

TEST REPORT



CTK Co., Ltd.
(Ho-dong), 113, Yejik-ro, Cheoin-gu,
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Report No.:
CTK-2017-01751
Page (1) / (15) Pages

1. Client

- Name : LG Household&Health Care Co., Ltd.
- Address : LG GwangHwaMoon Building, 58, Saemunan-ro Jongno-gu Seoul 03184, Korea
- Date of Receipt : 2017-08-10

2. Manufacturer

- Name : LG Household&Health Care Co., Ltd.
- Address : LG GwangHwaMoon Building, 58, Saemunan-ro Jongno-gu Seoul 03184, Korea

3. Use of Report : For FCC Certification

4. Test Sample / Model : Dual Spin Spa / LTE-007 and LTE-007A

5. Date of Test : 2017-08-26 to 2017-09-12

6. Test Standard(method) used : FCC 47 CFR Part 15C

7. Testing Environment : Temp.: (23 ± 3) °C, Humidity: (45 ± 3) % R.H.

8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by	Technical Manager
	Bong-jun, Jang: (Signature) 	Young-taek, Lee: (Signature) 

2017-09-18

Republic of KOREA **CTK Co., Ltd.**

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REPORT REVISION HISTORY

Date	Revision	Page No
2017-09-18	Issued (CTK-2017-01751) Change of Parts and Adaptor	all

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1. General Information

1.1 Client Information

Company	LG Household&Health Care Co., Ltd.
Contact Point	LG GwangHwaMoon Building, 58, Saemunan-ro Jongno-gu Seoul 03184, Korea
Contact Person	Name : Jungyong Lee E-mail : Jungyonglee@lgcare.com Tel : +82-42-860-8019 Fax : +82-42-860-2072

1.2 Product Information

FCC ID	2AIYULTE007
Product Description	Dual Spin Spa
Model name	LTE-007 and LTE-007A (LTE-007A : The variant model is due to change of color.)
Power Supply	5 Vdc [Adaptor] Model : MCS-02KPN Input Voltage : AC 100 V - AC 240 V Output Voltage : DC 5.0 V Output Current : 850 mA
Operating Frequency	115 kHz
Modulation Type	AM
Antenna Specification	Coil Antenna
FCC Rule	Part 15C

 CTK Co., Ltd. The Pioneer Leader of Global Regulatory Certification	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2017-01751 Page (5) / (15) Pages	
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2. Facility and Accreditations

2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yong-in-si, Gyeonggi-do, Korea.

2.2 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	FCC	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	805871	
CANADA	IC	IC EMI (3/10m test site)	8737A-2	
JAPAN	VCCI	VCCI V-3 EMI (Electromagnetic Interference / Emission)	C-986 T-1843 R-3627 G-387	
KOREA	MSIP	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	KR0025	

2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

3. Test Specifications

3.1 Standards

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15C.

Section	Test Items	Results
§ 15.203	Antenna requirement	N/A
§ 15.204	External radio frequency power amplifier and antenna modifications	N/A
§ 15.207	Conducted emissions	Complies
§ 15.209	Radiated emissions	Complies

§ 15.203 is not applicable because the transmitter is provided with an integral antenna.

§ 15.204 is not applicable because the transmitter is provided with an integral antenna.

3.2 Mode of operation during the test

Equipment under test was operated during the measurement under the following conditions:
Charging mode

3.3 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	1.5 dB
Occupied Bandwidth	0.1 MHz
Spurious Emission at Antenna Terminals	3.0 dB
Radiated Spurious Emissions ($f \leq 1$ GHz)	4.0 dB
Radiated Spurious Emissions ($f > 1$ GHz)	5.0 dB
Frequency Stability	0.1 kHz

3.4 Standards Environmental Test conditions

Temperature	+ 15 °C to + 35 °C
Relative humidity	30 % to 60 %
Air pressure	860 mbar to 1 060 mbar

4. Power line conducted emissions (Section 15.207)

Test Location

Shielded Room

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

* Measurement procedures was In accordance with ANSI C63.4-2014 7.3.3, 7.3.4

Limit

-15.207(a)

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency.

EUT Operating Modes

The EUT is an intentional radiator is operated at 115 kHz.

Test Results

The requirements are:

☒ Complies

Test Data

[L1]

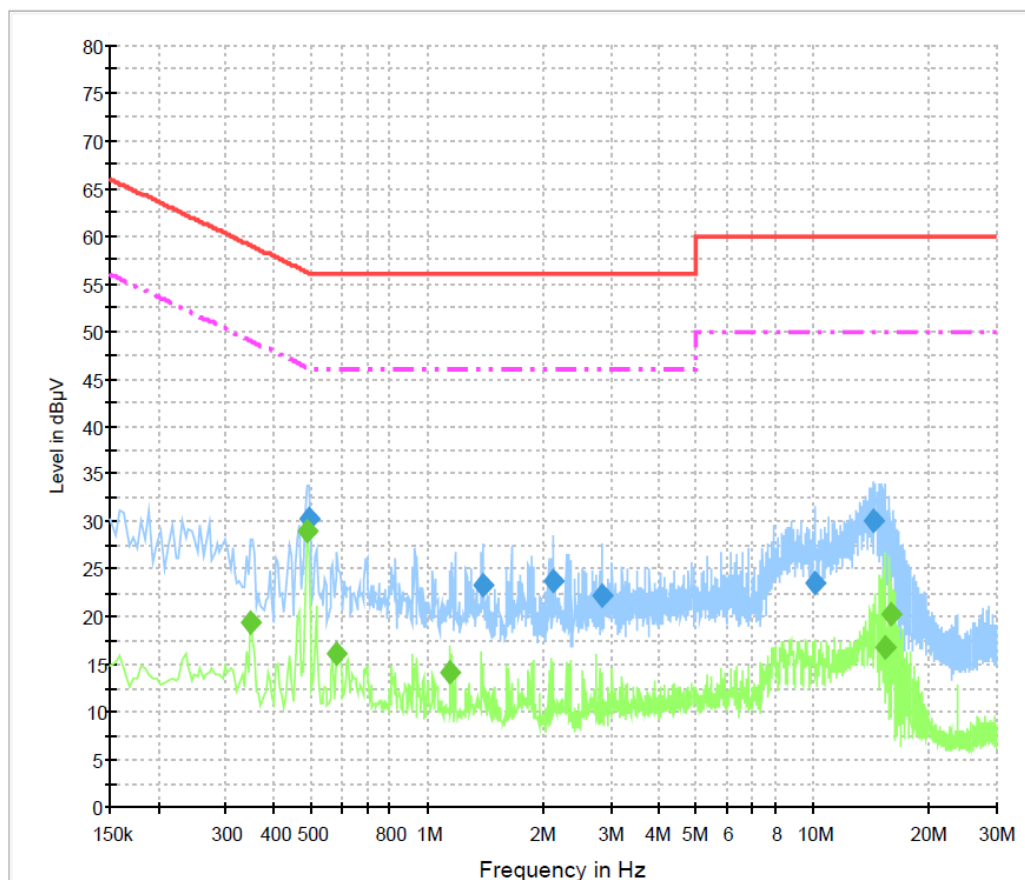
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.492000	30.2	1000.0	9.000	On	L1	9.9	25.9	56.1
1.396500	23.3	1000.0	9.000	On	L1	9.7	32.7	56.0
2.125500	23.7	1000.0	9.000	On	L1	9.8	32.3	56.0
2.832000	22.2	1000.0	9.000	On	L1	9.8	33.8	56.0
10.122000	23.6	1000.0	9.000	On	L1	9.9	36.4	60.0
14.455500	30.2	1000.0	9.000	On	L1	9.9	29.8	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.348000	19.3	1000.0	9.000	On	L1	9.8	29.7	49.0
0.487500	29.1	1000.0	9.000	On	L1	9.9	17.1	46.2
0.582000	16.0	1000.0	9.000	On	L1	9.9	30.0	46.0
1.144500	14.1	1000.0	9.000	On	L1	9.7	31.9	46.0
15.418500	16.8	1000.0	9.000	On	L1	9.9	33.2	50.0
15.904500	20.4	1000.0	9.000	On	L1	9.9	29.6	50.0

Class B_L1



[N]

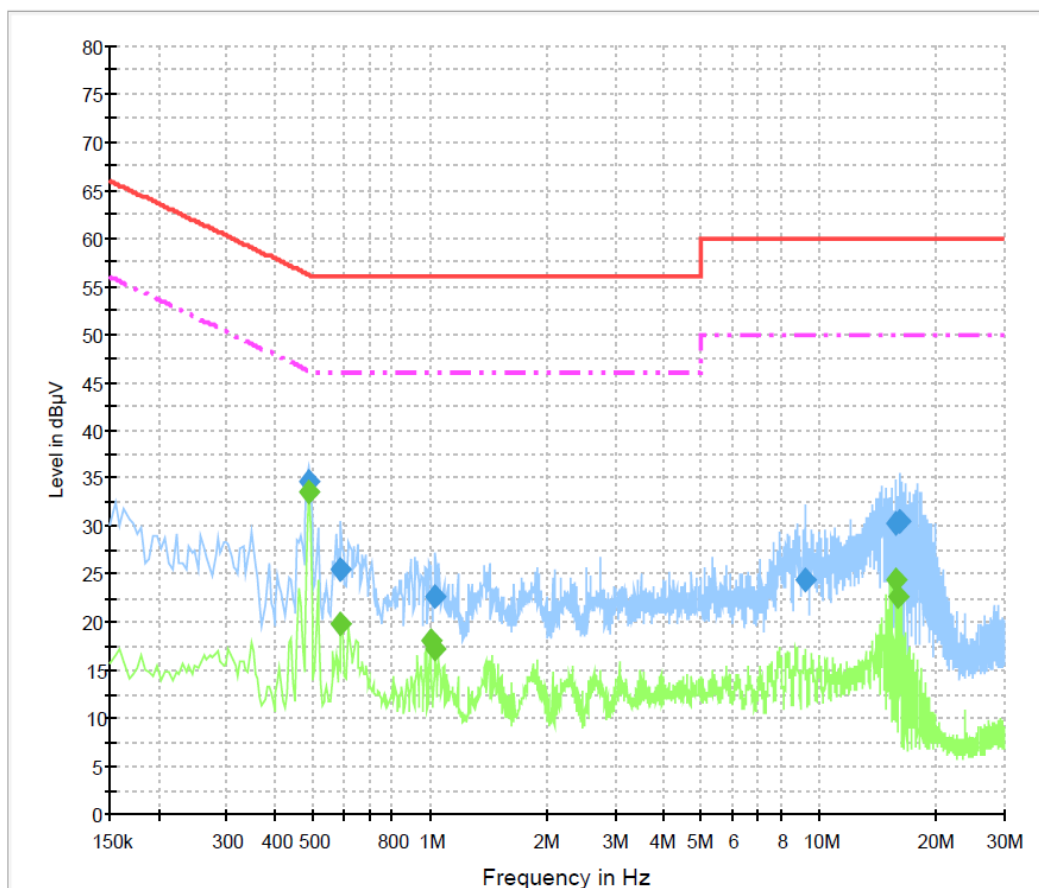
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.487500	34.7	1000.0	9.000	On	N	9.9	21.5	56.2
0.591000	25.5	1000.0	9.000	On	N	9.9	30.5	56.0
1.032000	22.7	1000.0	9.000	On	N	9.8	33.3	56.0
9.199500	24.5	1000.0	9.000	On	N	9.9	35.5	60.0
15.868500	30.4	1000.0	9.000	On	N	10.0	29.6	60.0
16.228500	30.5	1000.0	9.000	On	N	10.0	29.5	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.487500	33.7	1000.0	9.000	On	N	9.9	12.5	46.2
0.591000	19.9	1000.0	9.000	On	N	9.9	26.1	46.0
1.000500	18.2	1000.0	9.000	On	N	9.8	27.8	46.0
1.032000	17.2	1000.0	9.000	On	N	9.8	28.8	46.0
15.846000	24.4	1000.0	9.000	On	N	10.0	25.6	50.0
15.900000	22.6	1000.0	9.000	On	N	10.0	27.4	50.0

Class B_N



5. Radiated emissions (Section 15.209)

Test Location

- ☒ 10 m SAC (test distance : ☐ 10 m, ☒ 3 m)
☐ 3 m SAC (test distance : 3 m)

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- 2) In the frequency range above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 1 GHz
RBW = 100 kHz for $f < 1$ GHz, 9 kHz for $f < 30$ MHz
VBW $\geq$ RBW

Sweep = Auto

Limit

- 15.209(a)

Frequency [MHz]	Field Strength [uV/m]	Measurement Distance [Meters]
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

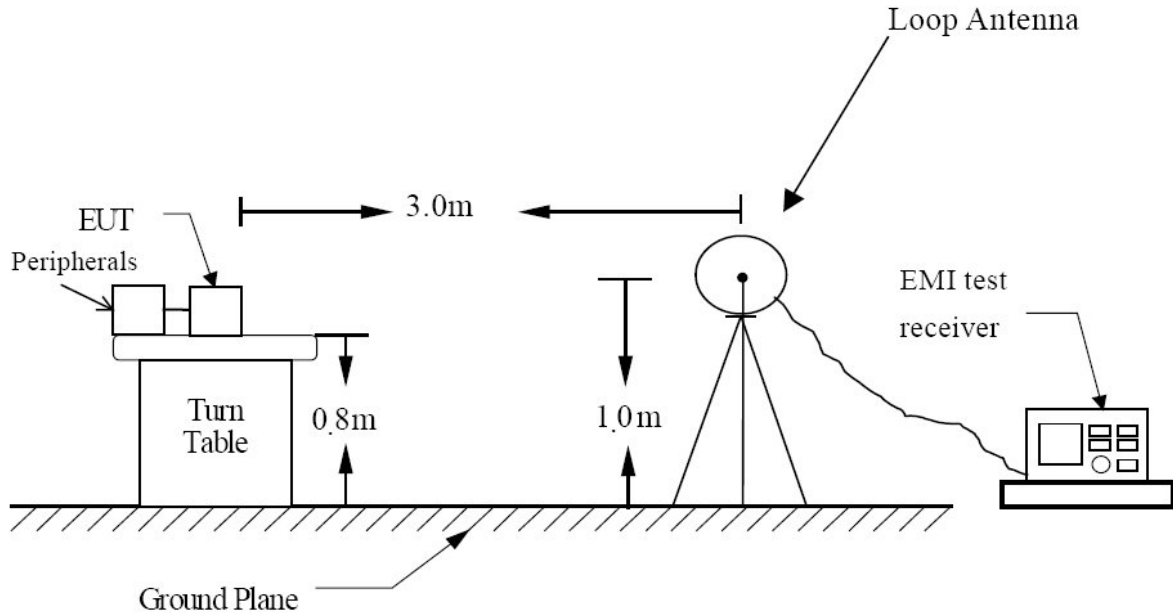
** Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

Note :

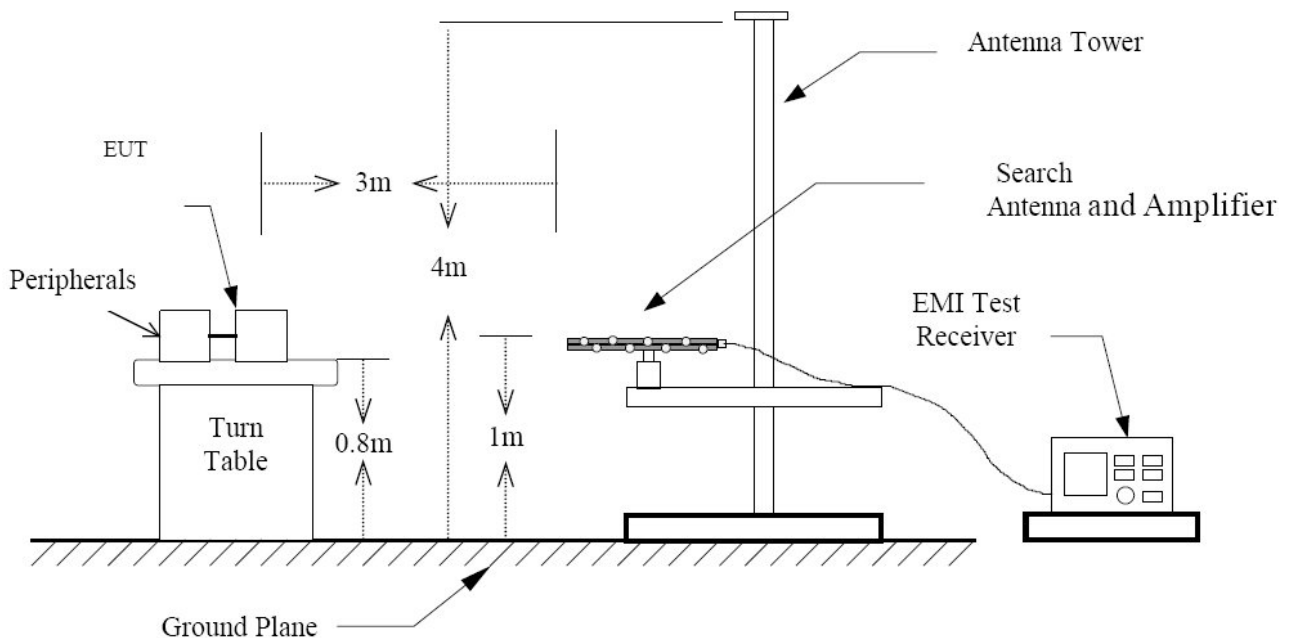
- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Test Setup:

- 1) For field strength of emissions from 9 kHz to 30 MHz



- 2) For field strength of emissions from 30 MHz to 1 GHz





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Test Results

EUT	Dual Spin Spa	Model	LTE-007
Frequency Range	9 kHz ~ 1 GHz	Test mode	TX

The requirements are:

☒ Complies

Test Data

Fundamental Test Data

Operating Frequency : 115 kHz

Freq. (kHz)	Reading (dBuV)	Antenna Factor (dB / m)	Cable Loss (dB)	Distance Correction	Result (dBuV / m)	Limit (dBuV / m)	Margin (dBuV / m)	Detect Mode
114.2	35.5	19.49	5.71	-80	-19.3	26.45	45.75	Peak

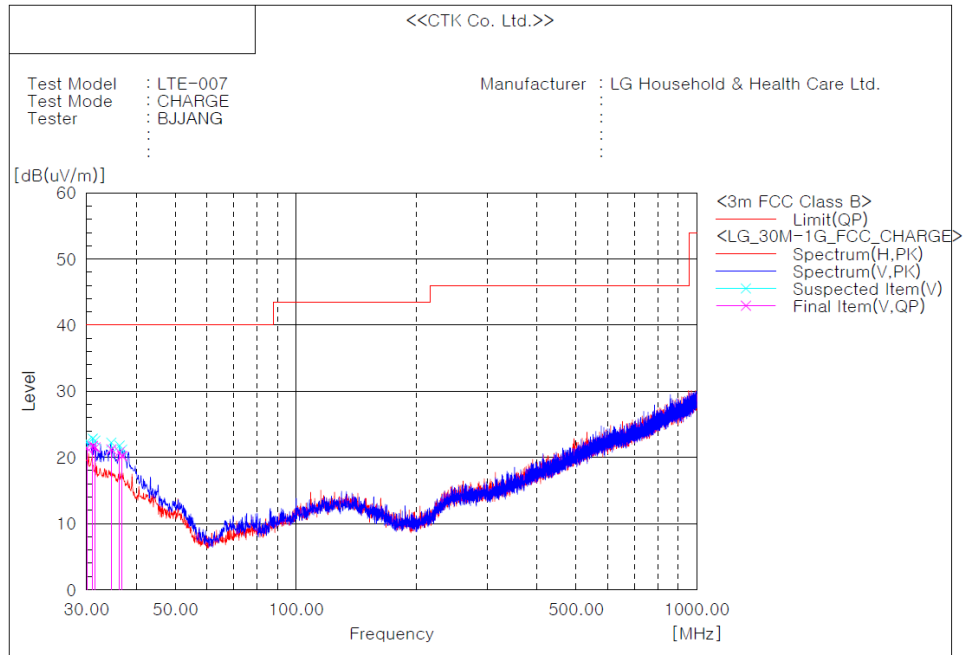
Result = Reading + Antenna Factor + Cable Loss + Distance Correction

Spurious Test Data

9 kHz - 30 MHz : Not Detected

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

30 MHz - 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	30.121	V	27.9	-6.5	21.4	40.0	18.6	101.0	60.0
2	31.091	V	28.5	-6.8	21.7	40.0	18.3	101.0	322.0
3	31.576	V	28.5	-7.0	21.5	40.0	18.5	101.0	322.0
4	34.608	V	29.3	-8.1	21.2	40.0	18.8	101.0	295.0
5	36.305	V	29.7	-8.9	20.8	40.0	19.2	101.0	322.0
6	36.790	V	29.3	-9.1	20.2	40.0	19.8	101.0	322.0

Result = Reading + c.f(Correction factor)

Correction factor = Antenna Factor + Cable Loss + 6 dB attenuator - Amp Gain



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APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
1	EMI Test Receiver	R&S	ESU40	100336	2018-05-12
2	LISN	R&S	ENV216	101760	2018-02-03
3	EMI Test Receiver	R&S	ESC17	100814	2017-11-01
4	Bilog Antenna	Schaffner	CBL6111C	2551	2018-05-13
5	6dB Attenuator	R&S	DNF	272.4110.50-2	2017-11-01
6	AMPLIFIER	SONOMA	310	291721	2018-02-02
7	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-126	2018-05-25
8	6dB Attenuator	R&S	DNF	272.4110.50-1	2018-02-03