



TEST REPORT

FCC SAR Exclusion Report for TFGMEIBBCD4

Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-SR-2310-FC005

DATE OF ISSUE
Oct. 06, 2023

Technical Manager
Yun Jeang Heo

(signature)

Accredited by KOLAS, Republic of KOREA

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FCC Test for
TFGMEIBBCD4

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Applicant **LG Electronics Inc.**
10, MagokJungang-ro, Gangseo-gu, Seoul 07796, Republic of Korea

EUT Type
Model Name GM Onstar Gen12 ROW
TFGMEIBBCD4

FCC ID BEJTFGMEIBBCD4

Maximum Output Power(dBm) *GSM850 : 25.99, *GSM1900: 21.99, WCDMA B2,B5 : 25.5, WCDMA B4 : 25.0,
LTE B4 : 24.5, LTE B5 : 25.7, LTE Other Band : 25.5, NR SA n77, n78 : 27.0,
NR SA, NSA Other Band : 25.5
* GSM Band including duty-cycle transmit are normalized to frame average.

FCC Rule Part(s) 47CFR §2.1093

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test results were applied only to the test methods required by the standard.

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	Oct. 06, 2023	Initial Release

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

This laboratory is not accredited for the test results marked *.

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 AND KOLAS (Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

If this report is required to confirmation of authenticity, please contact to www.hct.co.kr



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1. EUT DESCRIPTION

Applicant Name:	LG Electronics Inc.	
Address:	10, Magok Jungang-ro, Gangseo-gu, Seoul 07796, Republic of Korea	
FCC ID:	BEJTFGMEIBBCD4	
EUT Type:	GM Onstar Gen12 ROW	
Model(s):	TFGMEIBBCD4	
Additional Model:	TFGMEIBBCD5, TFGMEIBBCD6, TFGMEIBBCD7, TFGMEIBBCD8	
Device Wireless Specification overview	Band	Tx Frequency
	GSM/GPRS/EDGE 850	824.2 MHz ~ 848.8 MHz
	GSM/GPRS/EDGE 1900	1 850.2 MHz ~ 1 909.8 MHz
	UMTS Band 5	826.4 MHz ~ 846.6 MHz
	UMTS Band 4	1 712.4 MHz ~ 1 752.6 MHz
	UMTS Band 2	1 852.4 MHz ~ 1 907.6 MHz
	LTE Band 2 (PCS)	1 850.7 MHz ~ 1 909.3 MHz
	LTE Band 4 (AWS)	1 710.7 MHz ~ 1 754.3 MHz
	LTE Band 5 (Cell)	824.7 MHz ~ 848.3 MHz
	LTE Band 7	2 502.5 MHz ~ 2 567.5 MHz
	NR Band n2	1 852.5 MHz ~ 1 907.5 MHz
	NR Band n5	826.5 MHz ~ 846.5 MHz
	NR Band n7	2 502.5 MHz ~ 2 567.5 MHz
	NR Band n77(3 700 MHz ~ 3 980 MHz) NR Band n78(3 700 MHz ~ 3 800 MHz)	3 710.01 MHz ~ 3 969.99 MHz
	NR Band n77(DoD),n78 (3 450 MHz ~3 550 MHz)	3 460.02 MHz ~ 3 540.0 MHz
Serial number:	Conducted : EBR36018829_#75	
External Antenna Information	ANT5 : 86531607 ANT4 : 86575530 DUT4 : 85608774	

2. TEST METHODOLOGY

2.1 FCC

Body SAR Test Exclusions Applied _ GSM 850, GSM 1900, WCDMA B 2,4,5 LTE B 2,4,5,7 NR n2,5,7,77,78 it is used by most users in the Body. In addition, The antennas must be installed at all times a distance minimum of at least 170 mm Between antenna and any individual.
an exception evaluation is applied at a distance of 170 mm from the Body SAR.

According to the FCC KDB 447498 D01 v06 section 4.3.1 b), for 100 MHz to 6 GHz and test separation distances ≥ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

b) For 100 MHz to 6 GHz and test separation distances ≥ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following(also illustrated in appendix B):

1) $\{[(\text{Power allowed at numeric threshold for 50mm in step a})] + [(\text{Test separation distance} - 50\text{mm}) * (f(\text{MHz})/150)]\}$ mW, for 100MHz to 1500 MHz

2) $\{[(\text{Power allowed at numeric threshold for 50mm in step a}) + ((\text{Test separation distance} - 50\text{mm}) * 10)]\}$ mW, for $>1500\text{MHz}$ and $\leq 6\text{GHz}$

Appendix B

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and > 50 mm

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
150	387	397	407	417	427	437	447	457	467	477	487	497	507	517	527	
300	274	294	314	334	354	374	394	414	434	454	474	494	514	534	554	
450	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644	
835	164	220	275	331	387	442	498	554	609	665	721	776	832	888	943	
900	158	218	278	338	398	458	518	578	638	698	758	818	878	938	998	
1500	122	222	322	422	522	622	722	822	922	1022	1122	1222	1322	1422	1522	
1900	109	209	309	409	509	609	709	809	909	1009	1109	1209	1309	1409	1509	
2450	96	196	296	396	496	596	696	796	896	996	1096	1196	1296	1396	1496	
3600	79	179	279	379	479	579	679	779	879	979	1079	1179	1279	1379	1479	
5200	66	166	266	366	466	566	666	766	866	966	1066	1166	1266	1366	1466	
5400	65	165	265	365	465	565	665	765	865	965	1065	1165	1265	1365	1465	
5800	62	162	262	362	462	562	662	762	862	962	1062	1162	1262	1362	1462	

Calculation Result:

Band 100 MHz to 1500 MHz

*GSM 850

Tx frequency range: 824.2 MHz ~ 848.8 MHz

Body SAR Consideration Min. test separation distance: 170 mm

Maximum Output Power: 25.99 dBm (397.19 mW)

The Highest RF channel frequency: 848.8 MHz

Mode / Band		GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
		GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum		34.5	30.0	29.0	29.0	28.5	25.5	24.0	23.0
Nominal		32.5	28.0	27.0	27.0	26.5	23.5	22.0	21.0
GSM 850	128	32.52	30.68	28.41	27.28	26.66	23.58	22.10	21.51
	190	32.70	30.11	27.71	26.63	26.60	23.62	22.07	21.57
	251	32.49	29.60	27.10	26.02	26.55	23.37	21.91	21.32

GSM Conducted output powers (Burst-Average)

Mode / Band		GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
		GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum		25.47	23.98	24.74	25.99	19.47	19.48	19.74	19.99
Nominal		23.47	21.98	22.74	23.99	17.47	17.48	17.74	17.99
GSM 850	128	23.49	24.66	24.15	24.27	17.63	17.56	17.84	18.50
	190	23.67	24.09	23.45	23.62	17.57	17.6	17.81	18.56
	251	23.46	23.58	22.84	23.01	17.52	17.35	17.65	18.31

GSM Conducted output powers (Frame-Average)

Note:

Time slot average factor is as follows:

1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB

2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB

3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB

4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB

WCDMA B5

Tx frequency range: 826.4 MHz ~ 846.6 MHz

Body SAR Consideration Min. test separation distance: 170 mm

Maximum Output Power: 25.5 dBm (354.81 mW)

The Highest RF channel frequency: 846.6 MHz

LTE B5

Tx frequency range: 824.7 MHz ~ 848.3 MHz

Body SAR Consideration Min. test separation distance: 170 mm

Maximum Output Power: 25.7 dBm (371.54 mW)

The Highest RF channel frequency: 848.3 MHz

NR B5

Tx frequency range: 826.5 MHz ~ 846.5 MHz

Body SAR Consideration Min. test separation distance: 170 mm

Maximum Output Power: 25.5 dBm (354.81 mW)

The Highest RF channel frequency: 846.5 MHz
>1500MHz and ≤ 6GHz

***GSM 1900**

Tx frequency range: 1850.2 MHz ~ 1909.8 MHz
Body SAR Consideration Min. test separation distance: 170 mm
Maximum Output Power: 21.99 dBm (158.12 mW)
The Highest RF channel frequency: 1 909.8 MHz

Mode / Band		GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
		GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum		30.50	28.00	26.00	25.00	26.50	24.00	23.00	22.00
Nominal		29.50	27.00	25.00	24.00	25.50	23.00	22.00	21.00
GSM 1900	512	29.17	27.73	25.20	24.27	25.24	22.80	21.73	20.68
	661	29.40	27.60	25.05	23.85	25.48	23.10	22.00	21.18
	810	29.02	27.20	24.54	23.07	25.12	22.70	21.61	20.74

GSM Conducted output powers (Burst-Average)

Mode / Band		GPRS(GMSK) Data – CS1(dBm)				EDGE Data (dBm)			
		GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Maximum		21.47	21.98	21.74	21.99	17.47	17.98	18.74	18.99
Nominal		20.47	20.98	20.74	20.99	16.47	16.98	17.74	17.99
GSM 1900	512	20.14	21.71	20.94	21.26	16.21	16.78	17.47	17.67
	661	20.37	21.58	20.79	20.84	16.45	17.08	17.74	18.17
	810	19.99	21.18	20.28	20.06	16.09	16.68	17.35	17.73

GSM Conducted output powers (Frame-Average)

Note:

Time slot average factor is as follows:

1 Tx slot = 9.03 dB, Frame-Average output power = Burst-Average output power – 9.03 dB
2 Tx slot = 6.02 dB, Frame-Average output power = Burst-Average output power – 6.02 dB
3 Tx slot = 4.26 dB, Frame-Average output power = Burst-Average output power – 4.26 dB
4 Tx slot = 3.01 dB, Frame-Average output power = Burst-Average output power – 3.01 dB

WCDMA B2

Tx frequency range: 1852.2 MHz ~ 1907.6 MHz
Body SAR Consideration Min. test separation distance: 170 mm
Maximum Output Power: 25.5 dBm (354.81 mW)
The Highest RF channel frequency: 1 907.6 MHz

WCDMA B4

Tx frequency range: 1712.4 MHz ~ 1752.6 MHz
Body SAR Consideration Min. test separation distance: 170 mm
Maximum Output Power: 25.0 dBm (316.23 mW)
The Highest RF channel frequency: 1 752.6 MHz

LTE B2

Tx frequency range: 1850.7 MHz ~ 1909.3 MHz
 Body SAR Consideration Min. test separation distance: 170 mm
 Maximum Output Power: 25.5 dBm (354.81 mW)
 The Highest RF channel frequency: 1 909.3 MHz

LTE B4

Tx frequency range: 1710.7 MHz ~ 1754.3 MHz
 Body SAR Consideration Min. test separation distance: 170 mm
 Maximum Output Power: 24.5 dBm (281.84 mW)
 The Highest RF channel frequency: 1 754.3 MHz

LTE B7

Tx frequency range: 2502.5 MHz ~ 2567.5 MHz
 Body SAR Consideration Min. test separation distance: 170 mm
 Maximum Output Power: 25.5 dBm (354.81 mW)
 The Highest RF channel frequency: 2 567.5 MHz

NR B2

Tx frequency range: 1852.5 MHz ~ 1907.5 MHz
 Body SAR Consideration Min. test separation distance: 170 mm
 Maximum Output Power: 25.5 dBm (354.81 mW)
 The Highest RF channel frequency: 1 907.5 MHz

NR B7

Tx frequency range: 2502.5 MHz ~ 2567.5 MHz
 Body SAR Consideration Min. test separation distance: 170 mm
 Maximum Output Power: 25.5 dBm (354.81 mW)
 The Highest RF channel frequency: 2 567.5 MHz

***NR SA B77 DoD**

Tx frequency range: 3460.2 MHz ~ 3540.0 MHz
 Body SAR Consideration Min. test separation distance: 170 mm
 Maximum Output Power: 27.0 dBm (501.19 mW)
 The Highest RF channel frequency: 3 540 MHz

***NR SA B77**

Tx frequency range: 3710.01 MHz ~ 3969.99 MHz
 Body SAR Consideration Min. test separation distance: 170 mm
 Maximum Output Power: 27.0 dBm (501.19 mW)
 The Highest RF channel frequency: 3 969.99 MHz

***note**

When the supported frequency range of an NR band n78 falls completely within an NR band n77 with a larger transmission frequency range, both NR bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both NR bands share the same transmission path and signal characteristics, SAR was only assessed for the band n77 with the larger transmission frequency range.

For Body SAR Exclusion

Mode	Frequency [MHz]	Maximum Allowed Power [mW]	Separation Distance [mm]	SAR Test Exclusion Thresholds for >50mm [mW]	SAR Test Exclusion
GSM 850	848.8	397.19	170	843.04	Yes
WCDMA B5	846.6	354.81	170	841.28	Yes
LTE B5	848.3	371.54	170	842.64	Yes
NR n5	846.5	354.81	170	841.20	Yes
GSM 1900	1909.8	158.12	170	1309.0	Yes
WCDMA B2	1907.6	354.81	170	1309.0	Yes
WCDMA B4	1752.6	316.23	170	1309.0	Yes
LTE B2	1909.3	354.81	170	1309.0	Yes
LTE B4	1754.3	281.84	170	1309.0	Yes
LTE B7	2567.5	354.81	170	1296.0	Yes
NR n2	1907.5	354.81	170	1309.0	Yes
NR n7	2567.5	354.81	170	1296.0	Yes
NR n77/78 DoD	3540.0	501.19	170	1279.0	Yes
NR n77/78	3969.99	501.19	170	1279.0	Yes

Based on the maximum output power of GSM 850, GSM 1900, WCDMA B 2,4,5 LTE B 2,4,5,7 NR n2,5,7,77/78 and antenna to use separation distance, Bluetooth Body SAR were not required.