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	Revision: F-0

Revision History:

Revision	Revised By	Date	Change Description
DRAFT	Brent Deason	6/20/2016	Initial draft
DRAFT2	Brent Deason	6/27/2016	Made changes suggested by Glenn Ray and Grant Patten and Brent Humphries
A000	Brent Deason	7/13/2016	Releasing as preliminary to doc control
B000	Brent Deason	8/25/2016	Made note about initial mistake in E20 labels, changed E12 and SNAP Link codes slightly. Removed "Preliminary" watermark.
B001	Glen Ray	8/26/2016	Revised #5 descriptor
B002	Brent Deason	8/26/2016	Made suggested changes by Bill Curtis and Russ Dickerson. Added radio QR code information.
B003	Bill Curtis	8/31/2016	Update to limit SALES LEVEL PART NUMBER to 20 characters.
B004	Brent Deason	9/12/2016	Clarified #05 information with Jay Allison
C000	Brent Deason	12/9/2016	Added #06 field
D-0	Jason Gastler	02/08/2017	Added #07 field, clarified #06
E-0	Chris Browning	06/16/2017	Added #08 field, clarified #02
F-0	Esther Naholowaa	02/13/18	Added #09 field, IIoT products

Approvals:

Revision	Approved By	Date
B004	Brent Deason	9/12/2016
B004	Glenn Ray (for Manufacturing)	9/13/2016
B004	Bill Curtis	9/12/2016
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B004	Patricia Forrest (for Creative Solutions)	9/13/2016
B004	Grant Patton	9/12/2016
B004	James Gober	9/12/2016
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F-0	Jason Gastler	2/13/18

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1.1 Overview

This document shall be considered THE overriding document for formatting the data in QR codes on Synapse products. This document does not dictate that every product have a label, this document only dictates the data in the QR code if there is a QR code label on a Synapse product.

The purpose of this document is to ensure that all Synapse products use a standardized QR code format. Several departments within Synapse need to be aware of the different formats used for each product to ensure that each new product meets a certain format standard. Manufacturing uses a QR code reader to scan all of our products and thus needs all of our products to be designed in an agreed upon format. Software groups need to be aware of the QR code formats to ensure that QR code readers can properly commission our products. Product engineers need to make sure that their product labels fit within the standards in this document for these purposes. Please note that the size of the labels, the medium that the QR code is printed on, and any other label information is not covered in this document. The amount of data in each QR code will dictate the minimum size of the QR code. Some products are much smaller than other products and they might require a smaller amount of data in the QR code, while other products that have plenty of space for a label might opt for a QR format that has many data fields.

1.2 QR Format Information

QR codes consist of ASCII data that is formatted into a 2 dimensional digital array as shown in figure 1.



Figure 1: QR code example

Each QR code on Synapse products shall have the three leading characters “#XX” where the XX indicates the format of the rest of the data in the fields as indicated below.

- **#01:AAAAAA:BBBB:CCCCCCCCCCCC**
 - THE #01 IS RESERVED FOR LIGHTING PRODUCTS ONLY
 - Note that this is one only of only two formats where there is no colon at the end of the data
 - Field A = SNAP MAC ADDRESS (6 characters)
 - Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second 2 characters are week: Example, 0451 means week 51 of year 2004)
 - Field C = This is a variable length alphanumeric field that represents the model number
 - Actual product example...
 - #01:072982:1602:DIM10-250-11
 - Some products that use this are:
 - DIM10-250-11
 - Many other lighting products
- **#02:AAAAAAAAAAAAAAAAAAAA:BBBB:CCCCCCCCCCCC:DDDDDDDDDDDDDDDDDD:EEEEEEEEEEEE:FFFFFFFFFFFFFF**
 - The #02 Format is for E20 products (may or may not have a 3G CDMA modem)
 - Note that this is one only of only two formats where there is no colon at the end of the data
 - Field A = SALES LEVEL PART NUMBER (up to 20 characters)
 - Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second 2 characters are week: Example, 0451 means week 51 of year 2004)
 - Field C = ETHERNET MAC ADDRESS (12 characters)
 - Field D = SNAP MAC ADDRESS (16 characters)
 - Field E = WIFI MAC ADDRESS (12 characters)
 - Field F = MODEM MEID (up to 14 characters); '0' if not used
 - Actual product example...
 - #02:SC020-020:1619:001C2C618B80:001C2C1B2608527E:00078006DE35:A1000042F1866B
 - NOTE: due to a mistake initially, the E20's without cell modem are formatted without field F at all. QR code readers will have to be aware of the missing field. Below is an example. All E20's without cell modems will continue with this mistake for the sake of being consistent in format.
 - #02:SC020-010:1618:001C2C62BB27:001C2C1B26085385:00078006E3DD
 - Some products that use this are:
 - E20

- **#03:AAAAAAAAAAAAAAAAAAAAA:BBBB:CCCCCCCCCCCC:DDDDDDDDDDDDDDDDDD:0:FFFFFFFFFFF**
 - The #03 Format is for SNAP Link products
 - Don't forget the colon on the end of the data
 - Field A = SALES LEVEL PART NUMBER (up to 20 characters)
 - Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second 2 characters are week: Example, 0451 means week 51 of year 2004)
 - Field C = ETHERNET MAC ADDRESS (12 characters); '0' if not used
 - Field D = SNAP MAC ADDRESS (16 characters)
 - Field E = '0'
 - Field F = MODEL (up to 26 characters)
 - Example...
 - #03:SN232-003:1610:0:001C2C1B26605BA5:0:SNAPLINK:
 - Some products that use this are:
 - SL232-003 (SNAP Link 232, FCC only)
 - SL485-003 (SNAP Link 485, FCC only)
 - SL232-004 (SNAP Link 232, CE)
 - SL485-004 (SNAP Link 485, CE)
- **#04:AAAAAAAAAAAAAAAAAAAAA:BBBB:CCCCCCCCCCCC:DDDDDDDDDDDDDDDDDD:0:FFFFFFFFFFF**
 - The #04 Format is for E12 products
 - Don't forget the colon on the end of the data
 - Field A = SALES LEVEL PART NUMBER (up to 20 characters)
 - Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second 2 characters are week: Example, 0451 means week 51 of year 2004)
 - Field C = ETHERNET MAC ADDRESS (12 characters); '0' if not used
 - Field D = SNAP MAC ADDRESS (16 characters)
 - Field E = '0'
 - Field F = MODEL (up to 26 characters)
 - Example...
 - #04:SC012-010:1610: 00078006DE35:001C2C1B26605BA5:0:E12:
 - Some products that use this are:
 - E12
- **#05:AAAAAAAAAAAAAAAAAAAAA:BBBBBBBBBBBBBBBBBBBBB**
 - The #05 Format is for SS420, SS450, and other SimplySNAP products
 - Don't forget the colon on the end of the data
 - Field A = Default Password for User Access (12 - 20 characters)
 - Field B = Default Password for WIFI Access (12 - 20 characters)
 - Actual product example...
 - #05:Sassy\$Suzzyq78:Silent&Tim45:
- **#06:AAAAAAAAA:BBBB:CCCCC**
 - The #06 Format is for E12 products w/o housing
 - Don't forget the colon on the end of the data
 - Field A = SALES LEVEL PART NUMBER (up to 9 characters)
 - Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second to characters are week: Example, 0451 means week 51 of year 2004)
 - Field C = LAST 6 CHARACTERS OF THE ETHERNET MAC ADDRESS (6 characters)
 - Example...
 - #06:SC012-030:1650:63B704:
 - Some products this is used on:
 - SC012-030 (E12 SNAPconnect Gateway – w/o housing – North America)

- SC012-040 (E12 SNAPconnect Gateway – w/o housing – Europe)
- **#07:AAAAAAAA:BBBB:CCCCC:**
 - The #07 Format is for SN087 products
 - Don't forget the colon on the end of the data
 - Field A = SALES LEVEL PART NUMBER (up to 9 characters)
 - Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second 2 characters are week: Example, 0451 means week 51 of year 2004)
 - Field C = LAST 6 CHARACTERS OF THE SNAP MAC ADDRESS (6 characters)
 - Example...
 - #07:SN087-001:1650:63B704:
 - Some products this is used on:
 - SN087-001
- **#08:AAAAAAAAAAAAAAAAAAAA:BBBB:CCCCC:DDDDDD:EEEEEEEEEEEE:FFFFFFFF FFFFFFFF:GGGGGGGGGGGGGGGGGGGGGGG:**
 - The #08 Format is for E20 products with a 4G LTE modem
 - Note: the Ethernet and SNAP MAC addresses were shortened to be able to keep the IMEI and ICCID in the QR code
 - Don't forget the colon on the end of the data
 - Field A = SALES LEVEL PART NUMBER (up to 20 characters)
 - Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second 2 characters are week: Example, 0451 means week 51 of year 2004)
 - Field C = ETHERNET MAC ADDRESS (6 characters)
 - Field D = SNAP MAC ADDRESS (6 characters)
 - Field E = WIFI MAC ADDRESS (12 characters)
 - Field F = MODEM IMEI (up to 16 characters)
 - Field G = SIM ICCID (up to 20 characters)
 - Here is an example...
 - #08:SC020-020:1619:618B80:08527E:00078006DE35:356278079904498:89148000001081675984:
 - Some products that use this are:
 - E20
 - SS450-002
- **Synapse Radios**
 - Synapse radio QR codes consist only of the SNAP MAC address and contain no #XX Format unless otherwise documented.
 - Actual product example from the RF220SU...
 - 001C2C2AD609FAB5

· #09:AAAAAAAAAAAAAAAAAAAA:BBBB:CCCCC:

- THE #09 FORMAT IS RESERVED FOR IIoT PRODUCTS ONLY
- Field A = SALES LEVEL PART NUMBER (up to 20 characters)
- Field B = SYNAPSE MANUFACTURING DATE CODE (4 characters, first 2 characters are year, second 2 characters are week: Example, 0451 means week 51 of year 2004)
- Field C = SNAP MAC ADDRESS (6 characters)
- Actual product example...
 - #09:WSI-4-20-101:0451:065432:
- Some products that use this are:
 - SENSE 420
 - Many other IIoT products

If you determine that you need a new QR code format, then get with engineering and a new format can easily be added to this list.

1.3 References

The documents in this table are examples of labels and label information for different Synapse products.

Reference	Document #	Description
1	770-100700-120	LABEL, Supplementary QR Code for Lighting Controllers
2	770-100710-100	LABEL, QR Code - Lighting Controllers Standard Size
3	770-100720-100	LABEL, QR Code - Lighting Controllers Mini Size
4	114-001616-000	LABEL, MAC ADDRESS, E20 with CDMA
5	114-001621-000	LABEL, MAC ADDRESS, E20 Wifi Only
6	114-002261-000	LABEL, SNAP LINK, FCC ONLY
7	114-002262-000	LABEL, SNAP LINK, WITH CE