



Qualcomm Technologies, Inc.

# Qualcomm® Snapdragon™ 820E Processor (APQ8096SGE)

## Device Revision Guide

LM80-P2751-26 Rev. B

February 9, 2018

**Questions or comments:** <https://www.96boards.org/product/dragonboard820c/>

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## Revision history

Revision	Date	Description
A	January 2016	Initial release
B	February 2018	Updated to conform to QTI standards; no technical content was changed in this document revision.

# Contents

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<b>1 Introduction .....</b>	<b>4</b>
1.1 Scope and intended audience .....	4
<b>2 Device identification .....</b>	<b>5</b>
2.1 Device marking for APQ8096SGE .....	5
2.2 Hardware revision number – general format .....	6
2.3 Device identification for each sample type .....	7
2.4 Sample testing .....	7
2.4.1 Commercial samples (CS) .....	7
2.5 Compatible software releases .....	7
<b>3 Known issues .....</b>	<b>8</b>
3.1 Summary of known issues .....	8

## Figures

Figure 2-1 APQ8096SGE device marking (top view, not to scale) .....	5
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## Tables

Table 1-1 Primary APQ8096SGE documents .....	4
Table 2-1 APQ8096SGE device marking line definitions .....	5
Table 2-2 Device identification register .....	6
Table 2-3 QFPROM_CORR_PTE_ROW0_LSB register .....	6
Table 2-4 Device identification details .....	7
Table 2-5 Software compatibility for each sample type (PRR value) .....	7

# 1 Introduction

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Technical information for the APQ8096SGE device is covered by the documents listed in [Table 1-1](#).

**Table 1-1 Primary APQ8096SGE documents**

Document number	Document title
LM80-P2751-1	Qualcomm® Snapdragon™ 820E Processor (APQ8096SGE) Device Specification
LM80-P2751-26 (this document)	Qualcomm® Snapdragon™ 820E Processor (APQ8096SGE) Device Revision Guide

## 1.1 Scope and intended audience

This device revision guide identifies issues with all the APQ8096SGE samples released to date. The following information is included:

- Introduction to this document and its topic (Chapter 1)
- Device identification (Chapter 2)
  - Device marking
  - Hardware revision number
  - Identification details for each sample type
  - Sample testing (CS explanations)
  - Identification of compatible software releases
- Known issues (Chapter 3)
  - Issue description
  - Impact to system performance
  - Possible workarounds such as what designers should do to minimize the issue's impact.

This device revision guide is intended for new product developers who are designing, testing, and evaluating phones or terminals that include the APQ8096SGE device.

## 2 Device identification

The APQ8096SGE device can be identified by markings on its top surface and by the contents of an identification register. These identification techniques are described in section 2.1. Further details about each sample type are presented from section 2.2 through section 2.4.

### 2.1 Device marking for APQ8096SGE

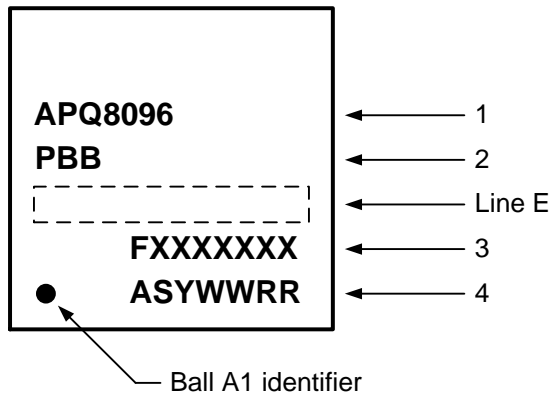


Figure 2-1 APQ8096SGE device marking (top view, not to scale)

Table 2-1 APQ8096SGE device marking line definitions

Line	Marking	Description
1	APQ8096SGE	QTI product name
2	PBB	P = product configuration code <ul style="list-style-type: none"> <li>See Table 2-5 for assigned values.</li> </ul> BB = feature code <ul style="list-style-type: none"> <li>See Table 2-5 for assigned values.</li> </ul>
E	Blank or random	Additional content as necessary
3	FXXXXXXX	F = supply source code <ul style="list-style-type: none"> <li>F = J (Samsung)</li> <li>XXXXXXX = traceability number</li> </ul>

Line	Marking	Description
4	ASYWWRR	A = assembly site code <ul style="list-style-type: none"> <li>▪ A = C (Amkor, South Korea)</li> <li>▪ A = X (Amkor, Japan)</li> </ul> S = traceability number Y = single-digit year WW = work week (based on calendar year) RR = product revision <ul style="list-style-type: none"> <li>▪ See <a href="#">Table 2-5</a> for assigned values.</li> </ul>

## 2.2 Hardware revision number – general format

The device identification register allows the user to determine the device's manufacturer, part number, and version via the test access port (TAP). The 32-bit device identification register is read through the JTAG interface and is summarized in [Table 2-2](#).

**Table 2-2 Device identification register**

Bit location	Description	Value
bits [31:28]	Version data (may change with sample type)	0x2
bits [27:12]	Part number (changes with sample type)	0947
bits [11:1]	Manufacturer identity code (administered by JEDEC)	0E1 (QTI code)
bit [0]	Device identification register start bit	Always = 1

The 28-bit QFPROM\_CORR\_PTE\_ROW0\_LSB register is summarized in [Table 2-3](#).

**Table 2-3 QFPROM\_CORR\_PTE\_ROW0\_LSB register**

Bit location	Name	Description
27:20	FEATURE_ID	These bits are used for defining various feature variants.
19:0	JTAG_ID	These bits map to 31:12 of the JTAG ID.

## 2.3 Device identification for each sample type

Table 2-4 Device identification details<sup>1</sup>

Device	Product configuration code (P)	Product revision (RR)	Hardware revision number	Sample type	BB value	Feature ID	Comments
APQ8096 SGE	1	04	0x4 003E 0E1	CS	AB	14	APQ8096SGE 994C MNSP, Qualcomm® Kryo™ Gold 2.15 GHz, A530 GPU 624 MHz, SSC, HVX

## 2.4 Sample testing

### 2.4.1 Commercial samples (CS)

These devices have undergone full production-level testing and meet the specifications and features described in the device specification, except as otherwise noted in this document. They have passed device-level qualifications. Commercial samples are suitable for performance testing, and also phone-level production and qualification.

## 2.5 Compatible software releases

Each sample type is for use with a particular AMSS8996 software version (or later). Sample types are not expected to be compatible with AMSS software releases that occurred earlier than that particular version. [Table 2-5](#) identifies the software compatibility of each sample type.

Table 2-5 Software compatibility for each sample type (PRR value)

MSM™ device sample	PRR <sup>2</sup>	Compatible software		Comments
		Windows phone	Linux Android	
CS	004	MSM8996.WP.1.0-01600-STD.PROD-2 or later	MSM8996.LA.1.0-01400-STD.PROD-1 or later	CS software release MSM8996.LA.1.0.r6-01600-STD.PROD-4 or later is recommended for use on CS devices.

<sup>1</sup> Devices with date code YWW ≥ 543 are CS parts.

<sup>2</sup> Only one PRR variant is shown per sample as an example. See [Table 2-5](#) for the full list of available PRR codes.

## 3 Known issues

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### 3.1 Summary of known issues

No known issues have been identified.



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