

TEST REPORT

Reference No...... : WTH24D12303194W003
FCC ID : 2BM6V-SWOBBEEONE
Applicant..... : Swobbee US Corp.
Address..... : C/O NEWLAB, 19 MORRIS AVENUE, BROOKLYN, New York, United States, 11205
Manufacturer : Swobbee US Corp.
Address..... : C/O NEWLAB, 19 MORRIS AVENUE, BROOKLYN, New York, United States, 11205
Product..... : Rechargeable Li-ion Battery
Model(s) : Swobbee ONE
Standards..... : FCC CFR47 Part 22 Subpart H
FCC CFR47 Part 24 Subpart E
FCC CFR47 Part 27
FCC CFR47 Part 90
Date of Receipt sample : 2025-01-21
Date of Test : 2025-02-25 to 2025-02-26
Date of Issue..... : 2025-03-11
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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3 Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTH24D12303194W003	2025-01-21	2025-02-20 to 2025-02-26	2025-03-11	Original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	Rechargeable Li-ion Battery
Model(s):	Swobbee ONE
Model Description:	N/A
Test Sample No.:	1-1/1
LTE Band(s):	FDD Band 2/4/5/12/13/14/66/71
Hardware Version:	V1.2
Software Version:	V1.12(Test_V1.04)
Storage Location:	Internal Storage
Note:	N/A

4.2 Details of E.U.T.

Operation Frequency:	LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz LTE Band 5: 824~849MHz LTE Band 12: 699~716MHz LTE Band 13: 777~787MHz LTE Band 14: 788~798MHz LTE Band 66: 1710~1780MHz LTE Band 71: 663~698MHz
Max. RF output power:	LTE Band 2: 25.5dBm LTE Band 4: 24.5dBm LTE Band 5: 24.5dBm LTE Band 12: 25dBm LTE Band 13: 24.5dBm LTE Band 14: 24.5dBm LTE Band 66: 24.5dBm LTE Band 71: 25.0dBm
ERP/EIRP:	LTE Band 2: 28.5dBm LTE Band 4: 27.5dBm LTE Band 5: 25.35dBm LTE Band 12: 25.85dBm LTE Band 13: 25.35dBm LTE Band 14: 25.35dBm LTE Band 66: 27.5dBm LTE Band 71: 25.85dBm
Type of Modulation:	LTE: QPSK, 16QAM
Antenna installation:	LTE: FPC ANT
Antenna Gain:	LTE Band 2: 3dBi LTE Band 4: 3dBi LTE Band 5: 3dBi LTE Band 12: 3dBi LTE Band 13: 3dBi

LTE Band 14: 3dBi

LTE Band 66: 3dBi

LTE Band 71: 3dBi

Note:

#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings: 48V, 15Ah, 720Wh

Type of Emission:

LTE Band 2 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)
LTE Band 2 3MHz: 2M72G7D(QPSK), 2M72W7D(16QAM)
LTE Band 2 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 2 10 MHz: 8M92G7D(QPSK), 8M92W7D(16QAM)
LTE Band 2 15MHz: 13M5G7D(QPSK), 13M5W7D(16QAM)
LTE Band 2 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)
LTE Band 4 1.4MHz: 1M08G7D(QPSK), 1M08W7D(16QAM)
LTE Band 4 3MHz: 2M73G7D(QPSK), 2M73W7D(16QAM)
LTE Band 4 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 4 10 MHz: 8M92G7D(QPSK), 8M92W7D(16QAM)
LTE Band 4 15MHz: 13M5G7D(QPSK), 13M5W7D(16QAM)
LTE Band 4 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)
LTE Band 5 1.4MHz: 1M11G7D(QPSK), 1M10W7D(16QAM)
LTE Band 5 3MHz: 2M80G7D(QPSK), 2M76W7D(16QAM)
LTE Band 5 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 5 10 MHz: 8M91G7D(QPSK), 8M90W7D(16QAM)
LTE Band 12 1.4MHz: 1M09G7D(QPSK), 1M08W7D(16QAM)
LTE Band 12 3MHz: 2M72G7D(QPSK), 2M72W7D(16QAM)
LTE Band 12 5MHz: 4M45G7D(QPSK), 4M46W7D(16QAM)
LTE Band 12 10MHz: 8M94G7D(QPSK), 8M95W7D(16QAM)
LTE Band 13 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 13 10 MHz: 8M91G7D(QPSK), 8M91W7D(16QAM)
LTE Band 14 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM)
LTE Band 14 10 MHz: 8M90G7D(QPSK), 8M89W7D(16QAM)
LTE Band 66 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)
LTE Band 66 3MHz: 2M73G7D(QPSK), 2M73W7D(16QAM)
LTE Band 66 5MHz: 4M50G7D(QPSK), 4M50W7D(16QAM)
LTE Band 66 10 MHz: 8M91G7D(QPSK), 8M91W7D(16QAM)
LTE Band 66 15MHz: 13M4G7D(QPSK), 13M4W7D(16QAM)
LTE Band 66 20MHz: 17M8G7D(QPSK), 17M9W7D(16QAM)
LTE Band 71 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM)
LTE Band 71 10 MHz: 8M90G7D(QPSK), 8M90W7D(16QAM)
LTE Band 71 15 MHz: 13M4G7D(QPSK), 13M4W7D(16QAM)
LTE Band 71 20 MHz: 17M8G7D(QPSK), 17M8W7D(16QAM)

4.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Support Band	Test Mode BW(MHz)	Channel Frequency	Channel Number
LTE Band 2	1.4	1850.7 MHz	18607
		1880.0 MHz	18900
		1909.3 MHz	19193
	3	1851.5 MHz	18615
		1880.0 MHz	18900
		1908.5 MHz	19185
	5	1852.5 MHz	18625
		1880.0 MHz	18900
		1907.5 MHz	19175
	10	1855.0 MHz	18650
		1880.0 MHz	18900
		1905.0 MHz	19150
	15	1857.5 MHz	18675
		1880.0 MHz	18900
		1902.5 MHz	19125
LTE Band 4	1.4	1860.0 MHz	18700
		1880.0 MHz	18900
		1900.0 MHz	19100
	3	1710.7 MHz	19957
		1732.5 MHz	20175
		1754.3 MHz	20393
	5	1711.5 MHz	19965
		1732.5 MHz	20175
		1753.5 MHz	20385
	10	1712.5 MHz	19975
		1732.5 MHz	20175
		1752.5 MHz	20375
	15	1715.0 MHz	20000
		1732.5 MHz	20175
		1750.0 MHz	20350
LTE Band 5	1.4	1717.5 MHz	20025
		1732.5 MHz	20175
		1747.5 MHz	20325
		1720.0 MHz	20050
		1732.5 MHz	20175
	1.4	1745.0 MHz	20300
		824.7 MHz	20407
		836.5 MHz	20525

	3	848.3 MHz	20643
		825.5 MHz	20415
		836.5 MHz	20525
		847.5 MHz	20635
	5	826.5 MHz	20425
		836.5 MHz	20525
		846.5 MHz	20625
	10	829.0 MHz	20450
		836.5 MHz	20525
		844.0 MHz	20600
LTE Band 12	1.4	699.7 MHz	23017
		707.5 MHz	23095
		715.3 MHz	23173
	3	700.5 MHz	23025
		707.5 MHz	23095
		714.5 MHz	23165
	5	701.5 MHz	23035
		707.5 MHz	23095
		713.5 MHz	23155
	10	704.0 MHz	23060
		707.5 MHz	23095
		711.0 MHz	23130
LTE Band 13	5	779.5 MHz	23205
		782.0 MHz	23230
		784.5 MHz	23255
	10	782.0 MHz	23230
LTE Band 14	5	790.5 MHz	23305
		793.0 MHz	23330
		795.5 MHz	23355
	10	793.0 MHz	23330
LTE Band 66	1.4	1710.7MHz	131979
		1744.9 MHz	132321
		1779.2 MHz	132664
	3	1711.5 MHz	131987
		1744.9 MHz	132321
		1778.4MHz	132656
	5	1712.5 MHz	131997
		1744.9 MHz	132321
		1777.4 MHz	132646
	10	1715.0 MHz	132022
		1744.9 MHz	132321
		1774.9 MHz	132621
	15	1722.5 MHz	132097

	20	1744.9 MHz	132321
		1767.4 MHz	132546
		1720.0 MHz	132072
		1744.9 MHz	132321
		1759.9 MHz	132471
LTE Band 71	5	665.5 MHz	133147
		680.5 MHz	133297
		695.5 MHz	133447
	10	668 MHz	133172
		680.5MHz	133297
		693 MHz	133422
	15	670.5 MHz	133197
		680.5 MHz	133297
		690.5 MHz	133397
	20	673 MHz	133222
		683 MHz	133322
		688 MHz	133372
Remark: All mode(s) were tested and the worst data was recorded.			

4.4 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

5 Test Summary

Test Items	Test Requirement	Result
RF Output Power	2.1046 22.913 (a) 24.232 (c) 27.50(h.2) 27.50(d.4) Part 90.542(a)	PASS*
ERP/EIRP Power	22.913(a) 24.232(c) 27.50(b) 27.50(c) 27.50(d) 27.50(h) Part 90.542(a)	PASS
Peak-to-Average Ratio	24.232 (d) 27.50(d)	PASS*
Bandwidth	2.1049 22.905 22.917 24.238 27.53(a)	PASS*
Spurious Emissions at Antenna Terminal	2.1051 22.917 (a) 24.238 (a) 27.53(h) 27.53(m)(4) Part 90.543(e)	PASS*
Field Strength of Spurious Radiation	2.1053 22.917 (a) 24.238 (a) 27.53(h) 27.53(m)(4) Part 90.543(e)	PASS
Out of band emission	22.917 (a) 24.238 (a) 27.53(h) 27.53(m)(4) Part 90.543(e)	PASS*

Frequency Stability	2.1055 22.355 24.235 27.5(h) 27.54	PASS*
Maximum Permissible Exposure (SAR)	1.1307 2.1091	PASS*
*: The test result refer to the report (FCC ID: 2AJYU-8XS0004).		

6 Equipment Used during Test

6.1 Equipments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date	Calibration Due Date
3m Semi-anechoic Chamber for Radiation Emissions 1#						
1	Spectrum Analyzer	R&S	FSP30	100091	2024-04-22	2025-04-21
2	Amplifier	Agilent	8447D	2944A10178	2024-07-18	2025-07-17
3	Tri-log Broadband Antenna	SCHWARZBECK	VULB9163	336	2024-07-21	2025-07-20
4	Coaxial Cable	Top	TYPE16(13M)	-	2024-04-22	2025-04-21
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120D	667	2024-01-23 2025-01-17	2025-01-22 2026-01-16
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2024-07-18	2025-07-17
7	Broadband Preamplifier	COMPLIANCE	PAP-1G18	2004	2024-07-18	2025-07-17
8	Coaxial Cable	Top	ZT26-NJ-NJ-8M/FA	-	2024-04-22	2025-04-21
9	Microwave Amplifier	SCHWARZBECK	BBV 9721	100472	2024-07-18	2025-07-17
10	Coaxial Cable	Top	ZT40-2.92J-2.92J-2.0M	17100919	2024-04-22	2025-04-21
3m Semi-anechoic Chamber for Radiation Emissions 2#						
1	Test Receiver	R&S	ESCI	101296	2024-04-22	2025-04-21
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2024-11-04	2025-11-03
3	Active Loop Antenna	Com-Power	AL-130R	10160007	2024-04-27	2025-04-26
4	Amplifier	ANRITSU	MH648A	M43381	2024-04-22	2025-04-21
5	Cable	HUBER+SUHNER	CBL2	525178	2024-04-22	2025-04-21
RF Conducted Testing						
1	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024-07-18	2025-07-17
2	Universal Radio Communication Tester	R&S	CMW 500	127818	2024-04-22	2025-04-21

Test Software:

Test Item	Software name	Software version
Radiated Emission(3m)	EZ-EMC	EZ-EMC(RA-03A1-1)

6.2 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission	± 3.64 dB(AC mains 150KHz~30MHz)
Radiated Spurious Emissions	± 5.08 dB (Bilog antenna 30M~1000MHz)
	± 5.47 dB (Horn antenna 1000M~25000MHz)
Radio Frequency	± 1 x 10 ⁻⁷ Hz
RF Power	± 0.42 dB
RF Power Density	± 0.7dB
Conducted Spurious Emissions	± 2.76 dB (9kHz~26500MHz)
Confidence interval: 95%. Confidence factor:k=2	

7 ERP&EIRP

Test Requirement: 22.913(a),24.232(c),27.50(b),27.50(c),27.50(d),27.50(h),Part 90.542(a)

7.1 EUT Operation

Operating Environment :

Temperature: 25.4 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

7.2 Test Procedure

EIRP(dBm)= average power +antenna gain

Band	Antenna Gain (dBi)	Max average power (dBm)	EIRP (dBm)	Limit (W)	Result
LTE B2	3.0	25.5	28.5	2.0	Pass
LTE B4	3.0	24.5	27.5	1.0	Pass
LTE B66	3.0	24.5	27.5	1.0	Pass

ERP(dBm)= average power +antenna gain-2.15(db)

Band	Antenna Gain (dBi)	Max average power (dBm)	ERP (dBm)	Limit (W)	Result
LTE B5	3.0	24.5	25.35	7.0	Pass
LTE B12	3.0	25.0	25.85	3.0	Pass
LTE B13	3.0	24.5	25.35	3.0	Pass
LTE B14	3.0	24.5	25.35	3.0	Pass
LTE B71	3.0	25.0	25.85	3.0	Pass

Note: Max average power (dBm) refer to the report FCC ID: 2AJYU-8XS0004

8 Spurious Radiated Emissions

Test Requirement:	FCC Part 2.1053, 22.917, 24.238, 27.53(h), 27.53(m)(4), Part 90.543(e)
Test Method:	ANSI C63.26:2015 ANSI/TIA-603-E:2016
Test Mode:	TX transmitting

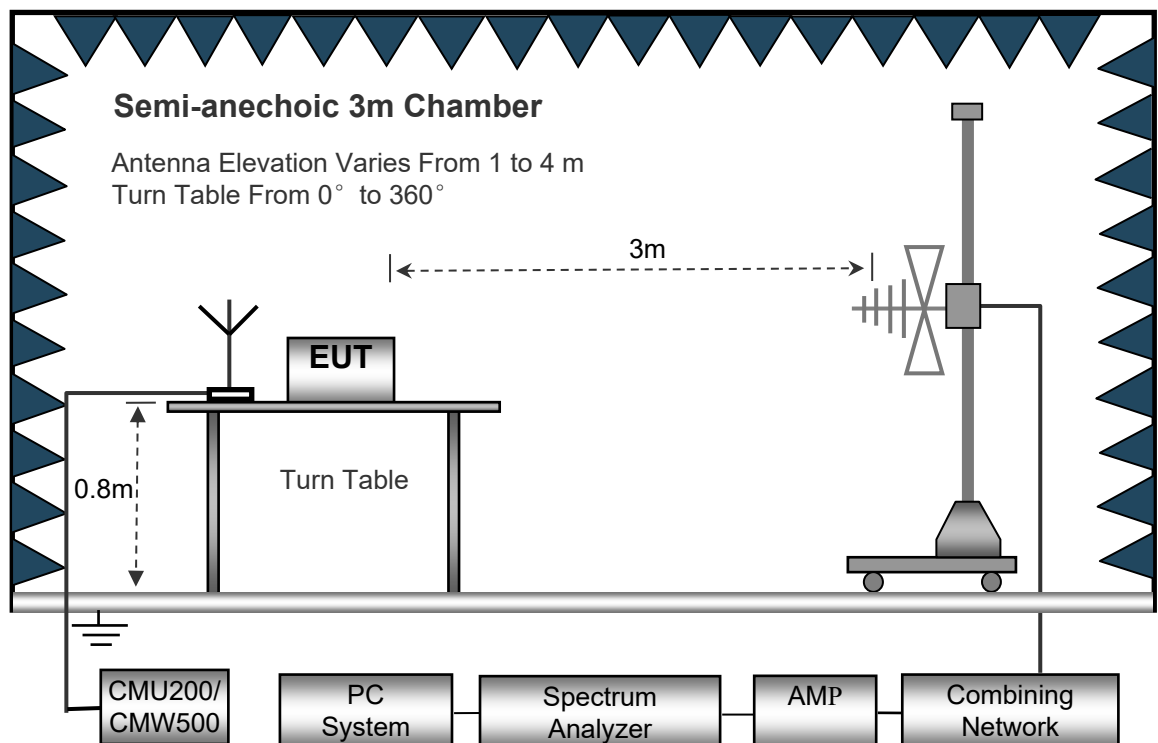
8.1 EUT Operation

Operating Environment :

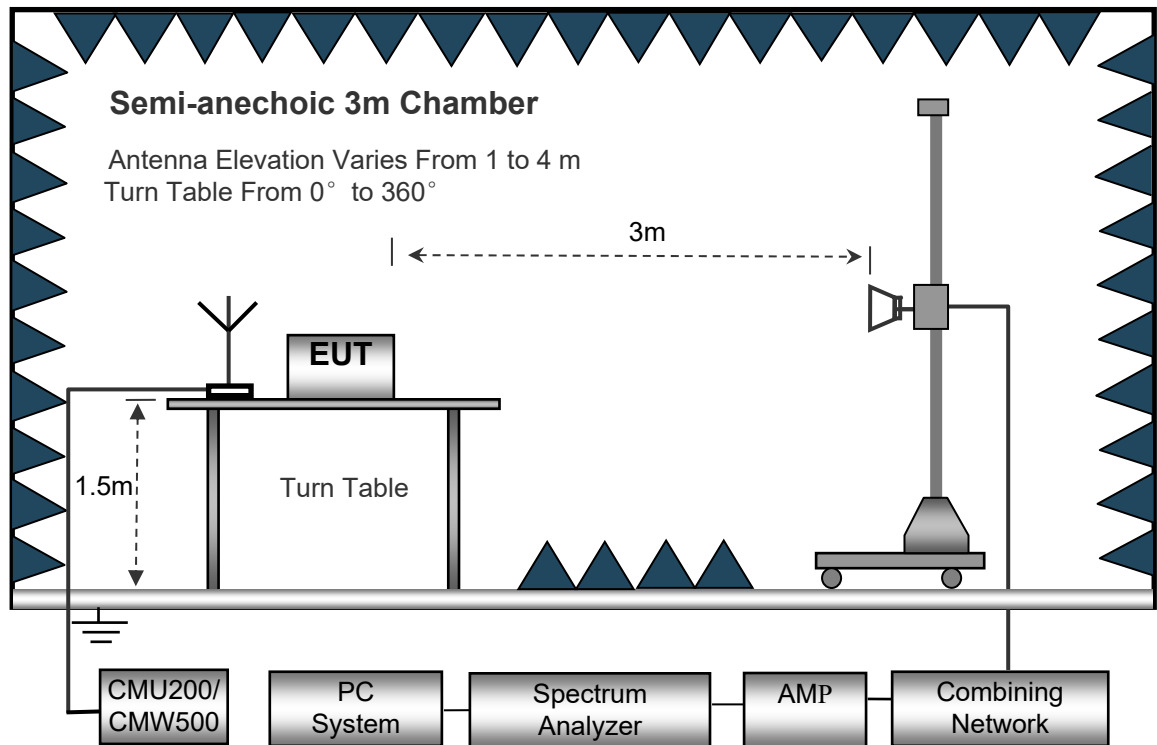
Temperature:	23.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	101.2kPa

8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site. The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



8.3 Spectrum Analyzer Setup

30MHz ~ 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 3MHz
Detector Ave.
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 10Hz

8.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m for below 1GHz and 1.5m for above 1GHz above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from 30MHz up to the tenth harmonic of the highest fundamental frequency.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the Z position. So the data shown was the Z position only.
7. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level
Spurious attenuation limit in dB = $43 + 10 \lg (\text{power out in Watts})$
8. Repeat above procedures until the measurements for all frequencies are completed.

8.5 Summary of Test Results

Remark: Test performed from 30MHz to 10th harmonics with low/middle/high channels, only the worst data were recorded.

LTE Band 2

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 2 Channel 18607										
165.65	55.14	301	1.3	H	-55.37	0.15	0.00	-55.52	-13.00	-42.52
165.65	58.54	356	1.0	V	-49.05	0.15	0.00	-49.20	-13.00	-36.20
3701.40	61.77	103	2.1	H	-49.77	2.37	12.50	-39.64	-13.00	-26.64
3701.40	63.28	175	1.7	V	-46.53	2.37	12.50	-36.40	-13.00	-23.40
5552.10	50.84	33	1.2	H	-58.77	2.86	12.90	-48.73	-13.00	-35.73
5552.10	55.14	336	1.3	V	-53.74	2.86	12.90	-43.70	-13.00	-30.70
LTE BAND 2 Channel 18900										
165.65	55.28	111	1.5	H	-55.23	0.15	0.00	-55.38	-13.00	-42.38
165.65	59.27	112	2.2	V	-48.32	0.15	0.00	-48.47	-13.00	-35.47
3760.00	55.27	106	2.0	H	-56.27	2.37	12.50	-46.14	-13.00	-33.14
3760.00	55.45	151	1.3	V	-54.36	2.37	12.50	-44.23	-13.00	-31.23
5640.00	44.47	283	1.7	H	-65.14	2.86	12.90	-55.10	-13.00	-42.10
5640.00	47.51	78	1.4	V	-61.37	2.86	12.90	-51.33	-13.00	-38.33
LTE BAND 2 Channel 19193										
165.65	56.27	31	1.6	H	-54.24	0.15	0.00	-54.39	-13.00	-41.39
165.65	59.17	237	1.8	V	-48.42	0.15	0.00	-48.57	-13.00	-35.57
3818.60	48.57	306	1.5	H	-62.28	2.37	12.60	-52.05	-13.00	-39.05
3818.60	49.14	249	1.9	V	-60.17	2.37	12.60	-49.94	-13.00	-36.94
5727.90	36.88	194	1.6	H	-72.47	2.86	12.90	-62.43	-13.00	-49.43
5727.90	39.75	41	1.8	V	-68.75	2.86	12.90	-58.71	-13.00	-45.71

LTE Band 4

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 4 Channel 19957										
263.48	48.50	14	1.9	H	-62.01	0.15	0.00	-62.16	-13.00	-49.16
263.48	54.84	15	1.9	V	-52.75	0.15	0.00	-52.90	-13.00	-39.90
3421.40	65.77	318	1.4	H	-47.28	2.34	12.40	-37.22	-13.00	-24.22
3421.40	66.37	345	2.1	V	-44.78	2.34	12.40	-34.72	-13.00	-21.72
5132.10	53.75	205	2.2	H	-55.66	2.79	12.70	-45.75	-13.00	-32.75
5132.10	58.50	322	1.5	V	-50.27	2.79	12.70	-40.36	-13.00	-27.36
LTE BAND 4 Channel 20175										
263.48	49.44	350	1.4	H	-61.07	0.15	0.00	-61.22	-13.00	-48.22
263.48	55.70	243	1.2	V	-51.89	0.15	0.00	-52.04	-13.00	-39.04
3465.00	58.21	196	1.5	H	-54.84	2.37	12.50	-44.71	-13.00	-31.71
3465.00	60.10	122	1.9	V	-51.05	2.37	12.50	-40.92	-13.00	-27.92
5197.50	47.66	283	1.2	H	-61.75	2.79	12.70	-51.84	-13.00	-38.84
5197.50	51.60	46	1.1	V	-57.17	2.79	12.70	-47.26	-13.00	-34.26
LTE BAND 4 Channel 20393										
263.48	48.76	301	1.9	H	-61.75	0.15	0.00	-61.90	-13.00	-48.90
263.48	56.54	213	1.4	V	-51.05	0.15	0.00	-51.20	-13.00	-38.20
3508.60	51.62	95	2.0	H	-61.02	2.37	12.50	-50.89	-13.00	-37.89
3508.60	52.63	261	1.2	V	-58.10	2.37	12.50	-47.97	-13.00	-34.97
5262.90	39.68	40	1.2	H	-69.90	2.81	12.80	-59.91	-13.00	-46.91
5262.90	45.32	243	1.9	V	-63.48	2.81	12.80	-53.49	-13.00	-40.49

LTE Band 5

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 5 Channel 20407										
231.50	60.09	232	1.2	H	-50.42	0.15	0.00	-50.57	-13.00	-37.57
231.50	64.85	128	1.9	V	-42.74	0.15	0.00	-42.89	-13.00	-29.89
1649.40	66.09	248	1.1	H	-46.96	2.34	12.40	-36.90	-13.00	-23.90
1649.40	60.09	24	2.2	V	-51.06	2.34	12.40	-41.00	-13.00	-28.00
2474.10	54.07	314	1.8	H	-55.34	2.79	12.70	-45.43	-13.00	-32.43
2474.10	45.55	281	1.1	V	-63.22	2.79	12.70	-53.31	-13.00	-40.31
LTE BAND 5 Channel 20525										
231.50	59.10	338	1.4	H	-51.41	0.15	0.00	-51.56	-13.00	-38.56
231.50	65.02	54	1.7	V	-42.57	0.15	0.00	-42.72	-13.00	-29.72
1673.00	58.13	173	1.3	H	-54.92	2.37	12.50	-44.79	-13.00	-31.79
1673.00	54.08	186	1.7	V	-57.07	2.37	12.50	-46.94	-13.00	-33.94
2509.50	46.12	131	2.1	H	-63.29	2.79	12.70	-53.38	-13.00	-40.38
2509.50	39.45	350	1.3	V	-69.32	2.79	12.70	-59.41	-13.00	-46.41
LTE BAND 5 Channel 20643										
231.50	58.68	58	2.1	H	-51.83	0.15	0.00	-51.98	-13.00	-38.98
231.50	64.48	178	1.4	V	-43.11	0.15	0.00	-43.26	-13.00	-30.26
1696.60	51.90	10	1.5	H	-60.74	2.37	12.50	-50.61	-13.00	-37.61
1696.60	47.27	107	1.1	V	-63.46	2.37	12.50	-53.33	-13.00	-40.33
2544.90	39.10	249	1.3	H	-70.48	2.81	12.80	-60.49	-13.00	-47.49
2544.90	33.41	279	2.0	V	-75.39	2.81	12.80	-65.40	-13.00	-52.40

LTE Band 12

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 12 Channel 23017										
233.48	60.04	151	1.4	H	-50.47	0.15	0.00	-50.62	-13.00	-37.62
233.48	63.12	56	1.4	V	-44.47	0.15	0.00	-44.62	-13.00	-31.62
1399.40	66.73	288	2.0	H	-46.32	2.34	12.40	-36.26	-13.00	-23.26
1399.40	68.19	35	1.6	V	-42.96	2.34	12.40	-32.90	-13.00	-19.90
2099.10	54.43	127	1.6	H	-54.98	2.79	12.70	-45.07	-13.00	-32.07
2099.10	59.68	243	2.2	V	-49.09	2.79	12.70	-39.18	-13.00	-26.18
LTE BAND 12 Channel 23095										
233.48	59.22	178	1.2	H	-51.29	0.15	0.00	-51.44	-13.00	-38.44
233.48	63.37	254	1.5	V	-44.22	0.15	0.00	-44.37	-13.00	-31.37
1415.00	60.37	47	1.3	H	-52.68	2.37	12.50	-42.55	-13.00	-29.55
1415.00	60.60	131	1.1	V	-50.55	2.37	12.50	-40.42	-13.00	-27.42
2122.50	47.87	110	1.6	H	-61.54	2.79	12.70	-51.63	-13.00	-38.63
2122.50	53.49	49	1.6	V	-55.28	2.79	12.70	-45.37	-13.00	-32.37
LTE BAND 12 Channel 23173										
233.48	59.88	231	2.1	H	-50.63	0.15	0.00	-50.78	-13.00	-37.78
233.48	62.86	173	2.2	V	-44.73	0.15	0.00	-44.88	-13.00	-31.88
1430.60	54.24	275	1.9	H	-58.40	2.37	12.50	-48.27	-13.00	-35.27
1430.60	53.00	205	1.9	V	-57.73	2.37	12.50	-47.60	-13.00	-34.60
2145.90	40.12	162	1.6	H	-69.46	2.81	12.80	-59.47	-13.00	-46.47
2145.90	47.08	292	1.1	V	-61.72	2.81	12.80	-51.73	-13.00	-38.73

LTE Band 13

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 13 Channel 23205										
263.79	60.84	201	2.2	H	-49.67	0.15	0.00	-49.82	-13.00	-36.82
263.79	65.98	210	1.7	V	-41.61	0.15	0.00	-41.76	-13.00	-28.76
1559.00	66.74	226	1.5	H	-50.31	2.34	12.40	-40.25	-13.00	-27.25
1559.00	65.64	205	1.7	V	-45.51	2.34	12.40	-35.45	-13.00	-22.45
2338.50	54.44	300	2.0	H	-54.97	2.79	12.70	-45.06	-13.00	-32.06
2338.50	59.36	318	1.7	V	-49.41	2.79	12.70	-39.50	-13.00	-26.50
LTE BAND 13 Channel 23230										
263.79	61.82	66	2.0	H	-48.69	0.15	0.00	-48.84	-13.00	-35.84
263.79	65.29	188	1.0	V	-42.30	0.15	0.00	-42.45	-13.00	-29.45
1564.00	60.24	60	1.8	H	-52.81	2.37	12.50	-42.68	-13.00	-29.68
1564.00	58.84	327	1.8	V	-52.31	2.37	12.50	-42.18	-13.00	-29.18
2346.00	48.42	324	1.5	H	-60.99	2.79	12.70	-51.08	-13.00	-38.08
2346.00	52.52	177	2.1	V	-56.25	2.79	12.70	-46.34	-13.00	-33.34
LTE BAND 13 Channel 23255										
263.79	62.63	353	1.2	H	-47.88	0.15	0.00	-48.03	-13.00	-35.03
263.79	66.27	249	1.8	V	-41.32	0.15	0.00	-41.47	-13.00	-28.47
1569.00	53.65	11	1.5	H	-58.99	2.37	12.50	-48.86	-13.00	-35.86
1569.00	52.10	126	1.1	V	-58.63	2.37	12.50	-48.50	-13.00	-35.50
2353.50	41.46	13	1.4	H	-68.12	2.81	12.80	-58.13	-13.00	-45.13
2353.50	44.87	12	1.2	V	-63.93	2.81	12.80	-53.94	-13.00	-40.94

LTE Band 14

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 14 Channel 23305										
223.12	61.17	193	1.1	H	-49.34	0.15	0.00	-49.49	-13.00	-36.49
223.12	65.77	239	1.3	V	-41.82	0.15	0.00	-41.97	-13.00	-28.97
1581.00	56.29	283	1.3	H	-60.76	2.34	12.40	-50.70	-40.00	-10.70
1581.00	50.95	36	1.4	V	-60.20	2.34	12.40	-50.14	-40.00	-10.14
2371.50	53.70	303	2.1	H	-55.71	2.79	12.70	-45.80	-13.00	-32.80
2371.50	58.98	172	1.2	V	-49.79	2.79	12.70	-39.88	-13.00	-26.88
LTE BAND 14 Channel 23330										
223.12	61.39	216	1.2	H	-49.12	0.15	0.00	-49.27	-13.00	-36.27
223.12	64.85	168	1.3	V	-42.74	0.15	0.00	-42.89	-13.00	-29.89
1564.00	49.55	259	1.3	H	-63.50	2.37	12.50	-53.37	-40.00	-13.37
1564.00	44.07	296	2.0	V	-67.08	2.37	12.50	-56.95	-40.00	-16.95
2346.00	46.74	46	1.1	H	-62.67	2.79	12.70	-52.76	-13.00	-39.76
2346.00	52.86	295	1.5	V	-55.91	2.79	12.70	-46.00	-13.00	-33.00
LTE BAND 14 Channel 23355										
223.12	61.17	221	1.5	H	-49.34	0.15	0.00	-49.49	-13.00	-36.49
223.12	65.45	52	1.5	V	-42.14	0.15	0.00	-42.29	-13.00	-29.29
1569.00	43.07	249	1.3	H	-69.57	2.37	12.50	-59.44	-40.00	-19.44
1569.00	37.90	277	1.3	V	-72.83	2.37	12.50	-62.70	-40.00	-22.70
2353.50	40.51	345	1.1	H	-69.07	2.81	12.80	-59.08	-13.00	-46.08
2353.50	46.17	244	1.4	V	-62.63	2.81	12.80	-52.64	-13.00	-39.64

LTE Band 66

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 66 Channel 131979										
263.14	57.88	184	2.0	H	-52.63	0.15	0.00	-52.78	-13.00	-39.78
263.14	61.51	313	1.5	V	-46.08	0.15	0.00	-46.23	-13.00	-33.23
1559.00	69.36	270	2.0	H	-47.69	2.34	12.40	-37.63	-13.00	-24.63
1559.00	69.53	169	1.4	V	-41.62	2.34	12.40	-31.56	-13.00	-18.56
2338.50	52.31	266	1.8	H	-57.10	2.79	12.70	-47.19	-13.00	-34.19
2338.50	57.53	270	2.2	V	-51.24	2.79	12.70	-41.33	-13.00	-28.33
LTE BAND 66 Channel 132321										
263.14	58.05	200	1.7	H	-52.46	0.15	0.00	-52.61	-13.00	-39.61
263.14	61.42	136	1.5	V	-46.17	0.15	0.00	-46.32	-13.00	-33.32
1564.00	62.30	207	1.4	H	-50.75	2.37	12.50	-40.62	-13.00	-27.62
1564.00	62.94	246	2.2	V	-48.21	2.37	12.50	-38.08	-13.00	-25.08
2346.00	44.33	118	1.6	H	-65.08	2.79	12.70	-55.17	-13.00	-42.17
2346.00	50.38	322	2.0	V	-58.39	2.79	12.70	-48.48	-13.00	-35.48
LTE BAND 66 Channel 132664										
263.14	57.25	236	1.2	H	-53.26	0.15	0.00	-53.41	-13.00	-40.41
263.14	61.12	73	2.2	V	-46.47	0.15	0.00	-46.62	-13.00	-33.62
1569.00	54.95	184	1.5	H	-57.69	2.37	12.50	-47.56	-13.00	-34.56
1569.00	55.43	216	1.9	V	-55.30	2.37	12.50	-45.17	-13.00	-32.17
2353.50	43.71	64	1.4	H	-65.87	2.81	12.80	-55.88	-13.00	-42.88
2353.50	50.34	311	2.0	V	-58.46	2.81	12.80	-48.47	-13.00	-35.47

LTE Band 71

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 71 Channel 133147										
263.48	64.34	320	2.2	H	-46.17	0.15	0.00	-46.32	-13.00	-33.32
263.48	45.89	351	1.7	V	-61.70	0.15	0.00	-61.85	-13.00	-48.85
1331.00	69.23	153	1.1	H	-47.82	2.34	12.40	-37.76	-13.00	-24.76
1331.00	69.60	8	1.6	V	-41.55	2.34	12.40	-31.49	-13.00	-18.49
1996.50	51.96	83	1.7	H	-57.45	2.79	12.70	-47.54	-13.00	-34.54
1996.50	56.90	96	2.0	V	-51.87	2.79	12.70	-41.96	-13.00	-28.96
LTE BAND 71 Channel 133297										
263.48	63.48	92	1.6	H	-47.03	0.15	0.00	-47.18	-13.00	-34.18
263.48	46.11	353	1.5	V	-61.48	0.15	0.00	-61.63	-13.00	-48.63
1361.00	62.38	344	1.2	H	-50.67	2.37	12.50	-40.54	-13.00	-27.54
1361.00	62.15	197	1.3	V	-49.00	2.37	12.50	-38.87	-13.00	-25.87
2041.50	44.91	57	2.2	H	-64.50	2.79	12.70	-54.59	-13.00	-41.59
2041.50	49.85	125	2.0	V	-58.92	2.79	12.70	-49.01	-13.00	-36.01
LTE BAND 71 Channel 133447										
263.48	63.41	114	1.2	H	-47.10	0.15	0.00	-47.25	-13.00	-34.25
263.48	46.83	88	1.3	V	-60.76	0.15	0.00	-60.91	-13.00	-47.91
1391.00	54.82	77	1.2	H	-57.82	2.37	12.50	-47.69	-13.00	-34.69
1391.00	56.02	42	1.6	V	-54.71	2.37	12.50	-44.58	-13.00	-31.58
2086.50	44.89	334	1.3	H	-64.69	2.81	12.80	-54.70	-13.00	-41.70
2086.50	49.10	16	1.3	V	-59.70	2.81	12.80	-49.71	-13.00	-36.71

Note: 1) Absolute Level = SG Level - Cable loss + Antenna Gain

2) Margin = Absolute Level - Limit

9 RF Exposure

Remark: refer to MPE test report: WTH24D12303194W004.

10 Photographs of test setup and EUT.

Note: Please refer to Appendix-Swobbee ONE-Photos

===== End of Report =====