



# FCC RADIO TEST REPORT

**FCC ID** : HD5-CK67X0N  
**Equipment** : Mobile Computer  
**Brand Name** : Honeywell  
**Model Name** : CK67X0N  
**Applicant** : Honeywell International Inc.  
Honeywell Safety and Productivity Solutions  
9680 Old Bailes Rd. Fort Mill, SC 29707 United States  
**Manufacturer** : Honeywell International Inc.  
Honeywell Safety and Productivity Solutions  
9680 Old Bailes Rd. Fort Mill, SC 29707 United States  
**Standard** : FCC Part 15 Subpart E §15.407

The product was received on Aug. 16, 2024 and testing was performed from Aug. 19, 2024 to Aug. 19, 2024. We, Sporton International Inc. EMC & Wireless Communications Laboratory, 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 partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

**Sporton International Inc. EMC & Wireless Communications Laboratory**

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



## Table of Contents

**History of this test report..... 3**

**Summary of Test Result..... 4**

**1 General Description ..... 5**

    1.1 Product Feature of Equipment Under Test..... 5

    1.2 Modification of EUT ..... 5

    1.3 Testing Location ..... 5

    1.4 Applicable Standards..... 6

**2 Test Result ..... 7**

    2.1 Standard Client Proper Power Adjustment Measurement..... 7

    2.2 Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP ..... 12

**3 List of Measuring Equipment..... 15**



### History of this test report

Report No.	Version	Description	Issue Date
FR461705-03	01	Initial issue of report	Aug. 27, 2024



### Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2.1	15.407 KDB 987594 D02 Section II. L.	Standard Client Proper Power Adjustment Measurement	Pass	-
2.2	15.407 KDB 987594 D02 Section II. K.	Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP	Pass	-

**Conformity Assessment Condition:**

The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.

**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.

**Reviewed by: Wei Chen**

**Report Producer: Clio Lo**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature
<p><b>General Specs</b> Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, Wi-Fi 6GHz 802.11a/ax, and NFC.</p> <p><b>Antenna Type</b> WLAN: &lt;Ant. 0 &gt;: PIFA Antenna &lt;Ant. 1 &gt;: PIFA Antenna Bluetooth: &lt;Ant. 0 &gt;: PIFA Antenna &lt;Ant. 1 &gt;: PIFA Antenna NFC: Loop Antenna</p>

**Remark:** The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

## 1.2 Modification of EUT

No modifications made to the EUT during the testing.

## 1.3 Testing Location

<b>Test Site</b>	Sporton International Inc. EMC & Wireless Communications Laboratory
<b>Test Site Location</b>	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
<b>Test Site No.</b>	<b>Sporton Site No.</b> DF02-HY

FCC designation No.: TW1190



## **1.4 Applicable Standards**

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v02r01
- ♦ ANSI C63.10-2013

**Remark:**

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.



## 2 Test Result

### 2.1 Standard Client Proper Power Adjustment Measurement

#### 2.1.1 Limit of Standard Client Proper Power Adjustment

15.407 KDB 987594 D02 Section II. L. Power limits for standard client devices

c) The maximum power limits shall remain at least 6 dB below the power levels authorized for the associated standard-power access point

#### 2.1.2 Test Procedures of Standard Client Proper Power Adjustment

The testing follows FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v02r01.

Section L. Proper Power Adjustment

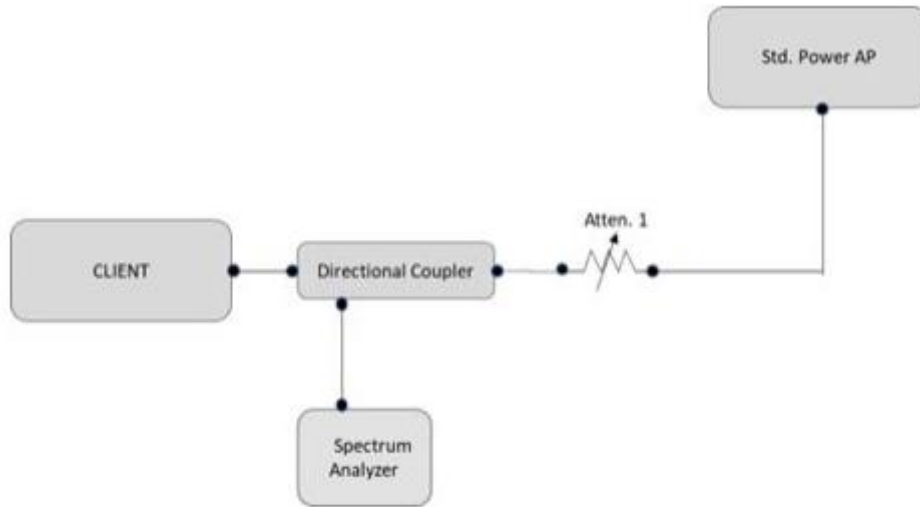
#### 2.1.3 Proper Power Adjustment, Client Devices Connected to a Standard Power Access Point

A client device that connects to a Standard Power AP must limit its power to a minimum of 6 dB lower than its associated Standard Power access point's authorized transmit power. The term "authorized" means the AFC-approved power level for the AP to use on a particular channel.

Test procedure to show that the client device can lower its power accordingly.

#### 2.1.4 Test Procedure:

1. Connect equipment as shown in Figure 7 below.
2. Adjust Atten 1 to Std Power AP so as to facilitate error free communication with the Client but protect the Client receiver from overload or damage.
3. Configure the Client and AP so that they associate and start sending data (stream data). The AP should be configured such that its registered power is 36 dBm EIRP.
4. Verify transmission between Client and Std Power AP. Additional attenuators may be required to protect measurement equipment. Measure the Client RF power using any of the methods in C63.10 for NII devices.
5. Use this power, along with its antenna gain, to calculate the Client EIRP.
6. The Client EIRP should be minimally 6 dB lower than that of the AP.
7. Repeat Steps 2 through 5 at two other selected measurement points – the first at the midpoint and the second at the lowest rated power of the client as declared by the manufacturer.



**Figure 7. Test setup for conducted testing**

**2.1.5 Test Result Summary**

Companion Standard Power AP: Brand name: Qualcomm, Model name: Wakiki

802.11ax 20MHz bandwidth

Test channel 149

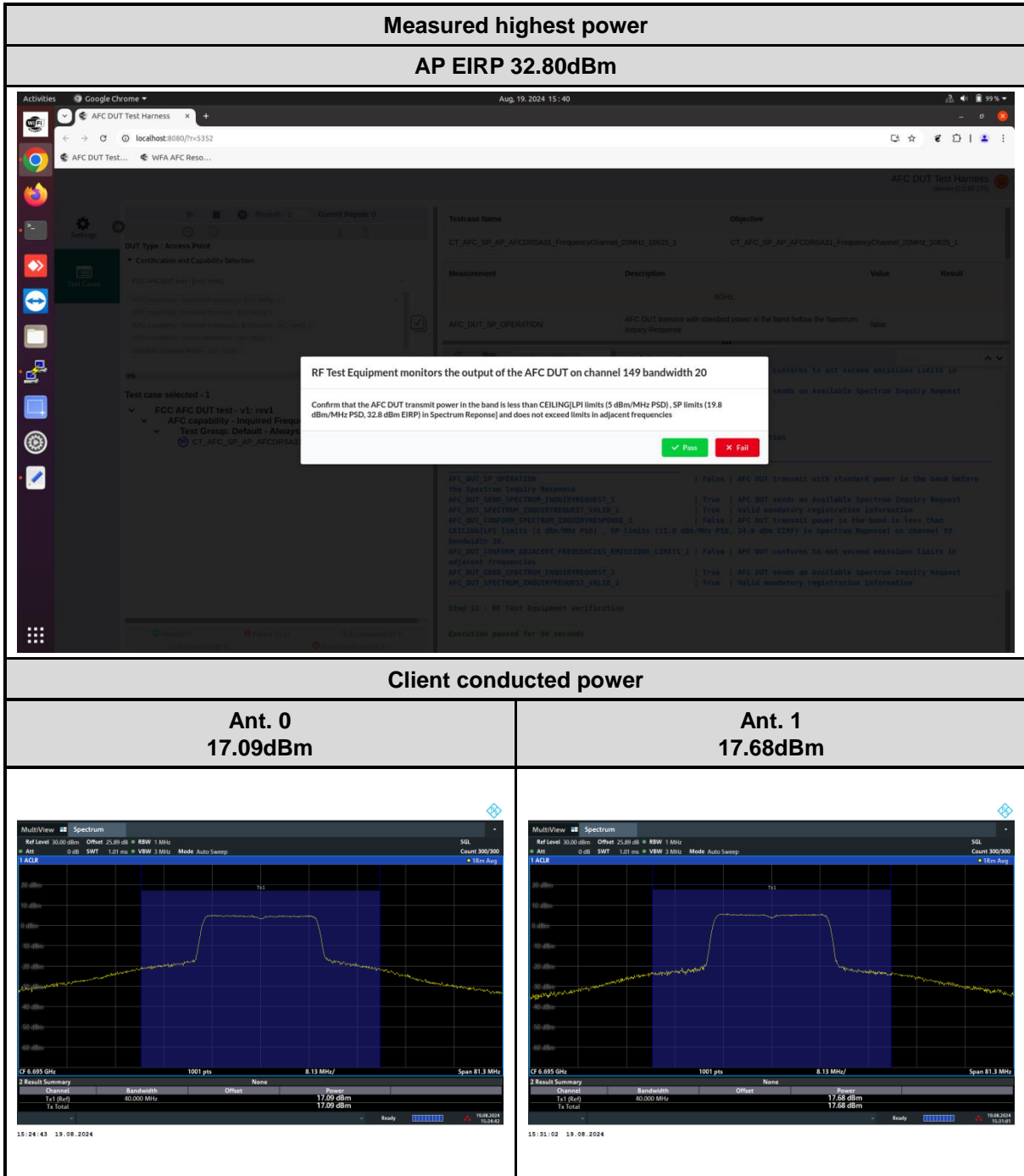
	Client Conducted Power (dBm)			Client EIRP (dBm)	AP EIRP (dBm)	AP to client EIRP Delta (dB)
	Ant. 0	Ant. 1	MIMO			
<b>Maximum EIRP</b>	17.09	17.68	20.41	24.41	32.80	8.39
<b>Midpoint EIRP</b>	11.92	11.94	14.94	18.94	26.70	7.76
<b>Lowest EIRP</b>	7.10	7.35	10.24	14.24	21.70	7.46
<b>Requirement</b>						At least 6 dB
<b>Result</b>						Pass

**Note:** Client EIRP = Client MIMO conducted power + antenna gain 4.0dBi





### 2.1.6 Test Result Plot





Measured mid-point power

AP EIRP 26.70dBm

The screenshot shows the AFC DUT Test Harness interface. A modal dialog box is displayed with the following text:

RF Test Equipment monitors the output of the AFC DUT on channel 149 bandwidth 20

Confirm that the AFC DUT transmit power in the band is less than CEILING/LPI limits (5 dBm/MHz PSD) , SP limits (13.7 dBm/MHz PSD, 26.7 dBm EIRP) in Spectrum Response] and does not exceed limits in adjacent frequencies

Buttons:

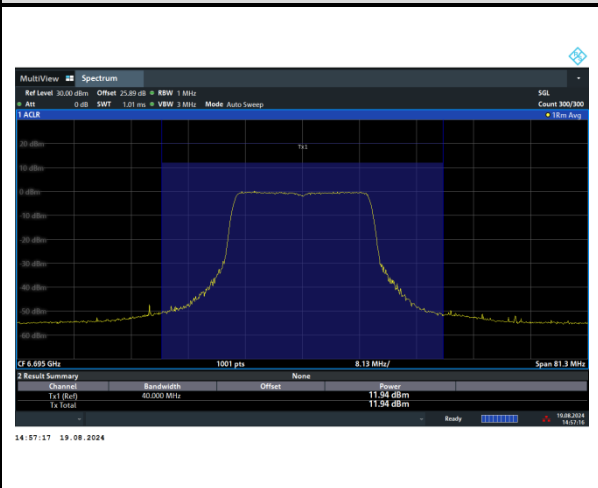
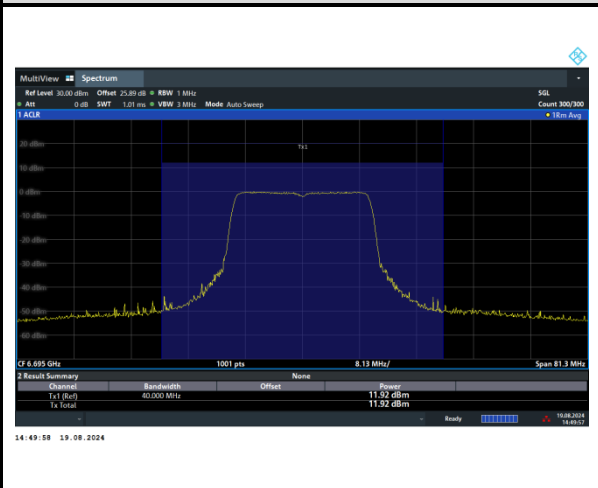
Background interface details:

- Testcase Name: CT\_AFC\_SP\_AP\_AFC09A31\_FrequencyChannel\_20MHz\_10A25\_1
- Objective: CT\_AFC\_SP\_AP\_AFC09A31\_FrequencyChannel\_20MHz\_10A25\_1
- Measurement: APC\_DUT\_SP\_OPERATION
- Description: APC DUT transmits with standard power in the band before the Spectrum Entry Response
- Value: 149.000
- Result: Pass

Client conducted power

Ant. 0  
11.92dBm

Ant. 1  
11.94dBm





Measured lowest power

AP EIRP 21.70dBm

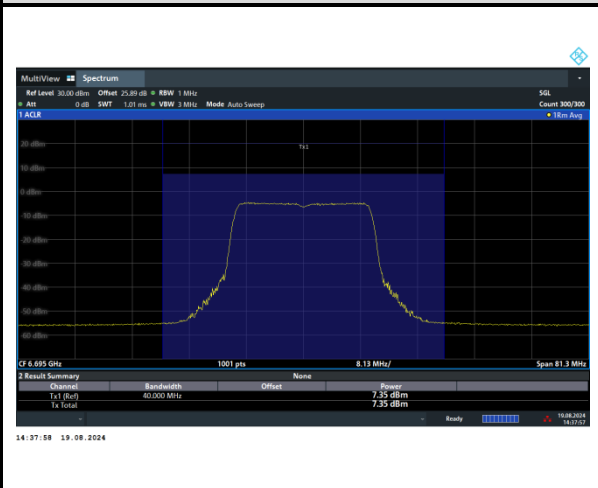
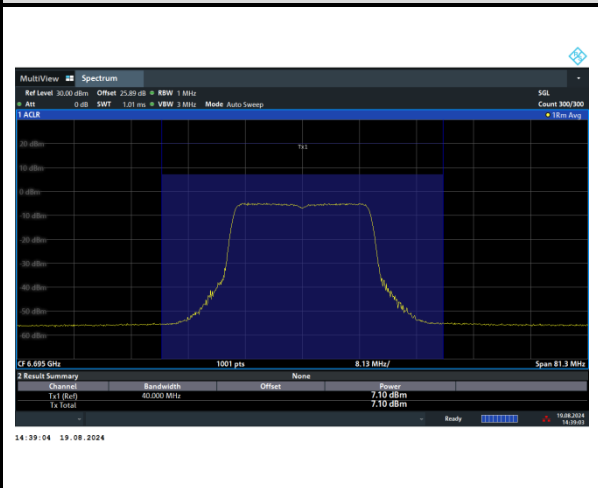
The screenshot shows the AFC DUT Test Harness interface. A pop-up message reads: "RF Test Equipment monitors the output of the AFC DUT on channel 149 bandwidth 20. Confirm that the AFC DUT transmit power in the band is less than CEILING/LPI limits (5 dBm/MHz PSD), SP limits (8.7 dBm/MHz PSD, 21.7 dBm EIRP) in Spectrum Response) and does not exceed limits in adjacent frequencies." The interface includes a table of test results:

Measurement	Description	Value	Result
AFC_DUT_SP_OPERATION	AFC DUT transmits with standard power in the band before the Spectrum Entry Response	libre	Pass
AFC_DUT_SP_OPERATION	AFC DUT transmits with standard power in the band before the Spectrum Entry Response	False	Fail
AFC_DUT_SEM_AVAILABLE_SPECTRUM_INQUIRYREQUEST_1	The Spectrum Inquiry Request	True	Pass
AFC_DUT_SEM_AVAILABLE_SPECTRUM_INQUIRYREQUEST_2	AFC DUT sends an Available Spectrum Inquiry Request	True	Pass
AFC_DUT_SEM_AVAILABLE_SPECTRUM_INQUIRYREQUEST_3	Valid regulatory registration information	True	Pass
AFC_DUT_SEM_AVAILABLE_SPECTRUM_INQUIRYREQUEST_4	AFC DUT transmits power in the band is less than CEILING/LPI limits (5 dBm/MHz PSD), SP limits (8.7 dBm EIRP) in Spectrum Response) on channel 149 bandwidth 20	False	Fail
AFC_DUT_SEM_AVAILABLE_SPECTRUM_INQUIRYREQUEST_5	AFC DUT conforms to not exceed emission limits in adjacent frequencies	False	Fail
AFC_DUT_SEM_AVAILABLE_SPECTRUM_INQUIRYREQUEST_6	AFC DUT sends an Available Spectrum Inquiry Request	True	Pass
AFC_DUT_SEM_AVAILABLE_SPECTRUM_INQUIRYREQUEST_7	Valid regulatory registration information	True	Pass

Client conducted power

Ant. 0  
7.10dBm

Ant. 1  
7.35dBm





## **2.2 Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP**

### **2.2.1 Limit of Proper Power Adjustment**

15.407 KDB 987594 D02 Section II. K. Power limits for standard client devices

A client device may connect to a Standard Power AP with a maximum power level of 30 dBm EIRP. A client may also connect to a Low Power indoor AP, but the power level is limited to a maximum of 24 dBm EIRP.

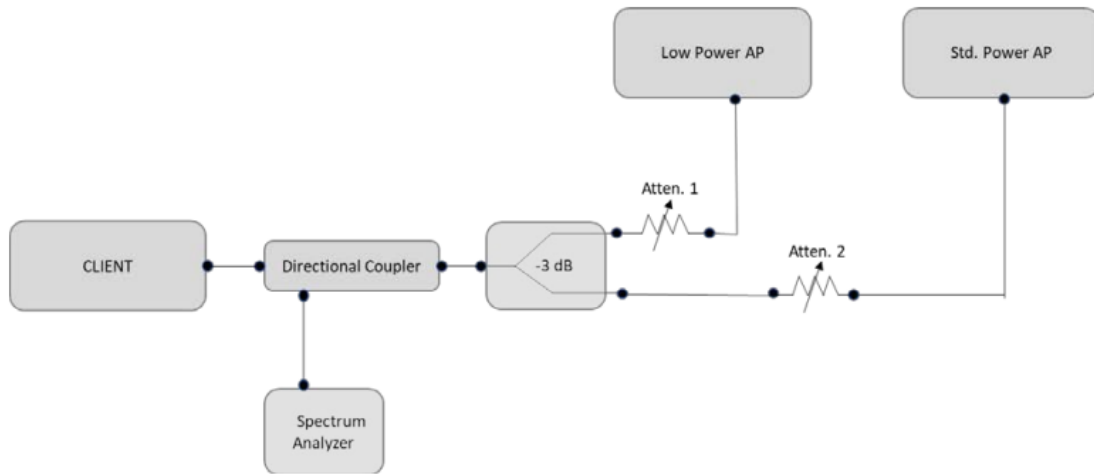
### **2.2.2 Test Procedures of Standard Client Proper Power Adjustment**

The testing follows FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v02r01.

Section K. Dual Client Test, Demonstration of Proper Power Adjustment based on Associated AP

### **2.2.3 Test Procedure:**

1. Connect equipment as shown in Figure 6 below..
2. Adjust Atten 2 to Std Power AP so as to facilitate error free communication with the Client (Atten 1 should be set to High on the RF path to the Low Power AP)
3. Configure the Client and APs so that they associate and start sending data (stream data). It is important that the client is configured to transmit at its highest power level. Initially, because the attenuation on Atten 1 is set high, the Client will only associate with the Std Power AP.
4. Verify transmission between Client and Std Power AP. Additional attenuators may be required to protect measurement equipment. Measure the Client RF power using any of the methods in C63.10 for NII devices.
5. Gradually increase Atten 2 while at the same time decreasing Atten 1. This simulates the Client moving from outdoors to indoors. At some level of attenuation the Client should associate with the Low Power indoor AP.
6. Verify transmission between Client and Low Power AP.
7. Measure the RF power of the Client device using the same method as in step 4. Verify the power is no more than 24 dBm EIRP



**Figure 6. Test setup for conducted testing**

### 2.2.4 Test Result Summary

Companion Standard Power AP: Brand name: Qualcomm, Model name: Wakiki

Companion Low Power indoor AP: Brand name: ASUS, Model name: GTAXE11000

802.11ax 20MHz bandwidth

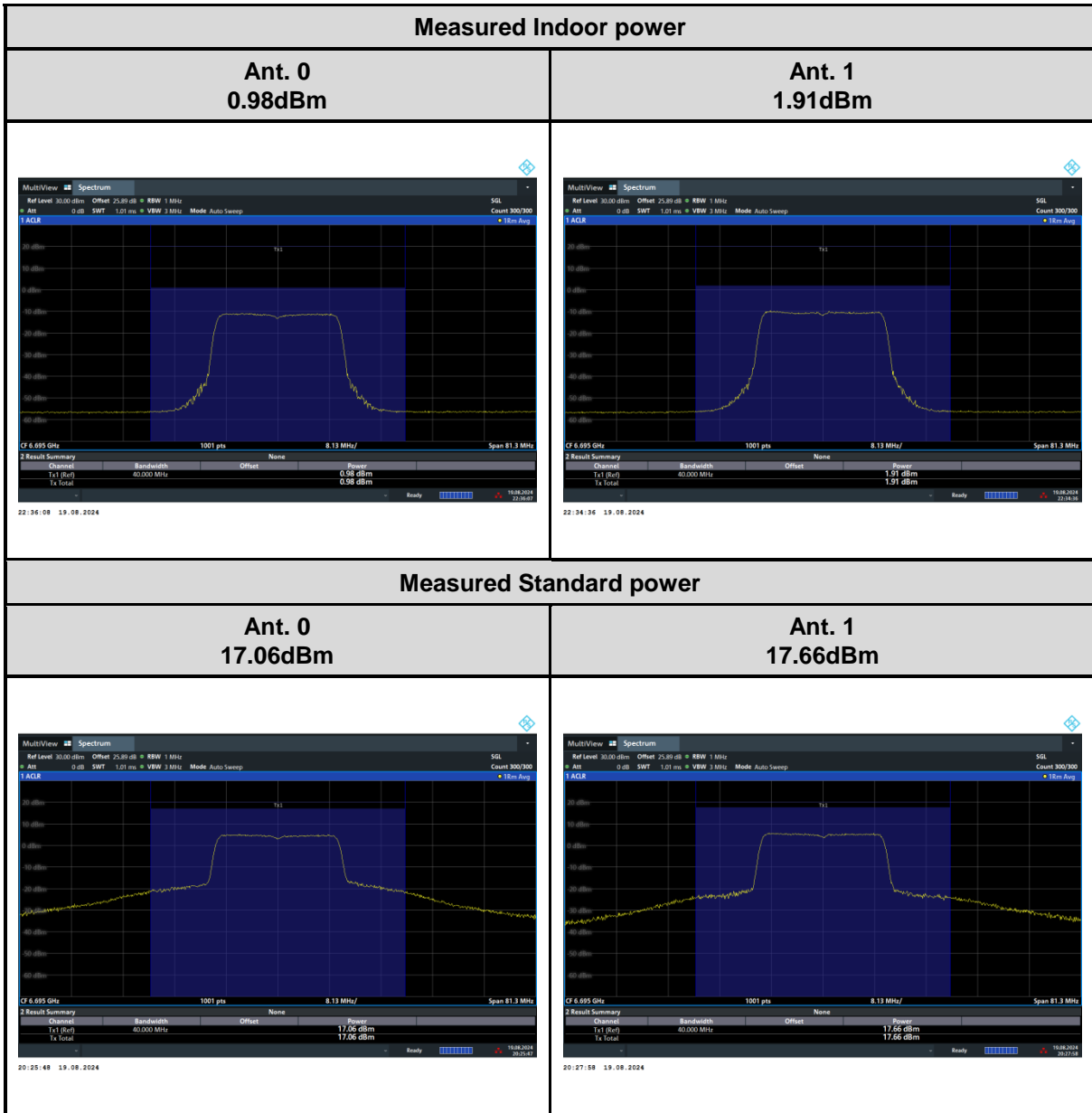
Test channel 149

	Client Conducted Power (dBm)			Client EIRP (dBm)	Limit EIRP (dBm)	Result
	Ant. 0	Ant. 1	MIMO			
<b>Indoor EIRP</b>	0.98	1.91	4.48	8.48	24	Pass
<b>Standard EIRP</b>	17.06	17.66	20.38	24.38	30	Pass

**Note:** Client EIRP = Client MIMO conducted power + antenna gain 4.0dBi



2.2.5 Test Result Plot





### 3 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSV3013	101549	10Hz~13.6GHz	Jan. 30, 2024	Aug. 19, 2024	Jan. 29, 2025	AFC (DF02-HY)

————THE END————