TCB

GRANT OF EQUIPMENT AUTHORIZATION

TCB

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

PHOENIX TESTLAB GmbH
Koenigswinkel 10
32825 Blomberg,
Germany

Date of Grant: 08/01/2022

Application Dated: 07/28/2022

Quectel Wireless Solutions Company Limited
Building 5, Shanghai Business Park PhaseIII
(Area B),No.1016 Tianlin Road, Minhang District
Shanghai, 200233
China

Attention: Jean Hu

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: XMR2022RM520NGL
Name of Grantee: Quectel Wireless Solutions Company Limited
Equipment Class: PCS Licensed Transmitter
Notes: 5G Sub-6 GHz M.2 Module with WCDMA and LTE
Modular Type: Single Modular

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
	22H	826.4 - 846.6	0.316	0.1 PM	4M15F9W
	22H	829.0 - 844.0	0.288	0.1 PM	8M94G7D
	22H	829.0 - 844.0	0.252	0.1 PM	8M94W7D
	22H	824.7 - 848.3	0.291	0.1 PM	1M11G7D
	22H	826.5 - 846.5	0.258	0.1 PM	4M48W7D
	22H	831.5 - 841.5	0.308	0.1 PM	13M5G7D
	22H	831.5 - 841.5	0.254	0.1 PM	13M5W7D
	22H	826.5 - 846.5	0.316	0.1 PM	4M48G7D
	22H	826.5 - 846.5	0.265	0.1 PM	4M48W7D
	22H	829.0 - 844.0	0.243	0.1 PM	18M8G7D
	22H	829.0 - 844.0	0.301	0.1 PM	18M8W7D
	22H	825.6 - 847.4	0.321	0.1 PM	7M52G7D
	22H	825.6 - 847.4	0.305	0.1 PM	7M51W7D
	22H	834.0 - 839.0	0.243	0.1 PM	17M9G7D
	22H	834.0 - 839.0	0.258	0.1 PM	18M9W7D
	22H	831.5 - 841.5	0.245	0.1 PM	13M4G7D
	22H	831.5 - 841.5	0.267	0.1 PM	14M1W7D
	22H	879.0 - 884.0	0.237	0.1 PM	18M9G7D
	22H	879.0 - 884.0	0.26	0.1 PM	18M9W7D
	22H	876.5 - 886.5	0.239	0.1 PM	13M4G7D
	22H	876.5 - 886.5	0.262	0.1 PM	14M1W7D
	24E	1852.4 - 1907.6	0.315	0.1 PM	4M17F9W
	24E	1860.0 - 1900.0	0.301	0.1 PM	17M9G7D
	24E	1860.0 - 1900.0	0.282	0.1 PM	18M0W7D
	24E	1855.0 - 1905.0	0.306	0.1 PM	8M95G7D
	24E	1860.0 - 1905.0	0.316	0.1 PM	17M9G7D
	24E	1860.0 - 1905.0	0.269	0.1 PM	17M9W7D

24E	1852.5 - 1912.5	0.274	0.1 PM	4M48W7D
24E	1860.0 - 1900.0	0.289	0.1 PM	37M8G7D
24E	1857.8 - 1902.5	0.31	0.1 PM	32M6G7D
24E	1860.0 - 1900.0	0.213	0.1 PM	37M7W7D
24E	1857.8 - 1902.5	0.219	0.1 PM	32M6W7D
24E	1860.0 - 1900.0	0.236	0.1 PM	17M9G7D
24E	1860.0 - 1900.0	0.2	0.1 PM	19M0W7D
24E	1857.5 - 1902.5	0.237	0.1 PM	13M4G7D
24E	1932.5 - 1987.5	0.217	0.1 PM	4M49W7D
24E	1870.0 - 1895.0	0.248	0.1 PM	38M6G7D
24E	1870.0 - 1895.0	0.215	0.1 PM	38M6W7D
24E	1942.5 - 1982.5	0.26	0.1 PM	22M9G7D
24E	1942.5 - 1982.5	0.226	0.1 PM	23M8W7D
27	1712.4 - 1752.6	0.297	0.1 PM	4M21F9W
27	1720.0 - 1745.0	0.31	0.1 PM	17M9G7D
27	1720.0 - 1745.0	0.273	0.1 PM	18M0W7D
27	1712.5 - 1752.5	0.315	0.1 PM	4M48G7D
27	1715.0 - 1750.0	0.276	0.1 PM	8M97W7D
27	2510.0 - 2560.0	0.282	0.1 PM	17M9G7D
27	2507.5 - 2562.5	0.305	0.1 PM	13M5G7D
27	2510.0 - 2560.0	0.265	0.1 PM	17M9W7D
27	2507.5 - 2562.5	0.284	0.1 PM	13M5W7D
27	704.0 - 711.0	0.29	0.1 PM	8M94G7D
27	704.0 - 711.0	0.276	0.1 PM	8M96W7D
27	701.5 - 713.5	0.28	0.1 PM	4W48W7D
27	700.5 - 714.5	0.308	0.1 PM	2M70G7D
27	782.0 - 782.0	0.283	0.1 PM	8M92G7D
27	782.0 - 782.0	0.262	0.1 PM	8M93W7D
27	779.5 - 784.5	0.289	0.1 PM	4M48G7D
27	779.5 - 784.5	0.265	0.1 PM	4M49W7D
27	709.0 - 711.0	0.29	0.1 PM	8M96G7D
27	709.0 - 711.0	0.272	0.1 PM	8M96W7D
27	706.5 - 713.5	0.314	0.1 PM	4M48G7D
27	706.5 - 713.5	0.274	0.1 PM	4M48W7D
27	2310.0 - 2310.0	0.27	0.1 PM	9M01G7D
27	2310.0 - 2310.0	0.246	0.1 PM	9M00W7D
27	2307.5 - 2312.5	0.282	0.1 PM	4M51G7D
27	2580.0 - 2610.0	0.385	0.1 PM	17M9G7D
27	2580.0 - 2610.0	0.345	0.1 PM	17M9W7D
27	2577.5 - 2612.5	0.397	0.1 PM	13M5G7D
27	2577.5 - 2612.5	0.356	0.1 PM	13M5W7D
27	2506.0 - 2680.0	0.467	0.1 PM	17M9G7D
27	2506.0 - 2680.0	0.433	0.1 PM	17M9W7D
27	2501.0 - 2685.0	0.5	0.1 PM	8M97G7D
27	2501.0 - 2685.0	0.449	0.1 PM	8M94W7D
27	3460.0 - 3540.0	0.352	0.1 PM	18M1G7D
27	3460.0 - 3540.0	0.207	0.1 PM	18M0W7D
27	3455.0 - 3545.0	0.368	0.1 PM	9M01G7D
27	3452.5 - 3547.5	0.299	0.1 PM	4M52W7D
27	3710.0 - 3790.0	0.385	0.1 PM	18M1G7D
27	3710.0 - 3790.0	0.29	0.1 PM	18M1W7D
27	3705.0 - 3795.0	0.294	0.1 PM	9M02W7D
27	1715.0 - 1775.0	0.298	0.1 PM	18M0G7D
27	1715.0 - 1775.0	0.249	0.1 PM	18M0W7D
27	673.0 - 688.0	0.311	0.1 PM	17M9G7D
27	673.0 - 688.0	0.277	0.1 PM	17M9W7D
27	670.5 - 690.5	0.315	0.1 PM	13M5G7D
27	2510.0 - 2560.0	0.285	0.1 PM	37M7G7D

	27	2510.0 - 2560.0	0.215	0.1 PM	37M7W7D
	27	2507.8 - 2562.2	0.236	0.1 PM	32M6W7D
	27	2505.5 - 2564.5	0.313	0.1 PM	27M7G7D
	27	2580.0 - 2610.0	0.394	0.1 PM	37M6G7D
	27	2580.0 - 2610.0	0.348	0.1 PM	37M6W7D
	27	2506.0 - 2680.0	0.369	0.1 PM	37M7G7D
	27	2506.0 - 2680.0	0.396	0.1 PM	37M7W7D
	27	2501.3 - 2684.7	0.415	0.1 PM	23M1G7D
	27	3460.0 - 3540.0	0.304	0.1 PM	37M4G7D
	27	3460.0 - 3540.0	0.262	0.1 PM	37M4W7D
	27	3455.5 - 3540.0	0.263	0.1 PM	28M0G7D
	27	3710.0 - 3790.0	0.299	0.1 PM	37M6G7D
	27	3710.0 - 3790.0	0.256	0.1 PM	37M5W7D
	27	1712.8 - 1777.2	0.299	0.1 PM	13M9G7D
	27	1715.0 - 1775.0	0.287	0.1 PM	18M9G7D
	27	1715.0 - 1775.0	0.313	0.1 PM	18M9W7D
	27	1717.8 - 1770.0	0.295	0.1 PM	32M6G7D
	27	1717.8 - 1770.0	0.216	0.1 PM	32M6W7D
	27	1720.0 - 1770.0	0.277	0.1 PM	37M7G7D
	27	1720.0 - 1770.0	0.21	0.1 PM	37M7W7D
	27	2520.0 - 2550.0	0.24	0.1 PM	38M6G7D
	27	2520.0 - 2550.0	0.252	0.1 PM	38M6W7D
	27	2515.0 - 2555.0	0.243	0.1 PM	28M7G7D
	27	2507.5 - 2562.5	0.294	0.1 PM	14M1W7D
	27	706.5 - 708.5	0.236	0.1 PM	13M4G7D
	27	706.5 - 708.5	0.251	0.1 PM	14M1W7D
	27	751.0 - 751.0	0.218	0.1 PM	8M92G7D
	27	751.0 - 751.0	0.233	0.1 PM	9M26W7D
	27	779.5 - 784.5	0.219	0.1 PM	4M48G7D
	27	779.5 - 784.5	0.233	0.1 PM	4M47W7D
	27	2310.0 - 2310.0	0.218	0.1 PM	8M95G7D
	27	2310.0 - 2310.0	0.231	0.1 PM	9M33W7D
	27	2307.5 - 2312.5	0.231	0.1 PM	4M48G7D
	27	2590.0 - 2600.0	0.274	0.1 PM	35M8G7D
	27	2590.0 - 2600.0	0.262	0.1 PM	38M0W7D
	27	2577.5 - 2612.5	0.345	0.1 PM	12M9G7D
	27	2577.5 - 2612.5	0.27	0.1 PM	13M6W7D
	27	2546.01 - 2640.0	0.486	0.1 PM	96M2G7D
	27	2546.01 - 2640.0	0.384	0.1 PM	97M7W7D
	27	2516.01 - 2670.0	0.506	0.1 PM	35M8G7D
	27	2511.0 - 2675.0	0.404	0.1 PM	27M9W7D
	27	1730.0 - 1760.0	0.255	0.1 PM	38M6G7D
	27	1730.0 - 1760.0	0.268	0.1 PM	38M6W7D
	27	1720.0 - 1770.0	0.256	0.1 PM	17M9G7D
	27	1717.5 - 1772.5	0.278	0.1 PM	14M1W7D
	27	1702.5 - 1702.5	0.238	0.1 PM	13M4G7D
	27	1702.5 - 1702.5	0.209	0.1 PM	14M1W7D
	27	673.0 - 688.0	0.226	0.1 PM	17M9G7D
	27	673.0 - 688.0	0.242	0.1 PM	18M9W7D
	27	670.5 - 690.5	0.229	0.1 PM	13M5G7D
	27	670.5 - 690.5	0.247	0.1 PM	14M1W7D
	27	3500.01 - 3500.01	0.379	0.1 PM	96M4G7D
	27	3500.01 - 3500.01	0.303	0.1 PM	97M6W7D
	27	3470.01 - 3530.01	0.4	0.1 PM	35M8G7D
	27	3457.5 - 3542.49	0.321	0.1 PM	13M6W7D
MO	27	3500.01 - 3500.01	0.282	0.1 PM	96M4G7D
MO	27	3500.01 - 3500.01	0.242	0.1 PM	97M6W7D
MO	27	3465.0 - 3534.99	0.294	0.1 PM	26M8G7D

MO	**27**	**3457.5 - 3542.49**	**0.263**	**0.1 PM**	**13M6W7D**
	27	**3750.0 - 3930.0**	**0.316**	**0.1 PM**	**96M4G7D**
	27	**3750.0 - 3930.0**	**0.25**	**0.1 PM**	**97M6W7D**
	27	**3720.0 - 3960.0**	**0.355**	**0.1 PM**	**35M8G7D**
	27	**3720.0 - 3960.0**	**0.275**	**0.1 PM**	**37M9W7D**
MO	**27**	**3750.0 - 3930.0**	**0.253**	**0.1 PM**	**96M4G7D**
MO	**27**	**3750.0 - 3930.0**	**0.235**	**0.1 PM**	**97M6W7D**
MO	**27**	**3720.0 - 3960.0**	**0.281**	**0.1 PM**	**35M8G7D**
MO	**27**	**3720.0 - 3960.0**	**0.248**	**0.1 PM**	**37M9W7D**
	27	**3500.01 - 3500.01**	**0.353**	**0.1 PM**	**96M4G7D**
	27	**3500.01 - 3500.01**	**0.284**	**0.1 PM**	**97M6W7D**
	27	**3470.01 - 3530.01**	**0.392**	**0.1 PM**	**35M8G7D**
	27	**3475.02 - 3525.0**	**0.316**	**0.1 PM**	**47M4W7D**
	27	**3750.0 - 3750.0**	**0.32**	**0.1 PM**	**96M4G7D**
	27	**3750.0 - 3750.0**	**0.254**	**0.1 PM**	**97M6W7D**
	27	**3715.02 - 3785.01**	**0.352**	**0.1 PM**	**26M8G7D**
	27	**3735.0 - 3765.0**	**0.348**	**0.1 PM**	**67M6W7D**
	90	**793.0 - 793.0**	**0.292**	**0.1 PM**	**8M93G7D**
	90	**793.0 - 793.0**	**0.272**	**0.1 PM**	**8M93W7D**
	90	**790.5 - 795.5**	**0.301**	**0.1 PM**	**4M48G7D**
	90	**819.0 - 819.0**	**0.313**	**0.1 PM**	**8M93G7D**
	90	**819.0 - 819.0**	**0.277**	**0.1 PM**	**8W93W7D**
	90	**816.5 - 821.5**	**0.282**	**0.1 PM**	**4M48W7D**
	90	**763.0 - 763.0**	**0.218**	**0.1 PM**	**8M96G7D**
	90	**763.0 - 763.0**	**0.239**	**0.1 PM**	**9M29W7D**
	90	**819.0 - 819.0**	**0.224**	**0.1 PM**	**8M95G7D**
	90	**819.0 - 819.0**	**0.244**	**0.1 PM**	**9M29W7D**
MO	**27**	**2590.0 - 2600.0**	**0.354**	**0.1 PM**	**35M8G7D**
MO	**27**	**2590.0 - 2600.0**	**0.314**	**0.1 PM**	**38M0W7D**
MO	**27**	**2585.0 - 2605.0**	**0.361**	**0.1 PM**	**26M9G7D**
MO	**27**	**2546.01 - 2640.0**	**0.327**	**0.1 PM**	**96M2G7D**
MO	**27**	**2546.01 - 2640.0**	**0.281**	**0.1 PM**	**97M7W7D**
MO	**27**	**2516.01 - 2670.0**	**0.352**	**0.1 PM**	**35M8G7D**
MO	**27**	**2511.0 - 2675.0**	**0.299**	**0.1 PM**	**27M9W7D**

Single Module approval is filing. Output power Listed is maximum RMS Conducted Power. Module supports WCDMA, LTE (QPSK, 16QAM, 64QAM, 256QAM) 5G NR Standalone and Non-standalone (CP-OFDM QPSK, 16QAM, 64QAM, 256QAM and DFT-s-OFDM BPSK, QPSK, 16QAM, 64QAM, 256QAM).
WCDMA B2, B4, B5
LTE B2, B4, B5, B7, B12, B13, B14, B17, B25, B26, B30, B38, B41, B42, B43, B66, B71
5G NR n2, n5, n7, n12, n13, n14, n25, n26, n30, n38, n41, n66, n70, n71, n77, n78
Channel Bandwidth (5/10 MHz) for LTE B13, B14, B17, B30; 5GNR n13, n14, n30
Channel Bandwidth (1.4/3/5/10 MHz) for LTE B5, B12
Channel Bandwidth (5/10/15 MHz) for 5GNR n12, n70
Channel Bandwidth (1.4/3/5/10/15/20 MHz) for LTE B2, B4, B25, B66
Channel Bandwidth (1.4/3/5/10/15 MHz) for LTE B26
Channel Bandwidth (5/10/15/20 MHz) for LTE B7, B38, B41, B42, B43, B71; 5GNR n2, n5, n26, n71
Channel Bandwidth (10/15/20/30/40 MHz) for 5GNR n38
Channel Bandwidth (5/10/15/20/30/40 MHz) for 5GNR n66
Channel Bandwidth (5/10/15/20/25/30/40 MHz) for 5GNR n7, n25
Channel Bandwidth (20/30/40/50/60/70/80/90/100 MHz) for 5G NR n41
Channel Bandwidth (10/15/20/30/40/50/60/70/80/90/100 MHz) for 5G NR n77, n78
This device contains functions that are not operational in U.S. Territories; this filing is only applicable for U.S. operations. This device has integrated CBE and PCB transmitters certified under the same FCC ID.
Module supports LTE Uplink carrier aggregation: CA_2C, CA_5B, CA_7C, CA_38C, CA_41C, CA_42C, CA_43C, CA_48C, CA_66B, CA_66C and also LTE and 5GNR inter-band carrier aggregation : UL CA_2A-4A; UL CA_2A-5A; UL CA_2A-7A; UL CA_2A-12A; UL CA_2A-13A; UL CA_2A-30A; UL CA_2A-66A;UL CA_4A-5A; UL CA_4A-7A; UL CA_4A-12A; UL CA_4A- 13A;UL CA_4A-30A; UL CA_5A-7A; UL CA_5A-30A; UL CA_5A-66A;UL CA_12A-30A; UL CA_12A-66A; UL CA_13A-66A; UL CA_14A-30A; n25A-n41A;n41A-n66A;n41A-n71A;n7A- n78A;n5A-n78A;n66A-n78A;n7A-n77A;n2A-n77A;n5A-n77A;n66A-n77A;n30A-n77A;n71A- n77A;n71A-n78A;n25A-n78A;n38A-n66A;n25A-n77A;n25A-n38A;n13A-n77A as described in this filing.
It supports ENDC
DC_13A_n66A;DC_5A_n2A;DC_14A_n2A;DC_30A_n2A;DC_2A_n5A;DC_30A_n5A;DC_66

A_n5A;DC_2A_n12A;DC_66A_n12A;DC_2A_n66A;DC_5A_n66A;DC_12A_n66A;DC_14A_
n66A;DC_30A_n66A;DC_12A_n2A;DC_66A_n2A;DC_71A_n2A;DC_12A_n41A;DC_71A_n6
6A;DC_2A_n71A;DC_66A_n71A;DC_66A_n25A;DC_25A_n41A;DC_12A_n78A;DC_13A_n7
8A;DC_25A_n78A;DC_12A_n77A;DC_13A_n77A;DC_14A_n77A;DC_26A_n78A;DC_2A_n7
8A;DC_26A_n41A;DC_2A_n41A;DC_7A_n5A;DC_38A_n78A;DC_7A_n71A;DC_41A_n78A;
DC_5A_n7A;DC_12A_n7A;DC_66A_n7A;DC_13A_n2A;DC_48A_n5A;DC_48A_n66A;DC_7
A_n66A;DC_4A_n78A;DC_20A_n77A;DC_5A_n78A;DC_4A_n41A;DC_66A_n38A;DC_2A_
n38A;DC_12A_n38A;DC_4A_n38A;DC_5A_n38A;DC_66A_n78A;DC_12A_n25A;DC_25A_n
77A;DC_2A_n77A;DC_71A_n78A;DC_71A_n38A;DC_13A_n7A;DC_5A_n41A;DC_66A_n41
A;DC_2A_n7A;DC_7A_n2A;DC_5A_n40A;DC_30A_n77A;DC_41A_n77A;DC_7A_n78A;DC
_48A_n25A;DC_66A_n28A;DC_71A_n41A;DC_28A_n66A;DC_30A_n12A;DC_2A_n14A;DC
_30A_n14A;DC_66A_n14A;DC_2A_n30A;DC_5A_n30A;DC_12
A_n30A;DC_14A_n30A;DC_66A_n30A;DC_71A_n7A;DC_7A_n12A;DC_5A_n77A;DC_66A
_n77A;DC_71A_n77A;DC_4A_n2A;DC_7A_n25A;DC_71A_n25A;DC_5A_n25A;DC_26A_n2
5A;DC_4A_n7A;DC_13A_n25A;DC_7A_n77A;DC_48A_n71A;DC_48A_n12A; as described in this filing.
This module is designed for mobile device application and only documented Antenna and permitted gain can be used in OEM installation. Use of additional antenna(s) are subject to the requirements of 15.204(c)(4). Modular Approval for mobile RF Exposure conditions. OEM integrators must be provided with antenna installation instructions to satisfy RF exposure compliance. the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons. This grant is valid only when the device is sold to OEM integrators and the OEM integrators are instructed to ensure that the end user has no manual instructions to remove or install the device.
External Monopole Antenna:
Max gain: 8.00 dBi for WCDMA B2, LTE B2; LTE B25, 5GNR n2, 5GNR n25;
Max gain: 5.00 dBi for WCDMA B4, LTE B4, LTE B66, 5GNR n66;
Max gain: 9.41 dBi for WCDMA B5, LTE B5, 5GNR n5;
Max gain: 8.00 dBi for LTE B7, 5GNR n7;
Max gain: 8.70 dBi for LTE B12, 5GNR n12;
Max gain: 8.74 dBi for LTE B17,
Max gain: 9.16 dBi for LTE B13, 5GNR n13;
Max gain: 9.23 dBi for LTE B14, 5GNR n14;
Max gain: 9.36 dBi for LTE B26, 5GNR n26;
Max gain: -1.02 dBi for LTE B30, 5GNR n30;
Max gain: 1.99 dBi for LTE B38, 5GNR n38; LTE B41, 5GNR n41;
Max gain: 2.00 dBi for LTE B42, LTE B43,
Max gain: -1.01 dBi for 5GNR n77, 5GNR n78;
Max gain: 8.48 dBi for LTE B71, 5GNR n71;
Max gain: 5.00 dBi for 5GNR n70.

MO: This Multiple Input Multiple Output (MIMO) device was evaluated for multiple transmitted signals as indicated in the filing.