

RF TEST REPORT

For

Shenzhen Hengshengzhizhao Technology Co., Ltd. Product Name: Surveillance camera

Test Model(s): 268-2MP

Report Reference No. : DACE250113018RL002

FCC ID : 2BAHV-268-2MP

Applicant's Name : Shenzhen Hengshengzhizhao Technology Co., Ltd.

Address 168 Creative Park, Room 101, 1st Floor, No. 663 Bulong Road, Dafapu

Community, Bantian Street, Longgang District, Shenzhen China

Testing Laboratory : Shenzhen DACE Testing Technology Co., Ltd.

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Address : Tangtou Community, Shiyan Subdistrict, Bao'an District, Shenzhen,

Guangdong, China

Test Specification Standard : 47 CFR Part 15.247

Date of Receipt : January 13, 2025

Date of Test : January 13, 2025 to January 16, 2025

Data of Issue : January 16, 2025

Result : Pass

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Apply for company information

Applicant's Name	:	Shenzhen Hengshengzhizhao Technology Co., Ltd.		
Address	:	168 Creative Park, Room 101, 1st Floor, No. 663 Bulong Road, Dafapu Community, Bantian Street, Longgang District, Shenzhen China		
Product Name	:	Surveillance camera		
Test Model(s)	i	268-2MP		
Series Model(s)		628,638,308,629,630,C05		
Test Specification Standard(s)	•	47 CFR Part 15.247		

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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Keren Huang / Test Engineer	Ben Tang / Project Engineer	Machael Mo / Manager
January 16, 2025	January 16, 2025	January 16, 2025

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Report No.: DACE250113018RL002

Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE250113018RL002	January 16, 2025
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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

1.2 Summary of Test Result

Item	Standard	Method	Requirement	Result
Antenna requirement	47 CFR Part 15.247		47 CFR 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.247	ANSI C63.10-2013 section 6.2	47 CFR 15.207(a)	Pass
6dB Bandwidth	47 CFR Part 15.247	ANSI C63.10-2013, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(a)(2)	Pass
Maximum Conducted Output Power	47 CFR Part 15.247	ANSI C63.10-2013, section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(b)(3)	Pass
Power Spectral Density	47 CFR Part 15.247	ANSI C63.10-2013, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(e)	Pass
Emissions in non-restricted frequency bands	47 CFR Part 15.247	ANSI C63.10-2013 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Band edge emissions (Radiated)	47 CFR Part 15.247	ANSI C63.10-2013 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (below 1GHz)	47 CFR Part 15.247	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (above 1GHz)	47 CFR Part 15.247	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass

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2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name: Shenzhen Hengshengzhizhao Technology Co., Ltd.

Address : 168 Creative Park, Room 101, 1st Floor, No. 663 Bulong Road, Dafapu

Community, Bantian Street, Longgang District, Shenzhen China

Report No.: DACE250113018RL002

Manufacturer : Shenzhen Hengshengzhizhao Technology Co., Ltd.

Address : 168 Creative Park, Room 101, 1st Floor, No. 663 Bulong Road, Dafapu

Community, Bantian Street, Longgang District, Shenzhen China

2.2 Description of Device (EUT)

Product Name:	Surveillance camera
Model/Type reference:	268-2MP
Series Model:	628,638,308,629,630,C05
Model Difference:	There are many models of this product, but they are different in model name and appearance, while other parts such as circuit principle, PCB, electrical structure, etc. are the same.
Trade Mark:	N/A
Power Supply:	DC 5V/1A from adapter
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz; 802.11n(HT40): 2422MHz to 2452MHz
Number of Channels:	802.11b/g/n(HT20): 11 Channels; 802.11n(HT40): 7 Channels
Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK); 802.11g: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n(HT20 and HT40): OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type:	FPC Antenna
Antenna Gain:	1.82dBi
Hardware Version:	V1.0
Software Version:	V1.0

Remark: The Antenna Gain is supplied by the customer. DACE is not responsible for this data and the related calculations associated with it

Operation	Operation Frequency each of channel						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)		
	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)	

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Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

2.3 Description of Test Modes

No	Title	Description			
TM1	802.11b mode	Keep the EUT in 802.11b transmitting mode.			
TM2	802.11g mode	Keep the EUT in 802.11g transmitting mode.			
TM3	802.11n(HT20) mode	Keep the EUT in 802.11n(HT20) transmitting mode.	2		
TM4	TM4 802.11n(HT40) mode Keep the EUT in 802.11n(HT40) transmitting mode.				
Remark:Only the data of the worst mode would be recorded in this report.					

2.4 Description of Support Units

Title	Manufacturer	Model No.	Serial No.
AC-DC adapter	HUAWEI TECHNOLOGY	HW100400C01	

2.5 Equipments Used During The Test

Conducted Emission a	Conducted Emission at AC power line								
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date				
Power absorbing clamp	SCHWARZ BECK	MESS- ELEKTRONIK	1	2024-03-25	2025-03-24				
Electric Network	SCHWARZ BECK	CAT5 8158	CAT5 8158#207	1	E				
Cable	SCHWARZ BECK	1	1	2024-03-20	2025-03-19				
Pulse Limiter	Pulse Limiter SCHWARZ BECK		561-G071	2024-12-06	2025-12-05				
50ΩCoaxial Switch	Anritsu	MP59B	M20531	/					
Test Receiver	Rohde & Schwarz	ESPI TEST RECEIVER	ID:1164.6607K 03-102109- MH	2024-06-12	2025-06-11				
L.I.S.N	R&S	ESH3-Z5	831.5518.52	2023-12-12	2025-12-11				
L.I.S.N	SCHWARZ BECK	NSLK 8126	05055	2024-06-14	2025-06-13				
Pulse Limiter	CYBERTEK	EM5010A	/	2024-09-27	2025-09-26				
EMI test software	EZ -EMC	EZ	V1.1.42	1	1				

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Equipment Manufacturer **Model No Inventory No Cal Date** Cal Due Date Tachoy Information RF Test Software **RTS-01** V1.0.0 Technology(she nzhen) Co.,Ltd. Power divider **MIDEWEST** PWD-2533 **SMA-79** 2023-05-11 2026-05-10 Tachoy Information TR1029-2 **RF Sensor Unit** 000001 Technology(she nzhen) Co.,Ltd. Wideband radio communication R&S CMW500 113410 2024-06-12 2025-06-11 tester Vector Signal Keysight N5181A MY50143455 2024-12-06 2025-12-05 Generator Signal Generator Keysight N5182A MY48180415 2024-12-06 2025-12-05

N9020A

MY53420323

Report No.: DACE250113018RL002

2025-12-05

2024-12-06

Band edge emissions (Radiated)
Emissions in frequency bands (below 1GHz)
Emissions in frequency bands (above 1GHz)

Keysight

Spectrum Analyzer

Elinosions in requeitey buries (above 10112)								
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date			
EMI Test software	Farad	EZ -EMC	V1.1.42	1	1			
Positioning Controller	MF	MF-7802	1	1	E'			
Amplifier(18-40G)	COM-POWER	AH-1840	10100008-1	2022-04-05	2025-04-04			
Horn antenna	COM-POWER	AH-1840 (18-40G)	10100008	2023-04-05	2025-04-04			
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2024-06-14	2026-06-13			
Cable(LF)#2	Schwarzbeck	1	61	2024-02-19	2025-02-18			
Cable(LF)#1	Schwarzbeck	1	1	2024-02-19	2025-02-18			
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2024-03-20	2025-03-19			
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	/	2024-03-20	2025-03-19			
Power amplifier(LF)	Schwarzbeck	BBV9743	9743-151	2024-06-12	2025-06-11			
Power amplifier(HF)	Schwarzbeck	BBV9718	9718-282	2024-06-12	2025-06-11			
Wideband radio communication tester	R&S	CMW500	113410	2024-06-12	2025-06-11			
Spectrum Analyzer	R&S	FSP30	1321.3008K40 -101729-jR	2024-06-12	2025-06-11			
Test Receiver	R&S	ESCI 3	1166.5950K03 -101431-Jq	2024-06-13	2025-06-12			
Horn Antenna	Sunol Sciences	DRH-118	A091114	2023-05-13	2025-05-12			
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2024-09-28	2026-09-27			

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2.6 Statement Of The Measurement Uncertainty

V1.0

Test Item	Measurement Uncertainty
Conducted Disturbance (0.15~30MHz)	±3.41dB
Occupied Bandwidth	±3.63%
RF conducted power	±0.733dB
RF power density	±0.234%
Conducted Spurious emissions	±1.98dB
Radiated Emission (Above 1GHz)	±5.46dB
Radiated Emission (Below 1GHz)	±5.79dB

Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Identification of Testing Laboratory

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Identification of the Responsible Testing Location

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Phone Number:	+86-13267178997					
Fax Number:	86-755-29113252					
FCC Registration Number:	0032847402					
Designation Number:	CN1342					
Test Firm Registration Number:	778666					
A2LA Certificate Number:	6270.01					

2.8 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by DACE and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

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3 Evaluation Results (Evaluation)

3.1 Antenna requirement

Test Requirement:

Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

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3.1.1 Conclusion:



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4 Radio Spectrum Matter Test Results (RF)

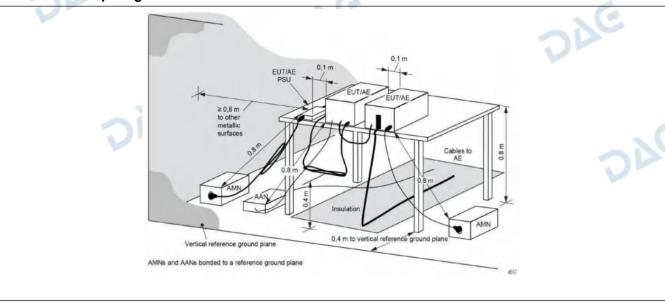
4.1 Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b)and (c)of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 $\mu\text{H}/50$ ohms line impedance stabilization network (LISN).						
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBµV)					
		Quasi-peak	Average				
	0.15-0.5	66 to 56*	56 to 46*				
	0.5-5	56	46				
	5-30	60	50				
\	*Decreases with the logarithm of the	frequency.	<u> </u>				
Test Method:	ANSI C63.10-2013 section 6.2						
Procedure:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices						

4.1.1 E.U.T. Operation:

Operating Environment:							
Temperature:	23.5 °C		Humidity:	54 %	Atmospheric Pressure:	101 kPa	
Pretest mode:		TM1					
Final test mode:		TM1					

4.1.2 Test Setup Diagram:



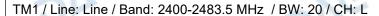
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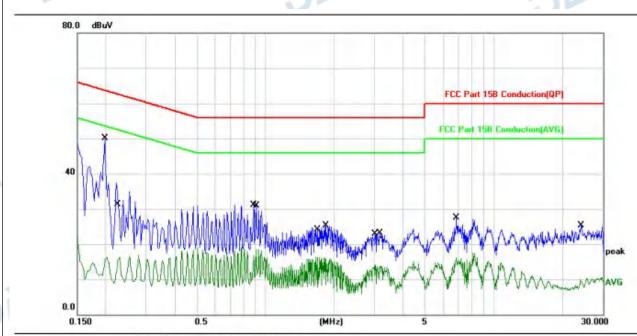
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4.1.3 Test Data:





No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1980	39.92	10.12	50.04	63.69	-13.65	QP	
2		0.2300	6.16	10.10	16.26	52.45	-36.19	AVG	
3		0.8860	21.01	10.10	31.11	56.00	-24.89	QP	
4		0.9100	8.36	10.10	18.46	46.00	-27.54	AVG	
5		1.6940	6.33	10.03	16.36	46.00	-29.64	AVG	
6		1.8460	15.19	10.01	25.20	56.00	-30.80	QP	
7		3.0100	4.02	10.06	14.08	46.00	-31.92	AVG	
8		3.1619	13.10	10.07	23.17	56.00	-32.83	QP	
9		6.8500	17.23	10.22	27.45	60.00	-32.55	QP	
10		6.8500	5.80	10.22	16.02	50.00	-33.98	AVG	
11		24.0100	-0.78	10.71	9.93	50.00	-40.07	AVG	
12		24.0540	14.55	10.71	25.26	60.00	-34.74	QP	
_									

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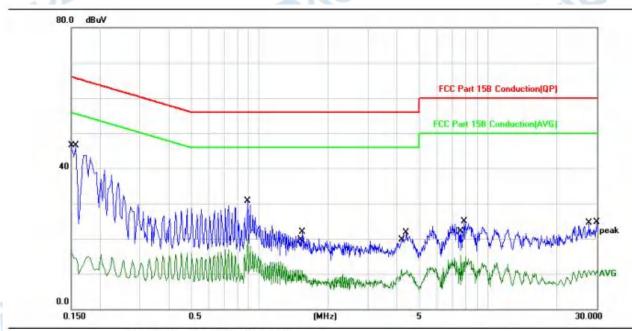
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TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 20 / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	6.36	10.13	16.49	55.99	-39.50	AVG	
2	*	0.1580	36.31	10.13	46.44	65.56	-19.12	QP	
3		0.8860	20.63	10.10	30.73	56.00	-25.27	QP	
4		0.8860	9.52	10.10	19.62	46.00	-26.38	AVG	
5		1.5180	1.14	10.05	11.19	46.00	-34.81	AVG	
6		1.5420	11.82	10.04	21.86	56.00	-34.14	QP	
7		4.1979	1.07	10.16	11.23	46.00	-34.77	AVG	
8		4.4020	11.60	10.17	21.77	56.00	-34.23	QP	
9		7.6380	5.08	10.24	15.32	50.00	-34.68	AVG	
10		7.8620	14.55	10.26	24.81	60.00	-35.19	QP	
11		27.7220	0.18	10.94	11.12	50.00	-38.88	AVG	
12		29.9980	13.52	11.09	24.61	60.00	-35.39	QP	

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V1.0

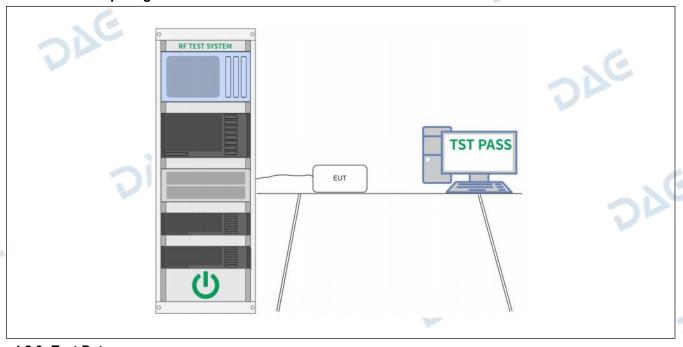
4.2 6dB Bandwidth

Test Requirement:	47 CFR 15.247(a)(2)
Test Limit:	Refer to 47 CFR 15.247(a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10-2013, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	a) Set RBW = 100 kHz. b) Set the VBW >= [3 × RBW]. c) Detector = peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.2.1 E.U.T. Operation:

Operating Environment:							
Temperature:	23.5 °C		Humidity:	54 %	Atmos	spheric Pressure:	101 kPa
Pretest mode: TM			TM2, TM3, 7	ГМ4	·		6
Final test mode: TM1			TM2, TM3, 7	ГМ4			

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Please Refer to Appendix for Details.

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4.3 Maximum Conducted Output Power

	addica Gatpat i Gwoi
Test Requirement:	47 CFR 15.247(b)(3)
Test Limit:	Refer to 47 CFR 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Method:	ANSI C63.10-2013, section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013, section 11.9.1 Maximum peak conducted output power Note: Per ANSI C63.10-2013, if there are two or more antnnas, the conducted powers at Core 0, Core 1,, Core i were first measured separately, as shown in the section above(this product olny have one antenna). The measured values were then summed in linear power units then converted back to dBm. Per ANSI C63.10-2013 Section 14.4.3.2.3, the directional gain is calculated using the following formula, where GN is the gain of the nth antenna and NANT, the total number of antennas used. For correlated unequal antenna gain Directional gain = 10*log[(10G1/20 + 10G2/20 + + 10GN/20)2 / NANT] dBi For completely uncorrelated unequal antenna gain Directional gain = 10*log[(10G1/10 + 10G2/10 + + 10GN/10)/ NANT] dBi Sample Multiple antennas Calculation: Core 0 + Core 1 +Core i. = MIMO/CDD (i is the number of antennas)
	(#VALUE! mW + mW) = #VALUE! mW = dBm Sample e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted Power (dBm) + Ant gain (dBi)

Report No.: DACE250113018RL002

4.3.1 E.U.T. Operation:

Operating Environment:												
Temperature:	23.5 °C		Humidity:	54 %	-	Atmospheric Pressure:	101 kPa	- 2/				
Pretest mode:		TM1,	TM2, TM3,	ГМ4				U				
Final test mode:		TM1,	TM2, TM3,	ГМ4								

4.3.2 Test Setup Diagram:

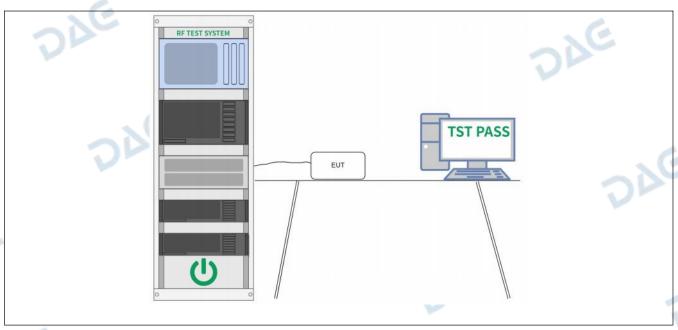
102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Community, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China
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E-mail: service@dace-lab.com
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4.3.3 Test Data:

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Please Refer to Appendix for Details.

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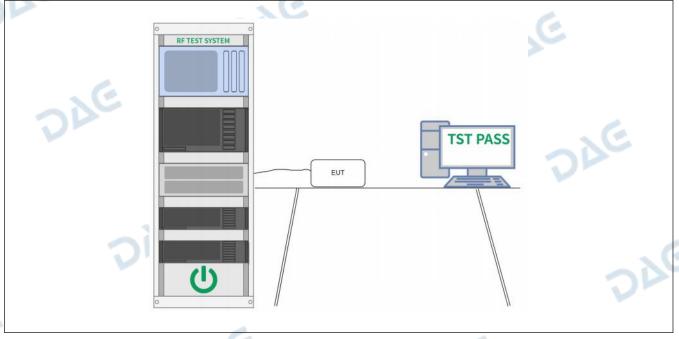
4.4 Power Spectral Density

Test Requirement:	47 CFR 15.247(e)
Test Limit:	Refer to 47 CFR 15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Method:	ANSI C63.10-2013, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013, section 11.10, Maximum power spectral density level in the fundamental emission

4.4.1 E.U.T. Operation:

Operating Environment:												
Temperature:	23.5 °C		Humidity:	54 %	А	Atmospheric Pressure:	101 kPa					
Pretest mode:	Pretest mode: TM1, TM2, TM3, TM4											
Final test mode: TM1, TM2, TM3, TM4												

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to Appendix for Details.

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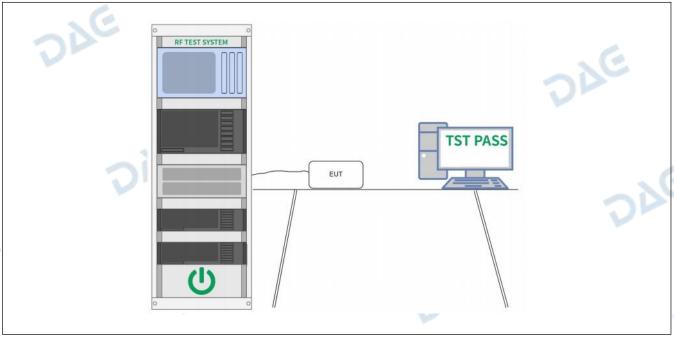
4.5 Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d), 15.209, 15.205
Test Limit:	Refer to 47 CFR 15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required.
Test Method:	ANSI C63.10-2013 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2013 Section 11.11.1, Section 11.11.2, Section 11.11.3

4.5.1 E.U.T. Operation:

Operating Environment:												
Temperature:	23.5 °C		Humidity:	54 %		Atmospheric Pressure:	101 kPa					
Pretest mode: TM1, TM2, TM3, TM4												
Final test mode:	Final test mode: TM1, TM2, TM3, TM4											

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

Please Refer to Appendix for Details.

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4.6 Band edge emissions (Radiated)

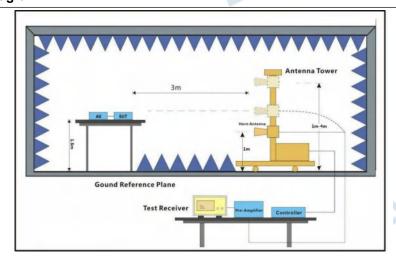
V1.0

Test Requirement:	restricted bands, as defi	(d), In addition, radiated emissioned in § 15.205(a), must also colin § 15.209(a)(see § 15.205(c))	omply with the radiated						
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)						
	0.009-0.490	2400/F(kHz)	300						
	0.490-1.705	24000/F(kHz)	30						
	1.705-30.0	30	30						
	30-88	100 **	3						
	88-216	150 **	3						
	216-960	200 **	3						
1	Above 960	500	3						
NE	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.								
Test Method: ANSI C63.10-2013 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02									
Procedure:	ANSI C63.10-2013 secti	on 6.10.5.2	· (e						

4.6.1 E.U.T. Operation:

Operating Environment:												
Temperature:	23.5 °C		Humidity:	54 %	Atmospheric Pressure:	101 kPa						
Pretest mode:		TM1,	TM2, TM3,	ΓM4	. 6							
Final test mode:	10	TM1,	TM2, TM3,	ГМ4								

4.6.2 Test Setup Diagram:



Web: http://www.dace-lab.com

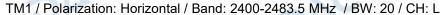
Tel: +86-755-23010613

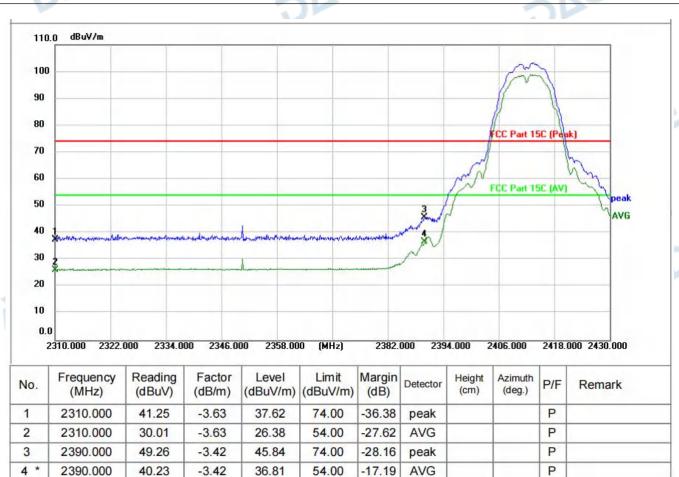
E-mail: service@dace-lab.com

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4.6.3 Test Data:





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2390.000

2390.000

3

4

DAG

46.67

37.30

-3.42

-3.42

43.25

33.88

Report No.: DACE250113018RL002

P

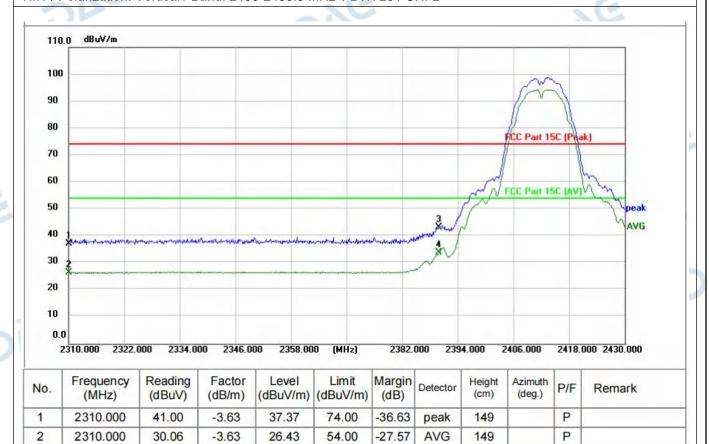
P

DAG

149

149

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L



74.00

54.00

-30.75

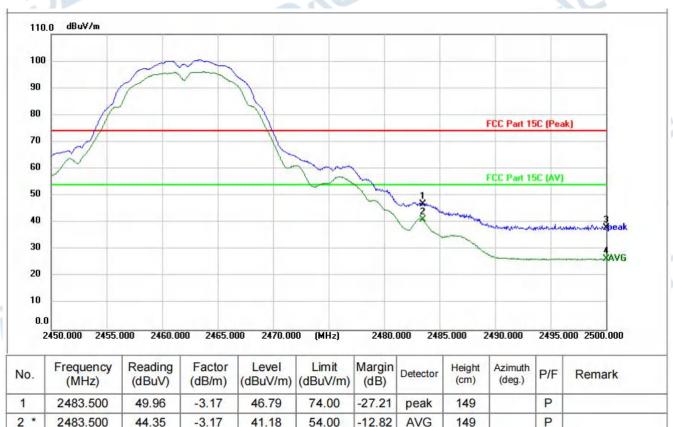
-20.12

peak

AVG



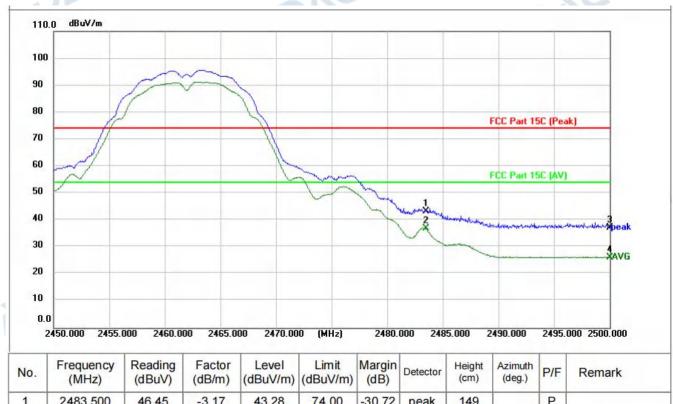
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	49.96	-3.17	46.79	74.00	-27.21	peak	149		Р	
2 *	2483.500	44.35	-3.17	41.18	54.00	-12.82	AVG	149		Р	
3	2500.000	41.09	-3.13	37.96	74.00	-36.04	peak	149		Р	
4	2500.000	29.63	-3.13	26.50	54.00	-27.50	AVG	149		Р	



TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H

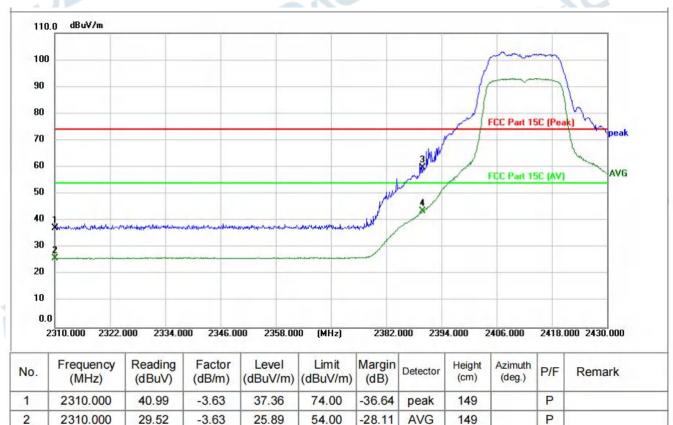


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	46.45	-3.17	43.28	74.00	-30.72	peak	149		Р	
2 *	2483.500	40.11	-3.17	36.94	54.00	-17.06	AVG	149		Р	
3	2500.000	40.42	-3.13	37.29	74.00	-36.71	peak	149		Р	
4	2500.000	29.52	-3.13	26.39	54.00	-27.61	AVG	149		Р	
4	2500.000	29.52	-3.13	26.39	54.00	-27.61	AVG	149		Р	

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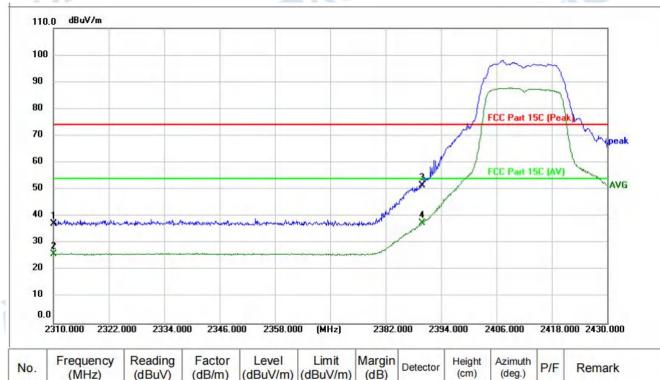
TM2 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	40.99	-3.63	37.36	74.00	-36.64	peak	149		Р	
2	2310.000	29.52	-3.63	25.89	54.00	-28.11	AVG	149		Р	
3	2390.000	63.27	-3.42	59.85	74.00	-14.15	peak	149		Р	
4 *	2390.000	47.14	-3.42	43.72	54.00	-10.28	AVG	149		Р	



TM2 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

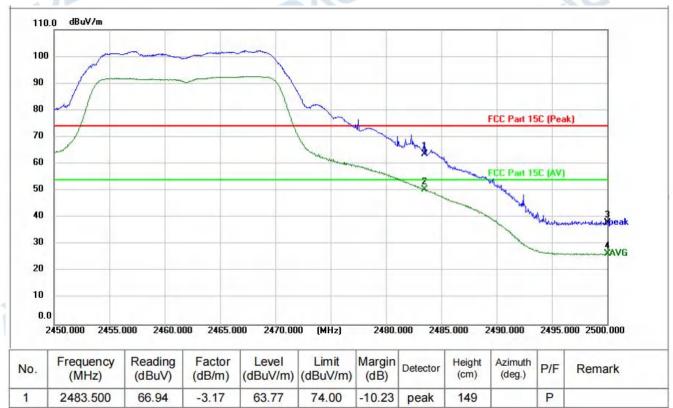


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	40.91	-3.63	37.28	74.00	-36.72	peak	149		Р	
2	2310.000	29.66	-3.63	26.03	54.00	-27.97	AVG	149		Р	
3	2390.000	55.05	-3.42	51.63	74.00	-22.37	peak	149		Р	
4 *	2390.000	40.90	-3.42	37.48	54.00	-16.52	AVG	149		Р	

DAG



TM2 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	66.94	-3.17	63.77	74.00	-10.23	peak	149		Р	
2 *	2483.500	53.55	-3.17	50.38	54.00	-3.62	AVG	149		Р	
3	2500.000	41.18	-3.13	38.05	74.00	-35.95	peak	149		Р	
4	2500.000	29.62	-3.13	26.49	54.00	-27.51	AVG	149		Р	
										_	



4

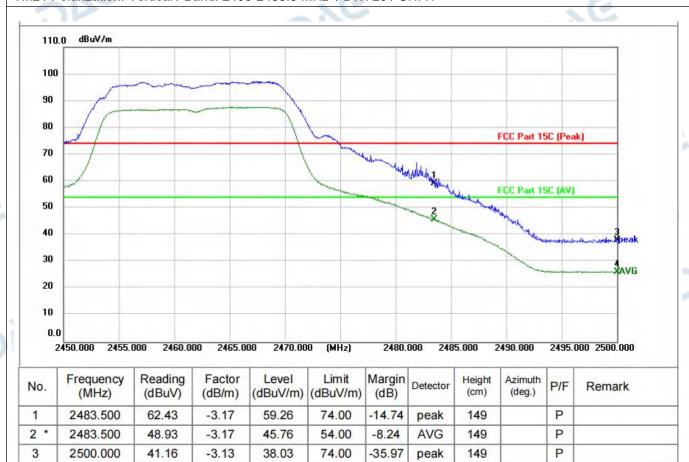
2500.000

29.37

-3.13

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TM2 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



26.24

54.00

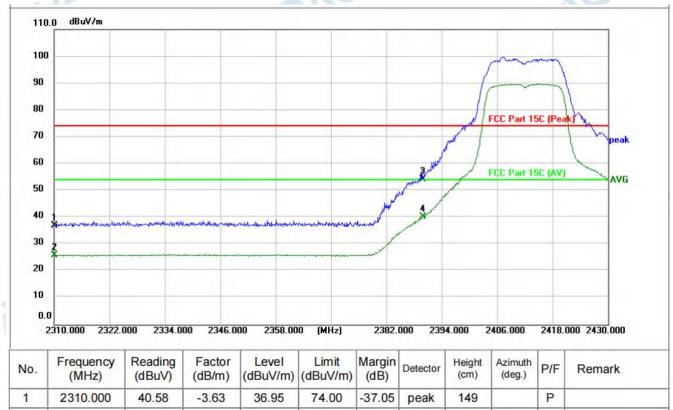
-27.76

AVG

P



TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: L



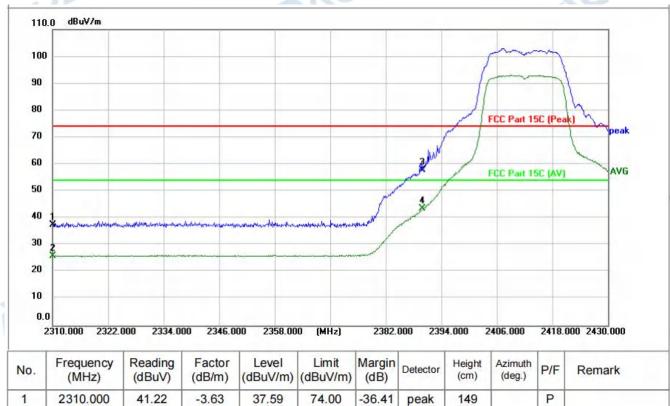
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	40.58	-3.63	36.95	74.00	-37.05	peak	149		Р	
2	2310.000	29.58	-3.63	25.95	54.00	-28.05	AVG	149		Р	
3	2390.000	57.86	-3.42	54.44	74.00	-19.56	peak	149		Р	
4 *	2390.000	43.74	-3.42	40.32	54.00	-13.68	AVG	149		Р	

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Report No.: DACE250113018RL002

TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	41.22	-3.63	37.59	74.00	-36.41	peak	149		Р	
2	2310.000	29.62	-3.63	25.99	54.00	-28.01	AVG	149		Р	
3	2390.000	61.38	-3.42	57.96	74.00	-16.04	peak	149		Р	
4 *	2390.000	47.00	-3.42	43.58	54.00	-10.42	AVG	149		Р	

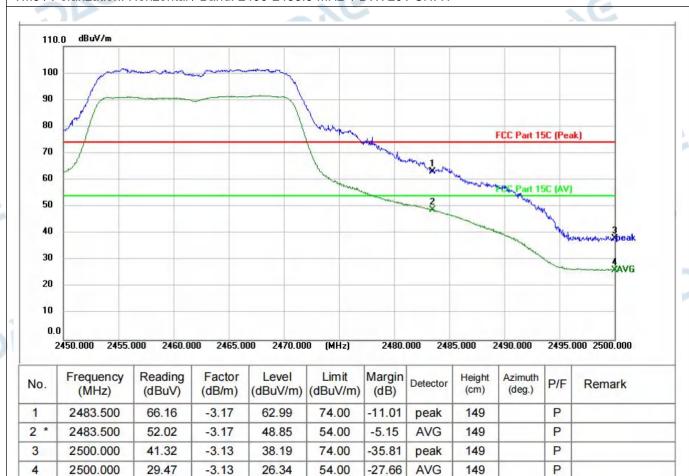
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DAG

Report No.: DACE250113018RL002

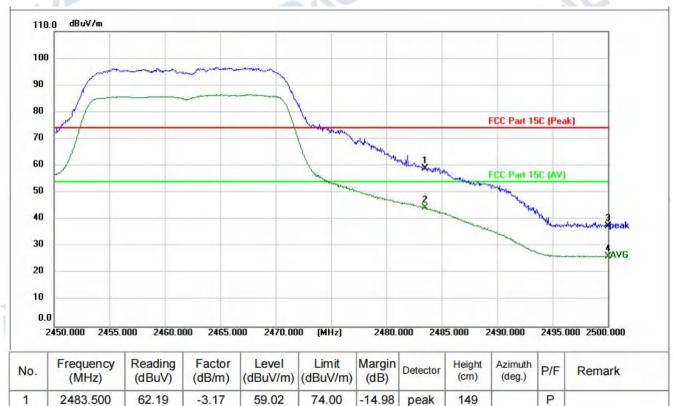
TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



DAG



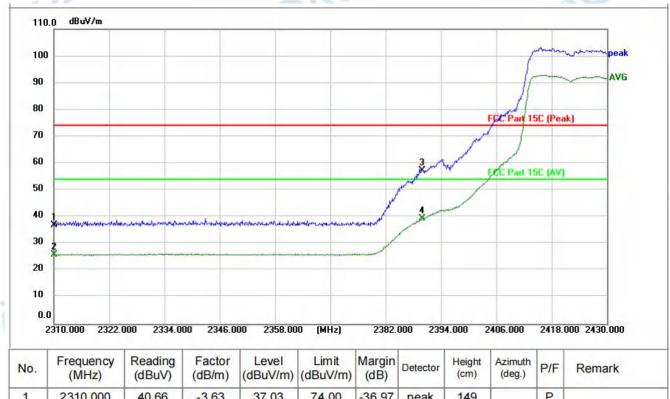
TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2483.500	62.19	-3.17	59.02	74.00	-14.98	peak	149		Р	
2 *	2483.500	47.56	-3.17	44.39	54.00	-9.61	AVG	149		Р	
3	2500.000	40.80	-3.13	37.67	74.00	-36.33	peak	149		Р	
4	2500.000	29.53	-3.13	26.40	54.00	-27.60	AVG	149		Р	



TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	2310.000	40.66	-3.63	37.03	74.00	-36.97	peak	149		Р	
2	2310.000	29.65	-3.63	26.02	54.00	-27.98	AVG	149		Р	
3	2390.000	60.79	-3.42	57.37	74.00	-16.63	peak	149		Р	
4 *	2390.000	42.80	-3.42	39.38	54.00	-14.62	AVG	149		Р	



3

4

DAG

2390.000

2390.000

54.12

35.49

-3.42

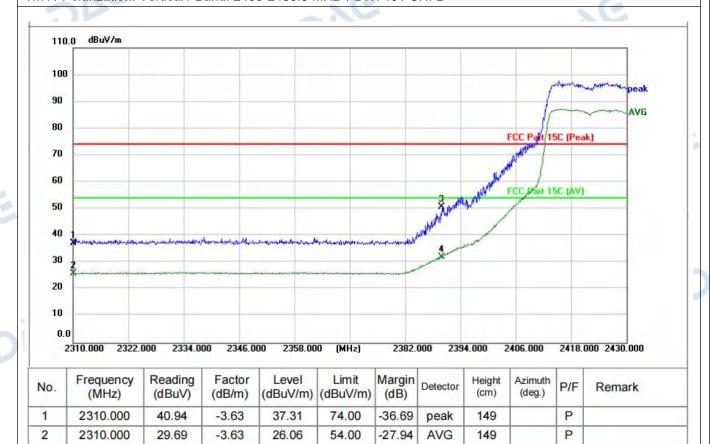
-3.42

50.70

32.07

Report No.: DACE250113018RL002

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: L



74.00

54.00

-23.30

-21.93

peak

AVG

149

149

P

P

DAG

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P

P

P

149

149

149

149



2483.500

2483.500

2500.000

2500.000

1

2

3

4

59.39

40.79

40.80

29.33

-3.17

-3.17

-3.13

-3.13

TM4 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 40 / CH: H dBuV/m 110.0 100 90 80 FCC Part 15C (Peak) 70 60 FCC Part 15C (AV) 50 40 30 20 10 0.0 2460.000 2465.000 2480.000 2495.000 2500.000 2450.000 2455.000 2470.000 2485.000 2490.000 Frequency Reading Factor Level Limit Margin Height Azimuth Detector P/F No. Remark (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) (cm) (deg.)

56.22

37.62

37.67

26.20

74.00

54.00

74.00

54.00

-17.78

-16.38

-36.33

-27.80

peak

AVG

peak

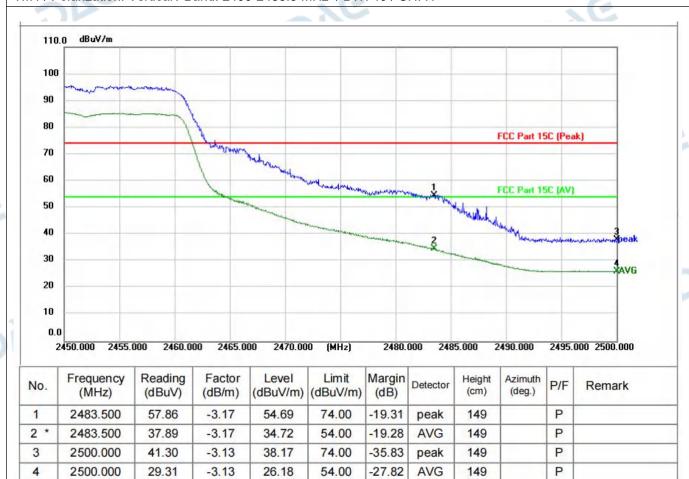
AVG



DAG

Report No.: DACE250113018RL002

TM4 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 40 / CH: H



DAG



4.7 Emissions in frequency bands (below 1GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).								
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)						
	0.009-0.490	2400/F(kHz)	300						
	0.490-1.705	24000/F(kHz)	30						
	1.705-30.0	30	30						
	30-88	100 **	3						
	88-216	150 **	3						
	216-960	200 **	3						
	Above 960	500	3						
	and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.								
Test Method:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02								
Procedure:	above the ground at a 3 or 3 360 degrees to determine the b. For above 1GHz, the EUT above the ground at a 3 medegrees to determine the poc. The EUT was set 3 or 10 which was mounted on the td. The antenna height is var determine the maximum val polarizations of the antenna e. For each suspected emist the antenna was tuned to he below 30MHz, the antenna was the suspected emist the antenna was tuned to he below 30MHz, the antenna was tuned to he suspected emist the antenna was tuned to he below 30MHz, the antenna was tuned to he suspected emist the antenna was tuned to he below 30MHz, the antenna was tuned to he suspected emist the	was placed on the top of a rotating meter semi-anechoic chamber. The position of the highest radiation was placed on the top of a rotation of the highest radiation. The table ter fully-anechoic chamber. The table ter fully-anechoic chamber away from the interference op of a variable-height antenna to ied from one meter to four meters use of the field strength. Both horizone set to make the measurements ion, the EUT was arranged to its eights from 1 meter to 4 meters (for was tuned to heights 1 meter) and the maximum to 360 degrees to find the maximum of the second se	The table was rotated in the table was rotated in the table 1.5 meters able was rotated 360 erreceiving antenna, ower. It is above the ground to contal and vertical int. It is worst case and then for the test frequency of the rotatable table						
	was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be retested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. h. Test the EUT in the lowest channel, the middle channel, the Highest channel. i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. j. Repeat above procedures until all frequencies measured was complete. Remark: 1) For emission below 1GHz, through pre-scan found the worst case is the lowest								

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channel. Only the worst case is recorded in the report.

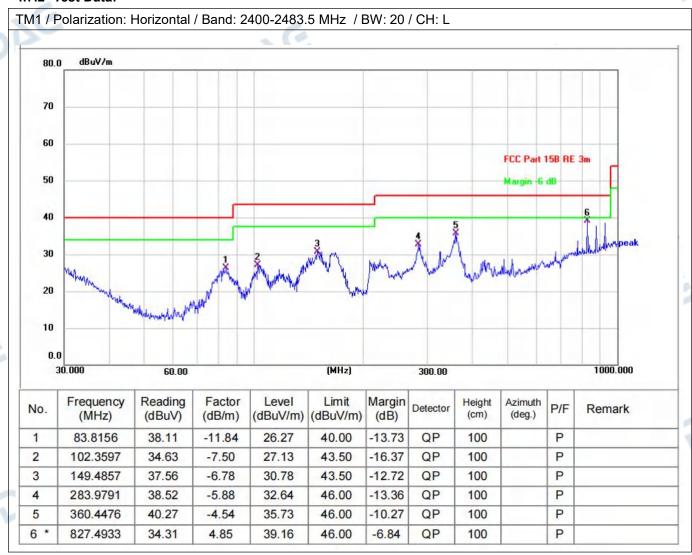
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level =Receiver Reading + Antenna Factor + Cable Factor "C Preamplifier Factor

3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. Fundamental frequency is blocked by filter, and only spurious emission is shown.

4.7.1 E.U.T. Operation:

Operating Environment:									
Temperature:	23.5 °C	- >	Humidity:	54 %	Atmospheric Pressure:	101 kPa			
Pretest mode:			TM2, TM3,	ГМ4	. 6				
Final test mode: TM1					270				

4.7.2 Test Data:



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P



827,4934

6 *

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L

4.78

38.39

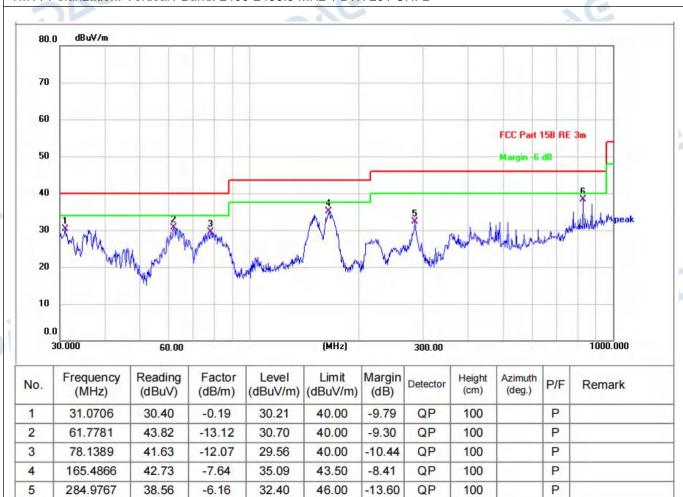
46.00

-7.61

QP

100

33,61



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Report No.: DACE250113018RL002

4.8 Emissions in frequency bands (above 1GHz)

		y with the radiated emission limits	ids, as defined in § specified in §					
	15.209(a)(see § 15.205(c)).							
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)					
	0.009-0.490	2400/F(kHz)	300					
	0.490-1.705	24000/F(kHz)	30					
	1.705-30.0	30	30					
	30-88	100 **	3					
	88-216	150 **	3					
	216-960	200 **	3					
1	Above 960	500	3					
E	these frequency bands is per and 15.241. In the emission table above The emission limits shown i employing a CISPR quasi-p 110–490 kHz and above 10	4-216 MHz or 470-806 MHz. Howermitted under other sections of the tighter limit applies at the bain the above table are based on meak detector except for the frequence of MHz. Radiated emission limits a employing an average detector	nis part, e.g., §§ 15.231 nd edges. neasurements ency bands 9–90 kHz, s in these three bands					
Test Method:	ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02							
Procedure:	above the ground at a 3 or 360 degrees to determine the b. For above 1GHz, the EU above the ground at a 3 medegrees to determine the poc. The EUT was set 3 or 10 which was mounted on the d. The antenna height is varied determine the maximum valpolarizations of the antenna e. For each suspected emisting the antenna was turned from 0 degrees f. The test-receiver system was turned from 0 degrees f. The test-receiver system was and width with Maximum Hg. If the emission level of the specified, then testing could reported. Otherwise the emitested one by one using per reported in a data sheet. h. Test the EUT in the lowes in the radiation measureme Transmitting mode, and four	T was placed on the top of a rotat 10 meter semi-anechoic chamber ne position of the highest radiation. T was placed on the top of a rotat ter fully-anechoic chamber. The tosition of the highest radiation. The tosition of a variable-height antenna to the field strength. Both horical are set to make the measuremension, the EUT was arranged to its eights from 1 meter to 4 meters (for was tuned to heights 1 meter) and to 360 degrees to find the maximal was set to Peak Detect Function and the EUT in peak mode was 10dB lost be stopped and the peak values issions that did not have 10dB maximal, quasi-peak or average methods at channel, the middle channel, the total last channel is the total last channel in the x axis positioning which it is until all frequencies measured were to the state of the x axis positioning which it is until all frequencies measured were to the x axis positioning which it is until all frequencies measured were to the x axis positioning which it is until all frequencies measured were to the x axis positioning which it is until all frequencies measured were to the x axis positioning which it is until all frequencies measured were to the x axis position in the x axis	r. The table was rotated in. ring table 1.5 meters able was rotated 360 ce-receiving antenna, ower. Is above the ground to zontal and vertical int. Is worst case and then for the test frequency of the rotatable table um reading. In and Specified contains would be read as specified and then the EUT would be argin would be red as specified and then the Highest channel. In the EUT would be argin would be red as specified and then the Highest channel. In the worst case.					
	Remark:							

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channel. Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level =Receiver Reading + Antenna Factor + Cable Factor "C Preamplifier Factor

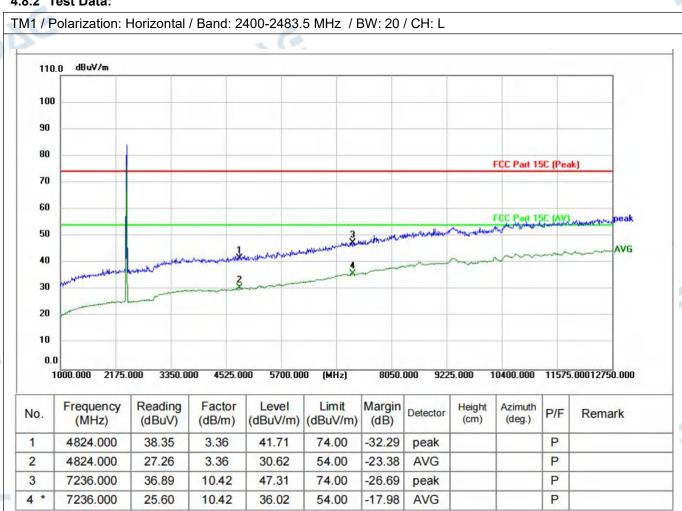
Report No.: DACE250113018RL002

3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. Fundamental frequency is blocked by filter, and only spurious emission is shown.

4.8.1 E.U.T. Operation:

Operating Environment:									
Temperature:	23.5 °C	- >	Humidity:	54 %	Atmospheric Pressure:	101 kPa			
Pretest mode:			TM2, TM3,	ГМ4	. 6				
Final test mode: TM1					270				

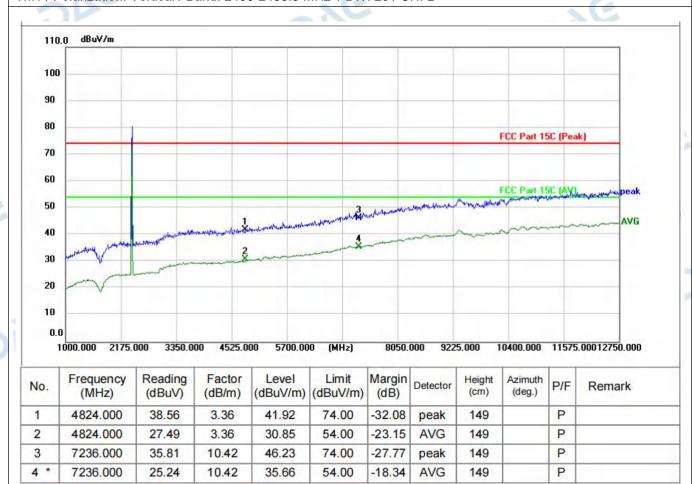
4.8.2 Test Data:



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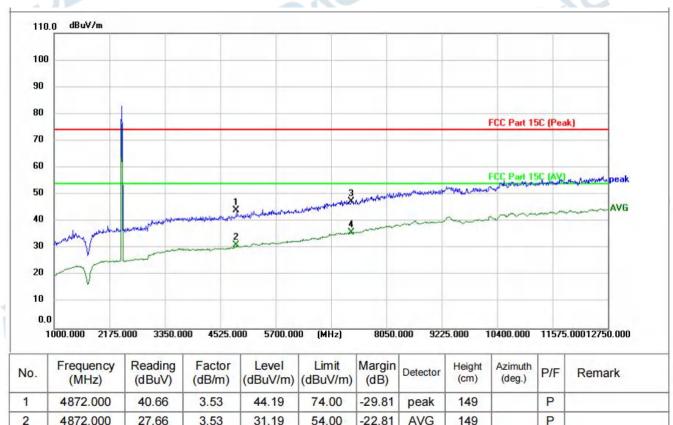


TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: L





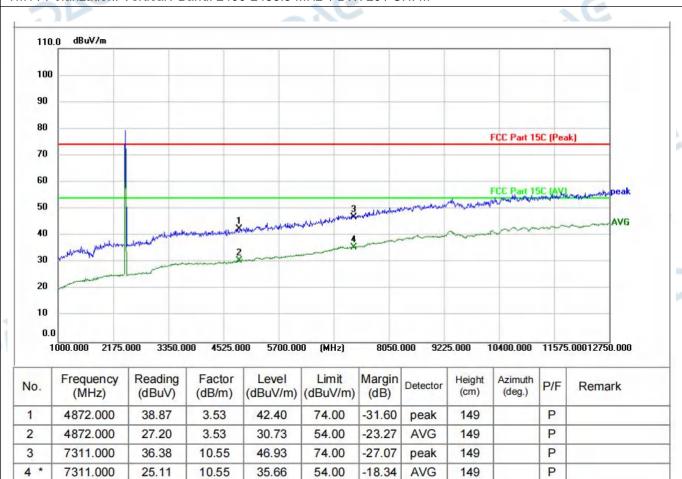
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	4872.000	40.66	3.53	44.19	74.00	-29.81	peak	149		Р	
2	4872.000	27.66	3.53	31.19	54.00	-22.81	AVG	149		Р	
3	7311.000	36.91	10.55	47.46	74.00	-26.54	peak	149		Р	
4 *	7311.000	25.22	10.55	35.77	54.00	-18.23	AVG	149		Р	

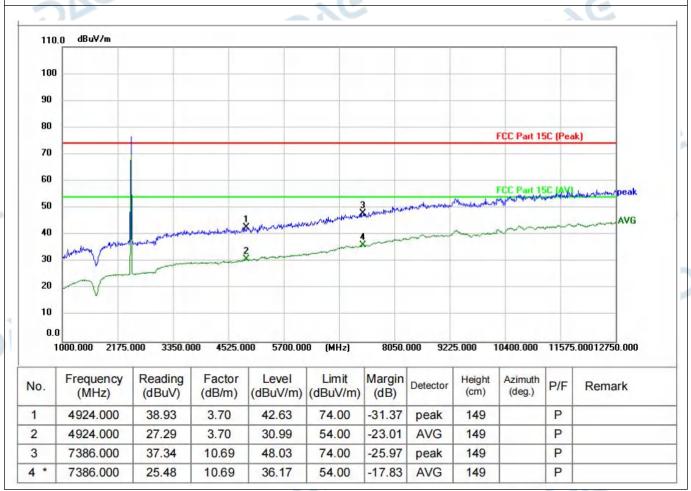


TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: M





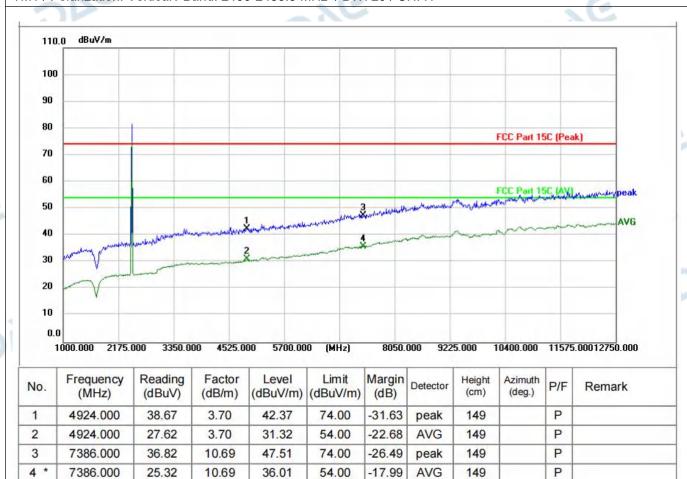
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 20 / CH: H



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TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 20 / CH: H



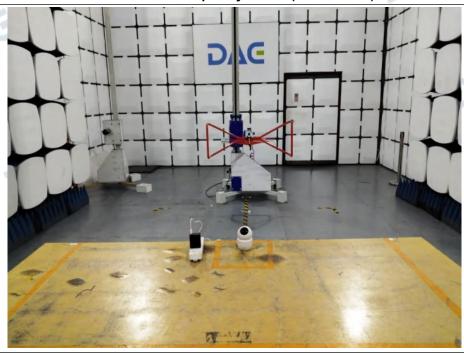


5 TEST SETUP PHOTOS

Conducted Emission at AC power line



Emissions in frequency bands (below 1GHz)



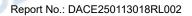
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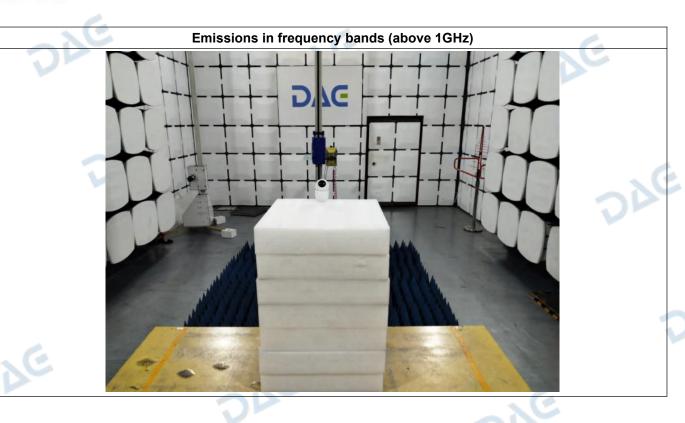




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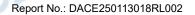
PHOTOS OF THE EUT

External











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Internal

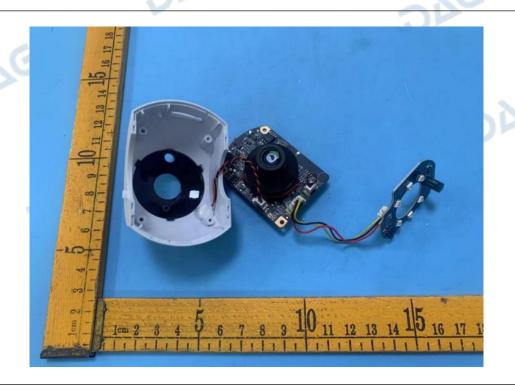




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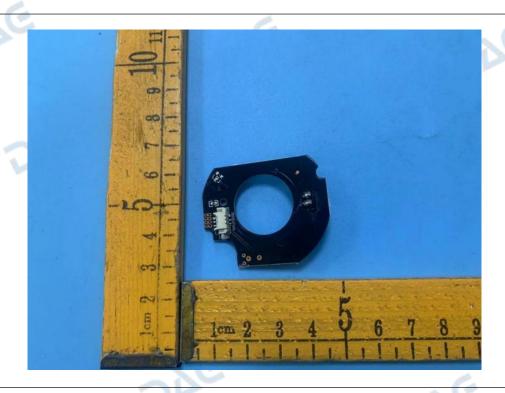


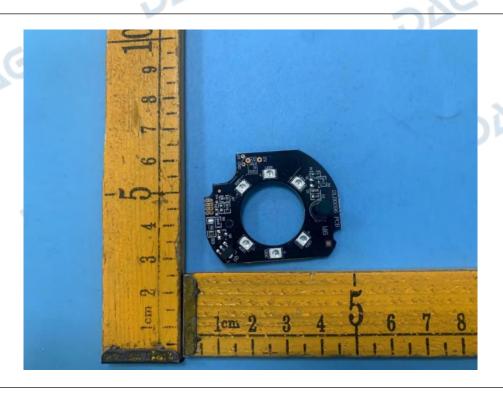




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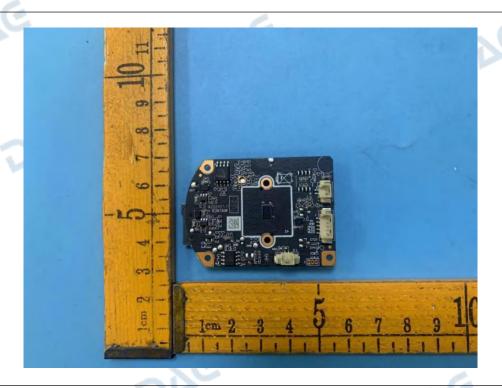
Web: http://www.dace-lab.com

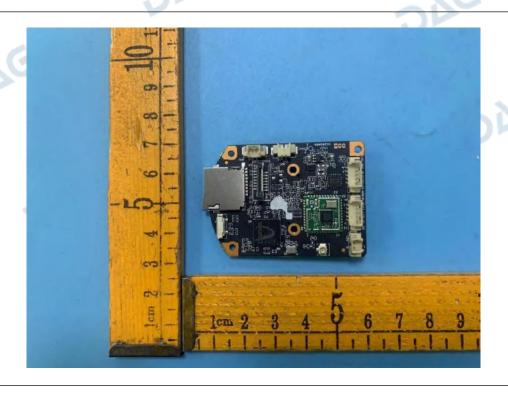
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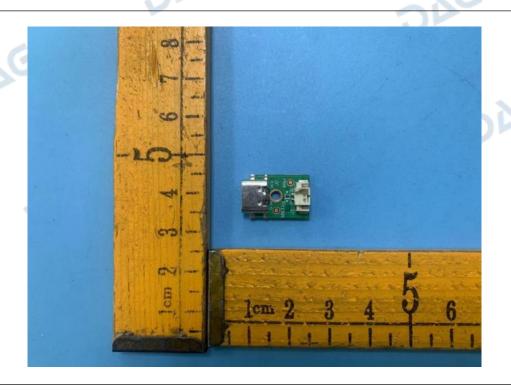
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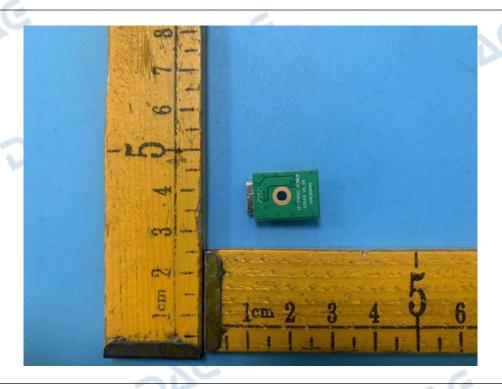
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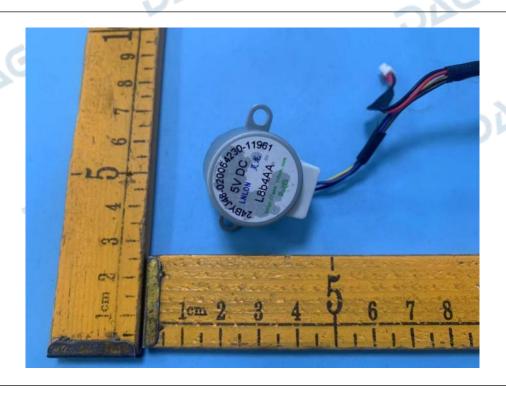












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