

RF Exposure Evaluation Report

Report Reference No......: **MTWG22040362-H**

FCC ID.....: **2AL26-SG100**

Compiled by

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Date of issue.....: **May23,2022**

Representative Laboratory Name .: **Shenzhen Most Technology Service Co., Ltd.**

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Nanshan, Shenzhen, Guangdong, China.

Applicant's name.....: **Reveal Media Ltd.**

Address: Riverview House, 20 Old Bridge Street, Hampton Wick, KT1 4BU.
UK

Test specification/ Standard: **47 CFR Part 1.1307;47 CFR Part 1.1310**
KDB447498D01 General RF Exposure Guidance v06

TRF Originator.....: Shenzhen Most Technology Service Co., Ltd.

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Test item description: Smart Gateway

Trade Mark: Reveal Media

Manufacturer: **Reveal Media Hong Kong Ltd.**

Model/Type reference.....: SG100

Listed Models: N/A

Modulation Type.....: CCK,DSSS,OFDM

Operation Frequency.....: From 2412 - 2462MHz,5180-5240 MHz,5260-5320 MHz,
5500-5700 MHz

Hardware Version.....: Raspberry Pi 4 Model B Rev 1.4

Software Version: Raspbian GNU/Linux 11 (bullseye)

Rating: DC 5V by Adapter

Result.....: **PASS**

TEST REPORT

Equipment under Test : Smart Gateway

Model /Type : SG100

Listed Models : N/A

Remark : N/A

Applicant : **Reveal Media Ltd.**

Address : Riverview House, 20 Old Bridge Street, Hampton Wick, KT1 4BU.
UK

Manufacturer : **Reveal Media Hong Kong Ltd.**

Address : 6/F., Luk Kwok Centre, 72 Gloucester Road, Wan Chi, Hong
Kong.

Test Result:	PASS
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2022-05-23	Initial Issue	Alisa Luo

2. SAR Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

2.1.2 Limits

According to FCC Part1.1310: 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 part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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

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.

2.1.3 EUT RF Exposure

Antenna Gain:2dBi

Antenna Gain: The maximum Gain measured in fullyanechoicchamberis

2.4inlinearscale.OutputPower Into Antenna& RF Exposure EvaluationDistance:

WIFI2.4G

802.11b			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(2412MHz)	12.12	12.12	13.12
Middle(2437MHz)	13.11	13.11	14.11
Highest(2462MHz)	13.16	13.16	14.16

802.11g			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(2412MHz)	12.31	12.31	13.31
Middle(2437MHz)	12.10	12.10	13.10
Highest(2462MHz)	11.85	11.85	12.85

802.11n			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(2412MHz)	11.60	11.60	12.60
Middle(2437MHz)	12.10	12.10	13.10
Highest(2462MHz)	11.99	11.99	12.99

WIFI2.4G

Worst case: 802.11b						
Channel	MaximumPeak Conducted OutputPower (dBm)	MaximumPeak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm2)	Limit	Result
Highest(2440MHz)	14.16	26.06	2	0.008	1.0	Pass

Note: 1)Refer to report **MTWG22040362-R2** forEUT test Max Conducted average Output Power value.Note:2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (26.06 * 1.58) / (4 * 3.1416 * 20^2) = 0.008$

Antenna Gain:3dBi

Antenna Gain: The maximum Gain measured in fullyanechoicchamberis
5inlinearscale.OutputPower Into Antenna& RF Exposure EvaluationDistance

WIFI 5G

U-NII 1			
802.11a			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(5180MHz)	12.30	12.30	13.30
Middle(5200MHz)	12.33	12.33	13.33
Highest(5240MHz)	13.01	13.01	14.01

802.11n(HT20)			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(5180MHz)	12.37	12.37	13.37
Middle(5200MHz)	12.50	12.50	13.50
Highest(5240MHz)	12.41	12.41	13.41

U-NII 2A			
802.11a			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(5260MHz)	12.01	12.01	13.01
Middle(5280MHz)	12.03	12.03	13.03
Highest(5320MHz)	12.52	12.52	13.52

802.11n(HT20)			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(5260MHz)	12.41	12.41	13.41
Middle(5280MHz)	12.40	12.40	13.41
Highest(5320MHz)	12.44	12.44	13.44

U-NII 2C			
802.11a			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(5500MHz)	12.60	12.60	13.60
Middle(5600MHz)	12.58	12.58	13.58
Highest(5700MHz)	12.02	12.02	13.02

802.11n(HT20)			
Testchannel	PeakOutput Power (dBm)	Tuneup tolerance (dBm)	Maximumtune-up Power
			(dBm)
Lowest(5500MHz)	12.52	12.52	13.52
Middle(5600MHz)	12.44	12.44	13.44
Highest(5700MHz)	13.30	13.30	14.30

WIFI 5G

U-NII 1						
Worst case: 802.11a						
Channel	MaximumPeak Conducted OutputPower (dBm)	MaximumPeak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm2)	Limit	Result
Highest(5240MHz)	14.01	25.17	3	0.009	1.0	Pass

Note: 1)Refer to report **MTWG22040362-R1** forEUT test Max Conducted average Output Power value.

Note:2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (25.17 * 1.99) / (4 * 3.1416 * 20^2) = 0.009$

U-NII 2A						
Worst case: 802.11a						
Channel	MaximumPeak Conducted OutputPower (dBm)	MaximumPeak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(5320MHz)	13.52	22.49	3	0.008	1.0	Pass

Note: 1)Refer to report **MTWG22040362-R1**forEUTtestMaxConducted average Output Power value.

Note:2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (22.49 * 1.99) / (4 * 3.1416 * 20^2) = 0.008$

U-NII 2C						
Worst case: 802.11a						
Channel	MaximumPeak Conducted OutputPower (dBm)	MaximumPeak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Lowest(5500MHz)	13.60	22.90	3	0.009	1.0	Pass

Note: 1)Refer to report **MTWG22040362-R1**forEUT test Max Conducted average Output Power value.

Note:2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (22.90 * 1.99) / (4 * 3.1416 * 20^2) = 0.009$

.....**THE END OF REPORT**.....