

Partial FCC RF Test Report

APPLICANT : Telit Communications S.p.A.
EQUIPMENT : 5G NR Module
BRAND NAME : 
MODEL NAME : FN990B40
FCC ID : RI7FN990B40
STANDARD : 47 CFR Part 90(R)
CLASSIFICATION : PCS Licensed Transmitter (PCB)
TEST DATE(S) : Dec. 10, 2024

We, Sporton International Inc. (ShenZhen), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (ShenZhen), the test report shall not be reproduced except in full.

Fly Liang

Approved by: Fly Liang



Sporton International Inc. (ShenZhen)

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site	6
1.5 Test Software	6
1.6 Applied Standards	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Test Mode	7
2.2 Connection Diagram of Test System	7
2.3 Support Unit used in test configuration and system	8
2.4 Frequency List of Low/Middle/High Channels	8
3 RADIATED TEST ITEMS	9
3.1 Measuring Instruments	9
3.2 Test Setup	9
3.3 Test Result of Radiated Test	10
3.4 Radiated Spurious Emission Measurement	11
4 LIST OF MEASURING EQUIPMENT	12
5 MEASUREMENT UNCERTAINTY	13
APPENDIX A. TEST RESULTS OF RADIATED TEST	
APPENDIX B. TEST SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG4N2105C	Rev. 01	Initial issue of report	Jul. 01, 2025
FG4N2105C	Rev. 02	Updated SW Version on Page 5. This report is an updated version, replacing the report issued on Jul. 01, 2025.	Aug. 19, 2025

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
4.4	§2.1053 §90.543 (e)(3) §90.543 (f)	Radiated Spurious Emission	$< 43 + 10 \log_{10}(P[\text{Watts}])$	PASS	Under limit 11.35 dB at 9221.90 MHz

Note: This is a Partial report which only test RSE item for 5G NR bands, the other 5G NR test items will be issued by separate test report.

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

Telit Communications S.p.A.

Via Stazione Di Prosecco 5/B, Trieste 34010, Italy

1.2 Manufacturer

Telit Communications S.p.A.

Via Stazione Di Prosecco 5/B, Trieste 34010, Italy

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	5G NR Module
Brand Name	
Model Name	FN990B40
FCC ID	RI7FN990B40
Tx Frequency	5G NR n14 : 788 MHz ~ 798 MHz
Rx Frequency	5G NR n14 : 758 MHz ~ 768 MHz
SCS / Bandwidth	15kHz : 5MHz / 10MHz
Type of Modulation	DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM)
IMEI Code	351138790003647
HW Version	1.00
SW Version	M0W.003001
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH02-SZ	CN1256	421272

1.5 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH02-SZ	AUDIX	E3	6.2009-8-24a

1.6 Applied Standards

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

- ♦ 47 CFR Part 90(R)
- ♦ ANSI C63.26
- ♦ KDB 971168 D01 Power Meas License Digital Systems v03r01
- ♦ KDB 412172 D01 Determining ERP and EIRP v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

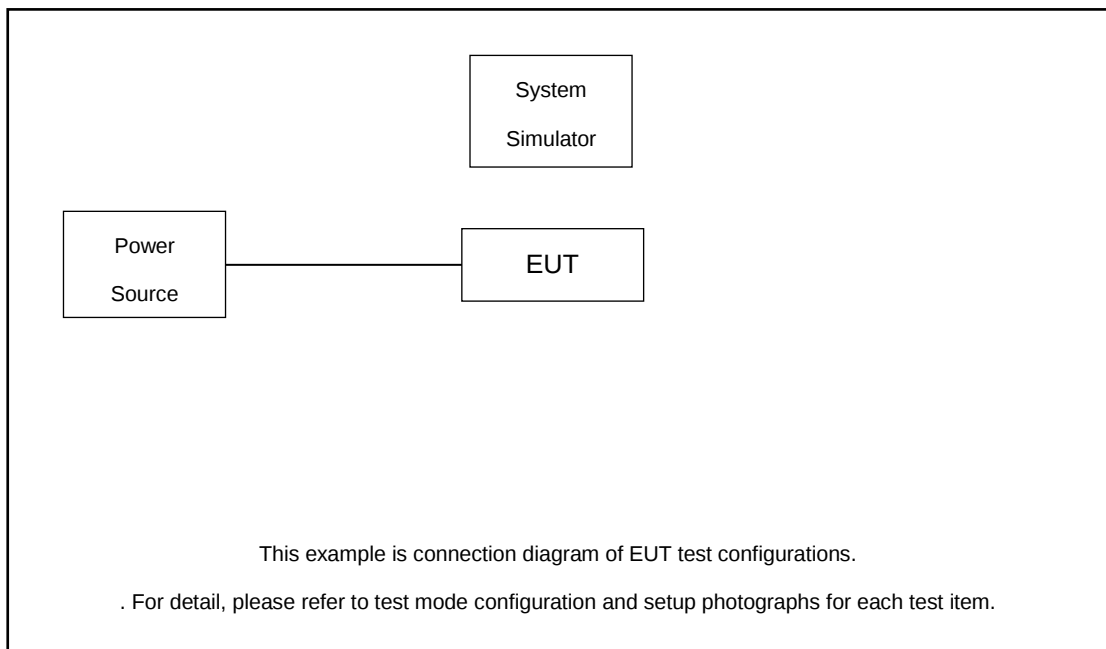
2.1 Test Mode

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.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Conducted Test Cases	Band	Bandwidth (MHz)						Modulation					RB #			Test Channel		
		1.4	3	5	10	15	20	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	n14	Worst Case														V	V	V
Note	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 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Frequency List of Low/Middle/High Channels

5G NR n14 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	158600	-
	Frequency	-	793	-
5	Channel	158100	158600	159100
	Frequency	790.5	793	795.5

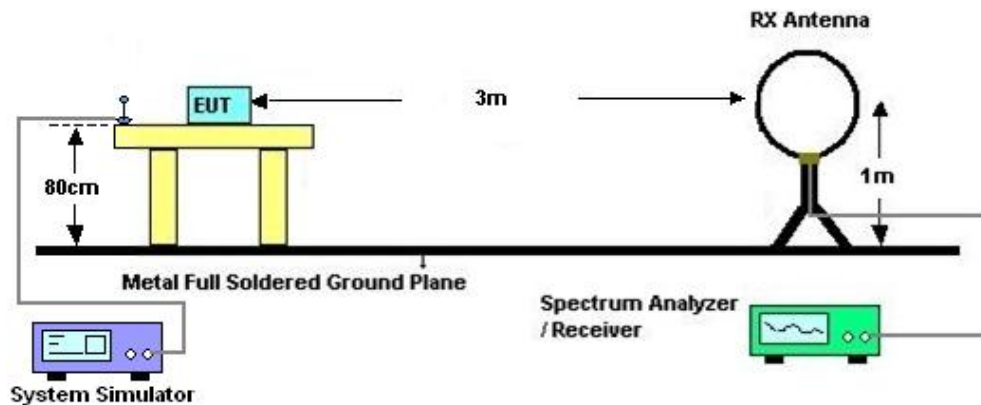
3 Radiated Test Items

3.1 Measuring Instruments

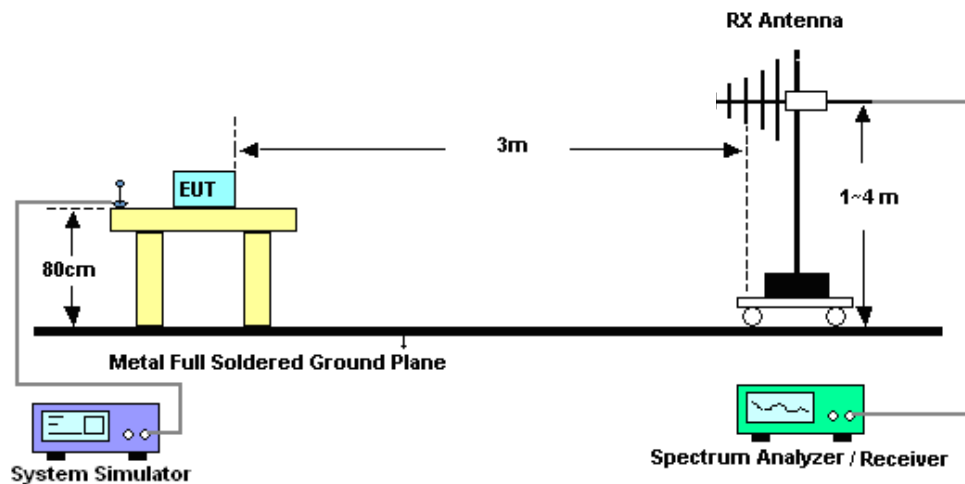
See list of measuring instruments of this test report.

3.2 Test Setup

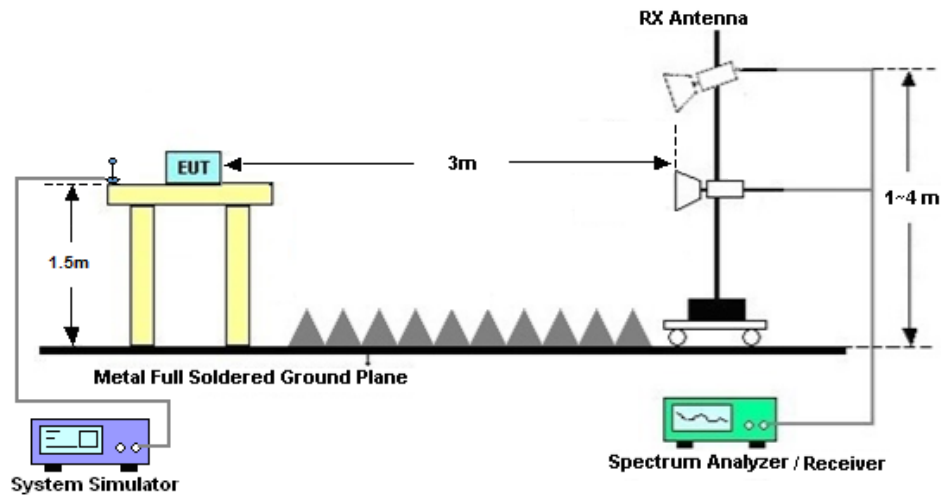
3.2.1 For radiated test below 30MHz



3.2.2 For radiated test from 30MHz to 1GHz



3.2.3 For radiated test above 1GHz



3.3 Test Result of Radiated Test

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Please refer to Appendix A.

3.4 Radiated Spurious Emission Measurement

3.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
10. $ERP \text{ (dBm)} = EIRP - 2.15$
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 03, 2024	Dec. 10, 2024	Jul. 02, 2025	Radiation (03CH02-SZ)
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 28, 2024	Dec. 10, 2024	Dec. 27, 2025	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Oct. 24, 2023	Dec. 10, 2024	Oct. 23, 2025	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 04, 2024	Dec. 10, 2024	Jul. 04, 2025	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 03, 2024	Dec. 10, 2024	Jul. 03, 2025	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09, 2024	Dec. 10, 2024	Apr. 08, 2025	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 18, 2024	Dec. 10, 2024	Oct. 17, 2025	Radiation (03CH02-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 14, 2024	Dec. 10, 2024	Oct. 13, 2025	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010003043	N/A	Oct. 18, 2024	Dec. 10, 2024	Oct. 17, 2025	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Dec. 10, 2024	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Dec. 10, 2024	NCR	Radiation (03CH02-SZ)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.47dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.31dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.72dB
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----- THE END -----

Appendix A. Test Results of Radiated Test

Field Strength of Spurious Radiated

Test Engineer :	PingZhou Liang	Temperature :	22~25°C
		Relative Humidity :	48~52%

n14 SA / NR 5MHz / QPSK(ANT0)									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1576.8	-60.55	-42.15	-18.40	-70.48	-63.78	3.98	9.36	H
	2365.2	-58.69	-13	-45.69	-73.42	-62.24	4.85	10.55	H
	3153.6	-56.75	-13	-43.75	-74.08	-61.68	5.50	12.58	H
	1576.8	-60.12	-42.15	-17.97	-70.18	-63.35	3.98	9.36	V
	2365.2	-59.24	-13	-46.24	-73.96	-62.79	4.85	10.55	V
	3153.6	-57.09	-13	-44.09	-74.42	-62.02	5.50	12.58	V
Middle	1581.8	-60.84	-42.15	-18.69	-70.78	-64.09	4.00	9.40	H
	2372.7	-59.35	-13	-46.35	-74.03	-62.92	4.88	10.60	H
	3163.6	-57.46	-13	-44.46	-74.79	-62.39	5.52	12.60	H
	1581.8	-59.96	-42.15	-17.81	-70.03	-63.21	4.00	9.40	V
	2372.7	-58.95	-13	-45.95	-73.62	-62.52	4.88	10.60	V
	3163.6	-56.97	-13	-43.97	-74.30	-61.90	5.52	12.60	V
Highest	1586.8	-60.64	-42.15	-18.49	-70.47	-63.81	4.10	9.42	H
	2380.2	-59.47	-13	-46.47	-74.16	-63.05	4.90	10.63	H
	3173.6	-58.07	-13	-45.07	-75.49	-62.99	5.55	12.62	H
	1586.8	-59.98	-42.15	-17.83	-70.00	-63.15	4.10	9.42	V
	2380.2	-60.74	-13	-47.74	-75.42	-64.32	4.90	10.63	V
	3173.6	-57.48	-13	-44.48	-74.88	-62.40	5.55	12.62	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

EN-DC_2A_n14A / LTE 20MHz + NR 5MHz / QPSK (ANT0+2)									
Channel	Frequency (MHz)	ERP/EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
NR n14 Middle	1576.95	-60.89	-42.15	-18.74	-70.82	-64.14	4.00	9.40	H
	2365.42	-59.30	-13	-46.30	-74.03	-62.87	4.88	10.60	H
	3153.9	-58.30	-13	-45.30	-75.63	-63.23	5.52	12.60	H
	1576.95	-59.62	-42.15	-17.47	-69.68	-62.87	4.00	9.40	V
	2365.42	-60.23	-13	-47.23	-74.95	-63.80	4.88	10.60	V
	3153.9	-58.60	-13	-45.60	-75.93	-63.53	5.52	12.60	V
LTE Band2 Middle	3742	-61.28	-13	-48.28	-79.86	-68.03	5.85	12.60	H
	5613	-59.60	-13	-46.60	-81.99	-65.40	7.30	13.10	H
	7484	-54.83	-13	-41.83	-81.76	-57.98	8.35	11.50	H
	3742	-61.24	-13	-48.24	-79.74	-67.99	5.85	12.60	V
	5613	-59.59	-13	-46.59	-82.17	-65.39	7.30	13.10	V
	7484	-54.89	-13	-41.89	-81.81	-58.04	8.35	11.50	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

EN-DC_30A_n14A / LTE 20MHz + NR 5MHz / QPSK (ANT0+2)									
Channel	Frequency (MHz)	ERP/EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
NR n14 Middle	1576.95	-61.36	-42.15	-19.21	-71.29	-64.61	4.00	9.40	H
	2365.42	-60.15	-13	-47.15	-74.88	-63.72	4.88	10.60	H
	3153.9	-58.33	-13	-45.33	-75.66	-63.26	5.52	12.60	H
	1576.95	-60.45	-42.15	-18.30	-70.51	-63.70	4.00	9.40	V
	2365.42	-60.58	-13	-47.58	-75.30	-64.15	4.88	10.60	V
	3153.9	-58.72	-13	-45.72	-76.05	-63.65	5.52	12.60	V
LTE Band30 Middle	4610.95	-59.72	-40	-19.72	-81.76	-65.97	6.45	12.70	H
	6916.42	-56.76	-40	-16.76	-82.43	-60.16	8.40	11.80	H
	9221.90	-51.35	-40	-11.35	-82.77	-53.70	9.65	12.00	H
	4610.95	-59.49	-40	-19.49	-81.91	-65.74	6.45	12.70	V
	6916.42	-56.16	-40	-16.16	-82.31	-59.56	8.40	11.80	V
	9221.90	-52.32	-40	-12.32	-82.92	-54.67	9.65	12.00	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



EN-DC_66A_n14A / LTE 20MHz + NR 5MHz / QPSK (ANT0+2)									
Channel	Frequency (MHz)	ERP/EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
NR n14 Middle	1576.95	-61.50	-42.15	-19.35	-71.43	-64.75	4.00	9.40	H
	2365.42	-59.80	-13	-46.80	-74.53	-63.37	4.88	10.60	H
	3153.9	-58.58	-13	-45.58	-75.91	-63.51	5.52	12.60	H
	1576.95	-60.86	-42.15	-18.71	-70.92	-64.11	4.00	9.40	V
	2365.42	-61.02	-13	-48.02	-75.74	-64.59	4.88	10.60	V
	3153.9	-58.91	-13	-45.91	-76.24	-63.84	5.52	12.60	V
LTE Band66 Middle	3472	-61.25	-13	-48.25	-78.15	-68.10	5.65	12.50	H
	5208	-60.92	-13	-47.92	-82.65	-66.59	7.13	12.80	H
	6944	-56.17	-13	-43.17	-82.09	-59.57	8.40	11.80	H
	3472	-61.13	-13	-48.13	-78.05	-67.98	5.65	12.50	V
	5208	-60.39	-13	-47.39	-82.37	-66.06	7.13	12.80	V
	6944	-55.99	-13	-42.99	-82.38	-59.39	8.40	11.80	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.