

TEST REPORT

Applicant: UAB 8Devices

Address of Applicant: Antakalnio 17, Vilnius, LT-10312, Lithuania

Equipment Under Test (EUT)

Product Name: Komikan

Model No.: Komikan

Applicable standards: EN 62311: 2008

Date of sample receipt: 24 Mar., 2020

Date of Test: 25 Mar., to 12 Jun., 2020

Date of report issue: 15 Jun., 2020

Test Result: PASS*

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to health contained in Directive 2014/35/EU are considered.



Bruce Zhang
Laboratory Manager



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	15 Jun., 2020	Original

Tested by: Mike.ou
Test Engineer

Date: 15 Jun., 2020

Reviewed by: Winner Zhang
Project Engineer

Date: 15 Jun., 2020

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4 General Information

4.1 Client Information

Applicant:	UAB 8Devices
Address:	Antakalnio 17, Vilnius, LT-10312, Lithuania
Manufacturer/Factory:	UAB 8Devices
Address:	Antakalnio 17, Vilnius, LT-10312, Lithuania

4.2 General Description of E.U.T.

Product Name:	Komikan
Model No.:	Komikan
Hardware version:	04
Software version:	1.0
BLE Specification	
Operation Frequency:	2402MHz-2480MHz
Channel number:	40
Channel separation:	2MHz
Modulation	GFSK
Antenna Type:	Ceramic Antenna, Whip Antenna, Flex Antenna
Antenna gain:	Ceramic Antenna: 2.09 dBi Flex Antenna: 3.20 dBi Whip Antenna: 4.00 dBi
Bluetooth Specification	
Operation Frequency:	2402MHz-2480MHz
Channel number:	79
Channel separation:	1MHz
Modulation	GFSK, Pi/4DQPSK, 8DPSK
Antenna Type:	Ceramic Antenna, Whip Antenna, Flex Antenna
Antenna gain:	Ceramic Antenna: 2.09 dBi Flex Antenna: 3.20 dBi Whip Antenna: 4.00 dBi
2.4G WIFI Specification	
Operation Frequency:	2412MHz-2472MHz
Channel number:	13 for 802.11b/802.11g/802.11n(HT20)
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Antenna Type:	Ceramic Antenna, Whip Antenna, Flex Antenna
Antenna gain:	Ceramic Antenna: 2.09 dBi Flex Antenna: 3.20 dBi Whip Antenna: 4.00 dBi

5G WIFI Specification	
Operation Frequency:	5180MHz~5240MHz
Nominal Bandwidth	20MHz, 40MHz, 80MHz
Channel Spacing:	10MHz
Modulation:	OFDM
Antenna Type:	Ceramic Antenna, Whip Antenna, Flex Antenna
Antenna gain:	Ceramic Antenna: 4.32 dBi Flex Antenna: 4.75 dBi Whip Antenna: 4.50 dBi

4.3 Operating Modes

Operating mode	Detail description
BLE mode	Keep the EUT in continuously transmitting in BLE mode
BT mode	Keep the EUT in continuously transmitting in BT mode
2.4G WIFI mode	Keep the EUT in continuously transmitting in 2.4G WIFI mode
5G WIFI mode	Keep the EUT in continuously transmitting in 5G WIFI mode

4.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX7070	2J8XSZ2	DoC
DELL	MONITOR	SE2018HR	3M7QPY2	DoC
DELL	KEYBOARD	KB216d	N/A	DoC
DELL	MOUSE	MS116t1	N/A	DoC
UAB 8Devices	Test suite	Komikan	/	/

4.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
RF output power, conducted	±1.5 dB

4.6 Additions to, deviations, or exclusions from the method

No

4.7 Laboratory Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC - Designation No.: CN1211 Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551. ● ISED – CAB identifier.: CN0021 The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1. ● A2LA - Registration No.: 4346.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf
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4.8 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
 Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road,
 Bao'an District, Shenzhen, Guangdong, China
 Tel: +86-755-23118282, Fax: +86-755-23116366
 Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

4.9 Test Instruments list

Conducted method:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Agilent	N9020A	MY50510123	11-18-2019	11-17-2020
Vector Signal Generator	Agilent	N5182A	MY49060014	11-18-2019	11-17-2020
Signal Generator	R&S	SMR20	1008100050	03-05-2020	03-04-2021
Power Sensor	D.A.R.E	RPR3006W	15I00041SNO12	11-25-2019	11-24-2020
Power Sensor	D.A.R.E	RPR3006W	15I00041SNO54	11-25-2019	11-24-2020
Power Sensor	D.A.R.E	RPR3006W	17I00015SNO27	11-25-2019	11-24-2020
Power Sensor	D.A.R.E	RPR3006W	17I00015SNO28	11-25-2019	11-24-2020
RF Switch Unit	Ascentest	AT890-RFB	N/A	N/A	N/A
Test Software	MWRFTST	MTS 8310	Version: 2.0.0.0		
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	09-25-2019	09-24- 2020
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	11-01-2019	10-31- 2020

5 Technical Requirements Specification in EN 62311

5.1 General Description of Applied Standards

EN 62311 Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz–300 GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current.

5.2 RF Exposure Evaluation

5.2.1 Limit

Reference levels for electric, magnetic and electromagnetic fields
(0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	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	$87/f^{0,2}$	$0,73/f$	$0,92/f$	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375 f^{0,2}$	$0,0037 f^{0,2}$	$0,0046 f^{0,2}$	$f/200$
2-300 GHz	61	0,16	0,20	10

Notes:

1. f as indicated in the frequency range column.

5.2.2 Test method

The antenna of the product, under normal use condition is at least 20cm away from the body of the user. Warning statement of the user for keeping 20cm separation distance and the prohibition of operating to a person has been printed on the user manual. So, this product under normal use is located on electromagnetic far field between the human body.

Far Field Calculation Formula

$$E = \frac{\sqrt{30PG(\theta, \phi)}}{r}$$

G = antenna gain relative to an isotropic antenna
 θ, ϕ = elevation and azimuth angles to point of investigation
 r = distance from observation point to the antenna

5.2.3 Measurement data(worst case):

Modulation	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (numeric)	E Field Strength (V/m)	E Field Strength Limit (V/m)	Result
Maximum Emissions Level of Bluetooth							
Ceramic Antenna							
GFSK Mode	5.33	3.41	2.09	1.62	2.03	61	Pass
Pi/4DQPSK Mode	4.56	2.86	2.09	1.62	1.86	61	Pass
8DPSK Mode	4.67	2.93	2.09	1.62	1.89	61	Pass
Flex Antenna							
GFSK Mode	5.53	3.57	3.20	2.09	2.37	61	Pass
Pi/4DQPSK Mode	4.85	3.05	3.20	2.09	2.19	61	Pass
8DPSK Mode	5.29	3.38	3.20	2.09	2.30	61	Pass
Whip Antenna							
GFSK Mode	5.93	3.92	4.00	2.51	2.72	61	Pass
Pi/4DQPSK Mode	5.29	3.38	4.00	2.51	2.52	61	Pass
8DPSK Mode	4.74	2.98	4.00	2.51	2.37	61	Pass
Maximum Emissions Level of BLE							
Ceramic Antenna							
GFSK Mode	5.61	3.64	2.09	1.62	2.10	61	Pass
Flex Antenna							
GFSK Mode	5.62	3.65	3.20	2.09	2.39	61	Pass
Whip Antenna							
GFSK Mode	5.62	3.65	4.00	2.51	2.62	61	Pass
Maximum Emissions Level of 2.4G WIFI							
Ceramic Antenna							
802.11b mode	16.78	47.64	2.09	1.62	7.60	61	Pass
802.11g mode	17.75	59.57	2.09	1.62	8.50	61	Pass
802.11n-HT20	17.59	57.41	2.09	1.62	8.35	61	Pass
802.11n-HT40	17.80	60.26	2.09	1.62	8.55	61	Pass
Flex Antenna							
802.11b mode	15.22	33.27	3.20	2.09	7.22	61	Pass
802.11g mode	16.73	47.10	3.20	2.09	8.59	61	Pass
802.11n-HT20	16.78	47.64	3.20	2.09	8.64	61	Pass
802.11n-HT40	16.72	46.72	3.20	2.09	8.58	61	Pass
Whip Antenna							
802.11b mode	14.78	30.06	4.00	2.51	7.53	61	Pass
802.11g mode	15.94	39.26	4.00	2.51	8.60	61	Pass
802.11n-HT20	15.64	36.64	4.00	2.51	8.31	61	Pass
802.11n-HT40	15.82	38.19	4.00	2.51	8.48	61	Pass

Maximum Emissions Level of 5G WIFI							
Ceramic Antenna							
802.11a	15.80	38.02	4.32	2.70	8.78	61	Pass
802.11n-HT20	15.36	34.36	4.32	2.70	8.35	61	Pass
802.11n-HT40	15.72	37.33	4.32	2.70	8.70	61	Pass
802.11ac20	15.28	33.73	4.32	2.70	8.27	61	Pass
802.11ac40	15.71	37.24	4.32	2.70	8.69	61	Pass
802.11ac80	15.44	34.99	4.32	2.70	8.42	61	Pass
Flex Antenna							
802.11a	15.89	38.82	4.75	2.99	9.32	61	Pass
802.11n-HT20	15.48	35.32	4.75	2.99	8.89	61	Pass
802.11n-HT40	15.73	37.41	4.75	2.99	9.15	61	Pass
802.11ac20	15.37	34.44	4.75	2.99	8.78	61	Pass
802.11ac40	15.71	37.24	4.75	2.99	9.13	61	Pass
802.11ac80	15.52	35.65	4.75	2.99	8.93	61	Pass
Whip Antenna							
802.11a	15.91	38.99	4.50	2.82	9.08	61	Pass
802.11n-HT20	15.40	34.67	4.50	2.82	8.56	61	Pass
802.11n-HT40	15.75	37.58	4.50	2.82	8.91	61	Pass
802.11ac20	15.48	35.32	4.50	2.82	8.64	61	Pass
802.11ac40	15.74	37.50	4.50	2.82	8.90	61	Pass
802.11ac80	15.58	36.14	4.50	2.82	8.74	61	Pass

5.2.4 Conclusion

Meet the requirements of EN 62311:2008

-----End of report-----