TEST REPORT

Verified Code: 403571

Report No.:	E20210426746801-6	**Application No.:**	E20210426746801
Client:	Lumi United Technology Co., Ltd.		
Address:	8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen.China		
Sample Description:	Camera Hub G3		
Model:	CH-H03		
Test Specification:	ETSIEN301 893 V2.1.1 (2017-05) 5 GHz RLAN;Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU		
Receipt Date:	2021-06-09		
Test Date:	2021-08-02 to 2021-08-06		
Issue Date:	2021-08-23		
Test Result:	Pass		

Prepared By:	**Reviewed By:**	**Approved By:**
Test Engineer	Technical Manager	Manager
Yu Shanshan	Wu Haoting	

Other Aspects:

Note:/

Abbreviations: *ok / P = passed; fail / F = failed; n.a. / N = not applicable;*

The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.

DIRECTIONS OF TEST

1. **This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.**

2. **The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.**

3. **If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.**

TABLE OF CONTENTS

1. TEST RESULT SUMMARY

Transmitter Part				
Standard	Item	Standard Clause	Limit	Result
EN 301 893 V2.1.1	Dynamic Frequency Selection (DFS)	4.2.6	Clause 4.2.6.2	Complied

2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name:	Lumi United Technology Co., Ltd.
Address:	8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen.China

2.2 MANUFACTURER

Name:	Lumi United Technology Co., Ltd.
Address:	8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen.China

2.3BASIC DESCRIPTION OF EUT

Equipment:	Camera Hub G3
Model No.:	CH-H03
Adding Model	/
Trade Name:	Aqara
Power Supply:	Adapter 1-EU Plug Model:A70-050200U-EU1 Input:100-240V~ 50/60Hz 0.35A Output:5.0V⎓2.0A 10.0W Adapter 2-UK Plug Model:A812-050200U-UK1 Input:100-240V~ 50/60Hz 0.35A Output:5.0V⎓2.0A 10.0W
Temperature Range:	-10℃ ~40℃
Hardware Version:	A20-GHC01-MIAN-X4
Software Version:	3.2.8_0003.0004
Sample No:	E20210426746801-0004
Note:	/

Frequency/Channel Information

Frequency Range(MHz)	Ch. Frequency(MHz)	Mode
5150MHz~5350MHz	5180MHz~5320MHz	802.11a;802.11n(HT20); 802.11ac(VHT20)
	5190MHz~5310MHz	802.11n(HT40); 802.11ac(VHT40)
	5210MHz~ 5290MHz	802.11ac(VHT80);
5470MHz~5725MHz	5500MHz~5700MHz	802.11a; 802.11n(HT20); 802.11ac(VHT20)
	5510MHz~5670MHz	802.11n(HT40); 802.11ac(VHT40)
	5530MHz~5610MHz	802.11ac(VHT80);

Antenna Information

Antenna type:	Internal antenna
Antenna number:	1
Max Antenna gain:	2 dBi
Note:	/

DFS Operation Mode Information

☐	Master
☐	Slave with radar detection
☐	Slave without radar detection

2.4 TEST MODE

Mode No.	Description of the modes
1	IEEE 802.11a mode (5320MHz, 5700MHz)
2	IEEE 802.11acVHT80 mode (5290MHz, 5530MHz)

2.5 LOCAL SUPPORTIVE INSTRUMENTS

Instruments:

Name of Equipment	Manufacturer	Model	Serial Number
Laptop	LENOVO	TianYi 310-14ISK	MP18DLC6
AC Adapter/ Adaptador CA	LENOVO	ADLX65NCC3A	/
Laptop	acer	MS2392	NXMPGCN01550311F8C6600
AC Adapter/ Adaptador CA	acer	DF985A	/

Note :The notebook is just used to produce fixed frequency transmitting.

Test software:

Software version	Test level
/	/

3. LABORATORY AND ACCREDITATIONS

3.1 LABORATORY

The tests & measurements refer to this report were performed byShenzhenEMC Laboratory of Guangzhou GRG Metrology & Test Co,. Ltd.

Add	:	Address: No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China
P.C.	:	518000
Tel	:	0755-61180008
Fax	:	0755-61180008

3.2 ACCREDITATIONS

Our laboratoriesare accredited and approved by the following approval agencies according to GB/T 27025(ISO/IEC 17025:2017)

USA	A2LA(Certificate#:2861.01)
China	CNAS(L0446)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
USA	FCC

Copies of granted accreditation certificates are available for downloading from our web site, http://www.grgtest.com

3.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.78 dB
Occupied channel bandwidth	0.4 dB
Unwanted emission, conducted	0.68 dB
Humidity	6 %
Temperature	2℃

Measurement	Frequency		Uncertainty
Radiated emission	Horizontal	30MHz ~ 1000MHz	4.3dB
		1000MHz ~26000MHz	5.6dB
	Vertical	30MHz ~ 1000MHz	4.3dB
		1000MHz ~26000MHz	5.6dB

This uncertainty represents an expanded uncertainty factor of *k*=2.

3.4 LIST OF USED TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Dynamic Frequency Selection (DFS)				
Simultaneous sampling DAQ	Tonscend	JS0806-2	186060020	2021-10-08
Spectrum Analyzer	Agilent	N9010A	MY52221469	2022-04-16
Vector Signal Generator	Agilent	N5182A	MY50142870	2021-10-08
BT/Wi-Fi System	tonscend	Js1120-3		

4. DYNAMIC FREQUENCY SELECTION (DFS)

4.1 NOMINAL CENTREFREQUENCRIES

Table D.1: DFS requirement values

Parameter	Value
Channel Availability Check Time	60 s (see note 1)
Minimum Off-Channel CAC Time	6 minutes (see note 2)
Maximum Off-Channel CAC Time	4 hours (see note 2)
Channel Move Time	10 s
Channel Closing Transmission Time	1 s
Non-Occupancy Period	30 minutes
NOTE 1: For channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz, the *Channel Availability Check Time* shall be 10 minutes. NOTE 2: For channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz, the *Off-Channel CAC Time* shall be within the range 1 hour to 24 hours.	

Table D.2: Interference threshold values

e.i.r.p. Spectral Density (dBm/MHz)	Value (see notes 1 and 2)
10	-62 dBm
NOTE 1: This is the level at the input of the receiver of an RLAN device with a maximum e.i.r.p. density of 10 dBm/MHz and assuming a 0 dBi receive antenna. For devices employing different e.i.r.p. spectral density and/or a different receive antenna gain G (dBi) the DFS threshold level at the receiver input follows the following relationship: DFS Detection Threshold (dBm) = -62 + 10 - e.i.r.p. Spectral Density (dBm/MHz) + G (dBi); however the DFS threshold level shall not be less than -64 dBm assuming a 0 dBi receive antenna gain. NOTE 2: Slave devices with a maximum e.i.r.p. of less than 23 dBm do not have to implement radar detection unless these devices are used in fixed outdoor point to point or fixed outdoor point to multipoint applications (see clause 4.7.1.3).	

Table D.3: Parameters of the reference DFS Test Signals

Pulse width W [μs]	Pulse repetition frequency PRF (PPS)	Pulses per burst (PPB)
1	700	18

4.3 CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

4.3.1 LIMIT

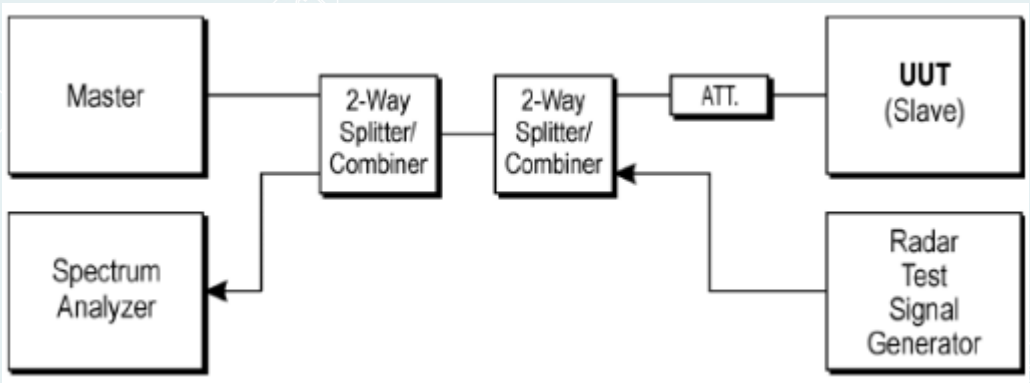
Parameter	Value
Channel Move Time	<10s
Channel Closing Transmission Time	<1s

4.3.2 TEST PROCEDURE

1. For a UUT with antenna connector(s) and using dedicated external antenna(s), or for a UUT with integral antenna(s) but with a temporary antenna connector(s) provided, conducted measurements shall be used. When performing DFS testing on smart antenna systems, a power splitter/combiner shall be used to combine all the receive chains (antenna inputs) into a single test point. The insertion loss of the splitter/combiner shall be taken into account.
2. The UUT shall be configured to operate at the highest transmitter output power setting.
3. If the UUT has a Radar Interference Detection function, the output power of the signal generator producing the radar test signals, as selected using clause 5.3.8.1.1, shall (unless otherwise specified) provide a received signal power at the antenna connector of the UUT with a level equal to applicable Radar Detection Threshold level defined in table D.2.
4. Parameter G [dBi] in table D.2 corresponds to the gain of the antenna assembly stated by the manufacturer. If more then one antenna assembly is intended for this power setting, the gain of the antenna assembly with the lowest gain shall be used.

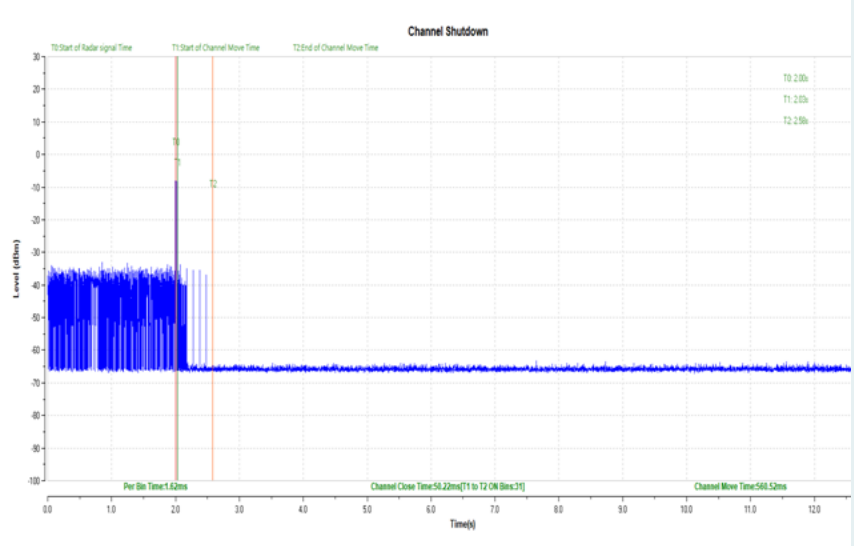
NOTE: Beam forming gain (Y) of smart antenna systems, operating in a mode where beam forming is active, is ignored in order to test the worse case.
The centre frequencies of the radar test signals used in the test procedures below shall fall within the central 80 % of the Occupied Channel Bandwidth of the RLAN channel under test.

4.3.3 TEST SETUP

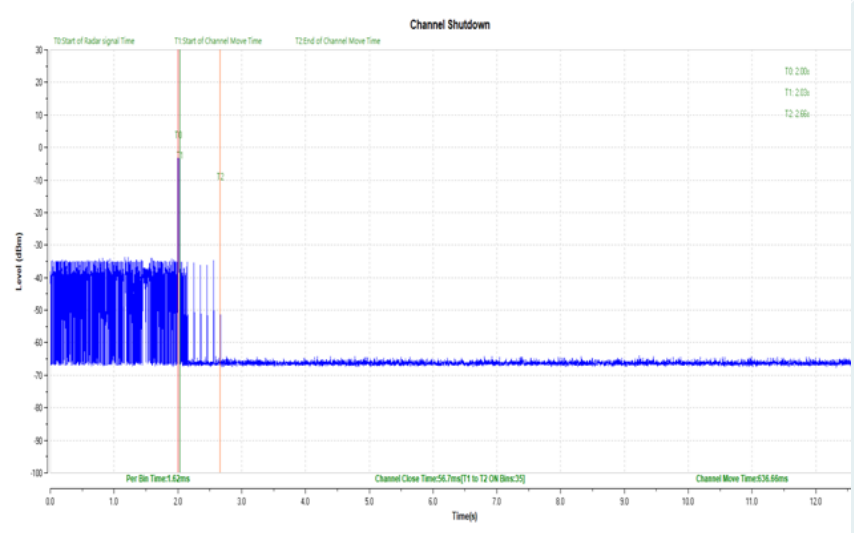


4.3.4 TEST RESULTS

Test Mode	Test frequency (MHz)	Channel Move Time (s)	Limit(s)	Result
IEEE 802.11a	5320	0.56052	10	Pass
	5700	0.63666	10	Pass

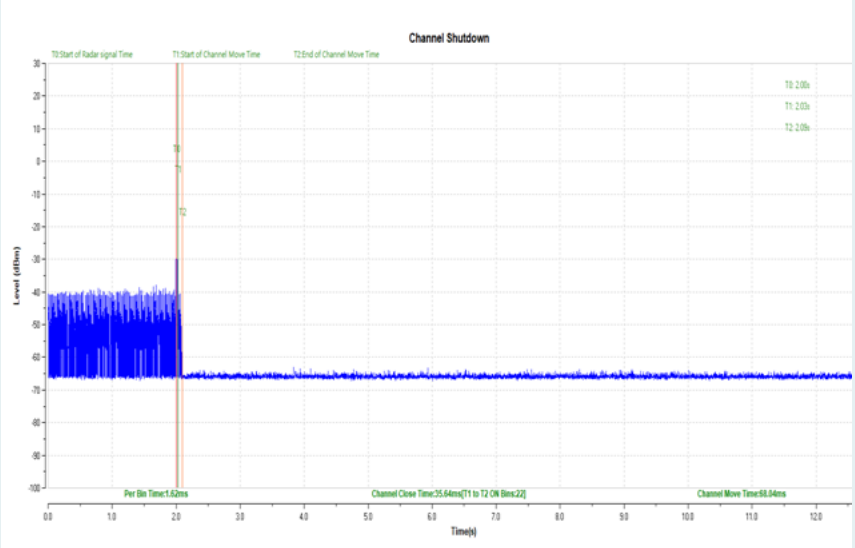


5320MHz

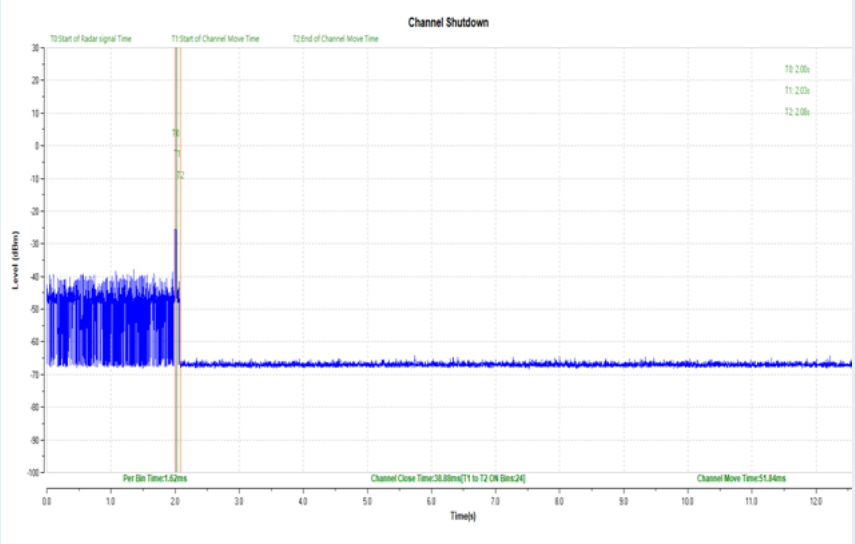


5700MHz

Test Mode	Test frequency (MHz)	Channel Move Time (s)	Limit(s)	Result
IEEE 802.11ac 80	5290	0.06804	10	Pass
	5530	0.05184	10	Pass



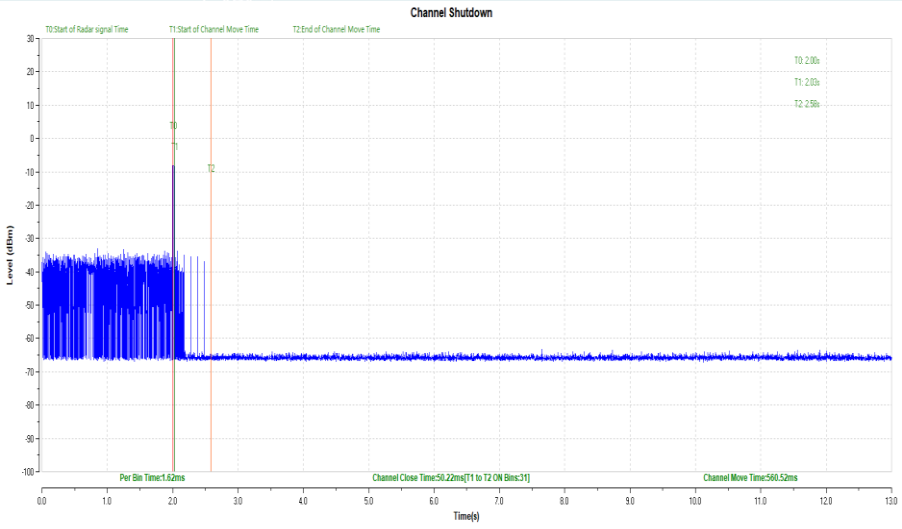
5290MHz



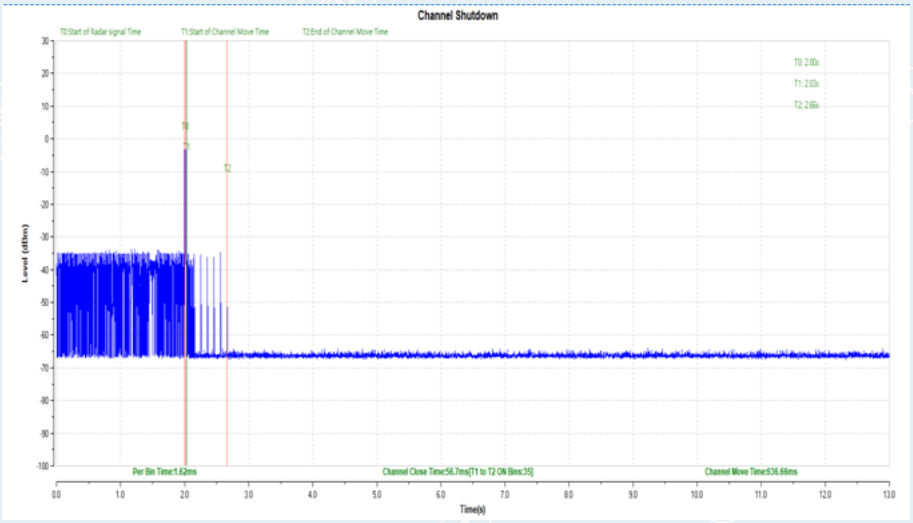
5530MHz

Reference Channel Closing Time

Test Mode	Test frequency (MHz)	Channel Closing Transmission Time(s)	Limit (s)	Result
IEEE 802.11a	5320	0.05022	1	Pass
	5700	0.05670	1	Pass

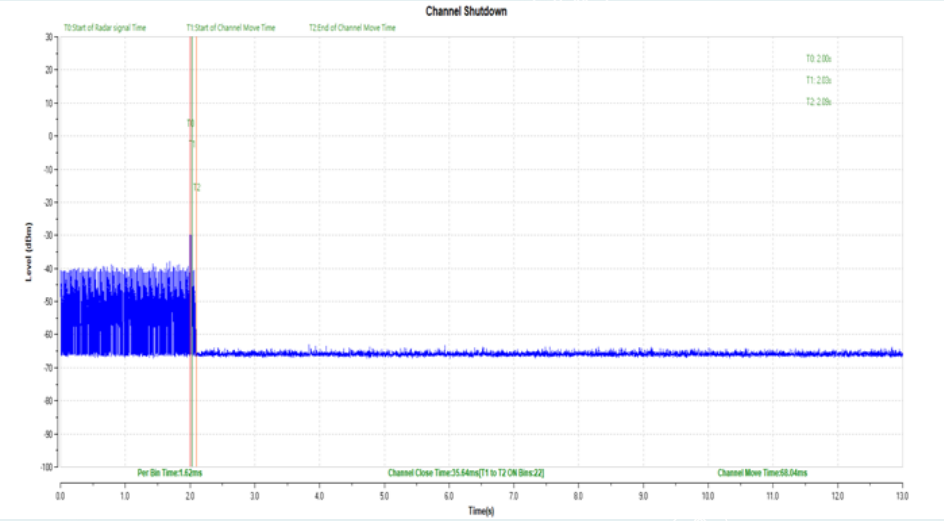


5320MHz

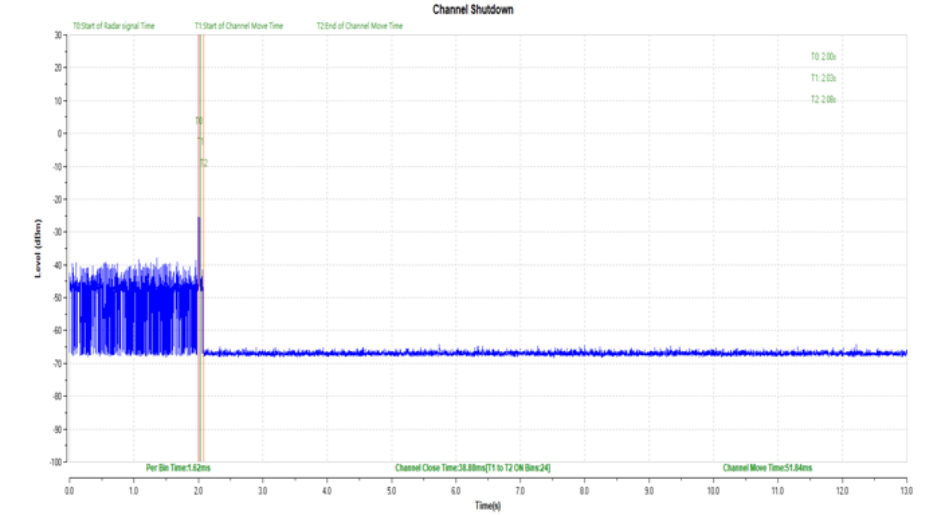


5700MHz

Test Mode	Test frequency (MHz)	Channel Closing Transmission Time (s)	Limit (s)	Result
IEEE 802.11ac 80	5290	0.03726	1	Pass
	5530	0.03888	1	Pass



5290MHz



5530MHz

APPENDIX A: PHOTOGRAPH OF THE TEST ARRANGEMENT

APPENDIX B: PHOTOGRAPH OF THE EUT

Please refer to the attached document E20210426746801-1-EUT Photo.

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