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Approved (Document resp) BNEWIHCI [Eva Janbris]	Checked	Date 2019-07-26	Rev E	Reference

## Specific label and marking requirements for Component- & PCB packages

### 1 Scope

The instruction is directed to all Suppliers delivering surface mount and through-hole components intended for automatic printed board assembly (PBA) and reflow soldering to Ericsson.

Applicable requirements are valid for manual assembled components, mechanical parts and press-fit components included on the PBA. The Printed Circuit Boards (PCB) is considered as component.

For volume delivery approval all requirements described in this document must be fulfilled.

Any concerns about interpretation of and compliance to the requirements shall be reported to the Supplier quality contact, responsible Component Engineer or Sourcing contact, within Ericsson.

Suppliers delivering products to Ericsson consumed in SMA and other processes use the label and identity marking requirement stated in this instruction.

For further information regarding label and marking, see chapter 10, Reference documentation

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## 2 Background

Ericsson Products have traceability on all components mounted in SMA on a Printed Circuit Board (PCB). The marking data required in this document is connected to production information and this information is used within Ericsson for continues quality improvements and also for understanding where specific Units are located globally if having a Supplier related fault.

To have this information is beneficial for Ericsson, our Suppliers and also our customers.

## 3 Data required on component packaging label

The data shall be arranged according to example below.

Additional information needed by Supplier is accepted, if not interfering with the requirements.

Supplier brand or company (short) name/logo is required on the label to identify the product supplier quickly.

All Data Elements shall be written on one physical label and in the following formats:

- Human readable
- Code 128
- PDF 417

Data Element	Required	Data Identifier	
Ericsson Product (Part) Number	Yes	P	
Ericsson Version (i.e. Ericsson R-state)	Yes*	21P	
Unit Code	Yes	18V	
Supplier Part Number	Yes	1P	
Supplier Version	Yes*	2P	
Quantity	Yes	Q	
Manufacture Date	Yes	11D or 12D	
Batch Number	Yes*	1T	
MSL Class (Moisture Sensitivity Level)	Yes*	13E	
Country of Origin: ISO 3166-1	Human Reading Text: Full (short) English country name	Yes	4L
	Barcode: ISO 3166-1 alpha-2 country code	Yes	4L

\*Additional information in chapter 4. Data Element and Data Identifier

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## 4 Data Element and Data Identifiers

Data identifiers shall be in accordance with the latest version of:

- ISO/IEC15459, Information technology- Automatic identification and data capture, techniques
- ISO/IEC 15418, Information technology — Automatic identification and data capture techniques — GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance.
- ANSI MH10.8.2, Data Identifier and application identifier Standard

### 4.1 Ericsson Product (Part) Number - Data Identifier; P

Ericsson Product Number is the part number assigned by Ericsson.

Example:

ABC123456/78

### 4.2 Ericsson version (i.e. Ericsson R-state) - Data Identifier; 21P

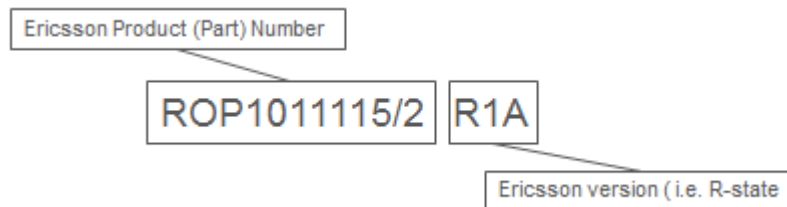
Ericsson Version specifies the revision level, R-state, for an Ericsson Product Number

Inside the Product specification (1301- ) there is Product information and if the product number has R State it is shown here.

The product specification (1301- document) also has a revision state, but that revision state is for the document itself and is not to be mixed with Product Number R State. Changes can be done in the drawing by Designer, but has no impact on the product itself. Any changes in drawings and documents result in a revision state change for the document.

\*Mark with NA in Data Element if not used on specific product

Example:



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### 4.3 Unit Code - Data Identifier; 18V

The Unit Code must represent the Site/Factory responsible for the manufacturing of the product delivered to Ericsson.

Ericsson have applied and been approved as Issuing Agency for assigning Company Identification Numbers (CINs), which with Ericsson's Issuing Agency Code (IAC) "LM" becomes globally unique.

Applying for a Unique Company Identification Name from Ericsson is free of charge. As Supplier you shall request a Company Identification Number (CIN) from Ericsson web Form: [http://tracy.ericsson.net/15459\\_CIN/](http://tracy.ericsson.net/15459_CIN/). After assigned a CIN from Ericsson the information is stored in Ericsson system, Tracy.

In this link there is additional information for understanding the construction and usage of ISO/IEC15459-2 and ISO/IEC15459-3 connected to Unit Code.

The Unit Code is IAC and CIN combined together.

Example:

1. Company A. request a CIN from Ericsson
2. Ericsson IAC = **LM**
3. Company A is assigned the CIN by Ericsson = **X99**
4. The company combine the CIN with Ericsson IAC for creating the Unit Code
5. Unit Code (IAC+CIN) = **LMX99**
6. Apply Unit Code in label according to above bullet

On the label where 18V is stated, Unit Code shall in all cases be IAC together with CIN. When request Unit Code from Ericsson according to this requirement IAC is always "LM" and "LM" is added to the CIN by the Supplier.

### 4.4 Supplier Part Number - Data Identifier; 1P

Supplier Part Number is the part number assigned by the supplier.

### 4.5 Supplier Version - Data Identifier; 2P

Supplier Version specifies the revision level for a Supplier Part Number (e.g. engineering change level, edition, or revision)

Supplier version is decided by the Supplier and there are no requirements from Ericsson that the Products need to have different versions from Supplier perspective.

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\*Mark with NA in Data Element if not used on specific product

**4.6 Quantity - Data Identifier; Q**

Quantity is the number of components on one carrier. On packed product level (see chapter 6) the quantity is the total number of components in the package.

**4.7 Manufacture Date - Data Identifier; 11D or 12D**

Manufacture Date shall be stated with 6 digits (11D) or 8 digits (12) in the following format:

- Data Identifier 11D
  - o YYYYWW
- Data Identifier 12D
  - o YYYYMMDD

State the manufacture date for the oldest component if the carrier contains components with different manufacture dates.

**4.8 Batch Number - Data Identifier; 1T**

Batch Number is assigned by the supplier.

If the Manufacture Date is used as batch number, it shall be stated.

**4.9 MSL Class (Moisture Sensitivity Level) - Data Identifier; 13E**

MSL Class is assigned by the supplier according IPC/JEDEC J-STD-020

\*MSL Class shall be stated as 1 if the component is not classified as moisture sensitive

**4.10 Country of Origin - Data Identifier; 4L**

Country of Origin shall be stated according to ISO 3166-1, human reading text must be full (short) English country name, barcode use alpha-2 country code.

**5 Data Identifier information**

The Data Identifier is a prefix identifying a unique class of data.

For Code 128 and PDF 417 this prefix shall be stated together with the Data Element. See picture below.

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On the label the Data Identifier for each Data Element is specified within brackets. The brackets are used to separate the identifier from the text.

**DO NOT** include the brackets in the barcodes.

Ericsson uses the Data Identifier to attach Data Element in correct location in Ericsson system.

Figure below is an example for understanding Data Identifier. The CE marking on label shall only be added when supplier's specific product & its production factory get CE certificate.


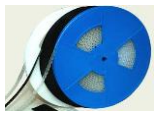



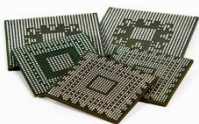


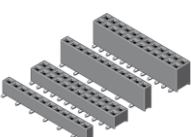






## 6 Label and label placement requirements

### 6.1 Label and label placement requirements

The placement of the label is depending on the component type and the component carrier. Moisture sensitive components shall have identical labels placed on the carrier and on the moisture barrier bag.

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All types of components	Component carrier type	Moisture barrier bag	Packed Product label
	Tape and Reel  Label required	MBB for Tape and Reel  Label required	    Label required
	Tray  No label on Pallet / Tray	MBB for tray  Label required	
	Tube (only when accepted by Ericsson)  Label required	MBB for tube (only when accepted by Ericsson)  Label required	
	MBB for PCB  Label required		
Other type of component	Other type of carriers Label required		

**6.2 Label placement on package**

The label shall be placed on the correct side of the reel according to the figure 6.1.

The adhesion of the label shall be complete and show no signs of peeling.

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The entire label shall be positioned inside the edge of the reel.

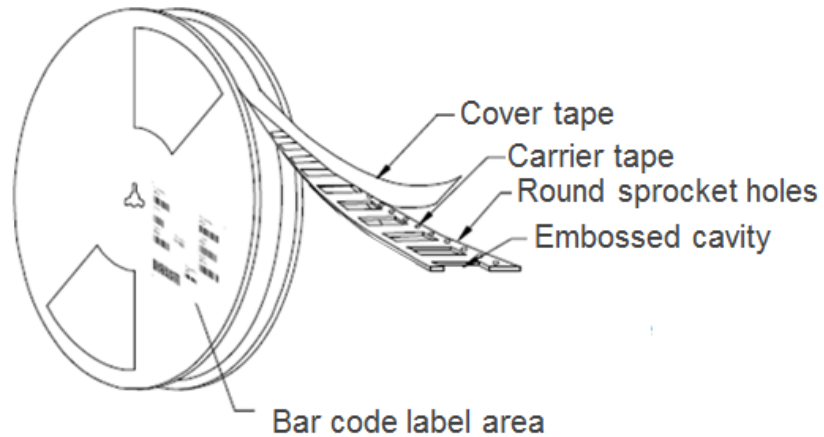


Figure 6.1

### 6.3 Label layout and size

Data printed on the label shall be in accordance with chapter 4. The layout can deviate.

Additional information is accepted.

If you as Supplier uses own developed labels it needs to be according to below requirements:

Min size:

- 76 x 38mm

Max size:

- No Max Size is set, but the entire label shall be positioned inside the edge of the reel/package

Color label                      White

Color print                        Black

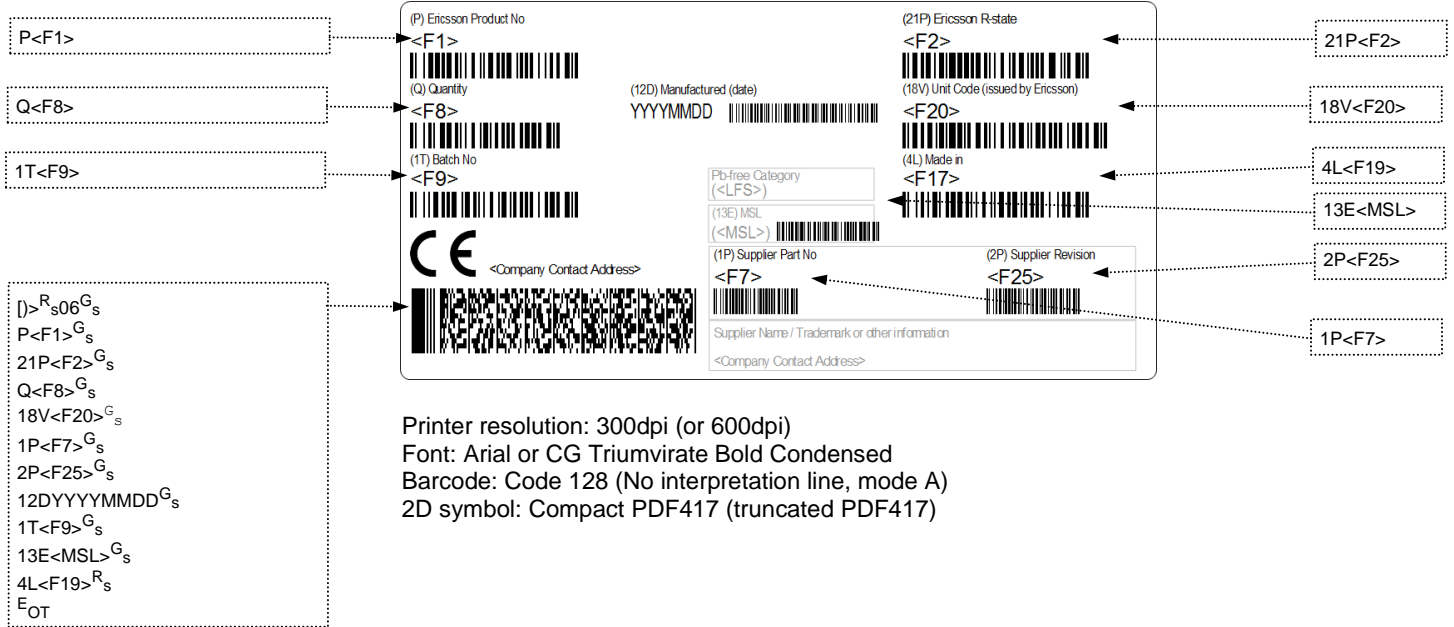
### 6.4 Label Reference from Ericsson

As reference, Ericsson label has printed label SVF 191 437/8. The CE marking on label shall only be added when supplier's specific product & its production factory get CE certificate.



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Label: [LZF 083 309/n](#) (76x38mm)  
Print file: [SVV 107 833/8](#)



## 7 Format Information for Data Element

### 7.1 Human readable

A human readable format is a representation of data or information that can be naturally read by human. (Plain text)

### 7.2 Code 128

Data Element in one-line bar code, Code128

### 7.3 PDF 417

Data Element in 2D symbol, PDF417 or Compact PDF417

PDF417 is checked, multi-line barcode which is said to be the most widely used 2D symbology in the world. PDF is equivalent of Portable Data Format. The “4” stands for the number of bars and spaces, which are used to encode every character, and the “17” means that the total width of these eight bars and spaces is 17 units

PDF 417 is represented in below ISO/IEC Standards:

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ISO/IEC15438 Information technology - Automatic identification and data capture techniques -PDF417 bar code symbology specification

ISO/IEC15434 Information Technology Automatic identification and data capture techniques -Syntax for high-capacity ADC media

For construction of PDF417 software with that capability is needed.

The PDF417 contains ASCII symbols that are not type writeable but used to steer certain equipment for example scanners

All Data Elements shall be included in the PDF417 barcode.

Table below is the encoded information.

Encoded information for PDF417
<code>[&gt;^R_s06^G_sPPRODUCTNUMBER^G_s21PRSTATE^G_sQQQUANTITY^G_s18VUNITCODE ^G_s1PSUPPLIERPARTNUMBER^G_s2PSUPPLIERVERSION^G_s12DYYYYMMDD ^G_s1TBATCH^G_s13EMSL^G_s4LCOUNTRYOFORIGIN^R_s^E_oT</code>

## 8 Barcode Validation

2D (PDF417) barcode can be validated via below web tool.

<http://tracy.ericsson.net/validation>

Table below shows the Symbols and characters used when validate the barcode via Ericsson web for PDF417 barcode:

ASCII symbol	Description	Web Browser characters	Substitution character for 2D validation tool
<sup>G</sup> <sub>s</sub>	Group Separator	GS	^
<sup>R</sup> <sub>s</sub>	Record Separator	RS	!
<sup>E</sup> <sub>oT</sub>	End of Transmission	EOT	?

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Tables below shows encoded string, the string when scanned in a web browser for 2D validation tool and the string after replacing the Web browser characters with Substitution characters used for the 2D validation tool

Web Browser string in 2D Validation tool (ASCII symbols replaced)
<i>[&gt;RS06GSPPRODUCTNUMBERS21PRSTATEGSQQQUANTITYGS18VUNITCODEGS1PSUPPLIERPARTNUMBERS2PSUPPLIERVERSIONGS12DYMMDDGS1TBATCHGS13EMSLGS4LCOUNTRYOFORIGINRSEoT</i>

String when manually replaced ASCII symbols with substitution characters for the 2D validation tool
<i>[&gt;!06^PPRODUCTNUMBER^21PRSTATE^QQQUANTITY^18VUNITCODE^1PSUPPLIERPARTNUMBER^2PSUPPLIERVERSION^12DYMMDD^1TBATCH^13EMSL^4LCOUNTRYOFORIGIN!?</i>

## 9 Document Change Information

Update Country of Origin for human reading text be full (short) English country name.

Adjust some contents & picture with more clear information and some changed to another/new chapter for better document structure.

## 10 References documentation

Reference instructions if there is a need of more detailed information regarding marking & labelling

### 10.1 Ericsson generic requirement documentation

[102 01-107 Uen](#)

Identity Markings for products and packages

[102 01-1003 Uen](#)

Identity Marking of Packed Product, Handling Unit and Transport Unit Packages

[102 01-3210 Uen](#)

Marking on packaging

### 10.2 Global standard documentation

EIA481

Electronic Components Association Standard

JEDEC J-STD-033

Joint Industry Standard

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IPC/JEDEC J-STD-020	Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices
ISO/IEC 15418	Information technology — EAN/UCC Application Identifiers and Fact Data Identifiers and Maintenance
ISO/IEC15438	Information technology - Automatic identification and data capture techniques -PDF417 bar code symbology specification
ISO/IEC15434	Information Technology Automatic identification and data capture techniques -Syntax for high-capacity ADC media
ISO/IEC15459	Information technology- Automatic identification and data capture, techniques
ISO 3166	Codes for the representation of names of countries and their subdivisions
ANSI MH10.8.2	Data Identifiers and application identifier Standard