

RF Exposure Evaluation declaration

Product Name : WCDMA/LTE/5G Mobile Phone

Model No. : EA211001,EC211001,EC211004

FCC ID : RYQEA211001

Applicant : FIH CO., LTD.

Address : No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan

Date of Receipt : Apr. 23, 2021

Date of Declaration : June 22, 2021

Report No. : 2150419R-E3082100013

Report Version : V2.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Issued Date: June 22, 2021

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Manufacturer	FIH CO., LTD.	
Model No.	EA211001,EC211001,EC211004	
FCC ID.	RYQEA211001	
Trade Name	FIH	
Applicable Standard	KDB 447498 D01 v06	☒ Minimum test separation distance ≥ 20 cm ☐ For low power devices
Test Result	Complied	

Documented By

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Revision History

Report No.	Version	Description	Issued Date
2150419R-E3082100013	V1.0	Initial issue of report.	2021-06-17
2150419R-E3082100013	V2.0	Update Product Name	2021-06-22

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	WCDMA/LTE/5G Mobile Phone
Model No.	EA211001,EC211001,EC211004
Trade Name	FIH
FCC ID	RYQEA211001
WWAN Functions	WCDMA: B2/B4/B5 LTE: B2/B4/B5/B12/B14/B30/B66 2UL CA: CA_2A-5A, CA_2A-12A, CA_2A-14A, CA_5A-30A, CA_5A-66A, CA_5B, CA_12A-30A, CA_14A-30A, CA_14A-66A ENDC: ENDC_2A-n2, ENDC_2A-n5, ENDC_2A-n66, ENDC_5A-n2, ENDC_5A-n66, ENDC_12A-n2, ENDC_12A-n66, ENDC_14A-n2, ENDC_14A-n66, ENDC_30A-n2, ENDC_30A-n5, ENDC_30A-n66, ENDC_66A-n2, ENDC_66A-n5, ENDC_66A-n66
WLAN Functions	WLAN 2.4G: 802.11b/g/n/ac-20M WLAN 5G: 802.11a/n-20M /ac-20M /n-40M/ac-40M/ac-80M
BT Functions	BR/EDR (1Mbps/2Mbps/3Mbps), BLE(1M/2M)

1.2. Antenna List :

No	Manufacturer	Part No	Antenna Type	Peak Gain
ANT0 (Main)	Tongda	MEFLC61001A/ MEFLC61004A	Monopole	0.6 dBi for B2 0.4 dBi for B4/B66 -5.1 dBi for B5 -2.9 dBi for B12 -4.7 dBi for B14 -0.3 dBi for B30
ANT1 (TRX)			Loop	-6.8 dBi for B2 -10.3 dBi for B4/B66 -2.0 dBi for B30
ANT2 (TRX)			Monopole	-2.5 dBi for B5 -4.1 dBi for B12 -2.5 dBi for B14
ANT6(GPS/ WIFI_2.4G)			Loop	-4.7 dBi for WIFI 2.4G
ANT5 (WIFI_5G)	Speed	S0AC60360A0	PIFA	1.4 dBi for WIFI 5G

2. RF Exposure Evaluation

2.1. 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	30
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

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

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.

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0

2.2. Test Result of RF Exposure Evaluation

Product : WCDMA/LTE/5G Mobile Phone
 Test Item : RF Exposure Evaluation
 Test Site : N/A

Frequency	Tune up Average Power (dBm)	Antenna Gain (dBi)	Tune up ERP/EIRP (W)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
WCDMA B2	25.0	0.60	0.363	316.2	0.072232	1.00	Pass
WCDMA B4	25.0	0.20	0.331	316.2	0.065876	1.00	Pass
WCDMA B5	25.5	-2.50	0.122	354.8	0.039695	0.55	Pass
LTE B2	25.0	0.60	0.363	316.2	0.072232	1.00	Pass
LTE B5	25.5	-2.50	0.122	354.8	0.039695	0.55	Pass
LTE B12	25.5	-2.90	0.111	354.8	0.036202	0.47	Pass
LTE B14	25.5	-2.50	0.122	354.8	0.039695	0.53	Pass
LTE B30	24.0	-0.30	0.234	251.2	0.046637	1.00	Pass
LTE B4/66	25.0	0.40	0.347	316.2	0.068981	1.00	Pass
ENDC_n2	25.0	0.60	0.363	316.2	0.072232	1.00	Pass
ENDC_n5	25.5	-2.50	0.122	354.8	0.039695	0.55	Pass
ENDC_n66	25.0	0.40	0.347	316.2	0.068981	1.00	Pass
WIFI_2.4G	18.5	-4.70	0.024	70.8	0.004772	1.00	Pass
WIFI_5G	13.0	1.40	0.028	20.0	0.005479	1.00	Pass
BT	11.5	-4.70	0.005	14.1	0.000952	1.00	Pass

2.3. Calculations for Multi-Transmitter

Worst case Mode	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Ratios	result	Ratios Limit	Pass/Fail
LTE B12 (LB)	0.036202	0.47	0.0777	0.1612	1	Pass
LTE B2 (HB)	0.072232	1.00	0.0722			
WIFI_2.4G	0.004772	1.00	0.0048			
WIFI_5G	0.005479	1.00	0.0055			
BT	0.000952	1.00	0.0010			