



**BUREAU
VERITAS**

Module Integration Report on

Brand: Particle

Model: U201

HW: V005

SW: V060

Module Brand: u-blox

Module Model: SARA-U201

Module HW: 261A01

Module SW: 23.60

SVN: 01

Report Reference: Project NO: 180306C13
Report NO: GC180306C13

Date: March 07, 2018

Test Laboratory:

BV 7LAYERS COMMUNICATIONS TECHNOLOGY(SHENZHEN) CO. LTD

No. B102, Dazu Cuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industry Park, Nanshan District, Shenzhen, Guangdong, China



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1 Administrative Data

1.1 Project Data

Project Responsible: Rock Tseng
Date Of Test Report: 2018/03/07
Date of first test: 2017/12/14
Date of last test: 2018/03/02

1.2 Applicant Data

Company Name: Particle Industries, Inc
Street: 126 Post St, 4th floor, San Francisco
City: CA 94108
Country: USA

Contact Person: Yuan Eric
Phone: 18682301202
E-Mail: eric@particle.io

1.3 Test Laboratory Data

The following list shows all places and laboratories involved for test result generation:

Bureau Veritas ADT, SZ

Company Name : BV 7LAYERS COMMUNICATION TECHNOLOGY(SHENZHEN) CO. LTD
Street : No. B102, Dazu Cuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industry Park, Nanshan District
City : Shenzhen, Guangdong
Country : China
Contact Person : Rock Tseng
Phone : +86-755-88696577
Fax : +86-755-86185206
E Mail : rock.tseng@tw.bureauveritas.com

Laboratory Details

<i>Lab ID</i>	<i>Identification</i>	<i>Responsible</i>	<i>Accreditation Info</i>
Lab 1	TP001 - IOP Environment	Rock Tseng	A2LA Accreditation No.: 3939.01
Lab 2	TP012 - SIM - COMPRION IT3 SIM Simulator	Rock Tseng	A2LA Accreditation No.: 3939.01
Lab 3	TP013 - USIM - COMPRION IT3 USIM Simulator	Rock Tseng	A2LA Accreditation No.: 3939.01
Lab 4	TP050 - Protocol - Anite SAT(A) UE	Rock Tseng	A2LA Accreditation No.: 3939.01

1.4 Signature of the Testing Responsible



Nilson She
responsible for tests performed in: Lab 1, Lab 2, Lab 3, Lab 4

2 Test Object Data

2.1 General OUT Description

The following section lists all OUTs (Object's Under Test) involved during testing.

OUT: U201

<i>Type / Model / Family:</i>	Brand: Particle Model: U201 HW: V005 SW: V060 Module Brand: u-blox Module Model: SARA-U201 Module HW: 261A01 Module SW: 23.60 SVN: 01
Manufacturer:	
<i>Company Name:</i>	Particle Industries, Inc
<i>Street:</i>	126 Post St, 4th floor, San Francisco
<i>City:</i>	CA 94108
<i>Country:</i>	USA
<i>Contact Person:</i>	Yuan Eric
<i>Phone:</i>	18682301202
<i>E-Mail:</i>	eric@particle.io

2.2 Detailed Description of OUT Samples

Sample : EUT 01

<i>OUT Identifier</i>	U201		
<i>Sample Description</i>			
<i>HW Status</i>	V005		
<i>SW Status</i>	V060		
<i>Low Voltage</i>	3.6 V	<i>Low Temp.</i>	-10 °C
<i>High Voltage</i>	4.4 V	<i>High Temp.</i>	55 °C
<i>Nominal Voltage</i>	3.7 V	<i>Normal Temp.</i>	25 °C

2.3 OUT Features

Features for OUT: U201

<i>Designation</i>	<i>Description</i>	<i>Allowed Values</i>	<i>Supported Value(s)</i>
Features for scope: GERAN_v1			
A	Feature "A" is used for "applicability" that is referenced in 51.010-2 for many test cases. You will find the description in Annex B of this specification.		
A.1/2	Extended GSM Band (E-GSM), (including standard Band)		
A.1/4	DCS 1800 band		
A.1/18	PCS 1900 band		
A.25/96	1,8V/3V SIM/ME interface.		
Features for scope: UTRA_v2			
102230_A. 1/4	Class B		
102230_A. 1/5	Class C		
34121_A.6/ 3	Frequency band: 1850 - 1910, 1930 - 1990 MHz		
34121_A.6/ 16	Frequency band: 824 - 849, 869 - 894 MHz		
R	recommended - the test case is recommended		

2.4 Setups used for Testing

For each setup a relation is given to determine if and which samples and auxiliary equipment is used. The left side list all OUT samples and the right side lists all auxiliary equipment for the given setup.

<i>Setup No.</i>	<i>List of OUT samples</i>	<i>List of auxiliary equipment</i>
<i>Sample No.</i>	<i>Sample Description</i>	<i>AE No. AE Description</i>
01.01.01 SW: V060)	(HW: V005	
<i>Sample:</i>	EUT 01	

3 Results

3.1 General

Documentation of tested devices:

Available at the test laboratory.

Interpretation of the test results:

The results of the inspection are described on the following pages, where 'Conformity' or 'Passed' means that the certification criteria were verified and that the tested device is conform to the applied standard.

In cases where 'Declaration' is printed, the required documents are available in the manufacturers product documentation.

In cases where 'not applicable' is printed, the test case requirements are not relevant to the specific equipment implementation.

Note:

1.Uncertainty for each test case and measurement were calculated implemented according to test equipment uncertainty document.

2.Test condition not required due to no practical connection made to the power supply, and then normal condition performed with standard battery. The standard battery would be measured prior to testing, and make sure the battery voltage was at full charge condition.

3.2 List of the Applicable Body

(Body for Scope: GERAN_v1)

<i>Designation</i>	<i>Description</i>
NAPRD.03 v5.27 bis	Official PTCRB NAPRD.03 v5.27

(Body for Scope: UTRA_v2)

<i>Designation</i>	<i>Description</i>
NAPRD.03 v5.27 bis	Official PTCRB NAPRD.03 Version 5.27

3.3 List of Test Specification

<i>Test Specification:</i>	3GPP TS 34.124
<i>Date / Version</i>	2017/03/29 Version: V14.0.0
<i>Title:</i>	3rd Generation Partnership Project; Technical Specification Group Radio Access Network; ElectroMagnetic Compatibility (EMC) requirements for mobile terminals and ancillary equipment (Release 14)
<i>Description:</i>	It specifies the applicable EMC tests for all types of UTRA UE's operating in FDD or TDD modes with their two options.
<i>Test Specification:</i>	51.010-1
<i>Date / Version</i>	2017/09/25 Version: v13.5.0
<i>Title:</i>	3GPP TS 51.010-1
<i>Description:</i>	Part 1: Conformance specification
<i>Test Specification:</i>	ETSI TS 102 230-1
<i>Date / Version</i>	2016/06/01 Version: V11.0.0
<i>Title:</i>	Smart Cards; UICC-Terminal interface; Physical, electrical and logical test specification; Part 1: Terminal features (Release 11)



4 Test Equipment Details

4.1 List of Used Test Equipment

The calibration, hardware and software states are shown for the testing period.

Test Equipment Anite SAT(A) UE

Lab ID: Lab 4
Description: Conformance Protocol Test System
Type: Anite SAT(A) UE

Single Devices for Anite SAT(A) UE

Single Device Name	Type	Serial Number	Manufacturer	
8960 Series 10 Wireless Comms Test Set E5515C-unit 1	E5515C	GB44052675	Agilent Technologies	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2016/11/07	2018/11/07
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: A.05.92		2012/12/20	
8960 Series 10 Wireless Comms Test Set E5515C-unit 2	E5515C	GB44052666	Agilent Technologies	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2016/10/24	2018/10/24
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: A.05.92		2012/12/20	
8960 Series 10 Wireless Comms Test Set E5515C-unit 3	E5515C	GB44052665	Agilent Technologies	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2016/09/20	2018/09/20
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: A.05.92		2012/12/20	
8960 Series 10 Wireless Comms Test Set E5515C-unit 4	E5515C	GB44052684	Agilent Technologies	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2016/09/12	2018/09/12
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: A.05.92		2012/12/20	
8960 Series 10 Wireless Comms Test Set E5515C-unit 5	E5515C	GB44052652	Agilent Technologies	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2016/10/24	2018/10/24
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: A.05.92		2012/12/20	
8960 Series 10 Wireless Comms Test Set E5515C-unit 6	E5515C	GB44052658	Agilent Technologies	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2016/09/13	2018/09/13
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: A.05.92		2012/12/20	



Single Devices for Anite SAT(A) UE (continued)

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>	
Anite Baseband Processor-unit 1	ABP	2716	Anite	
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: Release 21.0 V.25		2012/12/20	
Anite Baseband Processor-unit 2	ABP	2710	Anite	
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: Release 21.0 V.25		2012/12/20	
Anite Combiner	Anite Combiner	2526	Anite	
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	FW: Release 21.0 V.25		2012/12/20	
Control PC	OPTIPLEX 755	F57RJ3J	Dell	
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	SW: Release 21.0 V.25		2012/12/20	

Test Equipment IT3

Lab ID: Lab 2, Lab 3
Manufacturer: COMPRION
Description: COMPRION SIM-/USIM-Simulator
Type: IT3
Serial Number: M211-50112

Single Devices for IT3

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>	
COMPRION IT3 SIM-Simulator	IT3	M211	COMPRION	
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	IT3 Test Platform R4.10.3		2013/08/29	
IT3 Analog Probe	IT3-APR	50112	COMPRION	
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	Analog Probe Hardware 1.2		2012/08/20	

Test Equipment RSE Test System

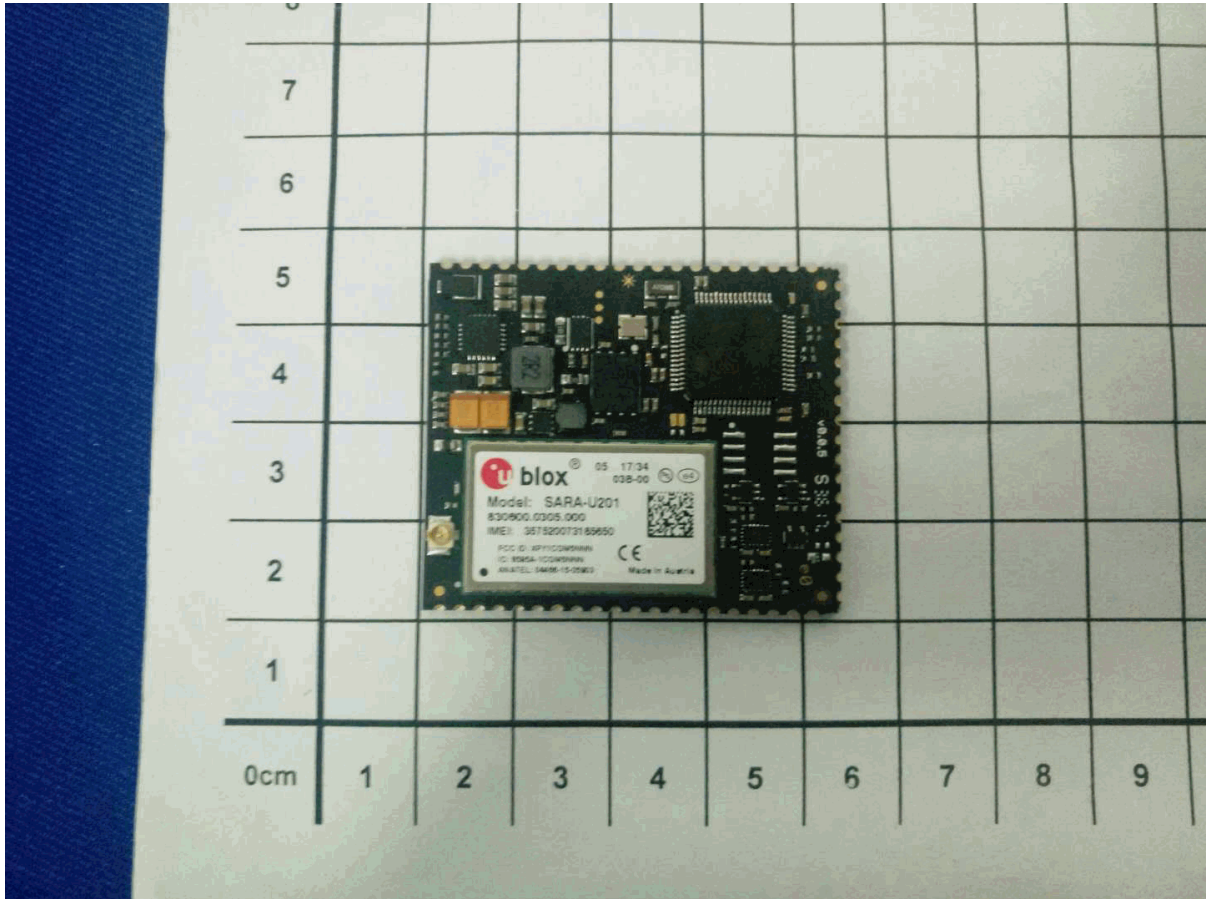
Lab ID: Lab 1
Description: RSE Test System

Single Devices for RSE Test System

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>	
3m Fully-anechoic Chamber	10m*10m*5m	Euroshieldpn-CT0001143-1217	ETS-LINDGREN	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2017/04/15	2018/04/14
EXA Signal Analyzer	N9010A-544	MY54510335	KEYSIGHT	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2017/03/01	2018/02/28
Horn Antenna	3117	00168692	ETS-LINDGREN	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2016/11/26	2018/11/25
Radio Communication Analyzer	MT8820C	6201465426	Anritsu	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2017/03/01	2018/02/28
RS Antenna_LF	R&S® HL046E	HL064E	Rohde&Schwarz	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2017/06/26	2018/06/25
Signal Pre-Amplifier	EMC 012645B	980257	EMSI	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2017/07/24	2018/07/23
Signal Pre-Amplifier	EMC 9135	980249	EMSI	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Calibration		2017/07/24	2018/07/23

5 Annex

5.1 Additional Information for Sample Description



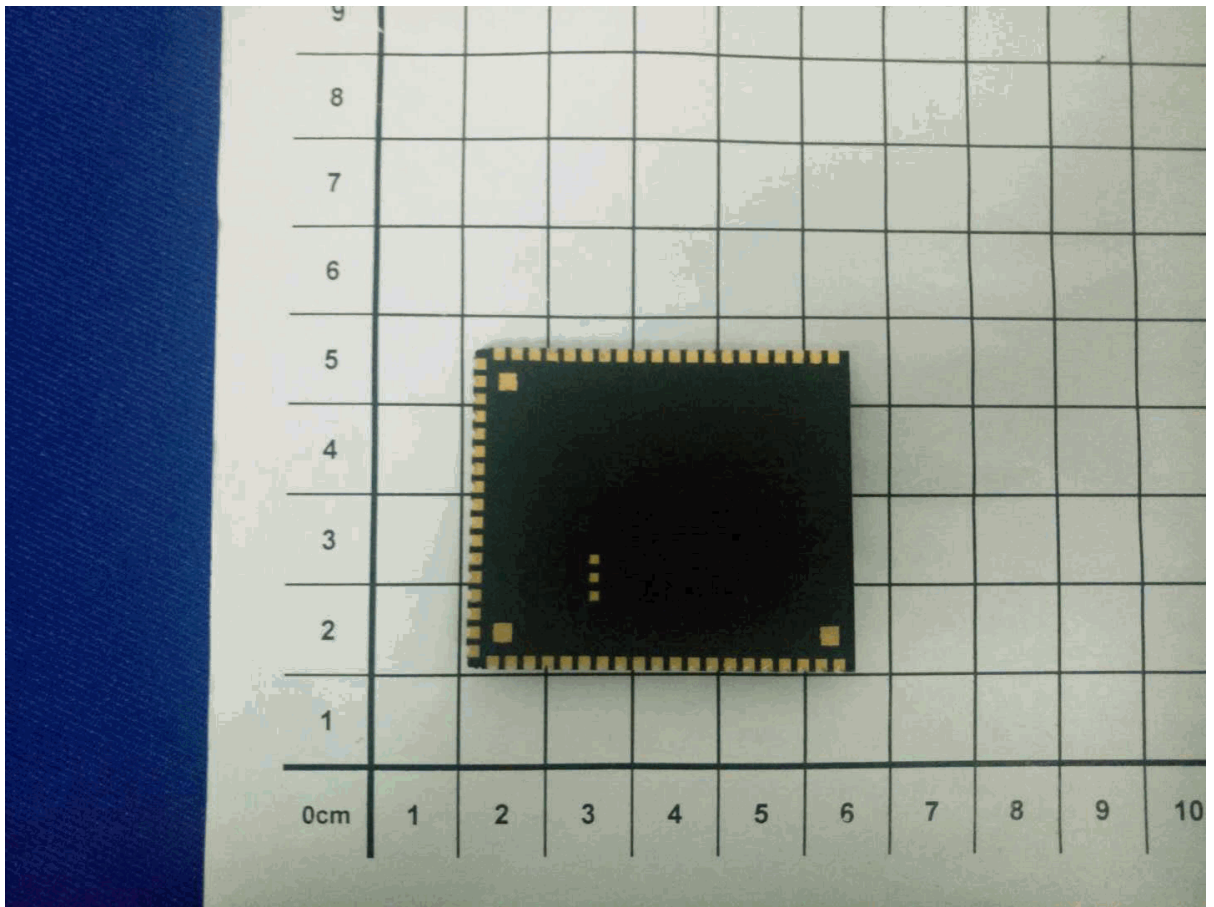
Photographs for the EUT
1. Front View of the EUT



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Reference: Project NO: 180306C13

Report NO: GC180306C13



Photographs for the EUT
2.Rear View of the EUT

5.2 Additional Information for Report

Test Case	Test_Spec	Category	Band	Verdict	Sample	Test_Platform
12.2.1; Frequency Band = 900, VN	51.010-1	A	All	PASS	03.01.01	01_BV SZ
12.2.1; Frequency Band = 1800, VN	51.010-1	A	All	PASS	03.01.01	01_BV SZ
12.2.2; Frequency Band = 900, VN	51.010-1	A	All	PASS	03.01.01	01_BV SZ
12.2.2; Frequency Band = 1800, VN	51.010-1	A	All	PASS	03.01.01	01_BV SZ
26.6.8.5; Frequency Band = 1900	51.010-1	A	Single	PASS	01.01.01	50_BV SZ
27.17.1.1	51.010-1	A	Single	PASS	01.01.01	12_BV SZ
5.1.1	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.1.2.2	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.1.3.2	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.1.5.3	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.1.5.4	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.1.5.6	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.2.2.3	ETSI TS 102 230	A	Single	PASS	02.01.01	13_BV SZ
5.2.2.4	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.2.3.2	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.2.4.2	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
5.2.5.3	ETSI TS 102 230	A	Single	PASS	01.01.01	13_BV SZ
8.2; Frequency Band = FDDII	34.124	A	Single	PASS	03.01.01	01_BV SZ
8.2; Frequency Band = FDDII	34.124	A	Single	PASS	03.01.01	01_BV SZ
8.2; Frequency Band = FDDV	34.124	A	Single	PASS	03.01.01	01_BV SZ
8.2; Frequency Band = FDDV	34.124	A	Single	PASS	03.01.01	01_BV SZ



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DUT Sample No.	Hardware Version	Software Version	IMEI
01.01.01	V005	V060	357520073183408
02.01.01	V005	V060	357520073185064
03.01.01	V005	V060	357520073144962

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