RF MEASUREMENT REPORT

FCC ID:	HD5-CK67X0N
Applicant:	Honeywell International Inc. Honeywell Safety and Productivity Solutions
Product:	Mobile Computer
Model No.:	CK67X0N
Trademark:	Honeywell
FCC Classification:	15E 6GHz Dual Client (6CD)
FCC Rule Part(s):	Part 15 Subpart E (Section 15.407(d)(6))
Result:	Complies
Received Date:	2024-06-20
Test Date:	2024-08-27 ~ 2024-08-29

Reviewed By: Jame Yuan

Approved By: Robin Wu

The test results relate only to the samples tested.
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB789033. Test results reported herein relate only to the item(s) tested.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2406RSU035-U2	V01	Initial Report	2024-09-02	Valid

CONTENTS

1. General Information

1.1. Applicant

Honeywell International Inc.
Honeywell Safety and Productivity Solutions
9680 Old Bailes Rd. Fort Mill, SC 29707 United States

1.2. Manufacturer

Honeywell International Inc.
Honeywell Safety and Productivity Solutions
9680 Old Bailes Rd. Fort Mill, SC 29707 United States

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China **Laboratory Location (Suzhou - SIP)** 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China **Laboratory Location (Suzhou - Wujiang)** Building 1, No.1 Xingdong Road, Wujiang, Suzhou, Jiangsu, People's Republic of China
	Laboratory Accreditations
	A2LA: 3628.01 CNAS: L10551 FCC: CN1166 ISED: CN0001 VCCI: ☐R-20025 ☐G-20034 ☐C-20020 ☐T-20020 ☐R-20141 ☐G-20134 ☐C-20103 ☐T-20104
☐	**Test Site – MRT Shenzhen Laboratory**
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China
	Laboratory Accreditations
	A2LA: 3628.02 CNAS: L10551 FCC: CN1284 ISED: CN0105
☐	**Test Site – MRT Taiwan Laboratory**
	Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
	Laboratory Accreditations
	TAF: 3261 FCC: 291082, TW3261 ISED: TW3261

1.4. Product Information

Product Name	Mobile Computer
Model No.	CK67X0N
Brand Name	Honeywell
EUT Identification No.	24113D8166
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Bluetooth Specification	Main BT/BLE: V5.3 dual mode + 2nd BLE: V5.3 Single mode
NFC Specification	13.56MHz
Antenna Information	Refer to section 1.7
Accessory	
Battery	Brand: Honeywell MODEL:CK65-BTSC Rating: 3.6Vdc, 7000mAh, 25.2Wh
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

Notes:

1. For other features of this EUT, test report will be issued separately.
2. This product has 3 imagers, 5 keypads, can refer as below:

imager	S0703	S0803FR	S0803	--	--
keypad	Alpha Numeric	Numeric	Large Numeric	53keys Alpha Numeric	42keys Numeric

3. This report selected S0803FR with Alpha Numeric as the main test.

1.5. Radio Specification under Test

Frequency Range	For 802.11a/ax-HE20: 5935 ~ 7115MHz For 802.11ax-HE40: 5965 ~ 7085MHz For 802.11ax-HE80: 5985 ~ 7025MHz For 802.11ax-HE160: 6025 ~ 6985MHz	
Type of Modulation	802.11a: OFDM 802.11ax: OFDMA	
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11ax: up to 2402Mbps	
Channel Puncturing Function	☐ Supported	☒ Unsupported
Support RU	☒ Full RU	☒ Partial RU

1.6. Working Frequencies

802.11a/ax-HE20

Channel	Frequency	Channel	Frequency	Channel	Frequency
2	5935 MHz	1	5955 MHz	5	5975 MHz
9	5995 MHz	13	6015 MHz	17	6035 MHz
21	6055 MHz	25	6075 MHz	29	6095 MHz
33	6115 MHz	37	6135 MHz	41	6155 MHz
45	6175 MHz	49	6195 MHz	53	6215 MHz
57	6235 MHz	61	6255 MHz	65	6275 MHz
69	6295 MHz	73	6315 MHz	77	6335 MHz
81	6355 MHz	85	6375 MHz	89	6395 MHz
93	6415 MHz	97	6435 MHz	101	6455 MHz
105	6475 MHz	109	6495 MHz	113	6515 MHz
117	6535 MHz	121	6555 MHz	125	6575 MHz
129	6595 MHz	133	6615 MHz	137	6635 MHz
141	6655 MHz	145	6675 MHz	149	6695 MHz
153	6715 MHz	157	6735 MHz	161	6755 MHz
165	6775 MHz	169	6795 MHz	173	6815 MHz
177	6835 MHz	181	6855 MHz	185	6875 MHz
189	6895 MHz	193	6915 MHz	197	6935 MHz
201	6955 MHz	205	6975 MHz	209	6995 MHz
213	7015 MHz	217	7035 MHz	221	7055 MHz
225	7075 MHz	229	7095 MHz	233	7115 MHz

802.11ax-HE40

Channel	Frequency	Channel	Frequency	Channel	Frequency
3	5965 MHz	11	6005 MHz	19	6045 MHz
27	6085 MHz	35	6125 MHz	43	6165 MHz
51	6205 MHz	59	6245 MHz	67	6285 MHz
75	6325 MHz	83	6365 MHz	91	6405 MHz
99	6445 MHz	107	6485 MHz	115	6525 MHz
123	6565 MHz	131	6605 MHz	139	6645 MHz
147	6685 MHz	155	6725 MHz	163	6765 MHz
171	6805 MHz	179	6845 MHz	187	6885 MHz
195	6925 MHz	203	6965 MHz	211	7005 MHz
219	7045 MHz	227	7085 MHz	--	--

802.11ax-HE80

Channel	Frequency	Channel	Frequency	Channel	Frequency
7	5985 MHz	23	6065 MHz	39	6145 MHz
55	6225 MHz	71	6305 MHz	87	6385 MHz
103	6465 MHz	119	6545 MHz	135	6625 MHz
151	6705 MHz	167	6785 MHz	183	6865 MHz
199	6945 MHz	215	7025 MHz	--	--

802.11ax-HE160

Channel	Frequency	Channel	Frequency	Channel	Frequency
15	6025 MHz	47	6185 MHz	79	6345 MHz
111	6505 MHz	143	6665 MHz	175	6825 MHz
207	6985 MHz	--	--	--	--

1.7. Antenna Details

Antenna Type	Frequency Band (MHz)	T_X Paths	Number of spatial streams	Max Antenna Gain (dBi)	Beamforming Directional Gain(dBi)	CDD Directional Gain (dBi)	
						For Power	For PSD
Wi-Fi Antenna							
PIFA	2412 ~ 2462	2	1	3.00	--	3.00	5.67
	5150 ~ 5250	2	1	2.50	--	2.50	5.07
	5250 ~ 5350	2	1	2.40	--	2.40	5.16
	5470 ~ 5725	2	1	2.70	--	2.70	5.42
	5725 ~ 5850	2	1	2.60	--	2.60	5.61
	5850 ~ 5895	2	1	2.60	--	2.60	5.61
	5925 ~ 6425	2	1	3.00	--	3.00	5.86
	6425 ~ 6525	2	1	3.00	--	3.00	5.86
	6525 ~ 6875	2	1	4.00	--	4.00	6.52
	6875 ~ 7125	2	1	3.90	--	3.90	6.81

Remark:

1. The EUT only supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

   If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

   - For power spectral density (PSD) measurements on all devices,

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

   - For power measurements on IEEE 802.11 devices,

   Array Gain = 0 dB for $N_{ANT} \leq 4$;

2. All messages of antenna were declared by manufacturer.

2. Test Configuration

2.1. Test Mode

Mode 1: Operating under standard AP mode

2.2. Applied Standards

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

- FCC KDB 987594 D02v02r01
- FCC KDB 987594 D04v02

2.3. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2025-05-12	WZ-SR5
Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	N/A	N/A	WZ-SR5
Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2025-05-08	WZ-SR5
Signal Generator	Keysight	N5182B	MRTSUE06993	1 year	2025-07-18	WZ-SR5
Frequency extender for EXG or MXG	Keysight	N5182BX07	MRTSUE06984	1 year	2025-02-03	WZ-SR5
Attenuator	MVE	MVE2213	MRTSUE11086	1 year	2025-06-05	WZ-SR5
Attenuator	MVE	MVE2213	MRTSUE11087	1 year	2025-06-05	WZ-SR5
Attenuator	MVE	MVE2213	MRTSUE11088	1 year	2025-06-05	WZ-SR5
Attenuator	MVE	MVE2213	MRTSUE11089	1 year	2025-06-05	WZ-SR5

Accessary Information

Access Point	Manufacturer	Type No.
Standard Access Point	Aruba	PMN, AP-634

4. Decision Rules and Measurement Uncertainty

4.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Time
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 4.34%

5. Test Result

5.1. Summary

FCC Section	Test Description	Test Condition	Verdict
15.407(d)(6)	Contention-Based Protocol	Conducted	Pass

Remark:

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

5.2. Contention Based Protocol Measurement

5.2.1. Test Limit

Unlicensed indoor low power device must detect co-channel radio frequency power that is at least -62dBm (The threshold is referenced to a 0dBi antenna gain.) or low.

Indoor low power device must detect an AWGN signal with 90% (or better) level of certainty.

5.2.2. Test Procedure

KDB 987594 D02v02r01- Section II)I

5.2.3. Test Setting

1. Configure the EUT to transmit with a constant duty cycle.

2. Set the operating parameters of the EUT including power level, operating frequency, modulation and bandwidth.

3. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT.

Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.

4. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.

5. Using an AWGN signal source, generate a 10 MHz-wide AWGN signal. Use Table 1 of KDB 987594 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.

6. Set the AWGN signal power to an extremely low level. Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in below figure.

7. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.

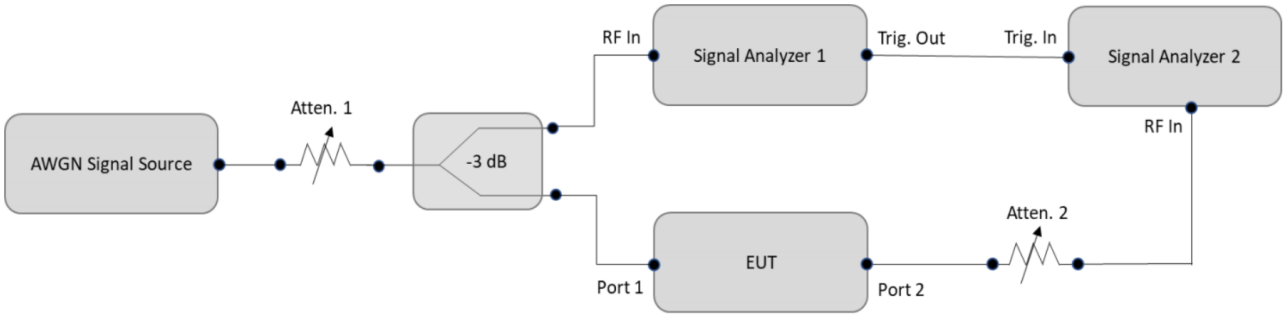
8. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.

9. Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.

10. Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If

testing is required more than once, then go back to step 5, choose a different center frequency for the AWGN signal and repeat the process.

5.2.4. Test Setup



5.2.5. Test Result

Test Site	WZ-SR5	Test Engineer	Dandy Li
Test Date	2024-08-27 ~ 2024-08-29		

Test Channel	Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	AWGN Power (dBm)	Ant. Gain (dBi)	Adjust Power (dBm)	Detection Limit (dBm)	Detected Number	Detection Probability (%)	Limit (%)	Test Result
Operation Band: U-NII 5											
21	20	6055	6055	-77.0	3.00	-80.0	≤ -62.0	10	100	90	Pass
15	160	6025	5950	-64.0	3.00	-67.0	≤ -62.0	10	100	90	Pass
15	160	6025	6025	-67.0	3.00	-70.0	≤ -62.0	10	100	90	Pass
15	160	6025	6100	-60.0	3.00	-63.0	≤ -62.0	10	100	90	Pass
Operation Band: U-NII 7											
133	20	6615	6615	-71.0	3.00	-74.0	≤ -62.0	10	100	90	Pass
143	160	6665	6590	-61.0	3.00	-64.0	≤ -62.0	10	100	90	Pass
143	160	6665	6665	-68.0	3.00	-71.0	≤ -62.0	10	100	90	Pass
143	160	6665	6740	-60.0	3.00	-63.0	≤ -62.0	10	100	90	Pass

Note 1: Adjust Power (dBm) = AWGN Power (dBm) – Antenna Gain (dBi).

Note 2: Conducted measurements are used.

Test Site	WZ-SR5	Test Engineer	Dandy Li
Test Date	2024-08-27 ~ 2024-08-29		

Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Tx Status
Operation Band: U-NII 5				
20	6055	6055	-83.0	ON
			-81.0	Minimal
			-80.0	OFF
160	6025	5950	-67.0	ON
			-65.0	Minimal
			-64.0	OFF
160	6025	6025	-72.0	ON
			-71.0	Minimal
			-70.0	OFF
160	6025	6100	-75.0	ON
			-64.0	Minimal
			-63.0	OFF

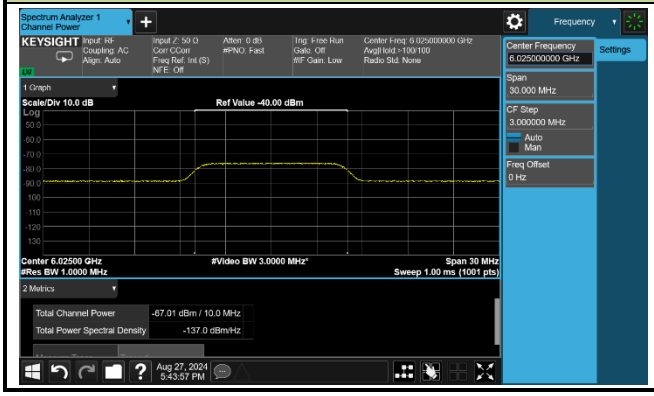
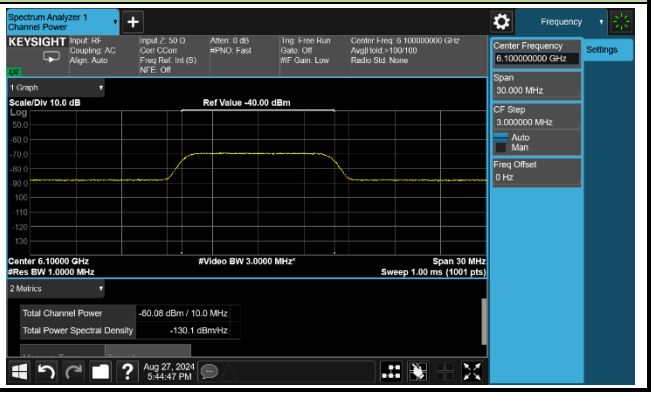
Bandwidth (MHz)	Freq. (MHz)	AWGN Freq. (MHz)	Adjust Power (dBm)	EUT Status
Operation Band: U-NII 7				
20	6615	6615	-79.0	ON
			-75.0	Minimal
			-74.0	OFF
160	6665	6590	-74.0	ON
			-65.0	Minimal
			-64.0	OFF
160	6665	6665	-72.0	ON
			-72.0	Minimal
			-71.0	OFF
160	6665	6740	-73.0	ON
			-64.0	Minimal
			-63.0	OFF

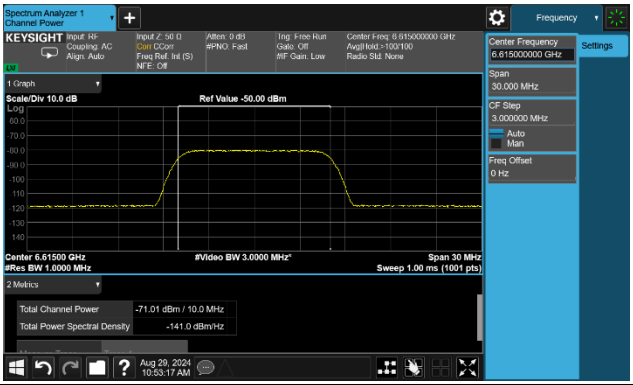
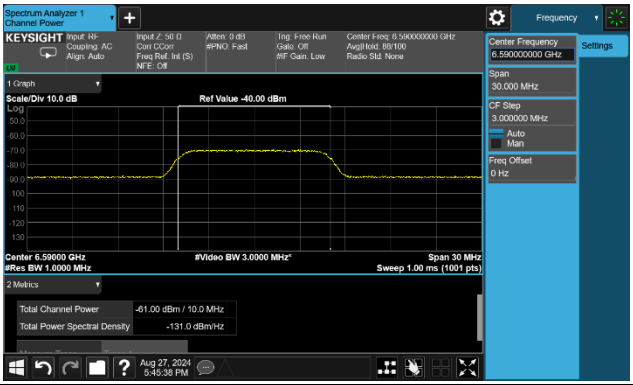
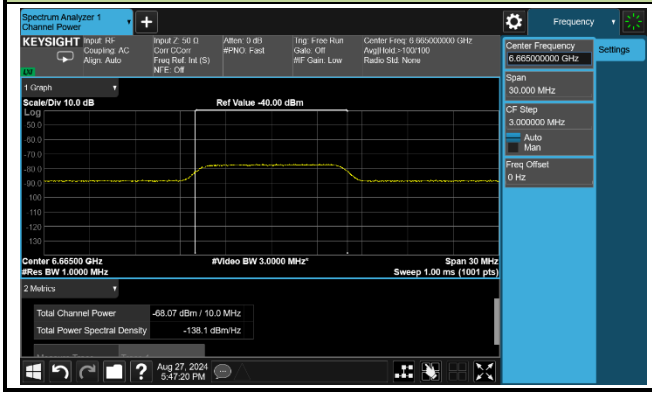
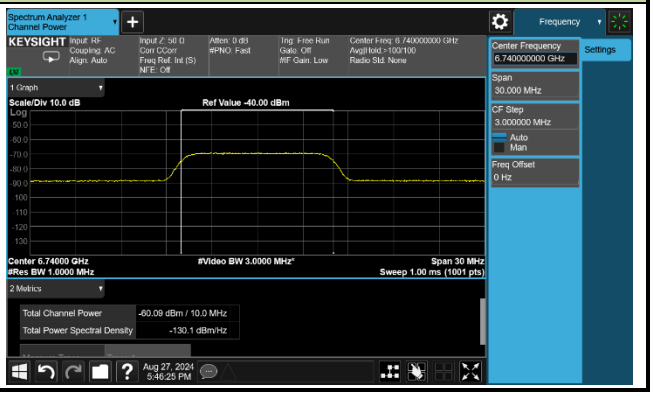
Note:

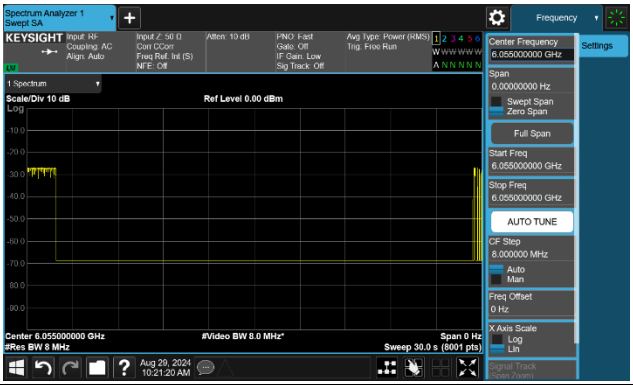
OFF: AWGN level at which no transmission is detected, consistently for a minimum period of 10 seconds

Minimal: AWGN level at which the system begins to trigger the transmission switch-off, albeit not being kept off consistently

ON: AWGN level at which no impact on the transmission is detected, consistently for a minimum period of 10 seconds

AWGN Signal Level (at Antenna Port) Calibration Plots (NII-5 Band)	
802.11ax-HE20 / CH21	802.11ax-HE160 / CH15 (Low Edge)
	
802.11ax-HE160 / CH15 (Middle)	802.11ax-HE160 / CH15 (High Edge)
	

AWGN Signal Level (at Antenna Port) Calibration Plots (NII-7 Band)	
802.11ax-HE20 / CH133	802.11ax-HE160 / CH143 (Low Edge)
	
802.11ax-HE160 / CH143 (Middle)	802.11ax-HE160 / CH143 (High Edge)
	

Test Result of EUT ceased transmission (NII-5 Band)	
802.11ax-HE20 / CH21	802.11ax-HE160 / CH15 (Low Edge)
	
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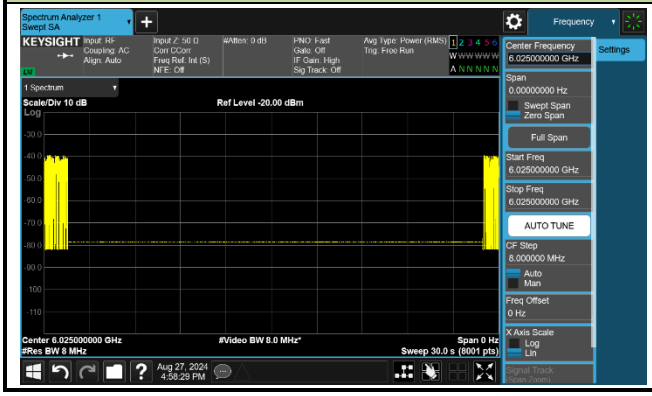
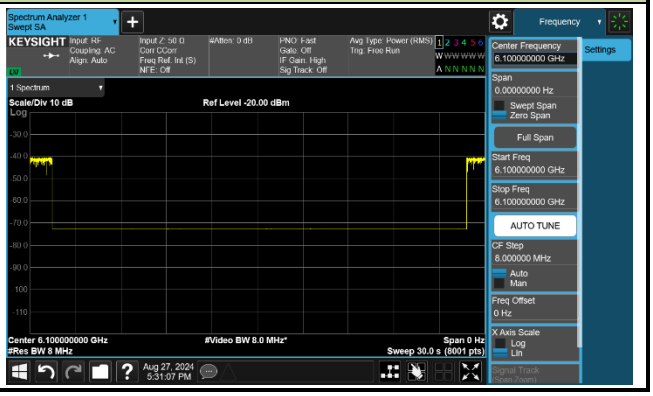
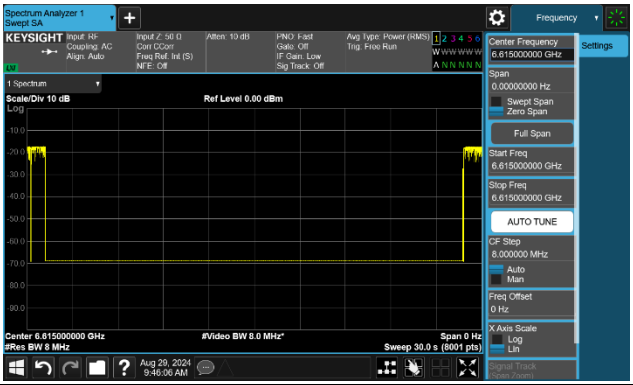
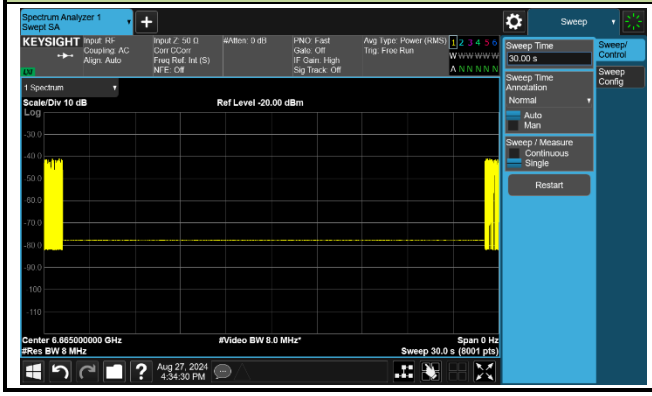
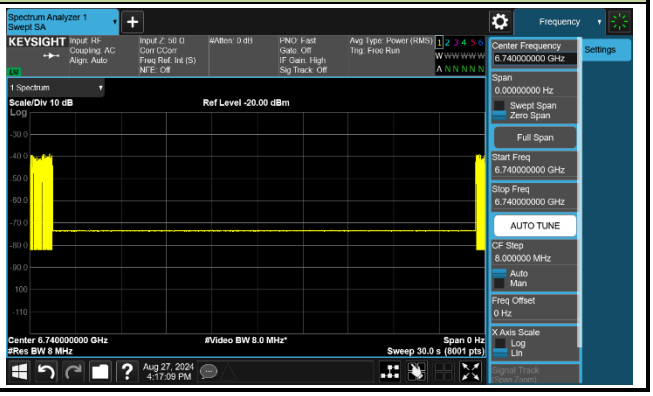
	

Test Result of EUT ceased transmission (NII-7 Band)	
802.11ax-HE20 / CH133	802.11ax-HE160 / CH143 (Low Edge)
	
802.11ax-HE160 / CH143 (Middle)	802.11ax-HE160 / CH143 (High Edge)
	

Appendix A – EUT Photograph

Refer to “EUT Photo” file.

The End