REPORT No. : SZ19050315S01

RF EXPOSURE

EVALUATION REPORT

APPLICANT	:	Social Bicycles LLC
PRODUCT NAME	:	Clarion Module
MODEL NAME	:	Clarion Module R9
BRAND NAME	:	JUMP Bikes
FCC ID	:	2ADEK1905R9
STANDARD(S)	:	47CFR 2.1091 KDB 447498
RECEIPT DATE	:	2019-06-15
TEST DATE	:	2019-06-22
ISSUE DATE	:	2019-06-22

Edited by: Liang Yumei (Rapporteur)

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DIRECTORY

Change history		
Version	**Date**	**Reason of changed**
1.0	2019-06-22	Original

1. Technical Information

Note: Provide by Applicant.

1.1 Applicant and Manufacturer Information

Applicant:	Social Bicycles LLC
Applicant Address:	55 Prospect St. Suite 410 Brooklyn,New York 11201,United States
Manufacturer:	E-BUSINESS INTERNATIONAL TECHNOLOGY(SHENZHEN) CO.LTD
Manufacturer Address:	Floor 13, Tower C, Chuangwei Building, 008 Gaoxin South First Road, Hi-Tech Park, Nanshan District, Shenzhen, China 518057

1.2 Equipment under Test (EUT) Description

EUT Name:	Clarion Module
Hardware Version:	R9
Software Version:	1.2.1_rc2
Frequency Bands:	GSM 850: 824.2 MHz ~ 848.8 MHz GSM 1900: 1850.2 MHz ~ 1909.8 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 18: 815 MHz ~ 830 MHz LTE Band 19: 830 MHz ~ 845 MHz LTE Band 26: 814 MHz ~ 849 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Modulation Mode:	EDGE: 8PSK LTE: QPSK/16QAM Bluetooth LE: GFSK
Antenna Type:	Chip Antenna
Antenna Gain:	EDGE:1.0dBi , LTE: 1.0dBi , BLE: 1.3dBi

1.3 Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	R9	1.2.1_rc2

1.4 Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1091	Radio Frequency Radiation Exposure Evaluation: mobile devices
2	KDB 447498 D01v06	General RF Exposure Guidance

2. Device Category and RF Exposure Limit

Per user manual, Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term “fixed location” means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

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)
(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* = Plane-wave equivalent power density

3. RF Output Power

➢ **GSM Conducted Power**

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
EDGE 1 Tx slot	24.75	24.90	24.94	25.00	15.75	15.90	15.94	16.00
EDGE 2 Tx slots	24.35	24.72	24.67	25.00	18.35	18.72	18.67	19.00
EDGE 3 Tx slots	24.27	24.18	23.94	24.50	20.01	19.92	19.68	20.24
EDGE 4 Tx slots	23.31	23.56	23.89	24.00	20.31	20.56	**20.89**	21.00

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
EDGE 1 Tx slot	24.68	24.44	24.48	25.00	15.68	15.44	15.48	16.00
EDGE 2 Tx slots	24.59	24.23	24.46	25.00	18.59	18.23	18.46	19.00
EDGE 3 Tx slots	24.29	24.06	24.27	24.50	20.03	19.80	20.01	20.24
EDGE 4 Tx slots	24.02	23.74	23.95	24.50	**21.02**	20.74	20.95	21.50

➢ **LTE Conducted Power**

<FDD-LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	23.27	23.07	23.24	23.5
20	QPSK	1	3	23.31	23.05	23.08	
20	QPSK	1	5	23.14	23.19	23.03	
20	QPSK	3	0	22.03	22.16	22.11	22.5
20	QPSK	3	1	22.16	22.05	22.14	
20	QPSK	3	3	22.12	22.15	22.04	
20	QPSK	6	0	22.14	22.14	22.11	
20	16QAM	1	0	22.03	21.99	22.04	22.5
20	16QAM	1	3	22.14	22.04	22.15	

20	16QAM	1	5	21.90	22.13	22.03	
20	16QAM	3	0	21.26	21.35	21.23	21.5
20	16QAM	3	1	21.34	21.22	21.27	
20	16QAM	3	3	21.35	21.23	21.25	
20	16QAM	6	0	21.08	21.23	21.14	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	23.05	23.06	23.04	23.5
15	QPSK	1	3	23.14	23.07	23.12	
15	QPSK	1	5	23.03	23.04	23.04	
15	QPSK	3	0	22.04	22.17	22.12	22.5
15	QPSK	3	1	22.14	22.03	22.15	
15	QPSK	3	3	22.10	22.14	22.04	
15	QPSK	6	0	22.15	22.14	22.11	
15	16QAM	1	0	22.04	22.38	22.04	22.5
15	16QAM	1	3	22.24	22.04	21.91	
15	16QAM	1	5	22.48	22.00	22.55	
15	16QAM	3	0	21.23	21.16	21.28	21.5
15	16QAM	3	1	21.36	21.22	21.25	
15	16QAM	3	3	21.33	21.25	21.29	
15	16QAM	6	0	21.36	21.23	21.16	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	23.19	23.05	23.14	23.5
10	QPSK	1	3	23.27	23.28	23.03	
10	QPSK	1	5	23.15	23.02	23.24	
10	QPSK	3	0	22.04	22.13	22.13	22.5
10	QPSK	3	1	22.17	22.04	22.14	
10	QPSK	3	3	22.11	22.14	22.04	
10	QPSK	6	0	22.15	22.14	22.10	
10	16QAM	1	0	22.05	22.44	22.04	22.5
10	16QAM	1	3	22.23	22.03	22.26	
10	16QAM	1	5	22.45	21.97	21.99	
10	16QAM	3	0	21.30	21.12	21.31	21.5
10	16QAM	3	1	21.32	21.29	21.36	
10	16QAM	3	3	21.24	21.25	21.31	
10	16QAM	6	0	21.42	21.24	21.17	

Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	23.19	22.66	22.99	23.5
5	QPSK	1	3	23.17	22.70	23.01	
5	QPSK	1	5	23.28	22.82	23.11	
5	QPSK	3	0	22.04	22.18	22.11	22.5
5	QPSK	3	1	22.14	22.05	22.13	
5	QPSK	3	3	22.11	22.13	22.03	
5	QPSK	6	0	22.14	22.19	22.10	
5	16QAM	1	0	22.04	22.32	22.03	22.5
5	16QAM	1	3	22.29	22.04	21.93	
5	16QAM	1	5	22.23	22.42	21.97	
5	16QAM	3	0	21.29	21.21	21.31	21.5
5	16QAM	3	1	21.28	21.32	21.22	
5	16QAM	3	3	21.35	21.24	21.22	
5	16QAM	6	0	21.43	21.27	21.27	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	23.22	23.10	23.14	23.5
3	QPSK	1	3	23.27	23.34	23.04	
3	QPSK	1	5	23.32	23.01	23.21	
3	QPSK	3	0	22.04	22.14	22.12	22.5
3	QPSK	3	1	22.20	22.03	22.14	
3	QPSK	3	3	22.11	22.15	22.04	
3	QPSK	6	0	22.15	22.15	22.10	
3	16QAM	1	0	22.04	22.39	22.04	22.5
3	16QAM	1	3	22.20	22.03	21.96	
3	16QAM	1	5	22.28	22.11	22.02	
3	16QAM	3	0	21.23	21.27	21.23	21.5
3	16QAM	3	1	21.31	21.25	21.33	
3	16QAM	3	3	21.35	21.24	21.23	
3	16QAM	6	0	21.16	21.31	21.25	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	23.15	23.06	23.27	23.5
1.4	QPSK	1	3	23.22	23.10	23.06	

1.4	QPSK	1	5	23.17	23.33	23.04	
1.4	QPSK	3	0	22.03	22.14	22.11	
1.4	QPSK	3	1	22.16	22.04	22.14	
1.4	QPSK	3	3	22.11	22.16	22.05	
1.4	QPSK	6	0	22.14	22.13	22.11	22.5
1.4	16QAM	1	0	22.03	22.47	22.04	
1.4	16QAM	1	3	22.44	22.04	22.21	
1.4	16QAM	1	5	22.07	22.46	22.26	22.5
1.4	16QAM	3	0	21.37	21.34	21.24	
1.4	16QAM	3	1	21.29	21.25	21.35	
1.4	16QAM	3	3	21.30	21.22	21.14	
1.4	16QAM	6	0	21.08	21.24	21.32	21.5

<FDD-LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	22.15	22.18	22.14	
20	QPSK	1	3	22.16	22.23	22.18	22.5
20	QPSK	1	5	22.15	22.14	22.20	
20	QPSK	3	0	21.10	21.08	21.24	
20	QPSK	3	1	21.31	21.24	21.28	
20	QPSK	3	3	21.32	21.40	21.28	21.5
20	QPSK	6	0	21.45	21.26	21.44	
20	16QAM	1	0	21.38	21.30	21.30	
20	16QAM	1	3	21.09	21.09	21.22	21.5
20	16QAM	1	5	21.23	21.26	21.22	
20	16QAM	3	0	20.44	20.38	20.09	
20	16QAM	3	1	19.95	20.22	20.29	
20	16QAM	3	3	20.18	20.44	20.41	20.5
20	16QAM	6	0	20.24	20.18	20.34	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	22.04	22.19	22.12	
15	QPSK	1	3	22.17	22.03	22.13	22.5

15	QPSK	1	5	22.10	22.15	22.04	
15	QPSK	3	0	21.02	21.10	21.26	21.5
15	QPSK	3	1	21.24	21.34	21.33	
15	QPSK	3	3	21.30	21.46	21.33	
15	QPSK	6	0	21.47	21.22	21.40	
15	16QAM	1	0	21.24	21.34	21.34	21.5
15	16QAM	1	3	21.16	21.09	21.23	
15	16QAM	1	5	21.29	21.25	21.35	
15	16QAM	3	0	20.00	19.99	19.93	20.5
15	16QAM	3	1	20.36	20.23	20.42	
15	16QAM	3	3	20.14	20.44	20.36	
15	16QAM	6	0	19.99	19.92	19.95	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	22.04	22.18	22.11	22.5
10	QPSK	1	3	22.19	22.04	22.14	
10	QPSK	1	5	22.10	22.14	22.03	
10	QPSK	3	0	21.03	21.11	21.27	21.5
10	QPSK	3	1	21.33	21.33	21.23	
10	QPSK	3	3	21.36	21.22	21.41	
10	QPSK	6	0	21.42	21.22	21.25	
10	16QAM	1	0	21.26	21.32	21.37	21.5
10	16QAM	1	3	21.16	21.10	21.25	
10	16QAM	1	5	21.27	21.36	21.28	
10	16QAM	3	0	20.16	20.22	20.23	20.5
10	16QAM	3	1	20.04	20.00	20.36	
10	16QAM	3	3	20.33	20.27	20.02	
10	16QAM	6	0	19.98	20.36	20.15	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	21.95	21.80	22.19	22.5
5	QPSK	1	3	22.11	22.03	22.13	
5	QPSK	1	5	22.11	22.04	21.97	
5	QPSK	3	0	21.15	21.11	21.26	21.5
5	QPSK	3	1	21.32	21.33	21.23	
5	QPSK	3	3	21.31	21.32	21.34	
5	QPSK	6	0	21.38	21.23	21.36	

5	16QAM	1	0	21.24	21.30	21.25	21.5
5	16QAM	1	3	21.07	21.11	21.23	
5	16QAM	1	5	21.22	21.25	21.32	
5	16QAM	3	0	19.93	20.37	20.21	20.5
5	16QAM	3	1	20.60	20.11	20.34	
5	16QAM	3	3	20.25	20.27	20.47	
5	16QAM	6	0	20.02	20.18	20.39	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	22.04	22.18	22.12	22.5
3	QPSK	1	3	22.17	22.04	22.14	
3	QPSK	1	5	22.12	22.16	22.04	
3	QPSK	3	0	21.16	21.09	21.22	21.5
3	QPSK	3	1	21.23	21.23	21.34	
3	QPSK	3	3	21.29	21.24	21.28	
3	QPSK	6	0	21.42	21.26	21.28	
3	16QAM	1	0	21.32	21.21	21.18	21.5
3	16QAM	1	3	21.04	21.12	21.24	
3	16QAM	1	5	21.26	21.25	21.32	
3	16QAM	3	0	20.39	20.22	20.27	20.5
3	16QAM	3	1	20.43	20.06	20.10	
3	16QAM	3	3	20.26	20.01	20.15	
3	16QAM	6	0	20.45	20.07	20.40	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	22.03	22.16	22.10	22.5
1.4	QPSK	1	3	22.15	22.04	22.14	
1.4	QPSK	1	5	22.11	22.15	22.04	
1.4	QPSK	3	0	21.06	21.08	21.26	
1.4	QPSK	3	1	21.35	21.22	21.22	
1.4	QPSK	3	3	21.30	21.27	21.24	
1.4	QPSK	6	0	21.32	21.22	21.35	21.5
1.4	16QAM	1	0	21.26	21.23	21.19	21.5
1.4	16QAM	1	3	21.06	21.09	21.26	
1.4	16QAM	1	5	21.34	21.35	21.31	
1.4	16QAM	3	0	20.19	20.40	20.10	
1.4	16QAM	3	1	20.35	20.27	20.41	

1.4	16QAM	3	3	20.50	20.28	20.22	
1.4	16QAM	6	0	19.99	20.54	20.28	20.5

<FDD-LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	22.98	22.82	22.90	23
10	QPSK	1	3	22.82	22.80	22.84	
10	QPSK	1	5	22.78	22.94	22.78	
10	QPSK	3	0	21.66	21.57	21.69	22
10	QPSK	3	1	21.02	20.93	21.18	
10	QPSK	3	3	21.19	20.92	21.54	
10	QPSK	6	0	21.56	21.52	21.63	
10	16QAM	1	0	21.69	21.66	21.12	22
10	16QAM	1	3	21.10	20.96	21.41	
10	16QAM	1	5	21.28	21.22	21.45	
10	16QAM	3	0	20.61	20.60	20.54	21
10	16QAM	3	1	20.55	20.59	20.36	
10	16QAM	3	3	20.58	20.01	20.55	
10	16QAM	6	0	20.19	19.92	20.29	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	22.65	22.61	22.79	23
5	QPSK	1	3	22.60	22.64	22.92	
5	QPSK	1	5	22.79	22.76	22.82	
5	QPSK	3	0	21.49	21.05	21.05	22
5	QPSK	3	1	21.34	21.65	20.99	
5	QPSK	3	3	21.37	21.29	21.53	
5	QPSK	6	0	21.28	21.64	21.55	
5	16QAM	1	0	20.94	21.67	21.39	22
5	16QAM	1	3	21.28	21.61	20.92	
5	16QAM	1	5	20.28	20.13	20.24	
5	16QAM	3	0	20.12	20.58	19.99	21
5	16QAM	3	1	20.11	20.34	19.92	

5	16QAM	3	3	20.52	20.46	19.95	
5	16QAM	6	0	20.59	20.35	20.55	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	22.89	22.83	22.73	23
3	QPSK	1	3	22.85	22.78	22.93	
3	QPSK	1	5	22.97	22.91	22.90	
3	QPSK	3	0	21.30	21.05	21.20	22
3	QPSK	3	1	21.56	21.67	21.64	
3	QPSK	3	3	21.57	21.06	21.66	
3	QPSK	6	0	21.21	21.46	20.98	
3	16QAM	1	0	21.20	21.24	20.92	22
3	16QAM	1	3	21.63	21.23	20.93	
3	16QAM	1	5	20.61	20.31	20.15	
3	16QAM	3	0	20.25	20.55	20.43	21
3	16QAM	3	1	20.05	20.40	20.11	
3	16QAM	3	3	20.14	19.96	20.47	
3	16QAM	6	0	20.50	20.28	20.01	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	22.83	22.93	22.92	23
1.4	QPSK	1	3	22.90	22.93	22.81	
1.4	QPSK	1	5	22.89	22.92	22.82	
1.4	QPSK	3	0	22.97	22.79	22.75	
1.4	QPSK	3	1	22.91	22.73	22.75	
1.4	QPSK	3	3	22.79	22.94	22.94	
1.4	QPSK	6	0	21.26	21.26	21.18	22
1.4	16QAM	1	0	21.21	21.16	21.00	22
1.4	16QAM	1	3	21.16	20.97	21.37	
1.4	16QAM	1	5	21.50	20.94	21.60	
1.4	16QAM	3	0	21.30	21.31	20.92	
1.4	16QAM	3	1	21.62	21.30	21.06	
1.4	16QAM	3	3	21.20	21.53	21.58	
1.4	16QAM	6	0	20.51	20.54	20.05	21

<FDD-LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23060	23095	23130	
Frequency (MHz)				704	707.5	711	
10	QPSK	1	0	22.39	22.50	22.39	23
10	QPSK	1	3	22.40	21.93	21.90	
10	QPSK	1	5	22.06	22.39	21.99	
10	QPSK	3	0	21.09	21.35	21.10	22
10	QPSK	3	1	20.99	21.03	21.69	
10	QPSK	3	3	20.92	21.40	21.60	
10	QPSK	6	0	21.08	21.00	21.23	
10	16QAM	1	0	21.64	20.93	21.44	22
10	16QAM	1	3	21.21	21.00	21.66	
10	16QAM	1	5	21.67	21.63	21.07	
10	16QAM	3	0	20.67	20.37	20.41	21
10	16QAM	3	1	20.53	20.23	20.57	
10	16QAM	3	3	20.08	20.13	20.36	
10	16QAM	6	0	20.13	20.11	20.00	
Channel				23035	23095	23155	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	22.14	22.22	22.04	23
5	QPSK	1	3	22.21	22.25	21.96	
5	QPSK	1	5	22.45	22.33	22.30	
5	QPSK	3	0	21.10	21.22	20.99	22
5	QPSK	3	1	21.44	21.42	21.22	
5	QPSK	3	3	21.32	21.11	21.13	
5	QPSK	6	0	21.11	21.66	21.27	
5	16QAM	1	0	21.33	21.22	21.58	22
5	16QAM	1	3	21.32	21.43	20.92	
5	16QAM	1	5	21.21	21.13	21.63	
5	16QAM	3	0	20.24	20.50	20.05	21
5	16QAM	3	1	20.65	20.43	20.43	
5	16QAM	3	3	20.37	20.61	20.10	
5	16QAM	6	0	19.96	20.47	20.36	
Channel				23025	23095	23165	Tune-up

Frequency (MHz)				700.5	707.5	714.5	limit (dBm)
3	QPSK	1	0	22.24	22.18	21.92	23
3	QPSK	1	3	22.27	22.23	21.96	
3	QPSK	1	5	22.06	21.99	21.99	
3	QPSK	3	0	21.54	21.50	21.27	22
3	QPSK	3	1	21.09	20.98	21.62	
3	QPSK	3	3	21.48	21.13	21.64	
3	QPSK	6	0	21.01	21.25	21.42	
3	16QAM	1	0	21.70	21.46	21.17	22
3	16QAM	1	3	20.93	21.24	21.49	
3	16QAM	1	5	21.65	20.91	21.58	
3	16QAM	3	0	20.04	20.63	20.55	21
3	16QAM	3	1	20.41	20.15	20.37	
3	16QAM	3	3	20.16	19.92	19.96	
3	16QAM	6	0	20.12	20.65	20.58	
Channel				23017	23095	23173	Tune-up limit (dBm)
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	22.36	22.20	22.32	23
1.4	QPSK	1	3	22.24	22.07	21.98	
1.4	QPSK	1	5	22.36	21.90	22.19	
1.4	QPSK	3	0	21.51	21.38	21.28	
1.4	QPSK	3	1	21.68	21.03	20.91	
1.4	QPSK	3	3	20.93	21.24	21.08	
1.4	QPSK	6	0	21.31	21.21	21.07	22
1.4	16QAM	1	0	21.37	21.61	21.43	22
1.4	16QAM	1	3	21.66	20.96	21.03	
1.4	16QAM	1	5	21.50	21.27	21.20	
1.4	16QAM	3	0	21.14	21.47	21.34	
1.4	16QAM	3	1	21.70	21.15	21.65	
1.4	16QAM	3	3	21.00	21.61	21.37	
1.4	16QAM	6	0	20.56	20.47	20.32	21

<FDD-LTE Band 18>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23925	23925	23925	
Frequency (MHz)				822.5	822.5	822.5	
15	QPSK	1	0	22.73	22.70	22.87	23
15	QPSK	1	3	22.43	22.38	22.61	
15	QPSK	1	5	22.28	22.39	22.28	
15	QPSK	3	0	21.60	21.28	21.39	22
15	QPSK	3	1	21.35	21.64	21.68	
15	QPSK	3	3	21.42	21.45	21.39	
15	QPSK	6	0	21.76	21.38	21.41	
15	16QAM	1	0	21.33	21.35	21.59	22
15	16QAM	1	3	21.25	21.63	21.69	
15	16QAM	1	5	21.38	21.75	21.47	
15	16QAM	3	0	20.74	20.82	20.82	21
15	16QAM	3	1	20.48	20.42	20.21	
15	16QAM	3	3	20.60	20.34	20.52	
15	16QAM	6	0	20.55	20.33	20.42	
Channel				23900	23925	23950	Tune-up limit (dBm)
Frequency (MHz)				820	822.5	825	
10	QPSK	1	0	22.69	22.51	22.49	23
10	QPSK	1	3	22.46	22.40	22.58	
10	QPSK	1	5	22.60	22.71	22.70	
10	QPSK	3	0	21.29	21.37	21.23	22
10	QPSK	3	1	21.33	21.80	21.29	
10	QPSK	3	3	21.78	21.32	21.48	
10	QPSK	6	0	21.31	21.58	21.81	
10	16QAM	1	0	21.42	21.56	21.20	22
10	16QAM	1	3	21.37	21.82	21.23	
10	16QAM	1	5	21.73	21.57	21.48	
10	16QAM	3	0	20.72	20.60	20.77	21
10	16QAM	3	1	20.54	20.19	20.47	
10	16QAM	3	3	20.17	20.45	20.37	
10	16QAM	6	0	20.41	20.54	20.43	
Channel				23875	23925	23975	Tune-up

Frequency (MHz)				817.5	822.5	827.5	limit (dBm)
5	QPSK	1	0	22.75	22.86	22.79	23
5	QPSK	1	3	22.79	22.85	22.86	
5	QPSK	1	5	22.75	22.73	22.83	
5	QPSK	3	0	21.54	21.56	21.44	22
5	QPSK	3	1	21.31	21.31	21.47	
5	QPSK	3	3	21.47	21.47	21.45	
5	QPSK	6	0	21.28	21.28	21.44	
5	16QAM	1	0	21.51	21.42	21.53	22
5	16QAM	1	3	21.24	21.30	21.42	
5	16QAM	1	5	21.48	21.44	21.50	
5	16QAM	3	0	20.54	20.33	20.43	21
5	16QAM	3	1	20.22	20.46	20.20	
5	16QAM	3	3	20.16	20.38	20.52	
5	16QAM	6	0	20.28	20.89	20.57	

<FDD-LTE Band 19>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				24075	24075	24075	
Frequency (MHz)				837.5	837.5	837.5	
15	QPSK	1	0	22.76	22.61	22.76	23
15	QPSK	1	3	22.56	22.58	22.86	
15	QPSK	1	5	22.29	22.61	22.74	
15	QPSK	3	0	21.54	21.36	21.48	22
15	QPSK	3	1	21.00	21.21	21.17	
15	QPSK	3	3	21.36	21.38	21.58	
15	QPSK	6	0	21.13	21.13	21.39	
15	16QAM	1	0	21.60	21.14	21.21	22
15	16QAM	1	3	21.07	21.32	21.13	
15	16QAM	1	5	21.52	21.14	21.21	
15	16QAM	3	0	20.19	19.97	20.30	21
15	16QAM	3	1	20.31	20.39	20.26	
15	16QAM	3	3	20.26	20.22	20.16	
15	16QAM	6	0	19.91	20.13	20.09	
Channel				24050	24075	24100	Tune-up

Frequency (MHz)				835	837.5	840	limit (dBm)
10	QPSK	1	0	22.64	22.69	22.61	23
10	QPSK	1	3	22.64	22.53	22.63	
10	QPSK	1	5	22.67	22.61	22.57	
10	QPSK	3	0	21.00	21.21	21.54	22
10	QPSK	3	1	21.68	21.54	21.69	
10	QPSK	3	3	21.33	21.04	21.22	
10	QPSK	6	0	21.11	21.58	21.24	
10	16QAM	1	0	21.66	21.37	21.47	22
10	16QAM	1	3	21.46	21.27	20.95	
10	16QAM	1	5	21.58	21.39	21.27	
10	16QAM	3	0	20.29	20.21	20.22	21
10	16QAM	3	1	20.14	20.25	20.11	
10	16QAM	3	3	20.09	19.99	20.33	
10	16QAM	6	0	20.20	20.10	20.21	
Channel				24025	24075	24125	Tune-up limit (dBm)
Frequency (MHz)				832.5	837.5	842.5	
5	QPSK	1	0	22.58	22.54	22.58	23
5	QPSK	1	3	22.61	22.61	22.52	
5	QPSK	1	5	22.79	22.65	22.60	
5	QPSK	3	0	21.42	20.98	21.00	22
5	QPSK	3	1	21.55	21.69	20.97	
5	QPSK	3	3	21.51	21.70	21.09	
5	QPSK	6	0	21.37	21.02	20.92	
5	16QAM	1	0	21.60	21.20	21.43	22
5	16QAM	1	3	21.47	21.51	21.34	
5	16QAM	1	5	21.56	21.53	21.29	
5	16QAM	3	0	19.97	20.25	20.22	21
5	16QAM	3	1	20.39	20.24	19.97	
5	16QAM	3	3	19.99	20.34	20.14	
5	16QAM	6	0	20.29	20.21	19.99	

<FDD-LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				26765	26865	26965	
Frequency (MHz)				821.5	831.5	841.5	
15	QPSK	1	0	22.04	22.19	22.13	22.5
15	QPSK	1	3	22.17	22.04	22.14	
15	QPSK	1	5	22.10	22.15	22.05	
15	QPSK	3	0	21.05	21.08	21.26	21.5
15	QPSK	3	1	21.27	21.34	21.34	
15	QPSK	3	3	21.11	21.08	21.24	
15	QPSK	6	0	21.26	21.25	21.22	
15	16QAM	1	0	21.15	21.08	21.22	21.5
15	16QAM	1	3	21.34	21.33	21.32	
15	16QAM	1	5	21.01	21.09	21.27	
15	16QAM	3	0	19.91	20.05	20.22	20.5
15	16QAM	3	1	20.23	19.93	20.15	
15	16QAM	3	3	20.14	20.07	20.41	
15	16QAM	6	0	20.36	20.43	20.63	
Channel				26740	26865	26990	Tune-up limit (dBm)
Frequency (MHz)				819	831.5	844	
10	QPSK	1	0	22.03	22.18	22.13	22.5
10	QPSK	1	3	22.19	22.04	22.14	
10	QPSK	1	5	22.11	22.15	22.04	
10	QPSK	3	0	21.13	21.10	21.24	21.5
10	QPSK	3	1	21.27	21.24	21.31	
10	QPSK	3	3	21.12	21.07	21.23	
10	QPSK	6	0	21.32	21.35	21.25	
10	16QAM	1	0	21.08	21.09	21.25	21.5
10	16QAM	1	3	21.29	21.26	21.22	
10	16QAM	1	5	21.15	21.13	21.26	
10	16QAM	3	0	20.24	19.94	19.92	20.5
10	16QAM	3	1	20.20	20.21	20.14	
10	16QAM	3	3	20.33	20.29	20.64	
10	16QAM	6	0	20.03	20.31	20.18	
Channel				26715	26865	27015	Tune-up

Frequency (MHz)				816.5	831.5	846.5	limit (dBm)
5	QPSK	1	0	22.27	22.19	22.10	22.5
5	QPSK	1	3	22.14	22.20	22.21	
5	QPSK	1	5	22.26	22.38	22.40	
5	QPSK	3	0	21.08	21.11	21.23	21.5
5	QPSK	3	1	21.22	21.33	21.24	
5	QPSK	3	3	21.04	21.12	21.22	
5	QPSK	6	0	21.26	21.25	21.25	
5	16QAM	1	0	21.03	21.07	21.24	21.5
5	16QAM	1	3	21.24	21.31	21.30	
5	16QAM	1	5	21.08	21.12	21.24	
5	16QAM	3	0	20.23	19.94	20.37	20.5
5	16QAM	3	1	20.12	20.23	19.97	
5	16QAM	3	3	20.63	20.21	20.17	
5	16QAM	6	0	20.21	20.07	20.28	
Channel				26705	26865	27025	Tune-up limit (dBm)
Frequency (MHz)				815.5	831.5	847.5	
3	QPSK	1	0	22.04	22.14	22.11	22.5
3	QPSK	1	3	22.14	22.03	22.14	
3	QPSK	1	5	22.11	22.14	22.03	
3	QPSK	3	0	21.02	21.07	21.26	21.5
3	QPSK	3	1	21.23	21.31	21.27	
3	QPSK	3	3	21.04	21.11	21.23	
3	QPSK	6	0	21.33	21.27	21.33	
3	16QAM	1	0	21.13	21.08	21.23	21.5
3	16QAM	1	3	21.35	21.36	21.32	
3	16QAM	1	5	21.10	21.08	21.27	
3	16QAM	3	0	19.95	20.21	20.17	20.5
3	16QAM	3	1	20.27	19.91	20.39	
3	16QAM	3	3	20.07	20.19	20.16	
3	16QAM	6	0	20.26	20.11	20.20	
Channel				26697	26865	27033	Tune-up limit (dBm)
Frequency (MHz)				814.7	831.5	848.3	
1.4	QPSK	1	0	22.03	22.14	22.13	22.5
1.4	QPSK	1	3	22.18	22.04	22.14	
1.4	QPSK	1	5	22.12	22.15	22.04	

1.4	QPSK	3	0	21.04	21.11	21.26	
1.4	QPSK	3	1	21.29	21.24	21.33	
1.4	QPSK	3	3	21.10	21.10	21.21	
1.4	QPSK	6	0	21.24	21.23	21.24	21.5
1.4	16QAM	1	0	21.07	21.11	21.27	
1.4	16QAM	1	3	21.34	21.26	21.32	
1.4	16QAM	1	5	21.14	21.13	21.23	21.5
1.4	16QAM	3	0	20.18	20.21	20.16	
1.4	16QAM	3	1	20.17	20.07	19.99	
1.4	16QAM	3	3	19.97	20.13	20.14	
1.4	16QAM	6	0	20.13	20.45	20.25	20.5

- **Bluetooth**

Mode	Channel	Frequency (MHz)	Peak power (dBm)
			GFSK
LE	CH 00	2402	-2.17
	CH 19	2440	-1.55
	CH 39	2480	-1.11
Tune-up power (dBm)			0.50

4. RF Exposure Evaluation

➢ **Standalone transmission evaluation:**

Bands	Frequency (MHz)	Maximum Tune-up Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Power density (mW/cm²)	Limit for MPE (mW/cm²)
GSM850	848.8	21.00	1.0	158.489	0.032	0.566
GSM1900	1850.2	21.50	1.0	177.828	0.035	1.0
LTE Band 2	1880	23.50	1.0	281.838	**0.056**	1.0
LTE Band 4	1732.5	22.50	1.0	223.872	0.045	1.0
LTE Band 5	829	23.00	1.0	251.189	0.050	0.553
LTE Band 12	707.5	23.00	1.0	251.189	0.050	0.472
LTE Band 18	822.5	23.00	1.0	251.189	0.050	0.548
LTE Band 19	837.5	23.00	1.0	251.189	0.050	0.558
LTE Band 26	841.5	22.50	1.0	223.872	0.045	0.561
Bluetooth	2480	-1.00	1.3	1.514	0.000	1.0

Note:

1. According to KDB 447498, SAR test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.
2. For 5GHz WLAN, only the worst case will be used for calculating the power density.
3. MPE calculate method

$$\text{Power Density} = EIRP/4\pi R^2$$

Where: EIRP = P+G

P = Output Power (dBm)

G = Antenna Gain (dBi)

R = Separation Distance (20cm)

➢ Simultaneous transmission evaluation:

Multi-Band simultaneous Transmission Consideration

Simultaneous Transmission Consideration	Position	Applicable Combination
	Body	EDGE + Bluetooth
		LTE +Bluetooth

1. This device contains transmitters that may operate simultaneously, therefore simultaneous transmission analysis is required.
2. The worst condition for WWAN & Bluetooth will be calculated for transmitting simultaneously.
   Formula: Result=Power density $_1$/ limit $_1$ + Power density $_2$/ limit $_2$ ≤1 mW/cm².

Transmission Bands	Power Density/ SAR	Limit	Simultaneous Transmission Result
LTE	0.056	1.0	0.056
Bluetooth	0.000	1.0	

Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

END OF REPORT