

Report No.: SEWA2203000005RG02

Rev.: 02

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TEST REPORT

Application No.:	SEWA2203000005RG
Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
EUT Description:	LTE-A Module
Model No.:	EG065K-NA
Trade Mark:	Quectel
FCC ID:	XMR2022EG065KNA
Standards:	47 CFR Part 2.1091
Date of Receipt:	2022/03/18
Date of Issue:	2023/03/31

Test Result:	PASS*
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Panta Sun
Wireless Laboratory Manager



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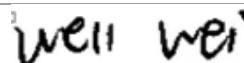
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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022/06/13		Original
02		2023/03/31		Updated Software Version

This report supersedes our previous report SEWA2203000005RG02, issued on 2022/06/13, which is hereby deemed null and void.

Prepared By	 (Nick Hu) / Test Engineer
Checked By	 (Well Wei) / Reviewer

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2 General Information

2.1 Client Information

Applicant:	Quectel Wireless Solutions Co., Ltd.
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Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

2.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327

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2.3 General Description of EUT

EUT Description:	LTE-A Module			
Model No.:	EG065K-NA			
Trade Mark:	Quectel			
Hardware Version:	R1.0			
Software Version:	EG065KNAVAR01A06M2G			
Antenna Type:	<input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated			
Antenna Gain*:	<input checked="" type="checkbox"/> Provided by client			
	LTE Band 2:	1.38dBi (Ant0)	LTE Band 4:	1.38dBi (Ant0)
	LTE Band 5:	-0.01dBi (Ant0)	LTE Band 7:	-5.90dBi (Ant1)
	LTE Band 12:	-0.01dBi (Ant0)	LTE Band 13:	-0.01dBi (Ant0)
	LTE Band 14:	-0.01dBi (Ant0)	LTE Band 25:	1.38dBi (Ant0)
	LTE Band 26:	-0.01dBi (Ant0)	LTE Band 30:	-5.70dBi (Ant1)
	LTE Band 66:	1.38dBi (Ant0)		
<p>Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.</p> <p>Remark:</p> <p>As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.</p>				

2.4 Description of Support Units

Description	Manufacturer	Model No.
Fixture	Quectel	EG065K-NA-TE-A
Power Board	Quectel	UMTS<E-EVB
Adapter	STH	P12F050200

Remark: all above the information of table are provided by client.



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3 RF Exposure Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz
 *=Plane-wave equivalent power density
 RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

$\pi = 3.1416$

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm² . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



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3.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

3.1.3 EUT RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Average Output Power (dBm)	EIRP(ERP) (dBm)	EIRP(ERP) Limit (dBm)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Gain according to EIRP(ERP) (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
LTE Band 2	1850.7	1.38	25.50	26.88	33.00	0.0970	1.0000	7.50	11.51	7.50	Pass
LTE Band 4	1710.7	1.38	25.50	26.88	30.00	0.0970	1.0000	4.50	11.51	4.50	Pass
LTE Band 5	824.7	-0.01	25.50	23.34	38.47	0.0704	0.5498	15.12	8.91	8.91	Pass
LTE Band 7	2502.5	-5.90	25.50	19.60	33.00	0.0181	1.0000	7.50	11.51	7.50	Pass
LTE Band 12	699.7	-0.01	25.50	23.34	34.77	0.0704	0.4665	11.42	8.20	8.20	Pass
LTE Band 13	779.5	-0.01	25.50	23.34	34.77	0.0704	0.5197	11.42	8.66	8.66	Pass
LTE Band 14	790.5	-0.01	25.50	23.34	34.77	0.0704	0.5270	11.42	8.73	8.73	Pass
LTE Band 25	1850.7	1.38	25.50	26.88	33.00	0.0970	1.0000	7.50	11.51	7.50	Pass
LTE Band 26(814-824)	814.7	-0.01	25.50	23.34	NA	0.0704	0.5431	NA	8.86	8.86	Pass
LTE Band 26(824-849)	824.7	-0.01	25.50	23.34	38.45	0.0704	0.5498	15.10	8.91	8.91	Pass
LTE Band 30	2307.5	-5.70	24.30	18.60	23.98	0.0144	1.0000	-0.32	12.71	-0.32	Pass
LTE Band 66	1710.7	1.38	25.50	26.88	30.00	0.0970	1.0000	4.50	11.51	4.50	Pass

---End of Report---



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