

RF Exposure Evaluation declaration

Product Name	PS1 Speaker
Model No.	PS1 Speaker
FCC ID	PPQ-PS1SPEAKER

Applicant	Lite-On Technology Corp.
Address	4F, 90, Chien 1 Road, Chung-Ho, Taipei Hsien 235, Taiwan, R.O.C.

Date of Receipt	Mar. 19, 2012
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Report No.	12B212R-RFUSP42V01

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1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

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

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is the limit of MPE, 1 mW/cm². 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 r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product : PS1 Speaker
 Test Item : RF Exposure Evaluation
 Test Site : No.3 OATS

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802.11b (1Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	51.2861	0.028558
6	2437.00	45.6037	0.025394
11	2462.00	33.6512	0.018738

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11g (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	75.5092	0.042047
6	2437.00	73.4514	0.040901
11	2462.00	59.7035	0.033245

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-20MHz_7.2Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2412.00	81.0961	0.045158
06	2437.00	79.6159	0.044333
11	2462.00	81.6582	0.045471

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-40MHz_15Mbps
Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2422.00	78.5236	0.043725
04	2437.00	83.1764	0.046316
07	2452.00	76.3836	0.042533

Power density in column 4 is much lower than the limit (1 mW/cm²).

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802.11b (1Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	55.9758	0.031170
6	2437.00	44.8745	0.024988
11	2462.00	37.5837	0.020928

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11g (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	83.1764	0.046316
6	2437.00	73.7904	0.041089
11	2462.00	62.9506	0.035053

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-20MHz_7.2Mbps
Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2412.00	88.3080	0.049173
06	2437.00	87.0964	0.048499
11	2462.00	88.7156	0.049400

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-40MHz_15Mbps**Output Power Into Antenna & RF Exposure Evaluation Distance (4.47dBi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2422.00	85.5067	0.047614
04	2437.00	89.1251	0.049628
07	2452.00	82.0352	0.045680

Power density in column 4 is much lower than the limit (1 mW/cm²).