

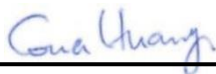
RF EXPOSURE EVALUATION REPORT

FCC ID : 2AQ68T99W373
Equipment : 5G WWAN Module
Brand Name : Foxconn
Model Name : T99W373
Applicant : Hon Lin Technology Co., Ltd
11F, No.32, Jihu Rd., Neihu Dist.,
Taipei City 114, Taiwan R.O.C.
Manufacturer : Hon Lin Technology Co., Ltd
11F, No.32, Jihu Rd., Neihu Dist.,
Taipei City 114, Taiwan R.O.C.
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

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Approved by: Cona Huang / Deputy Manager



SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
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History of this test report

Report No.	Version	Description	Issued Date
FA262904-03	Rev. 01	Initial issue of report	Jul. 28, 2022



1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	5G WWAN Module
Brand Name	Foxconn
Model Name	T99W373
FCC ID	2AQ68T99W373
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 29: 717 MHz ~ 728 MHz(Rx only) LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz, 3550 MHz ~ 3600 MHz LTE Band 43: 3600 MHz ~ 3700 MHz LTE Band 46: 5150 MHz ~ 5925 MHz(Rx only) LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n13: 777 MHz ~ 787 MHz 5G NR n14 : 788 MHz ~ 798 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n70 : 1695 MHz ~ 1710 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77 : 3450 MHz ~ 3550 MHz, 3550 MHz ~ 3700 MHz, 3700 MHz ~ 3980 MHz 5G NR n78 : 3450 MHz ~ 3550 MHz, 3550 MHz ~ 3700 MHz, 3700 MHz ~ 3800 MHz
Mode	RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM

There are three different HW of T99W373

Brand	Model	HW
Foxconn	T99W373	WCDMA+LTE+Sub6+mmWave+eSIM
		WCDMA+LTE+Sub6+mmWave w/o eSIM
		WCDMA+LTE+Sub6+mmWave w/o eSim+FPC connector on bottom

Reviewed by: Jason Wang

Report Producer: Paula Chen



2. Maximum RF average output power among production units

	Mode	Maximum Transmit Power Level (dBm)
WCDMA	WCDMA Band 2	24.50
	WCDMA Band 4	24.50
	WCDMA Band 5	24.50
LTE	LTE Band 2	24.00
	LTE Band 4	24.00
	LTE Band 5	24.50
	LTE Band 7	24.00
	LTE Band 12	24.50
	LTE Band 13	24.50
	LTE Band 14	24.50
	LTE Band 17	24.50
	LTE Band 25	24.00
	LTE Band 26	24.50
	LTE Band 30	23.00
	LTE Band 38	24.00
	LTE Band 41_PC3	24.00
	LTE Band 41_PC2	27.00
	LTE Band 42 (3450~3550MHz)	24.00
	LTE Band 42 (3550~3600MHz)	22.00
	LTE Band 43	22.00
	LTE Band 48	22.00
	LTE Band 66	24.00
LTE Band 71	24.00	
FR1	5G NR n2	24.00
	5G NR n5	24.00
	5G NR n7	24.00
	5G NR n12	24.00
	5G NR n13	24.00
	5G NR n14	24.00
	5G NR n25	24.00
	5G NR n26	24.00
	5G NR n30	23.00
	5G NR n38	24.00
	5G NR n41_PC3	24.00
	5G NR n41_PC2	27.00
	5G NR n48	22.00
	5G NR n66	24.00
	5G NR n70	24.00
	5G NR n71	24.00
	5G NR n77 (3450~3550MHz) (3700~3980MHz)	27.00
5G NR n77 (3550~3700MHz)	22.00	
5G NR n78 (3450~3550MHz) (3700~3800MHz)	27.00	
5G NR n78 (3550~3700MHz)	22.00	



3. RF Exposure Limit Introduction

According to Part1.1307b, Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th} \text{ (mW)} = ERP_{20cm} (d / 20)^x \text{ for distance } d \leq 20cm$$

$$P_{th} \text{ (mW)} = ERP_{20cm} \text{ for distance } 20cm < d \leq 40cm$$

$$x = -\log_{10} \left(\frac{60}{ERP_{20cm} \sqrt{f}} \right)$$

ERP _{20cm} (mW)	0.3 GHz ≤ f < 1.5 GHz:	2040 f
	1.5 GHz ≤ f ≤ 6 GHz:	3060



4. RF Exposure Evaluation

4.1. Standalone assessment

General Note:

- 1. Pi is mean the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm.
2. Pth is mean the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
3. The distance of 20cm is for this device.
4. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine LTE + NR simultaneous transmission exposure compliance.

Table with 11 columns: Band, Antenna Gain (dBi), Maximum Conducted Power (dBm), Maximum EIRP (dBm), Maximum ERP (dBm), Maximum EIRP (mW), Maximum ERP (mW), Pi (dBm), Pi (mW), RSE EIRP Limit (mW), Part1.1307 option(b) Threshold (mW), Part1.1307 option(b) Pi/Pth. The table lists various LTE and WCDMA bands with their respective parameters and a calculated Pi/Pth ratio. The value 0.269 is highlighted in green for LTE Band 41_PC2.



Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	RSE EIRP Limit (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
5G NR n2	5.90	24.00	29.9	27.75	977.24	595.66	27.75	595.66	2000	3060.000	0.195
5G NR n5	3.50	24.00	27.5	25.35	562.34	342.77	25.35	342.77	7000	1680.960	0.204
5G NR n7	4.30	24.00	28.3	26.15	676.08	412.10	26.15	412.10	2000	3060.000	0.135
5G NR n12	3.10	24.00	27.1	24.95	512.86	312.61	24.95	312.61	3000	1425.960	0.219
5G NR n13	3.40	24.00	27.4	25.25	549.54	334.97	25.25	334.97	3000	1585.080	0.211
5G NR n14	3.40	24.00	27.4	25.25	549.54	334.97	25.25	334.97	3000	1607.520	0.208
5G NR n25	5.90	24.00	29.9	27.75	977.24	595.66	27.75	595.66	2000	3060.000	0.195
5G NR n26	3.50	24.00	27.5	25.35	562.34	342.77	25.35	342.77	7000	1660.560	0.206
5G NR n30	0.98	23.00	24.0	21.83	250.0	152.41	23.00	199.53	250	3060.000	0.065
5G NR n38	4.30	24.00	28.3	26.15	676.08	412.10	26.15	412.10	2000	3060.000	0.135
5G NR n41_PC3	4.30	24.00	28.3	26.15	676.08	412.10	26.15	412.10	2000	3060.000	0.135
5G NR n41_PC2	4.30	27.00	31.3	29.15	1348.96	822.24	29.15	822.24	2000	3060.000	0.269
5G NR n48	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	1000	3060.000	0.052
5G NR n66	5.50	24.00	29.5	27.35	891.25	543.25	27.35	543.25	1000	3060.000	0.178
5G NR n70	6.00	24.00	30.0	27.85	1000.00	609.54	27.85	609.54	3000	3060.000	0.199
5G NR n71	3.40	24.00	27.4	25.25	549.54	334.97	25.25	334.97	3000	1352.520	0.248
5G NR n77 (3450-3550MHz) (3700-3980MHz)	3.00	27.00	30.0	27.85	1000.00	609.54	27.85	609.54	1000	3060.000	0.199
5G NR n77 (3550-3700MHz)	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	200	3060.000	0.052
5G NR n78 (3450-3550MHz) (3700-3800MHz)	3.00	27.00	30.0	27.85	1000.00	609.54	27.85	609.54	1000	3060.000	0.199
5G NR n78 (3550-3700MHz)	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	200	3060.000	0.052

Maximum LTE Pi/Pth Ratio	Maximum 5G NR Pi/Pth Ratio	Σ (Pi/Pth Ratio) of LTE + 5G NR
0.269	0.269	0.538

4.2. Collocated assessment

General Note:

1. This MPE analysis is applicable to any collocated transmitters with transmit power for WLAN is less than or equal to 20dBm and for Bluetooth is less than or equal to 15dBm.
2. A maximum antenna gain of 5 dBi for WLAN /BT has been assumed for all collocated antennas.
3. Either MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluated_k* term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1).
4. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine LTE + NR + WLAN + BT simultaneous transmission exposure compliance.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1 \quad (C.1)$$

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
WCDMA Band 2	5.20	24.50	29.7	27.55	933.25	568.85	27.55	568.85	3060.000	0.186
WCDMA Band 4	5.00	24.50	29.5	27.35	891.25	543.25	27.35	543.25	3060.000	0.178
WCDMA Band 5	2.80	24.50	27.3	25.15	537.03	327.34	25.15	327.34	1680.960	0.195
LTE Band 2	5.20	24.00	29.2	27.05	831.76	506.99	27.05	506.99	3060.000	0.166
LTE Band 4	5.00	24.00	29.0	26.85	794.33	484.17	26.85	484.17	3060.000	0.158
LTE Band 5	2.80	24.50	27.3	25.15	537.03	327.34	25.15	327.34	1680.960	0.195
LTE Band 7	3.60	24.00	27.6	25.45	575.44	350.75	25.45	350.75	3060.000	0.115
LTE Band 12	2.30	24.50	26.8	24.65	478.63	291.74	24.65	291.74	1425.960	0.205
LTE Band 13	2.60	24.50	27.1	24.95	512.86	312.61	24.95	312.61	1585.080	0.197
LTE Band 14	2.70	24.50	27.2	25.05	524.81	319.89	25.05	319.89	1607.520	0.199
LTE Band 17	2.30	24.50	26.8	24.65	478.63	291.74	24.65	291.74	1436.160	0.203
LTE Band 25	5.20	24.00	29.2	27.05	831.76	506.99	27.05	506.99	3060.000	0.166
LTE Band 26	2.80	24.50	27.3	25.15	537.03	327.34	25.15	327.34	1660.560	0.197
LTE Band 30	0.98	23.00	24.0	21.83	250.0	152.41	23.00	199.53	3060.000	0.065
LTE Band 38	3.60	24.00	27.6	25.45	575.44	350.75	25.45	350.75	3060.000	0.115
LTE Band 41_PC3	3.60	24.00	27.6	25.45	575.44	350.75	25.45	350.75	3060.000	0.115
LTE Band 41_PC2	3.60	27.00	30.6	28.45	1148.15	699.84	28.45	699.84	3060.000	0.229
LTE Band 42 (3450~3550MHz)	6.00	24.00	30.0	27.85	1000.00	609.54	27.85	609.54	3060.000	0.199
LTE Band 42 (3550~3600MHz)	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	3060.000	0.052
LTE Band 43	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	3060.000	0.052
LTE Band 48	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	3060.000	0.052
LTE Band 66	5.00	24.00	29.0	26.85	794.33	484.17	26.85	484.17	3060.000	0.158
LTE Band 71	2.70	24.00	26.7	24.55	467.74	285.10	24.55	285.10	1352.520	0.211



Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
5G NR n2	5.20	24.00	29.2	27.05	831.76	506.99	27.05	506.99	3060.000	0.166
5G NR n5	2.80	24.00	26.8	24.65	478.63	291.74	24.65	291.74	1680.960	0.174
5G NR n7	3.60	24.00	27.6	25.45	575.44	350.75	25.45	350.75	3060.000	0.115
5G NR n12	2.30	24.00	26.3	24.15	426.58	260.02	24.15	260.02	1425.960	0.182
5G NR n13	2.60	24.00	26.6	24.45	457.09	278.61	24.45	278.61	1585.080	0.176
5G NR n14	2.70	24.00	26.7	24.55	467.74	285.10	24.55	285.10	1607.520	0.177
5G NR n25	5.20	24.00	29.2	27.05	831.76	506.99	27.05	506.99	3060.000	0.166
5G NR n26	2.80	24.00	26.8	24.65	478.63	291.74	24.65	291.74	1660.560	0.176
5G NR n30	0.98	23.00	24.0	21.83	250.0	152.41	23.00	199.53	3060.000	0.065
5G NR n38	3.60	24.00	27.6	25.45	575.44	350.75	25.45	350.75	3060.000	0.115
5G NR n41_PC3	3.60	24.00	27.6	25.45	575.44	350.75	25.45	350.75	3060.000	0.115
5G NR n41_PC2	3.60	27.00	30.6	28.45	1148.15	699.84	28.45	699.84	3060.000	0.229
5G NR n48	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	3060.000	0.052
5G NR n66	5.00	24.00	29.0	26.85	794.33	484.17	26.85	484.17	3060.000	0.158
5G NR n70	5.50	24.00	29.5	27.35	891.25	543.25	27.35	543.25	3060.000	0.178
5G NR n71	2.70	24.00	26.7	24.55	467.74	285.10	24.55	285.10	1352.520	0.211
5G NR n77 (3450~3550MHz) (3700~3980MHz)	3.00	27.00	30.0	27.85	1000.00	609.54	27.85	609.54	3060.000	0.199
5G NR n77 (3550~3700MHz)	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	3060.000	0.052
5G NR n78 (3450~3550MHz) (3700~3800MHz)	3.00	27.00	30.0	27.85	1000.00	609.54	27.85	609.54	3060.000	0.199
5G NR n78 (3550~3700MHz)	1.00	22.00	23.0	20.85	199.53	121.62	22.00	158.49	3060.000	0.052
WLAN2.4GHz Band	5.0	20.00	25.0	22.85	316.23	192.75	22.85	192.75	3060.000	0.063
WLAN5GHz Band	5.0	20.00	25.0	22.85	316.23	192.75	22.85	192.75	3060.000	0.063
WLAN6GHz Band	5.0	20.00	25.0	22.85	316.23	192.75	22.85	192.75	3060.000	0.063
Bluetooth	5.0	15.00	20.0	17.85	100.00	60.95	17.85	60.95	3060.000	0.020

Maximum LTE Pi/Pth Ratio	Maximum 5G NR Pi/Pth Ratio	WLAN Pi/Pth Ratio	Bluetooth Pi/Pth Ratio	Σ (P/Pth Ratio) of LTE + 5G NR + WLAN + Bluetooth
0.229	0.229	0.063	0.020	0.541



Conclusion:

Based on FCC 47 CFR §1.1307, the analysis concludes that this product when transmitting in standalone within a host device, is compliant with the FCC RF exposure requirements in mobile exposure condition, provided the conducted power and antenna gain do not exceed the limits for each given frequency band per wireless technology as follow table:

Devoce	Technology	Band	Maximum Conducted Power (dBm)	Stanalone Allow Antenna Gain (dBi)	Collocated Allow Antenna Gain (dBi)
T99W373	UMTS	WCDMA Band 2	24.50	5.90	5.20
		WCDMA Band 4	24.50	5.50	5.00
		WCDMA Band 5	24.50	3.50	2.80
	LTE	LTE Band 2	24.00	5.90	5.20
		LTE Band 4	24.00	5.50	5.00
		LTE Band 5	24.50	3.50	2.80
		LTE Band 7	24.00	4.30	3.60
		LTE Band 12	24.50	3.10	2.30
		LTE Band 13	24.50	3.40	2.60
		LTE Band 14	24.50	3.40	2.70
		LTE Band 17	24.50	3.00	2.30
		LTE Band 25	24.00	5.90	5.20
		LTE Band 26	24.50	3.50	2.80
		LTE Band 30	23.00	0.98	0.98
		LTE Band 38	24.00	4.30	3.60
		LTE Band 41_PC3	24.00	4.30	3.60
		LTE Band 41_PC2	27.00	4.30	3.60
		LTE Band 42 (3450~3550MHz)	24.00	6.00	6.00
		LTE Band 42 (3550~3600MHz)	22.00	1.00	1.00
		LTE Band 43	22.00	1.00	1.00
		LTE Band 48	22.00	1.00	1.00
		LTE Band 66	24.00	5.50	5.00
		LTE Band 71	24.00	3.40	2.70
	5G NR	5G NR n2	24.00	5.90	5.20
		5G NR n5	24.00	3.50	2.80
		5G NR n7	24.00	4.30	3.60
		5G NR n12	24.00	3.10	2.30
		5G NR n13	24.00	3.40	2.60
		5G NR n14	24.00	3.40	2.70
		5G NR n25	24.00	5.90	5.20
		5G NR n26	24.00	3.50	2.80
		5G NR n30	23.00	0.98	0.98
		5G NR n38	24.00	4.30	3.60
		5G NR n41_PC3	24.00	4.30	3.60
		5G NR n41_PC2	27.00	4.30	3.60
		5G NR n48	22.00	1.00	1.00
5G NR n66		24.00	5.50	5.00	
5G NR n70		24.00	6.00	5.50	
5G NR n71		24.00	3.40	2.70	
5G NR n77 (3450~3550MHz) (3700~3980MHz)		27.00	3.00	3.00	
5G NR n77 (3550~3700MHz)	22.00	1.00	1.00		
5G NR n78 (3450~3550MHz) (3700~3800MHz)	27.00	3.00	3.00		
5G NR n78 (3550~3700MHz)	22.00	1.00	1.00		