

Report No.: SEWM2311000473RG01
 Rev.: 01
 Page: 1 of 66

TEST REPORT

Application No.: SEWM2311000473RG
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: 5G Sub-6 GHz LGA Module
Model No.: RG620T-NA
Trade Mark: Quectel
FCC ID: XMR2024RG620TNA
Standards: 47 CFR Part 2
 47 CFR Part 22
 47 CFR Part 24
 47 CFR Part 27
 47 CFR Part 90
Date of Receipt: 2023/03/06 (for report SEWA2303000029RG01)
 2023/11/21 (for report SEWM2311000473RG01)
Date of Test: 2023/03/10 to 2023/04/24 (for report SEWA2303000029RG01)
 2023/11/20 to 2024/05/25 (for report SEWM2311000473RG01)
Date of Issue: 2024/05/25

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

Authorized Signature:


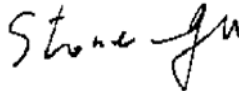
Well Wei
 Wireless Laboratory Manager



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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024/04/17		Original

Prepared By		 <hr/> (Levi Li) / Test Engineer
Checked By		 <hr/> (Stone Gu) / Reviewer



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2 Test Summary

2.1 LTE Band 5/26(824~849 MHz)/ CA_5B

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913(a)(5)	ERP ≤ 7 W	Section 1 of Appendix B.3&B.11&B.19	Pass
Peak-Average Ratio	§22.913(d)	Limit≤13 dB	Section 2 of Appendix B.3&B.11&B.19	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.3&B.11&B.19	Pass
Band Edges Compliance	§2.1051, §22.917(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 4 of Appendix B.3&B.11&B.19	Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917(a)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Section 5 of Appendix B.3&B.11&B.19	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	FCC: ≤ -13 dBm/100 kHz.	Section 6 of Appendix B.3&B.11&B.19	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §22.355	≤ ±2.5ppm.	Section 7 of Appendix B.3&B.11&B.19	Pass



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2.2 LTE Band 2 /25

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232(c)	EIRP ≤ 2 W	Section 1 of Appendix B.1&B.9	Pass
Peak-Average Ratio	§24.232(d)	Limits ≤ 13 dB	Section 2 of Appendix B.1&B.9	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.1&B.9	Pass
Band Edges Compliance	§2.1051, §24.238(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 4 of Appendix B.1&B.9	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)	≤ -13 dBm/1 MHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	Section 5 of Appendix B.1&B.9	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	≤ -13 dBm/1 MHz.	Section 6 of Appendix B.1&B.9	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §24.235	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.1&B.9	Pass



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2.3 LTE Band 4 /66/ CA_66B/ CA_66C/LTE Band 70

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(d)(4)	EIRP ≤ 1 W	Section 1 of Appendix B.2&B.17&B.24&B.25&B.47	Pass
Peak-Average Ratio	§27.50(d)(5)	Limit≤13 dB	Section 2 of Appendix B.2&B.17&B.24&B.25&B.47	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.2&B.17&B.24&B.25&B.47	Pass
Band Edges Compliance	§2.1051, §27.53(h)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 4 of Appendix B.2&B.17&B.24&B.25&B.47	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)	≤ -13 dBm/1 MHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	Section 5 of Appendix B.2&B.17&B.24&B.25&B.47	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(h)	≤ -13 dBm/1 MHz.	Section 6 of Appendix B.2&B.17&B.24&B.25&B.47	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.2&B.17&B.24&B.25&B.47	Pass



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2.4 LTE Band 7/38/41/CA_7C/ CA_38C/ CA_41C

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)(2)	EIRP ≤ 2W	Section 1 of Appendix B.4&B.13&B.14&B.20&B.21&B.22	Pass
Peak-Average Ratio	---	≤13 dB	Section 2 of Appendix B.4&B.13&B.14&B.20&B.21&B.22	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.4&B.13&B.14&B.20&B.21&B.22	Pass
Band Edges Compliance	§2.1051, §27.53(m)(4)	For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.	Section 4 of Appendix B.4&B.13&B.14&B.20&B.21&B.22	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)		Section 5 of Appendix B.4&B.13&B.14&B.20&B.21&B.22	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)		Section 6 of Appendix B.4&B.13&B.14&B.20&B.21&B.22	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.4&B.13&B.14&B.20&B.21&B.22	Pass



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2.5 LTE Band 12/17

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W.	Section 1 of Appendix B.5&B.8	Pass
Peak-Average Ratio	---	Limit≤13 dB	Section 2 of Appendix B.5&B.8	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.5&B.8	Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])	Section 4 of Appendix B.5&B.8	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ 43+10log10(P[Watts])	Section 5 of Appendix B.5&B.8	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	FCC: ≤ -13 dBm/100 kHz.	Section 6 of Appendix B.5&B.8	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.5&B.8	Pass



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2.6 LTE Band 13

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(b)(10)	ERP ≤ 3 W.	Section 1 of Appendix B.6	Pass
Peak-Average Ratio	---	Limit≤13 dB	Section 2 of Appendix B.6	Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.6	Pass
Band Edges Compliance	§2.1051, §27.53(c)	≤ 43+10log10(P[Watts])	Section 4 of Appendix B.6	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(c) §27.53(f)	≤ -13 dBm/100 kHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges. On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations. For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Section 5 of Appendix B.6	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(c) §27.53(f)	FCC: ≤ -13 dBm/100 kHz. For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Section 6 of Appendix B.6	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.6	Pass



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2.7 LTE Band 14

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §90.542(a)	ERP ≤ 3 W	Section 1 of Appendix B.7	Pass
Peak-Average Ratio	---	Limit≤13 dB	Section 2 of Appendix B.7	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.7	Pass
Emission Mask	§2.1051 §90.210(b)	Transmitters designed for operation under this part on frequencies other than listed in this section must meet the emission mask requirements of Emission Mask B. Equipment operating under this part on frequencies allocated to but shared with the Federal Government, must meet the applicable Federal Government technical standards (b) Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows: (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB..(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.	Section 4 of Appendix B.7	Pass
Band Edges Compliance	§2.1051 §90.543(e)(2)(3)	(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.(2) On all frequencies	Section 5 of Appendix B.7	Pass



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		between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.		
Spurious Emission at Antenna Terminals	§2.1051, §90.543(c) §90.543(f)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges. For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/ MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Section 6 of Appendix B.7	Pass
Field Strength of Spurious Radiation	§2.1053, §90.543(c) §90.543(f)	FCC: ≤ -13 dBm/100 kHz. For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/ MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Section 7 of Appendix B.7	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §90.213	Within authorized bands of operation/frequency block.	Section 8 of Appendix B.7	Pass



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2.8 LTE Band 26(814~824 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Transmitter Conducted Power Output	§2.1046, §90.635(b)	< 100 W.	Section 1 of Appendix B.10	Pass
Peak-Average Ratio	---	Limit≤13 dB	Section 2 of Appendix B.10	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.10	Pass
Emission Mask	§2.1051 § 90.691(a)	For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50+10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.	Section 4 of Appendix B.10	Pass
Spurious Emission at Antenna Terminals	§2.1051, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions	Section 5 of Appendix B.10	Pass
Field Strength of Spurious Radiation	§2.1053, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions	Section 6 of Appendix B.10	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §90.213	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.10	Pass



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2.9 LTE Band 30

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(a)(3)	EIRP ≤ 50mW/1MHz EIRP ≤ 250mW/5MHz	Section 1 of Appendix B.12	Pass
Peak-Average Ratio	---	FCC: Limits ≤ 13 dB	Section 2 of Appendix B.12	Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.12	Pass
Band Edges Compliance	§2.1051, §27.53(a)(4)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Section 4 of Appendix B.12	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(a)(4)	<p>Figure 1: Unwanted Emissions for Mobile, Portable, and Low Power Fixed Subscriber Equipment</p> <p>For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:</p> <p>(i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;</p> <p>(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10</p>	Section 5 of Appendix B.12	Pass



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		log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz;(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.		
Field Strength of Spurious Radiation	§2.1053, §27.53(a)(4)	≤ -13 dBm/1 MHz.	Section 6 of Appendix B.12	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	within the range of the operating frequency blocks	Section 7 of Appendix B.12	Pass



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2.10 LTE Band 42/ CA_42C

3450-3500 MHz:

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(k)(3)	EIRP ≤ 30dBm	Section 1 of Appendix B.15&B.23	Pass
Peak-Average Ratio	§27.50(k)(4)	Limit≤13 dB	Section 2 of Appendix B.15&B.23	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.15&B.23	Pass
Band Edges Compliance	§2.1051, §27.53(n)(2)	For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.	Section 4 of Appendix B.15&B.23	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(n)(2)	For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.	Section 5 of Appendix B.15&B.23	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(n)(2)	For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.	Section 6 of Appendix B.15&B.23	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/ frequency block.	Section 7 of Appendix B.15&B.23	Pass



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2.11 LTE Band 43

3700-3800 MHz:

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(j)(3)	EIRP ≤ 1W	Section 1 of Appendix B.16	Pass
Peak-Average Ratio	---	≤13 dB	Section 2 of Appendix B.16	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.16	Pass
Band Edges Compliance	§2.1051, §27.53(l)(2)	(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.	Section 4 of Appendix B.16	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(l)(2)	not exceed -13 dBm/MHz.	Section 5 of Appendix B.16	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(l)(2)	not exceed -13 dBm/MHz	Section 6 of Appendix B.16	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.16	Pass



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2.12 LTE Band 71

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W	Section 1 of Appendix B.18	Pass
Peak-Average Ratio	---	Limit ≤ 13 dB	Section 2 of Appendix B.18	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.18	Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ 43+10log ₁₀ (P[Watts])	Section 4 of Appendix B.18	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ 43+10log ₁₀ (P[Watts])	Section 5 of Appendix B.18	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	≤ -13 dBm/1 MHz.	Section 6 of Appendix B.18	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	within the authorized bands of operation.	Section 7 of Appendix B.18	Pass



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Remark for SEWM2311000473RG01 issue on 2024/04/17:

This test report (Report No.: SEWM2311000473RG01 issue on 2024/04/17) is based on the original test report (Report No.: SEWA2303000029RG01 (FCC ID: XMR2023RG620TNA) issue on 2023/04/24).

Review this report and original report, this report just changing the parts according to the declaration letter from client.

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report the Power for all frequency bands and LTE Band 41/70 were tested and Field Strength of Spurious Radiation were performed based on the worst case of the original report with report number SEWA2303000029RG01 (FCC ID: XMR2023RG620TNA) issue on 2023/04/24 and other test data in this report are based on the previous report with report number SEWA2303000029RG01 (FCC ID: XMR2023RG620TNA) issue on 2023/04/24.

Summary of the Spot check:

The items of Power and Field Strength of Spurious Radiation test against the variant model based on the worst-case condition from the original model was performed in this filing and the verification test results similar to the original FCC ID. All tests meet FCC technical limits. Detail sport check test result can be found in the Appendix A.3- Check data.



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 Rev.: 01
 Page: 20 of 66

3 General Information

3.1 Details of Client

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

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test engineer:	Levi Li, King-p Li

3.3 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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3.4 General Description of EUT

EUT Description:	5G Sub-6 GHz LGA Module			
Model No.:	RG620T-NA			
Trade Mark:	Quectel			
Hardware Version:	R2.0			
Software Version:	RG620TNA00AAR02A02G55_OCPU			
IMEI:	RF Conducted	861075060002904		
	RSE	861075060011178		
HPUE Power Class:	LTE Band 38; LTE Band 41			
Antenna Type:	<input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated			
Antenna Gain:	LTE Band 2:	0.75dBi (Ant7)	LTE Band 4:	0.33dBi (Ant7)
	LTE Band 5:	-10.68dBi (Ant7)	LTE Band 7:	1.26dBi (Ant7)
	LTE Band 12:	-8.65dBi (Ant7)	LTE Band 13:	-10.95dBi (Ant7)
	LTE Band 14:	-10.95dBi (Ant7)	LTE Band 17:	-8.65dBi (Ant7)
	LTE Band 25:	0.75dBi (Ant7)	LTE Band 26:	-10.68dBi (Ant7)
	LTE Band 30:	-3.06dBi (Ant7)	LTE Band 38:	1.69dBi (Ant7)
	LTE Band 41:	2.61dBi (Ant7)	LTE Band 42:	-4.29dBi (Ant6)
	LTE Band 43:	-4.11dBi (Ant6)	LTE Band 66:	0.02dBi (Ant7)
	LTE Band 71:	-9.34dBi (Ant7)	LTE CA_5B:	-10.68dBi (Ant7)
	LTE CA_7C:	1.26dBi (Ant7)	LTE CA_38C:	1.69dBi (Ant7)
	LTE CA_41C:	2.61dBi (Ant7)	LTE CA_42C:	-4.29dBi (Ant6)
	LTE CA_66B:	0.02dBi (Ant7)	LTE CA_66C:	0.02dBi (Ant7)
	LTE Band 70:	0.33dBi (Ant7)		
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.			
RF Cable:	0.8dB(Below 1GHz)	1.0dB(1.0~2.4GHz)	1.2dB(2.4~3.4GHz)	
	1.5dB(Above 3.4GHz)			
Remark:	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.			



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3.5 Test Mode

Test Mode	Test Modes Description
LTE/TM1	LTE system, QPSK modulation
LTE/TM2	LTE system, 16QAM modulation
LTE/TM3	LTE system, 64QAM modulation
LTE/TM4	LTE system, 256QAM modulation

Remark: The test mode(s) are selected according to relevant radio technology specifications.

3.6 Test Environment

Environment Parameter	101.0 kPa Selected Values During Tests	
Relative Humidity	44-46 % RH Ambient	
Value	Temperature(°C)	Voltage(V)
NTNV	22~23	3.8
LTLV	-30	3.3
LTHV	-30	4.4
HTLV	50	3.3
HTHV	50	4.4

Remark:
 NV: Normal Voltage LV: Low Extreme Test Voltage HV: High Extreme Test Voltage
 NT: Normal Temperature LT: Low Extreme Test Temperature HT: High Extreme Test Temperature

3.7 Description of Support Units

Description	Manufacturer	Model No.
Mother board	Quectel	N/A

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



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3.8 Technical Specification

Characteristics	Description		
Radio System Type	<input checked="" type="checkbox"/> LTE		
Supported Frequency Range	Band	TX	RX
	LTE Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE Band 5	824 to 849 MHz	869 to 894 MHz
	LTE Band 7	2500 to 2570 MHz	2620 to 2690 MHz
	LTE Band 12	699 to 716 MHz	729 to 746 MHz
	LTE Band 13	777 to 787 MHz	746 to 756 MHz
	LTE Band 14	788 to 798 MHz	758 to 768 MHz
	LTE Band 17	704 to 716 MHz	734 to 746 MHz
	LTE Band 25	1850 to 1915MHz	1930 to 1995 MHz
	LTE Band 26 (814 to 824 MHz)	814 to 824MHz	859 to 869 MHz
	LTE Band 26 (824 to 849 MHz)	824 to 849 MHz	869 to 894 MHz
	LTE Band 30	2305 to 2315 MHz	2350 to 2360 MHz
	LTE Band 38	2570 to 2620 MHz	2570 to 2620 MHz
	LTE Band 41	2496 to 2690MHz	2496 to 2690MHz
	LTE Band 42	3450 to 3500 MHz	3450 to 3500 MHz
	LTE Band 43	3700 to 3800 MHz	3700 to 3800 MHz
	LTE Band 66	1710 to 1780 MHz	2110 to 2200 MHz
	LTE Band 70	1695 to 1710 MHz	1995 to 2020 MHz
	LTE Band 71	663 to 698 MHz	617 to 652 MHz
LTE UL CA: CA_5B; CA_7C; CA_38C; CA_41C; CA_66B; CA_66C; CA_2A-4A; CA_2A-5A; CA_2A-7A; CA_2A-12A; CA_2A-13A; CA_2A-14A; CA_2A-17A; CA_2A-30A; CA_2A-38A; CA_2A-41A; CA_2A-66A; CA_2A-71A; CA_4A-5A; CA_4A-7A; CA_4A-12A; CA_4A-13A; CA_4A-17A; CA_4A-38A; CA_4A-41A; CA_4A-66A; CA_4A-71A; CA_5A-7A; CA_5A-12A; CA_5A-13A; CA_5A-14A; CA_5A-17A; CA_5A-30A; CA_5A-41A; CA_5A-66A; CA_5A-71A; CA_7A-12A; CA_7A-13A; CA_7A-25A;			



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	CA_7A-26A; CA_7A-42A; CA_7A-66A; CA_7A-71A; CA_12A-25A; CA_12A-30A; CA_12A-38A; CA_12A-41A; CA_12A-66A; CA_13A-25A; CA_13A-66A; CA_14A-30A; CA_14A-66A; CA_25A-26A; CA_25A-41A; CA_25A-66A; CA_25A-71A; CA_26A-38A; CA_26A-41A; CA_26A-66A; CA_30A-66A; CA_38A-66A; CA_41A-42A; CA_41A-66A; CA_41A-71A; UL CA intra-band Only test RSE, report only show worst mode.	
Supported Channel Bandwidth	LTE Band 2	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band 4	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band 5	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz
	LTE Band 7	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band 12	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz
	LTE Band 13	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz
	LTE Band 14	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz
	LTE Band 17	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz
	LTE Band 25	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band 26(814-824)	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz
	LTE Band 26(824-849)	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz
	LTE Band30	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz
	LTE Band38	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band41	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band42	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band43	<input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15 MHz <input checked="" type="checkbox"/> 20 MHz
	LTE Band66	<input checked="" type="checkbox"/> 1.4 MHz <input checked="" type="checkbox"/> 3 MHz <input checked="" type="checkbox"/> 5 MHz <input checked="" type="checkbox"/> 10 MHz <input checked="" type="checkbox"/> 15MHz <input checked="" type="checkbox"/> 20MHz
	LTE Band70	<input checked="" type="checkbox"/> 5MHz <input checked="" type="checkbox"/> 10MHz <input checked="" type="checkbox"/> 15MHz
	LTE Band71	<input checked="" type="checkbox"/> 5MHz <input checked="" type="checkbox"/> 10MHz <input checked="" type="checkbox"/> 15MHz <input checked="" type="checkbox"/> 20MHz
	LTE Band CA_5B	<input checked="" type="checkbox"/> 10MHz+10MHz <input checked="" type="checkbox"/> 10MHz+5MHz <input checked="" type="checkbox"/> 3MHz+5MHz <input checked="" type="checkbox"/> 5MHz+10MHz <input checked="" type="checkbox"/> 5MHz+3MHz



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	LTE Band CA_7C	<input checked="" type="checkbox"/> 10MHz+20MHz	<input checked="" type="checkbox"/> 15MHz+10MHz		
		<input checked="" type="checkbox"/> 15MHz+15MHz	<input checked="" type="checkbox"/> 15MHz+20MHz		
		<input checked="" type="checkbox"/> 20MHz+10MHz	<input checked="" type="checkbox"/> 20MHz+15MHz		
		<input checked="" type="checkbox"/> 20MHz+20MHz			
	LTE Band CA_38C	<input checked="" type="checkbox"/> 15MHz+15MHz	<input checked="" type="checkbox"/> 20MHz+20MHz		
	LTE Band CA_41C	<input checked="" type="checkbox"/> 10MHz+15MHz	<input checked="" type="checkbox"/> 10MHz+20MHz		
	<input checked="" type="checkbox"/> 15MHz+10MHz	<input checked="" type="checkbox"/> 15MHz+15MHz			
	<input checked="" type="checkbox"/> 15MHz+20MHz	<input checked="" type="checkbox"/> 20MHz+15MHz			
	<input checked="" type="checkbox"/> 20MHz+20MHz	<input checked="" type="checkbox"/> 20MHz+5MHz			
	<input checked="" type="checkbox"/> 5MHz+20MHz				
LTE Band CA_42C	<input checked="" type="checkbox"/> 10MHz+20MHz	<input checked="" type="checkbox"/> 15MHz+20MHz			
	<input checked="" type="checkbox"/> 20MHz+10MHz	<input checked="" type="checkbox"/> 20MHz+15MHz			
	<input checked="" type="checkbox"/> 20MHz+20MHz	<input checked="" type="checkbox"/> 20MHz+5MHz			
	<input checked="" type="checkbox"/> 5MHz+20MHz				
LTE Band CA_66B	<input checked="" type="checkbox"/> 10MHz+10MHz	<input checked="" type="checkbox"/> 10MHz+5MHz			
	<input checked="" type="checkbox"/> 15MHz+5MHz	<input checked="" type="checkbox"/> 5MHz+10MHz			
	<input checked="" type="checkbox"/> 5MHz+15MHz	<input checked="" type="checkbox"/> 5MHz+5MHz			
LTE Band CA_66C	<input checked="" type="checkbox"/> 10MHz+15MHz	<input checked="" type="checkbox"/> 10MHz+20MHz			
	<input checked="" type="checkbox"/> 15MHz+10MHz	<input checked="" type="checkbox"/> 15MHz+15MHz			
	<input checked="" type="checkbox"/> 15MHz+20MHz	<input checked="" type="checkbox"/> 20MHz+10MHz			
	<input checked="" type="checkbox"/> 20MHz+15MHz	<input checked="" type="checkbox"/> 20MHz+20MHz			
	<input checked="" type="checkbox"/> 20MHz+5MHz	<input checked="" type="checkbox"/> 5MHz+20MHz			
Characteristics	Description				
Designation of Emissions (Remark: the necessary bandwidth of which is the worst value from the measured occupied bandwidths for each type of channel bandwidth configuration.)	E-UTRA:	QPSK	16QAM	64QAM	256QAM
	LTE Band 2	1M10G7D	1M10W7D	1M10W7D	1M09W7D
		2M70G7D	2M69W7D	2M69W7D	2M69W7D
		4M47G7D	4M47W7D	4M47W7D	4M47W7D
		8M94G7D	8M94W7D	8M94W7D	8M93W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
	LTE Band 4	17M9G7D	17M9W7D	17M9W7D	17M9W7D
		1M10G7D	1M10W7D	1M12W7D	1M09W7D
		2M70G7D	2M69W7D	2M70W7D	2M69W7D
		4M47G7D	4M47W7D	4M47W7D	4M47W7D



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		8M93G7D	8M93W7D	8M95W7D	8M94W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
		17M9G7D	17M9W7D	17M9W7D	17M9W7D
	LTE Band 5	1M09G7D	1M10W7D	1M10W7D	1M09W7D
		2M70G7D	2M69W7D	2M69W7D	2M69W7D
		4M46G7D	4M47W7D	4M47W7D	4M46W7D
		8M94G7D	8M93W7D	8M94W7D	8M94W7D
	LTE Band 7	4M47G7D	4M47W7D	4M47W7D	4M47W7D
		8M94G7D	8M92W7D	8M94W7D	8M94W7D
		13M5G7D	13M5W7D	13M5W7D	13M4W7D
		17M9G7D	17M9W7D	17M9W7D	17M9W7D
	LTE Band 12	1M10G7D	1M10W7D	1M10W7D	1M09W7D
		2M70G7D	2M69W7D	2M69W7D	2M69W7D
		4M46G7D	4M46W7D	4M47W7D	4M47W7D
		8M93G7D	8M92W7D	8M94W7D	8M92W7D
	LTE Band13	4M46G7D	4M46W7D	4M47W7D	4M47W7D
		8M92G7D	8M91W7D	8M92W7D	8M87W7D
	LTE Band 14	4M46G7D	4M46W7D	4M47W7D	4M47W7D
		8M93G7D	8M92W7D	8M93W7D	8M92W7D
	LTE Band 17	4M47G7D	4M46W7D	4M47W7D	4M47W7D
		8M93G7D	8M92W7D	8M93W7D	8M94W7D
	LTE Band 25	1M10G7D	1M10W7D	1M10W7D	1M09W7D
		2M70G7D	2M70W7D	2M69W7D	2M69W7D
		4M47G7D	4M47W7D	4M47W7D	4M47W7D
		8M95G7D	8M93W7D	8M95W7D	8M94W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
		17M9G7D	17M9W7D	17M9W7D	17M9W7D
	LTE Band 26 (814-824)	1M11G7D	1M09W7D	1M10W7D	1M09W7D
2M70G7D		2M69W7D	2M69W7D	2M69W7D	
4M47G7D		4M47W7D	4M47W7D	4M47W7D	
8M92G7D		8M92W7D	8M92W7D	8M92W7D	
LTE Band 26 (824-849)	1M10G7D	1M10W7D	1M10W7D	1M09W7D	
	2M70G7D	2M69W7D	2M69W7D	2M69W7D	



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 中国·苏州·中国(江苏)自由贸易试验区苏州片区苏州工业园区润胜路1号的6号厂房南楼 邮编: 215000

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 t (86-512) 62992980 sgs.china@sgs.com

		4M46G7D	4M47W7D	4M47W7D	4M47W7D
		8M94G7D	8M94W7D	8M96W7D	8M93W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
	LTE Band 30	4M49G7D	4M50W7D	4M50W7D	4M50W7D
		8M98G7D	8M98W7D	8M99W7D	8M98W7D
	LTE Band 38	4M47G7D	4M47W7D	4M47W7D	4M47W7D
		8M95G7D	8M93W7D	8M97W7D	8M96W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
		17M9G7D	17M9W7D	17M9W7D	17M9W7D
	LTE Band 41	4M49G7D	4M51W7D	4M47W7D	4M47W7D
		8M91G7D	8M96W7D	8M92W7D	8M98W7D
		13M5G7D	13M4W7D	13M4W7D	13M4W7D
		17M9G7D	17M9W7D	17M9W7D	17M9W7D
	LTE Band 42	4M49G7D	4M49W7D	4M51W7D	4M49W7D
		9M00G7D	9M02W7D	9M01W7D	8M98W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
		18M0G7D	18M0W7D	18M0W7D	18M0W7D
	LTE Band 43	4M49G7D	4M50W7D	4M51W7D	4M49W7D
		8M98G7D	8M97W7D	8M97W7D	8M97W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
		18M0G7D	18M0W7D	18M0W7D	18M0W7D
	LTE Band 66	1M10G7D	1M10W7D	1M10W7D	1M09W7D
		2M70G7D	2M69W7D	2M69W7D	2M69W7D
		4M47G7D	4M47W7D	4M47W7D	4M47W7D
		8M93G7D	8M93W7D	8M95W7D	8M94W7D
		13M5G7D	13M5W7D	13M5W7D	13M5W7D
		17M9G7D	17M9W7D	17M9W7D	17M9W7D
	LTE Band 70	4M49G7D	4M48W7D	4M50W7D	4M48W7D
8M95G7D		8M93W7D	8M95W7D	8M95W7D	
13M6G7D		13M5W7D	13M5W7D	13M5W7D	
LTE Band 71	4M46G7D	4M47W7D	4M47W7D	4M47W7D	
	8M94G7D	8M93W7D	8M93W7D	8M94W7D	
	13M5G7D	13M5W7D	13M5W7D	13M5W7D	



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 sgs.china@sgs.com

	LTE Band CA_5B	17M9G7D 17M9W7D 17M9W7D 17M9W7D			
		50RB+50RB:			
		18M8G7D	18M8W7D	18M8W7D	18M8W7D
		50RB+25RB:			
		13M9G7D	13M9W7D	13M9W7D	13M9W7D
		15RB+25RB:			
		7M46G7D	7M46W7D	7M46W7D	7M48W7D
		25RB+50RB:			
		13M8G7D	13M8W7D	13M8W7D	13M8W7D
		25RB+15RB:			
	7M47G7D	7M50W7D	7M49W7D	7M49W7D	
	LTE Band CA_7C	50RB+100RB:			
		27M6G7D	27M6W7D	27M6W7D	27M6W7D
		75RB+50RB:			
		23M1G7D	23M1W7D	23M1W7D	23M1W7D
		75RB+75RB:			
		28M2G7D	28M2W7D	28M2W7D	28M2W7D
		75RB+100RB:			
		32M4G7D	32M5W7D	32M4W7D	32M4W7D
		100RB+50RB:			
		27M7G7D	27M7W7D	27M7W7D	27M6W7D
		100RB+75RB:			
		32M5G7D	32M5W7D	32M5W7D	32M5W7D
		100RB+100RB:			
		37M6G7D	37M6W7D	37M5W7D	37M6W7D
	LTE Band CA_38C	75RB+75RB:			
		28M3G7D	28M3W7D	28M4W7D	28M3W7D
		100RB+100RB:			
		37M7G7D	37M6W7D	37M7W7D	37M7W7D
	LTE Band CA_41C	50RB+75RB:			
		23M2G7D	24M3W7D	23M2W7D	24M9W7D
		50RB+100RB:			
		27M7G7D	27M7W7D	27M6W7D	27M6W7D



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	75RB+50RB:			
	24M3G7D	23M5G7D	23M2G7D	23M5G7D
	75RB+75RB:			
	28M4G7D	28M3W7D	28M3W7D	28M3W7D
	75RB+100RB:			
	32M6G7D	32M6W7D	32M5W7D	32M6W7D
	100RB+75RB:			
	32M7G7D	32M6W9D	32M6W7D	32M6W7D
	100RB+100RB:			
	37M8G7D	37M7W7D	37M7W7D	37M7W7D
	100RB+25RB:			
	23M3G7D	23M0W7D	23M2W7D	23M1W7D
	25RB+100RB:			
	23M0G7D	22M9W7D	22M8W7D	22M9W7D
	LTE Band CA_42C (3450-3550)			
	50RB+100RB:			
	28M2G7D	28M1W7D	28M0W7D	28M1W7D
	75RB+100RB:			
	33M0G7D	32M9W7D	32M9W7D	32M9W7D
	100RB+50RB:			
	28M3G7D	28M1W7D	28M1W7D	28M2W7D
	100RB+75RB:			
	33M0G7D	32M9W7D	32M9W7D	33M0W7D
	100RB+100RB:			
	37M8G7D	37M7W7D	37M7W7D	37M8W7D
	100RB+25RB:			
	23M9G7D	23M0W7D	23M6W7D	23M2W7D
	25RB+100RB:			
	25M7G7D	25M4W7D	24M7W7D	25M4W7D
	LTE Band CA_66B			
	50RB+50RB:			
	18M9G7D	18M8W7D	18M8W7D	18M8W7D
	50RB+25RB:			
13M9G7D	13M9W7D	13M9W7D	13M9W7D	
75RB+25RB:				



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t (86-512) 62992980 www.sgs.com.cn
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LTE Band CA_66C	18M3G7D	18M3W7D	18M3W7D	18M3W7D
	25RB+50RB:			
	13M9G7D	13M9W7D	13M9W7D	13M8W7D
	25RB+75RB:			
	18M3G7D	18M3W7D	18M3W7D	18M3W7D
	25RB+25RB:			
	9M23G7D	9M21W7D	9M23W7D	9M24W7D
	50RB+75RB:			
	23M2G7D	23M1W7D	23M1W7D	23M1W7D
	50RB+100RB:			
	27M6G7D	27M7W7D	27M6W7D	27M6W7D
	75RB+50RB:			
	23M1G7D	23M1W7D	23M1W7D	23M1W7D
	75RB+75RB:			
	28M2G7D	28M3W7D	28M2W7D	28M3W7D
	75RB+100RB:			
	32M5G7D	32M5W7D	32M4W7D	32M5W7D
	100RB+50RB:			
	27M7G7D	27M7W7D	27M6W7D	27M7W7D
	100RB+75RB:			
	32M6G7D	32M5W7D	32M5W7D	32M5W7D
	100RB+100RB:			
	37M7G7D	37M6W7D	37M5W7D	37M6W7D
	100RB+25RB:			
	22M9G7D	22M9W7D	22M8W7D	22M9W7D
	25RB+100RB:			
22M9G7D	22M9W7D	22M8W7D	22M8W7D	



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3.9 Test Frequencies

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 2	1.4MHz	TX	Channel 18607	Channel 18900	Channel 19193
			1850.7 MHz	1880 MHz	1909.3 MHz
		RX	Channel 607	Channel 900	Channel 1193
			1930.7 MHz	1960 MHz	1989.3 MHz
	3MHz	TX	Channel 18615	Channel 18900	Channel 19185
			1851.5 MHz	1880 MHz	1908.5 MHz
		RX	Channel 615	Channel 900	Channel 1185
			1931.5 MHz	1960 MHz	1988.5 MHz
	5MHz	TX	Channel 18625	Channel 18900	Channel 19175
			1852.5 MHz	1880 MHz	1907.5 MHz
		RX	Channel 625	Channel 900	Channel 1175
			1932.5 MHz	1960 MHz	1987.5 MHz
	10MHz	TX	Channel 18650	Channel 18900	Channel 19150
			1855 MHz	1880 MHz	1905 MHz
		RX	Channel 650	Channel 900	Channel 1150
			1935 MHz	1960 MHz	1985 MHz
	15MHz	TX	Channel 18675	Channel 18900	Channel 19125
			1857.5 MHz	1880 MHz	1902.5 MHz
		RX	Channel 675	Channel 900	Channel 1125
			1937.5 MHz	1960 MHz	1982.5 MHz
20MHz	TX	Channel 18700	Channel 18900	Channel 19100	
		1860 MHz	1880 MHz	1900 MHz	
	RX	Channel 700	Channel 900	Channel 1100	
		1940 MHz	1960 MHz	1980 MHz	



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 4	1.4MHz	TX	Channel 19957 1710.7 MHz	Channel 20175 1732.5 MHz	Channel 20393 1754.3 MHz
		RX	Channel 1975 2112.5 MHz	Channel 2175 2132.5MHz	Channel 2375 2152.5 MHz
	3MHz	TX	Channel 19965 1711.5 MHz	Channel 20175 1732.5 MHz	Channel 20385 1753.5 MHz
		RX	Channel 2000 2115 MHz	Channel 2175 2132.5MHz	Channel 2350 2150 MHz
	5MHz	TX	Channel 19975 1712.5 MHz	Channel 20175 1732.5 MHz	Channel 20375 1752.5 MHz
		RX	Channel 1975 2112.5 MHz	Channel 2175 2132.5MHz	Channel 2375 2152.5 MHz
	10MHz	TX	Channel 20000 1715 MHz	Channel 20175 1732.5 MHz	Channel 20350 1750 MHz
		RX	Channel 2000 2115 MHz	Channel 2175 2132.5MHz	Channel 2350 2150 MHz
	15MHz	TX	Channel 20025 1717.5 MHz	Channel 20175 1732.5 MHz	Channel 20325 1747.5 MHz
		RX	Channel 2025 2117.5 MHz	Channel 2175 2132.5MHz	Channel 2325 2147.5 MHz
	20MHz	TX	Channel 20050 1720 MHz	Channel 20175 1732.5 MHz	Channel 20300 1745 MHz
		RX	Channel 2050 2120 MHz	Channel 2175 2132.5MHz	Channel 2300 2145 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 5	1.4MHz	TX	Channel 20407 824.7 MHz	Channel 20525 836.5 MHz	Channel 20643 848.3 MHz
		RX	Channel 2407 869.7 MHz	Channel 2525 881.5 MHz	Channel 2643 893.3 MHz
	3MHz	TX	Channel 20415 825.5 MHz	Channel 20525 836.5 MHz	Channel 20635 847.5 MHz
		RX	Channel 2415 870.5 MHz	Channel 2525 881.5 MHz	Channel 2635 892.5 MHz
	5MHz	TX	Channel 20425 826.5 MHz	Channel 20525 836.5 MHz	Channel 20625 846.5 MHz
		RX	Channel 2425 871.5 MHz	Channel 2525 881.5 MHz	Channel 2625 891.5 MHz
	10MHz	TX	Channel 20450 829 MHz	Channel 20525 836.5 MHz	Channel 20600 844 MHz
		RX	Channel 2450 874 MHz	Channel 2525 881.5 MHz	Channel 2600 889 MHz



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 7	5MHz	TX	Channel 20775	Channel 21100	Channel 21425
			2502.5 MHz	2535 MHz	2567.5 MHz
		RX	Channel 2775	Channel 3100	Channel 5825
			2622.5 MHz	2655 MHz	2687.5 MHz
	10MHz	TX	Channel 20800	Channel 21100	Channel 21400
			2505 MHz	2535 MHz	2565 MHz
		RX	Channel 2800	Channel 3100	Channel 3400
			2625 MHz	2655 MHz	2685 MHz
	15MHz	TX	Channel 20825	Channel 21100	Channel 21375
			2507.5 MHz	2535 MHz	2562.5 MHz
		RX	Channel 2825	Channel 3100	Channel 3375
			2627.5 MHz	2655 MHz	2682.5 MHz
20MHz	TX	Channel 20850	Channel 21100	Channel 21350	
		2510 MHz	2535 MHz	2560 MHz	
	RX	Channel 2850	Channel 3100	Channel 3350	
		2630 MHz	2655 MHz	2680 MHz	

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 12	1.4MHz	TX	Channel 23017	Channel 23095	Channel 23173
			699.7 MHz	707.5 MHz	715.3 MHz
		RX	Channel 5017	Channel 5095	Channel 5173
			729.7 MHz	737.5 MHz	745.3 MHz
	3MHz	TX	Channel 23025	Channel 23095	Channel 23165
			700.5 MHz	707.5 MHz	714.5 MHz
		RX	Channel 5025	Channel 5095	Channel 5165
			730.5 MHz	737.5 MHz	744.5 MHz
	5MHz	TX	Channel 23035	Channel 23095	Channel 23155
			701.5 MHz	707.5 MHz	713.5 MHz
		RX	Channel 5035	Channel 5095	Channel 5155
			731.5 MHz	737.5 MHz	743.5 MHz
10MHz	TX	Channel 23060	Channel 23095	Channel 23130	
		704 MHz	707.5 MHz	711 MHz	
	RX	Channel 5060	Channel 5095	Channel 5130	
		734 MHz	737.5 MHz	741 MHz	



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 13	5MHz	TX	Channel 23025	Channel 23230	Channel 23255
			779.5 MHz	782 MHz	784.5 MHz
		RX	Channel 5205	Channel 5230	Channel 5255
			748.5 MHz	751 MHz	753.5 MHz
	10MHz	TX	Channel 23230	Channel 23230	Channel 23230
			782 MHz	782 MHz	782 MHz
RX	Channel 5230	Channel 5230	Channel 5230		
	751 MHz	751 MHz	751 MHz		

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 14	5MHz	TX	Channel 23305	Channel 23330	Channel 23355
			790.5 MHz	793 MHz	795.5 MHz
		RX	Channel 5305	Channel 5330	Channel 5355
			760.5 MHz	763 MHz	765.5 MHz
	10MHz	TX	Channel 23330	Channel 23330	Channel 23330
			793MHz	793 MHz	793 MHz
RX	Channel 5330	Channel 5330	Channel 5330		
	763MHz	763 MHz	763 MHz		

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 17	5MHz	TX	Channel 23755	Channel 23790	Channel 23825
			706.5 MHz	710 MHz	713.5 MHz
		RX	Channel 5755	Channel 5790	Channel 5825
			736.5 MHz	740 MHz	743.5 MHz
	10MHz	TX	Channel 23780	Channel 23790	Channel 23800
			709 MHz	710 MHz	711 MHz
RX	Channel 5780	Channel 5790	Channel 5800		
	739 MHz	740 MHz	741 MHz		



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 25	1.4MHz	TX	Channel 26047	Channel 26365	Channel 26683
			1850.7 MHz	1882.5 MHz	1914.3 MHz
		RX	Channel 8047	Channel 8365	Channel 8683
			1930.7 MHz	1962.5 MHz	1994.3 MHz
	3MHz	TX	Channel 26055	Channel 26365	Channel 26675
			1851.5 MHz	1882.5 MHz	1913.5 MHz
		RX	Channel 8055	Channel 8365	Channel 8675
			1931.5 MHz	1962.5 MHz	1993.5 MHz
	5MHz	TX	Channel 26065	Channel 26365	Channel 26665
			1852.5 MHz	1882.5 MHz	1912.5 MHz
		RX	Channel 8065	Channel 8365	Channel 8665
			1932.5 MHz	1962.5 MHz	1992.5 MHz
	10MHz	TX	Channel 26090	Channel 26365	Channel 26640
			1855 MHz	1882.5 MHz	1910 MHz
		RX	Channel 8090	Channel 8365	Channel 8640
			1935 MHz	1962.5 MHz	1990 MHz
	15MHz	TX	Channel 26115	Channel 26365	Channel 26615
			1857.5 MHz	1882.5 MHz	1907.5 MHz
		RX	Channel 8115	Channel 8365	Channel 8615
			1937.5 MHz	1962.5 MHz	1987.5 MHz
20MHz	TX	Channel 26140	Channel 26365	Channel 26590	
		1860 MHz	1882.5 MHz	1905 MHz	
	RX	Channel 8140	Channel 8365	Channel 8590	
		1940 MHz	1962.5 MHz	1985 MHz	



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 26 (814-824)	1.4MHz	TX	Channel 26697	Channel 26740	Channel 26783
			814.7 MHz	819 MHz	823.3 MHz
		RX	Channel 8697	Channel 8740	Channel 8783
			859.7 MHz	864MHz	868.3 MHz
	3MHz	TX	Channel 26705	Channel 26740	Channel 26775
			815.5 MHz	819 MHz	822.5 MHz
		RX	Channel 8705	Channel 8740	Channel 8775
			860.5 MHz	864MHz	867.5 MHz
	5MHz	TX	Channel 26715	Channel 26740	Channel 26765
			816.5 MHz	819 MHz	821.5 MHz
		RX	Channel 8715	Channel 8740	Channel 8755
			861.5 MHz	864MHz	866.5 MHz
10MHz	TX	Channel 26740	Channel 26740	Channel 26740	
		819 MHz	819 MHz	819 MHz	
	RX	Channel 8740	Channel 8740	Channel 8740	
		864MHz	864MHz	864MHz	

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band26 (824-849)	1.4MHz	TX	Channel 26797	Channel 26915	Channel 27033
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 8697	Channel 8915	Channel 9033
			859.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 26805	Channel 26915	Channel 27025
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 8805	Channel 8915	Channel 9025
			860.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 26815	Channel 26915	Channel 27015
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 8815	Channel 8915	Channel 9015
			871.5 MHz	881.5 MHz	891.5 MHz
	10MHz	TX	Channel 26840	Channel 26915	Channel 26990
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 8840	Channel 8915	Channel 8990
			874 MHz	881.5 MHz	889 MHz
	15MHz	TX	Channel 26865	Channel 26915	Channel 26965
			831.5 MHz	836.5 MHz	841.5 MHz
		RX	Channel 8865	Channel 8915	Channel 8965
			876.5 MHz	881.5 MHz	886.5 MHz



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 30	5MHz	TX	Channel 27685	Channel27710	Channel 27735
			2307.5 MHz	2310MHz	2312.5 MHz
		RX	Channel 9795	Channel 9820	Channel 9845
	10MHz	TX	2352.5MHz	2355 MHz	2357.5MHz
			Channel 27710	Channel27710	Channel27710
		RX	2310 MHz	2310MHz	2310MHz
			Channel 9820	Channel 9820	Channel 9820
			2355 MHz	2355 MHz	2355 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 38	5MHz	TX/RX	Channel 37775	Channel38000	Channel 38225
			2572.5 MHz	2595 MHz	2617.5 MHz
	10MHz	TX/RX	Channel 37800	Channel38000	Channel 38200
			2575 MHz	2595 MHz	2615 MHz
	15MHz	TX/RX	Channel 37825	Channel38000	Channel 38175
			2577.5 MHz	2595 MHz	2612.5 MHz
	20MHz	TX/RX	Channel 37850	Channel38000	Channel 38150
			2580 MHz	2595 MHz	2610 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 41 (2496-2690)	5MHz	TX / RX	Channel 39675	Channel40620	Channel 41565
			2498.5 MHz	2593 MHz	2687.5 MHz
	10MHz	TX / RX	Channel 39700	Channel40620	Channel 41540
			2501 MHz	2593 MHz	2685 MHz
	15MHz	TX / RX	Channel 39725	Channel40620	Channel 41515
			2503.5 MHz	2593 MHz	2682.5 MHz
	20MHz	TX / RX	Channel 39750	Channel40620	Channel 41490
			2506 MHz	2593 MHz	2680 MHz



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 42 (3450-3550)	5MHz	TX	Channel 42115	Channel 42590	Channel 43065
			3452.5 MHz	3500 MHz	3547.5 MHz
		RX	Channel 42115	Channel 42590	Channel 43065
			3452.5 MHz	3500 MHz	3547.5 MHz
	10MHz	TX	Channel 42140	Channel 42590	Channel 43040
			3455 MHz	3500 MHz	3545 MHz
		RX	Channel 42140	Channel 42590	Channel 43040
			3455 MHz	3500 MHz	3545 MHz
	15MHz	TX	Channel 42165	Channel 42590	Channel 43015
			3457.5 MHz	3500 MHz	3542.5 MHz
		RX	Channel 42165	Channel 42590	Channel 43015
			3457.5 MHz	3500 MHz	3542.5 MHz
20MHz	TX	Channel 42190	Channel 42590	Channel 42990	
		3460 MHz	3500 MHz	3540 MHz	
	RX	Channel 42190	Channel 42590	Channel 42990	
		3460 MHz	3500 MHz	3540 MHz	

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 43 (3700-3800)	5MHz	TX/RX	Channel 44615	Channel 45090	Channel 45565
			3702.5 MHz	3750.0 MHz	3797.5 MHz
	10MHz	TX/RX	Channel 44640	Channel 45090	Channel 45540
			3705.0 MHz	3750.0 MHz	3795.0 MHz
	15MHz	TX/RX	Channel 44665	Channel 45090	Channel 45515
			3707.5 MHz	3750.0 MHz	3792.5 MHz
	20MHz	TX/RX	Channel 44690	Channel 45090	Channel 45490
			3710 MHz	3750.0 MHz	3790.0 MHz



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band66	1.4MHz	TX	Channel 131979	Channel 132322	Channel 132665
			1710.7 MHz	1745 MHz	1779.3 MHz
		RX	Channel 66443	Channel 66786	Channel 67329
			2110.7 MHz	2145MHz	2199.3 MHz
	3MHz	TX	Channel 131987	Channel 132322	Channel 132657
			1711.5 MHz	1745 MHz	1778.5MHz
		RX	Channel 66451	Channel 66786	Channel 67321
			2111.5 MHz	2145MHz	2198.5MHz
	5MHz	TX	Channel 131997	Channel 132322	Channel 132647
			1712.5 MHz	1745 MHz	1777.5 MHz
		RX	Channel 66461	Channel 66786	Channel 67311
			2112.5 MHz	2145MHz	2197.5 MHz
	10MHz	TX	Channel 132022	Channel 132322	Channel 132622
			1715 MHz	1745 MHz	1775 MHz
		RX	Channel 66486	Channel 66786	Channel 67286
			2115 MHz	2145MHz	2195 MHz
	15MHz	TX	Channel 132047	Channel 132322	Channel 132597
			1717.5 MHz	1745 MHz	1772.5 MHz
		RX	Channel 66511	Channel 66786	Channel 67261
			2117.5 MHz	2145MHz	2192.5 MHz
20MHz	TX	Channel 132072	Channel 132322	Channel 132572	
		1720 MHz	1745 MHz	1770 MHz	
	RX	Channel 66536	Channel 66786	Channel 67236	
		2120 MHz	2145MHz	2190 MHz	



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band70	5MHz	TX	Channel 132997	Channel 133047	Channel 133097
			1697.5 MHz	1702.5 MHz	1707.5 MHz
		RX	Channel 68361	Channel 68411	Channel 68461
			1997.5 MHz	2002.5 MHz	2007.5 MHz
	10MHz	TX	Channel 133022	Channel 133047	Channel 133072
			1700 MHz	1702.5 MHz	1705 MHz
		RX	Channel 68386	Channel 68411	Channel 68436
			2000 MHz	2002.5 MHz	2005 MHz
	15MHz	TX	Channel 133047	Channel 133047	Channel 133047
			1702.5 MHz	1702.5 MHz	1702.5 MHz
		RX	Channel 68411	Channel 68411	Channel 68411
			2002.5 MHz	2002.5 MHz	2002.5 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band71	5MHz	TX	Channel 133147	Channel 133297	Channel 133447
			665.5 MHz	680.5 MHz	695.5 MHz
		RX	Channel 68611	Channel 68761	Channel 68911
			619.5 MHz	634.5 MHz	649.5 MHz
	10MHz	TX	Channel 133172	Channel 133297	Channel 133422
			668 MHz	680.5 MHz	693 MHz
		RX	Channel 68636	Channel 68761	Channel 68886
			622 MHz	634.5 MHz	647 MHz
	15MHz	TX	Channel 133197	Channel 133297	Channel 133397
			670.5 MHz	680.5 MHz	690.5 MHz
		RX	Channel 68661	Channel 68761	Channel 68861
			624.5 MHz	634.5 MHz	644.5 MHz
	20MHz	TX	Channel 133222	Channel 133297	Channel 133372
			673 MHz	680.5 MHz	688 MHz
		RX	Channel 68686	Channel 68761	Channel 68836
			627 MHz	634.5 MHz	642 MHz



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Table 4.3.1.1.5A-1: Test frequencies for CA_5B

Range	CC-Combo / N _{RB,agg} [RB]	CC1 Note1					CC2 Note1					
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	
Low	15+25	15	20416	825.6	2416	870.6	25	20455	829.5	2455	874.5	
		25	20425	826.5	2425	871.5	15	20464	830.4	2464	875.4	
	25+50	25	20428	826.8	2428	871.8	50	20500	834	2500	879	
	50+25	50	20450	829	2450	874	25	20522	836.2	2522	881.2	
Mid	15+25	50	20450	829	2450	874	50	20549	838.9	2549	883.9	
		15	20501	834.1	2501	879.1	25	20540	838.0	2540	883.0	
	25+50	25	20510	835.0	2510	880.0	15	20549	838.9	2549	883.9	
		25	20478	831.8	2478	876.8	50	20550	839	2550	884	
		50+25	50	20500	834	2500	879	25	20572	841.2	2572	886.2
High	50+50	50	20476	831.6	2476	876.6	50	20575	841.5	2575	886.5	
		15	20586	842.6	2586	887.6	25	20625	846.5	2625	891.5	
		25	20595	843.5	2595	888.5	15	20634	847.4	2634	892.4	
	25+50	25	20528	836.8	2528	881.8	50	20600	844	2600	889	
		50+25	50	20550	839	2550	884	25	20622	846.2	2622	891.2
		50+50	50	20501	834.1	2501	879.1	50	20600	844	2600	889

Note 1: Carriers in increasing frequency order.



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Table 4.3.1.1.7A-1: Test frequencies for CA_7C

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	50+100	50	20805	2505.5	2805	2625.5	100	20949	2519.9	2949	2639.9
		100	20850	2510	2850	2630	50	20994	2524.4	2994	2644.4
	75+50	75	20825	2507.5	2825	2627.5	50	20945	2519.5	2945	2639.5
	75+75	75	20825	2507.5	2825	2627.5	75	20975	2522.5	2975	2642.5
	75+100	75	20828	2507.8	2828	2627.8	100	20999	2524.9	2999	2644.9
		100	20850	2510	2850	2630	75	21021	2527.1	3021	2647.1
100+100	100	20850	2510	2850	2630	100	21048	2529.8	3048	2649.8	
Mid	50+100	50	21006	2525.6	3006	2645.6	100	21150	2540	3150	2660
		100	21051	2530.1	3051	2650.1	50	21195	2544.5	3195	2664.5
	75+50	75	21051	2530.1	3051	2650.1	50	21171	2542.1	3171	2662.1
	75+75	75	21025	2527.5	3025	2647.5	75	21175	2542.5	3175	2662.5
	75+100	75	21003	2525.3	3003	2645.3	100	21174	2542.4	3174	2662.4
		100	21026	2527.6	3026	2647.6	75	21197	2544.7	3197	2664.7
100+100	100	21001	2525.1	3001	2645.1	100	21199	2544.9	3199	2664.9	
High	50+100	50	21206	2545.6	3206	2665.6	100	21350	2560	3350	2680
		100	21251	2550.1	3251	2670.1	50	21395	2564.5	3395	2684.5
	75+50	75	21277	2552.7	3277	2672.7	50	21397	2564.7	3397	2684.7
	75+75	75	21225	2547.5	3225	2667.5	75	21375	2562.5	3375	2682.5
	75+100	75	21179	2542.9	3179	2662.9	100	21350	2560	3350	2680
		100	21201	2545.1	3201	2665.1	75	21372	2562.2	3372	2682.2
100+100	100	21152	2540.2	3152	2660.2	100	21350	2560	3350	2680	

Note 1: Carriers in increasing frequency order.



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Table 4.3.1.2.6A-1: Test frequencies for CA_38C

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	75+75	75	37825	2577.5	75	37975	2592.5
	100+100	100	37850	2580	100	38048	2599.8
Mid	75+75	75	37925	2587.5	75	38075	2602.5
	100+100	100	37901	2585.1	100	38099	2604.9
High	75+75	75	38025	2597.5	75	38175	2612.5
	100+100	100	37952	2590.2	100	38150	2610

Note 1: Carriers in increasing frequency order.



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Table 4.3.1.2.9A-1: Test frequencies for CA_41C

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	25+100	25	39683	2499.3	100	39800	2511
		100	39750	2506	25	39867	2517.7
	50+75	50	39703	2501.3	75	39823	2513.3
		75	39725	2503.5	50	39845	2515.5
	50+100	50	39705	2501.5	100	39849	2515.9
		100	39750	2506	50	39894	2520.4
	75+75	75	39725	2503.5	75	39875	2518.5
	75+100	75	39728	2503.8	100	39899	2520.9
		100	39750	2506	75	39921	2523.1
	100+100	100	39750	2506	100	39948	2525.8
Mid	25+100	25	40528	2583.8	100	40645	2595.5
		100	40595	2590.5	25	40712	2602.2
	50+75	50	40549	2585.9	75	40669	2597.9
		75	40571	2588.1	50	40691	2600.1
	50+100	50	40526	2583.6	100	40670	2598.0
		100	40571	2588.1	50	40715	2602.5
	75+75	75	40545	2585.5	75	40695	2600.5
	75+100	75	40523	2583.3	100	40694	2600.4
		100	40546	2585.6	75	40717	2602.7
	100+100	100	40521	2583.1	100	40719	2602.9
High	25+100	25	41373	2668.3	100	41490	2680
		100	41440	2675	25	41557	2686.7
	50+75	50	41395	2670.5	75	41515	2682.5
		75	41417	2672.7	50	41537	2684.7
	50+100	50	41346	2665.6	100	41490	2680
		100	41391	2670.1	50	41535	2684.5
	75+75	75	41365	2667.5	75	41515	2682.5
	75+100	75	41319	2662.9	100	41490	2680
		100	41341	2665.1	75	41512	2682.2
	100+100	100	41292	2660.2	100	41490	2680

Note 1: Carriers in increasing frequency order.



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LTE CA 42C(3450-3550):

Range	CC-Combo / NRB_agg [RB]	CC1 Note1			CC2 Note1		
		BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]	BW [RB]	N _{UL/DL}	f _{UL/DL} [MHz]
Low	25+100	25	42123	3453.3	100	42240	3465
		100	42190	3460	25	42307	3471.7
	50+100	50	42145	3455.5	100	42289	3469.9
		100	42190	3460	50	42334	3474.4
	75+100	75	42168	3457.8	100	42339	3474.9
		100	42190	3460	75	42361	3477.1
100+100	100	42190	3460	100	42388	3479.8	
Mid	25+100	25	42498	3490.8	100	42615	3502.5
		100	42565	3497.5	25	42682	3509.2
	50+100	50	42496	3490.6	100	42640	3505
		100	42541	3495.1	50	42685	3509.5
	75+100	75	42493	3490.3	100	42664	3507.4
		100	42516	3492.6	75	42687	3509.7
100+100	100	42491	3490.1	100	42689	3509.9	
High	25+100	25	42873	3528.3	100	42990	3540
		100	42940	3535	25	43057	3546.7
	50+100	50	42846	3525.6	100	42990	3540
		100	42891	3530.1	50	43035	3544.5
	75+100	75	42819	3522.9	100	42990	3540
		100	42841	3525.1	75	43012	3542.2
100+100	100	42792	3520.2	100	42990	3540	

Note 1: Carriers in increasing frequency order.



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Table 4.3.1.1.66A-1: Test frequencies for CA_66B

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	25+25	25	131997	1712.5	66461	2112.5	25	132045	1717.3	66509	2117.3
	25+50	25	132000	1712.8	66464	2112.8	50	132072	1720	66536	2120
		50	132022	1715	66486	2115	25	132094	1722.2	66558	2122.2
	25+75	25	132002	1713	66466	2113	75	132095	1722.3	66559	2122.3
		75	132047	1717.5	66511	2117.5	25	132140	1726.8	66604	2126.8
50+50	50	132022	1715	66486	2115	50	132121	1724.9	66585	2124.9	
Mid	25+25	25	132398	1752.6	66862	2152.6	25	132446	1757.4	66910	2157.4
	25+50	25	132375	1750.3	66839	2150.3	50	132447	1757.5	66911	2157.5
		50	132397	1752.5	66861	2152.5	25	132469	1759.7	66933	2159.7
	25+75	25	132353	1748.1	66817	2148.1	75	132446	1757.4	66910	2157.4
		75	132398	1752.6	66862	2152.6	25	132491	1761.9	66955	2161.9
50+50	50	132373	1750.1	66837	2150.1	50	132472	1760	66936	2160	
High ²	25+25	25	132647	1777.5	67111	2177.5	25	NA	NA	67159	2182.3
	25+50	25	132647	1777.5	67111	2177.5	50	NA	NA	67183	2184.7
		50	132622	1775	67086	2175	25	NA	NA	67158	2182.2
	25+75	25	132647	1777.5	67111	2177.5	75	NA	NA	67204	2186.8
		75	132597	1772.5	67061	2172.5	25	NA	NA	67154	2181.8
50+50	50	132622	1775	67086	2175	50	NA	NA	67185	2184.9	
High ³	25+25	25	132599	1772.7	67063	2172.7	25	132647	1777.5	67111	2177.5
	25+50	25	132550	1767.8	67014	2167.8	50	132622	1775	67086	2175
		50	132572	1770	67036	2170	25	132644	1777.2	67108	2177.2
	25+75	25	132504	1763.2	66968	2163.2	75	132597	1772.5	67061	2172.5
		75	132549	1767.7	67013	2167.7	25	132642	1777	67106	2177
50+50	50	132523	1765.1	66987	2165.1	50	132622	1775	67086	2175	

Note 1: Carriers in increasing frequency order.
 Note 2: Applicable for intra-band contiguous CA without UL CA.
 Note 3: Applicable for intra-band contiguous CA with UL CA.



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LTE CA_66C:

Range	CC-Combo / N _{RB_agg} [RB]	CC1 Note1					CC2 Note1				
		BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]	BW [RB]	N _{UL}	f _{UL} [MHz]	N _{DL}	f _{DL} [MHz]
Low	50+75	50	132025	1715.3	66489	2115.3	75	132145	1727.3	66609	2127.3
		75	132047	1717.5	66511	2117.5	50	132167	1729.5	66631	2129.5
	50+100	50	132027	1715.5	66491	2115.5	100	132171	1729.9	66635	2129.9
		100	132072	1720	66536	2120	50	132216	1734.4	66680	2134.4
	75+75	75	132047	1717.5	66511	2117.5	75	132197	1732.5	66661	2132.5
		75	132050	1717.8	66514	2117.8	100	132221	1734.9	66685	2134.9
	75+100	100	132072	1720	66536	2120	75	132243	1737.1	66707	2137.1
		100	132072	1720	66536	2120	25	132189	1731.7	66653	2131.7
	100+25	25	132005	1713.3	66469	2113.3	100	132122	1725.0	66586	2125.0
		100	132072	1720	66536	2120	100	132270	1739.8	66734	2139.8
Mid	50+75	50	132351	1747.9	66815	2147.9	75	132471	1759.9	66935	2159.9
		75	132373	1750.1	66837	2150.1	50	132493	1762.1	66957	2162.1
	50+100	50	132328	1745.6	66792	2145.6	100	132472	1760	66936	2160
		100	132373	1750.1	66837	2150.1	50	132517	1764.5	66981	2164.5
	75+75	75	132347	1747.5	66811	2147.5	75	132497	1762.5	66961	2162.5
		75	132325	1745.3	66789	2145.3	100	132496	1762.4	66960	2162.4
	75+100	100	132348	1747.6	66812	2147.6	75	132519	1764.7	66983	2164.7
		100	132397	1752.5	66861	2152.5	25	132514	1764.2	66978	2164.2
	100+25	25	132330	1745.8	66794	2145.8	100	132447	1757.5	66911	2157.5
		100	132323	1745.1	66787	2145.1	100	132521	1764.9	66985	2164.9
High ²	50+75	50	132622	1775	67086	2175	75	NA	NA	67206	2187
		75	132597	1772.5	67061	2172.5	50	NA	NA	67181	2184.5
	50+100	50	132622	1775	67086	2175	100	NA	NA	67230	2189.4
		100	132572	1770	67036	2170	50	NA	NA	67180	2184.4
	75+75	75	132597	1772.5	67061	2172.5	75	NA	NA	67211	2187.5
		75	132597	1772.5	67061	2172.5	100	NA	NA	67232	2189.6
	75+100	100	132572	1770	67036	2170	75	NA	NA	67207	2187.1
		100	132572	1770	67036	2170	25	NA	NA	67153	2181.7
	100+25	25	132647	1777.5	67111	2177.5	100	NA	NA	67228	2189.2
		100	132572	1770	67036	2170	100	NA	NA	67234	2189.8
High ³	50+75	50	132477	1760.5	66941	2160.5	75	132597	1772.5	67061	2172.5
		75	132499	1762.7	66963	2162.7	50	132619	1774.7	67083	2174.7
	50+100	50	132428	1755.6	66892	2155.6	100	132572	1770	67036	2170
		100	132473	1760.1	66937	2160.1	50	132617	1774.5	67081	2174.5
	75+75	75	132447	1757.5	66911	2157.5	75	132597	1772.5	67061	2172.5
		75	132401	1752.9	66885	2152.9	100	132572	1770	67036	2170
	75+100	100	132423	1755.1	66887	2155.1	75	132594	1772.2	67058	2172.2
		100	132522	1765	66986	2165	25	132639	1776.7	67103	2176.7
	100+25	25	132455	1758.3	66919	2158.3	100	132572	1770.0	67036	2170.0
		100	132374	1750.2	66838	2150.2	100	132572	1770	67036	2170

Note 1: Carriers in increasing frequency order.
 Note 2: Applicable for intra-band contiguous CA without UL CA.
 Note 3: Applicable for intra-band contiguous CA with UL CA.



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4 Description of Tests

4.1 Conducted Output Power

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.2.1

The transmitter output was connected to a calibrated coaxial cable, attenuator and power meter, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. The tests were performed at three frequencies (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.

Remark: Reference test setup 1



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4.2 Effective (Isotropic) Radiated Power of Transmitter

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8.4

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP(dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB



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中国·苏州·中国(江苏)自由贸易试验区苏州片区苏州工业园区润胜路1号的6号厂房南面 邮编: 215000

t (86-512) 62992980 www.sgs.com.cn
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4.3 EIRP Power Density

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.3

Test Settings

1. Set instrument center frequency to OBW center frequency.
2. Set span to at least 1.5 times the OBW.
3. Set the RBW to the specified reference bandwidth (often 1 MHz).
4. Set VBW $\geq 3 \times$ RBW.
5. Detector = RMS (power averaging).
6. Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
7. Sweep time = auto couple.
8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
9. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).



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4.4 Occupied Bandwidth

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 4.2 & 4.3

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel). The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

Remark: Reference test setup 1

Test Settings

1. The signal analyzer’s automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7



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4.5 Band Edge at Antenna Terminals

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at two frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to rms.

Remark: Reference test setup 1

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW \geq 1% of the emission bandwidth
4. VBW \geq 3 x RBW
5. Detector = RMS
6. Number of sweep points \geq 2 x Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize



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4.6 Spurious And Harmonic Emissions at Antenna Terminal

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel). The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

Remark: Reference test setup 1

Test Settings

1. Start frequency was set to 9kHz and stop frequency was set to at least 10* the fundamental frequency (Separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings



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4.7 Peak-Average Ratio

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.7.2

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode.

Remark: Reference test setup 1

Test Settings

1. The signal analyzer’s CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal “RF Burst” trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the “on time” of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power



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4.8 Field Strength of Spurious Radiation

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8

Below 1GHz test procedure as below:

- 1). The EUT was powered ON and placed on a 80cm high table in the chamber. The antenna of the transmitter was extended to its maximum length.
- 2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
- 3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
- 4). Test the EUT in the lowest channel, the middle channel ,the Highest channel.
- 5). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.
- 6). Repeat above procedures until all frequencies measured was complete.

$$E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + (\text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)} - \text{AMP(dB)})$$

$$\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20 \log D - 104.8; \text{ where D is the measurement distance in meters}$$

Above 1GHz test procedure as below:

- 1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber
- 2) Calculate power in dBm by the following formula:

$$E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + (\text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)} - \text{AMP(dB)})$$

$$\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20 \log D - 104.8; \text{ where D is the measurement distance in meters}$$
- 3). Test the EUT in the lowest channel, the middle channel the Highest channel
- 4). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.
- 5). Repeat above procedures until all frequencies measured was complete

Remark1: Reference test setup 2

Remark2: The emission below 18G were measured at a 3m test distance, while emissions above 18GHz were measured at a 1m test distance. At a measurement distance of 1 meter the limit line was increased by $20 \cdot \text{LOG}(3/1) = 9.54 \text{ dB}$.

Remark: Reference test setup 2

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & AMP. The basic equation with a sample calculation is as follows:

$$\text{AF} = \text{Antenna Factor(dB/m)}$$

$$\text{Factor} = \text{Cable Factor(dB)} - \text{Preamplifier (dB)}$$

$$\text{Level} = \text{Reading Level} + \text{AF} + \text{Factor} - 95.26$$

$$\text{Margin} = \text{Limit} - \text{Level}$$
- 2) Scan from 9kHz to 40GHz, The disturbance between 9kHz to 30MHz and 18GHz to 40GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3) All modes have been tested, but only the worst case data displayed in this report.



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4.9 Frequency Stability / Temperature Variation

Measurement Procedure:

Frequency stability testing is performed in accordance with the guidelines of FCC KDB 971168 D01 V03r01; Section 9

. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Remark: Reference test setup 3

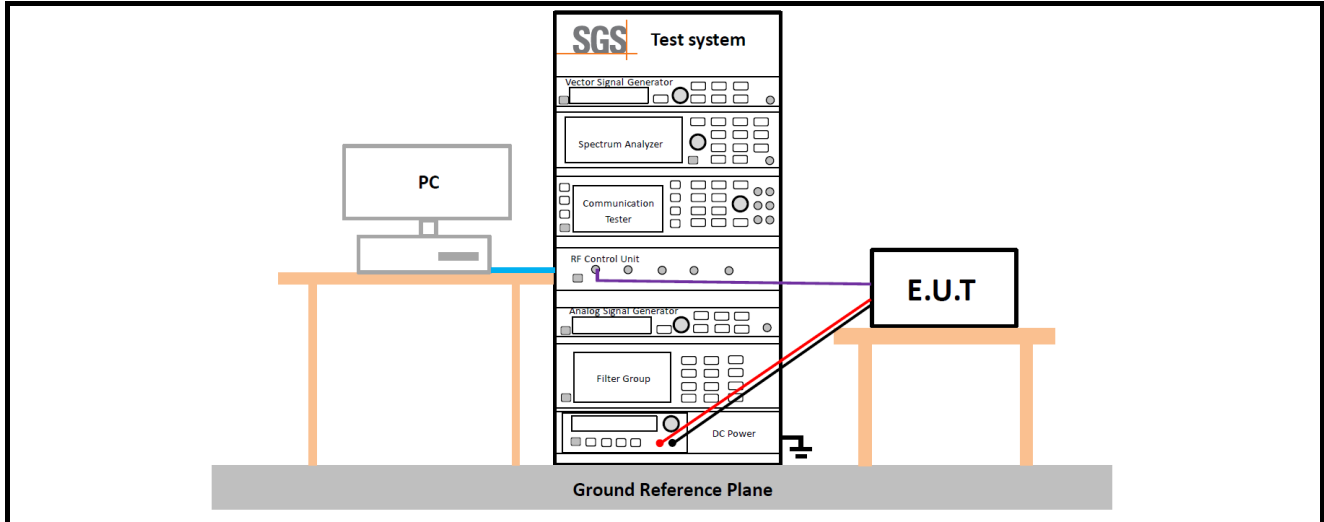


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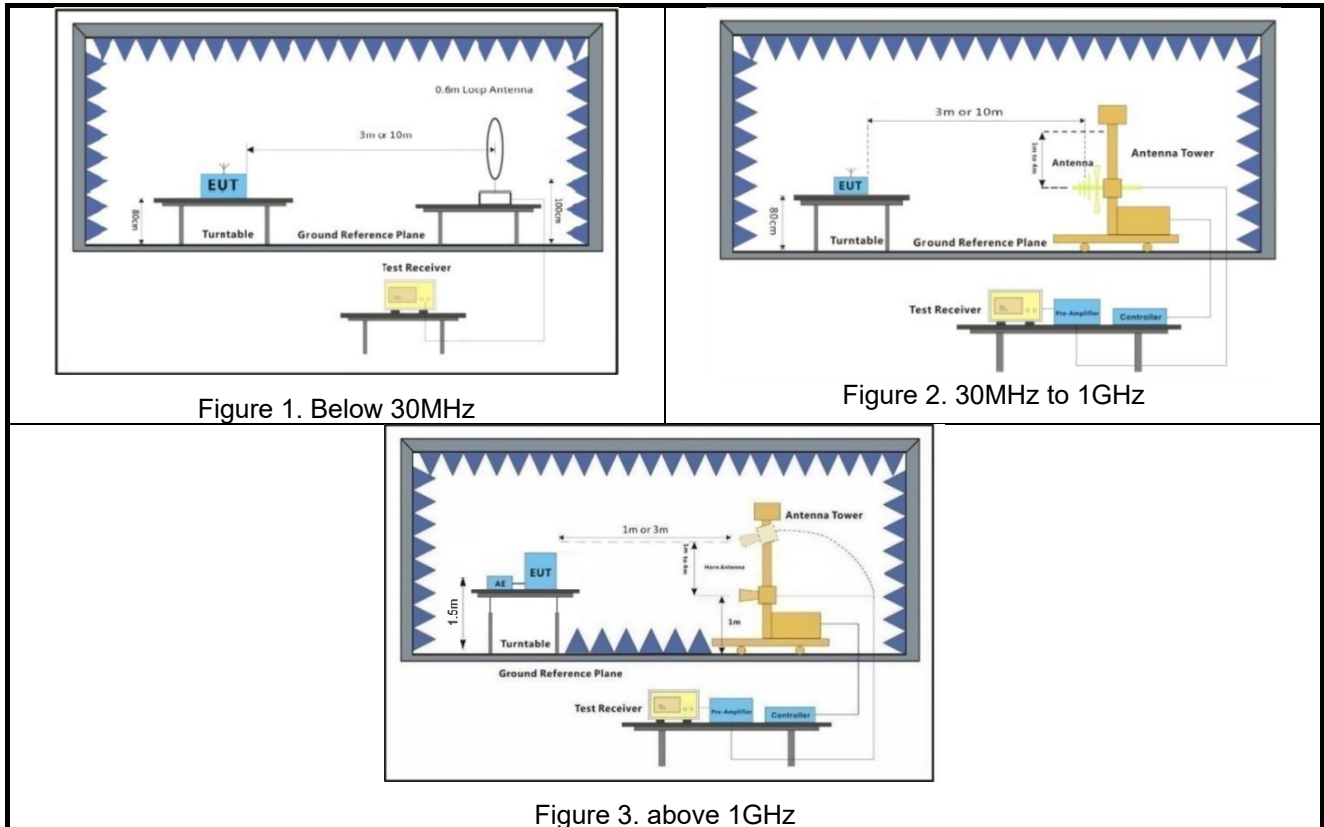
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4.10 Test Setups

4.10.1 Test Setup 1



4.10.2 Test Setup 2



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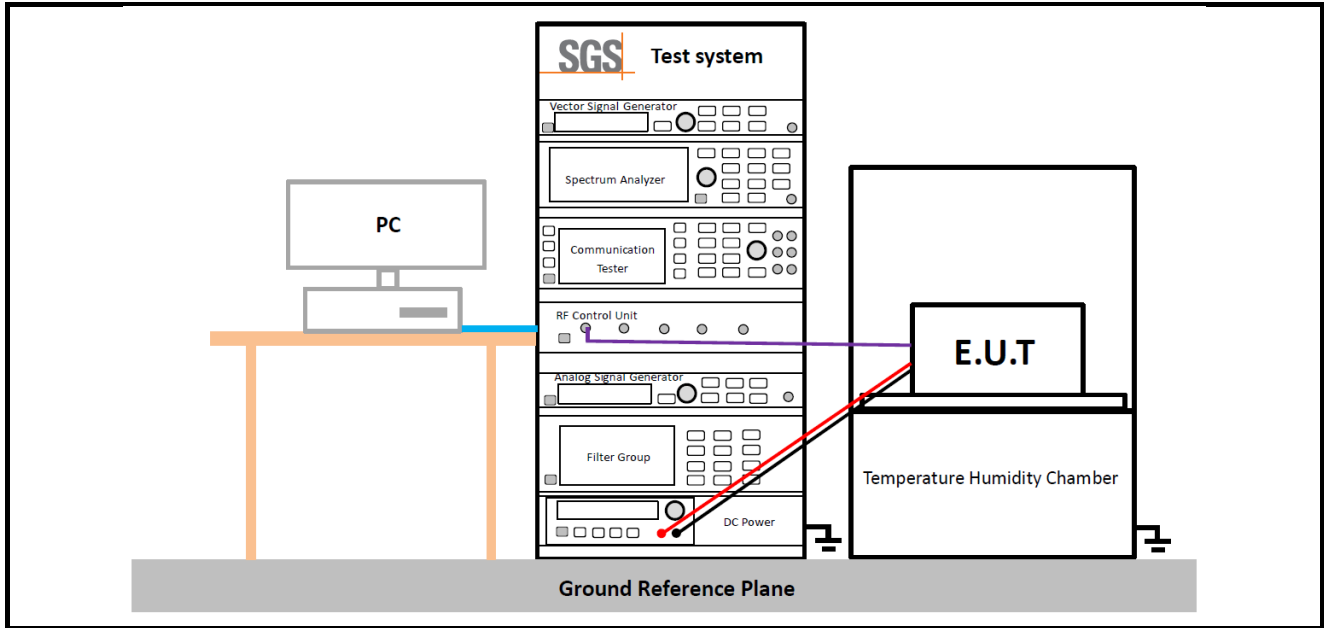
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4.10.3 Test Setup 3



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4.11 Test Conditions

Transmit Output Power Data - Average Power, Spectral Density	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	LTE/TM1;LTE/TM2;LTE/TM3;LTE/TM4
Peak-to-Average Ratio	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	LTE/TM1;LTE/TM2;LTE/TM3;LTE/TM4
Bandwidth - Occupied Bandwidth	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	LTE/TM1;LTE/TM2;LTE/TM3;LTE/TM4
Bandwidth - Emission Bandwidth	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	LTE/TM1;LTE/TM2;LTE/TM3;LTE/TM4
Band Edges Compliance	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, H (L= low channel, H= high channel)
Test Mode	LTE/TM1
Spurious Emission at Antenna Terminals	
Test Case	Test Conditions



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Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	LTE/TM1
Field Strength of Spurious Radiation	
Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 2
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	LTE/TM1 Remark: All bandwidth and modulation of LTE have been pre tested, and only the worst results are reflected in the report.
Frequency Stability	
Test Case	Test Conditions
Test Environment	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage (2) VL, VN and VH of Rated Voltage at Ambient Climate.
Test Setup	Test Setup 3
RF Channels (TX)	M (M= middle channel)
Test Mode	LTE/TM1 The report only show the bandwidth with the worst case.



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5 Main Test Instruments

RF conducted test (for report SEWA2303000029RG01)					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
Shielding Room	Brilliant-emc	N/A	SUWI-04-01-06	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2023/02/06	2024/02/05
Signal Analyzer	ROHDE&SCHWARZ	FSV3030	SUWI-01-02-02	2022/05/17	2023/05/16
Measurement Software	Tonscend	JS1120-3 Test System V 2.6.88.0336	SUWI-02-09-09	NCR	NCR
Radio Communication Analyzer	Anritsu	MT8821C	SUWI-01-26-03	2022/11/23	2023/11/22
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-05	2023/02/06	2024/02/05
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2023/02/06	2024/02/05
Temperature Chamber	ESPEC	SU-242	SUWI-01-13-01	2023/02/06	2024/02/05
Wideband Radio Communication Test Ststion	Anritsu	MT8000A	SUWI-01-34-02	2022/09/16	2023/09/15
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2022/05/28	2023/05/27

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RSE Test System (for report SEWA2303000029RG01)					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-02	2021/11/25	2024/11/24
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-13	2023/02/07	2024/02/06
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2022/05/28	2023/05/27
Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-06	2022/11/23	2023/11/22
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2023/02/08	2024/02/07
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	VULB 9163	SUWI-01-11-04	2021/12/05	2023/12/04
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-05	2021/12/05	2023/12/04
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2021/05/14	2023/05/13
Active Loop Antenna	SCHWRZBECK MESS-ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2021/06/10	2023/06/09
Amplifier	Tonscend	TAP9K3G32	SUWI-01-14-06	2022/11/23	2023/11/22
Amplifier	Tonscend	TAP01018050	SUWI-01-14-04	2022/11/23	2023/11/22
Amplifier	Tonscend	TAP30M7G30	SUWI-01-14-05	2022/11/23	2023/11/22
Wideband Radio Communication Tester	Anritsu	MT8820C	SUWI-01-16-08	2023/02/06	2024/02/05
Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	2022/11/23	2023/11/22
Measurement Software	Tonscend	JS32-RE V4.0.0.0	SUWI-02-09-04	NCR	NCR

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RF conducted test (for report SEWM2311000473RG01)					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
Shielding Room	Brilliant-emc	N/A	SUWI-04-01-06	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2023/02/06	2024/02/05
				2024/02/05	2025/02/04
Signal Analyzer	ROHDE&SCHWARZ	FSV3030	SUWI-01-02-02	2023/05/11	2024/05/10
Measurement Software	Tonscend	JS1120-3 Test System V 2.6.88.0336	SUWI-02-09-09	NCR	NCR
Radio Communication Analyzer	Anritsu	MT8821C	SUWI-01-26-03	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-05	2023/02/06	2024/02/05
				2024/02/05	2025/02/04
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2023/02/06	2024/02/05
				2024/02/05	2025/02/04
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	2023/05/13	2024/05/12
Wideband Radio Communication Test Ststion	Anritsu	MT8000A	SUWI-01-34-02	2023/09/12	2024/09/11
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2023/05/11	2024/05/10

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RSE Test System (for report SEWM2311000473RG01)					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-02	2021/11/25	2024/11/24
Temperature and humidity meter*	MingGao	TH101B	SUWI-01-01-13	2023/02/07	2024/02/06
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2023/05/11	2024/05/10
Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-06	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2023/02/08	2024/02/07
				2024/02/01	2025/01/31
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	VULB 9163	SUWI-01-11-01	2023/05/13	2024/05/12
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	2023/05/13	2024/05/12
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2023/05/12	2024/05/11
Active Loop Antenna	SCHWRZBECK MESS-ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2023/05/13	2024/05/12
Amplifier	Tonscend	TAP9K3G32	SUWI-01-14-06	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Amplifier	Tonscend	TAP01018050	SUWI-01-14-04	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Amplifier	Tonscend	TAP30M7G30	SUWI-01-14-05	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Wideband Radio Communication Tester	Anritsu	MT8820C	SUWI-01-16-08	2023/02/06	2024/02/05
				2024/02/04	2025/02/03
Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	2022/11/23	2023/11/22
				2023/11/21	2024/11/20
Measurement Software	Tonscend	JS32-RE V4.0.0.0	SUWI-02-09-04	NCR	NCR

Remark: NCR=No Calibration Requirement

Note*: The RSE data were tested in 2023/12/05 to 2023/12/12, so this equipment is not used for testing after 2024/02/06.



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 中国·苏州·中国(江苏)自由贸易试验区苏州片区苏州工业园区润胜路1号的6号厂房南座 邮编: 215000 t (86-512) 62992980 sgs.china@sgs.com

6 Measurement Uncertainty

For a 95% confidence level ($k = 2$), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	$\pm 0.54\text{dB}$
2	RF power density, conducted	$\pm 1.03\text{dB}$
3	Spurious emissions, conducted	$\pm 0.54\text{dB}$
4	Radio Frequency	$\pm 1.0\%$
5	Duty Cycle	$\pm 0.37\%$
6	Occupied Bandwidth	$\pm 1.0\%$
7	Radiated Emission	$\pm 3.13\text{dB}$ (9k -30MHz)
		$\pm 4.88\text{dB}$ (30M -1GHz)
		$\pm 4.75\text{dB}$ (1GHz to 18GHz)
		$\pm 4.77\text{dB}$ (Above 18GHz)

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results
 – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
 – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



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7 Appendixes

Appendix A.2	WWAN Setup Photos
Appendix B.1	LTE Band 2
Appendix B.2	LTE Band 4
Appendix B.3	LTE Band 5
Appendix B.4	LTE Band 7
Appendix B.5	LTE Band 12
Appendix B.6	LTE Band 13
Appendix B.7	LTE Band 14
Appendix B.8	LTE Band 17
Appendix B.9	LTE Band 25
Appendix B.10	LTE Band 26(814-824)
Appendix B.11	LTE Band 26(824-849)
Appendix B.12	LTE Band 30
Appendix B.13	LTE Band 38
Appendix B.14	LTE Band 41
Appendix B.15	LTE Band 42(3450-3550)
Appendix B.16	LTE Band 43(3700-3800)
Appendix B.17	LTE Band 66
Appendix B.18	LTE Band 71
Appendix B.19	LTE CA_5B
Appendix B.20	LTE CA_7C
Appendix B.21	LTE CA_38C
Appendix B.22	LTE CA_41C
Appendix B.23	LTE CA_42C(3450-3550)
Appendix B.24	LTE CA_66B
Appendix B.25	LTE CA_66C
Appendix B.47	LTE Band 70

---End of Report---



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t (86-512) 62992980 www.sgs.com.cn
 sgs.china@sgs.com

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