



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, and 90(S)

The product was received on Aug. 11, 2021 and testing was started from Aug. 30, 2021 and completed on Sep. 16, 2021. 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 333, Taiwan (R.O.C.)



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Appendix A. Test Results of Conducted Test



History of this test report

Report No.	Version	Description	Issued Date
FG031715-09F	01	Initial issue of report	Oct. 01, 2021



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046 §90.635	Conducted Output Power and Effective Radiated Power	Pass	-
-	-	Peak-to-Average Ratio	Not Required	-
-	§2.1049 §90.209	Occupied Bandwidth and 26dB Bandwidth	Not Required	-
-	§2.1051 §90.691	Emission masks – In-band emissions	Not Required	-
-	§2.1051 §90.691	Emission masks – Out of band emissions	Not Required	-
-	§2.1055 §90.213	Frequency Stability for Temperature & Voltage	Not Required	-
-	§2.1053 §90.691	Field Strength of Spurious Radiation	Not Required	-

Remark:

1. Not required means after assessing, test items are not necessary to carry out.
2. 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 FG031715-01F. Based on the original report, the Conducted Output Power test cases were verified. The verify test of Radiated Spurious Emission was assessed in other bands, which can be referred to other bands split report.

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: Avis Chuang

Report Producer: Cindy Liu



1 General Description

1.1 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

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Modification of EUT

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

1.3 Testing Site

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH03-HY
Test Engineer	Bryant Liu
Temperature	23~25°C
Relative Humidity	54~56%

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:

- ♦ FCC 47 CFR Part 2, 90
- ♦ ANSI / TIA-603-E
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ Interim Guidance for Equipment Authorization of Devices with Channel Bandwidths Combined Across Two Contiguous Service Rule Allocations OET/Lab/EACB, June 6, 2013

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.

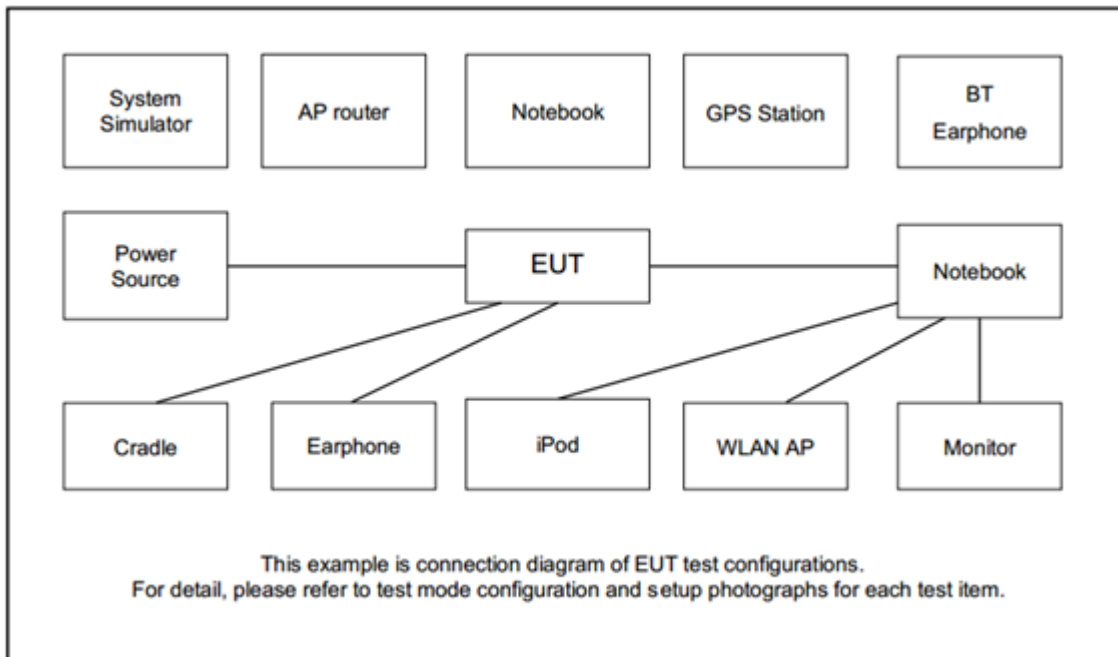
2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level.

Conducted Test Cases	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	26	v	v	v	v	v	-	v	v	v	v	v	v	v	v	v
E.R.P.	26	v	v	v	v	v	-	v	v	v	Max. Power					
Remark	<ol style="list-style-type: none"> The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. LTE Band26 transmit frequency for part22 rule is 824MHz-849MHz, for part90 rule is 814MHz-824MHz. ERP over 15MHz bandwidth complies the ERP limit line of part22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies. 															

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC power Supply	Agilent	E3610A	N/A	N/A	N/A
2.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m



2.4 Frequency List of Low/Middle/High Channels

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
15	Channel	26765	-	-
	Frequency	821.5	-	-
10	Channel	-	26740	-
	Frequency	-	819	-
5	Channel	26715	26740	26765
	Frequency	816.5	819	821.5
3	Channel	26705	26740	26775
	Frequency	815.5	819	822.5
1.4	Channel	26697	26740	26783
	Frequency	814.7	819	823.3

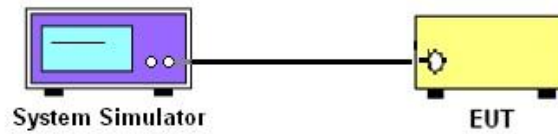
3 Conducted Test Items

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 Measurement and ERP Measurement

3.2.1 Description of the Conducted Output Power Measurement and ERP Measurement

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

The ERP of mobile transmitters must not exceed 100 Watts for LTE Band 26.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through 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
Radio Communication Analyzer	Anritsu	MT8821C	6262025341	LTE FDD/TDD LTE-2CC ULCA/DLCA	Oct. 06, 2020	Aug. 30, 2021~ Sep. 16, 2021	Oct. 05, 2021	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890001	1V~20V 0.5A~5A	Oct. 11, 2020	Aug. 30, 2021~ Sep. 16, 2021	Oct. 10, 2021	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 09, 2021	Aug. 30, 2021~ Sep. 16, 2021	Jan. 08, 2022	Conducted (TH03-HY)



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power & ERP)

LTE Band 26 Maximum Average Power [dBm] (GT - LC = 4.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
15	1	0	QPSK	22.77	-	-	25.12	0.3251
15	1	37		22.73	-	-		
15	1	74		22.65	-	-		
15	36	0		22.00	-	-		
15	36	20		22.06	-	-		
15	36	39		22.10	-	-		
15	75	0		22.00	-	-		
15	1	0	16-QAM	22.28	-	-	24.63	0.2904
15	1	37		22.17	-	-		
15	1	74		22.16	-	-		
15	36	0		21.06	-	-		
15	36	20		21.07	-	-		
15	36	39		21.06	-	-		
15	75	0		20.96	-	-		
15	1	0	64-QAM	21.18	-	-	23.53	0.2254
15	1	37		21.18	-	-		
15	1	74		21.09	-	-		
15	36	0		20.03	-	-		
15	36	20		20.06	-	-		
15	36	39		20.03	-	-		
15	75	0		19.99	-	-		
Limit	ERP < 7W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = 4.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	-	22.63	-	24.98	0.3148
10	1	25		-	22.55	-		
10	1	49		-	22.56	-		
10	25	0		-	21.81	-		
10	25	12		-	21.92	-		
10	25	25		-	21.91	-		
10	50	0		-	21.89	-		
10	1	0	16-QAM	-	22.13	-	24.48	0.2805
10	1	25		-	21.96	-		
10	1	49		-	22.00	-		
10	25	0		-	20.78	-		
10	25	12		-	20.86	-		
10	25	25		-	20.98	-		
10	50	0		-	20.95	-		
10	1	0	64-QAM	-	21.15	-	23.5	0.2239
10	1	25		-	21.09	-		
10	1	49		-	20.99	-		
10	25	0		-	19.88	-		
10	25	12		-	19.91	-		
10	25	25		-	19.91	-		
10	50	0		-	19.96	-		
Limit	ERP < 7W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = 4.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	22.61	22.69	22.67	25.04	0.3192
5	1	12		22.63	22.52	22.58		
5	1	24		22.64	22.61	22.47		
5	12	0		21.83	21.76	21.93		
5	12	7		21.88	21.81	21.99		
5	12	13		21.91	21.83	21.89		
5	25	0		21.92	21.82	21.81		
5	1	0	16-QAM	22.11	22.07	21.86	24.46	0.2793
5	1	12		22.08	22.05	21.99		
5	1	24		21.99	21.94	21.92		
5	12	0		20.94	20.87	20.86		
5	12	7		20.96	21.02	20.86		
5	12	13		20.99	20.95	20.84		
5	25	0		20.93	21.02	20.86		
5	1	0	64-QAM	21.11	20.97	20.97	23.53	0.2254
5	1	12		21.18	21.10	20.95		
5	1	24		21.01	21.05	20.83		
5	12	0		19.90	19.89	19.94		
5	12	7		19.96	20.07	19.94		
5	12	13		19.96	19.85	19.84		
5	25	0		19.99	20.02	19.85		
Limit	ERP < 7W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = 4.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	22.67	22.68	22.60	25.03	0.3184
3	1	8		22.62	22.60	22.51		
3	1	14		22.53	22.61	22.53		
3	8	0		21.97	21.96	21.74		
3	8	4		21.87	21.80	21.79		
3	8	7		22.00	21.96	21.89		
3	15	0		21.82	21.85	21.90		
3	1	0	16-QAM	22.14	22.16	21.95	24.51	0.2825
3	1	8		22.12	22.00	21.88		
3	1	14		21.99	22.00	21.92		
3	8	0		21.05	20.86	20.81		
3	8	4		20.98	21.01	20.83		
3	8	7		20.98	20.91	20.92		
3	15	0		20.76	20.93	20.94		
3	1	0	64-QAM	21.06	20.99	20.97	23.46	0.2218
3	1	8		21.11	21.07	21.06		
3	1	14		21.06	21.01	20.86		
3	8	0		19.88	19.92	19.80		
3	8	4		20.03	19.94	19.92		
3	8	7		19.89	19.96	20.04		
3	15	0		19.86	19.92	19.94		
Limit	ERP < 7W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = 4.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	22.68	22.62	22.63	25.04	0.3192
1.4	1	3		22.69	22.61	22.65		
1.4	1	5		22.61	22.64	22.47		
1.4	3	0		21.85	21.95	21.81		
1.4	3	1		22.02	21.98	21.88		
1.4	3	3		22.06	21.83	21.82		
1.4	6	0		21.93	21.85	21.83		
1.4	1	0	16-QAM	22.08	22.01	22.03	24.47	0.2799
1.4	1	3		22.11	22.12	21.85		
1.4	1	5		22.06	22.05	21.77		
1.4	3	0		21.01	20.93	20.91		
1.4	3	1		20.89	20.98	20.84		
1.4	3	3		21.02	20.89	20.80		
1.4	6	0		20.76	21.03	20.86		
1.4	1	0	64-QAM	21.09	21.00	20.82	23.44	0.2208
1.4	1	3		21.05	20.94	21.00		
1.4	1	5		21.08	20.93	20.88		
1.4	3	0		19.86	19.91	19.99		
1.4	3	1		20.02	20.07	19.79		
1.4	3	3		20.01	19.84	19.85		
1.4	6	0		19.87	19.96	19.80		
Limit	ERP < 7W			Result			Pass	

————THE END————