

# **SIGMACHECK2**

**HANDHELD EDDY CURRENT CONDUCTIVITY METER  
BUILT IN LITHIUM-ION RECHARGEABLE BATTERY (2023)**

## **USER MANUAL**



## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>3</b>
1.1	About the SIGMACHECK2.....	3
1.2	Abbreviations .....	3
1.3	Keys.....	4
1.4	Connectors .....	4
<b>2</b>	<b>Standard Package and accessories .....</b>	<b>5</b>
2.1	Standard Package .....	5
2.2	Recommended Accessories.....	6
2.3	Optional Accessories .....	6
<b>3</b>	<b>Operation of the instrument .....</b>	<b>8</b>
3.1	Operation principle.....	8
3.2	Screen layout .....	8
3.3	Menu Screen / Structure .....	8
3.4	Readings Screen .....	9
3.4.1	Min. Thickness.....	10
3.4.2	Freeze .....	10
3.5	Home / Instrument Status Screen.....	11
3.6	Setup.....	11
3.6.1	Calibration.....	12
3.6.2	Frequency.....	12
3.6.3	Probe.....	12
3.6.4	Advanced.....	13
3.6.5	Configure.....	18
<b>4</b>	<b>Charging .....</b>	<b>22</b>
<b>5</b>	<b>Li-Ion Battery .....</b>	<b>22</b>
<b>6</b>	<b>Setting-up procedures.....</b>	<b>23</b>
6.1	Calibrating and making a reading .....	23
6.2	Using the 2d data logging function .....	23
6.3	ALARM setup .....	24
<b>7</b>	<b>Using with a PC .....</b>	<b>25</b>
7.1	Connecting to PC .....	25
7.1.1	SigmaCheck2PC.....	25
7.1.2	ETherFUU (Firmware Update Utility) .....	28
7.2	Using a spread sheet to analyse data .....	30
<b>8</b>	<b>Care and Maintenance .....</b>	<b>31</b>
<b>9</b>	<b>Correcting for Thin and Radiused Material.....</b>	<b>32</b>
9.1	Thin Material .....	32
9.1.1	Influence of frequency table .....	32
9.1.2	Correction for Bare Sheet Material.....	41
9.2	Clad Material.....	44
9.2.1	SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2014 Clad Aluminium.....	44
9.2.1	SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2219 Clad Aluminium.....	45
9.2.1	SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2024 Clad Aluminium.....	47
9.2.1	SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2524 Clad Aluminium.....	48
9.2.1	SigmaCheck2 and PSIG001A 13mm probe at 60kHz 7075, 7178 Clad Aluminium .....	50
9.2.1	SigmaCheck2 and PSIG001A 13mm probe at 60kHz 3003, 6061 Clad Aluminium .....	51
9.3	Radiused Material.....	53
<b>10</b>	<b>Specifications.....</b>	<b>57</b>
<b>11</b>	<b>Safety and Environmental .....</b>	<b>58</b>
10.1	EC Declaration of Conformity.....	59

# 1 Introduction

## 1.1 About the SIGMACHECK2

The SIGMACHECK2 is designed to be extremely easy to use making it suitable for use by shop floor inspectors to engineers.

The SIGMACHECK2 meets the requirements for conductivity measurements in the aircraft manufacturing and maintenance fields where conductivity measurements are used to verify proper alloy/temper or detect heat damaged components. The SIGMACHECK2 is also useful to determine the purity of precious metals (counterfeit detection) such as gold bullion and coins.

The SIGMACHECK2 has a large, colour, LCD display that is easily seen in all lighting conditions

The SIGMACHECK2 is designed for convenient single handed operation due to its sculpted housing and its convenient size and weight; only  $\frac{3}{4}$  of a pound (350g.) and measuring less than 6  $\frac{1}{2}$ " tall x 3  $\frac{1}{4}$ " wide x 1" thick (163x80x25mm). A removable, silicone rubber boot is included to protect the instrument in rough environments.

The standard Probe has been designed to comfortably fit the hand of the user.

The SIGMACHECK2 has a standard operating frequency of 60 kHz and auxiliary frequencies of: 120, 240, 480 and 960kHz can be selected when necessary for testing thin materials with the standard probe.

Other features of the *ETHER NDE* SIGMACHECK2 include:

- Field Exchangeable Probes via SD Card
- True USB PC Connectivity for remote control and data logging.
- The USB Connection allows easy charging of the Instrument without having to swap the batteries.

The SIGMACHECK2 is supplied with a flame retardant ABS case, a dual (Hi-Low) calibration block, probe cable, charger, USB lead, removable desk stand and user manual. Optional, small diameter probe will be offered.

## 1.2 Abbreviations

C	Centigrade
F	Fahrenheit
IACS	International Annealed Copper Standard
MicroSD	Micro Secure Digital Flash Memory Card
Mil	Thousandths of an inch (0.001") US
MS/m	Mega Siemens per metre
Thou	Thousandths of an inch (0.001") UK

### 1.3 Keys

The SIGMACHECK2 instrument has 7 keys. 4 arrow keys (Up, Down, Left, Right), an OK key (shown with a tick), a Back or Cancel key (shown with a curly arrow) and a Power key.



### 1.4 Connectors

There are 2 Connectors on the SIGMACHECK2

A Micro USB B connector is on the left. This is used for:

- Charging the instrument.
- Powering the Instrument.
- Connecting the instrument to a PC for data up or download.

A 5 pin Lemo connector is on the right had side for connecting probes



## 2 Standard Package and accessories

### 2.1 Standard Package

All of the following Accessories should be available before using the SIGMACHECK2 instrument, although limited operation can be performed without.

Not pictured is a mains connector to which the USB cable can be connected to if not connected to a PC for charging and/or operation.



Contents of Standard Instrument Kit KISIG001A

Quantity	Part No	Description
1	ISIG001B	SIGMACHECK2 Instrument
1	ASIG014B	Dual conductivity standard with Nickel Silver and Aluminium Alloy
1	40222	Silicone Rubber Boot
1	ALL05-L05-012-SIGA	Probe Cable
1	PSIG001A	Probe 13mm dia. 60-480 kHz
1	30239	2 x Ergonomic Probe Skirts for tubes & easy Probe handling
1	A288	Male USB A to Micro B Cable for PC Connection/Charging
1	A092	POWER SUPPLY - USB - INCLUDES, UK, AU, EU, US Input: 90 - 264V AC Output: 5W
1	A242	32GB MicroSD Card
1	40293	Quick Reference Guide
1	60005	Manual and Utility on USB stick
1	AC001	Carrying Case

## 2.2 Recommended Accessories

Part No	Description
ASIG004	Peli Hard Case with custom insert.
ALL05-L05-012-SIGA	Probe Cable
PSIG001A	Probe 13mm dia. 60-480 kHz
PSIG002A	Probe 8 mm dia. 60-480 kHz
PSIG003A	Probe 13mm dia. 60-480kHz (Right Angled)

## 2.3 Optional Accessories

Part No	Description
ATBC-COPPER	Accessory, Test Block, Conductivity, Copper, (99.9-102.5 %IACS)
ATBC-ALU1200	Accessory, Test Block, Conductivity, Aluminium Alloy, 1200-H4, (56.0-62.0 %IACS)
ATBC-ALU6082	Accessory, Test Block, Conductivity, Aluminium Alloy, 6082-T6 (45.1-49.0 %IACS)
ATBC-ALU6061	Accessory, Test Block, Conductivity, Aluminium Alloy, 6061-T4 (40.5-45.0 %IACS)
ATBC-ALU2014A-T6	Accessory, Test Block, Conductivity, Aluminium Alloy, 2014A-T6 (34.7-40.3 %IACS)
ATBC-ALU2024-T4	Accessory, Test Block, Conductivity, Aluminium Alloy, 2024-T4 (28.8-31.0%IACS)
ATBC-ALU7075	Accessory, Test Block, Conductivity, Aluminium Alloy, 7075-T6 (30.0-34.1 %IACS)
ATBC-ALU5083	Accessory, Test Block, Conductivity, Aluminium Alloy, 5083 (26.6-30.0 %IACS)
ATBC-BRASS	Accessory, Test Block, Conductivity, Brass, CZ 121 (23.3-26.6 %IACS)
ATBC-PBRONZE	Accessory, Test Block, Conductivity, Phosphor Bronze (13.0-18.0 %IACS)
ATBC-NICSILVER	Accessory, Test Block, Conductivity, Nickel Silver, LC1291 (9.0-9.9 %IACS)
ATBC-TITANIUM2	Accessory, Test Block, Conductivity, Titanium, GRADE 2 (3.3-4.1 %IACS)
ATBC-STST303S	Accessory, Test Block, Conductivity, Stainless Steel, 303 S (1.6-2.5 %IACS)
ATBC-TITANIUM	Accessory, Test Block, Conductivity, Titanium, 6AL-4V (1.0-1.1 %IACS)
ASIG003	Accessory, Conductivity Test Block Holder Only - (Holds x5 Conductivity Test Blocks + x1 Dual Conductivity Reference Standard)
40270	Accessory, Stand, SigmaCheck
ASIG010B	Accessory, Dual Conductivity Reference Standards, Nominal Values 9.4% and 101% IACS. Recommended for High Conductivity measurement e.g. Copper and Precious Metals (SigmaCheck2/SigmaCheck22) NIST VALUES
ASIG011B	Accessory, Dual Conductivity Reference Standards, Nominal Values 9.4% and 101% IACS. Recommended for High Conductivity measurement e.g. Copper and Precious Metals (SigmaCheck2/SigmaCheck22) NPL VALUES
ASIG012B	Accessory, Dual Conductivity Reference Standards, Aluminium Alloys Nominal Values 28.5% and 58.8% IACS (SigmaCheck2) NIST VALUES
ASIG013B	Accessory, Dual Conductivity Reference Standards, Aluminium Alloys Nominal Values 28.5% and 58.8% IACS (SigmaCheck2) NPL VALUES

ASIG014B	Accessory, Dual Conductivity Reference Standards, Nominal Value 9.4% IACS (Nickel Silver) & Nominal Value 58.8% IACS (Aluminium Alloy), (Recommended for Aluminium Alloy use) (SigmaCheck2/SigmaCheck22) NIST VALUES
ASIG015B	Accessory, Dual Conductivity Reference Standards, Nominal Value 9.4% IACS (Nickel Silver) & Nominal Value 58.8% IACS (Aluminium Alloy), (Recommended for Aluminium Alloy use) (SigmaCheck2/SigmaCheck22) NPL VALUES
ASIGXXX	Accessory, Dual Conductivity Reference Standards, Nominal Values xx% and xx% IACS (SigmaCheck2) PLEASE CONFIRM NIST OR NPL VALUE REQUIRED  *****

## 3 Operation of the instrument

### 3.1 Operation principle

The SIGMACHECK2 is a simple to use Conductivity Meter with Lift-Off capability. The SIGMACHECK2 contains many modern features, for example a MicroSD card is included in the instrument so that large amounts of data can be stored. A USB connector is present so that the instrument can communicate in real-time with the PC software.

Once configured, the SIGMACHECK2 can very quickly be picked up, turned on, calibrated and then accurate and fast measurements can be taken of Conductivity or Lift-Off.

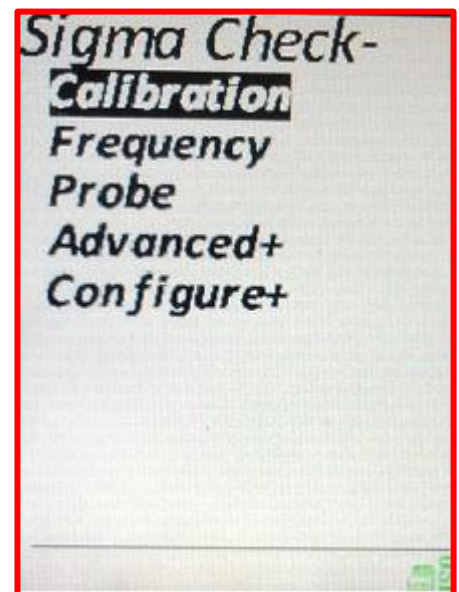
### 3.2 Screen layout

The instrument has 2 main screen layouts, the menu screen and the readings screen. The Menu screen allows all aspects of the instrument to be configured, from the inspection details to the individual users' preference. The Readings screen has 2 panes, a top and a bottom.

### 3.3 Menu Screen / Structure

The menu system on the SIGMACHECK2 is designed along the lines of the folder/file layout present on many modern computers. If a menu item contains child menu items beneath it, it will have a plus ('+') symbol after it, meaning that it can be expanded to reveal more menu items. If a menu item has a minus ('-') after its title then its child menu items are already visible. This screen shot shows the Top level SIGMACHECK2 menu with its 4 sub menus. Advanced and Configure contain more sub menus, hence their '+'.

The Up and Down keys move up and down child menu items are the current level. To move up a level the Left or Back keys should be used. To enter a menu items sub items, the Right or OK keys are used.



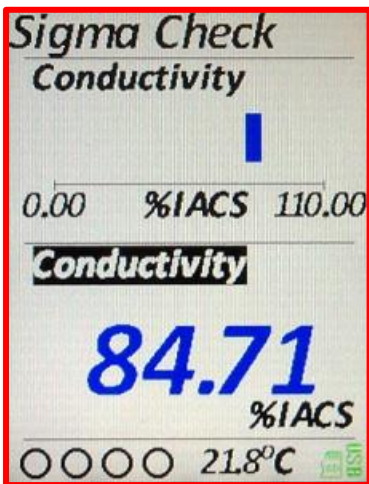


### 3.4 Readings Screen

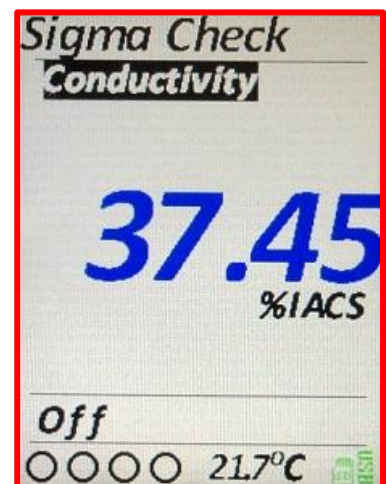
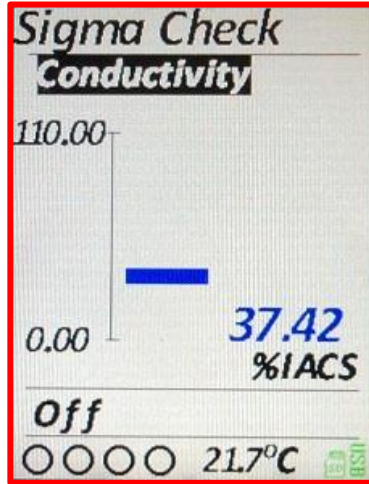
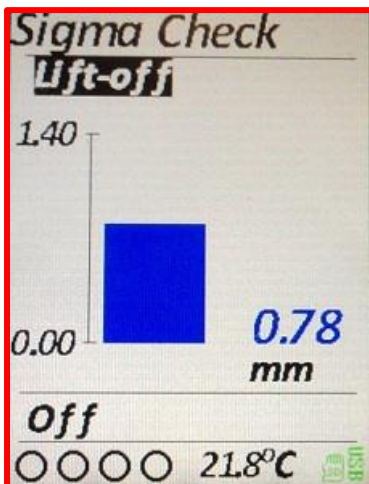
Selecting the top level SIGMACHECK2 menu item changes the instrument into Readings Mode. Here the screen has 2 configurable panes and a status bar. Pressing the Up or Down keys toggles the selected pane, this is visible by the title of the pane being highlighted. Pressing the Left or Right keys changes the display of the selected pane through the following possibilities:

- Lift Off
- Conductivity
- Lift Off Bar Graph
- Conductivity Meter
- Time & Date
- Metal Sort
- Min Thickness (See 3.4.1 below for more details)

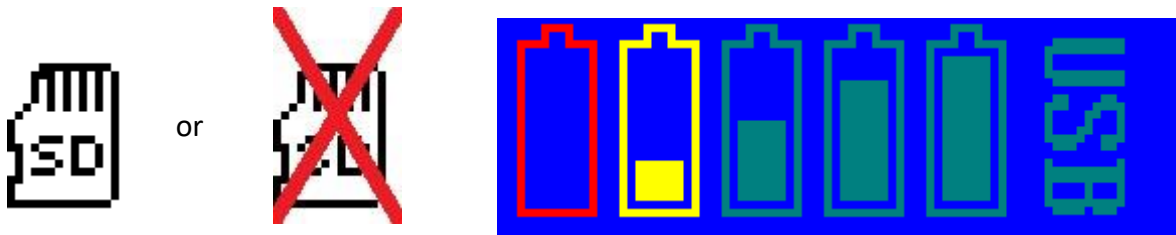
The Lower Pane can also be OFF, which expands the Upper Pane. If Data Logging is enabled then the Lower pane will ONLY show Data Logging until it is disabled. Examples of these various display modes are shown here:



With the Lower Pane set to OFF. Examples of Lift-Off bar graph, Conductivity Meter and Conductivity:



The Status Bar shows 4 Alarm LED representations, the temperature read by the probe, a MicroSD card icon and a Battery Meter or USB indicator. See the 3.6.4.1 **Alarms** section below for an explanation of their functionality. The temperature can be displayed in Celsius or Fahrenheit depending on the Units setting; see the 3.6.5.3 **Units** section below. The MicroSD icon will be with or without a red cross. Without a red cross indicates that the card is present and functioning correctly, with the red cross, there is a failure of the card. The battery states are Empty, 25%, 50% 75%, Full or USB Connected.



### 3.4.1 Min. Thickness

The SIGMACHECK2 is capable of using several different frequencies in the calculation of Conductivity and Lift-Off. Different frequencies penetrate the material under test to different depths, the lower the frequency the deeper the penetration. For example, if a specimen is clad in a different material, a high frequency can be selected that will only record the Conductivity of the cladding, a low frequency can be used to measure the material under the cladding.

The following equation is used within the Eddy Current industry to calculate the effective depth of penetration where the signal has dropped to 37%:

$$\delta = 50 \sqrt{\frac{172.41}{\sigma \mu f}}$$

$\delta$  = Standard Depth of Penetration (mm)

$\sigma$  = Conductivity (%IACS)

$\mu$  = Relative Permeability (= 1 for air)

$f$  = Frequency (Hz)

The value is then multiplied by 3 to give the depth where the Eddy Current signal has diminished to effectively 0.

The instrument knows the Frequency that it is using and also the Conductivity. The Min Thickness window simply shows the result of this calculation so that the user has an idea of the minimum thickness of material that they should be using to achieve an accurate result.

### 3.4.2 Freeze

When in Reading mode pressing the OK key will freeze the current display. Any alarms that were flashing will remain illuminated. Pressing OK again will remove the freeze and the real-time readings will continue. Pressing any other key will also cancel the freeze and the key will be actioned.

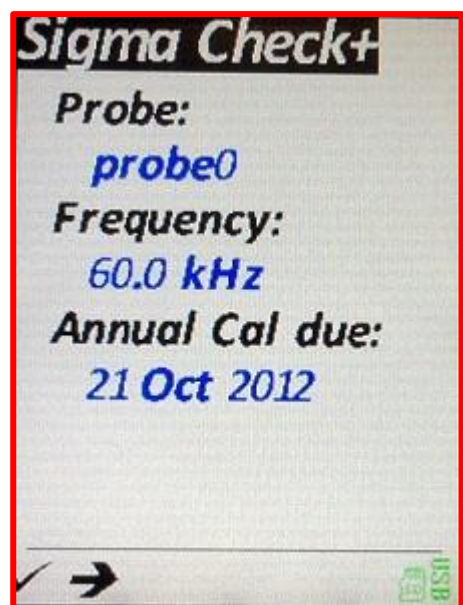
The Freeze functionality cannot be used when in Data Logging mode (as OK logs a reading) or if the instrument has not been calibrated since the last power-on (as OK moves the SIGMACHECK2 to the calibration menu).

Please note that the Freeze functionality freezes the display only and NOT any real time data being outputted over the USB.

To identify when the screen is frozen, the screen title text of "SIGMACHECK2" will change colour.

### 3.5 Home / Instrument Status Screen

The Home screen shows 3 useful pieces of information, the current Probe file that is loaded in, the current Frequency that is being used and when the instrument should next be calibrated.



The selected Probe should be the same as what is actually connected to the instrument. If these differ then there is no guarantee that any values displayed will be accurate. If "No probe Info" is displayed, then a Probe needs to be selected from the **probe** menu, see 3.6.3 below.

The frequency is dependent on what is required for the inspection and what the probe has been calibrated to do during manufacture.

The Annual Cal Due date is the date by which the instrument and probe should be re-calibrated. This date will flash once it has passed. The instrument will continue to function but there is no guarantee that any values displayed will be accurate.

### 3.6 Setup

All aspects of the SIGMACHECK2 can be configured using the menus. Navigation of the menu system is explained above in 3.3 **Menu Screen / Structure**.

### 3.6.1 Calibration

Calibration should be carried each time the instrument is turned on and periodically thereafter. The calibration procedure is explained below, see 6.1 **Calibrating and making a reading**.

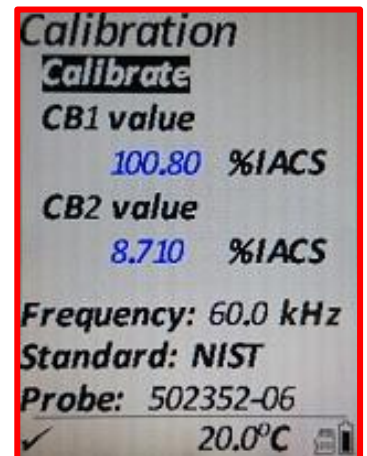
To calibrate the instrument, the Calibration Blocks (CB1 and CB2) values MUST be set to the values of the blocks attached to the top of the instrument. The standard being adhered to (either NIST or NPL) must also be correct and is engraved on the side of the Calibration Block holder (See 3.6.4.5 Standard for more info). To change a value use Up or Down to highlight the desired Calibration Block. Use Left or Right to begin editing the value. Left and Right will change the currently editing character and Up and Down will cycle between 0 and 9. Moving Left from the most significant digit will add a new digit up to a maximum of 3 significant figures. Moving Right from a significant figure of 0 will remove it.

When the value is correct, press the OK button to save it, or Back to cancel editing and return the value to its original value.

Selecting the menu option **Calibrate** will begin the calibration procedure.

Press OK or Back to leave this menu.

The Frequency, Standard and Probe serial number are shown for information purposes only.



### 3.6.2 Frequency

On entering this menu all available frequencies for the currently loaded probe will be listed. The current frequency will be highlighted. A cross after the frequency indicates that there is a problem with the probe details at that frequency stored on the MicroSD card. A tick indicates all is well and the frequency may be selected.

Left/Up or Right/Down will move up and down the list of available frequencies. Press OK to select a frequency or Back to leave the current selected frequency.



### 3.6.3 Probe

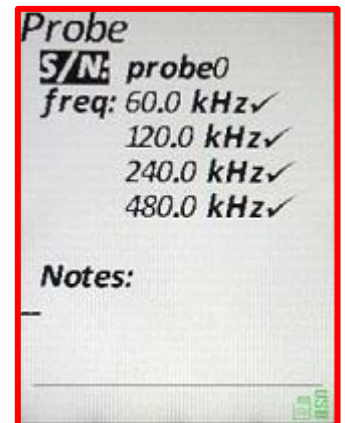
On entering the probe menu the current selected probe will be shown. Up and Down cycle through the headings of **S/N** (Serial Number), **freq** (frequency) and any notes that are present.

Moving Left or Right on the **S/N** will cycle through all available probe files on the instrument and update the rest of the screen with the details of that probe file.

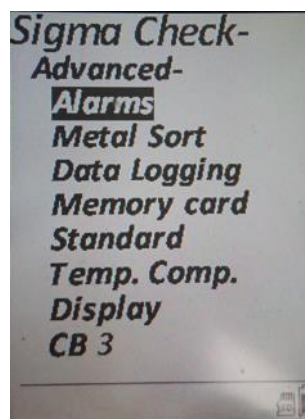
Moving Left or Right on the **freq** heading will move up and down the available frequencies for this probe file. Pressing OK while a frequency is highlighted will load the probe file and configure the instrument to use that frequency. Pressing OK with no frequency highlighted will load in the probe file and use the first frequency in the list.

Moving Left or Right with the Notes highlighted will scroll the notes in the case that there are more characters than fit on to the screen.

Pressing Back will leave the instrument with the current probe file and at the current frequency.



### 3.6.4 Advanced

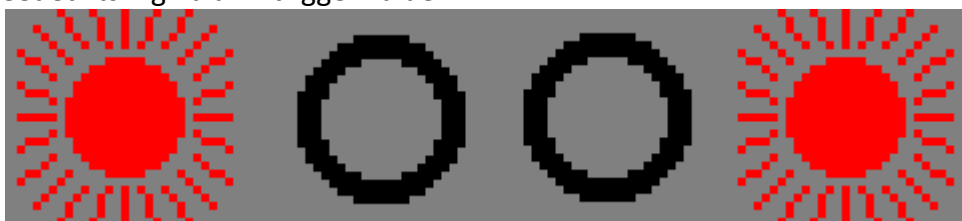


#### 3.6.4.1 Alarms

A visual alarm can be configured to trigger when a Conductivity or Lift-Off exceeds or drops below a predetermined value. When an alarm is triggered and the value is visible on the readings screen the reading will flash between the Value and Alarm colours (see 3.6.5.2 **Colour** below). In the alarm state the corresponding LED on the status bar will flash. The LED relates to the values being shown on the Upper or Lower panes in the readings screen.



The first LED indicates that the Upper Pane value has exceeded its high alarm trigger value.

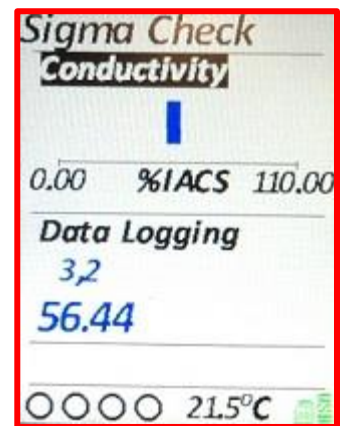


The second LED indicates that the Upper Pane value has dropped below its low alarm trigger value.

The third LED indicates that the Lower Pane value has exceeded its high alarm trigger value.

The forth LED indicates that the Upper Pane value has dropped below its low alarm trigger value.

The above diagram illustrates the Upper pane value exceeding its high alarm value while the Lower pane value has dropped below its low alarm value.



When entering the **Alarm** menu, four alarms are shown using the units specified in the **Units** menu. A High and Low value for Conductivity and Thickness is available.

To change a value use Up or Down to highlight the desired Alarm. Use Left or Right to begin editing the value. Left and Right will change the currently editing character and Up and Down will cycle between 0 and 9. Moving Left from the most significant digit will add a new digit up to a maximum of 3 significant figures. Moving Right from a significant figure of 0 will remove it.

When the value is correct, press the OK button to save it, or Back to cancel editing and return the value to its original value.

Press OK or Back to leave this menu.

### 3.6.4.2 Metal Sort

The Metal Sort functionality allows 10 different ranges of Conductivity to be entered. If conductivity is encountered that fits within one of these ranges the text associated with that range will be displayed on the Metal Sort pane.

This menu item allows the range to be entered (a low and high conductivity value) and a name that will be shown. The units of conductivity will depend on the **Units** menu item.



Using the Up and Down keys, the highlighted option will go from Name to Low value to High value and then to the next metal, and so on up to the 10<sup>th</sup> metal. Pressing OK will begin editing of the highlighted value or name, pressing OK again will save the new name/value whilst pressing Back will cancel editing and return the name/value to its original value. For details on editing values, see 3.6.4.1 **Alarms** above. Editing of characters is similar. Left and Right change the character being edited and Up and Down cycle through the available characters like so:

<space>0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz

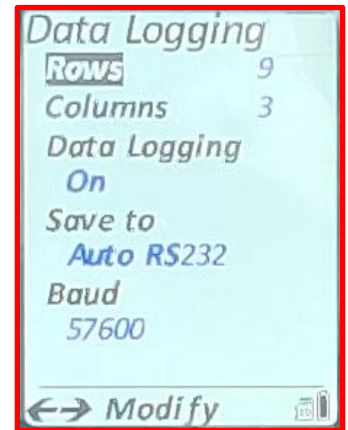
**\*\* Please note, for a metal to be shown on the readings pane, the **Metal Sort** pane must be present on the Upper or Lower pane. \*\***

When all changes have been made press OK or Back to return to the **Advanced** menu.

### 3.6.4.3 Data Logging

Please Note, any references to RS232 are only valid if the SigmaCheck2 being used is the RS232 version, identifiable by a LEMO socket on the top panel where the 2 Top Blocks are usually located.

The Data Logging functionality, when enabled, allows Conductivity readings to be logged at the press of the OK button or if transmitting via RS232, automatically when the readings are stable. There are 4 locations to store Data Logging data, **Memory Card, RAM, RS232 and Auto RS232**. The differences are:



#### **RAM**

The number of readings is limited to about 8000 (Rows multiplied by Columns). Once power is removed the readings are lost. SigmaCheck2PC can continue to operate fully. Data Logging data can be extracted at any point using SigmaCheck2PC. Using the Left or Right keys, previous data can be overwritten.

#### **Memory Card**

While Data Logging is enabled, any card access will stop data logging. Data cannot be uploaded until Data Logging has completed or been stopped. Once a value has been logged, it cannot be changed. Many separate data Logging sessions can take place and all data is saved.

These readings are stored in the SIGMACHECK2's memory until they are uploaded to a PC via the USB cable and the PC Software package. The resulting file is designed to be readable by most Spread sheet packages, hence why on the Data Logging menu a number of Rows and Columns are shown. When enabled, the Data Logging pane is shown in the Lower pane of the readings screen. It shows the current Column & Row numbers and below that, the last conductivity value that was logged. When all Columns and Rows are full, the screen will show "**Logging Full**". If a value has been taken incorrectly the pressing Left or Right will move back or forwards between readings allowing a new reading to be taken and overwrite the existing value. When moving backwards and forwards, the previous reading at this location will not be shown.

If a simple list of values is all that is required, then simply set the Rows or Columns to 1 and the other value to the required number of readings. The total number of readings taken will always be the Rows multiplied by the Columns. As each reading is taken, the SIGMACHECK2 increments the Column first, then when the row is full, the Row is incremented. Therefore the resulting spread sheet will have the first reading in the top left corner then reading like a book left to right, top to bottom. For information on downloading the Data Logger data, see 7.1 **Connecting to a PC** below.

On the Data Logging menu, the Up and Down keys will change the highlighted heading. Left or Right keys will begin editing of the Rows/Columns or toggle the Data Logging enabled option. For editing of the values see 3.6.4.1 **Alarms** above.

Please note, if Data Logging is enabled here, the lower pane on the readings screen will ONLY show **Data Logging**.

### **RS232**

If selected and the **Baud** rate is set to non-zero, a press of the OK key while on the readings screen will result in the SigmaCheck2 transmitting the values of Conductivity, Lift-Off and Temperature all separated by commas and 1000 times greater, e.g. 61.4%IACS, 0.11mm and 21.4 degrees Celsius will be transmitted like so: 61400,110,21400

The line will end with a carriage return and line feed.

The units of the values will be whatever units the instrument is currently using in the **Units** menu.

### **Auto RS232**

See the RS232 section above. The only difference being that the user does not need to press the OK key for a reading to be transmitted, it will be done automatically once a stable reading is obtained. Only one set of values are sent once the probe is stable, it will not send endless values. For another reading to be transmitted, either the conductivity value must be different OR the probe must be held in air until the transmitted value (as shown in the lower section of the readings screen) is cleared.

### **BAUD**

Only applicable for a SigmaCheck2 equipped with the RS232 socket.

For the RS232 to function the Baud rate must be greater than 0. Set this value to the same baud rate as the piece of equipment the SigmaCheck2 is communicating with.

The other settings that RS232 requires are fixed and cannot be changed, for reference these are:

Stop Bits: 1

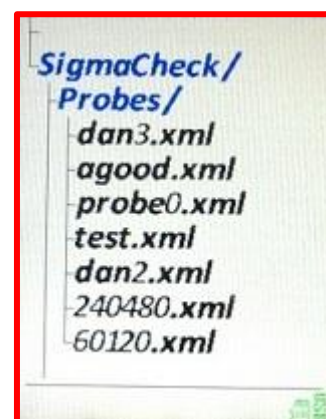
Parity: None

Data Bits: 8

Hardware Control: None

#### **3.6.4.4 Memory Card**

The SIGMACHECK2 contains a slot for a MicroSD memory card. Correct functioning of the instrument requires a card to be fitted (the instrument is supplied with a card). The files and folder structure of the card can be seen using this menu item. On selecting Memory the contents of the card are shown. Folders are shown with all of their contents indented. Folders are in the **Text** colour, files in the **Value** colour (see 3.6.5.2 **Colour** above).



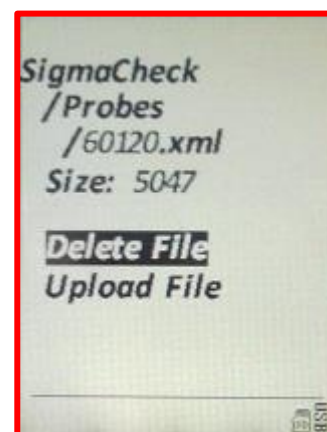


If there are more files/folders than fit onto the screen (evident by the vertical line to the left going off of the bottom of the screen) then pressing the down key will scroll the view.

If the OK key is pressed while a file is highlighted the File Details screen is shown. It shows the file name along with its complete path. The file size (-1 if the file is in fact a directory). There is then 2 options, **Delete** and **Upload**.

Delete will permanently delete the file.

Upload will send the file to SigmaCheck2PC if the SIGMACHECK2 is connected to a PC via the USB and SigmaCheck2PC is connected to the SIGMACHECK2. When the file transfer is initiated a progress bar will be shown on SigmaCheck2PC main screen. When complete, a Save File window will open on the PC.



Press Back to return to the **Advanced** menu.

#### 3.6.4.5 Standard

In the world of Eddy Current there are 2 main bodies who either currently or in the past manufactured various “Standards” to which all values of Conductivity are traceable. These bodies are NPL (National Physical Laboratory, UK) and NIST (National Institute of Standards and Technology). Unfortunately the values of the standards produced by each do not match. The difference is related to the methods in which the resistivity of the materials are measured. For the SIGMACHECK2 to accurately report a value of Conductivity it must have 2 traceable standards used for the 3-Point calibration and the Standards menu must be set to whether these 2 standard blocks are measured to NIST or NPL traceable standards.

The Standard menu can therefore be set to **NIST** or **NPL**. This value is also indicated on the calibration menu for information only. The test blocks provided with each SIGMACHECK2 are engraved with either NPL or NIST.

#### 3.6.4.6 Temperature Compensation

The SIGMACHECK2 probe has an integrated thermometer which gives the temperature of the material under test, assuming that the probe is held in contact with the specimen for sufficient time for the temperatures to reach equilibrium.

If the temperature is STABLE then the SIGMACHECK2 can read the Conductivity (which varies with temperature) and display what the Conductivity value would be at 20°C. For this feature to work correctly it is imperative that the temperature is stable, if not then the displayed value will drift.

Options for the Temperature Compensation are ON, OFF and SINGLE.

**OFF** – No temperature compensation is applied.

**ON** – Continuous temperature compensation is applied.

**SINGLE** – A one-off temperature measurement is made during 3-Point Calibration. All values of conductivity are then assumed to be at this value and are corrected back to their 20°C value.

### 3.6.4.7 Display

Values of Conductivity on the SIGMACHECK2 are constantly updated. If the angle or position of the probe change, then so may the displayed value of Conductivity. In hard to reach areas this can be a problem in getting an accurate reading. The SIGMACHECK2 can be set to SINGLE Display mode where the instrument continually monitors the Conductivity and Lift-Off values and will hold and display the most accurate value possible.

**SMOOTH** - The conductivity measurement is smoothed once the signal is stable

**SINGLE** -The value of Conductivity is displayed based on the minimum lift off value achieved.

**CONTINUOUS** -The current value of Conductivity is updated continually.

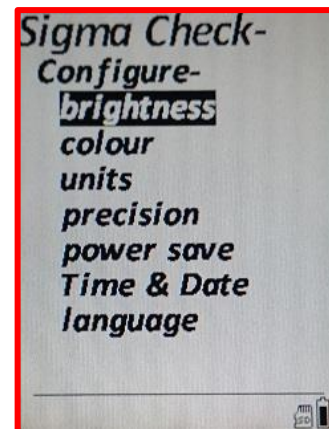
### 3.6.4.8 CB3

This menu item allows the user to set an intermediate Calibration Block with a value between CB2 and CB1. When switched on during calibration the user will be prompted to calibrate on a 3<sup>rd</sup> conductivity calibration standard.

### 3.6.5 Configure

The Configure menu contains the following sub-menus:

- Brightness
- Colour
- Units
- Precision
- Power save
- Time & date
- Language



### 3.6.5.1 Brightness

The brightness menu allows the brightness of the screen to be changed. Lowering the brightness will extend the battery life of the SIGMACHECK2.

Pressing Left or Down will decrease the brightness by 10%  
Pressing Up or Right will increase the brightness by 10%.  
Pressing OK will save the current brightness level.  
Pressing Back will return the brightness level back to its previous value.



### 3.6.5.2 Colour

4 Colours may be changed.

The Text, Background, Value and Alarms. The text colour is the colour most often used for menu items and headings on the readings screen. The background colour is self-explanatory. The Value colour is what is used for the numbers on the readings screen and several menu items, the Alarm colour should be noticeably different to the value colour that is used to indicate that a value is in the alarm state. The colours used for the majority of the screen shots in this manual shown in the first screen shot. The others are popular alternatives.



Pressing Up or Down cycles between the headings. Pressing Left or Right cycles through the available colours which are:

BLACK, WHITE, RED, GREEN, YELLOW, BLUE, CYAN, GREY, PINK, CREAM

Pressing OK will save and use the current colour scheme. Pressing Back will go back to the previous colour scheme. It is possible to set the text and background colours to the same colour while cycling through the colours but it IS NOT possible to accept these colours to be the same.

### 3.6.5.3 Units

The units can be set to any of the following:

**Conductivity** - %IACS or MS/m

**Temperature** – degrees Celsius or Fahrenheit

**Length** (Lift-Off) – mm, Thou or mil

(Thou & mil = Thousandths of an inch).

The Up and Down keys cycle between the headings, Left and Right toggle the Units for that heading.

Press OK to accept the new units or Back to return to the Configure menu and leave the units unaffected.

The units selected here affect all places where the values are displayed on the instrument, including other menus (i.e. Alarms).

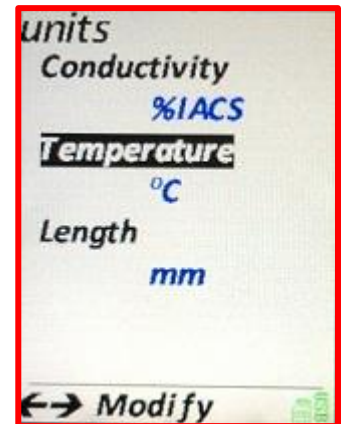
The units when downloading to the PC or viewing on the SIGMACHECK2

PC Software is fixed to:

**Conductivity** - %IACS

**Temperature** – degrees Celsius

**Length** – mm



### 3.6.5.4 Precision

The Precision only affects how many decimal places are shown on the screen of the SIGMACHECK2. The Conductivity can have 0, 1, 2, 3 or **Auto** decimal places. Temperature, 0 or 1 decimal places and Length 0, 1 or 2 decimal places.

**Auto** changes the precision of conductivity readings depending on the value:

0 to 10 %IACS = 3 decimal places.

10 to 100 %IACS = 2 decimal places.

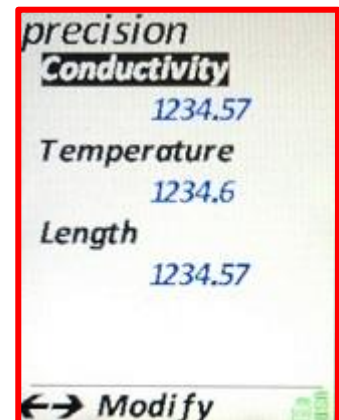
100 and above %IACS = 1 decimal place.

Pressing the Up or Down keys cycles through the headings.

Pressing Left decreases the number of decimal places and pressing Right increases the number.

The number below each heading is a representation of a number displayed to the current number of decimal places.

Press OK to accept the new number of decimal places and return to the configure menu or Back to return to the menu keeping the previous number of decimal places.



### 3.6.5.5 Power Save

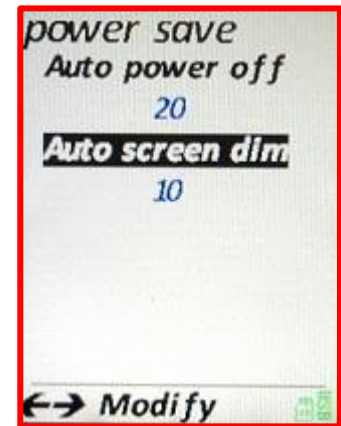
There are 2 methods of saving power. The instrument can be set to automatically dim the screen after a set time period and/or turn off the instrument completely after a set time period. These time periods range from Off (disabled) to 60 minutes in 5 minute steps.

Pressing the Up or Down keys cycles between the headings.

Pressing the Left key decreases the time in steps of 5 from 60 to Off.

Pressing the Right key increases the time in steps of 5 from Off to 60.

Press OK to use the new values or Back to use the previous values.



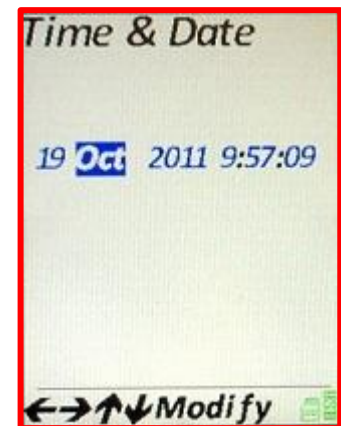
### 3.6.5.6 Time & Date

The SIGMACHECK2 contains a real time clock. It enables the time and date to be viewed on a pane in the Readings screen and is also required for writing data to the MicroSD card. The date and time can easily be set and will be remembered even when there are no batteries or USB power.

Pressing Left or Right cycles between the fields:

Day -> Month -> Year -> Hour -> Minute -> Second.

Pressing Up or Down will increment or decrement the highlighted value, except for seconds where Up or Down will set the number of Seconds to 0.



When finished, pressing OK will set the time of the SIGMACHECK2 to what has been entered. Pressing Back will leave the Time & date unchanged.

### 3.6.5.7 Language

The majority of the text displayed by the SIGMACHECK2 is translated in to several different languages. On the **language** menu pressing the Left or Right keys cycles through the currently available languages.

Press OK to accept the new language or Back to return to the Configure menu and return the language to the previous one.

## **4 Charging**

1. The SIGMACHECK2 may either be charged using the supplied AC charger. Alternatively using the USB cable the unit may be charged from a standard PC USB connector.
2. As soon as the DC power is connected, the battery will start to be charged. With the instrument powered down the battery will charge fully within 4 hours.
3. During Charging the front panel LED is Amber, when charging is complete the LED will extinguish. If the instrument is powered up and used during charging the battery will charge more slowly than if the unit was not powered up.
4. Note the instrument may be used whilst charging is taking place.



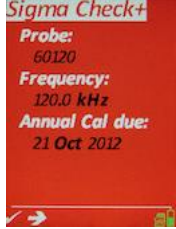
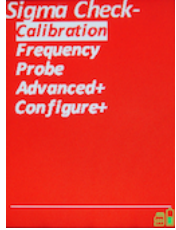

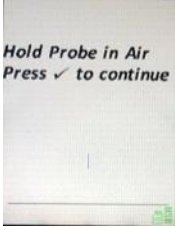
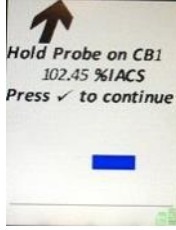

## **5 Li-Ion Battery**

- Li-Ion Battery contained in equipment
- 3.7V - 3500mAh
- 12.95 Wh

## 6 Setting-up procedures

### 6.1 Calibrating and making a reading

The SIGMACHECK2 should be calibrated after power on and at regular intervals to ensure accuracy. If the Temperature read by the probe deviates more than 3°C from the temperature at Calibration or 15 minutes have elapsed since Calibration, re-calibration is required. What follows is a quick step-by-step guide to configuring the SIGMACHECK2 and taking a reading. The user must take care to ensure that the probe, instrument, test pieces and material under test are all at a stable and similar temperature. After power up, connection of probe and selection of test frequency a minimum period of 15 minutes should be allowed before readings are made. The finger grip is provided to ensure the operator's hand does not warm the probe and affect the readings.

 <p>Splash Screen</p>	 <p>Readings Screen</p>	 <p>Main Menu Screen</p>	 <p>Calibration Screen</p>
<p>Press Power Key for 2 seconds. Splash screen appears. After a couple of seconds the reading screen is shown.</p>	<p>A warning across the bottom reads "Press ✓ to Cal" as no call since power-on. Press OK to Cal (go to step 5) OR press BACK to go to the menu screen...</p>	<p>Right or Down key to access the Main Menu.</p>	<p>To calibrate, with <b>Calibration</b> highlighted, press <b>OK</b>.</p>
 <p>Set air point</p>	 <p>Set high Conductivity</p>	 <p>Set Low Conductivity.</p>	 <p>Reading Screen</p>
<p>Ensure that the CB1 &amp; CB2 values match the blocks on top of the instrument, then with <b>Calibrate</b> highlighted, press <b>OK</b>.</p>	<p>Hold probe in air at least 100mm (4") away from any metal or magnets. Wait for Blue bar to stabilise. Press <b>OK</b>.</p>	<p>Place probe on left calibration sample wait for blue bar to stabilise and press <b>OK</b></p>	<p>Place probe on right calibration sample weight for blue bar to stabilise and press <b>OK</b>. After a brief pause the instrument will return to the Reading Screen and is ready to use.</p>

### 6.2 Using the 2d data logging function

The complete Data Logging process is broken up into several parts, each is explained in previous sections:

1. Configuring the SIGMACHECK2 to Data Log, see Data Logging.
2. Downloading the Data Logger data to a PC, see ***Downloading Data Logger Data***
3. Viewing the resultant files, see ***Using a spread sheet to analyse data.***

### **6.3 ALARM setup**

The Alarm functionality is fully explained in the ***Alarms*** section.



## 7 Using with a PC

### 7.1 Connecting to PC

The SIGMACHECK2 connects to a PC via its mini USB-B connector. This connection provides all communications and charging functionality.

There are 2 PC applications that use this USB connection:

SigmaCheck2PC and the ETHERFUU (Ether Firmware Update Utility) software packages.

When a SIGMACHECK2 is first connected to a PC the required drivers will automatically be installed. SIGMACHECK2 uses Windows default drivers so no additional drivers are required.

#### 7.1.1 SigmaCheck2PC

This application has several uses when connected to a SIGMACHECK2:

- Display real-time values of Conductivity, Lift-Off and Temperature
- Display the Unique ID (not the serial number) of the SIGMACHECK2.
- File handling of the SIGMACHECK2's microSD card.
- Upload Data Logger files from the SIGMACHECK2.
- Remote control the SIGMACHECK2.

Up to 4 SIGMACHECK2s can be simultaneously connected, but only one can be used at a time by SigmaCheck2PC. The active unit can quickly and easily be changed between any of the four by a click of one of the numbered buttons along the top of the screen.

##### 7.1.1.1 Real-Time display

As soon as the SIGMACHECK2 is powered, connected to SigmaCheck2PC and the instrument splash screen acknowledged, real-time values will be displayed on the SigmaCheck2PC screen. Across the top of the display is the Unique ID of the instrument, followed by "Ether NDE" and "SIGMACHECK2".

In larger text below that is the conductivity. In large text in the lower half of the screen is the Lift-Off.

Across the bottom is the current probe temperature.

Across the middle is a text entry box and a progress bar.

Unlike on the instrument, the units here cannot be changed and are set to:

- Conductivity - %IACS
- Temperature - degrees Celsius



- Lift off - mm

#### **7.1.1.2 Remote Control**

As soon as the SIGMACHECK2 is connected and the Unique ID displayed, it can be controlled from SigmaCheck2PC. The 7 buttons visible on the PC Screen (Up, Down, Left, Right, OK, Power, Back), when clicked have the same effect on the instrument as pressing the physical buttons by hand. Please note that if the SIGMACHECK2 is being operated completely remotely then a button must be pressed after the Unique ID is shown to remove the SIGMACHECK2 splash Screen. Until this button is pressed no real-time data is received.

The Power button will turn the remote SIGMACHECK2 OFF but will not turn ON a SIGMACHECK2.

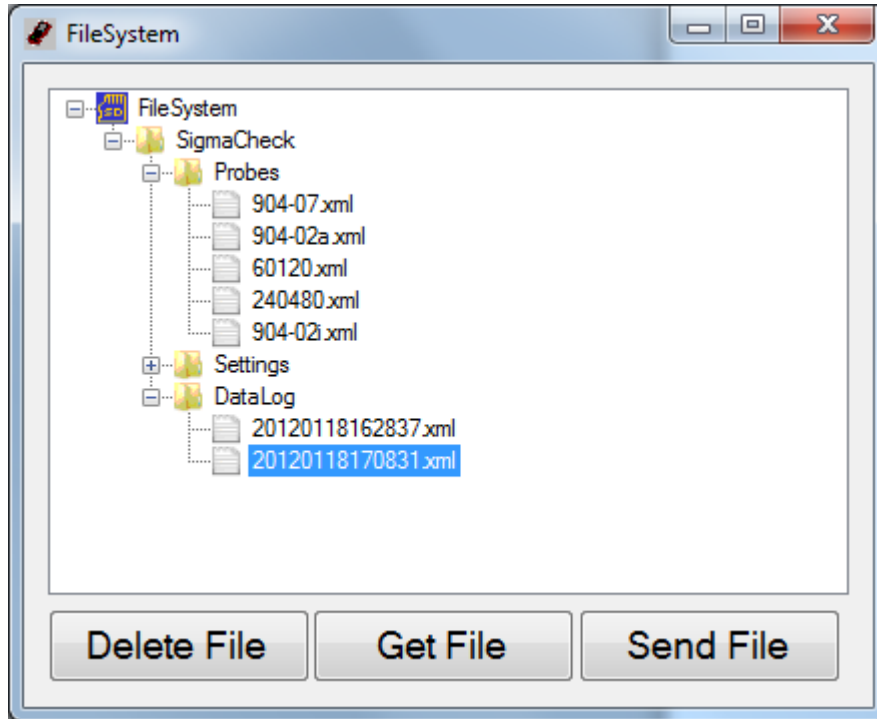
#### **7.1.1.3 Uploading & Downloading files to/from a SIGMACHECK2**

There are 2 ways of getting files on and off the SIGMACHECK2's MicroSD card:

1. Remove the card from the instrument (a slot is present under the Calibration Blocks), place into a PC card reader and copy the files using standard Windows / Mac capabilities.
2. Connecting the SIGMACHECK2 to a PC using the supplied USB cable then using the SigmaCheck2PC file handling functionality via the **MicroSD Card** button (see below).

#### 7.1.1.4 SigmaCheck2PC File handling

Connect the SigmaCheck2 to a PC using the USB cable. With SigmaCheck2PC running and connected to the instrument, click on the “**MicroSD Card**” button across the bottom. A window will appear like so:



The top of the file tree shows “File System”. Everything below this is either a file or folder that is present on the SIGMACHECK2’s MicroSD Card. Folders that have any contents are shown with a small box to the left of their folder icon. Clicking on this box toggles it between expanded or not expanded.

If a file or directory is selected, the 3 buttons across the bottom are enabled and can be clicked. Their functionality is as follows:

**Delete File** – The highlighted file will be deleted. Directories cannot be deleted.

**Get File** – The highlighted file will be downloaded from the SIGMACHECK2. A progress bar will be shown across the main screen of SigmaCheck2PC to show the progress of this file download. Once complete, a Save File window will appear and the file can be saved anywhere on the PC.

**Send File** – An Open File window will appear and a file can be selected from the PC. Clicking **Open** will send this file to the directory highlighted (or if a file is highlighted, to its directory) on the SIGMACHECK2. The progress bar on the SigmaCheck2PC main screen will show progress of this file transfer.

After Deleting or sending a file, the screen will be refreshed showing the new state of the file system on the SIGMACHECK2’s MicroSD Card.

Directories cannot be created or deleted. The directory structure is used by the SIGMACHECK2 like so:

Probes – All probe files must reside in here.

Settings – All files related to the configuration of the instrument must reside here.

Data Log – Any files created by the Data Logging functionality (assuming it is configured to write its data to the card and not to RAM) are written here. The filename is created from the Time & Date that the file was created in the following format:

YYYYMMDDHHMMSS.xml,

i.e. 20120119103502 = 10:35am (and 2 seconds) on the 19<sup>th</sup> Jan, 2012.

If downloading a new probe file to use, please remember that it must be selected from the **Probes** menu on the instrument after the download!

If any Data Logging to the MicroSD card was in progress when clicking the SigmaCheck2PC button **MicroSD Card**, it will be terminated. The data will not be lost and the file will be closed safely.

#### **7.1.1.5 Downloading Data Logger Data from RAM.**

Data Logging can be configured to either save to RAM (internal SIGMACHECK2 memory) or to output to the MicroSD Card.

The benefits of the two approaches are described in section 3.6.4.3.

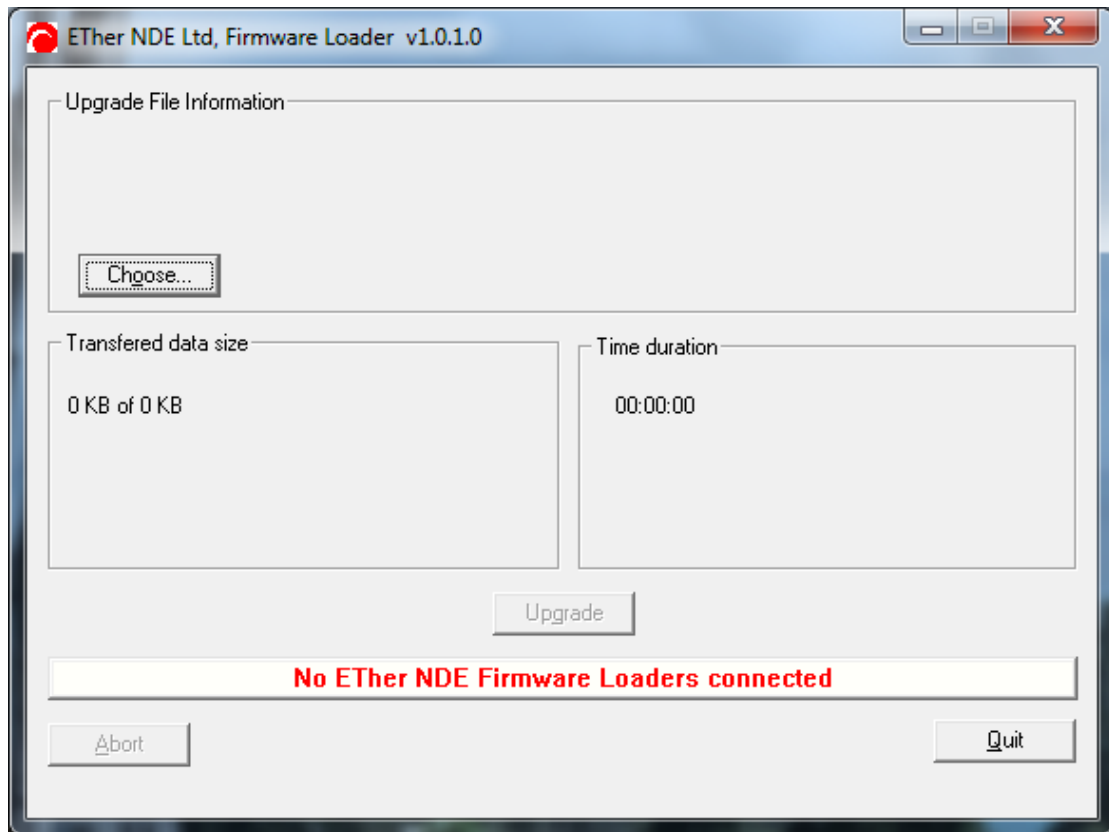
Clicking the “Retrieve Data” button along the bottom of the SigmaCheck2PC screen will begin the upload process. As long as the SIGMACHECK2 is connected to SigmaCheck2PC this process can be initiated. Even if data Logging has not been started, data relating to the number of Columns and Rows will be uploaded. If Data Logging was not completed, the remaining readings will be in an unknown state and will not contain valid data.

After the “Retrieve Data” button is pressed, data will begin uploading. The progress bar does not function for file upload. The time the upload takes is dependent on the number of Rows and Columns that Data Logging is set too. When Upload is complete a file save window will open. Select a file name and location where to save the XML file. For viewing the file, see 7.2 **Using a Spreadsheet to analyse data** below.

#### **7.1.2 ETHERFUU (Firmware Update Utility)**

The SIGMACHECK2 instrument firmware can be updated by the customer in the field allowing them to take advantage of new features and improvements as they are released from *ETHER NDE*. The process is simple and requires the ETHERFUU software to be installed on a PC, the Mini-B USB cable and of course the SIGMACHECK2 instrument.

An update file will be provided by *ETHER NDE*, this file will be a DFU file (i.e. v\_1\_1\_0.dfu). Run the ETHERFUU software. The screen will be as so:



First, the SIGMACHECK2 must be put in to Firmware Loader mode. To do this:

1. Turn the instrument OFF.
2. Hold down the **Down** key.
3. Press the **Power** key.
4. When the Splash Screen is visible, release the **Down** key.
5. The Splash Screen will show "Ether NDE, Firmware Loader"

When the SIGMACHECK2 is in Firmware Loader mode, ETHERFUU running on the PC and the SIGMACHECK2 is connected to the PC, the Splash Screen will show "USB Connected" and ETHERFUU will show:

"Connected to Ether Firmware Loader, but NO file loaded."

Now, click the **Choose** button on ETHERFUU and use the Open file window to navigate and select the provided \*.dfu file. ETHERFUU will now show:

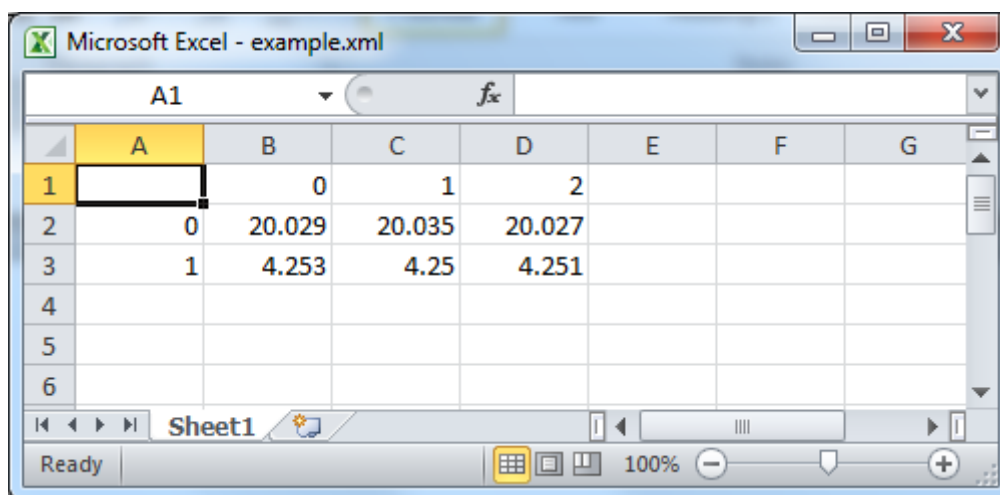
"File correctly loaded and connected"

The **Upgrade** button will no longer be greyed out and should be clicked. The software will be downloaded and progress will be shown by the progress bar. When completed, the SIGMACHECK2 must be restarted. Check on the Splash screen of the SIGMACHECK2 that the new software version is displayed.

## 7.2 Using a spread sheet to analyse data

Data Logger data that has been downloaded via SigmaCheck2PC will have been saved onto the PC in a \*.xml file (See 7.1.1.3 **Uploading & Downloading files** & 7.1.1.5 **Downloading Data Logging Data from RAM**, above).

This file format is not automatically recognised by Windows as being a spreadsheet file, so do not open the file from its icon. Open a spreadsheet package, click **Open File**, navigate to the file and open it. The spreadsheet package should recognise the file format and open the file as if it was a regular Spreadsheet file. Here is an example file opened up in MS Excel. The Data Logger on the SIGMACHECK2 was configured to have 2 rows and 3 columns:



The screenshot shows a Microsoft Excel window titled "Microsoft Excel - example.xml". The spreadsheet has 7 columns (A-G) and 6 rows (1-6). The data is as follows:

	A	B	C	D	E	F	G
1		0	1	2			
2	0	20.029	20.035	20.027			
3	1	4.253	4.25	4.251			
4							
5							
6							

The values shown are %IACS values.

When closing the spreadsheet package we recommend saving the file not in the original \*.xml format, but in the Spreadsheet packages default format.

## **8 Care and Maintenance**

- Use soft clean cloth moistened with a soap or mild detergent to clean the case, buttons and display window.
- Do not use an abrasive cleaning agent of any kind, as this will damage the instrument.
- Do not use solvents to clean the instrument, as they will cause irreparable damage to case and contents.

## 9 Correcting for Thin and Radiused Material

Please note it is the user's responsibility to verify that these tables are fit for the purpose. Also the customer is referred to the latest edition of Boeing BSS7351 (revision F 28-AUG-2017 or latter)

### 9.1 Thin Material

By far the best way to measure the conductivity of thin material with the SigmaCheck2 is to make sure the frequency appropriate for the thickness being tested is being used (i.e. as low as possible but ensuring the Min Thickness calculation is greater than the current thickness being tested). This may be displayed see 3.4.1 on the instrument or the table below gives a convenient reference.

#### 9.1.1 Influence of frequency table

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm <sup>-1</sup> )	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Aluminium												
Pure Aluminium (A1)	65.86%	38.20	0.039	0.99	0.028	0.70	0.020	0.50	0.014	0.35	0.010	0.25
Aluminium Alloy 1100-0	59.45%	34.48	0.041	1.04	0.029	0.74	0.021	0.52	0.015	0.37	0.010	0.26
Aluminium Alloy 1100-H18	57.47%	33.33	0.042	1.06	0.030	0.75	0.021	0.53	0.015	0.38	0.010	0.27
Aluminium Alloy 2024-0	50.71%	29.41	0.044	1.13	0.031	0.80	0.022	0.56	0.016	0.40	0.011	0.28
Aluminium Alloy 2024-T4	30.25%	17.55	0.058	1.46	0.041	1.03	0.029	0.73	0.020	0.52	0.014	0.37
Aluminium Alloy 3003-0	50.71%	29.41	0.044	1.13	0.031	0.80	0.022	0.56	0.016	0.40	0.011	0.28
Aluminium Alloy 5052-0	35.18%	20.40	0.053	1.36	0.038	0.96	0.027	0.68	0.019	0.48	0.013	0.34
Aluminium Alloy 5052-H38	35.18%	20.40	0.053	1.36	0.038	0.96	0.027	0.68	0.019	0.48	0.013	0.34
Aluminium Alloy 6061-0	46.60%	27.03	0.046	1.18	0.033	0.83	0.023	0.59	0.016	0.42	0.012	0.29
Aluminium Alloy 6061-T6	43.10%	25.00	0.048	1.22	0.034	0.87	0.024	0.61	0.017	0.43	0.012	0.31
Aluminium Alloy 7075-T6	33.16%	19.23	0.055	1.40	0.039	0.99	0.027	0.70	0.019	0.49	0.014	0.35
Aluminium Alloy 355.0-T6	27.81%	16.13	0.060	1.52	0.042	1.08	0.030	0.76	0.021	0.54	0.015	0.38
Aluminium Alloy 356.0-T6	25.35%	14.70	0.063	1.60	0.044	1.13	0.031	0.80	0.022	0.56	0.016	0.40
Aluminium Alloy 360.0-F	35.92%	20.83	0.053	1.34	0.037	0.95	0.026	0.67	0.019	0.47	0.013	0.34



Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Aluminium Alloy 380.0-F	43.10%	25.00	0.048	1.22	0.034	0.87	0.024	0.61	0.017	0.43	0.012	0.31
Aluminium Alloy B443.0-F	26.94%	15.63	0.061	1.55	0.043	1.10	0.030	0.77	0.022	0.55	0.015	0.39
Aluminium Alloy 5754-H111 (Din AlMg3)(3.3535)A-63µ	32.00%	18.56	0.056	1.42	0.040	1.01	0.028	0.71	0.020	0.50	0.014	0.36
Nickel and Alloys												
Nickel - (Pure) (Ni)	25.00%	14.50	0.063	1.61	0.045	1.14	0.032	0.80	0.022	0.57	0.016	0.40
Nickel - (Wrought)	18.00%	10.44	0.075	1.90	0.053	1.34	0.037	0.95	0.026	0.67	0.019	0.47
Nickel - (Dura) 301	4.06%	2.35	0.157	3.99	0.111	2.82	0.079	2.00	0.056	1.41	0.039	1.00
Monel 400	3.38%	1.96	0.172	4.37	0.122	3.09	0.086	2.19	0.061	1.55	0.043	1.09
Monel K-500	2.83%	1.64	0.188	4.78	0.133	3.38	0.094	2.39	0.067	1.69	0.047	1.19
Hastelloy B	1.28%	0.74	0.280	7.11	0.198	5.03	0.140	3.55	0.099	2.51	0.070	1.78
Inconel 600	1.67%	0.97	0.245	6.22	0.173	4.40	0.122	3.11	0.087	2.20	0.061	1.56
Inconel 625	1.34%	0.78	0.273	6.95	0.193	4.91	0.137	3.47	0.097	2.46	0.068	1.74
Inconel X-750	1.41%	0.82	0.267	6.77	0.189	4.79	0.133	3.39	0.094	2.39	0.067	1.69
Inconel 800	1.74%	1.01	0.240	6.10	0.170	4.31	0.120	3.05	0.085	2.16	0.060	1.52
Nichrome - Ni 61%, Cr 15%, Fe 24%	1.54%	0.89	0.255	6.48	0.180	4.58	0.128	3.24	0.090	2.29	0.064	1.62
Nichrome V - Ni 80% + 20% Cr	1.60%	0.93	0.250	6.36	0.177	4.49	0.125	3.18	0.088	2.25	0.063	1.59
Stainless Steels												
Stainless Steel Type 420	3.13%	1.82	0.179	4.54	0.127	3.21	0.089	2.27	0.063	1.61	0.045	1.14
Stainless Steel Type 403, 410 & 416	3.02%	1.75	0.182	4.63	0.129	3.27	0.091	2.31	0.064	1.64	0.046	1.16
St Steel Type 430, 430-F, 434 & 436	2.87%	1.66	0.187	4.75	0.132	3.36	0.093	2.37	0.066	1.68	0.047	1.19
Stainless Steel Type 405 & 409	2.83%	1.64	0.188	4.78	0.133	3.38	0.094	2.39	0.067	1.69	0.047	1.19
Stainless Steel Type 442	2.69%	1.56	0.193	4.90	0.136	3.47	0.097	2.45	0.068	1.73	0.048	1.23

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Stainless Steel Type 446	2.57%	1.49	0.197	5.02	0.140	3.55	0.099	2.51	0.070	1.77	0.049	1.25
Stainless Steel Type 201 & 202	2.50%	1.45	0.200	5.09	0.142	3.60	0.100	2.54	0.071	1.80	0.050	1.27
Stainless Steel Type 304 & 304L	2.46%	1.43	0.202	5.13	0.143	3.63	0.101	2.56	0.071	1.81	0.050	1.28
Stainless Steel Type 321	2.43%	1.41	0.203	5.16	0.144	3.65	0.102	2.58	0.072	1.82	0.051	1.29
S/S Type 301,302, 302-B, 303, 305, 308, 347, 414 & 431	2.39%	1.39	0.205	5.20	0.145	3.68	0.102	2.60	0.072	1.84	0.051	1.30
Stainless Steel Type 316, 316L & 317	2.33%	1.35	0.207	5.27	0.147	3.72	0.104	2.63	0.073	1.86	0.052	1.32
S/St Type 2522 (V/soft nr 1.4466) Similar to 316	1.01%	0.59	0.315	8.00	0.223	5.66	0.157	4.00	0.111	2.83	0.079	2.00
Stainless Steel Type 309	2.21%	1.28	0.213	5.41	0.151	3.82	0.106	2.70	0.075	1.91	0.053	1.35
Stainless Steel Type 310	2.18%	1.26	0.214	5.45	0.152	3.85	0.107	2.72	0.076	1.93	0.054	1.36
<b>Copper</b>												
99.995% Min (Vacuum Cast Pure Copper) (Cu)	102.00%	59.16	0.031	0.80	0.022	0.56	0.016	0.40	0.011	0.28	0.008	0.20
C10100 99.99% Min	101.00%	58.58	0.031	0.80	0.022	0.57	0.016	0.40	0.011	0.28	0.008	0.20
C10200 99.95% Cu+Ag	100.00%	58.00	0.032	0.80	0.022	0.57	0.016	0.40	0.011	0.28	0.008	0.20
C10400, C10500 & C10700 +0.5 to 0.15% Ag	100.00%	58.00	0.032	0.80	0.022	0.57	0.016	0.40	0.011	0.28	0.008	0.20
C10300 +0.001 to 0.005% P	98.20%	56.96	0.032	0.81	0.023	0.57	0.016	0.41	0.011	0.29	0.008	0.20
C14700 +0.3% S	96.00%	55.68	0.032	0.82	0.023	0.58	0.016	0.41	0.011	0.29	0.008	0.21
C14720 +0.1% S	96.00%	55.68	0.032	0.82	0.023	0.58	0.016	0.41	0.011	0.29	0.008	0.21
C15000 +0.13 to 0.20% Zr	93.00%	53.94	0.033	0.83	0.023	0.59	0.016	0.42	0.012	0.29	0.008	0.21
C14500 +0.5% Te	93.00%	53.94	0.033	0.83	0.023	0.59	0.016	0.42	0.012	0.29	0.008	0.21
Cu +0.03% Mg + 0.03% Zr	93.00%	53.94	0.033	0.83	0.023	0.59	0.016	0.42	0.012	0.29	0.008	0.21
C10800 +0.005 to 0.012% P	92.00%	53.36	0.033	0.84	0.023	0.59	0.017	0.42	0.012	0.30	0.008	0.21
Phosphorized Arsenical Copper	45.00%	26.10	0.047	1.20	0.033	0.85	0.024	0.60	0.017	0.42	0.012	0.30

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Cu + 0.03 to 0.06% Mg; +0.08 to 0.15% Zr; 0.40 to 0.80% Cr	85.00%	49.30	0.034	0.87	0.024	0.62	0.017	0.44	0.012	0.31	0.009	0.22
Cu +0.7 to 1.2% Cr	82.00%	47.56	0.035	0.89	0.025	0.63	0.017	0.44	0.012	0.31	0.009	0.22
Cu +2.0% Ni + 1.0% Ti	60.00%	34.80	0.041	1.04	0.029	0.73	0.020	0.52	0.014	0.37	0.010	0.26
Cu +5.0% Ni + 2.5% Ti	55.00%	31.90	0.043	1.08	0.030	0.77	0.021	0.54	0.015	0.38	0.011	0.27
Miscellaneous												
Brass 95% Cu + 5% Zn	55.00%	31.90	0.043	1.08	0.030	0.77	0.021	0.54	0.015	0.38	0.011	0.27
95.7% Cu + 4.3% Ti	10.00%	5.80	0.100	2.54	0.071	1.80	0.050	1.27	0.035	0.90	0.025	0.64
Admiralty Brass 70% Cu + 29% Zn + 1% Sn	2.50%	1.45	0.200	5.09	0.142	3.60	0.100	2.54	0.071	1.80	0.050	1.27
Alpha Alloy (Ti) + 5% Al + 2.5% Sn	1.10%	0.64	0.302	7.67	0.213	5.42	0.151	3.83	0.107	2.71	0.075	1.92
Alpha-Beta Alloy (Ti) + 6% Al + 4% V	1.01%	0.59	0.315	8.00	0.223	5.66	0.157	4.00	0.111	2.83	0.079	2.00
Alpha-Ti	3.20%	1.86	0.177	4.49	0.125	3.18	0.088	2.25	0.063	1.59	0.044	1.12
Aluminium Brass BSTF3	23.00%	13.34	0.066	1.68	0.047	1.19	0.033	0.84	0.023	0.59	0.017	0.42
Aluminium Brass Cu + Zn + 20% Al	23.00%	13.34	0.066	1.68	0.047	1.19	0.033	0.84	0.023	0.59	0.017	0.42
Aluminium Brass JIS BST F2.3	23.00%	13.34	0.066	1.68	0.047	1.19	0.033	0.84	0.023	0.59	0.017	0.42
Aluminium Brass 76% Cu + 22% Zn + 2% Al	23.00%	13.34	0.066	1.68	0.047	1.19	0.033	0.84	0.023	0.59	0.017	0.42
Aluminium Brass Type B	15.50%	8.99	0.080	2.04	0.057	1.44	0.040	1.02	0.028	0.72	0.020	0.51
Antimony (Sb)	4.48%	2.60	0.150	3.80	0.106	2.69	0.075	1.90	0.053	1.34	0.037	0.95
ASTM Bill/71 Alloy 715 (70/30 Cu/Ni)	5.00%	2.90	0.142	3.60	0.100	2.54	0.071	1.80	0.050	1.27	0.035	0.90
ASTM Bill/F1 Alloy 443 (70/30 Cu/Zn) with 1% Sn	25.00%	14.50	0.063	1.61	0.045	1.14	0.032	0.80	0.022	0.57	0.016	0.40
Barium (Ba)	2.76%	1.60	0.191	4.84	0.135	3.42	0.095	2.42	0.067	1.71	0.048	1.21
Beryllium (Be)	38.50%	22.33	0.051	1.30	0.036	0.92	0.026	0.65	0.018	0.46	0.013	0.32
Beta Alloy (Ti)	1.20%	0.70	0.289	7.34	0.204	5.19	0.144	3.67	0.102	2.60	0.072	1.84

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Bismuth (Bi)	1.55%	0.90	0.254	6.46	0.180	4.57	0.127	3.23	0.090	2.28	0.064	1.61
Boron Carbide	0.00034%	0.00020	17.168	436.07	12.140	308.35	8.584	218.04	6.070	154.17	4.292	109.02
Brass 70% Cu + 30% Zn	28.00%	16.24	0.060	1.52	0.042	1.07	0.030	0.76	0.021	0.54	0.015	0.38
Brass 85% Cu + 15% Zn	37.00%	21.46	0.052	1.32	0.037	0.93	0.026	0.66	0.018	0.47	0.013	0.33
Brass 97.5% Cu + 2.5% Ti	15.00%	8.70	0.082	2.08	0.058	1.47	0.041	1.04	0.029	0.73	0.020	0.52
Bronze 88% Cu + 12% Sn	9.70%	5.63	0.102	2.58	0.072	1.83	0.051	1.29	0.036	0.91	0.025	0.65
C17300 Cu + Be + Pb	22.00%	12.76	0.067	1.71	0.048	1.21	0.034	0.86	0.024	0.61	0.017	0.43
C34000 65% Cu; 34% Zn	26.00%	15.08	0.062	1.58	0.044	1.12	0.031	0.79	0.022	0.56	0.016	0.39
C36000 (Free Cutting Brass)	26.00%	15.08	0.062	1.58	0.044	1.12	0.031	0.79	0.022	0.56	0.016	0.39
C54400 88% Cu; 4% Zn; + Pb + P	19.00%	11.02	0.073	1.84	0.051	1.30	0.036	0.92	0.026	0.65	0.018	0.46
C64200 91% Cu + 7% Al + 2% Si	8.00%	4.64	0.112	2.84	0.079	2.01	0.056	1.42	0.040	1.01	0.028	0.71
C65500 97% Cu + 3% Si	7.00%	4.06	0.120	3.04	0.085	2.15	0.060	1.52	0.042	1.07	0.030	0.76
C67500 Cu + Zn + Mn	24.00%	13.92	0.065	1.64	0.046	1.16	0.032	0.82	0.023	0.58	0.016	0.41
C6871-2TS-0	23.00%	13.34	0.066	1.68	0.047	1.19	0.033	0.84	0.023	0.59	0.017	0.42
C70690 90% Cu + 10% Ni	11.90%	6.90	0.092	2.33	0.065	1.65	0.046	1.17	0.032	0.82	0.023	0.58
C71590 70% Cu + 30% Ni	5.00%	2.90	0.142	3.60	0.100	2.54	0.071	1.80	0.050	1.27	0.035	0.90
C83600 (Red Brass) 0.85% Cu; 5% Zn; 5% Sn; 5% Pb	15.00%	8.70	0.082	2.08	0.058	1.47	0.041	1.04	0.029	0.73	0.020	0.52
C85200 (Yellow Brass)	18.00%	10.44	0.075	1.90	0.053	1.34	0.037	0.95	0.026	0.67	0.019	0.47
C86200 (Manganese Bronze)	7.50%	4.35	0.116	2.94	0.082	2.08	0.058	1.47	0.041	1.04	0.029	0.73
C92200 (Navy 'M' Bronze)	14.30%	8.29	0.084	2.13	0.059	1.50	0.042	1.06	0.030	0.75	0.021	0.53
C92900 Cu + Zn + Sn + Pb + Ni	9.20%	5.34	0.104	2.65	0.074	1.87	0.052	1.33	0.037	0.94	0.026	0.66
C93200 (Bearing-Bronze)	12.00%	6.96	0.091	2.32	0.065	1.64	0.046	1.16	0.032	0.82	0.023	0.58

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
C95400 (Aluminium-Bronze)	13.00%	7.54	0.088	2.23	0.062	1.58	0.044	1.12	0.031	0.79	0.022	0.56
C97300 Cu + Ni + Zn	5.70%	3.31	0.133	3.37	0.094	2.38	0.066	1.68	0.047	1.19	0.033	0.84
Cadmium (Cd) (Pure)	25.17%	14.60	0.063	1.60	0.045	1.13	0.032	0.80	0.022	0.57	0.016	0.40
Cadmium (Drawn)	22.68%	13.15	0.066	1.69	0.047	1.19	0.033	0.84	0.024	0.60	0.017	0.42
Calcium (Ca)	37.60%	21.81	0.052	1.31	0.037	0.93	0.026	0.66	0.018	0.46	0.013	0.33
Carbon (Pure)	0.12%	0.07	0.914	23.21	0.646	16.41	0.457	11.61	0.323	8.21	0.228	5.80
Carbon Extruded	0.18%	0.10	0.746	18.95	0.528	13.40	0.373	9.48	0.264	6.70	0.187	4.74
Cesium (Cs)	9.14%	5.30	0.105	2.66	0.074	1.88	0.052	1.33	0.037	0.94	0.026	0.66
Chromium (Cr)	13.45%	7.80	0.086	2.19	0.061	1.55	0.043	1.10	0.031	0.78	0.022	0.55
Cobalt (Co) (99.8% Pure)	17.80%	10.32	0.075	1.91	0.053	1.35	0.038	0.95	0.027	0.67	0.019	0.48
Cobalt (Co) (Pure)	27.60%	16.01	0.060	1.53	0.043	1.08	0.030	0.77	0.021	0.54	0.015	0.38
Cu 50%; Ni 30%; Zn 20%	3.58%	2.08	0.167	4.25	0.118	3.00	0.084	2.12	0.059	1.50	0.042	1.06
Cu 60% + Ni 40%	3.52%	2.04	0.169	4.29	0.119	3.03	0.084	2.14	0.060	1.52	0.042	1.07
Cu 64%; Ni 18%; Zn 18%	5.20%	3.02	0.139	3.53	0.098	2.49	0.069	1.76	0.049	1.25	0.035	0.88
Cu Ni 30Fe Admiralty ( 70/30 Cu/Ni) CN106; CN107	5.00%	2.90	0.142	3.60	0.100	2.54	0.071	1.80	0.050	1.27	0.035	0.90
Cu Ni JIS-CNTF3 (CN107)	5.00%	2.90	0.142	3.60	0.100	2.54	0.071	1.80	0.050	1.27	0.035	0.90
Gallium (Ga)	10.00%	5.80	0.100	2.54	0.071	1.80	0.050	1.27	0.035	0.90	0.025	0.64
Germanium (Ge)	3.80%	2.20	0.162	4.12	0.115	2.92	0.081	2.06	0.057	1.46	0.041	1.03
Gold (Au) 99.9% Pure	77.60%	45.01	0.036	0.91	0.025	0.65	0.018	0.46	0.013	0.32	0.009	0.23
Graphite with Elemental Carbon - Plain	0.03%	0.02	1.828	46.42	1.292	32.83	0.914	23.21	0.646	16.41	0.457	11.61
Graphite with Elemental Carbon - Resin filled	0.03%	0.02	1.828	46.42	1.292	32.83	0.914	23.21	0.646	16.41	0.457	11.61
Graphite with Elemental Carbon - Silver filled	0.06%	0.03	1.292	32.83	0.914	23.21	0.646	16.41	0.457	11.61	0.323	8.21

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Hafnium (Hf)	5.34%	3.10	0.137	3.48	0.097	2.46	0.068	1.74	0.048	1.23	0.034	0.87
Indium (In)	19.14%	11.10	0.072	1.84	0.051	1.30	0.036	0.92	0.026	0.65	0.018	0.46
Iridium (Ir)	32.50%	18.85	0.056	1.41	0.039	1.00	0.028	0.71	0.020	0.50	0.014	0.35
Lanthanum (La)	2.93%	1.70	0.185	4.70	0.131	3.32	0.092	2.35	0.065	1.66	0.046	1.17
Lead Alloy +0.07% Ca	7.91%	4.59	0.113	2.86	0.080	2.02	0.056	1.43	0.040	1.01	0.028	0.71
Lead Alloy +0.07% Ca +0.7% Sn	7.87%	4.56	0.113	2.87	0.080	2.03	0.056	1.43	0.040	1.01	0.028	0.72
Lead Alloy +10.0% Sb	6.22%	3.61	0.127	3.22	0.090	2.28	0.063	1.61	0.045	1.14	0.032	0.81
Lead Alloy +4.0% Sb	7.18%	4.16	0.118	3.00	0.084	2.12	0.059	1.50	0.042	1.06	0.030	0.75
Lead Alloy +42.3% Pb + 57.7% Bi	2.72%	1.58	0.192	4.88	0.136	3.45	0.096	2.44	0.068	1.72	0.048	1.22
Lead Alloy +6.0% Sb	6.81%	3.95	0.121	3.08	0.086	2.18	0.061	1.54	0.043	1.09	0.030	0.77
Lithium (Li)	19.40%	11.25	0.072	1.83	0.051	1.29	0.036	0.91	0.025	0.65	0.018	0.46
Magnesium (Mg) (Pure)	38.60%	22.39	0.051	1.29	0.036	0.92	0.025	0.65	0.018	0.46	0.013	0.32
Manganese (Mn)	9.30%	5.39	0.104	2.64	0.073	1.86	0.052	1.32	0.037	0.93	0.026	0.66
Mercury (Hg) 0°C	1.83%	1.06	0.234	5.94	0.165	4.20	0.117	2.97	0.083	2.10	0.059	1.49
Mercury (Hg) 20°C	1.80%	1.04	0.236	5.99	0.167	4.24	0.118	3.00	0.083	2.12	0.059	1.50
Mg Alloy AZ31B-F	18.74%	10.87	0.073	1.86	0.052	1.31	0.037	0.93	0.026	0.66	0.018	0.46
Mg Alloy AZ91B-F	13.36%	7.75	0.087	2.20	0.061	1.56	0.043	1.10	0.031	0.78	0.022	0.55
Mg Alloy ZK60A-T5	30.25%	17.55	0.058	1.46	0.041	1.03	0.029	0.73	0.020	0.52	0.014	0.37
Molybdenum (Annealed)	41.00%	23.78	0.049	1.26	0.035	0.89	0.025	0.63	0.017	0.44	0.012	0.31
Molybdenum (Hard Drawn)	35.20%	20.42	0.053	1.36	0.038	0.96	0.027	0.68	0.019	0.48	0.013	0.34
Molybdenum (Mo) (Pure)	33.50%	19.43	0.055	1.39	0.039	0.98	0.027	0.69	0.019	0.49	0.014	0.35
Niobium (Nb) (Columbium)	13.80%	8.00	0.085	2.16	0.060	1.53	0.043	1.08	0.030	0.77	0.021	0.54

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Osmium (Os)	18.10%	10.50	0.074	1.89	0.053	1.34	0.037	0.94	0.026	0.67	0.019	0.47
Palladium (Pd)	16.90%	9.80	0.077	1.96	0.054	1.38	0.039	0.98	0.027	0.69	0.019	0.49
Platinum (Pt) Drawn Wire	15.70%	9.11	0.080	2.03	0.056	1.43	0.040	1.01	0.028	0.72	0.020	0.51
Platinum (Pt) (Pure)	17.50%	10.15	0.076	1.92	0.054	1.36	0.038	0.96	0.027	0.68	0.019	0.48
Platinum-Iridium 80% Pt + 20% Ir	5.46%	3.17	0.135	3.44	0.096	2.43	0.068	1.72	0.048	1.22	0.034	0.86
Platinum-Rhodium 90% Pt + 10% Rh	8.16%	4.73	0.111	2.81	0.078	1.99	0.055	1.41	0.039	1.00	0.028	0.70
Polonium (Po)	3.45%	2.00	0.170	4.33	0.121	3.06	0.085	2.16	0.060	1.53	0.043	1.08
Potassium (K)	28.30%	16.41	0.060	1.51	0.042	1.07	0.030	0.76	0.021	0.53	0.015	0.38
Pure Lead (Pb)	7.93%	4.60	0.112	2.86	0.079	2.02	0.056	1.43	0.040	1.01	0.028	0.71
Pyrolytic Graphite	0.43%	0.25	0.483	12.26	0.341	8.67	0.241	6.13	0.171	4.34	0.121	3.07
Rhenium (Re)	8.80%	5.10	0.107	2.71	0.075	1.92	0.053	1.36	0.038	0.96	0.027	0.68
Rhodium (Rh)	38.20%	22.16	0.051	1.30	0.036	0.92	0.026	0.65	0.018	0.46	0.013	0.33
Rubidium (Rb)	14.90%	8.64	0.082	2.08	0.058	1.47	0.041	1.04	0.029	0.74	0.021	0.52
Ruthenium (Annealed)	26.70%	15.49	0.061	1.56	0.043	1.10	0.031	0.78	0.022	0.55	0.015	0.39
Ruthenium (Ru) (Pure)	17.20%	9.98	0.076	1.94	0.054	1.37	0.038	0.97	0.027	0.69	0.019	0.48
Scandium (Sc)	2.58%	1.50	0.197	5.01	0.139	3.54	0.099	2.50	0.070	1.77	0.049	1.25
Selenium (Se)	13.80%	8.00	0.085	2.16	0.060	1.53	0.043	1.08	0.030	0.77	0.021	0.54
Silicon (Si)	17.24%	10.00	0.076	1.94	0.054	1.37	0.038	0.97	0.027	0.68	0.019	0.48
Silicon Carbide	0.00017%	0.0000986	24.279	616.70	17.168	436.07	12.140	308.35	8.584	218.04	6.070	154.17
Silver (Ag) (Pure)	117.40%	68.09	0.029	0.74	0.021	0.52	0.015	0.37	0.010	0.26	0.007	0.19
Silver (Ag) 99.78% Pure	105.80%	61.36	0.031	0.78	0.022	0.55	0.015	0.39	0.011	0.28	0.008	0.20
Sodium (Na)	40.10%	23.26	0.050	1.27	0.035	0.90	0.025	0.63	0.018	0.45	0.012	0.32

Types and/or Description	Conductivity % IACS	Mega Siemen per m (MSm-1)	Minimum Test Thickness									
			60kHz (inch)	60kHz (mm)	120kHz (inch)	120kHz (inch)	240kHz (inch)	240kHz (mm)	480kHz (inch)	480kHz (mm)	960kHz (inch)	960kHz (mm)
Strats-Tin 99.8%	15.00%	8.70	0.082	2.08	0.058	1.47	0.041	1.04	0.029	0.73	0.020	0.52
Strontium (Sr)	7.40%	4.29	0.116	2.96	0.082	2.09	0.058	1.48	0.041	1.05	0.029	0.74
Tantalum (Ta)	13.10%	7.60	0.087	2.22	0.062	1.57	0.044	1.11	0.031	0.79	0.022	0.56
Thallium (Tl)	9.80%	5.68	0.101	2.57	0.072	1.82	0.051	1.28	0.036	0.91	0.025	0.64
Thorium (Th)	9.47%	5.49	0.103	2.61	0.073	1.85	0.051	1.31	0.036	0.92	0.026	0.65
Tin (Sn) (Pure)	16.40%	9.51	0.078	1.99	0.055	1.40	0.039	0.99	0.028	0.70	0.020	0.50
Titanium (Ti) Comm Pure ASTM B-338 C-R2, JIS TTN35 W201-2, IMI125	3.58%	2.08	0.167	4.25	0.118	3.00	0.084	2.12	0.059	1.50	0.042	1.06
Titanium (Ti) (Pure)	4.10%	2.38	0.156	3.97	0.111	2.81	0.078	1.99	0.055	1.40	0.039	0.99
Tungsten (W)	31.30%	18.15	0.057	1.44	0.040	1.02	0.028	0.72	0.020	0.51	0.014	0.36
Uranium (U)	5.86%	3.40	0.131	3.32	0.092	2.35	0.065	1.66	0.046	1.17	0.033	0.83
Vanadium (Va)	6.90%	4.00	0.121	3.06	0.085	2.16	0.060	1.53	0.043	1.08	0.030	0.77
White Metal 92% Sn; 8% b	11.10%	6.44	0.095	2.41	0.067	1.71	0.048	1.21	0.034	0.85	0.024	0.60
Wood's Metal 55.7% Bi + 13.7% Sn + 13.7% Pb + 16.9% Cd	3.33%	1.93	0.173	4.41	0.123	3.12	0.087	2.20	0.061	1.56	0.043	1.10
Yttrium (Y)	3.28%	1.90	0.175	4.44	0.124	3.14	0.087	2.22	0.062	1.57	0.044	1.11
Zinc +0.08% Pb	28.80%	16.70	0.059	1.50	0.042	1.06	0.029	0.75	0.021	0.53	0.015	0.37
Zinc +0.25% Cu	27.80%	16.12	0.060	1.53	0.042	1.08	0.030	0.76	0.021	0.54	0.015	0.38
Zinc +0.6% Cu + 0.1% Ti	27.80%	16.12	0.060	1.53	0.042	1.08	0.030	0.76	0.021	0.54	0.015	0.38
Zinc (Cast)	28.10%	16.30	0.060	1.52	0.042	1.07	0.030	0.76	0.021	0.54	0.015	0.38
Zinc (Pure)	32.00%	18.56	0.056	1.42	0.040	1.01	0.028	0.71	0.020	0.50	0.014	0.36
Zircalloy2	2.40%	1.39	0.204	5.19	0.144	3.67	0.102	2.60	0.072	1.84	0.051	1.30
Zirconium (Zr)	4.13%	2.40	0.156	3.96	0.110	2.80	0.078	1.98	0.055	1.40	0.039	0.99



### 9.1.2 Correction for Bare Sheet Material

SigmaCheck2 and PSIG001A 13mm probe at 60kHz

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches						
	0.016	0.020	0.025	0.032	0.040	0.050	0.063 AND THICKER
	Corrected Conductivity value in percent IACS						
26.0	13.0	18.0	23.0	26.5	27.5	26.5	26.0
26.5	13.5	18.5	23.5	27.5	28.0	27.5	26.5
27.0	14.0	19.0	24.0	28.0	28.5	28.0	27.0
27.5	14.5	19.5	25.0	28.5	29.0	28.5	27.5
28.0	14.5	20.5	25.5	29.5	29.5	29.0	28.0
28.5	15.0	21.0	26.0	30.0	30.5	29.5	28.5
29.0	15.5	21.5	27.0	30.5	31.0	30.0	29.0
29.5	16.0	22.0	27.5	31.5	31.5	30.5	29.5
30.0	16.5	23.0	28.5	32.0	32.0	31.0	30.0
30.5	17.0	23.5	29.0	32.5	32.5	31.5	30.5
31.0	18.0	24.5	29.5	33.0	33.0	32.0	31.0
31.5	18.5	25.0	30.5	33.5	33.5	32.5	31.5
32.0	19.0	25.5	31.0	34.0	34.0	33.0	32.0
32.5	19.5	26.0	31.5	34.5	34.5	33.5	32.5
33.0	20.0	26.5	32.0	35.0	35.0	33.5	33.0
33.5	20.5	27.0	33.0	35.5	35.5	34.0	33.5
34.0	21.0	28.0	33.5	36.0	36.0	34.5	34.0
34.5	21.5	28.5	34.0	36.5	36.0	35.0	34.5
35.0	22.0	29.0	34.5	37.5	36.5	35.5	35.0
35.5	22.5	29.5	35.5	38.0	37.0	36.0	35.5
36.0	23.0	30.0	36.0	38.5	37.5	36.5	36.0
36.5	23.5	30.5	36.5	39.0	38.0	37.0	36.5
37.0	24.0	31.0	37.0	39.5	38.5	37.5	37.0
37.5	24.5	32.0	38.0	40.0	39.0	38.0	37.5
38.0	25.0	32.5	38.5	40.5	39.5	38.5	38.0
38.5	25.5	33.0	39.0	41.0	40.0	39.0	38.5
39.0	26.0	33.5	39.5	42.0	40.5	39.5	39.0
39.5	26.5	34.0	40.5	42.5	41.0	40.0	39.5

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches						
	0.016	0.020	0.025	0.032	0.040	0.050	0.063 AND THICKER
	Corrected Conductivity value in percent IACS						
40.0	27.5	34.5	41.0	43.0	41.5	40.5	40.0
40.5	28.0	35.5	41.5	43.5	42.0	41.0	40.5
41.0	28.5	36.0	42.5	44.0	42.5	41.5	41.0
41.5	29.5	36.5	43.0	44.5	43.0	42.0	41.5
42.0	30.0	37.5	44.0	45.0	43.5	42.5	42.0
42.5	31.0	38.0	44.5	46.0	44.0	43.0	42.5
43.0	32.0	39.0	45.5	46.5	44.5	43.5	43.0
43.5	32.5	39.5	46.0	47.0	45.0	44.0	43.5
44.0	33.5	40.0	46.5	47.5	45.5	44.5	44.0
44.5	34.0	41.0	47.5	48.0	46.0	45.0	44.5
45.0	35.0	41.5	48.0	49.0	47.0	45.5	45.0
45.5	35.5	42.5	48.5	49.5	47.0	46.0	45.5
46.0	36.0	43.0	49.5	50.0	47.5	46.5	46.0
46.5	36.0	43.5	50.0	50.5	48.0	47.0	46.5
47.0	36.5	44.0	50.5	51.0	48.5	47.5	47.0
47.5	37.0	45.0	51.0	51.5	49.0	48.0	47.5
48.0	37.5	45.5	51.5	52.0	49.5	48.5	48.0
48.5	38.0	46.0	52.0	52.0	50.0	49.0	48.5
49.0	38.5	47.0	52.5	52.5	50.5	49.5	49.0
49.5	39.0	47.5	53.5	53.0	51.0	50.0	49.5
50.0	39.5	48.0	54.0	53.5	51.5	50.5	50.0
50.5	40.0	48.5	54.5	54.0	51.5	51.0	50.5
51.0	40.5	49.5	55.0	54.5	52.0	51.5	51.0
51.5	41.0	50.0	55.5	55.0	52.5	52.0	51.5
52.0	41.5	50.5	56.0	55.5	53.0	52.5	52.0
52.5	41.5	51.0	56.5	56.0	53.5	53.0	52.5
53.0	42.0	52.0	57.5	56.5	54.0	53.0	53.0
53.5	42.5	52.5	58.0	57.0	54.5	53.5	53.5
54.0	43.0	53.0	58.5	57.5	55.0	54.0	54.0
54.5	43.5	54.0	59.0	58.0	55.5	54.5	54.5
55.0	44.0	54.5	59.5	58.5	56.0	55.0	55.0
55.5	44.5	55.0	60.0	59.0	56.0	55.5	55.5
56.0	45.0	55.5	60.5	59.5	56.5	56.0	56.0
56.5	45.5	56.5	61.5	60.0	57.0	56.5	56.5
57.0	46.0	57.0	62.0	60.5	57.5	57.0	57.0
57.5	46.5	57.5	62.5	61.0	58.0	57.5	57.5

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches						
	0.016	0.020	0.025	0.032	0.040	0.050	0.063 AND THICKER
	Corrected Conductivity value in percent IACS						
58.0	46.5	58.5	63.0	61.5	58.5	58.0	58.0
58.5	47.0	59.0	63.5	62.0	59.0	58.5	58.5
59.0	47.5	59.5	64.0	62.5	59.5	59.0	59.0
59.5	48.0	60.0	64.5	63.0	60.0	59.5	59.5
60.0	48.5	61.0	65.5	63.5	60.5	60.0	60.0
60.5	49.5	61.5	65.5	64.0	61.0	60.5	60.5
61.0	50.0	62.0	66.0	64.5	61.5	61.0	61.0
61.5	50.5	62.5	66.5	65.0	62.0	61.5	61.5
62.0	51.5	63.0	67.0	65.5	62.5	62.0	62.0
62.5	52.0	63.5	67.5	66.0	63.0	62.5	62.5
63.0	53.0	64.0	68.0	66.5	63.5	63.0	63.0
63.5	53.5	64.5	68.5	67.0	64.0	63.5	63.5
64.0	54.0	65.5	69.0	67.0	64.5	64.0	64.0
64.5	55.0	66.0	69.5	67.5	65.0	64.5	64.5
65.0	55.5	66.5	70.0	68.0	65.5	65.0	65.0

## 9.2 Clad Material

### 9.2.1 SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2014 Clad Aluminium

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
26.0	18.0	23.5	27.0	30.0	29.0	29.0	30.0	32.0	33.5	29.0	29.5	30.0	31.0	33.0
26.5	18.5	24.0	27.5	31.0	29.5	29.5	30.5	32.5	34.0	29.5	30.0	30.5	31.5	33.5
27.0	19.0	24.5	28.0	31.5	30.0	30.5	31.0	33.0	34.5	30.0	30.5	31.0	32.0	33.5
27.5	19.5	25.5	29.0	32.0	30.5	30.5	31.5	33.5	35.0	30.5	31.0	31.5	32.5	34.0
28.0	20.0	26.0	29.5	32.5	31.0	31.0	32.0	34.0	35.5	31.0	31.5	32.0	33.0	34.5
28.5	20.5	27.0	30.0	33.0	31.5	31.5	32.5	34.5	36.0	31.5	32.0	32.5	33.5	35.0
29.0	21.0	27.5	31.0	33.5	32.0	32.0	33.0	35.0	36.5	32.0	32.5	33.0	34.0	35.0
29.5	21.5	28.0	31.5	34.0	32.5	32.5	33.5	35.5	37.0	32.5	33.0	33.5	34.5	35.5
30.0	22.0	29.0	32.5	34.5	33.0	33.0	34.0	35.5	37.0	32.5	33.5	34.0	35.0	36.0
30.5	22.5	29.5	33.0	35.0	33.5	33.5	34.5	36.0	37.5	33.0	33.5	34.5	35.0	36.0
31.0	23.5	30.5	33.5	35.5	34.0	34.0	35.0	36.5	37.5	33.5	34.0	34.5	35.5	36.5
31.5	24.0	31.0	34.0	36.0	34.5	34.5	35.5	36.5	38.0	33.5	34.0	35.0	35.5	36.5
32.0	24.5	31.5	34.5	36.5	35.0	35.0	35.5	37.0	38.5	34.0	34.5	35.0	36.0	37.0
32.5	25.0	32.0	35.0	37.0	35.5	35.5	36.0	37.5	39.0	34.5	35.0	35.5	36.0	37.0
33.0	25.5	32.5	35.5	37.5	36.0	36.0	36.5	38.0	39.0	35.0	35.5	36.0	36.5	37.5
33.5	26.0	33.5	36.5	38.0	36.0	36.0	37.0	38.5	39.5	35.5	36.0	36.5	37.0	38.0
34.0	26.5	34.0	37.0	38.5	36.5	36.5	37.5	38.5	40.0	36.0	36.5	37.0	37.5	38.0
34.5	27.0	34.5	37.5	39.0	37.0	37.0	38.0	39.0	40.5	36.5	36.5	37.0	37.5	38.5
35.0	27.5	35.0	38.0	39.5	37.5	37.5	38.5	39.5	40.5	37.0	37.0	37.5	38.0	38.5
35.5	28.0	35.5	38.5	39.5	38.0	38.0	39.0	40.0	41.0	37.5	37.5	38.0	38.5	39.0
36.0	28.5	36.0	39.0	40.0	38.5	38.5	39.5	40.5	41.5	37.5	38.0	38.5	39.0	39.5
36.5	29.0	36.5	39.5	40.5	39.0	39.0	39.5	40.5	42.0	38.0	38.5	39.0	39.0	39.5
37.0	29.5	37.5	40.0	41.0	39.5	39.5	40.0	41.0	42.0	38.5	39.0	39.0	39.5	40.0
37.5	30.0	38.0	41.0	41.5	40.0	40.0	40.5	41.5	42.5	39.0	39.5	39.5	40.0	40.0
38.0	30.5	38.5	41.5	42.0	40.0	40.0	41.0	42.0	43.0	39.5	39.5	40.0	40.0	40.5
38.5	31.0	39.0	42.0	42.5	40.5	40.5	41.5	42.5	43.5	40.0	40.0	40.5	40.5	41.0
39.0	31.5	39.5	42.5	43.0	41.0	41.0	42.0	43.0	43.5	40.5	40.5	41.0	41.0	41.0
39.5	32.5	40.0	43.0	43.5	41.5	41.5	42.5	43.0	44.0	41.0	41.0	41.0	41.5	41.5
40.0	33.0	41.0	43.5	44.0	42.0	42.0	43.0	43.5	44.5	41.5	41.5	41.5	41.5	41.5
40.5	33.5	41.5	44.0	44.5	42.5	42.5	43.0	44.0	45.0	42.0	42.0	42.0	42.0	42.0
41.0	34.0	41.5	44.5	45.0	43.0	43.0	43.5	44.5	45.0	42.0	42.5	42.5	42.5	42.5
41.5	34.5	42.0	45.5	45.5	43.5	43.5	44.0	45.0	45.5	42.5	43.0	43.0	43.0	43.0
42.0	35.0	42.5	46.0	46.0	44.0	43.5	44.5	45.0	46.0	43.0	43.0	43.5	43.5	43.5
42.5	35.5	43.0	46.5	46.5	44.5	44.0	45.0	45.5	46.5	43.5	43.5	44.0	44.0	44.0
43.0	36.5	43.5	47.0	47.0	45.0	44.5	45.5	46.0	46.5	44.0	44.0	44.5	44.5	44.0

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
43.5	37.0	44.0	47.5	47.5	45.5	45.0	45.5	46.5	47.0	44.5	44.5	45.0	45.0	44.5
44.0	37.5	44.5	48.0	48.0	46.0	45.5	46.0	47.0	47.5	45.0	45.0	45.0	45.0	45.0
44.5	38.0	45.0	48.5	49.0	46.5	46.0	46.5	47.0	48.0	45.5	45.5	45.5	45.5	45.5
45.0	38.5	45.0	49.5	49.5	47.0	46.5	47.0	47.5	48.0	46.0	46.0	46.0	46.0	46.0
45.5	39.0	45.5	49.5	49.5	47.0	47.0	47.5	48.0	48.5	46.5	46.5	46.5	46.5	46.5
46.0	39.5	46.0	50.0	50.0	47.5	47.0	47.5	48.5	49.0	46.5	47.0	47.0	47.0	47.0
46.5	40.0	46.5	50.5	50.5	48.0	47.5	48.0	48.5	49.0	47.0	47.5	47.5	47.5	47.0
47.0	40.0	47.0	51.0	51.0	48.5	48.0	48.5	49.0	49.5	47.5	47.5	48.0	48.0	47.5
47.5	40.5	47.5	51.5	51.0	49.0	48.5	49.0	49.5	50.0	48.0	48.0	48.5	48.5	48.0
48.0	41.0	47.5	52.0	51.5	49.0	49.0	49.5	50.0	50.5	48.5	48.5	48.5	48.5	48.5
48.5	41.5	48.0	52.5	52.0	49.5	49.5	50.0	50.5	50.5	49.0	49.0	49.0	49.0	49.0
49.0	42.0	48.5	53.0	52.5	50.0	49.5	50.5	50.5	51.0	49.5	49.5	49.5	49.5	49.5
49.5	42.0	49.0	53.5	52.5	50.5	50.0	50.5	51.0	51.5	49.5	50.0	50.0	50.0	50.0
50.0	42.5	49.5	53.5	53.0	51.0	50.5	51.0	51.5	51.5	50.0	50.5	50.5	50.5	50.0

9.2.1 SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2219 Clad Aluminium

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
26.0	18.0	23.5	28.5	32.0	29.0	29.0	30.0	32.0	33.5	29.0	29.5	30.0	31.0	33.0
26.5	18.5	24.0	29.5	32.5	29.5	29.5	30.5	32.5	34.0	29.5	30.0	30.5	31.5	33.5
27.0	19.0	24.5	30.0	33.5	30.0	30.5	31.0	33.0	34.5	30.0	30.5	31.0	32.0	33.5
27.5	19.5	25.5	30.5	34.0	30.5	30.5	31.5	33.5	35.0	30.5	31.0	31.5	32.5	34.0
28.0	20.0	26.0	31.5	34.5	31.0	31.0	32.0	34.0	35.5	31.0	31.5	32.0	33.0	34.5
28.5	20.5	27.0	32.0	35.0	31.5	31.5	32.5	34.5	36.0	31.5	32.0	32.5	33.5	35.0
29.0	21.0	27.5	32.5	35.5	32.0	32.0	33.0	35.0	36.5	32.0	32.5	33.0	34.0	35.0
29.5	21.5	28.0	33.5	36.0	32.5	32.5	33.5	35.5	37.0	32.5	33.0	33.5	34.5	35.5
30.0	22.0	29.0	34.0	36.5	33.0	33.0	34.0	35.5	37.0	32.5	33.5	34.0	35.0	36.0
30.5	22.5	29.5	34.5	36.5	33.5	33.5	34.5	36.0	37.5	33.0	33.5	34.5	35.0	36.0
31.0	23.5	30.5	35.0	37.0	34.0	34.0	35.0	36.5	37.5	33.5	34.0	34.5	35.5	36.5
31.5	24.0	31.0	35.5	37.0	34.5	34.5	35.5	36.5	38.0	33.5	34.0	35.0	35.5	36.5
32.0	24.5	31.5	36.0	37.5	35.0	35.0	35.5	37.0	38.5	34.0	34.5	35.0	36.0	37.0
32.5	25.0	32.0	36.5	38.0	35.5	35.5	36.0	37.5	39.0	34.5	35.0	35.5	36.0	37.0

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
33.0	25.5	32.5	37.0	38.5	36.0	36.0	36.5	38.0	39.0	35.0	35.5	36.0	36.5	37.5
33.5	26.0	33.5	37.5	39.0	36.0	36.0	37.0	38.5	39.5	35.5	36.0	36.5	37.0	38.0
34.0	26.5	34.0	38.0	39.5	36.5	36.5	37.5	38.5	40.0	36.0	36.5	37.0	37.5	38.0
34.5	27.0	34.5	38.5	40.0	37.0	37.0	38.0	39.0	40.5	36.5	36.5	37.0	37.5	38.5
35.0	27.5	35.0	39.5	40.5	37.5	37.5	38.5	39.5	40.5	37.0	37.0	37.5	38.0	38.5
35.5	28.0	35.5	40.0	41.0	38.0	38.0	39.0	40.0	41.0	37.5	37.5	38.0	38.5	39.0
36.0	28.5	36.0	40.5	41.0	38.5	38.5	39.5	40.5	41.5	37.5	38.0	38.5	39.0	39.5
36.5	29.0	36.5	41.0	41.5	39.0	39.0	39.5	40.5	42.0	38.0	38.5	39.0	39.0	39.5
37.0	29.5	37.5	41.5	42.0	39.5	39.5	40.0	41.0	42.0	38.5	39.0	39.0	39.5	40.0
37.5	30.0	38.0	42.0	42.5	40.0	40.0	40.5	41.5	42.5	39.0	39.5	39.5	40.0	40.0
38.0	30.5	38.5	42.5	43.0	40.0	40.0	41.0	42.0	43.0	39.5	39.5	40.0	40.0	40.5
38.5	31.0	39.0	43.0	43.5	40.5	40.5	41.5	42.5	43.5	40.0	40.0	40.5	40.5	41.0
39.0	31.5	39.5	43.5	44.0	41.0	41.0	42.0	43.0	43.5	40.5	40.5	41.0	41.0	41.0
39.5	32.5	40.0	44.0	44.5	41.5	41.5	42.5	43.0	44.0	41.0	41.0	41.0	41.5	41.5
40.0	33.0	41.0	44.5	45.0	42.0	42.0	43.0	43.5	44.5	41.5	41.5	41.5	41.5	41.5
40.5	33.5	41.5	45.0	45.0	42.5	42.5	43.0	44.0	45.0	42.0	42.0	42.0	42.0	42.0
41.0	34.0	41.5	45.5	46.0	43.0	43.0	43.5	44.5	45.0	42.0	42.5	42.5	42.5	42.5
41.5	34.5	42.0	46.0	46.5	43.5	43.5	44.0	45.0	45.5	42.5	43.0	43.0	43.0	43.0
42.0	35.0	42.5	46.5	47.0	44.0	43.5	44.5	45.0	46.0	43.0	43.0	43.5	43.5	43.5
42.5	35.5	43.0	47.0	47.5	44.5	44.0	45.0	45.5	46.5	43.5	43.5	44.0	44.0	44.0
43.0	36.5	43.5	47.5	48.0	45.0	44.5	45.5	46.0	46.5	44.0	44.0	44.5	44.5	44.0
43.5	37.0	44.0	48.0	48.5	45.5	45.0	45.5	46.5	47.0	44.5	44.5	45.0	45.0	44.5
44.0	37.5	44.5	48.5	49.0	46.0	45.5	46.0	47.0	47.5	45.0	45.0	45.0	45.0	45.0
44.5	38.0	45.0	49.0	49.5	46.5	46.0	46.5	47.0	48.0	45.5	45.5	45.5	45.5	45.5
45.0	38.5	45.0	49.5	50.0	47.0	46.5	47.0	47.5	48.0	46.0	46.0	46.0	46.0	46.0
45.5	39.0	45.5	49.5	50.5	47.0	47.0	47.5	48.0	48.5	46.5	46.5	46.5	46.5	46.5
46.0	39.5	46.0	50.0	50.5	47.5	47.0	47.5	48.5	49.0	46.5	47.0	47.0	47.0	47.0
46.5	40.0	46.5	50.5	51.0	48.0	47.5	48.0	48.5	49.0	47.0	47.5	47.5	47.5	47.0
47.0	40.0	47.0	51.0	51.5	48.5	48.0	48.5	49.0	49.5	47.5	47.5	48.0	48.0	47.5
47.5	40.5	47.5	51.5	51.5	49.0	48.5	49.0	49.5	50.0	48.0	48.0	48.5	48.5	48.0
48.0	41.0	47.5	52.0	52.0	49.0	49.0	49.5	50.0	50.5	48.5	48.5	48.5	48.5	48.5
48.5	41.5	48.0	52.0	52.5	49.5	49.5	50.0	50.5	50.5	49.0	49.0	49.0	49.0	49.0
49.0	42.0	48.5	52.5	52.5	50.0	49.5	50.5	50.5	51.0	49.5	49.5	49.5	49.5	49.5
49.5	42.0	49.0	53.0	53.0	50.5	50.0	50.5	51.0	51.5	49.5	50.0	50.0	50.0	50.0
50.0	42.5	49.5	53.5	53.5	51.0	50.5	51.0	51.5	51.5	50.0	50.5	50.5	50.5	50.0

9.2.1 SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2024 Clad Aluminium

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
26.0	16.0	21.0	25.5	28.5	29.0	29.0	27.0	27.5	28.0	29.0	29.5	30.0	31.0	33.0
26.5	16.0	21.5	26.0	29.5	29.5	29.5	28.0	28.5	29.0	29.5	30.0	30.5	31.5	33.5
27.0	16.5	22.0	26.5	30.0	30.0	30.5	28.5	29.0	29.5	30.0	30.5	31.0	32.0	33.5
27.5	17.0	22.5	27.5	30.5	30.5	30.5	29.0	29.5	30.0	30.5	31.0	31.5	32.5	34.0
28.0	17.5	23.0	28.0	31.0	31.0	31.0	29.5	30.0	30.5	31.0	31.5	32.0	33.0	34.5
28.5	18.0	24.0	29.0	31.5	31.5	31.5	29.5	30.5	31.0	31.5	32.0	32.5	33.5	35.0
29.0	18.5	24.5	29.5	32.5	32.0	32.0	30.0	31.0	31.5	32.0	32.5	33.0	34.0	35.0
29.5	18.5	25.0	30.0	33.0	32.5	32.5	30.5	31.5	32.0	32.5	33.0	33.5	34.5	35.5
30.0	19.0	26.0	31.0	33.5	33.0	33.0	31.0	31.5	32.0	32.5	33.5	34.0	35.0	36.0
30.5	20.0	26.5	31.5	34.0	33.5	33.5	31.5	32.0	32.5	33.0	33.5	34.5	35.0	36.0
31.0	20.5	27.5	32.0	34.5	34.0	34.0	32.0	32.5	33.0	33.5	34.0	34.5	35.5	36.5
31.5	21.0	28.0	33.0	35.0	34.5	34.5	32.5	33.0	33.5	33.5	34.0	35.0	35.5	36.5
32.0	21.5	28.5	33.5	35.5	35.0	35.0	33.0	33.5	34.0	34.0	34.5	35.0	36.0	37.0
32.5	22.0	29.0	34.0	36.0	35.5	35.5	33.5	34.0	34.0	34.5	35.0	35.5	36.0	37.0
33.0	22.5	30.0	34.5	36.5	36.0	36.0	34.0	34.5	34.5	35.0	35.5	36.0	36.5	37.5
33.5	23.0	30.5	35.0	37.0	36.0	36.0	34.5	35.0	35.0	35.5	36.0	36.5	37.0	38.0
34.0	23.5	31.0	35.5	37.5	36.5	36.5	35.0	35.5	35.5	36.0	36.5	37.0	37.5	38.0
34.5	24.0	31.5	36.0	38.0	37.0	37.0	35.5	36.0	36.0	36.5	36.5	37.0	37.5	38.5
35.0	24.5	32.0	37.0	38.5	37.5	37.5	36.0	36.5	36.5	37.0	37.0	37.5	38.0	38.5
35.5	25.5	32.5	37.5	39.0	38.0	38.0	36.5	37.0	37.0	37.5	37.5	38.0	38.5	39.0
36.0	26.0	33.5	38.0	39.5	38.5	38.5	37.0	37.0	37.5	37.5	38.0	38.5	39.0	39.5
36.5	26.5	34.0	38.5	40.0	39.0	39.0	37.5	37.5	38.0	38.0	38.5	39.0	39.0	39.5
37.0	27.0	34.5	39.0	40.0	39.5	39.5	38.0	38.0	38.5	38.5	39.0	39.0	39.5	40.0
37.5	27.5	35.0	39.5	40.5	40.0	40.0	38.5	38.5	39.0	39.0	39.5	39.5	40.0	40.0
38.0	28.0	35.5	40.5	41.0	40.0	40.0	39.0	39.0	39.5	39.5	39.5	40.0	40.0	40.5
38.5	28.5	36.0	41.0	41.5	40.5	40.5	39.5	39.5	40.0	40.0	40.0	40.5	40.5	41.0
39.0	29.0	37.0	41.5	42.0	41.0	41.0	40.0	40.0	40.5	40.5	40.5	41.0	41.0	41.0
39.5	29.5	37.5	42.0	42.5	41.5	41.5	40.5	40.5	40.5	41.0	41.0	41.0	41.5	41.5
40.0	30.0	38.0	42.5	43.0	42.0	42.0	41.0	41.0	41.0	41.5	41.5	41.5	41.5	41.5
40.5	30.5	38.5	43.0	43.5	42.5	42.5	41.5	41.5	41.5	42.0	42.0	42.0	42.0	42.0
41.0	31.0	39.0	44.0	44.0	43.0	43.0	42.0	42.0	42.0	42.0	42.5	42.5	42.5	42.5
41.5	32.0	39.5	44.5	45.0	43.5	43.5	42.5	42.5	42.5	42.5	43.0	43.0	43.0	43.0
42.0	32.5	40.5	45.0	45.5	44.0	43.5	43.0	43.0	43.0	43.0	43.0	43.5	43.5	43.5
42.5	33.0	41.0	45.5	46.0	44.5	44.0	43.5	43.5	43.5	43.5	43.5	44.0	44.0	44.0
43.0	34.0	41.5	46.5	46.5	45.0	44.5	43.5	44.0	44.0	44.0	44.0	44.5	44.5	44.0

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
43.5	34.5	42.0	47.0	47.0	45.5	45.0	44.0	44.5	44.5	44.5	44.5	45.0	45.0	44.5
44.0	35.5	42.5	47.5	47.5	46.0	45.5	44.5	44.5	45.0	45.0	45.0	45.0	45.0	45.0
44.5	36.0	43.0	48.0	48.0	46.5	46.0	45.0	45.0	45.5	45.5	45.5	45.5	45.5	45.5
45.0	36.5	43.5	49.0	48.5	47.0	46.5	45.5	45.5	46.0	46.0	46.0	46.0	46.0	46.0
45.5	37.0	44.0	49.5	49.0	47.0	47.0	46.0	46.0	46.0	46.5	46.5	46.5	46.5	46.5
46.0	37.5	44.5	50.0	49.5	47.5	47.0	46.5	46.5	46.5	46.5	47.0	47.0	47.0	47.0
46.5	38.0	45.5	50.5	50.0	48.0	47.5	47.0	47.0	47.0	47.0	47.5	47.5	47.5	47.0
47.0	38.5	46.0	51.0	50.0	48.5	48.0	47.5	47.5	47.5	47.5	47.5	48.0	48.0	47.5
47.5	39.0	46.5	51.5	50.5	49.0	48.5	48.0	48.0	48.0	48.0	48.0	48.5	48.5	48.0
48.0	39.5	47.0	51.5	51.0	49.0	49.0	48.5	48.0	48.5	48.5	48.5	48.5	48.5	48.5
48.5	39.5	47.5	52.0	51.5	49.5	49.5	49.0	48.5	49.0	49.0	49.0	49.0	49.0	49.0
49.0	40.0	48.0	52.5	52.0	50.0	49.5	49.0	49.0	49.0	49.5	49.5	49.5	49.5	49.5
49.5	40.5	48.5	53.0	52.5	50.5	50.0	49.5	49.5	49.5	49.5	50.0	50.0	50.0	50.0
50.0	41.0	49.0	53.5	53.0	51.0	50.5	50.0	50.0	50.0	50.0	50.5	50.5	50.5	50.0

9.2.1 SigmaCheck2 and PSIG001A 13mm probe at 60kHz 2524 Clad Aluminium

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
26.0	15.5	20.5	25.0	28.0	28.5	28.0	27.0	27.0	27.5	27.5	28.0	29.0	29.5	30.5
26.5	15.5	21.0	25.5	29.0	29.0	29.0	27.5	28.0	28.0	28.5	29.0	29.5	30.0	31.0
27.0	16.0	21.5	26.0	29.5	30.0	29.5	28.0	28.5	28.5	29.0	29.5	30.0	30.5	31.5
27.5	16.5	22.0	27.0	30.0	30.0	30.0	28.5	29.0	29.0	29.5	30.0	30.5	31.0	32.0
28.0	17.0	22.5	27.5	30.5	30.5	30.0	29.0	29.5	29.5	30.0	30.5	31.0	31.5	32.5
28.5	17.5	23.0	28.0	31.0	31.0	30.5	29.5	30.0	30.0	30.5	31.0	31.5	32.0	33.0
29.0	17.5	24.0	29.0	32.0	31.5	31.0	30.0	30.5	30.5	31.0	31.5	32.0	32.5	33.5
29.5	18.0	24.5	29.5	32.5	32.0	31.5	30.5	31.0	31.0	31.5	31.5	32.5	33.0	34.0
30.0	18.5	25.0	30.5	33.0	32.5	32.0	31.0	31.0	31.5	31.5	32.0	32.5	33.5	34.0
30.5	19.5	26.0	31.0	33.5	33.0	32.5	31.5	31.5	32.0	32.0	32.5	33.0	33.5	34.5
31.0	20.0	26.5	31.5	34.0	33.5	33.0	32.0	32.0	32.0	32.5	32.5	33.0	34.0	34.5
31.5	20.5	27.5	32.5	34.5	34.0	33.5	32.5	32.5	32.5	32.5	33.0	33.5	34.0	34.5
32.0	21.0	28.0	33.0	35.0	34.5	34.0	32.5	33.0	33.0	33.0	33.5	34.0	34.5	35.0
32.5	21.5	28.5	33.5	35.5	35.0	34.5	33.0	33.5	33.5	33.5	34.0	34.5	35.0	35.5



Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
33.0	22.0	29.0	34.0	36.0	35.5	35.0	33.5	34.0	34.0	34.0	34.5	35.0	35.0	36.0
33.5	22.5	29.5	34.5	36.5	36.0	35.5	34.0	34.5	34.5	34.5	35.0	35.0	35.5	36.0
34.0	23.0	30.5	35.0	37.0	36.5	36.0	34.5	35.0	35.0	35.0	35.5	35.5	36.0	36.5
34.5	23.5	31.0	36.0	37.5	37.0	36.5	35.0	35.5	35.5	35.5	35.5	36.0	36.5	37.0
35.0	24.0	31.5	36.5	38.0	37.0	37.0	35.5	36.0	36.0	36.0	36.0	36.5	37.0	37.5
35.5	24.5	32.0	37.0	38.5	37.5	37.0	36.0	36.5	36.5	36.5	36.5	37.0	37.0	37.5
36.0	25.5	32.5	37.5	39.0	38.0	37.5	36.5	37.0	37.0	37.0	37.0	37.5	37.5	38.0
36.5	26.0	33.0	38.0	39.5	38.5	38.0	37.0	37.5	37.5	37.5	37.5	38.0	38.0	38.5
37.0	26.5	34.0	38.5	40.0	39.0	38.5	37.5	38.0	38.0	38.0	38.0	38.0	38.5	38.5
37.5	27.0	34.5	39.5	40.5	39.5	39.0	38.0	38.5	38.5	38.5	38.5	38.5	39.0	39.0
38.0	27.5	35.0	40.0	41.0	40.0	39.5	38.5	39.0	39.0	39.0	39.0	39.0	39.0	39.5
38.5	28.0	35.5	40.5	41.5	40.5	40.0	39.0	39.5	39.5	39.5	39.5	39.5	39.5	40.0
39.0	28.5	36.0	41.0	42.0	41.0	40.5	39.5	39.5	40.0	39.5	40.0	40.0	40.0	40.0
39.5	29.0	36.5	41.5	42.5	41.5	41.0	40.0	40.0	40.0	40.0	40.5	40.5	40.5	40.5
40.0	29.5	37.5	42.0	43.0	41.5	41.5	40.5	40.5	40.5	40.5	40.5	41.0	41.0	41.0
40.5	30.0	38.0	43.0	43.5	42.0	42.0	41.0	41.0	41.0	41.0	41.0	41.0	41.5	41.5
41.0	30.5	38.5	43.5	44.0	42.5	42.5	41.5	41.5	41.5	41.5	41.5	41.5	42.0	42.0
41.5	31.5	39.0	44.0	44.5	43.0	43.0	42.0	42.0	42.0	42.0	42.0	42.0	42.5	42.5
42.0	32.0	39.5	45.0	45.0	43.5	43.0	42.5	42.5	42.5	42.5	42.5	42.5	43.0	43.0
42.5	33.0	40.5	45.5	46.0	44.0	43.5	43.0	43.0	43.0	43.0	43.0	43.0	43.5	43.5
43.0	33.5	41.0	46.0	46.5	44.5	44.0	43.5	43.5	43.5	43.5	43.5	43.5	44.0	44.0
43.5	34.0	41.5	46.5	47.0	45.0	44.5	44.0	44.0	44.0	44.0	44.0	44.0	44.5	44.5
44.0	35.0	42.0	47.5	47.5	45.5	45.0	44.5	44.5	44.5	44.5	44.5	44.5	45.0	45.0
44.5	35.5	42.5	48.0	48.0	46.0	45.5	45.0	45.0	45.0	45.0	45.0	45.0	45.5	45.5
45.0	36.5	43.5	48.5	48.5	46.5	46.0	45.5	45.5	45.5	45.5	45.5	45.5	45.5	46.0
45.5	36.5	44.0	49.0	49.0	47.0	46.5	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0
46.0	37.0	44.5	49.5	49.5	47.5	47.0	46.5	46.5	46.5	46.5	46.5	46.5	46.5	46.5
46.5	37.5	45.0	50.0	50.0	48.0	47.0	47.0	47.0	46.5	46.5	47.0	47.0	47.0	47.0
47.0	38.0	45.5	50.5	50.5	48.5	47.5	47.5	47.5	47.0	47.0	47.0	47.5	47.5	47.5
47.5	38.5	46.0	51.0	50.5	49.0	48.0	48.0	47.5	47.5	47.5	47.5	48.0	48.0	48.0
48.0	39.0	46.5	51.5	51.0	49.0	48.5	48.5	48.0	48.0	48.0	48.0	48.0	48.5	48.5
48.5	39.5	47.0	52.0	51.5	49.5	49.0	48.5	48.5	48.5	48.5	48.5	48.5	49.0	49.0
49.0	40.0	47.5	52.5	52.0	50.0	49.5	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.5
49.5	40.5	48.0	53.0	52.5	50.5	50.0	49.5	49.5	49.5	49.5	49.5	49.5	49.5	50.0
50.0	40.5	48.5	53.5	53.0	51.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0

9.2.1 SigmaCheck2 and PSIG001A 13mm probe at 60kHz 7075, 7178 Clad Aluminium

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
26.0	15.5	20.5	25.0	28.0	28.5	28.0	27.0	27.5	28.0	29.0	29.5	30.0	31.0	33.0
26.5	15.5	21.0	25.5	29.0	29.0	29.0	28.0	28.5	29.0	29.5	30.0	30.5	31.5	33.5
27.0	16.0	21.5	26.0	29.5	30.0	29.5	28.5	29.0	29.5	30.0	30.5	31.0	32.0	33.5
27.5	16.5	22.0	27.0	30.0	30.0	30.0	29.0	29.5	30.0	30.5	31.0	31.5	32.5	34.0
28.0	17.0	22.5	27.5	30.5	30.5	30.0	29.5	30.0	30.5	31.0	31.5	32.0	33.0	34.5
28.5	17.5	23.0	28.0	31.0	31.0	30.5	29.5	30.5	31.0	31.5	32.0	32.5	33.5	35.0
29.0	17.5	24.0	29.0	32.0	31.5	31.0	30.0	31.0	31.5	32.0	32.5	33.0	34.0	35.0
29.5	18.0	24.5	29.5	32.5	32.0	31.5	30.5	31.5	32.0	32.5	33.0	33.5	34.5	35.5
30.0	18.5	25.0	30.5	33.0	32.5	32.0	31.0	31.5	32.0	32.5	33.5	34.0	35.0	36.0
30.5	19.5	26.0	31.0	33.5	33.0	32.5	31.5	32.0	32.5	33.0	33.5	34.5	35.0	36.0
31.0	20.0	26.5	31.5	34.0	33.5	33.0	32.0	32.5	33.0	33.5	34.0	34.5	35.5	36.5
31.5	20.5	27.5	32.5	34.5	34.0	33.5	32.5	33.0	33.5	33.5	34.0	35.0	35.5	36.5
32.0	21.0	28.0	33.0	35.0	34.5	34.0	33.0	33.5	34.0	34.0	34.5	35.0	36.0	37.0
32.5	21.5	28.5	33.5	35.5	35.0	34.5	33.5	34.0	34.0	34.5	35.0	35.5	36.0	37.0
33.0	22.0	29.0	34.0	36.0	35.5	35.0	34.0	34.5	34.5	35.0	35.5	36.0	36.5	37.5
33.5	22.5	29.5	34.5	36.5	36.0	35.5	34.5	35.0	35.0	35.5	36.0	36.5	37.0	38.0
34.0	23.0	30.5	35.0	37.0	36.5	36.0	35.0	35.5	35.5	36.0	36.5	37.0	37.5	38.0
34.5	23.5	31.0	36.0	37.5	37.0	36.5	35.5	36.0	36.0	36.5	36.5	37.0	37.5	38.5
35.0	24.0	31.5	36.5	38.0	37.0	37.0	36.0	36.5	36.5	37.0	37.0	37.5	38.0	38.5
35.5	24.5	32.0	37.0	38.5	37.5	37.0	36.5	37.0	37.0	37.5	37.5	38.0	38.5	39.0
36.0	25.5	32.5	37.5	39.0	38.0	37.5	37.0	37.0	37.5	37.5	38.0	38.5	39.0	39.5
36.5	26.0	33.0	38.0	39.5	38.5	38.0	37.5	37.5	38.0	38.0	38.5	39.0	39.0	39.5
37.0	26.5	34.0	38.5	40.0	39.0	38.5	38.0	38.0	38.5	38.5	39.0	39.0	39.5	40.0
37.5	27.0	34.5	39.5	40.5	39.5	39.0	38.5	38.5	39.0	39.0	39.5	39.5	40.0	40.0
38.0	27.5	35.0	40.0	41.0	40.0	39.5	39.0	39.0	39.5	39.5	39.5	40.0	40.0	40.5
38.5	28.0	35.5	40.5	41.5	40.5	40.0	39.5	39.5	40.0	40.0	40.0	40.5	40.5	41.0
39.0	28.5	36.0	41.0	42.0	41.0	40.5	40.0	40.0	40.5	40.5	40.5	41.0	41.0	41.0
39.5	29.0	36.5	41.5	42.5	41.5	41.0	40.5	40.5	40.5	41.0	41.0	41.0	41.5	41.5
40.0	29.5	37.5	42.0	43.0	41.5	41.5	41.0	41.0	41.0	41.5	41.5	41.5	41.5	41.5
40.5	30.0	38.0	43.0	43.5	42.0	42.0	41.5	41.5	41.5	42.0	42.0	42.0	42.0	42.0
41.0	30.5	38.5	43.5	44.0	42.5	42.5	42.0	42.0	42.0	42.0	42.5	42.5	42.5	42.5
41.5	31.5	39.0	44.0	44.5	43.0	43.0	42.5	42.5	42.5	42.5	43.0	43.0	43.0	43.0
42.0	32.0	39.5	45.0	45.0	43.5	43.0	43.0	43.0	43.0	43.0	43.0	43.5	43.5	43.5
42.5	33.0	40.5	45.5	46.0	44.0	43.5	43.5	43.5	43.5	43.5	43.5	44.0	44.0	44.0
43.0	33.5	41.0	46.0	46.5	44.5	44.0	43.5	44.0	44.0	44.0	44.0	44.5	44.5	44.0

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches													
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	0.100	0.110	0.125	0.140	0.160
	Corrected Conductivity value in percent IACS													
	Do not use table for nominal thicknesses greater than 0.160 inch.													
43.5	34.0	41.5	46.5	47.0	45.0	44.5	44.0	44.5	44.5	44.5	44.5	45.0	45.0	44.5
44.0	35.0	42.0	47.5	47.5	45.5	45.0	44.5	44.5	45.0	45.0	45.0	45.0	45.0	45.0
44.5	35.5	42.5	48.0	48.0	46.0	45.5	45.0	45.0	45.5	45.5	45.5	45.5	45.5	45.5
45.0	36.5	43.5	48.5	48.5	46.5	46.0	45.5	45.5	46.0	46.0	46.0	46.0	46.0	46.0
45.5	36.5	44.0	49.0	49.0	47.0	46.5	46.0	46.0	46.0	46.5	46.5	46.5	46.5	46.5
46.0	37.0	44.5	49.5	49.5	47.5	47.0	46.5	46.5	46.5	46.5	47.0	47.0	47.0	47.0
46.5	37.5	45.0	50.0	50.0	48.0	47.0	47.0	47.0	47.0	47.0	47.5	47.5	47.5	47.0
47.0	38.0	45.5	50.5	50.5	48.5	47.5	47.5	47.5	47.5	47.5	47.5	48.0	48.0	47.5
47.5	38.5	46.0	51.0	50.5	49.0	48.0	48.0	48.0	48.0	48.0	48.0	48.5	48.5	48.0
48.0	39.0	46.5	51.5	51.0	49.0	48.5	48.5	48.0	48.5	48.5	48.5	48.5	48.5	48.5
48.5	39.5	47.0	52.0	51.5	49.5	49.0	49.0	48.5	49.0	49.0	49.0	49.0	49.0	49.0
49.0	40.0	47.5	52.5	52.0	50.0	49.5	49.0	49.0	49.0	49.5	49.5	49.5	49.5	49.5
49.5	40.5	48.0	53.0	52.5	50.5	50.0	49.5	49.5	49.5	49.5	50.0	50.0	50.0	50.0
50.0	40.5	48.5	53.5	53.0	51.0	50.0	50.0	50.0	50.0	50.0	50.5	50.5	50.5	50.0

9.2.1 SigmaCheck2 and PSIG001A 13mm probe at 60kHz 3003, 6061 Clad Aluminium

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches									
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090	
	Corrected Conductivity value in percent IACS									
	Do not use table for nominal thicknesses greater than 0.090 inch.									
36.0	26.0	33.5	38.0	39.5	38.5	38.5	39.5	40.5	41.5	
36.5	26.5	34.0	38.5	40.0	39.0	39.0	39.5	40.5	42.0	
37.0	27.0	34.5	39.0	40.0	39.5	39.5	40.0	41.0	42.0	
37.5	27.5	35.0	39.5	40.5	40.0	40.0	40.5	41.5	42.5	
38.0	28.0	35.5	40.5	41.0	40.0	40.0	41.0	42.0	43.0	
38.5	28.5	36.0	41.0	41.5	40.5	40.5	41.5	42.5	43.5	
39.0	29.0	37.0	41.5	42.0	41.0	41.0	42.0	43.0	43.5	
39.5	29.5	37.5	42.0	42.5	41.5	41.5	42.5	43.0	44.0	
40.0	30.0	38.0	42.5	43.0	42.0	42.0	43.0	43.5	44.5	
40.5	30.5	38.5	43.0	43.5	42.5	42.5	43.0	44.0	45.0	
41.0	31.0	39.0	44.0	44.0	43.0	43.0	43.5	44.5	45.0	
41.5	32.0	39.5	44.5	45.0	43.5	43.5	44.0	45.0	45.5	
42.0	32.5	40.5	45.0	45.5	44.0	43.5	44.5	45.0	46.0	
42.5	33.0	41.0	45.5	46.0	44.5	44.0	45.0	45.5	46.5	

Uncorrected Conductivity Values in Percent IACS	Single Thickness (gauge), in Inches								
	0.016	0.020	0.025	0.032	0.040	0.050	0.063	0.080	0.090
	Corrected Conductivity value in percent IACS								
	Do not use table for nominal thicknesses greater than 0.090 inch.								
43.0	34.0	41.5	46.5	46.5	45.0	44.5	45.5	46.0	46.5
43.5	34.5	42.0	47.0	47.0	45.5	45.0	45.5	46.5	47.0
44.0	35.5	42.5	47.5	47.5	46.0	45.5	46.0	47.0	47.5
44.5	36.0	43.0	48.0	48.0	46.5	46.0	46.5	47.0	48.0
45.0	36.5	43.5	49.0	48.5	47.0	46.5	47.0	47.5	48.0
45.5	37.0	44.0	49.5	49.0	47.0	47.0	47.5	48.0	48.5
46.0	37.5	44.5	50.0	49.5	47.5	47.0	47.5	48.5	49.0
46.5	38.0	45.5	50.5	50.0	48.0	47.5	48.0	48.5	49.0
47.0	38.5	46.0	51.0	50.0	48.5	48.0	48.5	49.0	49.5
47.5	39.0	46.5	51.5	50.5	49.0	48.5	49.0	49.5	50.0
48.0	39.5	47.0	51.5	51.0	49.0	49.0	49.5	50.0	50.5
48.5	39.5	47.5	52.0	51.5	49.5	49.5	50.0	50.5	50.5
49.0	40.0	48.0	52.5	52.0	50.0	49.5	50.5	50.5	51.0
49.5	40.5	48.5	53.0	52.5	50.5	50.0	50.5	51.0	51.5
50.0	41.0	49.0	53.5	53.0	51.0	50.5	51.0	51.5	51.5
50.5	41.5	49.5	54.0	53.0	51.0	51.0	51.5	52.0	52.0
51.0	42.0	50.0	54.5	53.5	51.5	51.5	52.0	52.0	52.5
51.5	42.5	50.5	55.0	54.0	52.0	52.0	52.5	52.5	52.5
52.0	43.0	51.0	55.5	54.5	52.5	52.0	53.0	53.0	53.0
52.5	43.5	51.5	56.0	55.0	53.0	52.5	53.5	53.5	53.5
53.0	43.5	52.0	56.5	55.5	53.0	53.0	53.5	53.5	54.0
53.5	44.0	52.5	57.0	56.0	53.5	53.5	54.0	54.0	54.0
54.0	44.5	53.0	57.5	56.0	54.0	54.0	54.5	54.5	54.5
54.5	45.0	53.5	58.0	56.5	54.5	54.5	55.0	55.0	55.0
55.0	45.5	54.0	58.5	57.0	55.0	54.5	55.5	55.0	55.0
55.5	46.0	54.5	59.0	57.5	55.0	55.0	56.0	55.5	55.5
56.0	46.5	55.0	59.5	58.0	55.5	55.5	56.0	56.0	56.0

### 9.3 Radiused Material

SigmaCheck2 2 and PSIG001A 13mm probe at 60kHz

Uncorrected Conductivity Values in Percent IACS	Diameter (inches)										
	0.25	0.38	0.50	0.75	1.00	1.50	2.00	3.00	4.00	5.00	6.00 AND ABOVE
	Corrected Conductivity value in percent IACS										
26.0	13.0	16.5	20.0	22.5	24.0	25.0	25.0	25.5	25.5	26.0	26.0
26.5	13.0	17.0	20.5	23.0	24.5	25.5	25.5	26.0	26.0	26.5	26.5
27.0	13.5	17.0	21.0	23.5	25.0	26.0	26.0	26.5	26.5	27.0	27.0
27.5	13.5	17.5	21.5	24.0	25.5	26.5	26.5	27.0	27.0	27.5	27.5
28.0	14.0	18.0	21.5	24.5	26.0	27.0	27.0	27.5	27.5	28.0	28.0
28.5	14.0	18.0	22.0	25.0	26.5	27.5	27.5	27.5	28.0	28.0	28.5
29.0	14.5	18.5	22.5	25.5	26.5	28.0	28.0	28.0	28.5	28.5	29.0
29.5	14.5	19.0	23.0	26.0	27.0	28.5	28.5	28.5	29.0	29.0	29.5
30.0	15.0	19.0	23.5	26.0	27.5	29.0	29.0	29.0	29.5	29.5	30.0
30.5	15.0	19.5	23.5	26.5	28.0	29.5	29.5	29.5	30.0	30.0	30.5
31.0	15.5	19.5	24.0	27.0	28.5	30.0	30.0	30.0	30.5	30.5	31.0
31.5	15.5	20.0	24.5	27.5	29.0	30.0	30.5	30.5	31.0	31.0	31.5
32.0	16.0	20.5	25.0	28.0	29.5	30.5	31.0	31.0	31.5	31.5	32.0
32.5	16.0	20.5	25.0	28.5	30.0	31.0	31.5	31.5	32.0	32.0	32.5
33.0	16.5	21.0	25.5	29.0	30.5	31.5	31.5	32.0	32.5	32.5	33.0
33.5	16.5	21.5	26.0	29.5	31.0	32.0	32.0	32.5	33.0	33.0	33.5
34.0	17.0	21.5	26.5	29.5	31.0	32.5	32.5	33.0	33.5	33.5	34.0
34.5	17.0	22.0	27.0	30.0	31.5	33.0	33.0	33.5	34.0	34.0	34.5
35.0	17.5	22.5	27.0	30.5	32.0	33.5	33.5	34.0	34.5	34.5	35.0
35.5	17.5	22.5	27.5	31.0	32.5	34.0	34.0	34.5	34.5	35.0	35.5
36.0	18.0	23.0	28.0	31.5	33.0	34.0	34.5	35.0	35.0	35.5	36.0
36.5	18.0	23.0	28.5	32.0	33.5	34.5	35.0	35.5	35.5	36.0	36.5
37.0	18.5	23.5	29.0	32.5	34.0	35.0	35.5	35.5	36.0	36.5	37.0
37.5	18.5	24.0	29.0	32.5	34.5	35.5	36.0	36.0	36.5	37.0	37.5

Uncorrected Conductivity Values in Percent IACS	Diameter (inches)										
	0.25	0.38	0.50	0.75	1.00	1.50	2.00	3.00	4.00	5.00	6.00 AND ABOVE
	Corrected Conductivity value in percent IACS										
38.0	19.0	24.0	29.5	33.0	35.0	36.0	36.0	36.5	37.0	37.5	38.0
38.5	19.0	24.5	30.0	33.5	35.0	36.5	36.5	37.0	37.5	38.0	38.5
39.0	19.5	25.0	30.5	34.0	35.5	37.0	37.0	37.5	38.0	38.5	39.0
39.5	19.5	25.0	31.0	34.5	36.0	37.5	37.5	38.0	38.5	39.0	39.5
40.0	20.0	25.5	31.0	35.0	36.5	37.5	38.0	38.5	39.0	39.5	40.0
40.5	20.0	26.0	31.5	35.5	37.0	38.0	38.5	39.0	39.5	40.0	40.5
41.0	20.5	26.0	32.0	35.5	37.5	38.5	39.0	39.5	40.0	40.5	41.0
41.5	20.5	26.5	32.5	36.0	38.0	39.0	39.5	40.0	40.5	41.0	41.5
42.0	21.0	27.0	32.5	36.5	38.5	39.5	40.0	40.5	41.0	41.5	42.0
42.5	21.0	27.0	33.0	37.0	39.0	40.0	40.0	41.0	41.5	42.0	42.5
43.0	21.5	27.5	33.5	37.5	39.0	40.5	40.5	41.5	42.0	42.5	43.0
43.5	21.5	27.5	34.0	38.0	39.5	41.0	41.0	41.5	42.5	43.0	43.5
44.0	22.0	28.0	34.5	38.5	40.0	41.5	41.5	42.0	43.0	43.5	44.0
44.5	22.0	28.5	34.5	38.5	40.5	41.5	42.0	42.5	43.5	44.0	44.5
45.0	22.5	28.5	35.0	39.0	41.0	42.0	42.5	43.0	43.5	44.5	45.0
45.5	22.5	29.0	35.5	39.5	41.5	42.5	43.0	43.5	44.0	45.0	45.5
46.0	23.0	29.5	36.0	40.0	42.0	43.0	43.5	44.0	44.5	45.5	46.0
46.5	23.0	29.5	36.5	40.5	42.5	43.5	44.0	44.5	45.0	46.0	46.5
47.0	23.5	30.0	36.5	41.0	43.0	44.0	44.5	45.0	45.5	46.5	47.0
47.5	23.5	30.5	37.0	41.5	43.5	44.5	45.0	45.5	46.0	47.0	47.5
48.0	24.0	30.5	37.5	42.0	43.5	45.0	45.5	46.0	46.5	47.5	48.0
48.5	24.0	31.0	38.0	42.0	44.0	45.5	45.5	46.5	47.0	48.0	48.5
49.0	24.5	31.5	38.0	42.5	44.5	46.0	46.0	47.0	47.5	48.5	49.0
49.5	24.5	31.5	38.5	43.0	45.0	46.5	46.5	47.5	48.0	49.0	49.5
50.0	25.0	32.0	39.0	43.5	45.5	47.0	47.0	48.0	48.5	49.5	50.0
50.5	25.0	32.0	39.5	44.0	46.0	47.5	47.5	48.5	49.0	50.0	50.5
51.0	25.5	32.5	40.0	44.5	46.5	47.5	48.0	49.0	49.5	50.5	51.0
51.5	25.5	33.0	40.0	45.0	47.0	48.0	48.5	49.5	50.0	51.0	51.5
52.0	26.0	33.0	40.5	45.5	47.5	48.5	49.0	50.0	50.5	51.5	52.0
52.5	26.0	33.5	41.0	45.5	48.0	49.0	49.5	50.0	51.0	51.5	52.5
53.0	26.5	34.0	41.5	46.0	48.5	49.5	50.0	50.5	51.5	52.0	53.0
53.5	26.5	34.0	42.0	46.5	48.5	50.0	50.5	51.0	52.0	52.5	53.5
54.0	27.0	34.5	42.0	47.0	49.0	50.5	51.0	51.5	52.5	53.0	54.0
54.5	27.0	35.0	42.5	47.5	49.5	51.0	51.5	52.0	53.0	53.5	54.5
55.0	27.5	35.0	43.0	48.0	50.0	51.5	52.0	52.5	53.5	54.0	55.0
55.5	27.5	35.5	43.5	48.5	50.5	52.0	52.5	53.0	54.0	54.5	55.5

Uncorrected Conductivity Values in Percent IACS	Diameter (inches)										
	0.25	0.38	0.50	0.75	1.00	1.50	2.00	3.00	4.00	5.00	6.00 AND ABOVE
	Corrected Conductivity value in percent IACS										
56.0	28.0	35.5	43.5	48.5	51.0	52.5	53.0	53.5	54.5	55.0	56.0
56.5	28.0	36.0	44.0	49.0	51.5	53.0	53.5	54.0	55.0	55.5	56.5
57.0	28.5	36.5	44.5	49.5	52.0	53.5	53.5	54.5	55.5	56.0	57.0
57.5	28.5	36.5	45.0	50.0	52.5	54.0	54.0	55.0	56.0	56.5	57.5
58.0	28.5	37.0	45.5	50.5	53.0	54.5	54.5	55.5	56.5	57.0	58.0
58.5	29.0	37.5	45.5	51.0	53.5	54.5	55.0	56.0	57.0	57.5	58.5
59.0	29.0	37.5	46.0	51.5	53.5	55.0	55.5	56.5	57.5	58.0	59.0
59.5	29.5	38.0	46.5	52.0	54.0	55.5	56.0	57.0	58.0	58.5	59.5
60.0	29.5	38.5	47.0	52.0	54.5	56.0	56.5	57.5	58.5	59.0	60.0
60.5	30.0	38.5	47.0	52.5	55.0	56.5	57.0	58.0	59.0	59.5	60.5
61.0	30.0	39.0	47.5	53.0	55.5	57.0	57.5	58.5	59.5	60.0	61.0
61.5	30.5	39.0	48.0	53.5	56.0	57.5	58.0	59.0	59.5	60.5	61.5
62.0	30.5	39.5	48.5	54.0	56.5	58.0	58.5	59.5	60.0	61.0	62.0
62.5	31.0	40.0	49.0	54.5	57.0	58.5	59.0	60.0	60.5	61.5	62.5
63.0	31.0	40.0	49.0	55.0	57.5	59.0	59.5	60.5	61.0	62.0	63.0
63.5	31.5	40.5	49.5	55.5	58.0	59.5	60.0	61.0	61.5	62.5	63.5
64.0	31.5	41.0	50.0	55.5	58.5	60.0	60.5	61.5	62.0	63.0	64.0
64.5	32.0	41.0	50.5	56.0	58.5	60.5	61.0	61.5	62.5	63.5	64.5
65.0	32.0	41.5	50.5	56.5	59.0	61.0	61.5	62.0	63.0	64.0	65.0

**ETher NDE SigmaCheck2@ with Probe PSIG002A  
(8mm) operating at 60kHz or 480kHz**

Inches	0.20	0.39	0.59	0.79	0.98	1.18	1.38	1.57	1.77	1.97
Dia. (mm) /Corrected Value % IACS	5	10	15	20	25	30	35	40	45	50
20	15.0	18.5	19.5	19.5	20.0	20.0	20.0	20.0	20.0	20.0
21	16.0	19.5	20.0	20.5	21.0	21.0	21.0	21.0	21.0	21.0
22	16.5	20.5	21.0	21.5	22.0	22.0	22.0	22.0	22.0	22.0
23	17.5	21.0	22.0	22.5	22.5	23.0	23.0	23.0	23.0	23.0
24	18.0	22.0	23.0	23.5	23.5	24.0	24.0	24.0	24.0	24.0
25	19.0	23.0	24.0	24.5	24.5	25.0	25.0	25.0	25.0	25.0
26	19.5	24.0	25.0	25.5	25.5	26.0	26.0	26.0	26.0	26.0
27	20.5	25.0	26.0	26.5	26.5	27.0	27.0	27.0	27.0	27.0
28	21.0	26.0	27.0	27.5	27.5	28.0	28.0	28.0	28.0	28.0
29	22.0	26.5	28.0	28.5	28.5	29.0	29.0	29.0	29.0	29.0
30	22.5	27.5	29.0	29.5	29.5	29.5	30.0	30.0	30.0	30.0
31	23.5	28.5	30.0	30.5	30.5	30.5	31.0	31.0	31.0	31.0
32	24.0	29.5	30.5	31.0	31.5	31.5	32.0	32.0	32.0	32.0
33	25.0	30.5	31.5	32.0	32.5	32.5	33.0	33.0	33.0	33.0
34	25.5	31.0	32.5	33.0	33.5	33.5	34.0	34.0	34.0	34.0
35	26.5	32.0	33.5	34.0	34.5	34.5	35.0	35.0	35.0	35.0
36	27.0	33.0	34.5	35.0	35.5	35.5	36.0	36.0	36.0	36.0
37	28.0	34.0	35.5	36.0	36.5	36.5	36.5	37.0	37.0	37.0
38	28.5	35.0	36.5	37.0	37.5	37.5	37.5	38.0	38.0	38.0

39	29.5	36.0	37.5	38.0	38.5	38.5	38.5	39.0	39.0	39.0
40	30.0	36.5	38.5	39.0	39.5	39.5	39.5	40.0	40.0	40.0
41	31.0	37.5	39.5	40.0	40.5	40.5	40.5	41.0	41.0	41.0
42	31.5	38.5	40.0	41.0	41.5	41.5	41.5	42.0	42.0	42.0
43	32.5	39.5	41.0	42.0	42.5	42.5	42.5	43.0	43.0	43.0
44	33.0	40.5	42.0	43.0	43.5	43.5	43.5	44.0	44.0	44.0
45	34.0	41.5	43.0	44.0	44.0	44.5	44.5	45.0	45.0	45.0
46	34.5	42.0	44.0	45.0	45.0	45.5	45.5	45.5	46.0	46.0
47	35.5	43.0	45.0	46.0	46.0	46.5	46.5	46.5	47.0	47.0
48	36.0	44.0	46.0	46.5	47.0	47.5	47.5	47.5	48.0	48.0
49	37.0	45.0	47.0	47.5	48.0	48.5	48.5	48.5	49.0	49.0
50	37.5	46.0	48.0	48.5	49.0	49.5	49.5	49.5	50.0	50.0
51	38.5	46.5	49.0	49.5	50.0	50.5	50.5	50.5	51.0	51.0
52	39.0	47.5	49.5	50.5	51.0	51.5	51.5	51.5	52.0	52.0
53	40.0	48.5	50.5	51.5	52.0	52.5	52.5	52.5	53.0	53.0
54	40.5	49.5	51.5	52.5	53.0	53.5	53.5	53.5	53.5	54.0
55	41.5	50.5	52.5	53.5	54.0	54.5	54.5	54.5	54.5	55.0
56	42.0	51.5	53.5	54.5	55.0	55.5	55.5	55.5	55.5	56.0
57	43.0	52.0	54.5	55.5	56.0	56.5	56.5	56.5	56.5	57.0
58	43.5	53.0	55.5	56.5	57.0	57.5	57.5	57.5	57.5	58.0
59	44.5	54.0	56.5	57.5	58.0	58.0	58.5	58.5	58.5	59.0
60	45.0	55.0	57.5	58.5	59.0	59.0	59.5	59.5	59.5	60.0



## 10 Specifications

Inspection Technology	Eddy Current
Operating Frequencies	60 kHz, 120 kHz, 240 kHz, 480 kHz. Option of 960 kHz.
Display	240 x 320 pixels colour display. LCD with selectable backlight.
Conductivity Standards	Dual Sample Conductivity Reference Blocks mounted on top of unit. Removable for value verification, and ensuring thermal equilibrium.
Conductivity Range	0.5 % IACS to 120 % IACS, 0.28-70 MS/m
Resolution	Selectable as 1, 2 or 3 decimal places up to a maximum of 5 digits e.g. 0.050 - 120.00
Lift Off	13mm probe compensated to 0.020" (0.5mm) 7 mm probe compensated to 0.010" (0.25 mm)
Accuracy	Probe must be in thermal equilibrium with test material, and instrument and probe stabilized prior to testing. Minimum 15-minute warm up time for stabilisation. At 20°C: 0-20% IACS: ± 0.05 IACS At 20°C: >20% IACS ± 0.25% of readout
Temperature Measurement	In-probe sensor (accurate to 0.5 °C) Range 0 °C to +50 °C
Automatic Compensation	Conductivity measurements are corrected to the 20°C value.
Environmental Range	0 to 95% relative humidity, 0°C to +50°C for reliable operation
Data Logger Memory	Removable 32GB micro SD Card allowing many thousands of probe maps to be stored and easily transferred between instruments.
Probes	13mm diameter for 60 kHz to 480 kHz 8mm probe operates at 60 kHz to 480 kHz Probes are interchangeable with simple operator resetting procedure.
PC Connectivity	USB port for charger and PC communications
Accessories	A range of conductivity reference standards traceable to US and European standards are available for in-field use. Up to five can be mounted on an aluminium anodised Settings Reference Blocks Holder (Part number: ASIG003)
Size	163mm Long x 80mm Wide x 25mm Deep
Construction & Storage	High impact, splash proof, moulded UL94-5VA flame retardant ABS case. Protective rubber boot to hold unit, probes, probe cable, operator manual on USB, and removable stand.
Weight	358g (0.79lbs) including batteries and dual reference block
Power	1 Internal Rechargeable Battery, 3.635 V, Lithium Ion, 3.5 Ah. Over 12 hrs battery life at 60kHz, 50% screen brightness.

## 11 Safety and Environmental

The rechargeable lithium-ion batteries used in the SigmaCheck are sealed units which are not hazardous when used according to the recommendations of the manufacturer and as long as their integrity is maintained. Battery MSDS sheet available on request.

Do not short circuit, puncture, incinerate, crush, immerse in water, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion.

Even classified as lithium ion batteries UN3480 or UN3481 (Contained in Equipment or Packed with Equipment), the product is handled as Non-Dangerous Goods.

Regulations specifically applicable to the product:

- IATA/ICAO (air transportation): UN 3480 or UN 3481
- Transportation within the US-DOT, 49 Code of Federal Regulations (special provision 188
- IMDG (sea transportation) : UN 3480 or UN 3481(special provision 188, 230)



EC Declaration of Conformity - this product is CE marked; CE marking signifies that the product conforms with all EU directives or EU regulations that apply to it.



Environmental Protection: This product should not be disposed of with household waste. Please recycle where facilities exist. Check with your local Authority or retailer for recycling advice.

## 10.1 EC Declaration of Conformity

We

*ETherNDE Ltd*

Of

*ETher NDE Ltd.  
Endeavour House,  
Unit 18, Brick Knoll Park,  
Ashley Road,  
St Albans,  
Hertfordshire,  
AL1 5UG  
United Kingdom*

Hereby declare that:

Equipment: SigmaCheck2 Eddy Current Meter

Model Number: ISIG001B

Meet the intent of Directive 89/336/EEC for Electromagnetic Compatibility.

Compliance tested to:

Test Specification:	EN 61326-1:2021
Title:	Electrical equipment for measurement, control and laboratory use.
Test Specification:	EN 55011:2009 + A1:2010
Title:	Industrial, scientific and medical (ISM) radio frequency equipment. - Radio disturbance characteristics
Test Specification:	EN61000 Part 4
Title:	Electromagnetic compatibility (EMC) - Part 4. Testing and measurement techniques.
Sections:	EN61000-4-2: 2009 - Electrostatic discharge immunity test. EN61000-4-3: 2006+A2:2010- Radiated radio frequency electromagnetic field immunity test.