

# TEST REPORT

## CERTIFICATE OF CONFORMITY

**Standard:** Certification Ordinance Article 2-1-19-3  
**Report No.:** RJBEMI-WTW-P22080178A-1  
**Product:** Electronic Display Device  
**Brand:** Rakuten kobo  
**Model No.:** N605  
**Received Date:** 2023/3/22  
**Test Date:** 2023/6/2  
**Issued Date:** 2023/6/15

**Applicant:** NETRONIX, INC.  
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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory  
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**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

**Approved by:** \_\_\_\_\_, **Date:** 2023/6/15  
May.Chen / Manager

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Prepared by : Claire Kuan / Specialist



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### Release Control Record

Issue No.	Description	Date Issued
RJBEMI-WTW-P22080178A-1	Original release.	2023/6/15

## 1 Certificate

**Product:** Electronic Display Device

**Brand:** Rakuten kobo

**Test Model:** N605

**Sample Status:** Engineering sample

**Applicant:** NETRONIX, INC.

**Test Date:** 2023/6/2

**Standard:** Certification Ordinance Article 2-1-19-3

**Measurement procedure:** Measurement was conducted by the temporary test method which TELECOM submitted to the Minister for Internal Affairs and Communications based on the Ordinance Concerning Technical Regulations Conformity Certification etc. of Specified Radio Equipment in Annex 1, the Ministry of Internal Affairs and Communication notification in Article 88, Paragraph 2

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

## 2 Summary of Test Results

Certification Ordinance Article 2-1-19-3		
Clause	Test Item	Result
OR: Article 7. Annex 3.29	Spurious Emissions	Pass
OR: Article 49-20	Antenna Specifications	Pass
OR: Article 24.2	Spurious Emissions of Receiver	Pass
OR: Article 49-20	High frequency / modulation section can not be opened easily	Pass (Refer to Note 3)
OR: Article 49-20	Communication Method	Pass (Refer to Note 3)
OR: Article 49-20	Modulation Mehtod	Pass (Refer to Note 3)
OR: Article 49-20	Signal Transmission Rate	Pass (Refer to Note 3)

### Notes:

1. OR: Ordinance Regulating Radio Equipment.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. The relative information refer section 3.1 of this report
4. This report is prepared for supplementary report.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in ETSI TR 100 028-1:

Parameter	Uncertainty (±)
Occupied Bandwidth	960 Hz
Spurious Emissions	2.5 dB
Output power density	1.2 dB
Adjacent Channel Leakage Power	2.5 dB
Out of band radiated power	2.5 dB
Frequency Tolerance	960 Hz
Burst Length	1.8 ms

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

### 2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	Electronic Display Device
Brand	Rakuten kobo
Test Model	N605
Test Software Version	Run HyperTerminal
Status of EUT	Engineering sample
Power Supply Rating	5 Vdc from USB interface 3.7 Vdc from Battery
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps
Operating Frequency	5.18 GHz ~ 5.24 GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Assembly	The EUT is constructed as an Electronic Display Device. The housing consists of two parts, and the plastic enclosure was assembled with glue and covered by rubbers, separating the two parts was only possible by means of brute force.

Note:

- This is a supplementary report of Report No.: RJBEMI-WTW-P22080178-1 R1. The differences between them are as below information:

- ◆ Change DRAM LP-DDR4 (Dynamic Random Access Memory, DRAM)

Original	
Brand	Model
NANYA	NT6AN512M16AV-J2
Newly	
Brand	Model
MICRON	MT53D512M16D1DS-046 WT:D

- According to above conditions, only spurious emissions below 1 GHz measurement need to be performed. All data for meeting the requirement is verified.

- The EUT could be supplied with a rechargeable battery as the following table:

Brand	Model	Specification
EVE Energy CO., LTD	PR 158098N	Power Rating : 3.7V , 1200mAH , 4.44Wh

- The EUT uses following accessories.

USB Cable		
Brand	Model	Specification
Yih Fone	SH-0381	Signal Line : Shielded : Y , 1.0M , Core: N/A
Pen		
Brand	Model	
Rakuten kobo	ME-MPP702-K	

- There are WLAN and Bluetooth technology used for the EUT.

- Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	Bluetooth
2	WLAN 5GHz	Bluetooth

- The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

### 3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Brand	Model	Antenna Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
INPAQ	RFFPA360911EMLB101	3.31	2.4~2.4835	Dipole	ipex(MHF)	101
		4.34	5.15~5.85			

\* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a SISO function:

5 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11a	1TX	1RX
802.11n (HT20)	1TX	1RX
802.11n (HT40)	1TX	1RX
802.11ac (VHT20)	1TX	1RX
802.11ac (VHT40)	1TX	1RX
802.11ac (VHT80)	1TX	1RX

3. Antenna Pattern:

Please refer to the attached file (Antenna pattern).

### 3.3 Channel List

#### FOR 5180 ~ 5240 MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency
36	5180 MHz
40	5200 MHz
44	5220 MHz
48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency
38	5190 MHz
46	5230 MHz

1 channels are provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 MHz

### 3.4 Test Mode Applicability and Tested Channel Detail

Test Conditions	Voltage (Vdc)
$V_{normal}$	5
$V_{max. (+10\%)}$	5.5
$V_{min. (-10\%)}$	4.5

Pre-Scan:	1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Worst Case:	Test modes are presented in the report as above according to original test report (RJBEMI-WTW-P22080178-1 R1).

Following channel(s) was (were) selected for the final test as listed below:

Test Item	Test Conditions	Mode	Tested Channel	Modulation	Data Rate Parameter
Spurious Emissions	Chain 0	802.11a	36	DBPSK	1Mb/s
Spurious Emissions of Receiver	Chain 0	20MHz System	36	-	-

Note: The EUT DRAM LP-DDR4 (Dynamic Random Access Memory) add 2nd Source (Original is NANYA NT6AN512M16AV-J2, adding MICRON MT53D512M16D1DS-046 WT:D), and it need verify Spurious Emissions below 1 GHz after evaluation.

## 4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.1 Spurious Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
DC POWER SUPPLY Topward	6603D	795558	Note 2	Note 2	BV CPS E&E	(d)
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26	BV CPS E&E	(d)
MXA Signal Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17	ETC	(c)
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8	ETC	(c)

Notes:

- Calibration method:
  - Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
  - Calibration conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) Japan Calibration Service System.
  - Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
  - Calibration conducted by using other equipment that listed above from a) to c).
- The power supply no evaluation calibrated, which used the RMS clamp meter to verify before each testing.
- The test was performed in Oven room 2.
- Tested Date: 2023/6/2

### 4.2 Spurious Emissions of Receiver

Refer to section 4.1 to get information of the instruments.

## 5 Limits of Test Items

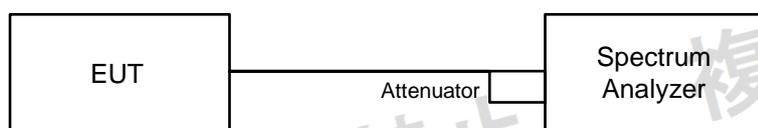
### 5.1 Spurious Emissions

### 5.2 Spurious Emissions of Receiver

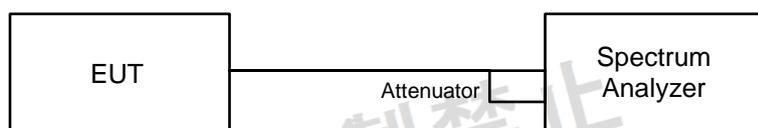
Frequencies	Limit
Below 1 GHz	$\leq 4$ nW
Above 1 GHz	$\leq 20$ nW

## 6 Test Arrangements

### 6.1 Spurious Emissions



### 6.2 Spurious Emissions of Receiver



## 7 Test Results of Test Item

### 7.1 Spurious Emissions

Environmental Conditions:	25°C, 61% RH	Tested By:	Eric Peng
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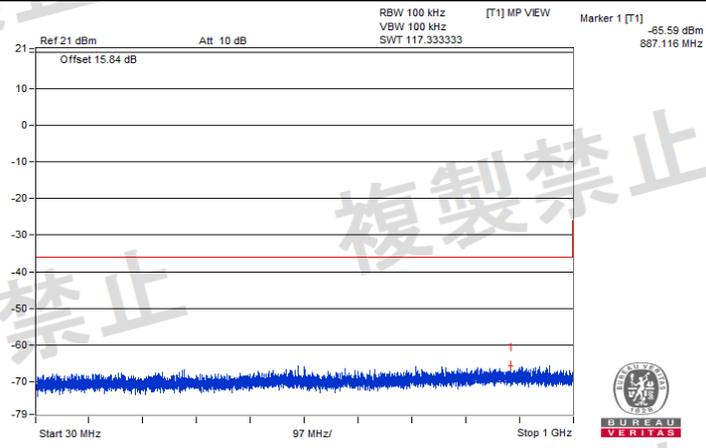
#### 802.11a Chain 0 W52

TEST CHANNEL		CH 36 (5180 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	EMISSION VALUE	LIMIT	RESULT
V <sub>normal</sub>	30.0 to 1000.0	887.116	0.000276 uW/100kHz	0.25 uW/100kHz	PASS
V <sub>max.</sub>	30.0 to 1000.0	960.230	0.0003 uW/100kHz	0.25 uW/100kHz	PASS
V <sub>min.</sub>	30.0 to 1000.0	809.516	0.000262 uW/100kHz	0.25 uW/100kHz	PASS

**NOTE:** 1. The spectrum plots are attached on the following pages.

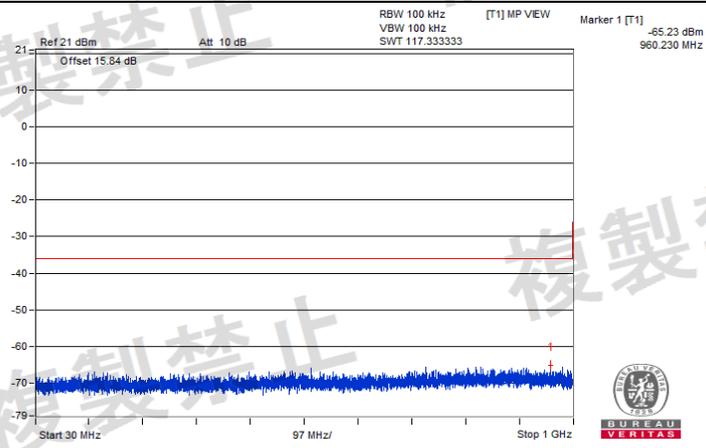


V<sub>normal</sub>



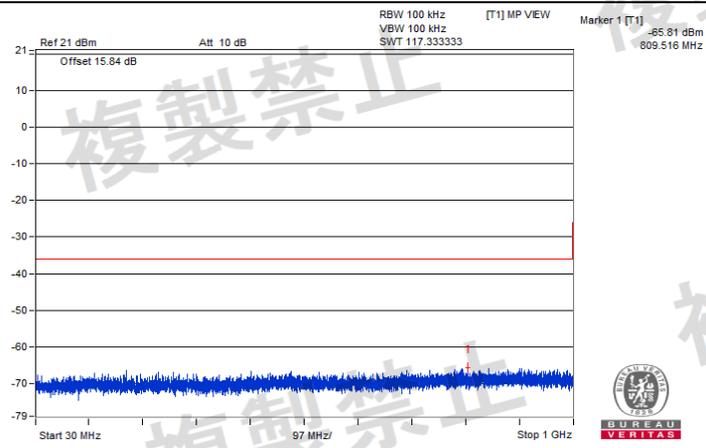
CH 36 (5180 MHz)

V<sub>max</sub>



CH 36 (5180 MHz)

V<sub>min</sub>



CH 36 (5180 MHz)

## 7.2 Spurious Emissions of Receiver

Environmental Conditions:	25°C, 61% RH	Tested By:	Eric Peng
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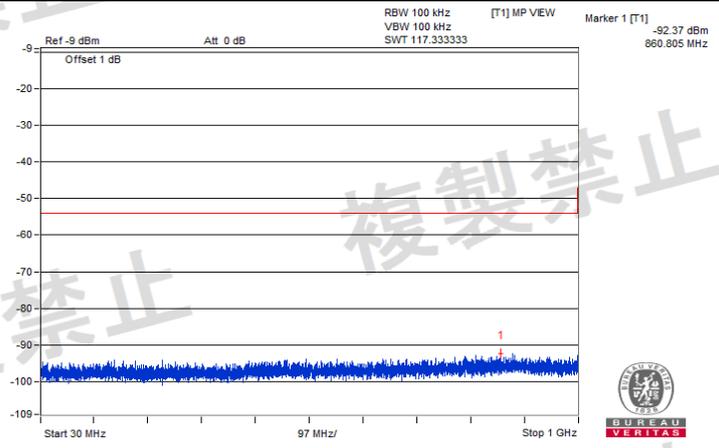
### 20 MHz System: Chain 0

TEST CHANNEL		CH 36 (5180 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(nW)	LIMIT (nW)	RESULT
V <sub>normal</sub>	30.0 to 1000.0	860.805	0.000579	4	PASS
V <sub>max.</sub>	30.0 to 1000.0	860.926	0.000701	4	PASS
V <sub>min.</sub>	30.0 to 1000.0	965.201	0.000687	4	PASS

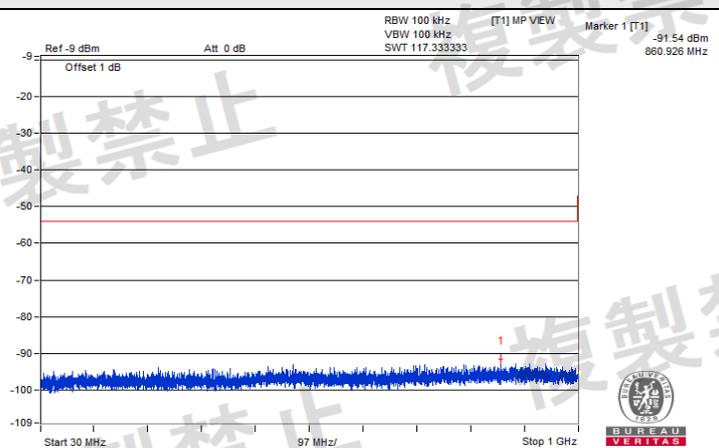


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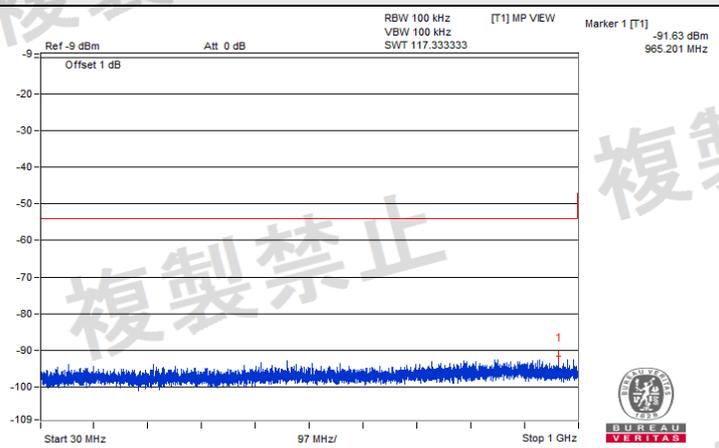
V<sub>normal</sub>



V<sub>max</sub>



V<sub>min</sub>



CH 36 (5180 MHz)

## 8 Pictures of Test Arrangements



## 9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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