

# TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: BEJTM05NNNABM0

Equipment Under Test : Telematics Module  
Model Name : TM05NNNABM0  
Variant Model Name(s) : -  
Applicant : LG Electronics USA  
Manufacturer : LG Electronics Inc.  
Date of Receipt : 2021.04.02  
Date of Test(s) : 2021.04.06 ~ 2021.07.26  
Date of Issue : 2022.03.15

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by:



Brant Jang

Technical  
Manager:



Jinhyoung Cho

**SGS Korea Co., Ltd. Gunpo Laboratory**



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Report Number: F690501-RF-RTL002985

Page: 2 of 14

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# INDEX

<u>Table of Contents</u>	Page
1. General Information -----	3
2. RF Exposure Evaluation -----	8

## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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- Designation number: KR0150

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### 1.2. Details of Applicant

Applicant : LG Electronics USA  
 Address : 111 Sylvan Avenue, North Building, Englewood Cliffs, New Jersey, United States, 07632  
 Contact Person : Sung-soo, Kim  
 Phone No. : +1 201 266 2215

### 1.3. Details of Manufacturer

Company : LG Electronics Inc.  
 Address : 10, Magokjungang 10-ro, Gangseo-gu, Seoul, Korea, 07796

### 1.4. Description of EUT

<b>Kind of Product</b>	Telematics Module
<b>Model Name</b>	TM05NNNABM0
<b>Serial Number</b>	Conducted: 352881170000019, Radiated: 352881170026303
<b>Power Supply</b>	DC 12.0 V
<b>Rated Power</b>	GSM 850 (SIM 1): 33 dB m GSM 850 (SIM 2): 32 dB m GSM 1900: 30 dB m WCDMA II, IV, V: 24 dB m LTE Band 2, 4, 5, 7, 12, 13, 17, 25, 26, 66, 71: 23 dB m LTE Band 41: 26 dB m NR Band 2, 5, 25, 41, 66, 71: 23 dB m NR Band 77: 23 dB m (only for SIM2)

<b>Frequency Range</b>	<b>SIM 1</b>	GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz WCDMA II: 1 850 MHz ~ 1 910 MHz WCDMA IV: 1 710 MHz ~ 1 755 MHz WCDMA V: 824 MHz ~ 849 MHz LTE Band 2: 1 850 MHz ~ 1 910 MHz LTE Band 4: 1 710 MHz ~ 1 755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2 500 MHz ~ 2 570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1 850 MHz ~ 1 915 MHz LTE Band 26: 814 MHz ~ 824 MHz LTE Band 26: 824 MHz ~ 849 MHz LTE Band 41: 2 496 MHz ~ 2 690 MHz LTE Band 66: 1 710 MHz ~ 1 780 MHz LTE Band 71: 663 MHz ~ 698 MHz NR Band 2(only NSA): 1 850 MHz ~ 1 910 MHz NR Band 5(only NSA): 824 MHz ~ 849 MHz NR Band 25: 1 850 MHz ~ 1 915 MHz NR Band 41: 2 496 MHz ~ 2 690 MHz NR Band 66: 1 710 MHz ~ 1 780 MHz NR Band 71: 663 MHz ~ 698 MHz
	<b>SIM 2</b>	GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz LTE Band 2: 1 850 MHz ~ 1 910 MHz LTE Band 4: 1 710 MHz ~ 1 755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2 500 MHz ~ 2 570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1 850 MHz ~ 1 915 MHz LTE Band 26: 814 MHz ~ 824 MHz LTE Band 26: 824 MHz ~ 849 MHz LTE Band 41: 2 496 MHz ~ 2 690 MHz LTE Band 66: 1 710 MHz ~ 1 780 MHz LTE Band 71: 663 MHz ~ 698 MHz NR Band 25: 1 850 MHz ~ 1 915 MHz NR Band 41: 2 496 MHz ~ 2 690 MHz NR Band 66: 1 710 MHz ~ 1 780 MHz NR Band 71: 663 MHz ~ 698 MHz NR Band 77: 3 450 MHz ~ 3 550 MHz NR Band 77: 3 700 MHz ~ 3 980 MHz
<b>Modulation Technique</b>	BPSK, QPSK, 16QAM, 64QAM, 256QAM, GMSK, 8PSK	
<b>Antenna Type</b>	External Antenna (Refer to the clause 1.5)	
<b>Antenna Gain*</b>	Refer to the clause 1.5	
<b>H/W Version</b>	Rev.D2	
<b>S/W Version</b>	v004.147.065	

### 1.5. Antenna Designation

#### SIM 1

Antenna Type	Antenna No.	Antenna Name	Antenna Part Number
Trunk	1	Antenna Box (basic)	8705921
	2	MSA TEL	920631001
	3	MSA TEL SDARS	920361002
Roof	4	DA WAVE HAF 5G-US	8705914-05
	5	DA WAVE High 5G-US	5A09D90-03

Operating Frequency (MHz)		Antenna Peak Gain (dB i)			
		Ant. No	Ant. Gain	Cable Loss	Final Gain
LTE Band 71 NR Band 71	663 ~ 698	Ant. 1	-3.00	0.22	-3.22
		Ant. 2	2.20	0.52	1.68
		Ant. 3	2.50	0.52	<b>1.98</b>
		Ant. 4	-3.80	-	-3.80
		Ant. 5	-3.40	-	-3.40
LTE Band 12/17	669 ~ 716	Ant. 1	3.00	0.22	<b>2.78</b>
		Ant. 2	2.60	0.52	2.08
		Ant. 3	2.50	0.52	1.98
		Ant. 4	-3.00	-	-3.00
		Ant. 5	-3.10	-	-3.10
LTE Band 13	777 ~ 787	Ant. 1	3.00	0.22	<b>2.78</b>
		Ant. 2	2.60	0.52	2.08
		Ant. 3	2.50	0.52	1.98
		Ant. 4	-3.00	-	-3.00
		Ant. 5	-3.10	-	-3.10
GSM 850 WCDMA V LTE Band 26/5 NR Band 5	824 ~ 849	Ant. 1	3.00	0.22	<b>2.78</b>
		Ant. 2	2.10	0.52	1.58
		Ant. 3	2.30	0.52	1.78
		Ant. 4	-0.40	-	-0.40
		Ant. 5	-0.20	-	-0.20
LTE Band 26	814 ~ 824	Ant. 1	3.00	0.22	<b>2.78</b>
		Ant. 2	2.10	0.52	1.58
		Ant. 3	2.30	0.52	1.78
		Ant. 4	-0.30	-	-0.30
		Ant. 5	0.00	-	0.00
WCDMA IV LTE Band 66/4 NR Band 66	1 710 ~ 1 780	Ant. 1	5.00	0.30	4.70
		Ant. 2	5.40	0.73	4.67
		Ant. 3	5.80	0.73	<b>5.07</b>
		Ant. 4	2.70	-	2.70
		Ant. 5	3.00	-	3.00
GSM 1900 WCDMA II LTE Band 25/2 NR Band 2, 25	1 850 ~ 1 915	Ant. 1	5.00	0.34	4.66
		Ant. 2	6.20	0.82	<b>5.38</b>
		Ant. 3	5.90	0.82	5.08
		Ant. 4	2.80	-	2.80
		Ant. 5	2.30	-	2.30
LTE Band 7/41 NR Band 41	2 496 ~ 2 690	Ant. 1	5.00	0.40	4.60
		Ant. 2	6.60	0.96	<b>5.64</b>
		Ant. 3	6.50	0.96	5.54
		Ant. 4	3.30	-	3.30
		Ant. 5	3.00	-	3.00

- The Roof type antennas are directly connected to the EUT, so there is no cable loss.

**SIM 2**

Antenna Type	Antenna No.	Antenna Name	Antenna Part Number
Trunk	1	Antenna Box	8705921
	2	FSA WAVE 5G (left/right)	8705919/8705920
	3	HKL Mobilradioantenna (basic)	5A2D602
	4	ZB Spoilerantenna	5A0C5B0

Operating Frequency (MHz)		Antenna Peak Gain (dB i)			
		Ant. No	Ant. Gain	Cable Loss	Final Gain
LTE Band 71 NR Band 71	663 ~ 698	Ant. 1	-3.00	0.57	-3.57
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	<b><u>4.43</u></b>
		Ant. 4	4.00	0.57	3.43
LTE Band 12/17	669 ~ 716	Ant. 1	3.00	0.57	2.43
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	<b><u>4.43</u></b>
		Ant. 4	3.00	0.57	2.43
LTE Band 13	777 ~ 787	Ant. 1	3.00	0.57	2.43
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	<b><u>4.43</u></b>
		Ant. 4	3.00	0.57	2.43
GSM 850 LTE Band 26/5	814 ~ 849	Ant. 1	3.00	0.57	2.43
		Ant. 2	4.00	0.57	3.43
		Ant. 3	5.00	0.57	<b><u>4.43</u></b>
		Ant. 4	3.00	0.57	2.43
LTE Band 66/4 NR Band 66	1 710 ~ 1 780	Ant. 1	5.00	0.79	4.21
		Ant. 2	4.00	0.79	3.21
		Ant. 3	5.00	0.79	<b><u>4.21</u></b>
		Ant. 4	4.00	0.79	3.21
GSM 1900 LTE Band 25/2 NR Band 25	1 850 ~ 1 915	Ant. 1	5.00	0.89	4.11
		Ant. 2	4.00	0.89	3.11
		Ant. 3	5.00	0.89	<b><u>4.11</u></b>
		Ant. 4	4.00	0.89	3.11
LTE Band 7/41 NR Band 41	2 496 ~ 2 690	Ant. 1	5.00	1.04	3.96
		Ant. 2	5.00	1.04	3.96
		Ant. 3	5.00	1.04	<b><u>3.96</u></b>
		Ant. 4	4.00	1.04	2.96
NR Band 77	3 450 ~ 3 550	Ant. 1	5.00	1.15	3.85
		Ant. 2	5.00	1.15	3.85
		Ant. 3	5.00	1.15	<b><u>3.85</u></b>
		Ant. 4	3.00	1.15	1.85
	3 700 ~ 3 980	Ant. 1	5.00	1.15	3.85
		Ant. 2	5.00	1.15	3.85
		Ant. 3	5.00	1.15	<b><u>3.85</u></b>
		Ant. 4	3.00	1.15	1.85

**Note;**

-According to manufacturer's antenna specification, only the highest antenna gain of each antenna is reported.



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Report Number: F690501-RF-RTL002985

Page: 7 of 14

**1.5. Test Report Revision**

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL002985	2022.03.15	Initial

## 2. RF Exposure Evaluation

### 2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1 500	-	-	f/300	6
1 500-100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
<b><u>300-1 500</u></b>	-	-	<b><u>f/1500</u></b>	<b><u>30</u></b>
<b><u>1 500-100 000</u></b>	-	-	<b><u>1.0</u></b>	<b><u>30</u></b>

#### 2.1.1. Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where  $P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

R = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.



### 2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data  
 Test Mode : Normal Operation

### 2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

#### SIM 1

##### GSM 850

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Duty Cycle (%)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	33.0	1.0	34.0	25	2.78	0.236 957	0.549 333

##### GSM 1900

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Duty Cycle (%)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	30.0	1.0	31.0	25	5.38	0.216 108	1

##### WCDMA II

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	24	1.7	25.7	5.38	0.255 112	1

##### WCDMA IV

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 755	24	1.7	25.7	5.07	0.237 536	1

##### WCDMA V

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	24	1.7	25.7	2.78	0.140 194	0.549 333

**LTE Band 7**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 500 ~ 2 570	23	2.7	25.7	5.64	0.270 851	1

**LTE Band 12/17**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
699 ~ 716	23	2.7	25.7	2.78	0.140 194	0.465 333

**LTE Band 13**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
777 ~ 787	23	2.7	25.7	2.78	0.140 194	0.518 000

**LTE Band 25/2**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 915	23	2.7	25.7	5.38	0.255 112	1

**LTE Band 26**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
814 ~ 824	23	2.7	25.7	2.78	0.140 194	0.542 667

**LTE Band 26/5**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	23	2.7	25.7	2.78	0.140 194	0.549 333

**LTE Band 41**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 496 ~ 2 690	26	2.0	28.0	5.64	0.459 971	1

**LTE Band 66/4**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 780	23	2.7	25.7	5.07	0.237 536	1

**LTE Band 71**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
663 ~ 698	23	2.7	25.7	1.98	0.116 608	0.442 000

**NR Band 2**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	23	2.7	25.7	5.38	0.255 112	1

**NR Band 5**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	23	2.7	25.7	2.78	0.140 194	0.549 333

**NR Band 25**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 915	23	2.7	25.7	5.38	0.255 112	1

**NR Band 41**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 496 ~ 2 690	23	2.7	25.7	5.64	0.270 851	1

**NR Band 66**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 780	23	2.7	25.7	5.07	0.237 536	1

**NR Band 71**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
663 ~ 698	23	2.7	25.7	1.98	0.116 608	0.442 000

**SIM 2**

**GSM 850**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Duty Cycle (%)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	32.0	0.5	32.5	25	4.43	0.245 285	0.549 333

**GSM 1900**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Duty Cycle (%)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	30.0	1.0	31.0	25	4.11	0.161 313	1

**LTE Band 7**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 500 ~ 2 570	23	2.7	25.7	3.96	0.183 963	1

**LTE Band 12/17**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
699 ~ 716	23	2.7	25.7	4.43	0.204 989	0.465 333

**LTE Band 13**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
777 ~ 787	23	2.7	25.7	4.43	0.204 989	0.518 000

**LTE Band 25/2**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 915	23	2.7	25.7	4.11	0.190 428	1

**LTE Band 26**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
814 ~ 824	23	2.7	25.7	4.43	0.204 989	0.542 667

**LTE Band 26/5**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	23	2.7	25.7	4.43	0.204 989	0.549 333

**LTE Band 41**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 496 ~ 2 690	26	2.0	28.0	3.96	0.312 414	1

**LTE Band 66/4**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 780	23	2.7	25.7	4.21	0.194 863	1

**LTE Band 71**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
663 ~ 698	23	2.7	25.7	4.43	0.204 989	0.442 000

**NR Band 25**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 915	23	2.7	25.7	4.11	0.190 428	1

**NR Band 41**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 496 ~ 2 690	23	2.7	25.7	3.96	0.183 963	1

**NR Band 66**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 780	23	2.7	25.7	4.21	0.194 863	1

**NR Band 71**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
663 ~ 698	23	2.7	25.7	4.43	0.204 989	0.442 000

**NR Band 77**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Maximum Tune Up Tolerance (dB m)	Maximum Output Average Power (dB m)	Max Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
3 450 ~ 3 550	23	2.7	25.7	3.85	0.179 362	1
3 700 ~ 3 980	23	2.7	25.7	3.85	0.179 362	

**Note;**

- The Maximum Output Average Power = Output Average Power to Antenna + Maximum Tune up Tolerance.
- The Output Average Power to Antenna is the manufacturer's declared rated power.
- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.
- In NSA mode, power of LTE anchor band get reduced when NR is activated.
- Total power of LTE and NR at NSA mode does not exceed SA output power.

**Simultaneous transmission of RF Exposure test exclusion for worst case configuration.**

SIM 1: the worst ratio is at LTE Band 14 = 0.459 971 / 1

SIM 2: the worst ratio is at LTE Band 71 = 0.204 989 / 0.442 000

Confirm the sum result of individual MPEs ratio is ≤ 1.0;

SIM 1 + SIM 2: (0.459 971 / 1) + (0.204 989 / 0.442 000) = 0.923 747 ≤ 1.0

**- End of the Test Report -**