

DCC Response to changes to the Intimate Communications Hub Interface Specification Consultation



Date: 24 April 2020

Classification: DCC Public

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1 Introduction

On 6 January 2020, DCC issued a consultation to invite views on amendments to the Intimate Communications Hub Interface Specification (ICHIS), which is a specification required under H12 of the Smart Energy Code (SEC).

SEC Section H12.5 requires the DCC to keep the ICHIS under review to ascertain whether the specification remains fit for purpose as envisaged by the SEC. At its discretion, DCC may consult with Parties as to whether they consider the specification to be fit for purpose.

DCC completed a review, with the assistance of the ICHIS Working Group (WG),¹ and sought views on the following amendments to the specification:

- The inclusion of testing with Communications Hub Antenna Structure (CHAS) test equipment designed for the Fylingdales geographic area.
- Updates to the DC Power section in ICHIS to ensure it does not conflict with testing required by existing overarching regulation.²
- An update to clarify the application of the limits for results generated by the eight-meter testing arrangements.

The consultation closed on 31 January 2020 and in total six organisations responded. Respondents included energy suppliers and other smart metering market participants.

1.1 Structure of this document

This document comprises of the following sections:

- The questions that were asked, together with a summary of views of respondents and DCC's responses to these.
- Additional comments received and DCC responses to these.
- DCC's conclusions/next steps.

¹ The ICHIS WG is a technical forum chaired by the DCC and attended by meter manufacturers, Communication Service Providers (CSPs), Comms Hub Manufacturers and observed by the Department for Business, Energy and Industrial Strategy (BEIS). The WG engages with industry through Energy UK and forums such as the Technical and Business Design Group (TBDG). The ICHIS WG has an advisory role in guiding DCC policy on the topic of the ICHIS.

² An organisation designated by an EU country to assess the conformity of certain products before being placed on the market.

2 Feedback on changes to the ICHIS

2.1 Responses to the consultation questions

Q1

Do you agree with the proposals in Section 2.1 of the consultation document? Please provide your rationale.

Stakeholders' response

The majority of respondents agreed with the proposed changes to accommodate the introduction of the Fylingdales frequency band and CHAS. However, a number of respondents requested further clarity on the arrangements.

Firstly, one respondent requested reassurance that if the proposed two-meter test proves to be insufficient in the future, then meters will not be recalled.

The same respondent also noted that it is unclear whether the eight-meter plus two-meter testing is also required if a manufacturer makes specific adjustments/changes to a meter model or creates a new product to operate only in the Fylingdales area. They noted that if the eight-meter plus two-meter testing is required, this could increase the costs of testing and provide a disincentive to meter/product development for the Fylingdales area.

Another respondent requested clarity on the best way to interpret the results of the two-meter tests using the EDM I Fylingdales Dual Band Communications Hub (DBCH) CHAS in relation to the results of the eight-meter test at 454MHz using the EDM I DBCH CHAS. They questioned whether the mean values between the two CHAS' for the relevant Electricity Smart Metering Equipment (ESME) should also be reviewed.

The same respondent noted that the reference to 'WAN & HAN noise limits in the Communication Service Provider (CSP) area' seems to rule out the use of an ESME with a Single Band (SB) Integrated Communications Hub operating at 2.4GHz in a particular CSP area because it exceeds the Sub-GHz HAN noise limits. The respondent therefore requested clarity on whether the proposed new section F9.0 of the ICHIS should only refer to the Wide Area Network (WAN) and Home Area Network (HAN) noise limits in the CSP area it is being used in, or whether it should also refer to the Communications Hub variant that it is supporting.

One respondent did not agree with the proposed changes as they noted that the justification for only testing two meters was not detailed enough or proven to demonstrate that it is an acceptable deviation from the other CSP regions. They noted that with only using two meters to calculate a mean, the variability has less relevance as an average of two is not statistically strong enough. The respondent questioned whether, by limiting the testing, there is an increased chance of there being potential communications issues due to noise. They noted that if this is the case, DCC and BEIS need to state that the testing methodology is fit for

purpose and suppliers will not be responsible for meter replacements or any network enhancements in the future.

DCC's response

DCC recognises that the range of responses reflect the need to ensure there is effective testing whilst being proportionate to minimise the additional costs associated with the smaller Fylingdales WAN area.

In order to address the comments raised by respondents, DCC has provided further details on the Fylingdales testing arrangements below.

DCC can confirm a set of eight meters for each meter model (currently being deployed and soon to be deployed) was tested on the standard EDM I DBCH CHAS in the 454MHz band. This was a simple test to accommodate within the existing eight-meter tests with a very low test overhead. All meter models tested using the standard EDM I DBCH CHAS at the 454MHz band were within the noise thresholds which are currently applied for the 423MHz band.

Testing was then carried out on the EDM I Fylingdales DBCH CHAS to determine the difference in the results for the 454MHz band. Most of the meter models showed a noise rise difference between the two CHAS devices with a range from 0 to 4dB. However, for each meter model which completed testing, the majority of the two samples tested on the EDM I Fylingdales DBCH CHAS showed a similar difference in the noise rise when tested on the two CHAS devices. I.e. testing one or two devices gives a reasonable indication of the noise increase expected to be seen for other samples of the same model if tested on the EDM I Fylingdales DBCH CHAS.

The conclusions from this testing were:

- Testing only on the EDM I standard DBCH CHAS at 454MHz would be insufficient as different meter models exhibited different levels of noise rise on the Fylingdales DBCH CHAS.
- At least one of the eight meters should be tested using the EDM I Fylingdales DBCH CHAS.
- Using two of the eight meters where the two are selected close to the mean from the eight-meter test on the standard EDM I DBCH CHAS reduces the risk of a single sample being an anomaly.
- Whilst testing on the full eight-meter samples on the EDM I Fylingdales CHAS would align Fylingdales testing with the existing testing method, it would extend the testing into a third day which would increase test costs. Therefore, this was considered disproportionate given the population of Fylingdales is only circa 2% of the CSP North population.

During the evaluation phase CSP North were given access to test traces for any meters with higher noise rises between the two CHAS devices. This enabled CSP North to determine whether there could be a risk to the network performance. CSP North has confirmed that following their review of the tests, the testing arrangements do not present a risk to their network.

Given that the responses were generally supportive, with one request to extend the testing and one request to minimise the testing, DCC has agreed with the support of the ICHIS WG that the proposed eight plus two-meter test shall be included in the ICHIS.

DCC and CSP North will monitor the ongoing testing for the Fylingdales frequency band. If there is an opportunity via a test house change to simplify the introduction of 8-meter testing using the EDM I Fylingdales DBCH CHAS this will be reviewed with the ICHIS WG. However, any change to ICHIS or the test specification would also be subject to consultation. DCC will continue to support meter models previously approved provided these have also been subject to any appropriate retest during their life as set out in ICHIS part F4.3.

With regard to the comments received in relation to the proposed F9.0 change, DCC confirms that ICHIS 2.0 and above requires all of the Host devices to be within the HAN limits for both the 2.4GHz and the 868MHz bands (noting the derogation allowance for 868MHz as set out in section F8.0).

Q2

Do you agree with the proposed changes to ICHIS Part C1.3, C1.4, C2.1 and C2.6? Please provide your rationale.

Stakeholders' response

The majority of respondents support the proposed changes to ICHIS Part C.

However, one respondent did not agree with the proposal to remove content from C2.1. They noted that further consideration is required if deployed Communications Hubs are non-compliant with Mechanical Safety requirements currently referenced in this section (BS 50470-1). The respondent believed that this section should remain, and Communications Hubs must pass Mechanical Safety tests because they are intimate to the ESME which is complaint to this standard. They highlighted that they considered this to be a significant unaddressed gap in the safety of Communications Hubs and expect this to be resolved by DCC.

Another respondent also raised concerns in relation to references to standards, making the following points:

- There is no reference to the Low Voltage, Radio Equipment or EMC Directives. The respondent noted that no safety standards are referenced and DCC must decide what

type of equipment the Communications Hub is in order to define the safety testing it shall comply with.

- The respondent noted that BS7671 which is currently reference is irrelevant as this applies to wiring installations not equipment safety.
- In section C1.3.2, the respondent highlighted there is no value stated for the isolation withstand voltage on any external metal parts and no reference to any standard.
- The respondent noted the safety tests have been removed from C2.0. They also noted that standard tests have not been substituted and hence no guidance for the notified body.
- They noted that the comment in A11 “tests could include” is not specific enough and not a term used in technical specifications. They noted that the original paragraph was correct as this section is normative.

The same respondent also highlighted a potential safety issue arising from the design of the interface on the Communications Hub when fitting it on to a meter. This issue was caused by increasing the length of the pins as described in ICHIS Part B3.1.1.1 and the respondent notes that Communications Hubs do not appear to have any safety warning labels.

DCC’s response

With regard to the comments in relation to the safety standards, DCC considers that the principles underlying the proposed changes are still valid, i.e:

- Safety of the Communications Hub (and Hosts) is covered by overarching product safety regulation within the applicable European directives (including for example the Radio Emissions Directive and the Low Voltage Directive). This is set out in the manufacturer’s Declarations of Conformity following testing agreed by the manufacturer working with its notified body, as required.
- ICHIS should not define the detailed safety tests for each device, instead the responsibility for this should remain with manufacturers as required under existing overarching product safety regulation.
- ICHIS should continue to provide clear information on any aspects of the interface that a notified body/test house etc. needs to be aware of, to determine the applicable safety testing. For example, although the power to the Communications Hub is DC, it can be referenced to the live or neutral mains supply and may not be isolated by the meter.

However, DCC understands the concerns raised by the respondents and is planning an additional piece of work prior to implementing changes to align ICHIS with these principles.

DCC therefore plans to carry out a further review of the standards referenced for Communication Hubs in the CSP commercial agreement (in the published schedule 2.3 and schedule 11) and, supported by the ICHIS WG, the standards referenced in ICHIS. This will cover:

- Reviewing the applicable current standards applicable given the changes to the standards since schedule 11, schedule 2.3 and ICHIS were initially defined.
- Identifying which of the standard references should remain in ICHIS and whether there are any additional references required.
- Publishing an updated set of standards which are applicable to Communications Hubs.

Therefore, for the new ICHIS version being published alongside this response, DCC has reverted Parts C1.3, C1.4, C2.1 and C2.6 back to version V2.1 (noting below that C1.3 has an additional change to clarify there is no AC Signalling Connection present) whilst this standards review is undertaken.

Regarding the potential safety risk raised by one respondent on the ICHIS connector, DCC notes that it is the intention of the present ICHIS version that Live and Neutral are not both present on the ICHIS DC connector. There should only be up to 6V DC potential across any of the pins. The pins as a group may have a common with respect to Live, Neutral or Ground. If the Communications Hub has no other external connections, then there would be no path for any mains current to flow subject to appropriate insulation tests carried out by the Communications Hub manufacturer.

ICHIS has been written assuming that the ESME manufacturer needs to reference their control / ICHIS circuitry at Live or Neutral potential (allowed in the ICHIS) so that the whole group of ICHIS pins will be isolated or at the same relative mains potential. This is because, the other pins are normally described with reference to the COM pin (low side of ICHIS 12V power).

The ICHIS WG has reviewed the ICHIS definitions for the voltage reference and limitations on the DC signalling pins and refinements to the definitions have been included in the updated ICHIS version. This has resulted in minor updates to Part C1.2 to clarify the voltage reference and Part E2.0 and a new subsection E2.3 to clarify the voltage limitations.

In 2019 DCC published ICHIS 2.0 which removed the optional AC connector from Communications Hub designs (i.e. forbidden). To ensure this is clear; Parts B3.1, C1.3 and Part D have been updated for consistency in excluding this option on the Communications Hub.

Q3

Do you agree with the proposal to update ICHIS Part F4.5 to correct the description in ICHIS F4.0? Please provide your rationale.

Stakeholders' response

All respondents supported the proposed changes to ICHIS Part F.

One respondent did however highlight that the term 'OSD' on a Noise plot is ambiguous and does not have a mathematical meaning. They therefore recommended that DCC consider an

alternative term to define what is meant in this context. For example, the use of 'M' (for mean) or 1SD (one standard deviation) could be considered as appropriate.

DCC's response

DCC has included a change to remove the "0SD" label and updated the diagram to show the "2SD" and "3SD" levels are referenced to the "Noise Limit + Measurement Accuracy" line.

Aligned with this the ICHIS WG agreed a simplification to the description in words in points (2) and (3) above the diagram. There is no change to the mathematical definition from the wording proposed in the consultation.

2.2 Additional comments to consultation

In addition to the comments received in response to the three consultation questions, a general comment was provided by one respondent. This section summarises the comment received, not already covered elsewhere, and provides the DCC's response.

ICHIS Noise Derogation

One respondent noted the ICHIS noise derogation that ended on 31 March 2020 and highlighted that they would have liked to see some consideration to further extend the derogation deadline. In line with their response to the previous ICHIS consultation, they noted that they believed that the noise derogation should continue until at least the end of April 2020 to help mitigate the risk of valuable metering assets becoming stranded.

They noted that whilst the stock levels of affected meters have been greatly depleted since the derogation was last revised, and are reducing more every day, the risk remains that some might yet be left unused. As it is self-evident that such risk could be further reduced with every additional month that is offered to the derogation, the respondent urged DCC to reconsider moving its end date to April/May 2020 to help avoid needless additional costs.

DCC's response

DCC has not extended the derogation period given the previous extension and the responses received to the September 2019 ICHIS consultation. However, any consideration of an extension would need to be based on an understanding of stock levels of remaining "derogated compliant" meters (for which DCC do not have visibility) to understand the impact on the CSP networks. DCC will engage bilaterally on this with affected parties.

3 DCC Conclusions

3.1 Next steps

DCC has updated and published the ICHIS (version 2.2) - <https://www.smartdcc.co.uk/document-centre/communications-hubs/intimate-communications-hub-interface-specification/>

4 Contact

If you have any questions about this conclusion document, please contact Sasha Townsend at sasha.townsend@smartdcc.co.uk or regulation@smartdcc.co.uk.