Harman International Industries, Inc.

MPE ASSESSMENT REPORT

Report Type:
FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

Model:
LUXASTR01

REPORT NUMBER:
210402581SHA-004

ISSUE DATE:
May 29, 2021

DOCUMENT CONTROL NUMBER:
TTRFFCCMPE-01_V1

Intertek Testing Services Shanghai
Building No.86, 1198 Qinzhou Road (North)
Caohejing Development Zone
Shanghai 200233, China

Telephone: 86 21 6127 8200
www.intertek.com
Report no.: 210402581SHA-004

Total Quality. Assured.

TEST REPORT

Applicant:	Harman International Industries, Inc.
	8500, Balboa Blvd, Northridge, CA,91329, USA
Manufacturer:	Anam Electronics Co., Ltd.
	27, Digital-ro 27ga-gil, Guro-gu, Seoul, 08375, Republic of Korea
Product Name:	WiFi Module
Type/Model:	LUXASTR01
FCC ID:	APILUXASTR01

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:
KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:	**REVIEWED BY:**
Project Engineer Dylan Tang	Reviewer Daniel Zhao

Total Quality. Assured.

TEST REPORT

Revision History

Report No.	Version	Description	Issued Date
210402581SHA-004	Rev. 01	C2PC	May 26, 2021

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	WiFi Module
Type/Model:	LUXASTR01
Description of EUT:	The EUT is a WiFi Platform Module, which supports 802.11a/b/g/n/ac mode.
Rating:	DC 5V
EUT type:	☒ Table top ☐ Floor standing
Sample number：	G212B019
Product Marketing Name:	WiFi & BT Platform Module
Hardware Version:	LUXASTR01
Sample received date:	May 6, 2021
Date of test:	April 28, 2020 ~ May 27, 2021

1.2 Technical Specification

Frequency Range:	5150 ~ 5250MHz 5250 ~ 5350MHz 5470 ~ 5725MHz 5725 ~ 5850MHz
Support Standards:	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80)
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Number:	For 5180 ~ 5240MHz band: Channel 36 - 48 For 5260 ~ 5320MHz Band: Channel 52 - 64 For 5500 ~ 5700MHz Band: Channel 100 - 140 For 5745 ~ 5825MHz band: Channel 149 - 165
Antenna port Information:	Chip antenna: ant1 3.75dBi, ant2 3.75dBi PCB antenna: ant1 3.94dBi, ant2 3.94dBi Pole antenna: ant1 3.32dBi, ant2 3.32dBi

TEST REPORT

1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN1175
	IC Registration Lab CAB identifier.: CN0051
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (uT)	Equivalent plane wave power density S_{eq} (W/m^2)
0-1 Hz	-	$3,2 \times 10^4$	4×10^4	-
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10 000	4 000/f	5 000/f	-
0,025-0,8 kHz	250/f	4/f	5/f	-
0,8-3 kHz	250/f	5	6,25	-
3-150 kHz	87	5	6,25	-
0,15-1 MHz	87	0,73/f	0,92/f	-
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	-
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Mobile device exposure for simultaneous transmission operations: **the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0**

TEST REPORT

2.2 Assessment Results

Power density (S) is calculated according to the formula:

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

Where S = power density in mW/cm^2

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 210402581SHA-001, 210402581SHA-002, 210402581SHA-003:

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

Frequency band	Power		Antenna Gain		R	S	Limits
(MHz)	dBm	mW	dBi	(Numeric)	(cm)	(mW/cm^2)	(mW/cm^2)
2402-2480	4.15	2.60	3.19	2.82	20	0.001	1
2412 - 2462	16.32	42.85	3.19	2.82	20	0.027	1
5180 - 5240	13.18	20.80	3.04	2.62	20	0.013	1
5260 - 5320	17.55	56.89	3.94	2.43	20	0.045	1
5500 - 5700	16.36	43.25	3.92	2.74	20	0.034	1
5745 - 5825	16.31	42.76	3.07	2.84	20	0.026	1

Note: 1 mW/cm2 from 1.310 Table 1.

Total Quality. Assured.

TEST REPORT

Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.
To ensure compliance, operations at closer than this distance is not recommended.