

TEST REPORT



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

REPORT No.:
CTK-2026-00207
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1. Applicant

- Name : ESS Co., Ltd.
- Address : 2-10-10 Yushima, Bunkyo-ku, Tokyo
- Date of Receipt : 2025-12-26

2. Manufacturer

- Name : CNSLink Co., Ltd.

3. Use of Report : For Japan MIC Certification

4. Test sample / Model : Dash CAM / EM2

5. Date(s) of test : 2026-01-08

6. Test Standard (Method) used : Article 2, Clause 1, Item 19 No. 88 appended table 43

7. Testing Environment : refer to 8 page

8. Test Results : Compliance

9. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

(Address : 5, Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
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Approval	Tested by:	Technical Manager:
	 Seong-uk Park (Signature)	 Bong-seok Kim (Signature)

2026-01-20

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REPORT REVISION HISTORY

Date	Revision	Page No
2026-01-20	Issued (CTK-2026-00207)	all

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1. General Product Description

1.1 Applicant Information

Company	ESS Co., Ltd.
Contact Point	2-10-10 Yushima, Bunkyo-ku, Tokyo
Contact Person	Name : Seokki Park E-mail : 238park@ess.jp Tel : +82-10-2519-2794

1.2 Manufacturer Information

Manufacturer	CNSLink Co., Ltd.
Address	1206, 12F, 14, Galmachi-ro 288beon-gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Factory #1	Dongguan Hampo Electronic Technology Co., Ltd
Factory #1 Address	NO.10, Xingui Road,Tangxia Town,Dongguan City,Guangdong Province, China

1.3 Product Information

Product Description	Dash CAM
Model name	EM2
Variant Model name	-
Antenna type	Chip Antenna
Antenna gain	1.75 dBi
Operating Frequency	2 412 MHz
RF Output Power	802.11n HT20 : 0.715 mW
Number of channels	1
Type of Modulation	802.11n : OFDM
Power Source	DC (12 - 24) V
Test Software	Tera term 4.99(-)

1.4 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Notebook	HP Inc.	HP Probook 455 G7	5CD0234DWM
AC Adapter	HP Inc.	PPP012D-S	677777-003

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1.5 Interference prevention function

Interference prevention function	Description	Check
Identification code transmission/reception	Radio equipment used mainly on the same premises and automatically transmits or receives identification code	☒ Apply ☐ Does not apply

1.6 Test Software

Conducted Test	Ics Pro Ver. 6.0.3
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2. Accreditations

2.1 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	CN : 8737A CAB ID : KR0025
KOREA	NRRA	KR0025

2.2 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

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2.3 Measurement equipment list

No.	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal. Authority	Cal. Method	Cal Date	Due Date
1	Spectrum Analyzer	Agilent	N9020A	MY50510324	SICT Co., Ltd.	(c)	2025-11-25	2026-11-25
2	Signal Generator	R&S	SMB100A	175528	SICT Co., Ltd.	(c)	2025-03-21	2026-03-21
3	DC Power Supply	Agilent	E3632A	MY50370042	SICT Co., Ltd.	(c)	2025-07-04	2026-07-04

Note : Cal. Method

- Calibration conducted by the National Institute of Information and Communications Technology～ NICT～ or a designated calibration agency under Article 102-18 paragraph (1)～ Telecom Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc～.
- Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)～Japan Calibration Service System～
- Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1)～ Telecom Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc～.
- Calibration conducted by using other equipment that listed above from a) to c)

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2.4 Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.

Coverage factor $k = 2$, Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	1.5 dB (C.L.: Approx. 95 %, $k = 2$)
Spurious emissions(Conducted)	1.5 dB (C.L.: Approx. 95 %, $k = 2$)
Temperature	1.0 °C (C.L.: Approx. 95 %, $k = 2$)
Humidity	3.0 % (C.L.: Approx. 95 %, $k = 2$)
Supply voltages	1.7 mV (C.L.: Approx. 95 %, $k = 2$)

2.5 Testing Environment

Test Item	Test Date	Temperature (°C)	Relative Humidity (%)
Frequency Tolerance	2026-01-08	23 ±1	37 ±3
Occupied Bandwidth & Spread Bandwidth			
RF Output Power & Tolerance			
Unwanted(Spurious) Emission Strength			
Secondary Emitted Radio Wave Strength			

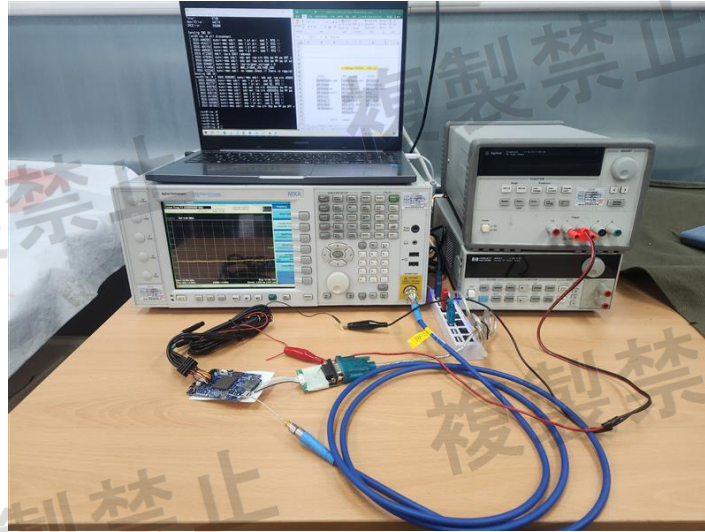


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2.6 Test Setup photo





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3. Test Results

3.1 802.11n_HT20

DC 18.0 V

Peak Antenna Gain	1.75	dBi
Declaration RF Output Power	1.00	mW/MHz
	0.00	dBm/MHz
E.I.R.P.	1.75	dBm/MHz

Transmission Time	ON TIME	5.07	ms
	OFF TIME	0.27	ms
	Ratio	0.95	-
Packet Type (Mode)		Not Applicable	mode
Data Rate		MCS 0	
Tested Circit Insertion Loss		0.84	dB

Channel Number		Ch.	1		
Measurement Frequency		MHz	2 412	Result	Limit
Frequency Measurements		MHz	2 411.932 573	PASS	
Frequency Tolerance		ppm	-27.955	PASS	$\pm 50 \times 10^{-6}$ (50ppm)
Occupied Bandwidth		MHz	17.924	PASS	26 MHz or below
Spread Bandwidth		MHz	15.908	PASS	500 kHz or more
RF Output Power		mW/MHz	0.678	PASS	10 mW/MHz or below
RF Output Power Tolerance		%	-32.153	PASS	+20 to -80%
Unwanted (Spurious) Emissions	30 to 2 387 MHz	uW/MHz	0.095	PASS	2.5 uW/MHz or below
		MHz	2 384.64	-	
	2 387 to 2 400 MHz	uW/MHz	22.336	PASS	25 uW/MHz or below
		MHz	2 399.94	-	
	2 483.5 to 2 496.5 MHz	uW/MHz	0.012	PASS	25 uW/MHz or below
		MHz	2 484.22	-	
	2 496.5 to 12 500 MHz	uW/MHz	1.950	PASS	2.5 uW/MHz or below
		MHz	4 827.00	-	
Secondary Emitted Radio Wave Strength	30 to 1000 MHz	nW	0.667	PASS	4 nW or below
		MHz	399.57	-	
	1000 to 10 000 MHz	nW	1.406	PASS	20 nW or below
		MHz	6 031.00	-	
	10 000 to 12 500 MHz	nW	0.242	PASS	20 nW or below
		MHz	11 922.50	-	

Note : Output Power = $10^{((\text{Measured value (dBm)} + \text{Tested Circit Insertion Loss (dB)})/10)} / \text{Duty cycle}$

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DC 26.4 V

Peak Antenna Gain	1.75	dBi
Declaration RF Output Power	1.00	mW/MHz
	0.00	dBm/MHz
E.I.R.P.	1.75	dBm/MHz

Transmission Time	ON TIME	5.07	ms
	OFF TIME	0.27	ms
	Ratio	0.95	-
Packet Type (Mode)		Not Applicable	mode
Data Rate		MCS 0	
Tested Circit Insertion Loss		0.84	dB

Channel Number		Ch.	1	Result	Limit
Measurement Frequency		MHz	2 412		
Frequency Measurements		MHz	2 411.932 601	PASS	
Frequency Tolerance		ppm	-27.943	PASS	$\pm 50 \times 10^{-6}$ (50ppm)
Occupied Bandwidth		MHz	17.935	PASS	26 MHz or below
Spread Bandwidth		MHz	15.917	PASS	500 kHz or more
RF Output Power		mW/MHz	0.709	PASS	10 mW/MHz or below
RF Output Power Tolerance		%	-29.118	PASS	+20 to -80%
Unwanted (Spurious) Emissions	30 to 2 387 MHz	uW/MHz	0.091	PASS	2.5 uW/MHz or below
		MHz	2 387.00	-	
	2 387 to 2 400 MHz	uW/MHz	22.809	PASS	25 uW/MHz or below
		MHz	2 399.94	-	
	2 483.5 to 2 496.5 MHz	uW/MHz	0.012	PASS	25 uW/MHz or below
		MHz	2 487.54	-	
	2 496.5 to 12 500 MHz	uW/MHz	2.330	PASS	2.5 uW/MHz or below
		MHz	4 827.00	-	
Secondary Emitted Radio Wave Strength	30 to 1000 MHz	nW	0.659	PASS	4 nW or below
		MHz	399.57	-	
	1000 to 10 000 MHz	nW	1.462	PASS	20 nW or below
		MHz	6 031.00	-	
	10 000 to 12 500 MHz	nW	0.256	PASS	20 nW or below
		MHz	12 445.00	-	

Note : Output Power = $10^{((\text{Measured value (dBm)} + \text{Tested Circit Insertion Loss (dB)})/10)} / \text{Duty cycle}$



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DC 10.8 V

Peak Antenna Gain	1.75	dBi
Declaration RF Output Power	1.00	mW/MHz
	0.00	dBm/MHz
E.I.R.P.	1.75	dBm/MHz

Transmission Time	ON TIME	5.07	ms
	OFF TIME	0.27	ms
	Ratio	0.95	-
Packet Type (Mode)		Not Applicable	mode
Data Rate		MCS 0	
Tested Circit Insertion Loss		0.84	dB

Channel Number		Ch.	1		
Measurement Frequency		MHz	2 412	Result	Limit
Frequency Measurements		MHz	2411.932 631	PASS	
Frequency Tolerance		ppm	-27.931	PASS	$\pm 50 \times 10^{-6}$ (50ppm)
Occupied Bandwidth		MHz	17.914	PASS	26 MHz or below
Spread Bandwidth		MHz	15.902	PASS	500 kHz or more
RF Output Power		mW/MHz	0.715	PASS	10 mW/MHz or below
RF Output Power Tolerance		%	-28.463	PASS	+20 to -80%
Unwanted (Spurious) Emissions	30 to 2 387 MHz	uW/MHz	0.086	PASS	2.5 uW/MHz or below
		MHz	2 387.00	-	
	2 387 to 2 400 MHz	uW/MHz	22.972	PASS	25 uW/MHz or below
		MHz	2 399.94	-	
	2 483.5 to 2 496.5 MHz	uW/MHz	0.011	PASS	25 uW/MHz or below
		MHz	2 484.89	-	
	2 496.5 to 12 500 MHz	uW/MHz	1.952	PASS	2.5 uW/MHz or below
		MHz	4 827.00	-	
Secondary Emitted Radio Wave Strength	30 to 1000 MHz	nW	0.654	PASS	4 nW or below
		MHz	399.57	-	
	1000 to 10 000 MHz	nW	1.379	PASS	20 nW or below
		MHz	6 031.00	-	
	10 000 to 12 500 MHz	nW	0.222	PASS	20 nW or below
		MHz	12 165.00	-	

Note : Output Power = $10^{((\text{Measured value (dBm)} + \text{Tested Circit Insertion Loss (dB)})/10)} / \text{Duty cycle}$



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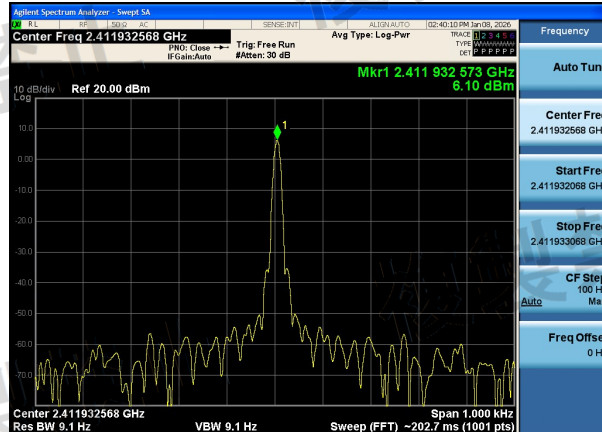
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APPENDIX A – 802.11n_HT20

DC 18.0 V

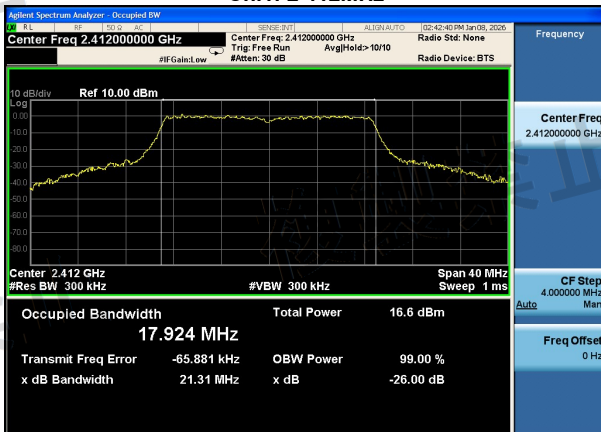
Frequency tolerance

Ch.1: 2 412MHz



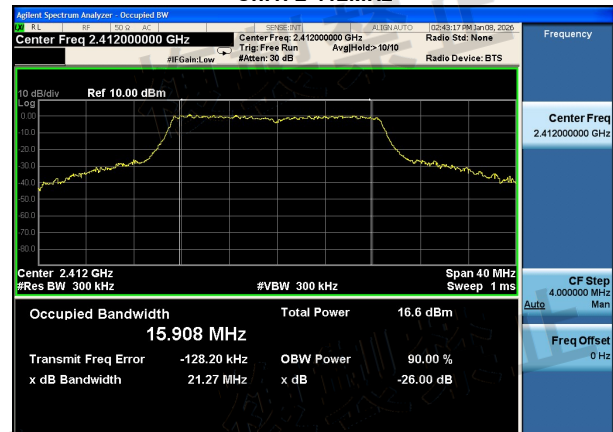
Occupied bandwidth

Ch.1: 2 412MHz



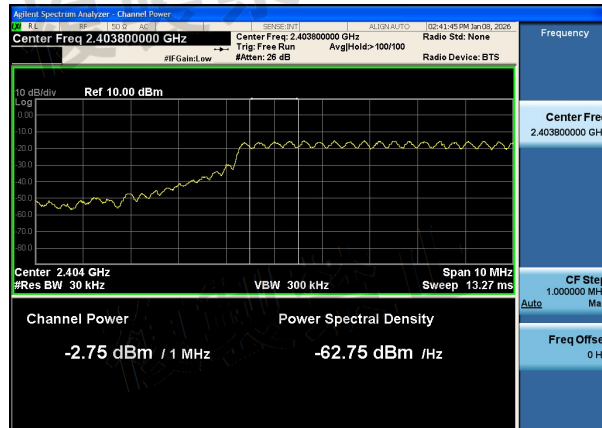
Spread bandwidth

Ch.1: 2 412MHz



RF output power

Ch.1: 2 412MHz



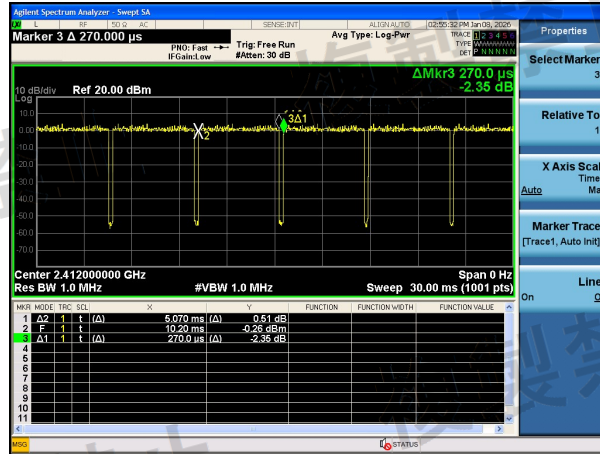


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ON/OFF time





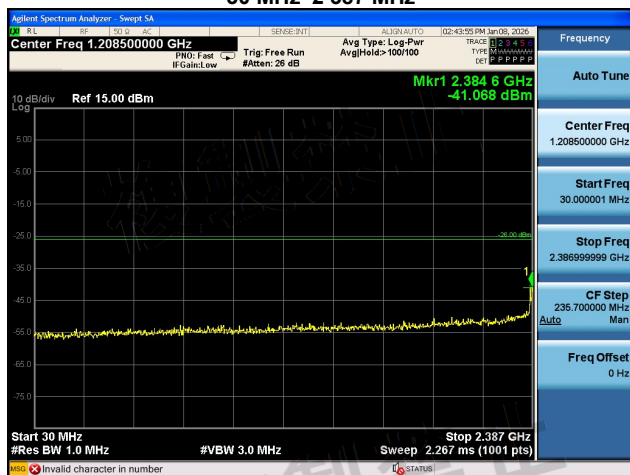
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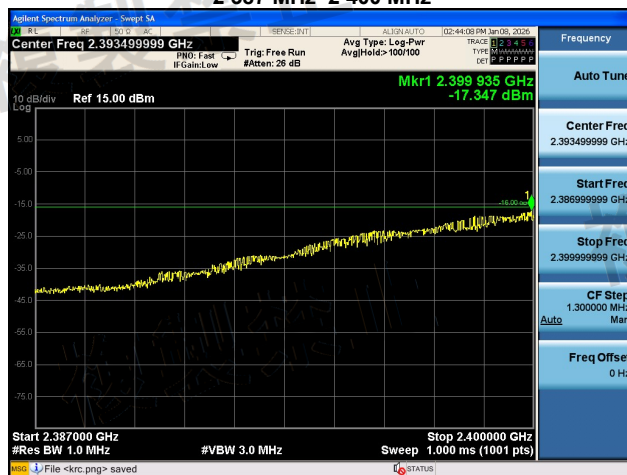
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Unwanted(Spurious) emission Ch.1: 2 412MHz

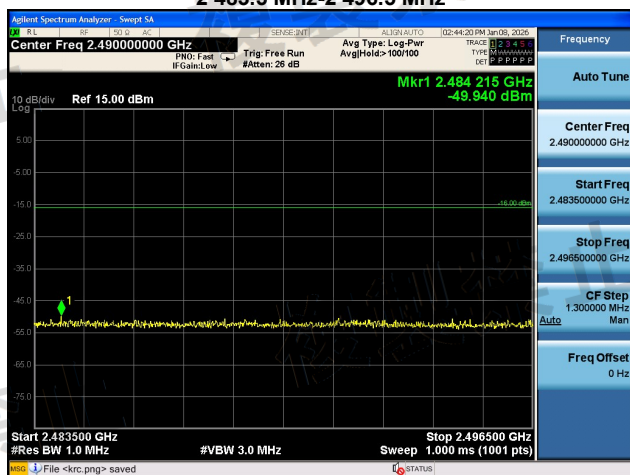
30 MHz-2 387 MHz



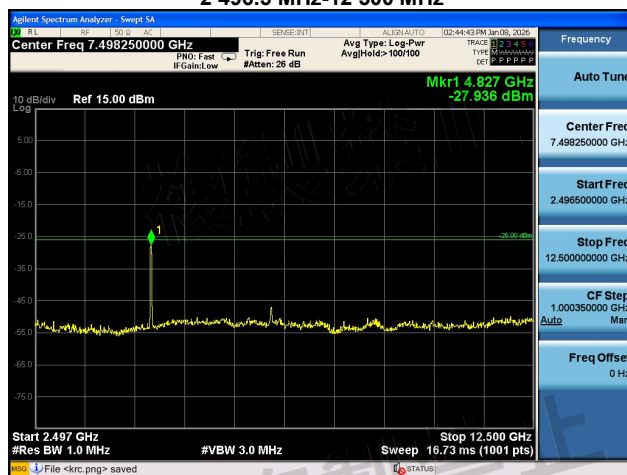
2 387 MHz-2 400 MHz



2 483.5 MHz-2 496.5 MHz



2 496.5 MHz-12 500 MHz





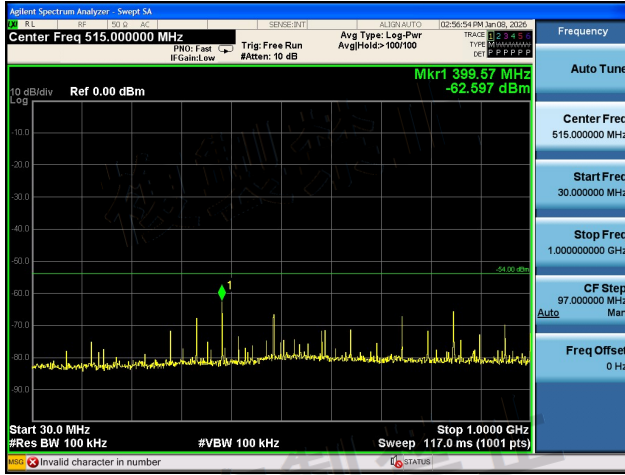
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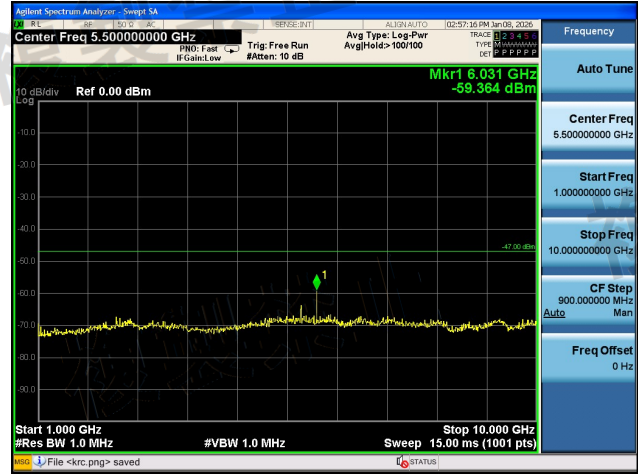
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Secondary emitted radio wave strength Ch.1: 2 412MHz

30 MHz-1 GHz



1 GHz-10 GHz



10 GHz-12.5 GHz





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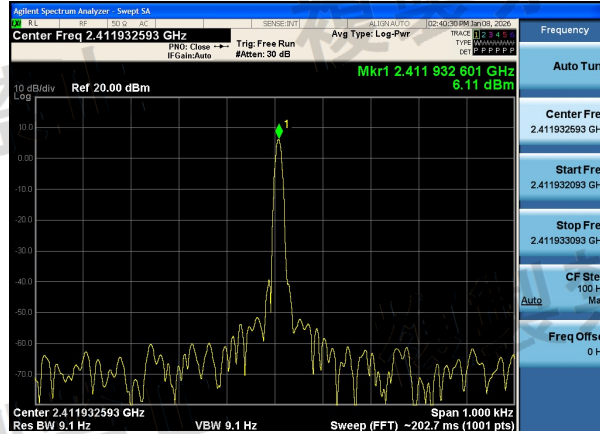
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DC 26.4 V

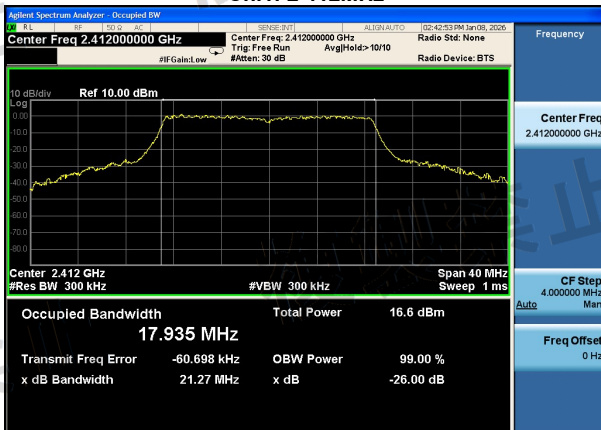
Frequency tolerance

Ch.1: 2 412MHz



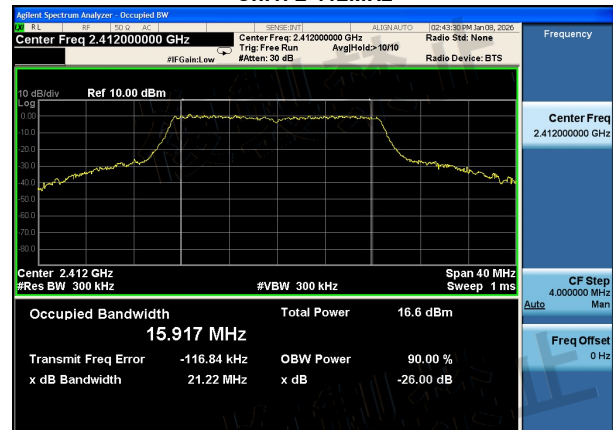
Occupied bandwidth

Ch.1: 2 412MHz



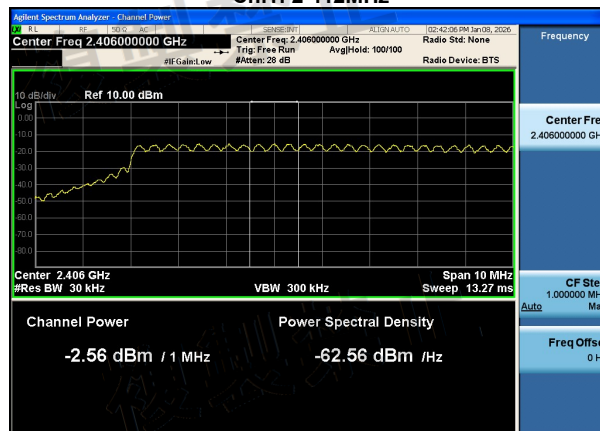
Spread bandwidth

Ch.1: 2 412MHz



RF output power

Ch.1: 2 412MHz





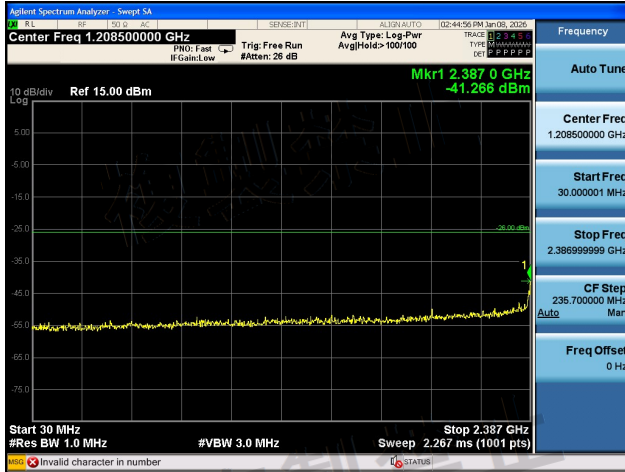
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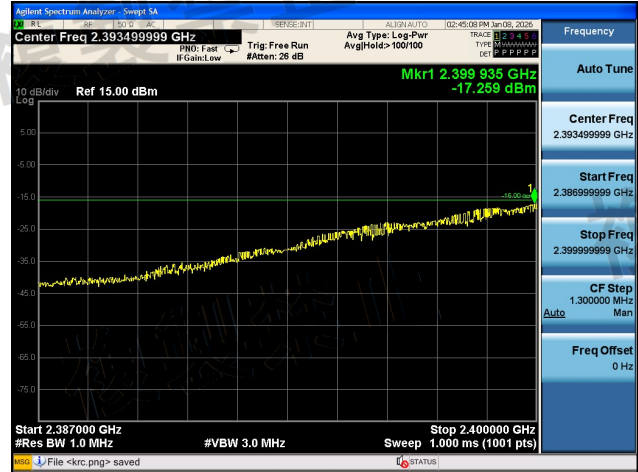
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Unwanted(Spurious) emission Ch.1: 2 412MHz

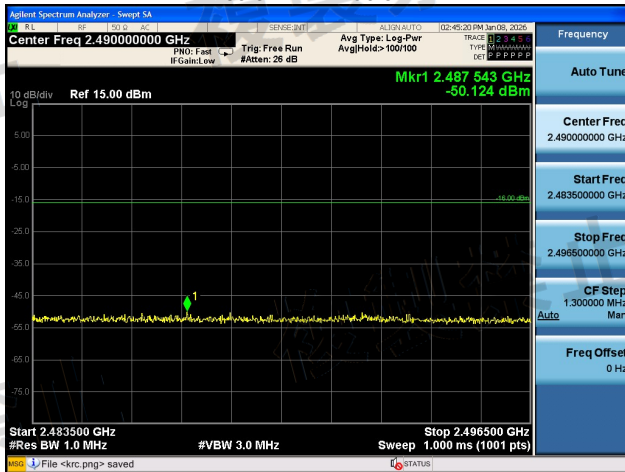
30 MHz~2 387 MHz



2 387 MHz~2 400 MHz



2 483.5 MHz~2 496.5 MHz



2 496.5 MHz~12 500 MHz





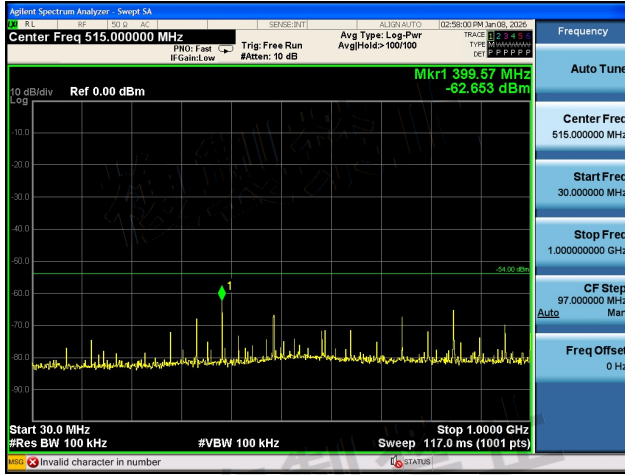
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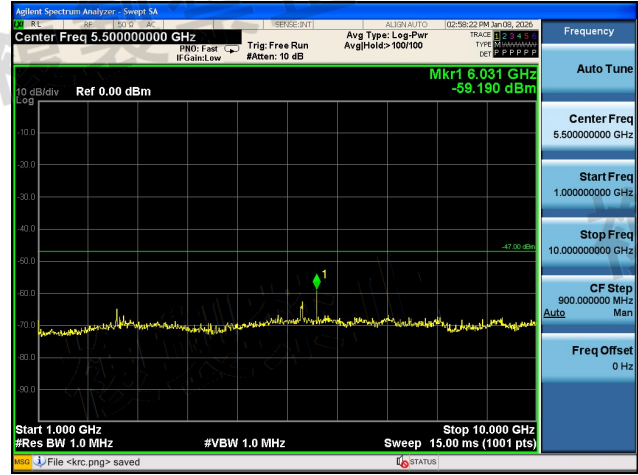
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Secondary emitted radio wave strength Ch.1: 2 412MHz

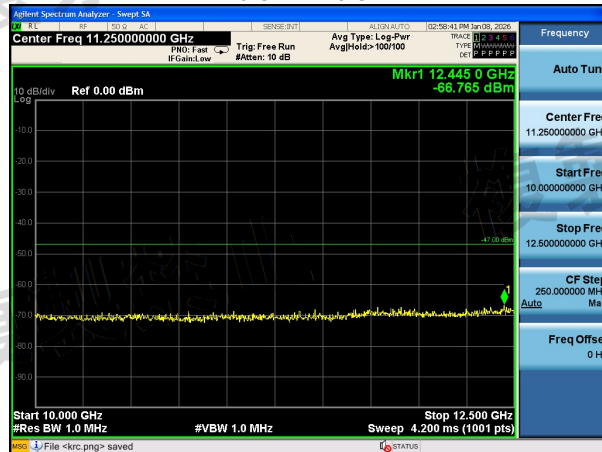
30 MHz-1 GHz



1 GHz-10 GHz



10 GHz-12.5 GHz





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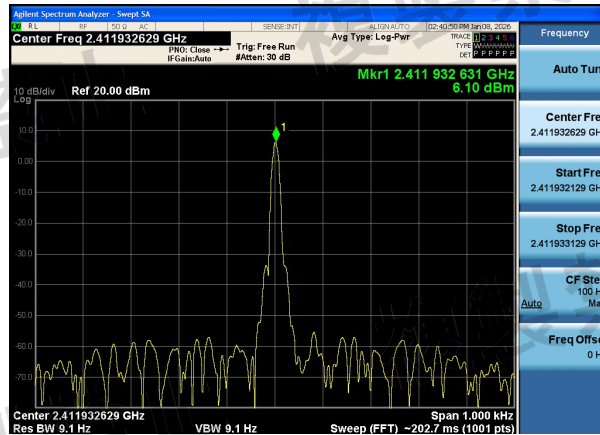
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DC 10.8 V

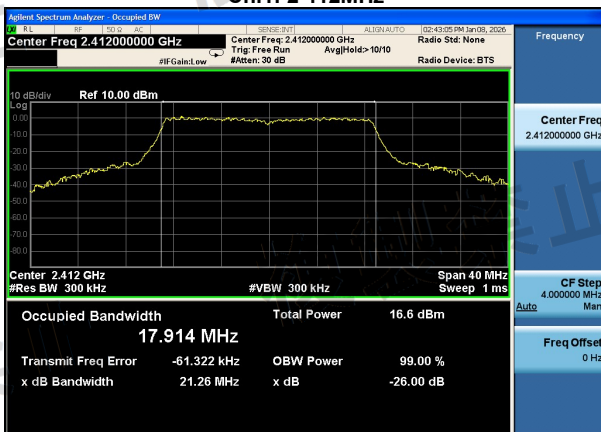
Frequency tolerance

Ch.1: 2 412MHz



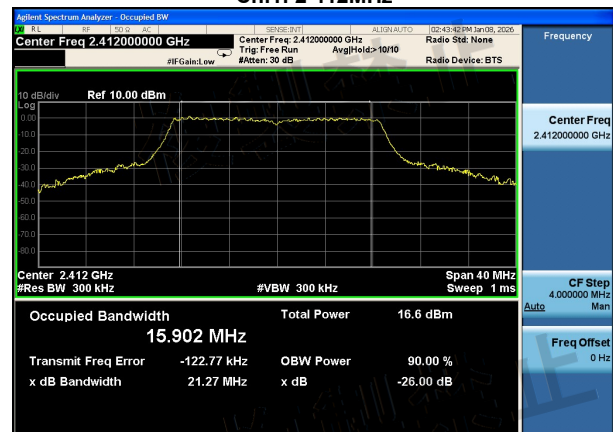
Occupied bandwidth

Ch.1: 2 412MHz



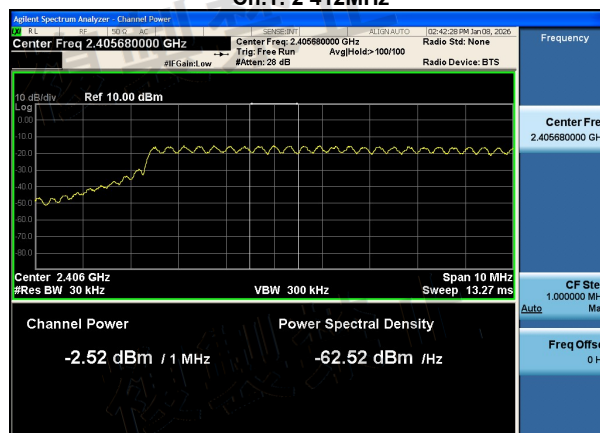
Spread bandwidth

Ch.1: 2 412MHz



RF output power

Ch.1: 2 412MHz





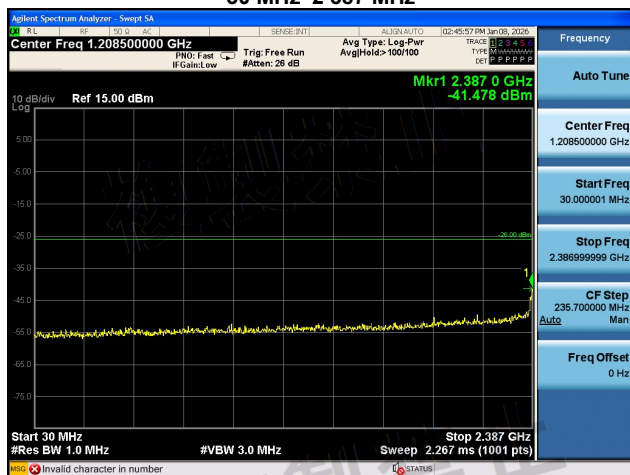
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 17142, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

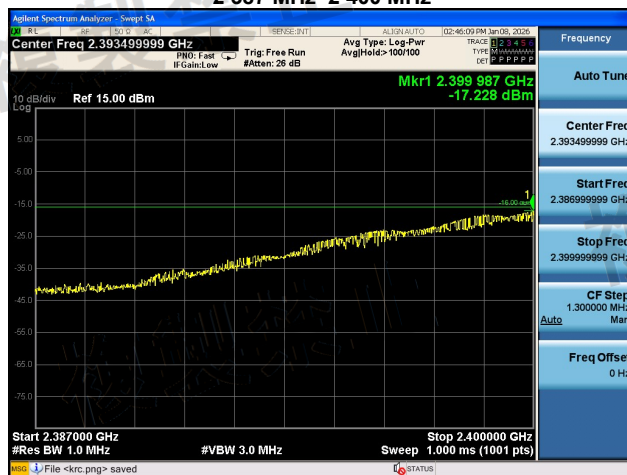
REPORT No.:
CTK-2026-00207
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Unwanted(Spurious) emission Ch.1: 2 412MHz

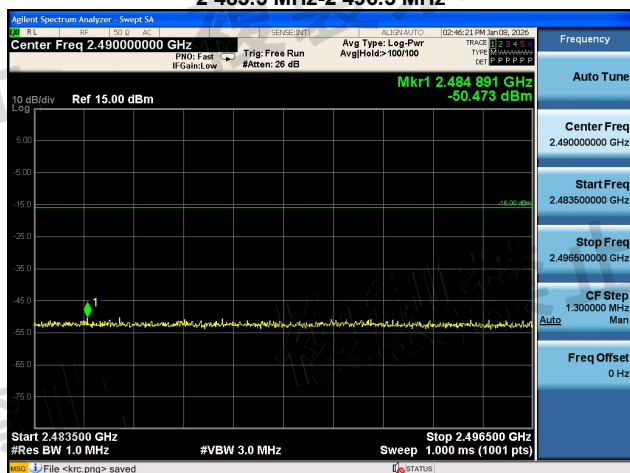
30 MHz–2 387 MHz



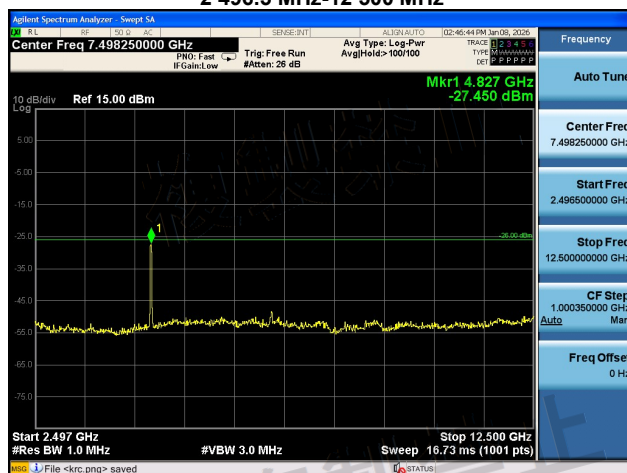
2 387 MHz–2 400 MHz



2 483.5 MHz–2 496.5 MHz



2 496.5 MHz–12 500 MHz





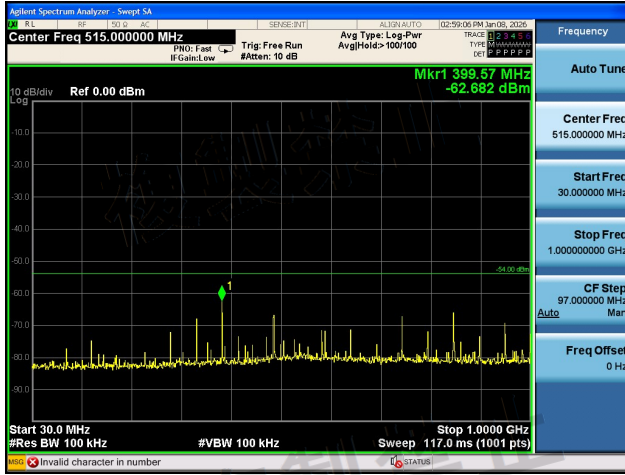
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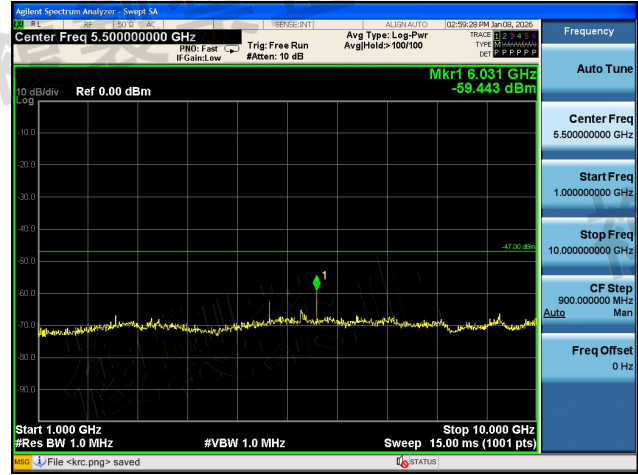
REPORT No.:
CTK-2026-00207
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Secondary emitted radio wave strength Ch.1: 2 412MHz

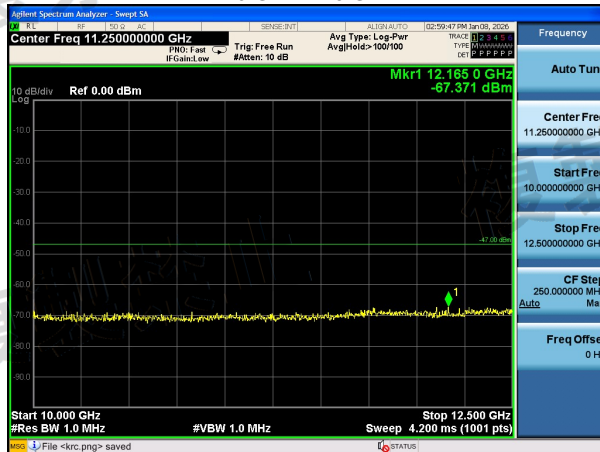
30 MHz-1 GHz



1 GHz-10 GHz



10 GHz-12.5 GHz



-END-