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Page 1 of 63





Apply for company information

Applicant's Name	:	ShenZhen RiShengHua Technology Co., Ltd.				
Address	:	loor 2, building E1, qiangrong East Industrial Zone, No. 723, Zhoushi Road, Jiuwei community, Hangcheng street, Bao'an District, Shenzhen				
Product Name	:	Human presence detector				
Test Model(s)	:	RSH-RD24G01				
Series Model(s)		N/A				
Test Specification Standard(s)	:	: 47 CFR Part 15.247				

NOTE1:

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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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Compiled by: Keren Huang

Keren Huang / Test Engineer February 26, 2025

Supervised by:

Ben Tang / Project Engineer February 26, 2025

Ben Tang

Approved by:

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Machael MJ

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Machael Mo / Manager February 26, 2025

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DAG -	V1.0		Report No.: DACE2502120
		vision History Of Repo	rt DAC
Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE250212015RL001	February 26, 2025
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TEST SUMMARY 1

1.1 Test Standards

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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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V1.0 Report No.: DACE250212015RL001 DAC **GENERAL INFORMATION** 2 2.1 Client Information **Applicant's Name** ShenZhen RiShengHua Technology Co., Ltd. Address Floor 2, building E1, giangrong East Industrial Zone, No. 723, Zhoushi Road, Jiuwei community, Hangcheng street, Bao'an District, Shenzhen Manufacturer ShenZhen RiShengHua Technology Co., Ltd. Address Floor 2, building E1, qiangrong East Industrial Zone, No. 723, Zhoushi Road, Jiuwei community, Hangcheng street, Bao'an District, Shenzhen

Description of Device (EUT) 2.2

Product Name:	Human presence detector
Model/Type reference:	RSH-RD24G01
Series Model:	N/A
Trade Mark:	N/A
Power Supply:	DC 5V/1A from adapter
Operation Frequency:	2405MHz to 2480MHz
Number of Channels:	16
Modulation Type:	O-QPSK
Antenna Type:	PCB
Antenna Gain:	2.21dBi
Hardware Version:	V1.0
Software Version:	V1.0

Operation Frequency each of channel

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2405MHz	5	2425MHz	9	2445MHz	13	2465MHz
2	2410MHz	6	2430MHz	10	2450MHz	14	2470MHz
3	2415MHz	7	2435MHz	11	2455MHz	15	2475MHz
4	2420MHz	8	2440MHz	12	2460MHz	16	2480MHz

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)
rest channel	ZIGBEE
Lowest channel	2405MHz
Middle channel	2440MHz
Highest channel	2480MHz

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No T	itle	Description	
TM1 T	X mode	Keep the EUT connect to AC po transmitting mode with O-QPSK	ower line and works in continuou (modulation.
Test softwa	are		
	2405 10.0dbm - Zigbee_250K - Carrier: Carrier RX: RXTest	Set_Channel Set_Power Set_RF_Mode CarrierData Hop	

2.4 Description of Support Units

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

2.5 Equipments Used During The Test

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Conducted Emission at AC power line						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
Power absorbing clamp	SCHWARZ BECK	MESS- ELEKTRONIK	/	2024-03-25	2025-03-24	
Electric Network	SCHWARZ BECK	CAT5 8158	CAT5 8158#207	/	1	
Cable	SCHWARZ BECK		1	2024-03-20	2025-03-19	
Pulse Limiter	SCHWARZ BECK	VTSD 9561-F Pulse limiter 10dB Attenuation	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	/	

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6dB Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in non-restricted frequency bands

	Emissions in non-rest					
	Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
	RF Test Software	Tachoy Information Technology(she nzhen) Co.,Ltd.	RTS-01	V1.0.0	/	1
	Power divider	MIDEWEST	PWD-2533	SMA-79	2023-05-11	2026-05-10
- A	RF Sensor Unit	Tachoy Information Technology(she nzhen) Co.,Ltd.	TR1029-2	000001	/	1
	Wideband radio communication tester	R&S	CMW500	113410	2024-06-12	2025-06-11
	Vector Signal Generator	Keysight	N5181A	MY50143455	2024-12-06	2025-12-05
	Signal Generator	Keysight	N5182A	MY48180415	2024-12-06	2025-12-05
	Spectrum Analyzer	Keysight	N9020A	MY53420323	2024-12-06	2025-12-05

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Band edge emissions	(Radiated)				-
Emissions in frequence	. ,	GHz)			
Emissions in frequence	y bands (above 10	GHz)		- DP	
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test software	Farad	EZ -EMC	V1.1.42	1	1
Positioning Controller	S MF	MF-7802		1	1
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	/	/	2024-12-19	2025-12-18
Cable(LF)#1	Schwarzbeck	/	1	2024-12-19	2025-12-18
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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Statement Of The Measurement Uncertainty 2.6

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
Noto: (1) This upcortainty represents an expanded u	upportainty overcoood at approximately the 0.5%

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

2.7 Identification of Testing Laboratory

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.				
Address:	102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Connunity, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China				
Phone Number:	+86-13267178997				
Fax Number:	86-755-29113252				
Identification of the Responsible Testing Location					
Company Name:	Shenzhen DACE Testing Technology Co., Ltd.				
Address:	102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Connunity, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China				
Phone Number:	+86-13267178997				
Fax Number:	86-755-29113252				
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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Evaluation Results (Evaluation) 3

3.1 Antenna requirement

Test Requirement:

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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.

3.1.1 Conclusion:

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Report No.: DACE250212015RL001

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 μ H/50 ohms line impedance stabilization network (LISN).							
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBµV)						
		Quasi-peak	Average					
	0.15-0.5							
	0.5-5							
	5-30 60 50							
	*Decreases with the logarithm of the frequency.							
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							

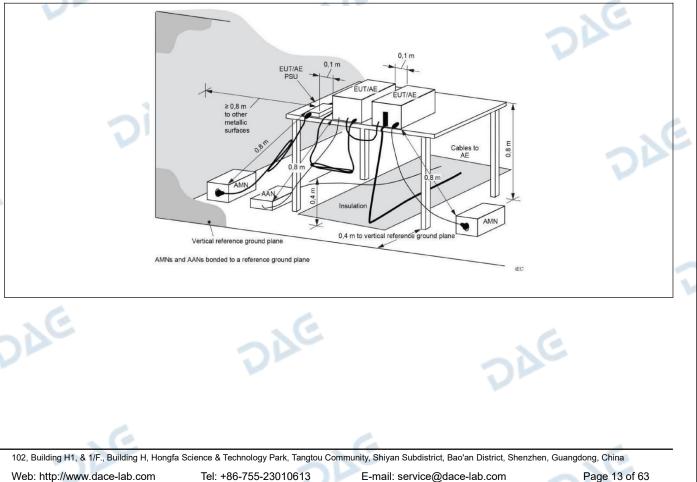
4.1.1 E.U.T. Operation:

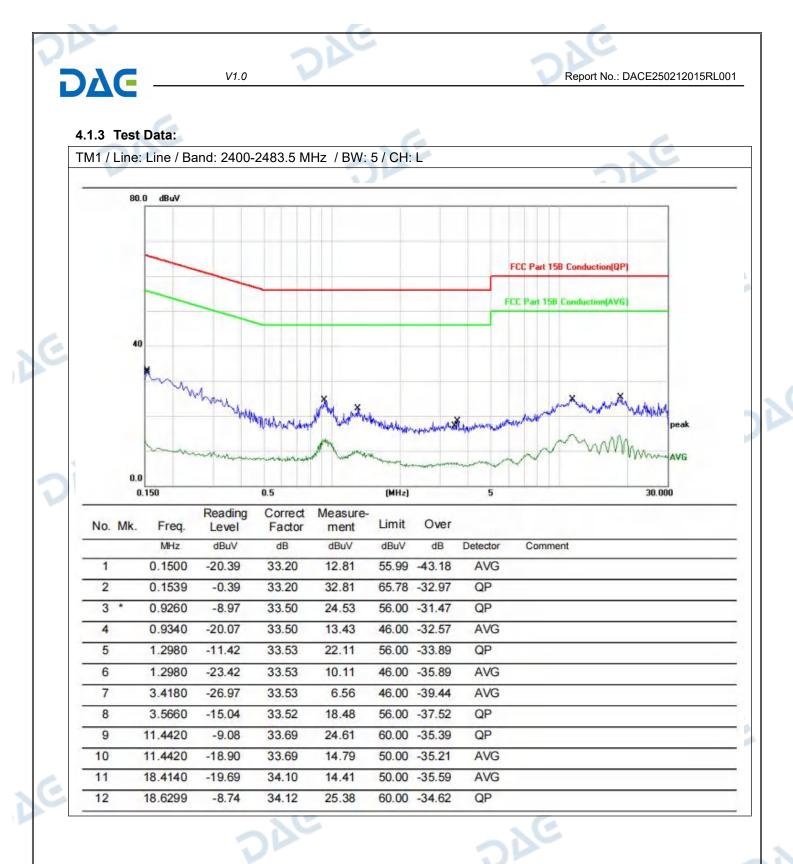
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Operating Environment:							
Temperature:	22.4 °C		Humidity:	54 %	Atmospheric Pressure:	101 kPa	
Pretest mode:		TM1			V		
Final test mode:		TM1					

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4.1.2 Test Setup Diagram:





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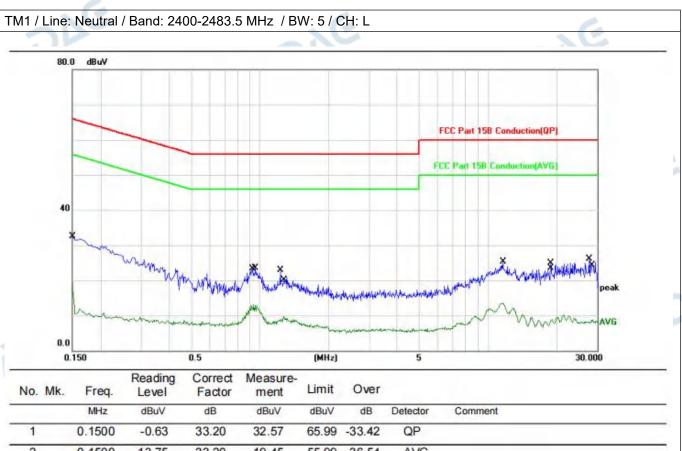
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1	0.1500	-0.03	33.20	32.57	05.99 -33.42	UP .	
2	0.1500	-13.75	33.20	19.45	55.99 -36.54	AVG	
3	0.9340	-20.49	33.50	13.01	46.00 -32.99	AVG	
4 *	0.9540	-9.90	33.50	23.60	56.00 -32.40	QP	
5	1.2260	-10.55	33.52	22.97	56.00 -33.03	QP	
6	1.2740	-23.76	33.53	9.77	46.00 -36.23	AVG	
7	11.5780	-8.40	33.69	25.29	60.00 -34.71	QP	
8	11.5780	-20.12	33.69	13.57	50.00 -36.43	AVG	
9	18.7979	-9.33	34.13	24.80	60.00 -35.20	QP	
10	19.0300	-25.34	34.14	8.80	50.00 -41.20	AVG	ļ
11	27.5620	-7.87	33.90	26.03	60.00 -33.97	QP	
12	28.6860	-25.16	33.85	8.69	50.00 -41.31	AVG	

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4.2 6dB Bandwidth

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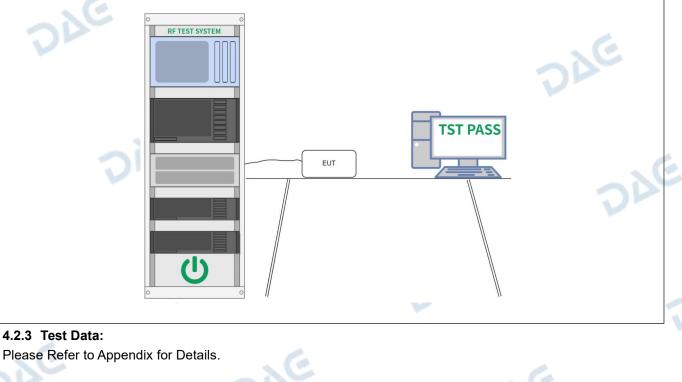
Test Requirement:	47 CFR 15.247(a)(2)
Test Limit:	Refer to 47 CFR 15.247(a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10-2013, section 11.8 KDB 558074 D01 15.247 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.

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4.2.1 E.U.T. Operation:

Operating Environment:							
Temperature: 22.4 °C Humidity: 54 % Atmospheric Pressure: 101 kPa							
Pretest mode: TM1				6			
Final test mode: TM1				~	10		
122 Test Set		m •					

4.2.2 Test Setup Diagram:



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4.3 Maximum Conducted Output Power

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 = $10*\log[(10G1/20 + 10G2/20 + + 10GN/20)2 / NANT] dBiFor completely uncorrelated unequal antenna gainDirectional gain = 10*\log[(10G1/10 + 10G2/10 + + 10GN/10)/ NANT] dBi$
	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)

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4.3.1 E.U.T. Operation:

Operating Environment:								
Temperature:	22.4 °C		Humidity:	54 %	1	Atmospheric Pressure:	101 kPa	- >
Pretest mode:		TM1					•	JAC
Final test mode:		TM1						

4.3.2 Test Setup Diagram:

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4.3.3 Test Data: Please Refer to Ap		AC DAC
	ding H. Hangfa Saianga & Tashnalagy Park Tagata	

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4.4 Power Spectral Density

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4.4.1 E.U.T. Operation:	
Procedure:	ANSI C63.10-2013, section 11.10, Maximum power spectral density level in the fundamental emission
Test Method:	ANSI C63.10-2013, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
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 Requirement:	47 CFR 15.247(e)

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4.4.1 E.U.T. Operation:

Operating Environment:							
Temperature:	22.4 °C		Humidity:	54 %	Atmospheric Pressure:	101 kPa	
Pretest mode:	·	TM1			VE		
Final test mode:		TM1					

4.4.2 Test Setup Diagram:

_	4.4.2 Test Setup Diagram:	
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2	4.4.3 Test Data:	. 6
	Please Refer to Appendix for Details.	
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Report No.: DACE250212015RL001

4.5 Emissions in non-restricted frequency bands

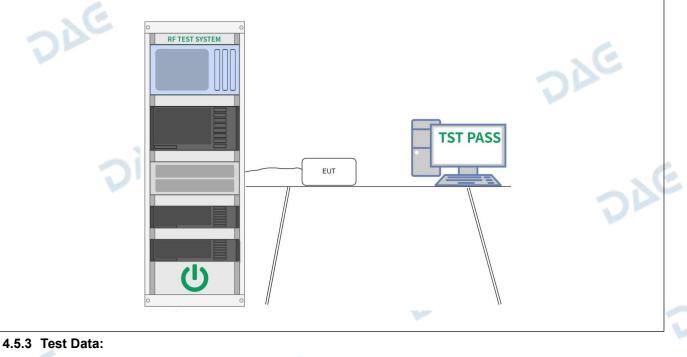
Test Requirement:	47 CFR 15.247(d), 15.209, 15.205
Test Limit:	Refer to 47 CFR 15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall 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:

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	Operating Enviro	onment:					
6	Temperature:	22.4 °C		Humidity:	54 %	Atmospheric Pressure:	101 kPa
	Pretest mode:		TM1	20			6
	Final test mode:		TM1	V			
	A E O Toot Cotu		~				

4.5.2 Test Setup Diagram:



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Please Refer to Appendix for Details.

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Report No.: DACE250212015RL001

4.6 Band edge emissions (Radiated)

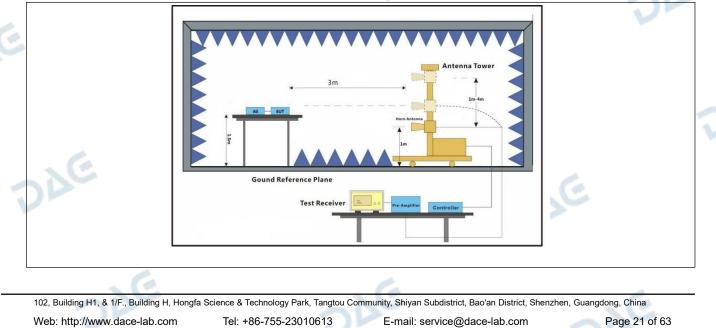
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Test Requirement:	restricted bands, as defined	, In addition, radiated emissions w d in § 15.205(a), must also comply § 15.209(a)(see § 15.205(c)).`	
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
20	0.009-0.490	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
AE	radiators operating under th 54-72 MHz, 76-88 MHz, 17 these frequency bands is p and 15.241. In the emission table above The emission limits shown employing a CISPR quasi- 110–490 kHz and above 10	ragraph (g), fundamental emission his section shall not be located in t 4-216 MHz or 470-806 MHz. Howe ermitted under other sections of th e, the tighter limit applies at the bar in the above table are based on m beak detector except for the freque 000 MHz. Radiated emission limits ts employing an average detector.	he frequency bands ever, operation within his part, e.g., §§ 15.231 nd edges. leasurements ency bands 9–90 kHz, in these three bands
Test Method:	ANSI C63.10-2013 section KDB 558074 D01 15.247 N		
Procedure:	ANSI C63.10-2013 section	6.10.5.2	1C
4.6.1 E.U.T. Operation:			24

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Temperature: 22.4 °C Humidity: 54 % Atmospheric Pressure: 101 kPa Pretest mode: TM1 TM1 TM1 TM1 TM1	Operating Enviro	onment:							
	Temperature:	22.4 °C		Humidity:	54 %	Atmospheric	Pressure:	101 kPa	
Final test mode: TM1	Pretest mode:		TM1			6			
	Final test mode:	DP	TM1			200			

4.6.2 Test Setup Diagram:



DAG V1.0 Report No.: DACE250212015RL001 4.6.3 Test Data: TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 5 / CH: L 1 110.0 dBu¥ 100 90 80 FCC Part 15C (Peal 70 60 FCC Part 15C (A) 50 40 AVG 30 20 10 0.0 2400.000 2410.000 2340.000 2350.000 2370.000 2310.000 2320.000 2330.000 (MHz) 2380.000 2390.000 Frequency Reading Factor Level Limit Margin Height Azimuth Detector P/F Remark No. (cm) (deg.) (MHz) (dBuV) (dB) (dBuV) (dBuV) (dB) 1 2310.000 41.07 -3.63 37.44 74.00 -36.56 peak 149 P 2 2310.000 29.90 -3.63 26.27 54.00 -27.73 AVG 149 P . 41.07 P 3 2390.000 -3.42 37.65 74.00 -36.35 149 peak 29.38 25.96 P 4 2390.000 -3.42 54.00 -28.04 AVG 149

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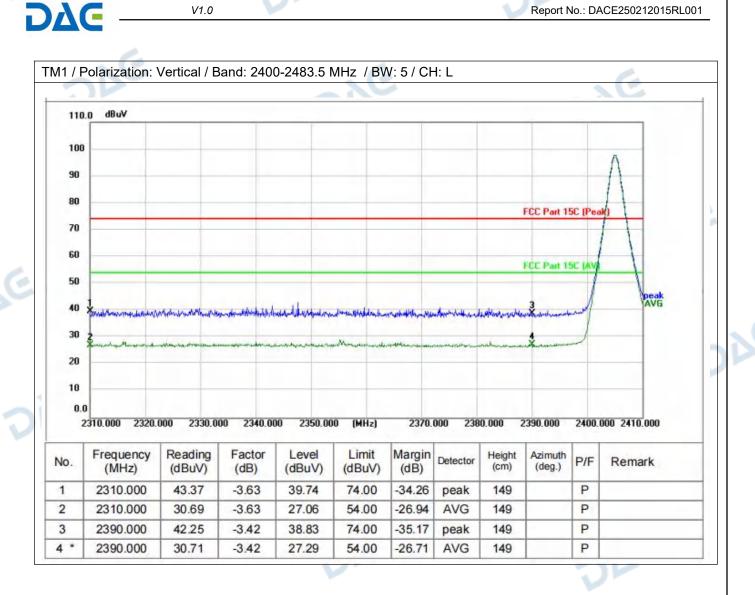
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DAC V1.0 Report No.: DACE250212015RL001 TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 5 / CH: H dBu∀ 110.0 100 90 80 FCC Part 15C (Peak) 70 60 FCC Part 15C (AV) 50 40 30 XAVG 20 10 0.0 2475.000 2480.000 2482.500 2485.000 2497.500 2500.000 2477.500 (MHz) 2490.000 2492.500 2495.000 Frequency Reading Factor Level Limit Margin Height Azimuth Detector P/F No. Remark (dBuV) (deg.) (MHz) (dBuV) (dB) (dBuV) (dB) (cm) 2483.500 53.77 -3.17 50.60 74.00 -23.40 149 P 1 peak P 2 * 2483.500 52.19 -3.17 49.02 54.00 -4.98 AVG 149 3 2500.000 40.56 -3.13 37.43 74.00 -36.57 peak 149 P

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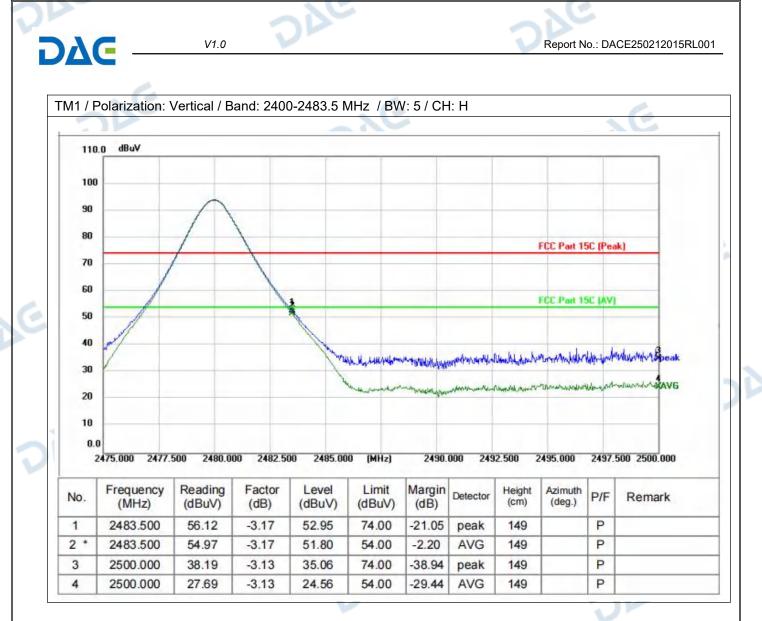
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4.7 Emissions in frequency bands (below 1GHz)

Frequency (MHz) 0.009-0.490	d in § 15.209(a)(see § 15.205(c)).` Field strength (microvolts/meter)	Measurement				
0.009-0.490		distance (meters)				
	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				
The emission limits sho employing a CISPR qua 110–490 kHz and above	wn in the above table are based on asi-peak detector except for the freq e 1000 MHz. Radiated emission limi	measurements uency bands 9–90 kHz ts in these three bands				
ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02						
above the ground at a 3 360 degrees to determine b. For above 1GHz, the above the ground at a 3 degrees to determine the c. The EUT was set 3 of which was mounted on d. The antenna height is determine the maximum polarizations of the anter e. For each suspected of the antenna was tuned below 30MHz, the anter was turned from 0 degrees f. The test-receiver syst Bandwidth with Maximum g. If the emission level of specified, then testing of reported. Otherwise the tested one by one using reported in a data sheef h. Test the EUT in the lo i. The radiation measured Transmitting mode, and j. Repeat above proced	B or 10 meter semi-anechoic chamber ne the position of the highest radiatine EUT was placed on the top of a rotate meter fully-anechoic chamber. The ne position of the highest radiation. r 10 meters away from the interferent the top of a variable-height antenna s varied from one meter to four meter n value of the field strength. Both ho enna are set to make the measurem emission, the EUT was arranged to to heights from 1 meter to 4 meters nna was tuned to heights 1 meter) a ees to 360 degrees to find the maximer makes to Peak Detect Function in Hold Mode. of the EUT in peak mode was 10dB could be stopped and the peak value emissions that did not have 10dB in g peak, quasi-peak or average method. bowest channel, the middle channel, the ements are performed in X, Y, Z axis found the X axis positioning which	er. The table was rotate on. ating table 1.5 meters table was rotated 360 nce-receiving antenna, tower. ers above the ground to rizontal and vertical ent. its worst case and ther (for the test frequency nd the rotatable table num reading. n and Specified lower than the limit es of the EUT would be nargin would be re- od as specified and the the Highest channel. s positioning for it is the worst case.				
	IGHz, through pre-scan found the w	orst case is the lowest				
	88-216 216-960 Above 960 ** Except as provided in radiators operating und 54-72 MHz, 76-88 MHz these frequency bands and 15.241. In the emission table at The emission limits sho employing a CISPR qua 110–490 kHz and above are based on measurer ANSI C63.10-2013 sec KDB 558074 D01 15.24 a. For below 1GHz, the above the ground at a 3 360 degrees to determine b. For above 1GHz, the above the ground at a 3 degrees to determine th c. The EUT was set 3 on which was mounted on d. The antenna height is determine the maximum polarizations of the anter e. For each suspected of the antenna was tuned below 30MHz, the anter was turned from 0 degr f. The test-receiver syst Bandwidth with Maximu g. If the emission level of specified, then testing of reported in a data sheef h. Test the EUT in the low i. The radiation measurer Transmitting mode, and j. Repeat above proced Remark: 1) For emission below 7	88-216 150 ** 216-960 200 ** Above 960 500 ** Except as provided in paragraph (g), fundamental emissi radiators operating under this section shall not be located in 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. Ho these frequency bands is permitted under other sections of and 15.241. In the emission table above, the tighter limit applies at the b The emission limits shown in the above table are based on employing a CISPR quasi-peak detector except for the freq 110-490 kHz and above 1000 MHz. Radiated emission limit are based on measurements employing an average detector ANSI C63.10-2013 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02 a. For below 1GHz, the EUT was placed on the top of a rota above the ground at a 3 or 10 meter semi-anechoic chambe 360 degrees to determine the position of the highest radiatio b. For above 1GHz, the EUT was placed on the top of a rota above the ground at a 3 meter fully-anechoic chamber. The degrees to determine the position of the highest radiation. c. The EUT was set 3 or 10 meters away from the interferer which was mounted on the top of a variable-height antenna d. The antenna height is varied from one meter to four meter determine the maximum value of the field strength. Both ho polarizations of the antenna are set to make the measurem e. For each suspected emission, the EUT was arranged to 1 the antenna was tuned to heights from 1 meter to 4 meters below 30MHz, the antenna was suned to heights 1 meter) a was turned from 0 degrees to 360 degrees to find the maxif f. The test-receiver system was set to Peak Detect Function Bandwidth with Maximum Hold Mode. g. If the emission level of the EUT in peak mode was 10dB specified, then testing could be stopped and the peak value reporte				

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ΔC –	V	1.0		Repor	t No.: DACE250212015F
		2) The field streng Preamplifier. The Final Test Level = Preamplifier Fact 3) Scan from 9kH	gth is calcula basic equation Receiver Re for z to 25GHz,	s recorded in the report. ted by adding the Antenna Fac on with a sample calculation is ading + Antenna Factor + Cabl the disturbance above 12.75G ed on above plots are the high	as follows: e Factor C Hz and below 30MH
)AG	found when testin spurious emission the limit need not	ig, so only at ns from the ra be reported.	oove points had been displayed adiator which are attenuated m Fundamental frequency is bloc	l. The amplitude of ore than 20dB belov
474 54 7 0		spurious emissior	n is shown.	VE	
4.7.1 E.U.T. Op					V
Operating Enviro	22.4 °C	Humidity:	54 %	Atmospheric Pressure:	101 kPa
Pretest mode:	22.4 0	TM1			
Final test mode:	1	TM1		200	
				V	
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DΔC V1.0 Report No.: DACE250212015RL001 4.7.2 Test Data: TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 5 / CH: L 80.0 dBu¥ 70 60 FCC Part 15B Class B RE 3m 50 n -6 d 40 9 30 20 10 0.0 30.000 60.00 (MHz) 300.00 1000.000 Frequency Reading Factor Level Limit Margin Height Azimuth Detector No. P/F Remark (deg.) (MHz) (dBuV) (dB) (dBuV) (dBuV) (dB) (cm) 31.1798 27.63 -0.45 40.00 QP 100 P 27.18 -12.82 1 2 70.3365 36.40 -11.72 24.68 40.00 -15.32 QP 100 Ρ P 3 119.4361 34.01 -5.63 28.38 43.50 -15.12 QP 100 Ρ 4 197.8928 36.32 -8.85 27.47 43.50 -16.03 QP 100 5 * 326.7395 41.59 -5.85 35.74 46.00 -10.26 QP 100 Ρ 6 364,2595 38.84 -4.61 34.23 46.00 -11.77 QP 100 P

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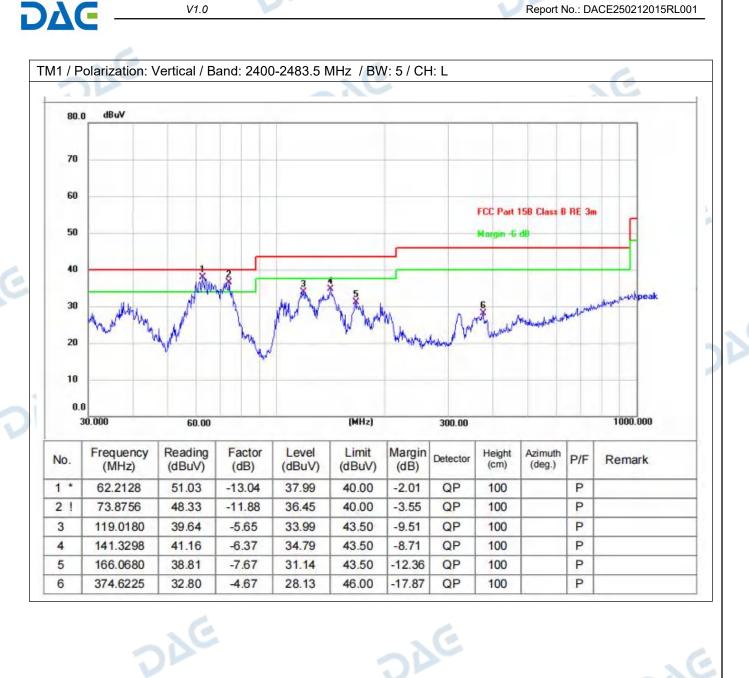
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Report No.: DACE250212015RL001



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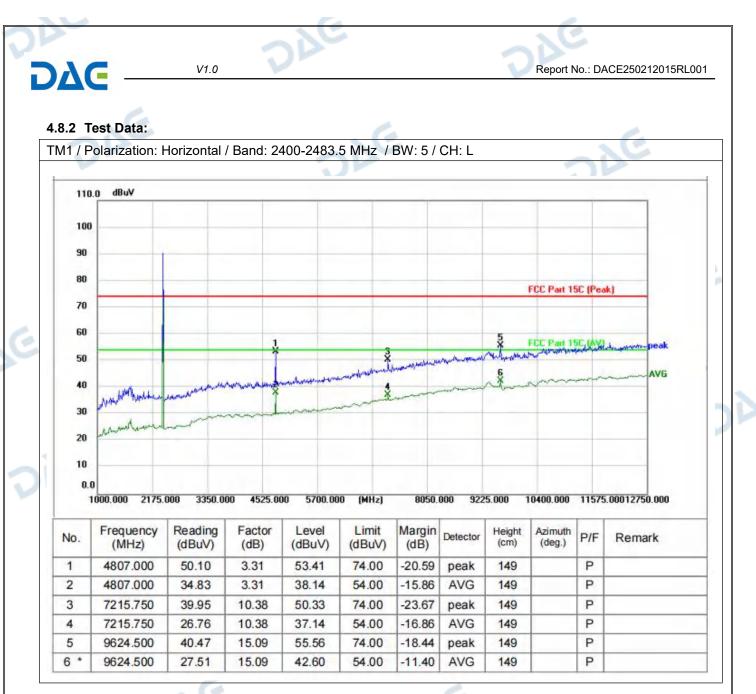
Report No.: DACE250212015RL001

4.8 Emissions in frequency bands (above 1GHz)

Test Requirement:	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 abo The emission limits show employing a CISPR qua 110–490 kHz and above	s permitted under other sections ove, the tighter limit applies at the vn in the above table are based o si-peak detector except for the fr 1000 MHz. Radiated emission li ents employing an average dete	e band edges. on measurements equency bands 9–90 kHz mits 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 3 360 degrees to determine b. For above 1GHz, the above the ground at a 3 degrees to determine the c. The EUT was set 3 or which was mounted on to d. The antenna height is determine the maximum polarizations of the anter e. For each suspected et the antenna was tuned to below 30MHz, the antern was turned from 0 degree f. The test-receiver syste Bandwidth with Maximum g. If the emission level of specified, then testing cor reported. Otherwise the tested one by one using reported in a data sheet. h. Test the EUT in the loo i. The radiation measure Transmitting mode, and j. Repeat above procedu Remark:	f the EUT in peak mode was 10d buld be stopped and the peak val emissions that did not have 10dE peak, quasi-peak or average me west channel, the middle channe ments are performed in X, Y, Z a found the X axis positioning whic irres until all frequencies measure	hber. The table was rotated ation. rotating table 1.5 meters he table was rotated 360 h. rence-receiving antenna, na tower. eters above the ground to horizontal and vertical ement. to its worst case and then rs (for the test frequency of) and the rotatable table eximum reading. ion and Specified IB lower than the limit lues of the EUT would be 3 margin would be re- ethod as specified and then d, the Highest channel. xis positioning for th it is the worst case. ed was complete.				
		GHz, through pre-scan found the					

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	240	200	2) The Pream Final ² Pream 3) Sca was v found spurio the lim	e field streng nplifier. The Test Level = nplifier Facto an from 9kH ery low. The when testin us emissior	oth is calcul basic equal Receiver R or Iz to 25GHz points mar ig, so only a ns from the be reported	is recorded in th ated by adding th ion with a sample eading + Antenna , the disturbance ked on above plo bove points had radiator which are I. Fundamental fr	e Antenna Fa e calculation is a Factor + Cal above 12.750 ots are the hig been displaye e attenuated n	s as follows ble Factor "(GHz and bel hest emission ed. The amp nore than 20	ow 30MH ons could litude of 0dB belov
_	4.8.1 E.U.T. Op	peration:							マ
	Operating Envir								
3	Temperature:	22.4 °C	>	Humidity:	54 %	Atmosphe	ric Pressure:	101 kPa	
Ļ	Pretest mode:	_	TM1				.6		
L	Final test mode:		TM1			_	0		
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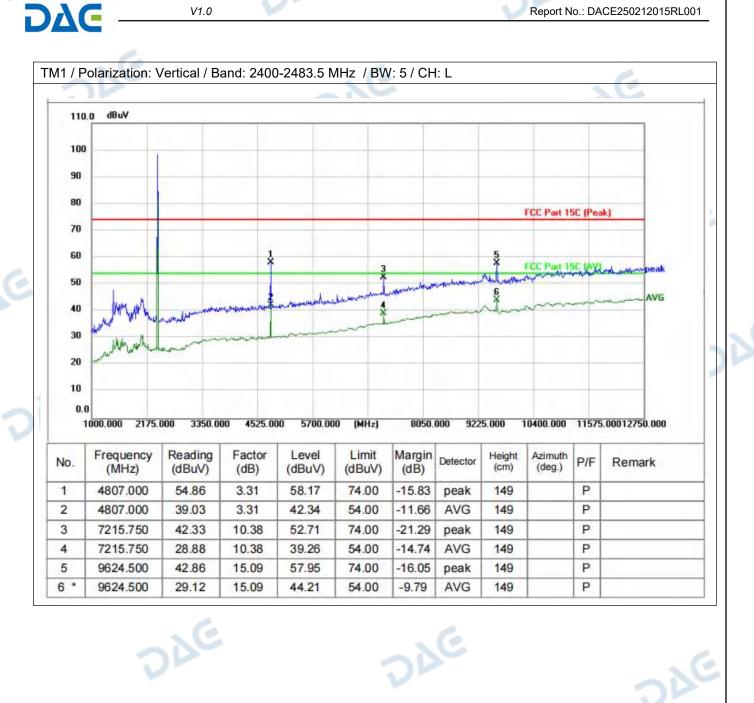
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Report No.: DACE250212015RL001



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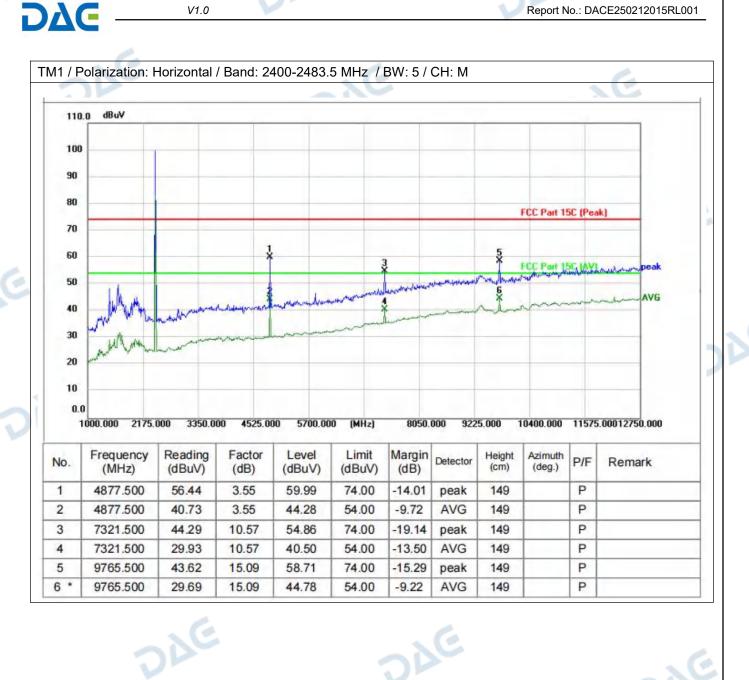
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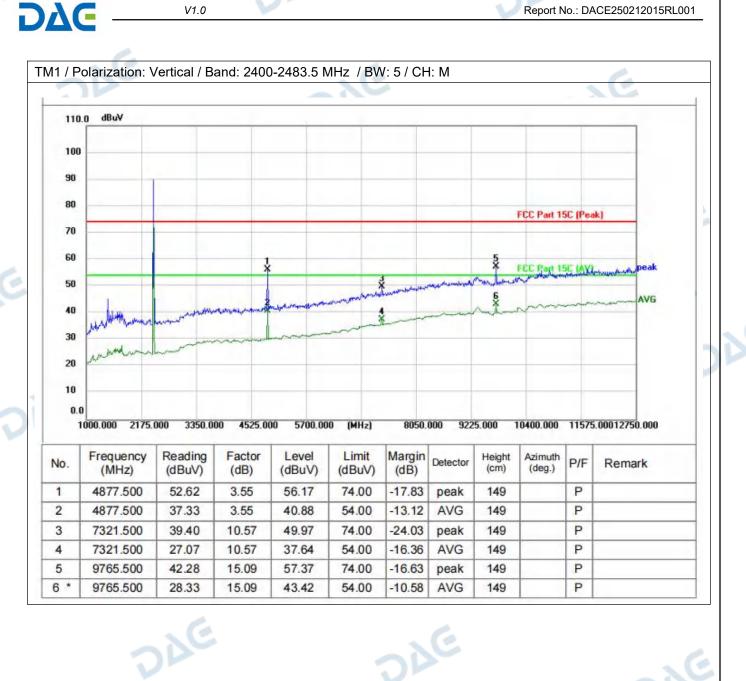
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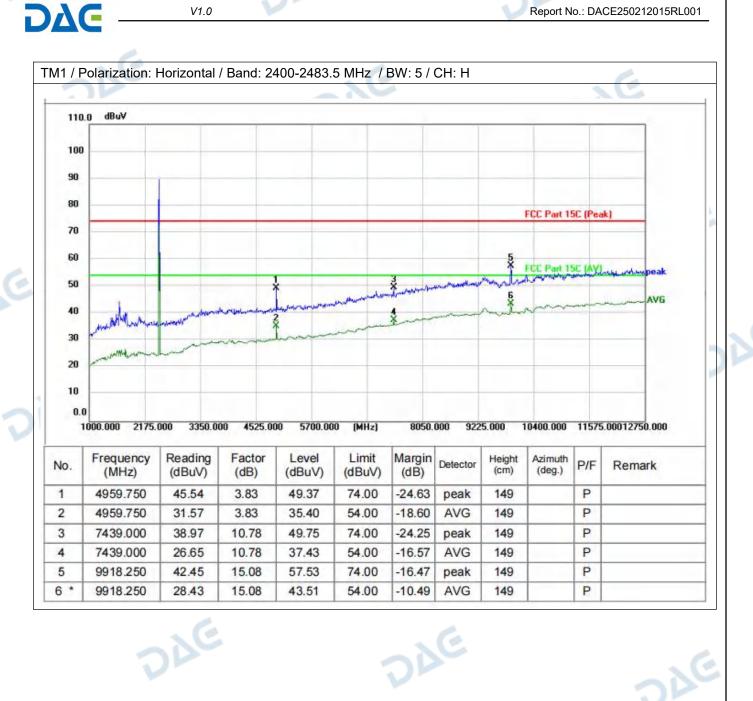
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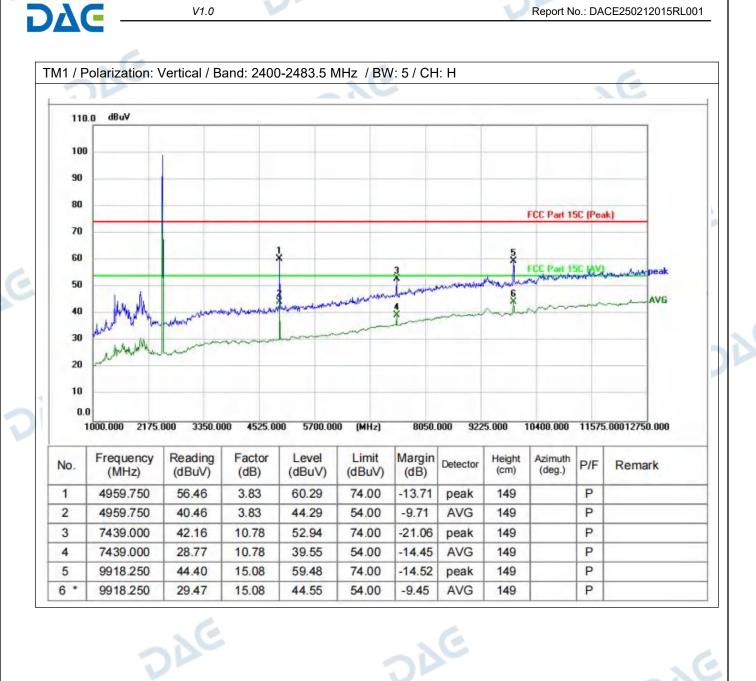
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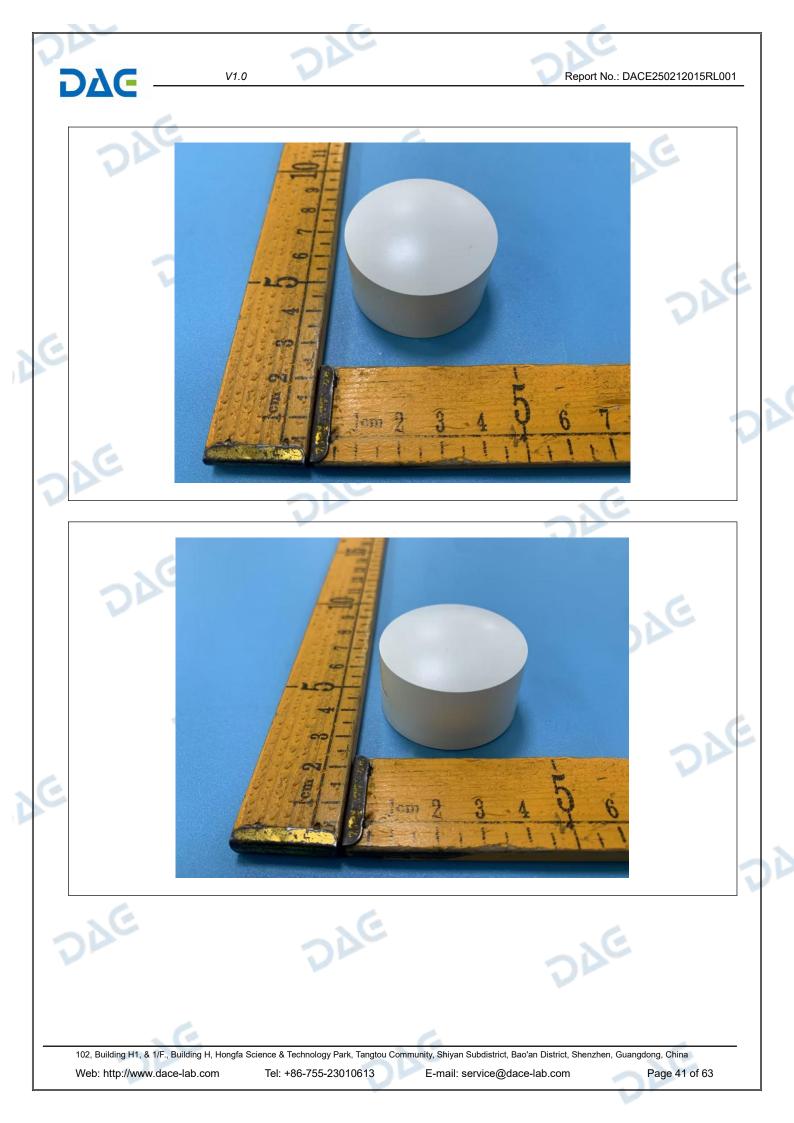
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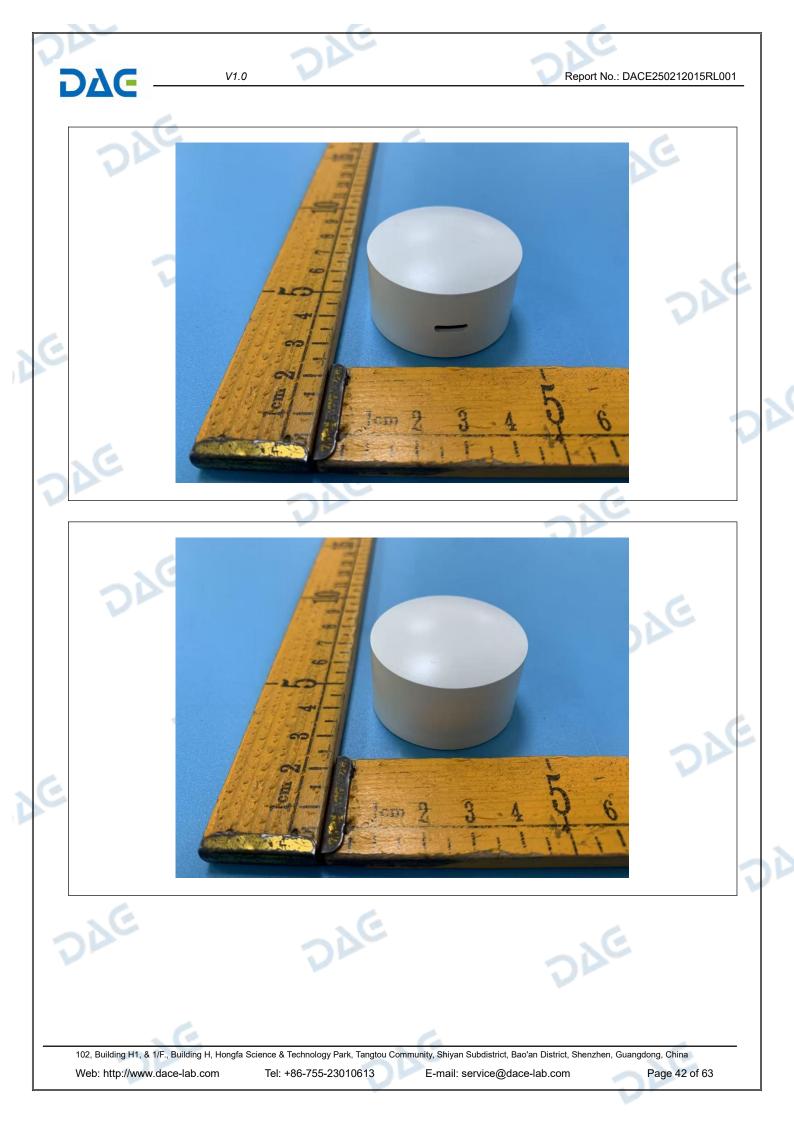
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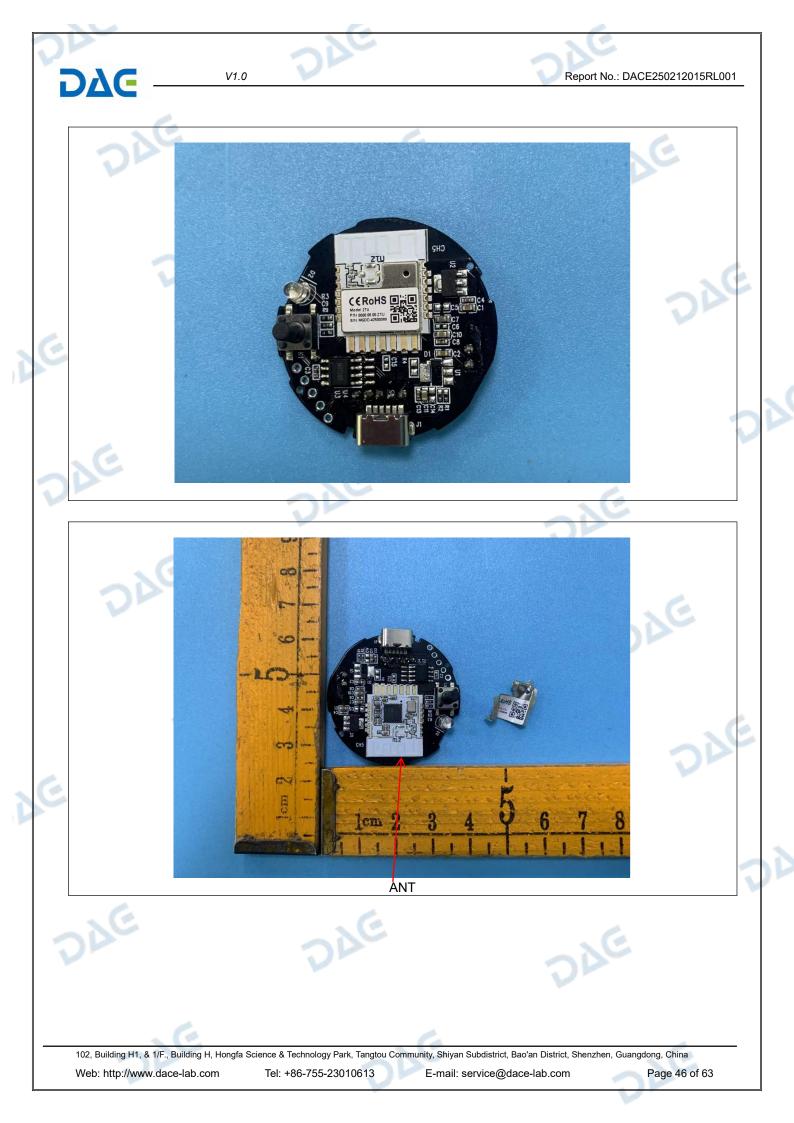


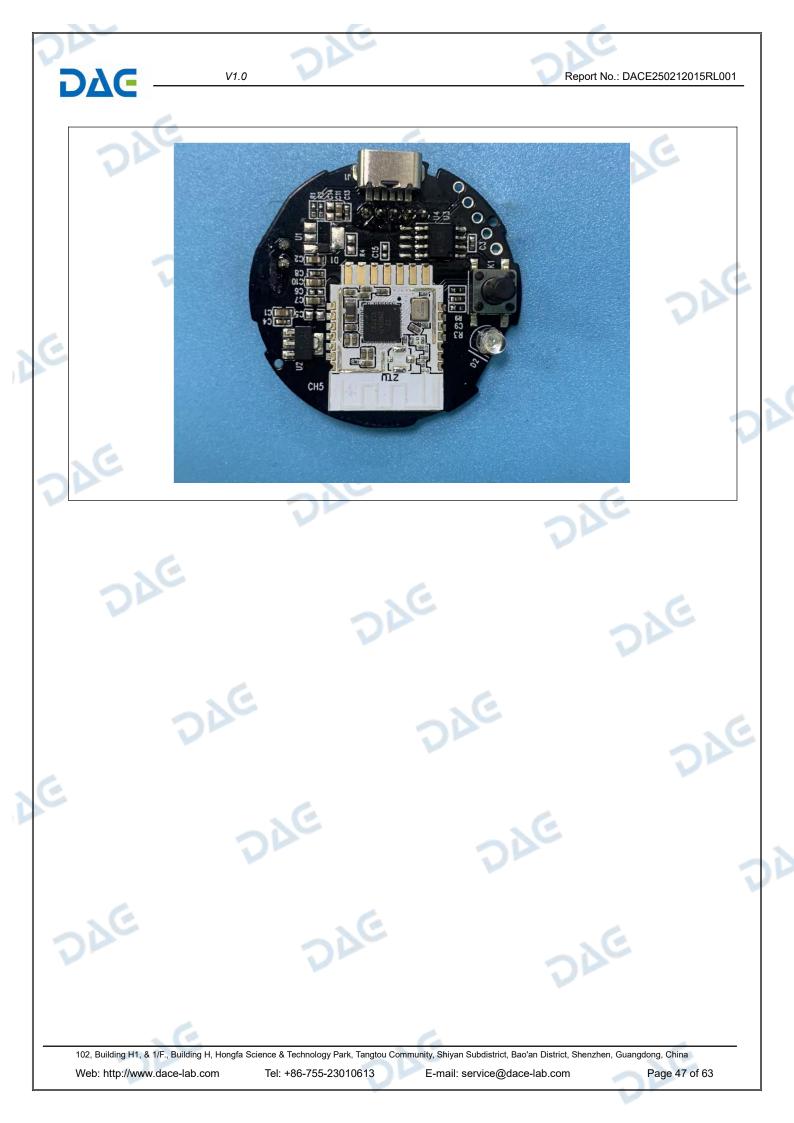














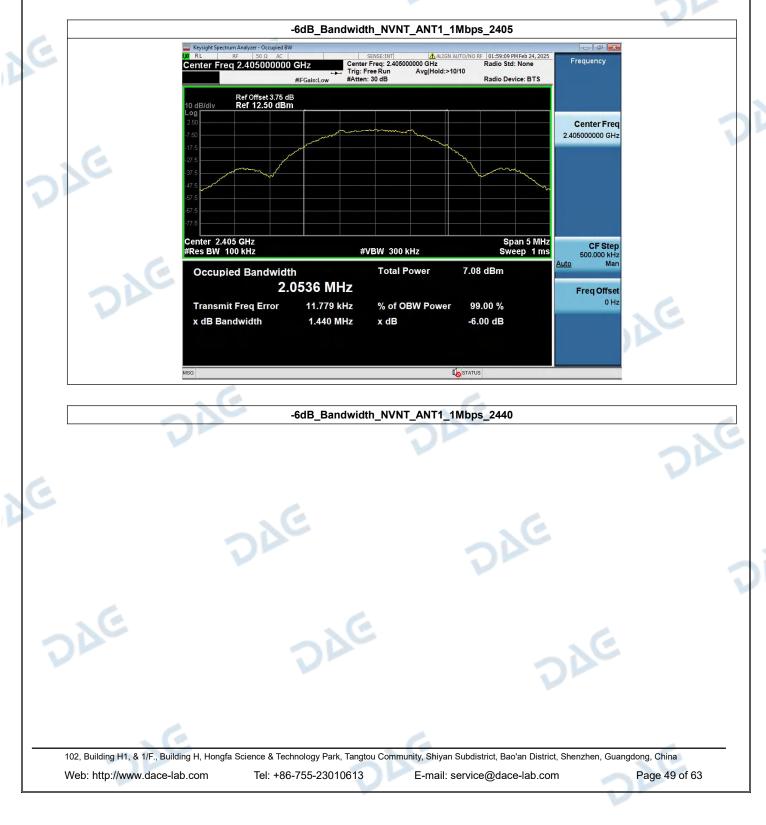
HT250212010--RD24G01--ZigBee--FCC FCC_BLE (Part15.247) Test Data

1. -6dB Bandwidth

V1.0

DAC

Condition	Antenna	Rate	Frequency (MHz)	-6dB BW(kHz)	limit(kHz)	Result
NVNT	ANT1	1Mbps	2405.00	1439.80	500	Pass
NVNT	ANT1	1Mbps	2440.00	1430.12	500	Pass
NVNT	ANT1	1Mbps	2480.00	1389.42	500	Pass



DAG V1.0 Report No.: DACE250212015RL001 SENSE:INT ALGN AUTO/NO RF 02:02:54 PM Feb 24, 2025 Center Freq: 2:440000000 GHz Radio Std: None Trig: Free Run Avg|Hold:>10/10 #Atten: 30 dB Padio Data Keysight Spectrum Analyzer - Occupied BW - - - - X Frequency Center Freq 2.440000000 GHz #IFGain:Low Ref Offset 3.72 dB Ref 16.44 dBm **Center Freq** 2.440000000 GHz Center 2.44 GHz #Res BW 100 kHz Span 5 MHz Sweep 1 ms CF Step 500.000 kHz Mar #VBW 300 kHz Auto **Occupied Bandwidth Total Power** 6.82 dBm 2.0576 MHz **Freq Offset** 0 Hz Transmit Freq Error 11.689 kHz % of OBW Power 99.00 % x dB Bandwidth 1.430 MHz -6.00 dB x dB **I**status -6dB_Bandwidth_NVNT_ANT1_1Mbps_2480
 SENSE:INTI
 Image: Autor Autor / No RF
 02:06:10 PM Feb 24, 2025

 Center Freq: 2.480000000 GHz
 Radio Std: None

 Trig: Free Run
 Avg|Hold: 10/10

 #Atten: 30 dB
 B
 a x Keysight Spectrum Analyzer - Occupied BW Frequency Center Freq 2.480000000 GHz #IEGain:Lov Ref Offset 3.85 dB Ref 16.70 dBm 0 dB/di **Center Freq** 2.480000000 GHz Center 2.48 GHz #Res BW 100 kHz Span 5 MHz Sweep 1 ms CF Step 500.000 kHz #VBW 300 kHz Ma Auto **Total Power** 7.52 dBm Occupied Bandwidth 2.0458 MHz Freq Offset 0 H: Transmit Freq Error 12.606 kHz % of OBW Power 99.00 % 4 1.389 MHz x dB Bandwidth x dB -6.00 dB STATUS DAG)AC DAG 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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2. 99% Occupied Bandwidth

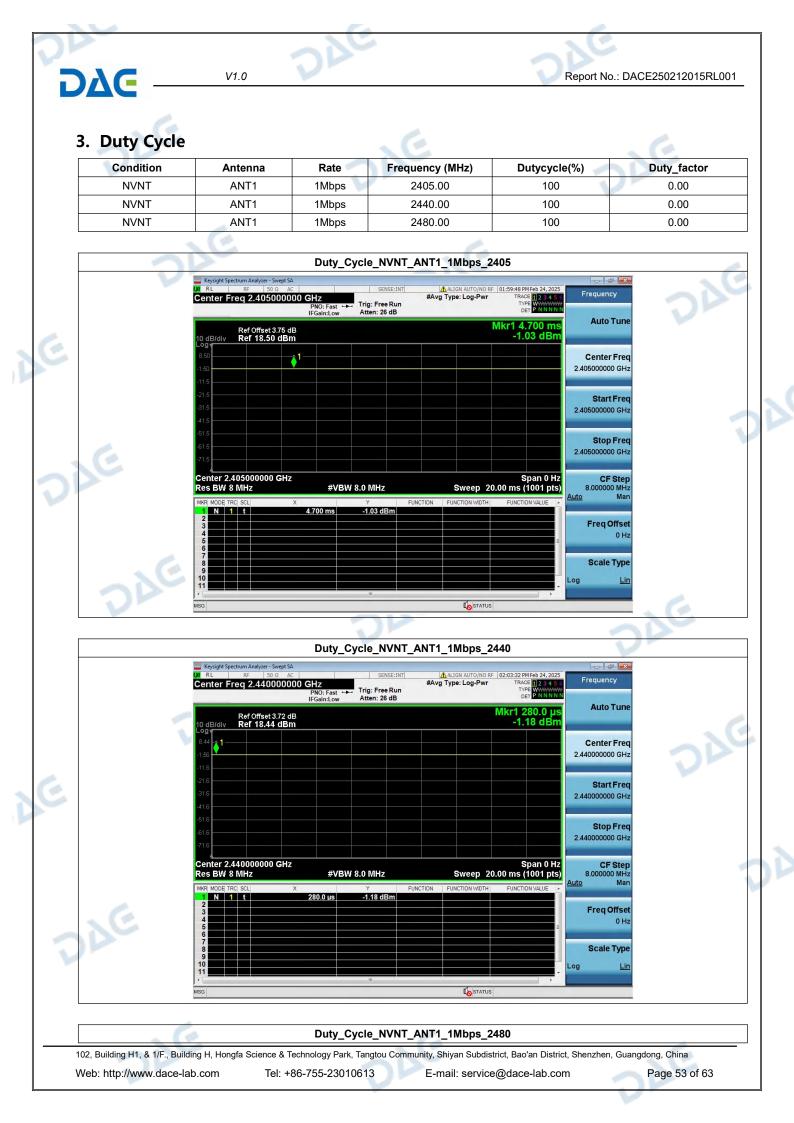
DAC

Condition	Condition Antenna		ndition Antenna Rate Frequency (M		Frequency (MHz)	99%%BW(MHz)
NVNT	ANT1	1Mbps	2405.00	2.051		
NVNT	ANT1	1Mbps	2440.00	2.053		
NVNT	ANT1	1Mbps	2480.00	2.054		

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0PC	ale	- ie
DAG -	V1.0	Report No.: DACE250212015RL001
DAC.	Center Freq 2.480000000 GHz	ALIGN AUTO/NO RF 02:06:30 PMFeb 24, 2025 z Radio Std: None old: 10/10 Radio Device: BTS
	Ref Offset 3.85 dB 10 dB/div Ref 14.70 dBm	
	Log 4.70 	Center Freq 2.480000000 GHz
	-10.3 25.3 35.3	the second secon
V	-45.3	
	-75.3 Center 2.48 GHz	Span 5 MHz CF Step
E	#Res BW 30 kHz #VBW 100 kHz Occupied Bandwidth Total Power	Sweep 5.333 ms CF Step 9.10 dBm Auto Man
	2.0539 MHz Transmit Freq Error 12.417 kHz % of OBW Po	wer 99.00 % 0 Hz
	x dB Bandwidth 2.615 MHz x dB	-26.00 dB
1C	MSG	С status



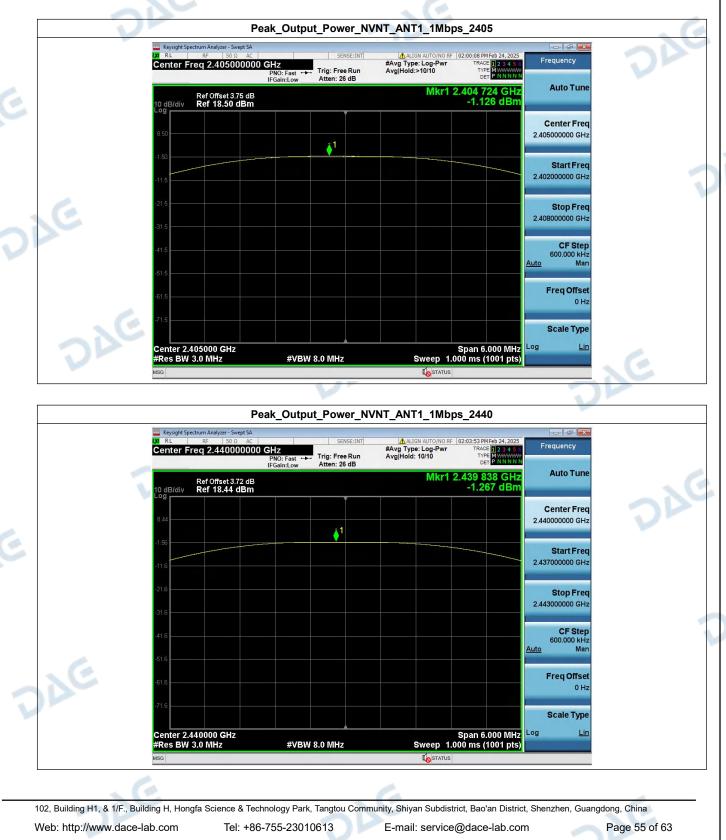
240	Keysight Spectrum Analyzer - Swept SA M RL RF 50 Ω AC Center Freq 2,480000000	PNO: Fast ++ Trig: Free Run	ALIGN AUTO/NO RF 02:06 #Avg Type: Log-Pwr	HE PMFeb 24, 2025 TRACE 1 2 3 4 5 TYPE	E
	10 dB/dly Ref Offset 3.85 dB Log	n Gameen.	Mkr′	Auto Tune Auto Tune Center Freq	
	-5.90 -15.3 -25.3 			2.48000000 GHz Start Freq 2.48000000 GHz	
	-45.3 -66.3 -86.3 -75.3			Stop Freq 2.480000000 GHz	
E	Center 2.480000000 GHz Res BW 8 MHz MRR MODE TRC SCL X	#VBW 8.0 MHz	Sweep 20.00 n	Span 0 Hz ns (1001 pts) NCTION VALUE	
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			Freq Offset	
6	8 9 10 11 ×		I o status	Log Lin	
DAC		0AG		E	
			2		

D

4. Peak Output Power

DΔG

4. Peak Output Power									
Condition	Antenna	Rate	Frequency (MHz)	Max. Conducted Power(dBm)	Max. Conducted Power(mW)	Limit(mW)	Result		
NVNT	ANT1	1Mbps	2405.00	-1.13	0.77	1000	Pass		
NVNT	ANT1	1Mbps	2440.00	-1.27	0.75	1000	Pass		
NVNT	ANT1	1Mbps	2480.00	-0.65	0.86	1000	Pass		



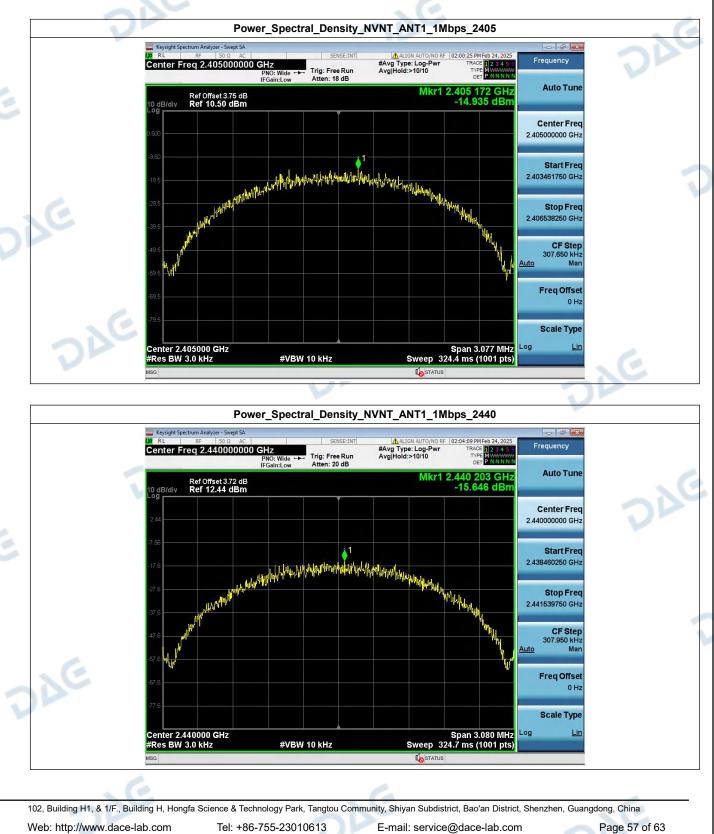
26	Peak	_Output_Power_NV	NT_ANT1_1Mbps_24	80	
LXI	Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC enter Freq 2.480000000 GF	SENSE:INT Z NO: Fast →→→ Trig: Free Run		ACE 1 2 3 4 5 6	
	Ref Offset 3.85 dB dB/div Ref 18.70 dBm	Gain:Low Atten: 26 dB	Mkr1 2.479	652 GHz Auto Tune 650 dBm	
				Center Freq 2.480000000 GHz	
	20	∳ ¹		Start Freq 2.477000000 GHz	. (-
-11	3			Stop Freq	DAG
-31	.3			2.483000000 GHz	
-41				CF Step 600.000 kHz <u>Auto</u> Man	
-61	.3			Freq Offset 0 Hz	
-71	.3			Scale Type	V
	enter 2.480000 GHz tes BW 3.0 MHz	#VBW 8.0 MHz	Span Sweep 1.000 ms	6.000 MHz Log Lin s (1001 pts)	
	2	P		26]
		. 6			

5. Power Spectral Density

DΔG

Condition	Antenna	Rate	Frequency (MHz)	Power Spectral Density(dBm/3kHz)	Limit(dBm/3kHz)	Result
NVNT	ANT1	1Mbps	2405.00	-14.94	8	Pass
NVNT	ANT1	1Mbps	2440.00	-15.22	8	Pass
NVNT	ANT1	1Mbps	2480.00	-13.74	8	Pass

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DAG	Power_Spectral_Density_N Keysight Spectrum Analyzer - Swept SA M RL RF S0 QAC SENSE:INT Center Freq 2.480000000 GHz	ALIGN AUTO/NO RF 02:07:25 PM Feb 24, 2025	
2	Ref Offset 3.85 dB Trig: Free Run 10 dB/div Ref 6.70 dBm -3.30 -11 -13.3 -11 -3.31 -11 -3.33 -11 -3.33 -11 -3.33 -12 -3.33 -13 -3.33 -13 -3.33 -14 -3.33 -14 -3.33 -14 -3.33 -15 -3.33 -14	Avg Hold: 10/10 TYPE DUT Auto T Mkr1 2.479 544 GHz -13.739 dBm Auto T Center F 2.48000000 Start F 2.481540500 Start F 2.481540500 Start F 2.481540500 Start F 308.100 Start F 308.100 Start F 308.100 Start F Start F Start F 500 Start F 500 </th <th>req GHz GHz CHz CHz CHz Man</th>	req GHz GHz CHz CHz CHz Man
DIE Die		Scale T Span 3.081 MHz Sweep 324.9 ms (1001 pts)	
		DAG	





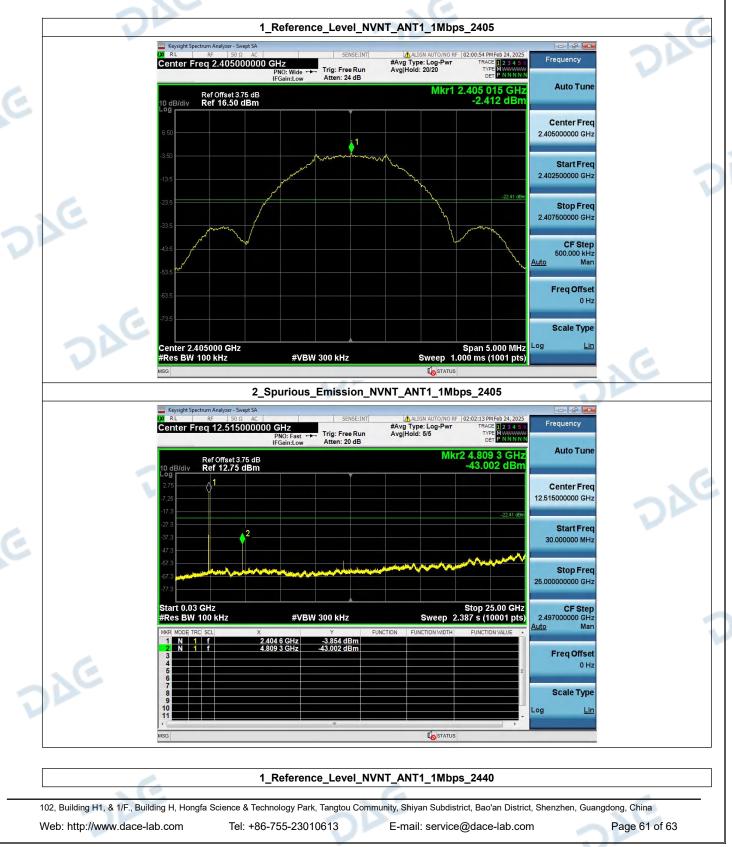
V1.0

Report No.: DACE250212015RL001

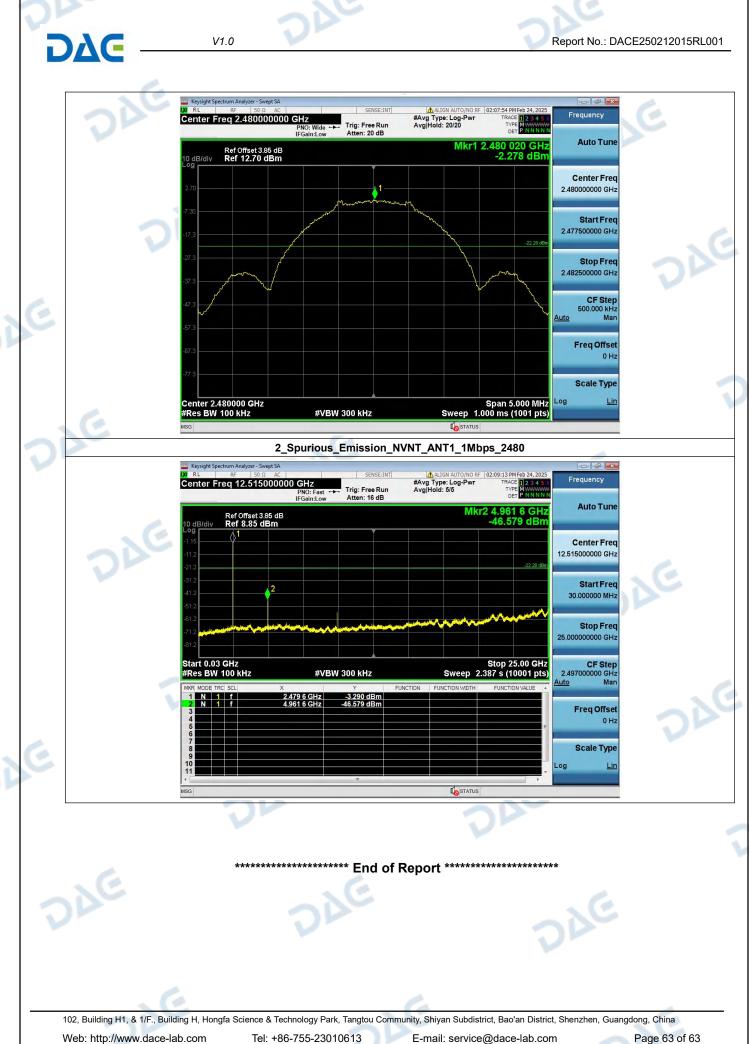
7. Spurious Emission

DΔG

7. Spurious Emission									
Condition	Antenna	Modulation	TX_Frequency (MHz)	Ref_level(dBm)	Spurious level(dBm)	limit(dBm)	Result		
NVNT	ANT1	1Mbps	2405.00	-2.412	-43.002	-22.412	Pass		
NVNT	ANT1	1Mbps	2440.00	-3.249	-45.581	-23.249	Pass		
NVNT	ANT1	1Mbps	2480.00	-2.278	-46.579	-22.278	Pass		







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