FCC RADIO TEST REPORT

FCC ID	:	**RI7FN980M**
Equipment	:	**5G/ LTE M.2 Data Card**
Brand Name	:	**Telit**
Model Name	:	**FN980m**
Marketing Name	:	**FN980m**
Applicant	:	**TELIT COMMUNICATIONS S.P.A. VIA STAZIONE DI PROSECCO 5B - SGONICO -TRIESTE - ITALY**
Manufacturer	:	**TELIT COMMUNICATIONS S.P.A. VIA STAZIONE DI PROSECCO 5B - SGONICO -TRIESTE - ITALY**
Standard	:	**FCC 47 CFR Part 2, 96**

The product was received on Aug. 10, 2020 and testing was started from Aug. 12, 2020 and completed on Aug. 12, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FG031715-03B	01	Initial issue of report	Oct. 23, 2020
FG031715-03B	02	Add description in summary	Nov. 10, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Pass	-
-	§96.41	Peak-to-Average Ratio	Not Required	-
-	§96.41	Effective Isotropic Radiated Power	Not Required	-
-	§2.1049 §96.41	Occupied Bandwidth	Not Required	-
-	§2.1051 §96.41	Conducted Band Edge Measurement	Not Required	-
-	§2.1051 §96.41	Conducted Spurious Emission	Not Required	-
-	§2.1055	Frequency Stability for Temperature & Voltage	Not Required	-
-	§2.1051 §96.41	Radiated Spurious Emission	Not Required	-
-	§96.47	End User Device additional requirement	Not Required	-

Note:

1. Not required means after assessing, test items are not necessary to carry out.
2. LTE Band 43 (3600- 3700MHz, 5/10/15/20MHz bandwidth, CA 5+20/10+20/15+20/20+20MHz bandwidth) is covered by LTE Band 48 (3550- 3700MHz) because it is a subset of LTE Band 48 and they have same output power.
3. This is a variant report which can be referred Product Equality Declaration. All the test cases were performed on original report which can be referred to Sporton Report Number FG031715-01G and FG031715-01H.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang
Report Producer: Yimin Ho

1 General Description

1.1 Product Feature of Equipment Under Test

WCDMA/LTE/5G NR, and GNSS.

Product Specification subjective to this standard	
Antenna Type	**WWAN:** <Ant. 0> Dipole Antenna <Ant. 1> Dipole Antenna <Ant. 2> Dipole Antenna <Ant. 3> Dipole Antenna **GNSS:** **<1559 MHz ~ 1610 MHz>:** <Ant. 3> Dipole Antenna <Ant. 4> Dipole Antenna **<1164 MHz ~ 1215 MHz>:** <Ant. 2> Dipole Antenna

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH05-HY
Test Engineer	Jacky Wang
Temperature	22~25℃
Relative Humidity	44~50%

FCC Designation No.: TW1190

1.4 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26-2015
- ANSI / TIA-603-E
- FCC 47 CFR Part 2, 96
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 940660 D01 Part 96 CBRS Eqpt v01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	43	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v
Remark	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.															

Test Items	Band	Bandwidth (MHz)				Modulation			RB #			Test Channel		
		20+20	15+20	10+20	5+20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	43_CA	v	v	v	v	v	v	v	v	v	v	v	v	v
Remark	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.													

2.2 Frequency List of Low/Middle/High Channels

LTE Band 43 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	43690	44090	44490
	Frequency	3610.0	3650.0	3690.0
15	Channel	43665	44090	44515
	Frequency	3607.5	3650.0	3692.5
10	Channel	43640	44090	44540
	Frequency	3605.0	3650.0	3695.0
5	Channel	43615	44090	44565
	Frequency	3602.5	3650.0	3697.5

LTE Band 43 Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	43690	43991	44292
		Frequency	3610.0	3640.1	3670.2
	SCC	Channel	43888	44189	44490
		Frequency	3629.8	3659.9	3690.0
15 + 20	PCC	Channel	43665	43993	44319
		Frequency	3607.5	3640.3	3672.9
	SCC	Channel	43836	44164	44490
		Frequency	3624.6	3657.4	3690.0
10 + 20	PCC	Channel	43640	43996	44346
		Frequency	3605.0	3640.6	3675.6
	SCC	Channel	43784	44140	44490
		Frequency	3619.4	3655.0	3690.0
5 + 20	PCC	Channel	43615	43998	44373
		Frequency	3602.5	3640.8	3678.3
	SCC	Channel	43732	44115	44490
		Frequency	3614.2	3652.5	3690.0

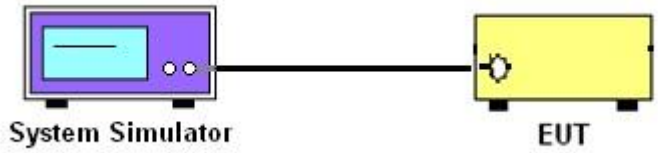
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Description of the Conducted Output Power Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201432821	GSM/GPRS /WCDMA/LTE	Oct. 18, 2019	Aug. 12, 2020	Oct. 17, 2020	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 15, 2019	Aug. 12, 2020	Nov. 14, 2020	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 09, 2019	Aug. 12, 2020	Oct. 08, 2020	Conducted (TH05-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#A	1-18GHz	Jan. 13, 2020	Aug. 12, 2020	Jan. 12, 2021	Conducted (TH05-HY)

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 43 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	21.44	21.35	21.42
20	1	49		21.50	21.34	21.45
20	1	99		21.52	21.39	21.43
20	50	0		20.78	20.65	20.70
20	50	24		20.79	20.62	20.72
20	50	50		20.65	20.55	20.63
20	100	0		20.66	20.60	20.72
20	1	0	16-QAM	20.74	20.77	20.78
20	1	49		20.83	20.70	20.79
20	1	99		20.87	20.75	20.80
20	50	0		19.76	19.74	19.77
20	50	24		19.78	19.66	19.76
20	50	50		19.71	19.62	19.66
20	100	0		19.70	19.67	19.76
20	1	0	64-QAM	19.55	19.55	19.58
20	1	49		19.57	19.46	19.60
20	1	99		19.60	19.50	19.52
20	50	0		18.71	18.71	18.81
20	50	24		18.83	18.68	18.79
20	50	50		18.81	18.61	18.66
20	100	0		18.77	18.68	18.78
15	1	0	QPSK	21.58	21.50	21.53
15	1	37		**21.60**	21.45	21.56
15	1	74		21.58	21.49	21.52
15	36	0		20.76	20.65	20.69
15	36	20		20.81	20.63	20.72
15	36	39		20.79	20.54	20.57
15	75	0		20.79	20.66	20.68
15	1	0	16-QAM	20.88	20.74	20.76
15	1	37		20.90	20.72	20.73
15	1	74		20.95	20.79	20.77
15	36	0		19.76	19.66	19.71
15	36	20		19.73	19.59	19.66
15	36	39		19.77	19.52	19.60
15	75	0		19.81	19.67	19.70
15	1	0	64-QAM	19.64	19.56	19.55
15	1	37		19.67	19.51	19.57
15	1	74		19.74	19.47	19.50
15	36	0		18.84	18.69	18.73
15	36	20		18.84	18.68	18.74
15	36	39		18.83	18.62	18.63
15	75	0		18.85	18.71	18.76

LTE Band 43 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	21.58	21.41	21.45
10	1	25		21.50	21.34	21.41
10	1	49		21.57	21.40	21.35
10	25	0		20.76	20.64	20.52
10	25	12		20.82	20.61	20.60
10	25	25		20.79	20.52	20.50
10	50	0		20.73	20.59	20.61
10	1	0	16-QAM	20.88	20.74	20.81
10	1	25		20.88	20.76	20.75
10	1	49		20.98	20.79	20.75
10	25	0		19.70	19.59	19.59
10	25	12		19.77	19.60	19.61
10	25	25		19.75	19.52	19.53
10	50	0		19.74	19.68	19.64
10	1	0	64-QAM	19.72	19.62	19.63
10	1	25		19.67	19.50	19.54
10	1	49		19.77	19.58	19.56
10	25	0		18.84	18.67	18.76
10	25	12		18.87	18.67	18.76
10	25	25		18.87	18.67	18.68
10	50	0		18.79	18.56	18.72
5	1	0	QPSK	21.46	21.42	21.47
5	1	12		21.44	21.32	21.36
5	1	24		21.55	21.37	21.33
5	12	0		20.72	20.59	20.60
5	12	7		20.73	20.63	20.62
5	12	13		20.68	20.55	20.51
5	25	0		20.69	20.54	20.56
5	1	0	16-QAM	20.92	20.78	20.78
5	1	12		20.89	20.69	20.71
5	1	24		20.98	20.75	20.74
5	12	0		19.79	19.61	19.61
5	12	7		19.77	19.60	19.66
5	12	13		19.78	19.51	19.56
5	25	0		19.75	19.64	19.61
5	1	0	64-QAM	19.71	19.56	19.59
5	1	12		19.68	19.54	19.50
5	1	24		19.76	19.56	19.51
5	12	0		18.85	18.69	18.57
5	12	7		18.87	18.71	18.59
5	12	13		18.89	18.65	18.63
5	25	0		18.81	18.65	18.70

LTE Band 43C_CA Maximum Average Power [dBm]								
BW [MHz]	PCC		SCC		Mod	Lowest	Middle	Highest
	RB Size	RB Offset	RB Size	RB Offset				
20+20	100	0	100	0	QPSK	11.46	11.45	11.23
20+20	1	99	1	0		0.43	0.33	0.14
20+20	0	0	1	99		0.16	0.04	0.16
20+20	100	0	100	0	16-QAM	11.52	11.44	11.22
20+20	1	99	1	0		0.95	0.93	0.56
20+20	0	0	1	99		0.62	0.56	0.41
20+20	100	0	100	0	64-QAM	11.47	11.43	11.26
20+20	1	99	1	0		0.45	0.57	0.08
20+20	0	0	1	99		0.24	0.22	0.03
15+20	75	0	100	0	QPSK	11.42	11.57	11.45
15+20	1	0	1	99		0.91	0.78	0.62
15+20	1	74	1	0		0.34	0.35	0.03
15+20	75	0	100	0	16-QAM	11.34	11.23	11.33
15+20	1	0	1	99		1.41	1.33	1.14
15+20	1	74	1	0		0.90	0.19	0.76
15+20	75	0	100	0	64-QAM	11.29	11.48	11.23
15+20	1	0	1	99		1.11	1.03	0.83
15+20	1	74	1	0		0.59	0.31	0.04
10+20	50	0	100	0	QPSK	11.57	**11.72**	11.49
10+20	1	0	1	99		0.91	0.78	0.61
10+20	1	49	1	0		0.53	0.11	0.37
10+20	50	0	100	0	16-QAM	11.56	11.35	10.87
10+20	1	0	1	99		1.47	1.38	1.12
10+20	1	49	1	0		0.29	0.57	0.47
10+20	50	0	100	0	64-QAM	11.69	11.14	11.44
10+20	1	0	1	99		1.11	1.05	0.79
10+20	1	49	1	0		0.37	0.17	0.15
5+20	25	0	100	0	QPSK	11.52	11.38	11.58
5+20	1	0	1	99		0.90	0.79	0.62
5+20	1	24	1	0		0.22	0.24	0.12
5+20	25	0	100	0	16-QAM	11.48	11.66	11.25
5+20	1	0	1	99		1.37	1.29	1.17
5+20	1	24	1	0		0.84	0.34	0.24
5+20	25	0	100	0	64-QAM	11.08	11.27	11.48
5+20	1	0	1	99		0.99	1.01	0.82
5+20	1	24	1	0		0.03	0.02	0.19

———THE END———