

FCC Part 96.47 Test Report

Applicant : unitech electronics co., ltd.
Equipment : Rugged Handheld Computer
Brand Name : unitech
Model Name : EA660
FCC ID : HLEEA660BWNW
Standard : FCC Part 96.47
TEST DATE(S) : Aug. 18, 2023

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (Kunshan)

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China



Table of Contents

1	GENERAL DESCRIPTION	5
1.1	APPLICANT	5
1.2	MANUFACTURER	5
1.3	PRODUCT FEATURE OF EQUIPMENT UNDER TEST.....	5
1.4	PRODUCT SPECIFICATION OF EQUIPMENT UNDER TEST	5
1.5	TESTING LOCATION.....	6
1.6	TEST SOFTWARE	6
1.7	APPLICABLE STANDARDS.....	6
2	TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....	7
2.1	CONNECTION DIAGRAM OF TEST SYSTEM	7
3	END USER DEVICE ADDITIONAL REQUIREMENT	8
3.1	TEST REQUIREMENT	8
3.2	TEST PROCEDURE.....	8
3.3	TEST RESULT	9
4	LIST OF MEASURING EQUIPMENT	13
APPENDIX A. TEST SETUP PHOTO		



History of this test report

Report No.	Version	Description	Issued Date
FG372407I	01	Initial issue of report	Oct. 13, 2023



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3	96.47	End User Device additional requirement	Pass	-

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

unitech electronics co., ltd.

5F., No. 136, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City, Taiwan

1.2 Manufacturer

unitech electronics co., ltd.

5F., No. 136, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City, Taiwan

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Rugged Handheld Computer
Brand Name	unitech
Model Name	EA660
FCC ID	HLEEA660BWNW
IMEI Code	357458980003676/357458980003684
HW Version	V4
SW Version	ST6729A_1280_Unitech_patchbuild_20230815181058934
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n48: 3550 MHz ~ 3700 MHz
Rx Frequency	5G NR n48: 3550 MHz ~ 3700 MHz
Antenna Type / Gain	<Ant.5>: PIFA Antenna / -2.2dBi <Ant.8>: PIFA Antenna / -1.2dBi
Type of Modulation	DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM)



1.5 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	DFS01-KS	CN1257	314309
Test Engineer	Chad Wang		
Temperature	20 ~ 24.5 °C		
Relative Humidity	40 ~ 60 %		

1.6 Test Software

Item	Site	Manufactor	Name	Version
1.	DFS01-KS	Sporton	DFS & Adaptivity Test Tools	1.0

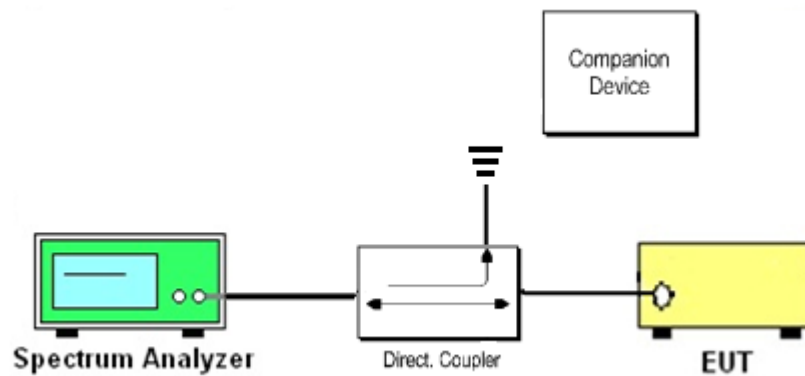
1.7 Applicable Standards

- ♦ FCC Part 96.47
- ♦ FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
- ♦ WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

2.1 Connection Diagram of Test System



The companion device is certified CBRS (FCC ID: PIDAS2900)

3 End User Device additional requirement

3.1 Test Requirement

FCC Part 96.47

(a) End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.

(1) An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

3.2 Test Procedure

Following procedure can be done by applying WINNF-TS-0122-V1.0.2 CBRS CBSD Test Specification, use the certified CBSD (FCC ID: PIDAS2900) as companion device to show compliance with Part 96.47 requirement for End User Device (EUD):

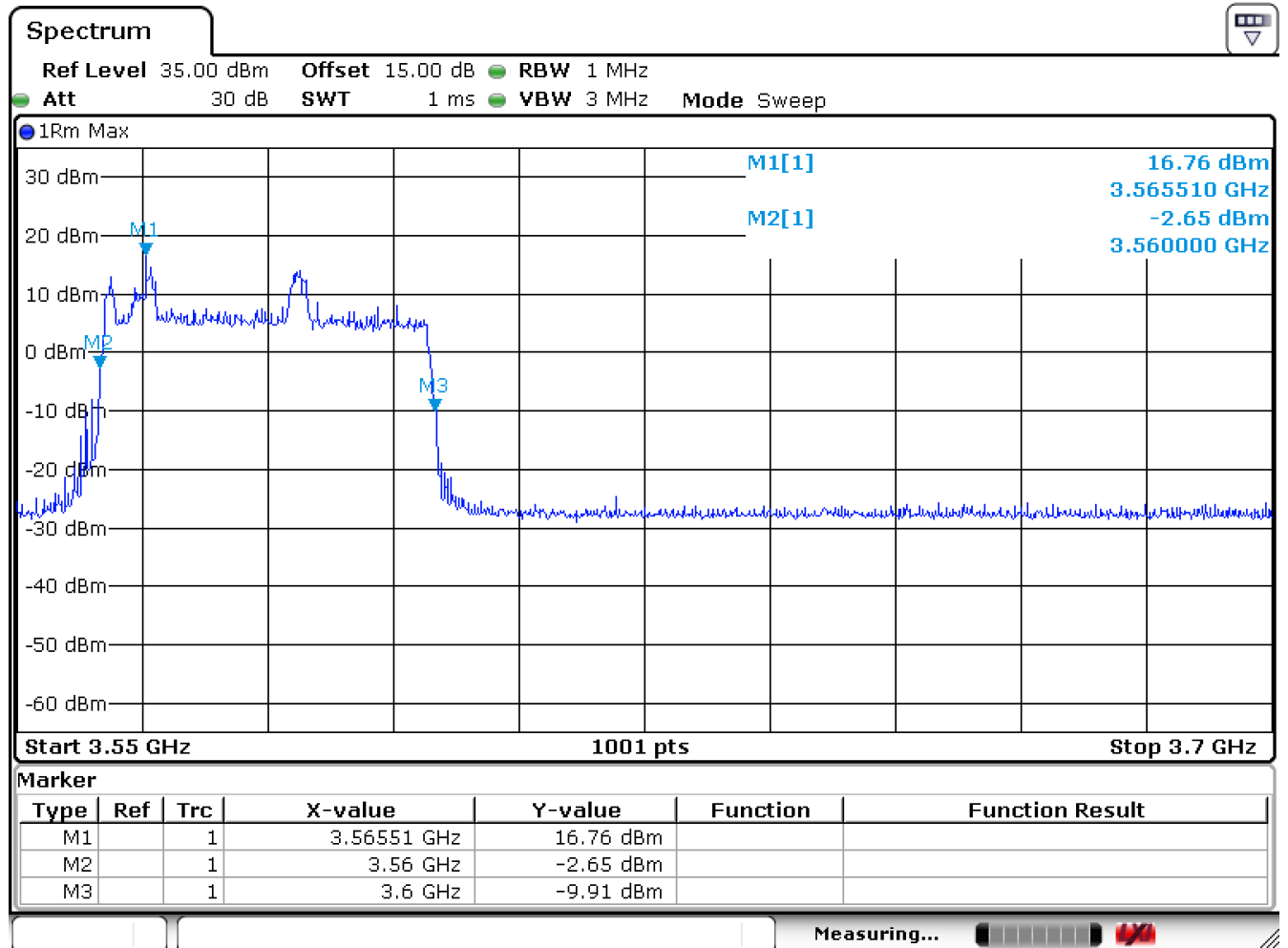
1. Setup with frequency 3600-3620MHz and power level 17dBm/MHz
2. Enable AP service from Ruckus Cloud management
3. Check EUD Tx Frequency and power
4. Disable AP service from Ruckus Cloud management
 - a. Check EUD stops transmission within 10seconds.
5. Setup with 3670-3690MHz & power level 7dBm/MHz
6. Enable AP service from Ruckus Cloud management
7. Check EUD Tx Frequency and power
8. Disable AP service from Ruckus Cloud management
 - a. Check EUD stops transmission within 10seconds.



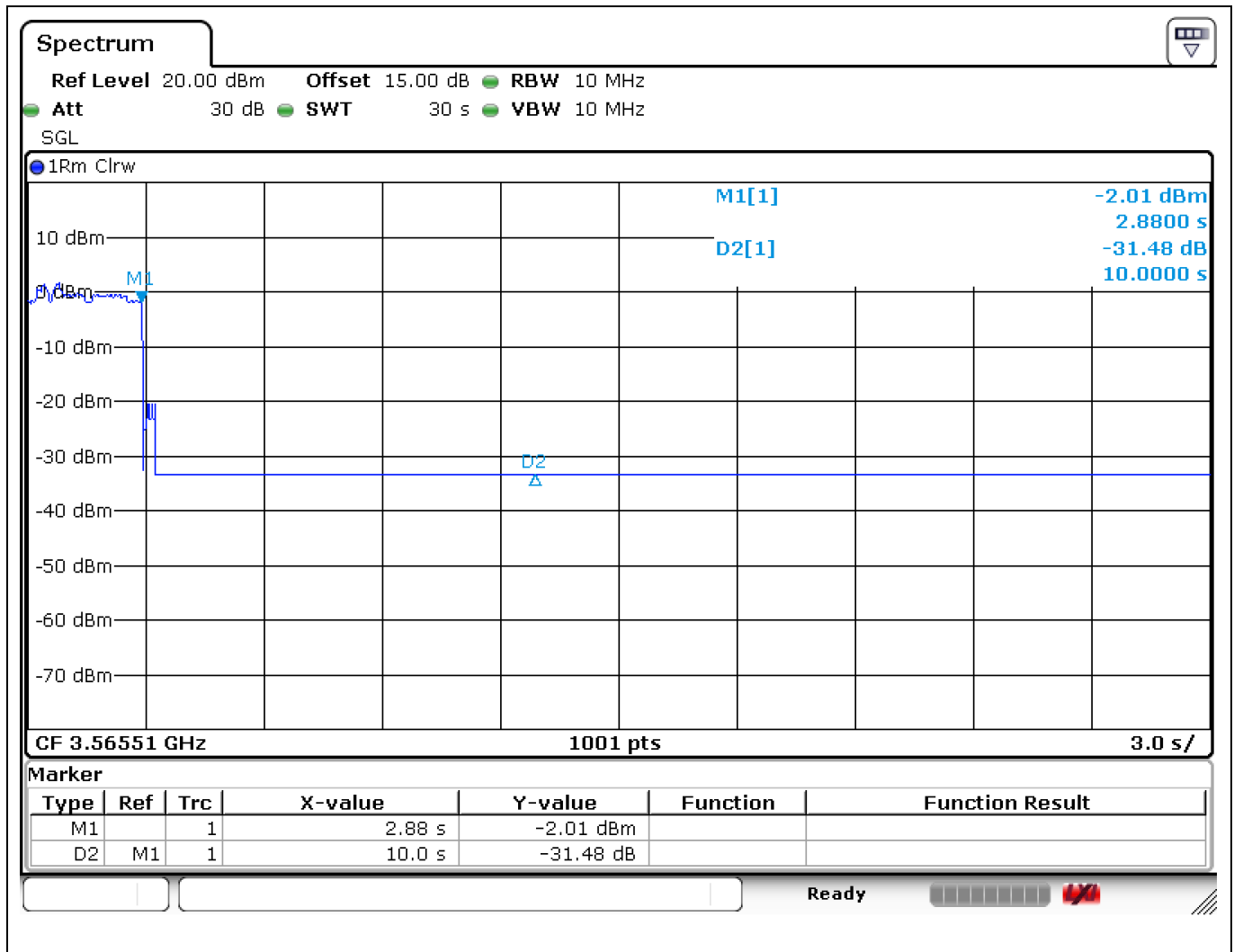
3.3 Test Result

[Step 1] Setup with frequency 3560-3600MHz and power level 34dBm/MHz

[Step 3] Check EUD Tx Frequency and power



[Step 4.a.] EUD stops transmission within 10 seconds of receiving instructions from its associated CBSD.

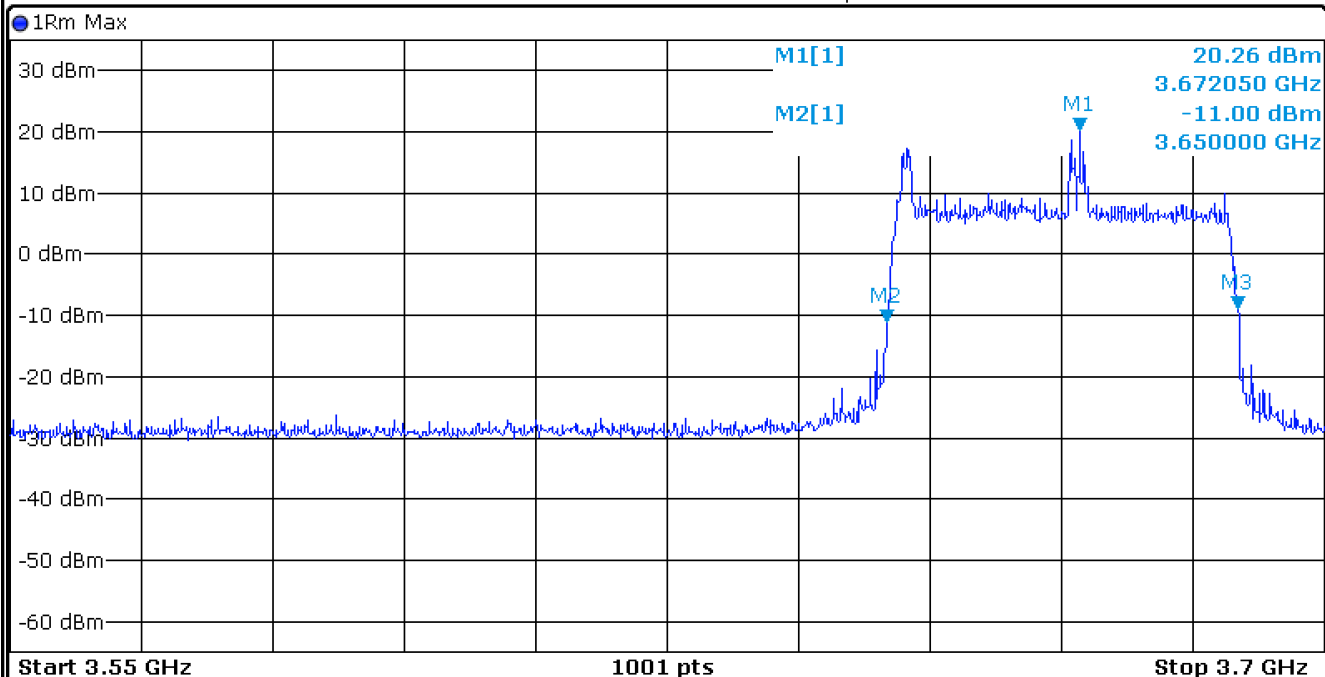




[Step 5] Setup with 3650-3690MHz & power level 20dBm/MHz

[Step 7] Check EUD Tx Frequency and power

Spectrum

Ref Level 35.00 dBm Offset 15.00 dB RBW 1 MHz
Att 30 dB SWT 1 ms VBW 3 MHz Mode Sweep

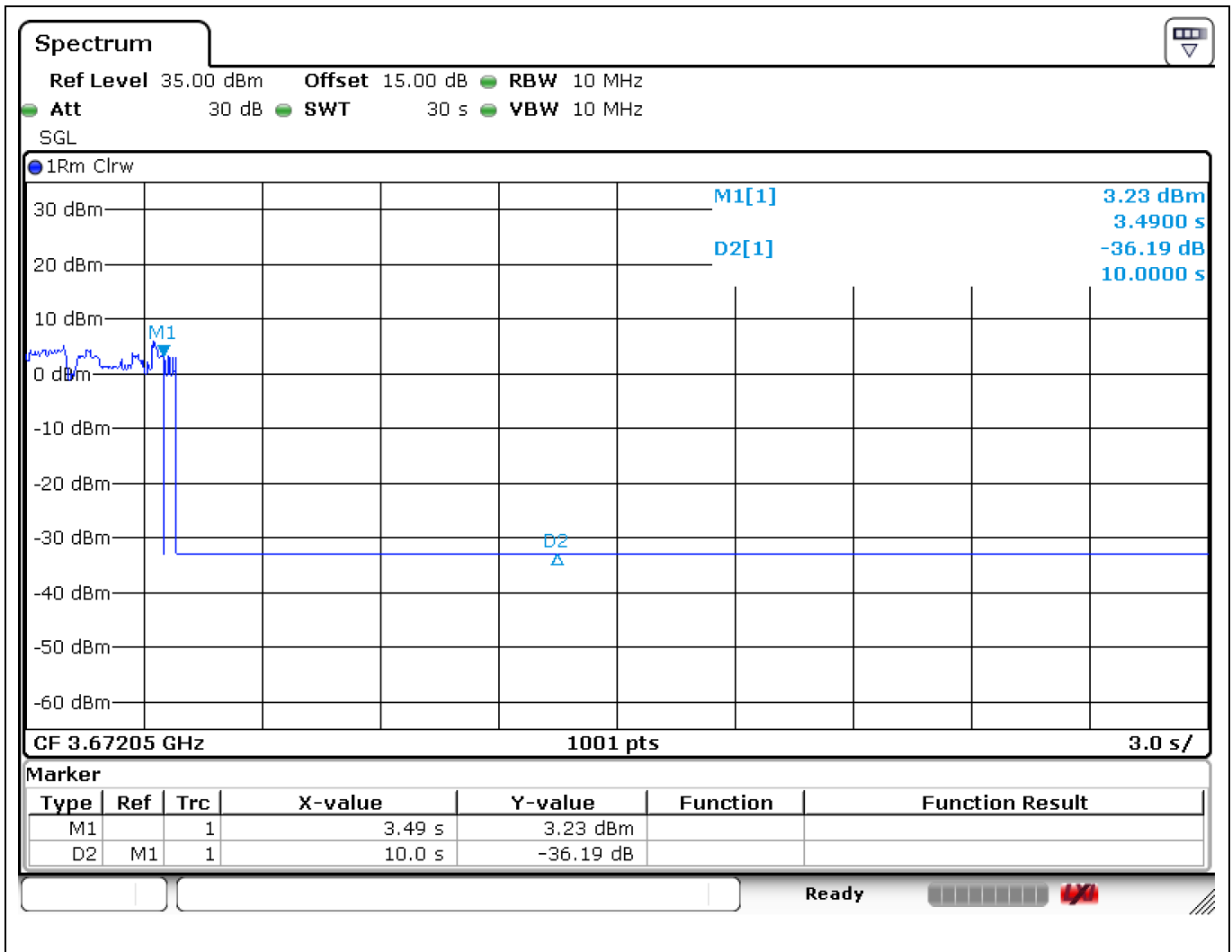
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	3.67205 GHz	20.26 dBm		
M2		1	3.65 GHz	-11.00 dBm		
M3		1	3.69 GHz	-8.92 dBm		

Measuring...

[Step 8.a.] After changing the frequency and power level,

The module (EUT) discontinues operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD. Test result is PASS.





4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Signal Analyzer	R&S	FSV7	101472	10Hz~7GHz	Jan. 05, 2023	Aug.18, 2023	Jan. 04, 2024	Conducted (DFS01-KS)

----- THE END -----