RF TEST REPORT

Applicant	Mobiwire SAS
FCC ID	QPN-ONEIDA
Product	4G Smart Feature Phone
Brand	MobiWire
Model	MobiWire Oneida, MobiWire Oneida Lite, MBW Vodacom Vibe 4G
Report No.	R1912A0712-R4V1
Issue Date	January 8, 2020

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2018)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Peng Tao

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TABLE OF CONTENT

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	Frequency Hopping System	15.247 (g), (h)	Refer to the Original
2	Peak Power Output -Conducted	15.247(b)(1)	PASS
3	Occupied Bandwidth (20dB)	15.247(a)(1)	Refer to the Original
4	Frequency Separation	15.247(a)(1)	Refer to the Original
5	Time of Occupancy (Dwell Time)	15.247(a)(1)(iii)	Refer to the Original
6	Band Edge Compliance	15.247(d)	Refer to the Original
7	Number of Hopping Frequency	15.247(a)(1)(iii)	Refer to the Original
8	Spurious RF Conducted Emissions	15.247(d)	Refer to the Original
9	Unwanted Emissions	15.247(d),15.205,15.209	Refer to the Original
10	Conducted Emissions	15.207	Refer to the Original
Date of Testing: December 18, 2019~ January 8, 2020			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

Note: This revised report (Report No.:R1912A0712-R4V1) supersedes and replaces the previously issued report (Report No.:R1912A0712-R4). Please discard or destroy the previously issued report and dispose of it accordingly.

MobiWire Oneida, MobiWire Oneida Lite, MBW Vodacom Vibe 4G (Report No.: R1912A0712-R4V1) is a variant model of MobiWire Oneida (Report No.: I18D00205-SRD01-V02). Test values partial duplicated from Original for variant. There is only tested RF power output for variant in this report. The detailed product change description please refers to the *GM2809D Oneida Product Change Description 20191205.*

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
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2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	Mobiwire SAS
Applicant address	79 avenue Francois Arago, 92000 NANTERRE France
Manufacturer	Mobiwire SAS
Manufacturer address	79 avenue Francois Arago, 92000 NANTERRE France

2.2 General information

EUT Description			
Model	MobiWire Oneida, MobiWire Oneida Lite, MBW Vodacom Vibe 4G		
IMEI	IMEI 1:352718110002129 IMEI 2:352718110002137		
Hardware Version	V04C		
Software Version	V01		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)		
Antenna Gain	1.0 dBi		
Test Mode(s)	Basic Rate	Enhanced Data Rate(EDR)	
Modulation Type	Frequency Hopping Spread Spectrum (FHSS)		
	GFSK	π/4 DQPSK	8DPSK
Packet Type (Maximum Payload)	DH5	2DH5	3DH5
Max. Conducted Power	3.30dBm		
Operating Frequency Range(s)	2402-2480 MHz		
EUT Accessory			
Adapter	Manufacturer: DongGuan Aohai Power Technology Co.,Ltd Model: A31A-050055U-US1		
Battery	Manufacturer: NINGBO VEKEN BATTERY CO.,LTD Model: 178150977		
Earphone 1	Manufacturer: jiu jiang JUWEI ELECTRONICS CO.,LTD Model: JWEP1062-M01R 1.0m, Shielded		
Earphone 2	Manufacturer: jiu jiang JUWEI ELECTRONICS CO.,LTD Model: JWEP0944-M01R 1.0m, Shielded		

Note: 1. The information of the EUT is declared by the manufacturer.

Item	Configure 1	Configure 2	Configure 3	Configure 4
Software	the same	the same	the same	the same
Hardware	the same	the same	the same	the same
Frequency band	the same	the same	the same	the same
camera	with camera	with camera	without camera	without camera
SIM card slot	2*SIM card	2*SIM card	1*SIM card	1*SIM card
LCD	HLT LCD	SL LCD	HLT LCD	SL LCD
Other	The same	The same	The same	The same
Note: Customer declaration, Four configures is the same, except for camera , LCD and SIM card slot. There are more than one Configure, each one should be applied throughout the compliance test respectively, however, only the worst case (Configure 2) will be recorded in this report.				

3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR47 Part 15C (2018) Radio Frequency Devices

ANSI C63.10 (2013)

Reference standard:

KDB 558074 D01 15.247 Meas Guidance v05r02

4 Information about the FHSS characteristics

4.1 Frequency Hopping System Requirement

Standard requirement:
(g) Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.
(h) The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.
Compliance for section 15.247(g):
According to Bluetooth Core Specification, the Bluetooth system transmits the packets with the pseudorandom hopping frequency with a continuous data and short burst transmission from the Bluetooth system is also transmitted under the frequency hopping system with the pseudorandom hopping frequency system.
Compliance for section 15.247(h):
According to Bluetooth Core Specification, the Bluetooth system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels.
According to Bluetooth Core Specification, the Bluetooth system is designed not have the ability to coordinate with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.

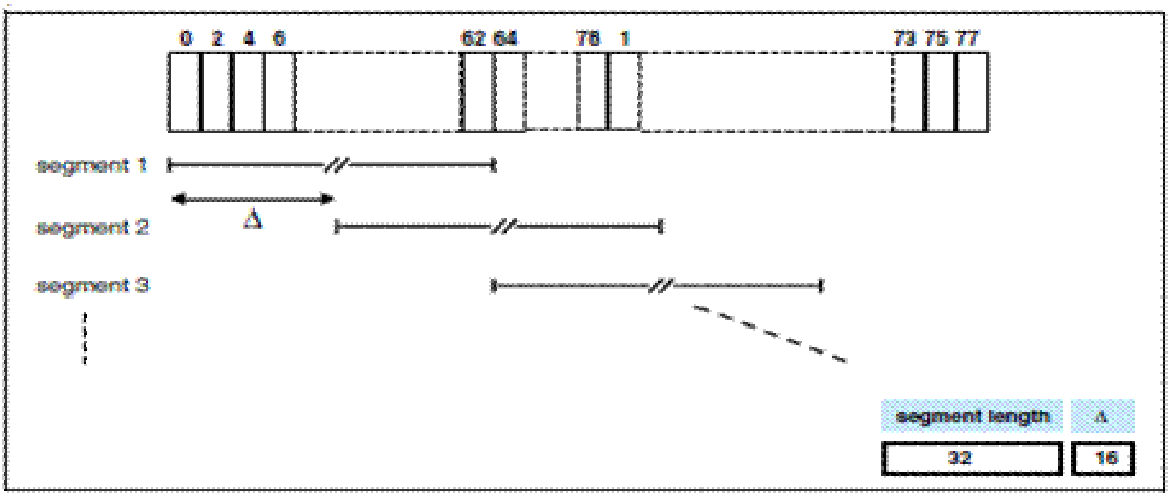
4.2 Pseudorandom Frequency Hopping Sequence

Frequency Hopping Systems. A spread spectrum system in which the carrier is modulated with the coded information in a conventional manner causing a conventional spreading of the RF energy about the frequency carrier. The frequency of the carrier is not fixed but changes at fixed intervals under the direction of a coded sequence. The wide RF bandwidth needed by such a system is not required by spreading of the RF energy about the carrier but rather to accommodate the range of frequencies to which the carrier frequency can hop. The test of a frequency hopping system is that the near term distribution of hops appears random, the long term distribution appears evenly distributed over the hop set, and sequential hops are randomly distributed in both direction and magnitude of change in the hop set.

Adaptive Frequency Hopping (AFH) was introduced in the Bluetooth specification to provide an effective way for a Bluetooth radio to counteract normal interference. AFH identifies "bad" channels, where either other wireless devices are interfering with the Bluetooth signal or the Bluetooth signal is interfering with another device. The AFH-enabled Bluetooth device will then communicate with other devices within its pioneer to share details of any identified bad channels. The devices will then switch to alternative available "good" channels, away from the areas of interference, thus having no impact on the bandwidth used.

The selection scheme chooses a segment of 32 hop frequencies spanning about 64 MHz and visits these hops in a pseudo-random order. Next, a different 32-hop segment is chosen, etc. In the page, master page response, slave page response, page scan, inquiry, inquiry response and inquiry scan hopping sequences, the same 32-hop segment is used all the time (the segment is selected by the address; different devices will have different paging segments).

When the basic channel hopping sequence is selected, the output constitutes a pseudo-random sequence that slides through the 79 hops. The principle is depicted in the figure below.



Hop selection scheme in CONNECTION state.

Pseudorandom Frequency Hopping Sequence Table as below:

Channel: 08, 24, 40, 56, 40, 56, 72, 09, 01, 09, 33, 41, 33, 41, 65, 73, 53, 69, 06, 22, 04, 20, 36, 52, 38, 46, 70, 78, 68, 76, 21, 29, 10, 26, 42, 58, 44, 60, 76, 13, 03, 11, 35, 43, 37, 45, 69, 77, 55, 71, 08, 24, 08, 24, 40, 56, 40, 48, 72, 01, 72, 01, 25, 33, 12, 28, 44, 60, 42, 58, 74, 11, 05, 13, 37, 45, etc.

Each frequency used equally on the average by each transmitter.

The system receiver have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

4.3 Equal Hopping Frequency Use

All Bluetooth units participating in the Pico net are time and hop-synchronized to the channel. Each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event.

4.4 System Receiver Input Bandwidth

Each channel bandwidth is 1MHz. The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

4.5 Test Configuration

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Test Cases	Test Modes
Peak Power Output -Conducted	DH5/2DH5/3DH5

5 Test Case Results

5.1 Peak Power Output –Conducted

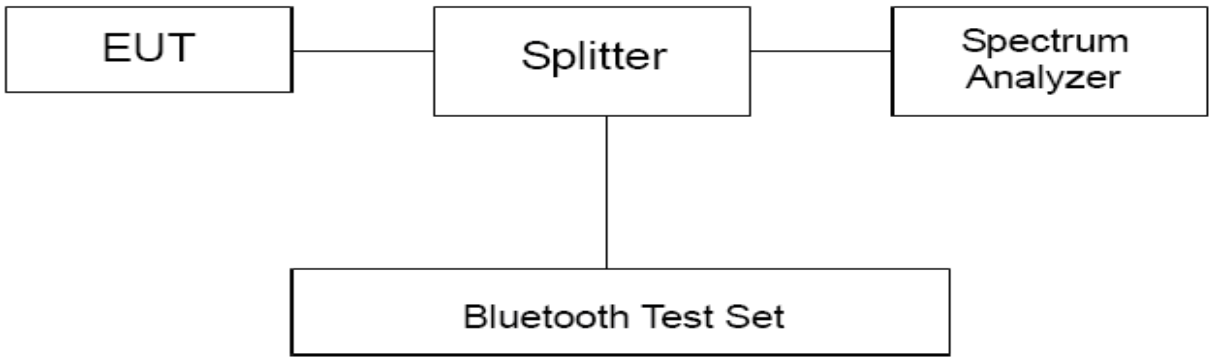
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The EUT is controlled by the Bluetooth test set to ensure max power transmission with proper modulation. The peak detector is used. RBW is set to 2 MHz; VBW is set to 6 MHz. These measurements have been tested at following channels: 0, 39, and 78.

Test Setup



Limits

Rule Part 15.247 (b) (1)specifies that " For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts."

Peak Output Power	≤ 1W (30dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U=0.44 dB.

Test Results

Channel	Frequency (MHz)	Peak Output Power (dBm)			Limit (dBm)	Conclusion
		DH5	2DH5	3DH5		
0	2402	2.25	1.48	1.82	30	PASS
39	2441	3.30	2.96	3.04	30	PASS
78	2480	2.18	1.81	1.95	30	PASS

Note: The measured power density (dBm) has the offset with cable loss already.

Note: For AFH mode using 20 hopping channels, the maximum output power limit is 21dBm.

6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
BT Base Station Simulator	R&S	CBT	100271	2019-05-19	2020-05-18
Signal Analyzer	R&S	FSV30	100815	2019-12-15	2020-12-14
EMI Test Receiver	R&S	ESCI	100948	2019-05-19	2020-05-18
Loop Antenna	Schwarzbeck	FMZB1519	1519-047	2017-09-26	2020-09-25
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-201	2017-11-18	2020-11-17
Double Ridged Waveguide Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Standard Gain Horn	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
EMI Test Receiver	R&S	ESR	101667	2019-05-19	2020-05-18
LISN	R&S	ENV216	101171	2018-12-15	2021-12-14
Spectrum Analyzer	Agilent	N9010A	MY47191109	2019-05-19	2020-05-18
RF Cable	Agilent	SMA 15cm	0001	2019-12-13	2020-06-12
Power Splitter	Hua Xiang	SHX-GF2-2 -13	10120101	/	/
Software	R&S	EMC32	9.26.0	/	/

*******END OF REPORT *******