

2.4GHz Wideband Low Power Data Communication System Test Report

Product Name	BIKE POWER TRAINER
Model No.	NOZA V

Applicant	Acer Gadget Inc.
Address	6th Floor, No. 68 Ruiguang Road, Neihu District, Taipei City

Date of Receipt	Jan. 25, 2022
Issued Date	Apr. 25, 2022
Report No.	2210755R-RFJPOTHV02-A
Report Version	V1.0



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.

Test Report

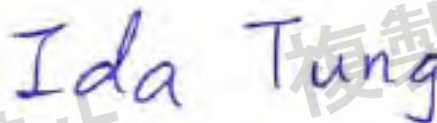
Issued Date: Apr. 25, 2022

Report No.: 2210755R-RFJPOTHV02-A



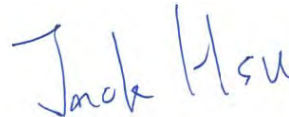
Product Name	BIKE POWER TRAINER
Applicant	Acer Gadget Inc.
Address	6th Floor, No. 68 Ruiguang Road, Neihu District, Taipei City
Manufacturer	Acer Gadget Inc.
Model No.	NOZA V
EUT Rated Voltage	AC 100-240V, 50/60Hz
EUT Test Voltage	AC 100V/50Hz
Trade Name	XPLOVA
Test Method	Public notice of MIC No.88 test method of specified radio equipment (January 26, 2004) Annex43. Article 2 paragraph 1 item 19
Test Result	Complied

Documented By :



(Project Specialist / Ida Tung)

Tested By :



(Senior Engineer / Jack Hsu)

Approved By :



(Manager / Tim Sung)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	4
1.1. EUT Description	4
1.2. EUT Exercise Software	5
1.3. Parament of test software setting	5
1.4. Test Conditions	5
1.5. RF and IF section must be tamper requirement	6
1.6. Test Facility	7
1.7. List of Test Item and Equipment	8
1.8. Uncertainty	9
2. Output Power and Output Power Tolerance.....	10
2.1. Test Setup.....	10
2.2. Limits	10
2.3. Test Procedure.....	10
2.4. Test Result of Output Power and Output Power Tolerance	11
3. Occupied Bandwidth	13
3.1. Test Setup.....	13
3.2. Test Procedure.....	13
3.3. Limits	13
3.4. Test Result of Occupied Bandwidth	14
4. Frequency Tolerance.....	15
4.1. Test Setup.....	15
4.2. Test Procedure.....	15
4.3. Limits	15
4.4. Test Result of Frequency Tolerance	16
5. Transmitter Suprious Emissions.....	17
5.1. Test Setup.....	17
5.2. Test Procedure.....	17
5.3. Limits	17
5.4. Test Result of Transmitter Spurious Emissions	18
6. Receiver Suprious Emissions	22
6.1. Test Setup.....	22
6.2. Test Procedure.....	22
6.3. Limits	22
6.4. Test Result of Receiver Spurious Emissions	23
7. EMI Reduction Method During Compliance Testing.....	26
Appendix 1: EUT Test Photographs	
Appendix 2: Product Photos-Please refer to the file: 2210755R-Product Photos	

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	BIKE POWER TRAINER
Trade Name	XPLOVA
Model No.	NOZA V
SERIAL NUMBER	N/A
Frequency Range	2457MHz
Number of Channels	1CH
Type of Modulation	GFSK
Antenna Type	PCB Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto
Declared Output Power	Zigbee operation (16 channel): 1.429mW
Power Cable	Trade Name: DSS, M/N: DSS100-2400400, Non-shielded, 1.8m
Power Adapter	Trade Name: DSS, M/N: DSS100-2400400 Input: AC 100-240V ~2.5A, 50/60Hz Output: DC 24.0V, 4.0A Cable Out: Non-shielded, 1.8m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Darfon Electronics Corp.	NOZA V	PCB Antenna	-13.8dBi for 2.4GHz

Center Frequency of Each Channel:

Channel Frequency

Channel 01: 2457 MHz

Note:

- The EUT is a BIKE POWER TRAINER with a built-in ANT+ and Bluetooth V5.0 transceiver, this report is for ANT+.
- The EUT has two different appearances.
- DEKRA verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode	Mode 1: Transmit
	Mode 2: Receive

1.2. EUT Exercise Software

- (1) Execute software “Tera Term Version 4.105” on the Notebook PC.
- (2) Configure the test mode, the test channel, and the data rate.
- (3) Press “OK” to start the continuous Transmit.
- (4) Verify that the EUT works properly.

1.3. Parament of test software setting

The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Test Software	Tera Term Version 4.105
Frequency	2457MHz
ANT+	4

1.4. Test Conditions

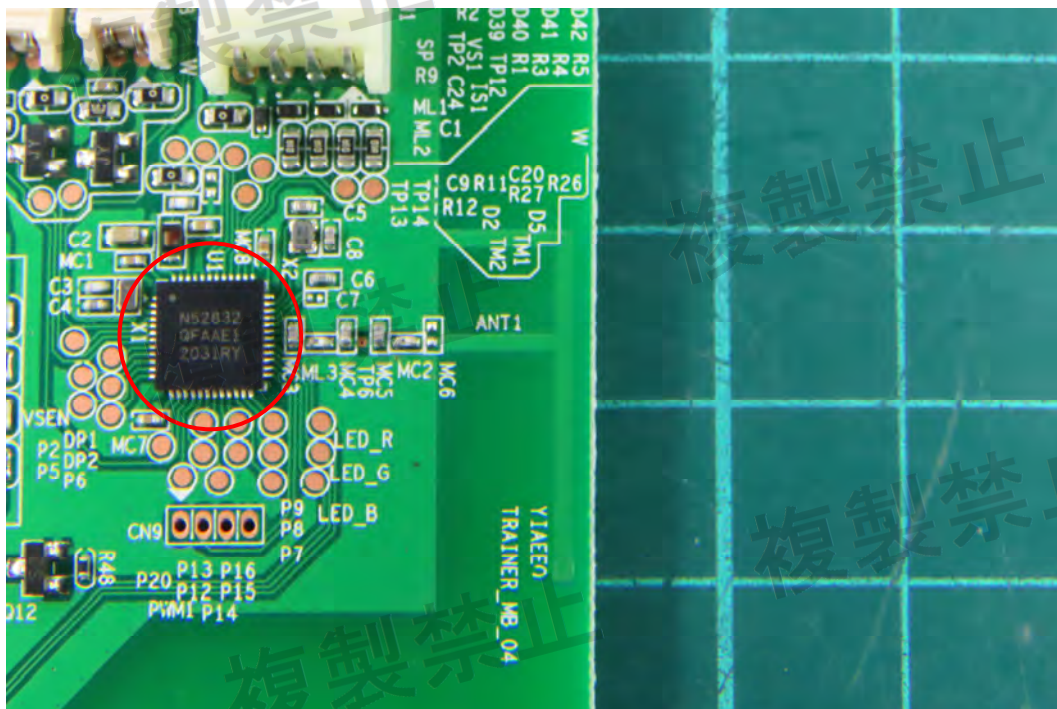
Voltage Test Item	Test Voltage	Voltage meter reading value (U10 pin b6-2)
Nominal Voltage	DC 24 V	3.2 V
Highest Voltage	DC 26.4 V	3.2 V
Lowest Voltage	DC 21.6 V	3.2 V

Note:

1. The Voltage supply for U10 pin b6-2 is DC 3.2V .
2. The internal supply gives a fluctuation value less than 1 % (Around 0% from max. to min.)

1.5. RF and IF section must be tamper requirement

Requirement	Comments	Result
RF, IF and Modulation section must be tamper	<input type="checkbox"/> Use Special Screw <input type="checkbox"/> Metal Shielding is Soldered <input type="checkbox"/> Use Ball Grid Array (BGA) (Please see Attachment: EUT Detailed Photographs)	--
	<input checked="" type="checkbox"/> RF module/Chip pin >10 <input checked="" type="checkbox"/> RF module/Chip pins distance <1.5mm (Please see Attachment: EUT Detailed Photographs)	Complete



1.6. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conductive	Temperature (°C)	10~40 °C	21.3 °C
	Humidity (%RH)	10~90 %	65.9 %

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City,
24451, Taiwan

Performed Location : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City
333411, Taiwan, R.O.C.

Phone number : +886-3-275-7255
Fax number : +866-3-327-8031
Email address : info.tw@dekra.com
Website : <http://www.dekra.com.tw>

1.7. List of Test Item and Equipment

For Conducted measurements /SH2

	Equipment	Manufacturer	Model No.	Serial No.	Calibrated	Cal. Method	Cal. Date	Due. Date
X	Spectrum Analyzer	R&S	FSV30	103466	ETC	*(c)	2021.12.27	2022.12.26
X	Peak Power Analyzer	KEYSIGHT	8900B	MY51000539	ETC	*(c)	2021.06.07	2022.06.06
X	Power Sensor	KEYSIGHT	N1923A	MY59240002	ETC	*(c)	2021.05.17	2022.05.16
X	Power Sensor	KEYSIGHT	N1923A	MY59240003	ETC	*(c)	2021.05.17	2022.05.16

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test System V9.0.5
4.
 - a) Calibration conducted by the National Institute of Information and Communications Technology(NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1)
 - b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)
 - c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated agency under Article 102-18 paragraph (1).
 - d) Calibration conducted by using other equipment that listed above from a) to c).

1.8. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

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.

Test item	Uncertainty	
	Power Meter	Spectrum Analyzer
Output Power and Output Power Tolerance	± 0.91 dB	± 2.53 dB
Occupied Bandwidth	± 682.83 Hz	
Frequency Tolerance	± 682.83 Hz	
Transmitter Spurious Emissions	± 2.53 dB	
Receiver Spurious Emissions	± 2.53 dB	

2. Output Power and Output Power Tolerance

2.1. Test Setup



2.2. Limits

10mW (10dBm)

2.3. Test Procedure

Output power is measured using the power meter and record the value.

2.4. Test Result of Output Power and Output Power Tolerance

Product : BIKE POWER TRAINER
Test Item : Output Power
Test Date : 2022/02/22
Test Mode : Mode 1: Transmit

Maximum Antenna Gain= -13.8dBi				
Frequency (MHz)	Real Value (dBm)	Limit (dBm)	Real Value (EIRP) (dBm)	Limit (EIRP) (dBm)
2457	1.42	10	-12.38	12.14

Real Value (EIRP) = Real Value + Antenna Gain

Test Result	PASS
-------------	------

Product : BIKE POWER TRAINER
Test Item : Output Power Tolerance
Test Date : 2022/02/22
Test Mode : Mode 1: Transmit

Frequency (MHz)	Declared Output Power (mW)	Output Power (mW)	Tolerance (%)	Limit (%)
2457	1.429	1.387	-2.93	+20% to -80%

Note: Deviation = (Output Power - Declared Output Power) / Declared Output Power * 100%

Test Result	PASS
-------------	------

3. Occupied Bandwidth

3.1. Test Setup



3.2. Test Procedure

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- (a) A positive peak detector function must be used.
- (b) A measurement instrument with an integrated 99% power bandwidth function may be used to automate the test process.
- (c) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (d) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

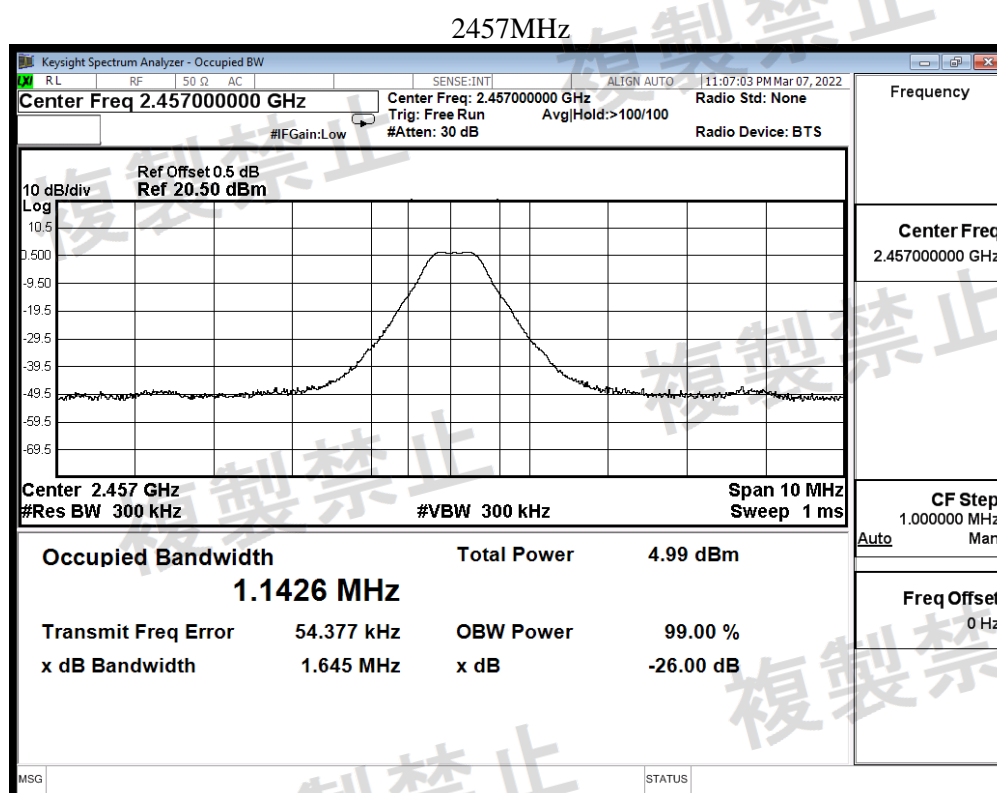
3.3. Limits

≤ 26 MHz for DSSS&OFDM, ≤ 83.5 MHz for FHSS,
 ≤ 38 MHz for OFDM(Wide-band)

3.4. Test Result of Occupied Bandwidth

Product : BIKE POWER TRAINER
 Test Item : Occupied Bandwidth
 Test Mode : Mode 1: Transmit

Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
2457	1.14	≤ 26



Test Result	PASS
-------------	------

4. Frequency Tolerance

4.1. Test Setup



4.2. Test Procedure

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

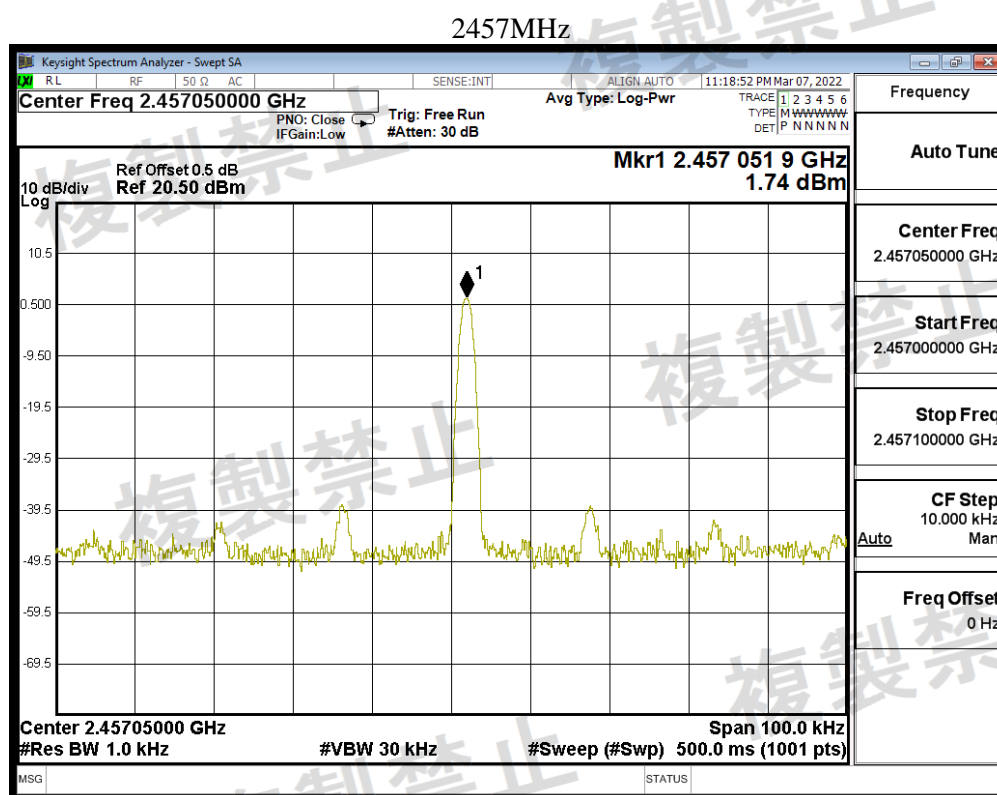
4.3. Limits

± 50 ppm

4.4. Test Result of Frequency Tolerance

Product : BIKE POWER TRAINER
 Test Item : Frequency Tolerance
 Test Mode : Mode 1: Transmit

Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2457	2457.0519	21.12332	± 50



Test Result	PASS
-------------	------

5. Transmitter Suprious Emissions

5.1. Test Setup



5.2. Test Procedure

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.3. Limits

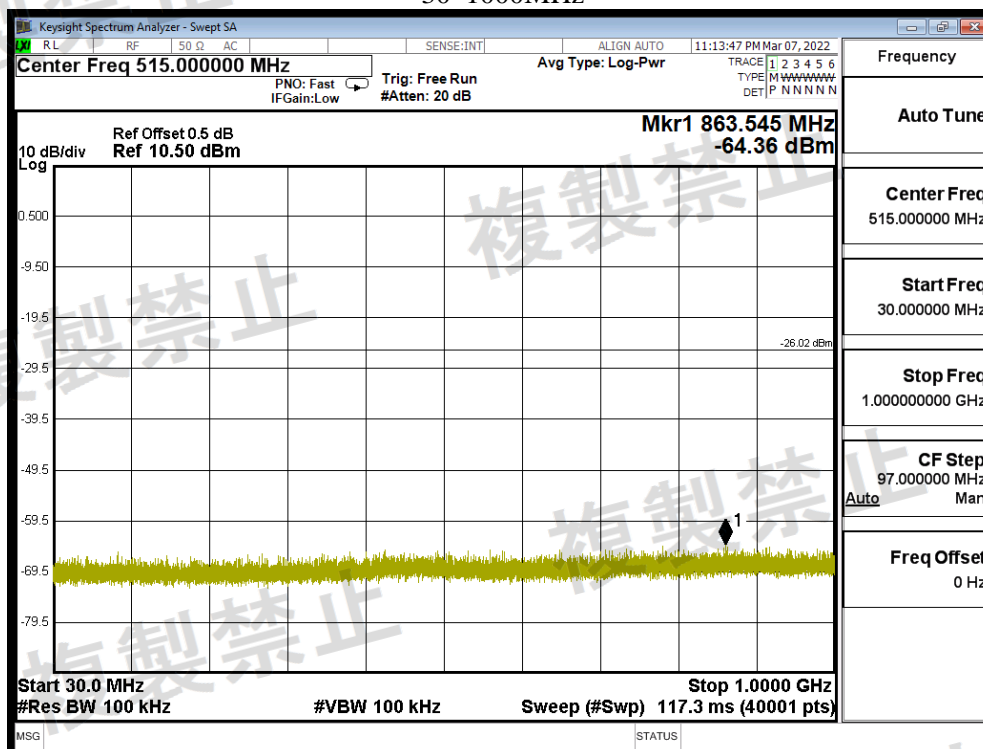
- $\leq 2.5\mu\text{W}$ for 30 – 2387 MHz
- $\leq 25\mu\text{W}$ for 2387 – 2400 MHz
- $\leq 25\mu\text{W}$ for 2483.5 – 2496.5 MHz
- $\leq 2.5\mu\text{W}$ for 2496.5 – 12500 MHz

5.4. Test Result of Transmitter Spurious Emissions

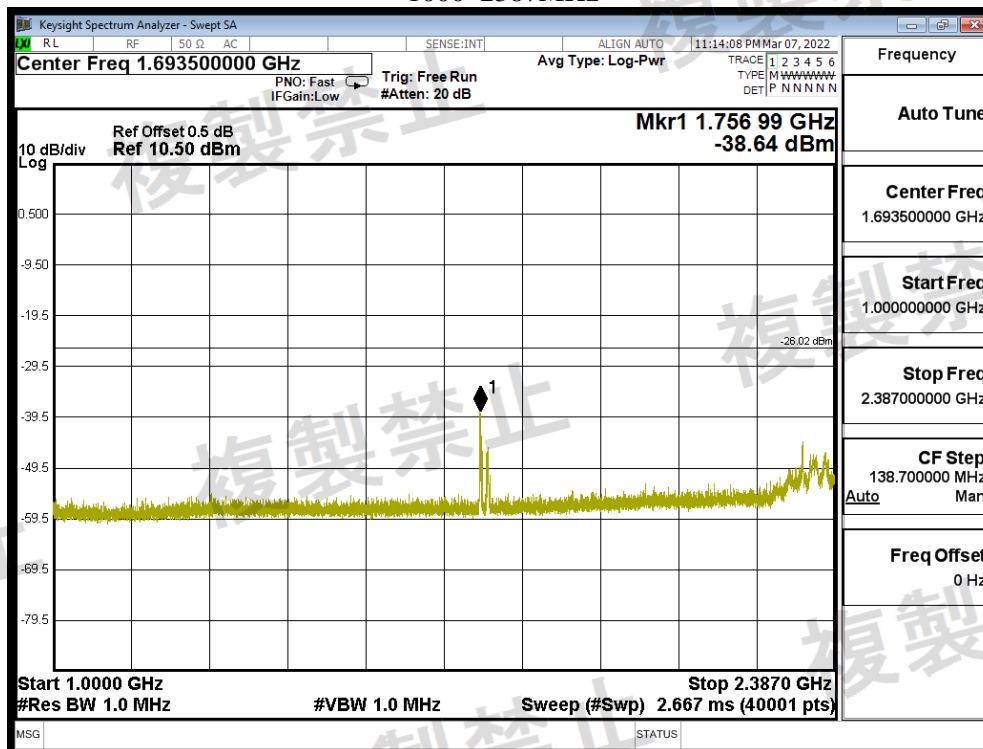
Product : BIKE POWER TRAINER
Test Item : Transmitter Spurious Emissions
Test Mode : Mode 1: Transmit (2457MHz)

Frequency Range (MHz)	Reading Value (dBm)	Limit (dBm)
30 - 1000	-64.36	-26 (2.5uW)
1000 – 2387	-38.64	-26 (2.5uW)
2387 – 2400	-47.38	-16 (25uW)
2483.5 – 2496.5	-51.25	-16 (25uW)
2496.5 – 8000	-41.84	-26 (2.5uW)
8000 – 12750	-53.14	-26 (2.5uW)

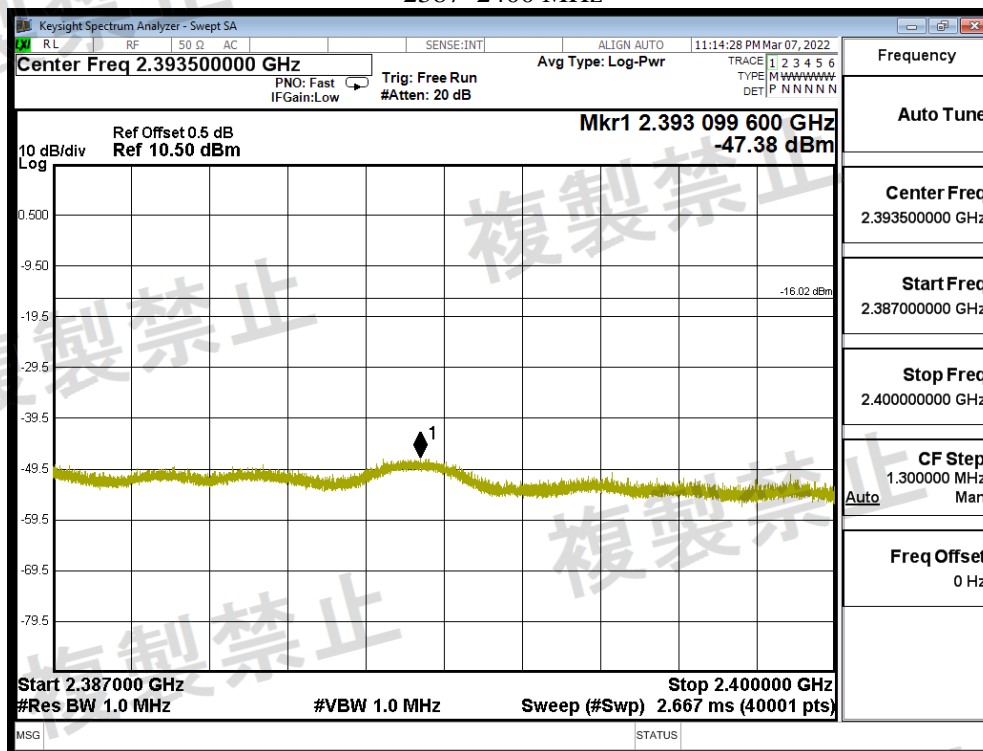
30–1000MHz



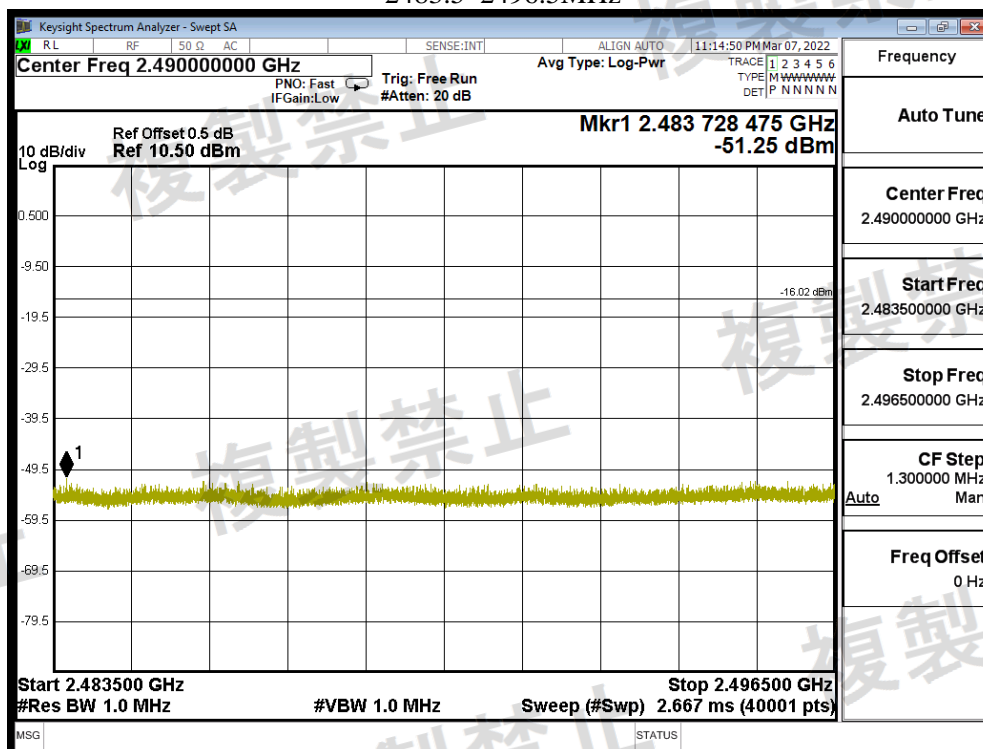
1000–2387MHz



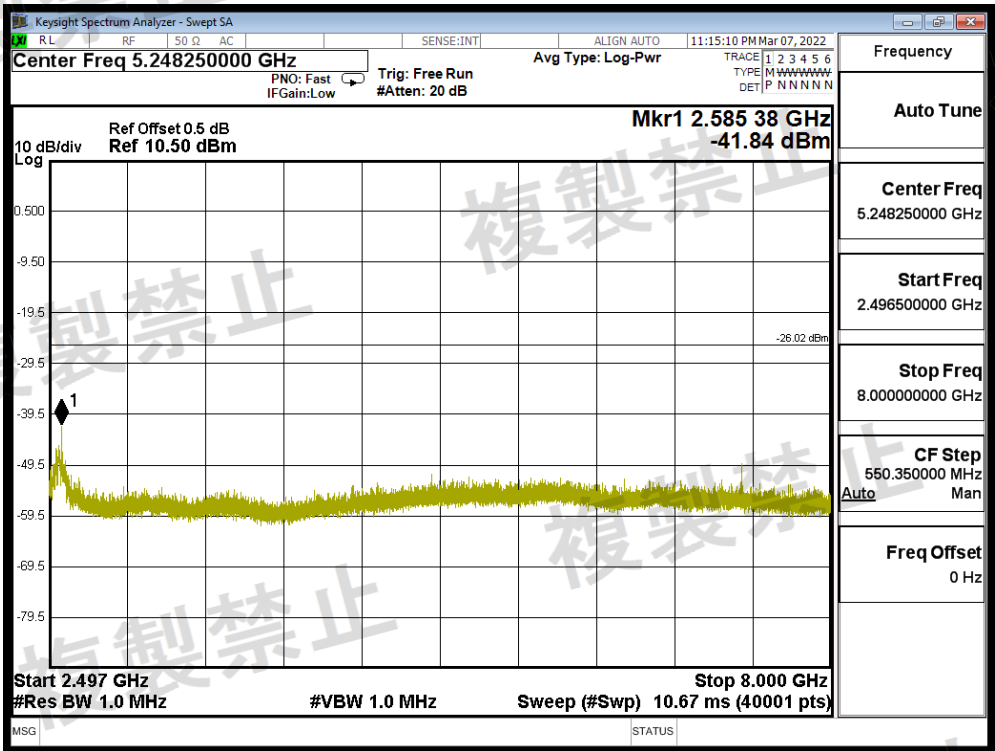
2387–2400 MHz



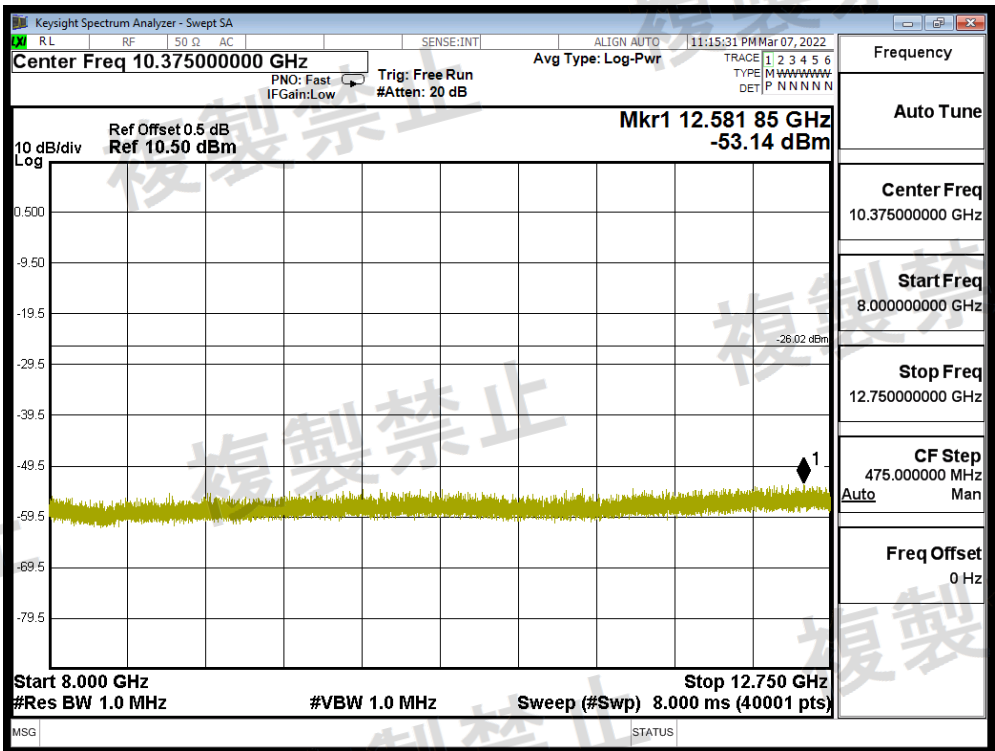
2483.5–2496.5 MHz



2496.5–8000MHz



8000–12750MHz



Test Result

PASS

6. Receiver Suprious Emissions

6.1. Test Setup



6.2. Test Procedure

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

6.3. Limits

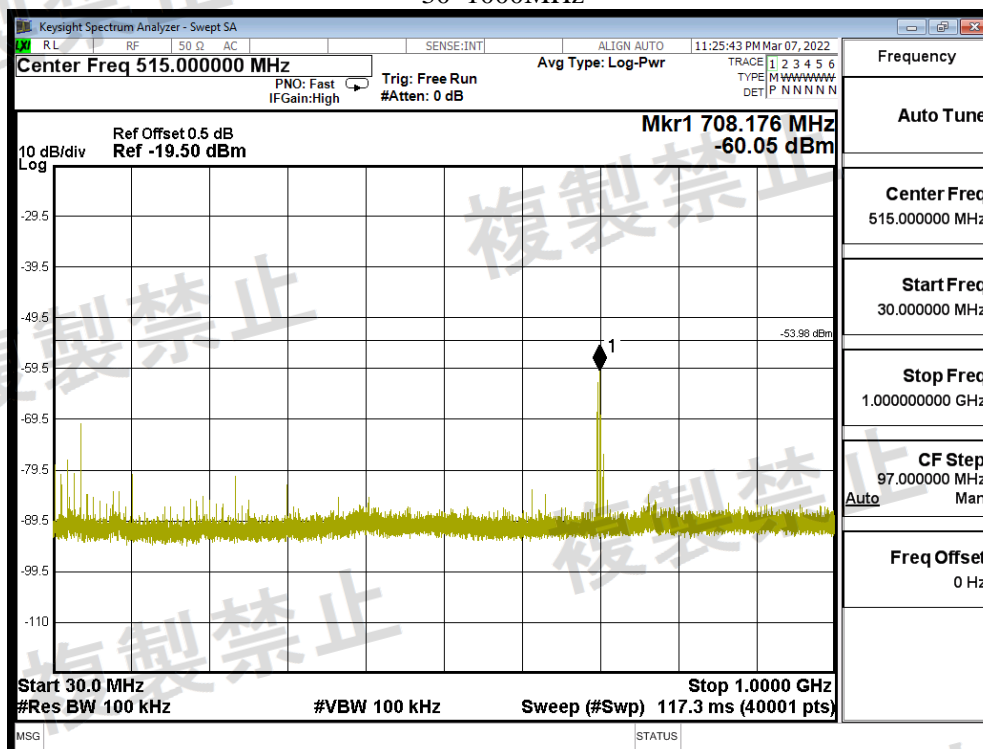
- $\leq 4\text{nW}$ for 30 – 1000 MHz
- $\leq 20\text{nW}$ for 1000 – 3000 MHz
- $\leq 20\text{nW}$ for 3000 – 12750 MHz

6.4. Test Result of Receiver Spurious Emissions

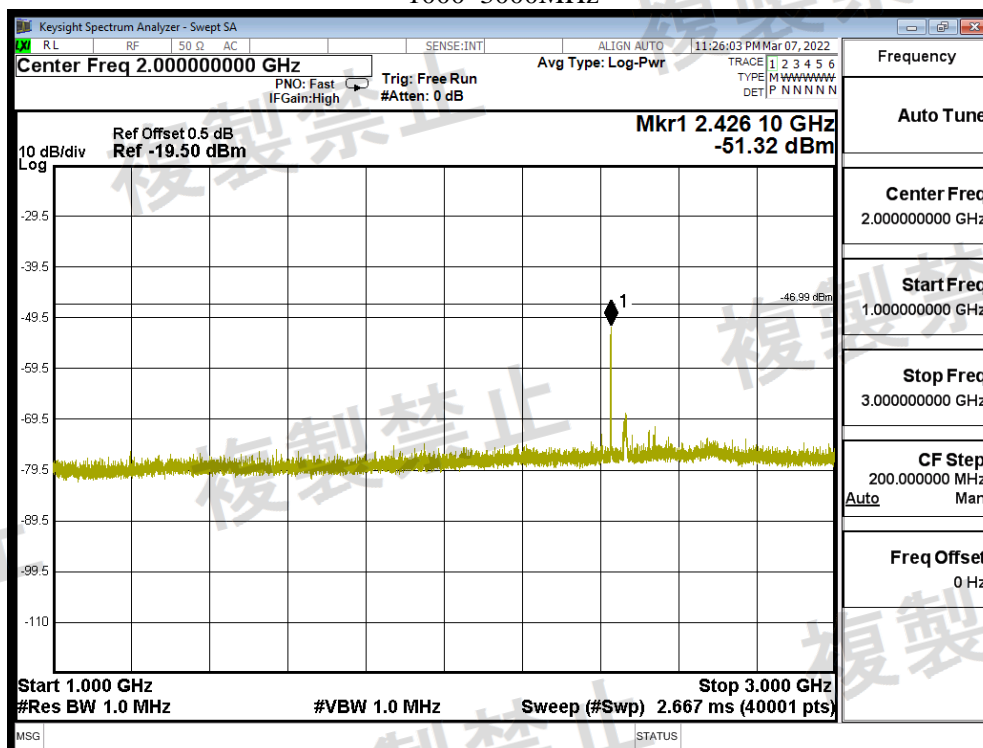
Product : BIKE POWER TRAINER
Test Item : Receiver Spurious Emissions
Test Mode : Mode 2: Receive (2457MHz)

Frequency Range (MHz)	Reading Value (dBm)	Limit (dBm)
30 - 1000	-60.05	-54 (4nW)
1000 – 3000	-51.31	-47 (20nW)
3000 – 8000	-73.26	-47 (20nW)
8000 – 12750	-74.82	-47 (20nW)

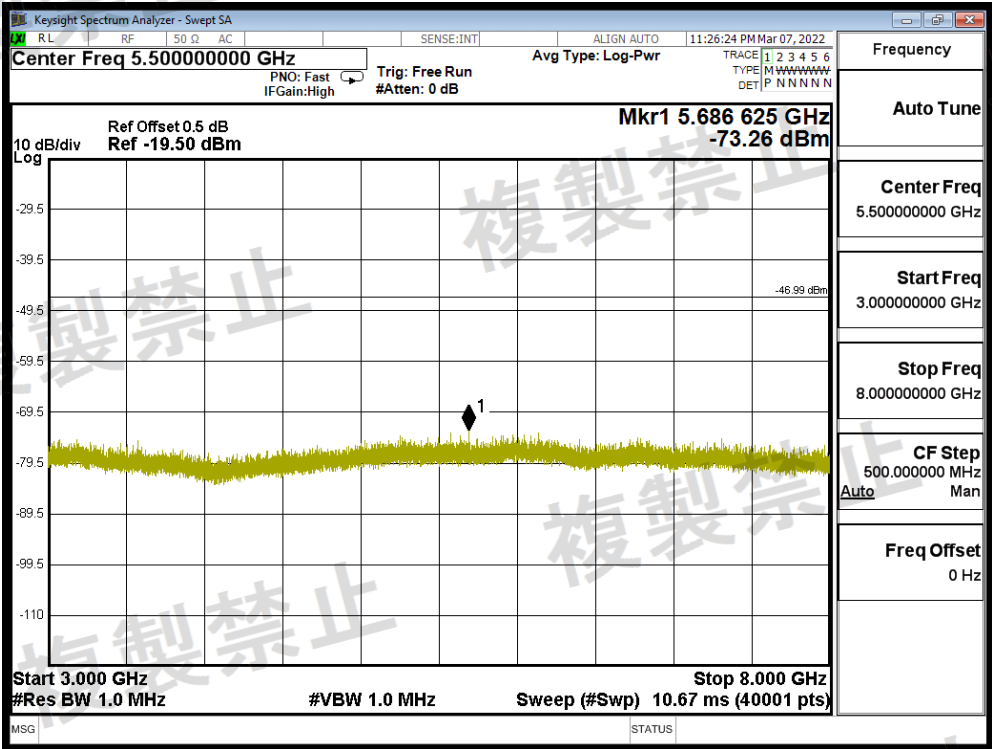
30–1000MHz



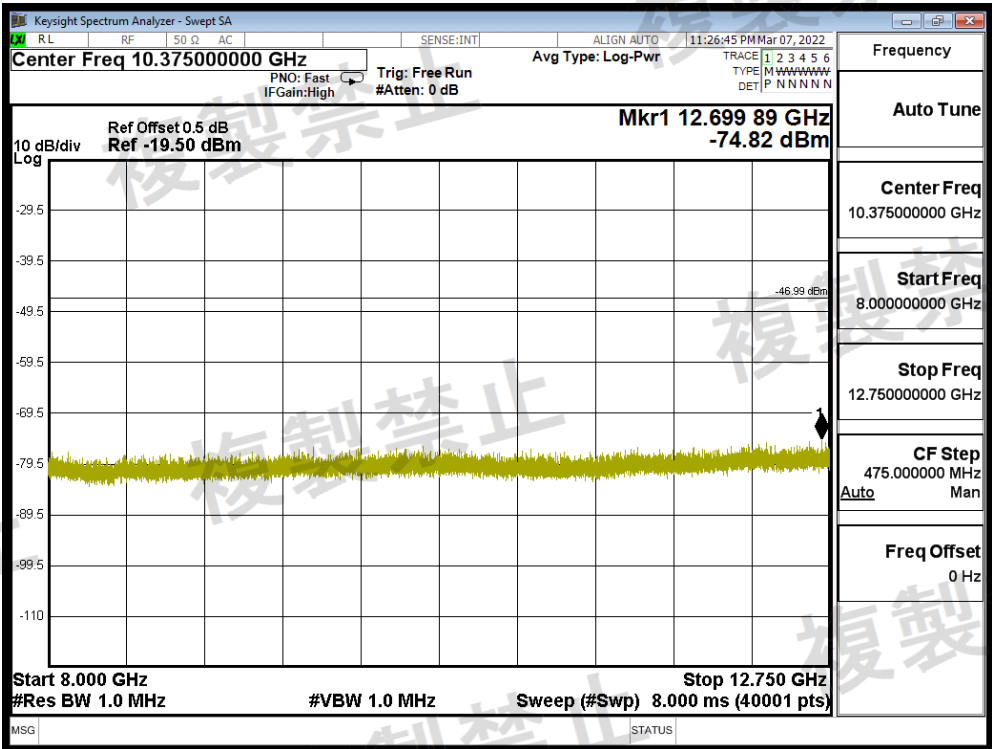
1000–3000MHz



3000–8000MHz



8000–12750MHz



Test Result

PASS

7. EMI Reduction Method During Compliance Testing

No modification was made during testing.