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TEST REPORT

FCC MPE Test for IL7SB
Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-RF-2101-FC111-R1

DATE OF ISSUE
February 5, 2021

Tested by
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Additional Model
-

Applicant	**LG Electronics Inc.** 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea
Eut Type Model Name	Silverbox RADIO ASM-RECEIVER IL7SB
FCC ID	BEJIL7SB2
Frequency range	2 402 MHz – 2 480 MHz (Bluetooth) 2 412 MHz ~ 2 462 MHz (WLAN) 5 180 MHz ~ 5 825 MHz (UNII)

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	January 28, 2021	Initial Release
1	February 05, 2021	Revised the Worst case on page 11

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

RF Exposure Statement

1. Limit

According to § 1.1310, § 2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
0.3 - 1.34	614	1.63	*(100)	30
1.34 - 30	824/f	2.19/f	*(180/ f^2)	30
30 - 300	27.5	0.073	0.2	30
300 - 1500	.....	.....	f/1500	30
1500 - 100.000	.....	.....	1.0	30

F = frequency in MHz

* = Plane-wave equivalent power density

2. Maximum Permissible Exposure Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

S = Power density

P = Power input to antenna

G = Power gain to the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

3. RESULTS

3-1. Bluetooth

Average output Power at antenna input terminal	6.500	dBm
Average output Power at antenna input terminal	4.467	mW
Prediction distance	20.000	cm
Prediction frequency	2 402 ~ 2 480	MHz
Antenna Gain(typical)	5.400	dBi
Antenna Gain(numeric)	3.467	-
Power density at prediction frequency(S)	0.00308	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm^2

2.1091

EIRP	11.900	(dBm)
ERP	9.75	(dBm)
ERP	0.009	(W)
ERP Limit	3.00	(W)
MARGIN	25.02	(dB)

3-2. WLAN DTS Band (802.11b,g,n) SISO Internal Antenna

Average output Power at antenna input terminal	18.000	dBm
Average output Power at antenna input terminal	63.096	mW
Prediction distance	20.000	cm
Prediction frequency	2 412 ~ 2 462	MHz
Antenna Gain(typical)	5.400	dBi
Antenna Gain(numeric)	3.467	-
Power density at prediction frequency(S)	0.04352	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm^2

2.1091

EIRP	23.400	(dBm)
ERP	21.25	(dBm)
ERP	0.133	(W)
ERP Limit	3.00	(W)
MARGIN	13.52	(dB)

3-3. WLAN DTS Band (802.11b,g,n) SISO External Antenna

Average output Power at antenna input terminal	18.000	dBm
Average output Power at antenna input terminal	63.096	mW
Prediction distance	20.000	cm
Prediction frequency	2 412 ~ 2 462	MHz
Antenna Gain(typical)	1.200	dBi
Antenna Gain(numeric)	1.318	-
Power density at prediction frequency(S)	0.01655	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm^2

2.1091

EIRP	19.200	(dBm)
ERP	17.05	(dBm)
ERP	0.051	(W)
ERP Limit	3.00	(W)
MARGIN	17.72	(dB)

3-4. WLAN DTS Band (802.11b,g,n) MIMO

Average output Power at antenna input terminal	21.000	dBm
Average output Power at antenna input terminal	125.893	mW
Prediction distance	20.000	cm
Prediction frequency	2 412 ~ 2 462	MHz
Antenna Gain(typical)	5.400	dBi
Antenna Gain(numeric)	3.467	-
Power density at prediction frequency(S)	0.08684	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm^2

2.1091

EIRP	26.400	(dBm)
ERP	24.25	(dBm)
ERP	0.266	(W)
ERP Limit	3.00	(W)
MARGIN	10.52	(dB)

3-5. UNII Band 3(802.11a,n,ac) SISO Internal Antenna

Average output Power at antenna input terminal	21.500	dBm
Average output Power at antenna input terminal	141.254	mW
Prediction distance	20.000	cm
Prediction frequency	5 745 ~ 5 825	MHz
Antenna Gain(typical)	5.400	dBi
Antenna Gain(numeric)	3.467	-
Power density at prediction frequency(S)	0.09744	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm^2

2.1091

EIRP	26.900	(dBm)
ERP	24.75	(dBm)
ERP	0.299	(W)
ERP Limit	3.00	(W)
MARGIN	10.02	(dB)

3-6. UNII Band 2C (802.11a,n,ac) SISO External Antenna

Average output Power at antenna input terminal	20.500	dBm
Average output Power at antenna input terminal	112.202	mW
Prediction distance	20.000	cm
Prediction frequency	5 500 ~ 5 720	MHz
Antenna Gain(typical)	1.400	dBi
Antenna Gain(numeric)	1.380	-
Power density at prediction frequency(S)	0.03081	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm^2

2.1091

EIRP	21.900	(dBm)
ERP	19.75	(dBm)
ERP	0.094	(W)
ERP Limit	3.00	(W)
MARGIN	15.02	(dB)

3-7. UNII Band 3 (802.11a,n,ac) MIMO

Average output Power at antenna input terminal	23.000	dBm
Average output Power at antenna input terminal	199.526	mW
Prediction distance	20.000	cm
Prediction frequency	5 745 ~ 5 825	MHz
Antenna Gain(typical)	5.400	dBi
Antenna Gain(numeric)	3.467	-
Power density at prediction frequency(S)	0.13764	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.000	mW/cm^2

2.1091

EIRP	28.400	(dBm)
ERP	26.25	(dBm)
ERP	0.422	(W)
ERP Limit	3.00	(W)
MARGIN	8.52	(dB)

Worst Case: Simultaneous MPE 20cm is

BT (0.00308 mW/cm^2) + 5G WLAN (0.13764 mW/cm^2)= 0.14072 < 1