwords

Using the Level 2 Password, establish that all the data listed at Level 1 can be retrieved and in addition that the following actions can be performed:	<b>102</b>
(a) changes to time and date; and	<b>103</b>
(b) resetting of all Maximum Demands.	<b>104</b>

### 3.4.24 Level 3 Passwords

Using the Level 3 Password, establish that all the functionality listed at Level 2 can be performed and in addition that the following programming can be performed:	<b>105</b>
(a) Displays and Facilities as defined in Clause 5.4;	<b>106</b>
(b) measurement transformer ratios as defined in Clause 5.3; <u>Not applicable to CoP10</u>	<b>107</b>
(c) (for combined Meter and Outstation only), the VT and CT transformer error correction factor and/or system loss factor applied as a constant factor to the entire dynamic range; and <u>Not applicable to CoP10</u>	<b>108</b>
(d) passwords for Levels 1, 2 and 3.	<b>109</b>
(e) where applicable, confirm it is possible to programme the schedule for automated transfer of Level 1 metering data via Level 3 access.	<b>110</b>

Establish that it is possible to read additional information within the Metering Equipment to enable the programmed information to be confirmed.	<b>111</b>
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### 3.4.25 Level 4 Passwords

Not applicable to CoP10

If the Level 4 Password is implemented electronically then establish that all the functionality listed at Level 3 can be performed and in addition that the following alterations can be performed:	<b>112</b>
(a) calibration of the Meter (only where the Meter is integral with the Outstation);	<b>113</b>
(b) setting the measurement transformer ratios, where appropriate;	<b>114</b>
(c) setting the measurement transformer error correction and/or system loss factors	<b>115</b>

	applied as a complex factor; and	
(d)	programming the Level 3 & 4 Passwords.	<b>116</b>

If the Level 4 Password is implemented by removing the seals and cover, then establish that the following alterations can be performed:

(a)	calibration of the Meter (only where the Meter is integral with the Outstation);	<b>117</b>
(b)	setting the measurement transformer ratios, where appropriate; and	<b>118</b>
(c)	setting the measurement transformer error correction and/or system loss factors applied as a complex factor.	<b>119</b>

### 3.4.26 Password Monitoring {Appendix D}

Using the Approved Protocol <sup>4</sup> , verify that the password offered determines the Level of access to the data within the Metering Equipment.	<b>120</b>
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Verify, by accessing the Metering Equipment at least eight times with an “illegal” password(s), that:  
[Not applicable to CoP10](#)

(a)	the illegal password counter resets to zero every hour on the hour change; and	<b>121</b>
(b)	after the seventh illegal password attempt entered between counter resets, that access is prohibited at all levels until the counter resets.	<b>122</b>

### 3.4.27 Additional Tests

#### 3.4.27.1 *Electromagnetic Compatibility Tests*

[Not applicable to CoP10](#)

In addition to the EMC tests carried out by the Electricity Meter Examination Service of the Director of Electricity Supply as part of the process of Type Approval for the Meter in accordance with BS EN 61036, verify, by testing under all the conditions detailed in BS EN 61036, that:

(a)	any stored data and time/date is not corrupted or has been destroyed; and	<b>123</b>
(b)	the metering accuracy remains within the requirements of Clause 5.4 of this Compliance Testing .	<b>124</b>

### 3.4.27.2 Immunity to Electromagnetic HF Fields

#### Not applicable to CoP10

Verify, by testing in accordance with IEC 1000-4-3, and under the following conditions:

- the voltage and auxiliary circuits energised with reference voltage;
- a frequency band of 26MHz to 1GHz;
- a test field strength of 12.5V/m; and
- a carrier of 80% amplitude modulated with a 1kHz sine wave.

(a)	that without any current in the current circuits and the current terminals open circuit the application of the HF fields shall not produce a change in the Meter Register reading of more than 0.01kWh and the test output shall not produce a signal equivalent to more than 0.01kWh. (Where VT and CT connected Meter(s) is under test, equivalent scaled values should be used taking into account the transformer ratios); and	<b>125</b>
(b)	that with basic current $I_b$ , and power factor equal to 1.0, at sensitive frequencies or frequencies of dominant interest, the variation of error does not exceed 3%.	<b>126</b>

On completion of each EMC test verify that:

(a)	any stored data is not corrupted or has been destroyed; and	<b>127</b>
(b)	the metering accuracy remains within the requirements of Clause 5.4 of this .	<b>128</b>

NOTE: Where VT and CT connected Meter(s) are under test the equivalent scaled values, taking into account the transformer ratios, should be used when considering any differences in Meter Register reading and output signals.