FCC RF EXPOSURE EVALUATION REPORT

Product Name:	DP CONNECTING KIT(SMART CONTROLLER)
Trade Mark:	N/A
Model No.:	2042811
Report Number:	180919023RFC-2
Test Standards:	FCC 47 CFR Part 1 Subpart I
FCC ID:	2ALCP2042811S
Test Result:	PASS
Date of Issue:	October 18, 2018

Prepared for:

LF Beauty Limited
2/F., HK Spinners Industrial Building, Phases I & II, 800 Cheung ShaWan Road, Kowloon, Hong Kong

Prepared by:

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Tested by: _____ Henry Lu, Project Engineer

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Date: October 18, 2018

Version

Version No.	Date	Description
V1.0	October 18, 2018	Original

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	LF Beauty Limited
Address of Applicant:	2/F., HK Spinners Industrial Building, Phases I & II, 800 Cheung ShaWan Road, Kowloon, Hong Kong
Manufacturer:	LF Beauty Limited
Address of Manufacturer:	2/F., HK Spinners Industrial Building, Phases I & II, 800 Cheung ShaWan Road, Kowloon, Hong Kong

1.2 EUT INFORMATION

Product Name:	DP CONNECTING KIT(SMART CONTROLLER)	
Model No.:	2042811	
Add. Model No.:	N/A	
Trade Mark:	N/A	
DUT Stage:	Identical Prototype	
EUT Supports Function:	GSM Bands:	GSM850/1900
	UTRA Bands:	Band II/ Band V
	2.4 GHz ISM Band:	Bluetooth V4.0 (Only LE)
Sample Received Date:	September 19, 2018	
Sample Tested Date:	September 19, 2018 to October 16, 2018	

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For BT_LE	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2402 MHz to 2480 MHz
Bluetooth Version:	Bluetooth LE
Type of Modulation:	GFSK
Number of Channels:	40
Channel Separation:	2 MHz
Antenna Type:	External Antenna
Antenna Gain:	6 dBi
Maximum Peak Power:	-4.22 dBm

For WWAN		
Type of Modulation:	GPRS:	GMSK
	EDGE:	GMSK, 8PSK
	WCDMA	BPSK
	HSDPA:	QPSK
	HSUPA:	QPSK
Frequency Range:	GPRS/EDGE 850:	824.2-848.8 MHz
	GPRS/EDGE 1900:	1850.2-1909.8 MHz
	WCDMA Band II:	1852.4-1907.6 MHz
	WCDMA Band V:	826.4-846.6 MHz
Max RF Output Power:	GPRS 850:	32.14 dBm
	EDGE 850:	26.29 dBm
	GPRS 1900:	29.10 dBm
	EDGE 1900:	25.70 dBm
	WCDMA Band II:	23.70 dBm
	WCDMA Band V:	23.24 dBm
Max RF Output Power:	GPRS 850:	1TS*(1/8): 33 dBm ±3dB
		2TS*(2/8): 32 dBm ±3dB
		3TS*(3/8): 31 dBm ±3dB
		4TS*(4/8): 29 dBm ±3dB
	GPRS 1900:	1TS*(1/8): 30 dBm ±3dB

		2TS*(2/8): 29.5 dBm ±3dB
		3TS*(3/8): 28.5 dBm ±3dB
		4TS*(4/8): 27.0 dBm ±3dB
	WCDMA Band II:	24 dBm ±3dB
	WCDMA Band V:	24 dBm ±3dB
Antenna Type:	External Antenna	
Antenna Gain:	GSM 850:	2 dBi
	GSM 1900:	2 dBi
	WCDMA Band II:	2 dBi
	WCDMA Band V:	2 dBi

1.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I

All test items have been performed and recorded as per the above standards

1.5 TEST LOCATION

All tests were performed at:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1
The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report.

3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density.

3.2.2 Test Procedure

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

3.3 MPE CALCULATION METHOD

S = PG/4πR^2= EIRP/4πR^2
S = power density (in appropriate units, e.g., mw/cm2)
P = power input to the antenna (in appropriate units, e.g., mw)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.
R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

3.4 MPE CALCULATION RESULTS

Note: *For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.*

3.4.1 For BLE

For BLE function, operating at 2402MHz to 2480 MHz

3.4.1.1 Antenna Type:

Chain 0: External Antenna

3.4.1.2 Antenna Gain:

Chain 0: 2402MHz to 2480 MHz: 6 dBi

3.4.1.3 Results for BLE

Operating Mode	Freq.	Declared maximum conducted average output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(mW)	(mw/cm^2)	
LE	2402-2480	-6	3	6	3	1.9953	1	0.0004

3.4.2 For WWAN

For GPRS/EDGE function, operating at 850/1900 bands for GMSK and 8PSK and
For WCDMA function, operating at band II/ IV/ V for BPSK and QPSK

3.4.2.1 Antenna Type:

Chain 0: External Antenna

3.4.2.2 Antenna Gain:

Chain 0: 2 dBi

3.4.2.3 Results for WWAN

Operating Mode	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Duty cycle	Equivalent EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(%)	(mW)	(mw/cm^2)	
GPRS 850 1TS*(1/8)	824.2-848.8	33	3	2	38	12.5	788.6967	0.5493	0.1569
GPRS 850 2TS*(2/8)		32	3	2	37	25	1252.9681	0.5493	0.2493
GPRS 850 3TS*(3/8)		31	3	2	36	37.5	1492.9019	0.5493	0.2970
GPRS 850 4TS*(4/8)		29	3	2	34	50	1255.9432	0.5493	0.2499
GPRS 1900 1TS*(1/8)	1850.2-1909.8	30	3	2	35	12.5	395.2847	1	0.0786
GPRS 1900 2TS*(2/8)		29.5	3	2	34.5	25	704.5957	1	0.1402
GPRS 1900 3TS*(3/8)		28.5	3	2	33.5	37.5	839.5204	1	0.1670
GPRS 1900 4TS*(4/8)		27.0	3	2	32	50	792.4466	1	0.1576
WCDMA FDD Band II	1852.4-1907.6	24	3	2	29	100	794.3282	1	0.1580
WCDMA FDD Band V	826.4-846.6	24	3	2	29	100	794.3282	0.5493	0.1580

Note 1: Calculated maximum EIRP = Declared maximum conducted output power + Max. positive tolerance according manufacturer + Antenna Gain.
Note 2: Declared maximum EIRP = $10^{\left(\frac{\text{Calculated maximum EIRP}}{10}\right)}$.
Note 3: Equivalent EIRP = Declared maximum EIRP * Duty cycle.
Note 4: Margin = MPE Limit - MPE Value.

3.4.3 Simultaneous Multi-band Transmission MPE Analysis

3.4.4.1 List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Support/Not Support
1	WWAN + BT	Support

3.4.4.2 Results for transmit simultaneously

No.	Configurations	Maximum MPE Value (mw/cm^2)			Limits (mw/cm^2)
		WWAN	BT	Transmit simultaneously	
1	GPER 850 + BT	0.2970	0.0004	0.5411	1
2	GPER 1900 + BT	0.1670	0.0004	0.1674	1
3	WCDMA Band II + BT	0.1580	0.0004	0.1584	1
4	WCDMA Band V + BT	0.1580	0.0004	0.2880	1

Note 1: According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

Transmit simultaneously MPE = Σ of MPE ratios

MPE ratios = Field strengths or power density / MPE limit at the test frequency

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***