



RF TEST REPORT

For

VITRINEMEDIA Enterprise

Product Name: LIGHT&PLAY

Test Model(s).: 0106_2_00

Report Reference No. : DACE241101016RL002

FCC ID : 2AR5X-0106

Applicant's Name : VITRINEMEDIA Enterprise

Address : 50 route de la Reine 92100 Boulogne-Billancourt FRANCE

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

102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park,

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

Guangdong, China

Test Specification Standard : 47 CFR Part 15.247

Date of Receipt : November 1, 2024

Date of Test : November 1, 2024 to November 30, 2024

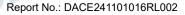
Data of Issue : November 30, 2024

Result : Pass

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Apply for company information

Applicantic Name	١.	VITDINEMEDIA Entermine				
Applicant's Name	÷	VITRINEMEDIA Enterprise				
Address	:	50 route de la Reine 92100 Boulogne-Billancourt FRANCE				
Product Name	:	LIGHT&PLAY				
Test Model(s)	:	0106_2_00				
Series Model(s)	ė	0106_2_01; 0106_3_00; 0106_3_01; 0106_4_00; 0106_4_01;				
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	ü	0106_5_00; 0106_5_01; 0106_7_00; 0106_7_01				
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.

Compiled by:

Keren Huang

Keren Huang / Test Engineer

November 30, 2024

Supervised by:

Approved by:

Machael Mo / Manager

November 30, 2024

November 30, 2024

November 30, 2024

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Report No.: DACE241101016RL002

Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE241101016RL002	November 30, 2024
	1	2	

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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 : VITRINEMEDIA Enterprise

Address : 50 route de la Reine 92100 Boulogne-Billancourt FRANCE

Manufacturer : Huizhou Vitrinemedia Optoelectronic Technology Co., Ltd

Address: Building #4, Desheng Industrial Park, Changbu Village, Xinxu Town,

Huiyang District, Huizhou City, China

2.2 Description of Device (EUT)

Product Name:	LIGHT&PLAY
Model/Type reference:	0106_2_00
Series Model:	0106_2_01; 0106_3_00; 0106_3_01; 0106_4_00; 0106_4_01;
P.	0106_5_00; 0106_5_01; 0106_7_00; 0106_7_01
Model Difference:	Their electrical circuit designs, layouts, components used and internal wiring layouts are identical, only the product sizes are different.
Trade Mark:	VITRINEMEDIA
Power Supply:	DC 24V from adapte
Operation Frequency:	2402MHz to 2480MHz
Number of Channels:	40
Modulation Type:	GFSK
Antenna Type:	External
Antenna Gain:	3dBi
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 Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	11	2422 MHz	21	2442 MHz	31	2462 MHz
2	2404 MHz	12	2424 MHz	22	2444 MHz	32	2464 MHz
3	2406 MHz	13	2426 MHz	23	2446 MHz	33	2466 MHz
4	2408 MHz	14	2428 MHz	24	2448 MHz	34	2468 MHz
5	2410 MHz	15	2430 MHz	25	2450 MHz	35	2470 MHz
6	2412 MHz	16	2432 MHz	26	2452 MHz	36	2472 MHz
7	2414 MHz	17	2434 MHz	27	2454 MHz	37	2474 MHz
8	2416 MHz	18	2436 MHz	28	2456 MHz	38	2476 MHz
9	2418 MHz	19	2438 MHz	29	2458 MHz	39	2478 MHz
10	2420 MHz	20	2440 MHz	30	2460 MHz	40	2480 MHz

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

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below:

Test channel	Frequency (MHz)
rest channel	BLE
Lowest channel	2402MHz
Middle channel	2440MHz
Highest channel	2480MHz
Remark:Only the data of the wo	rst mode would be recorded in this report.

Report No.: DACE241101016RL002

2.3 Description of Test Modes

No	Title	Description
TM1	Lowest channel	Keep the EUT connect to AC power line and works in continuously transmitting mode with GFSK modulation.
TM2	Middle channel	Keep the EUT connect to AC power line and works in continuously transmitting mode with GFSK modulation.
ТМЗ	Highest channel	Keep the EUT connect to AC power line and works in continuously transmitting mode with GFSK modulation.

2.4 Description of Support Units

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

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2.5 Equipments Used During The Test

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	1	
Cable	SCHWARZ BECK	104	1	2024-03-20	2025-03-19	
Pulse Limiter	SCHWARZ BECK	VTSD 9561-F Pulse limiter 10dB Attenuation	561-G071	2023-12-12	2024-12-11	
50ΩCoaxial Switch	Anritsu	MP59B	M20531	/	1	
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	1	2024-09-27	2025-09-26	
EMI test software	EZ -EMC	EZ	V1.1.42	1	1	

6dB Bandwidth

Maximum Conducted Output Power

Power Spectral Density

Emissions in non-restricted frequency bands

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	/	
Power divider	MIDEWEST	PWD-2533	SMA-79	2023-05-11	2026-05-10
RF Sensor Unit	Tachoy Information Technology(she nzhen) Co.,Ltd.	TR1029-2	000001	1	1
Wideband radio communication tester	R&S	CMW500	113410	2024-06-12	2025-06-11
Vector Signal Generator	Keysight	N5181A	MY50143455	2023-12-11	2024-12-10
Signal Generator	Keysight	N5182A	MY48180415	2023-12-12	2024-12-11
Spectrum Analyzer	Keysight	N9020A	MY53420323	2023-12-12	2024-12-11

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

Elinissions in frequency bands (above 10112)											
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date						
EMI Test software	Farad	EZ -EMC	V1.1.42	1	/						
Positioning Controller	MF	MF-7802	61	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	1	1	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	Cable(HF)#1 Schwarzbeck			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.

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					
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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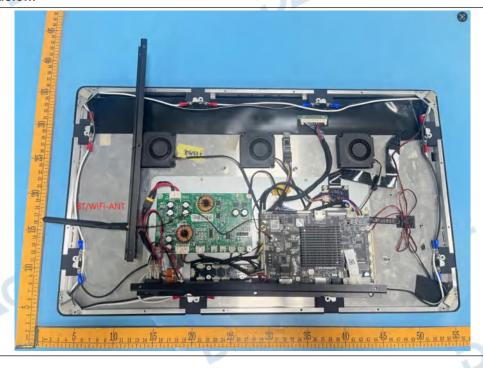
3 Evaluation Results (Evaluation)

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.

3.1.1 Conclusion:



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4 Radio Spectrum Matter Test Results (RF)

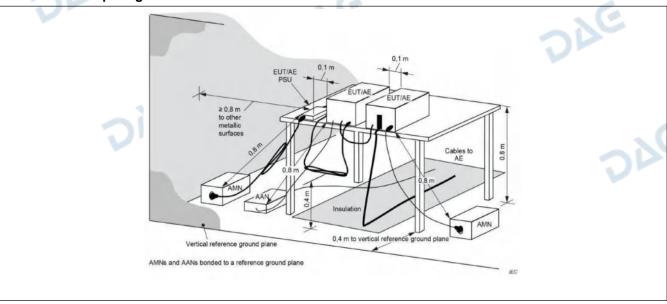
4.1 Conducted Emission at AC power line

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 µH/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.									
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:	22 °C		Humidity:	46 %	Atmospheric Pressure:	102 kPa			
Pretest mode: TM									
Final test mode:									

4.1.2 Test Setup Diagram:



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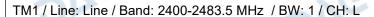
Tel: +86-755-23010613

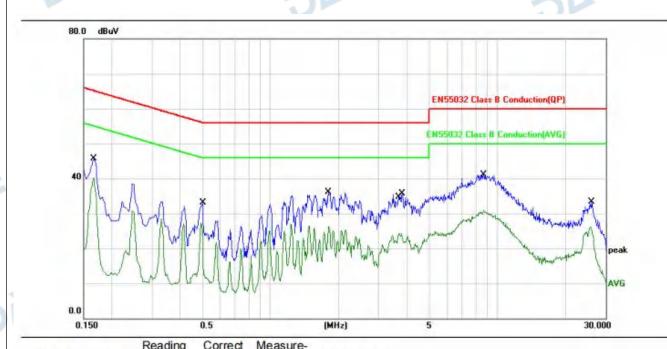
E-mail: service@dace-lab.com

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4.1.3 Test Data:





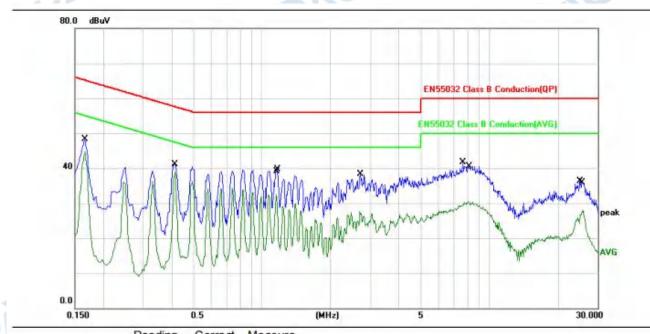
No.	Mk.	Freq.	Level	Factor	ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1660	35.64	10.10	45.74	65.15	-19.41	QP	
2	*	0.1660	30.18	10.10	40.28	55.15	-14.87	AVG	
3		0.4940	17.25	10.08	27.33	46.10	-18.77	AVG	
4		0.5020	22.94	10.08	33.02	56.00	-22.98	QP	
5		1.7980	26.14	10.01	36.15	56.00	-19.85	QP	
6		1.8020	16.26	10.01	26.27	46.00	-19.73	AVG	
7		3.6980	14.14	10.13	24.27	46.00	-21.73	AVG	
8		3.8100	25.55	10.15	35.70	56.00	-20.30	QP	
9		8.7180	30.74	10.29	41.03	60.00	-18.97	QP	
10		8.7180	20.57	10.29	30.86	50.00	-19.14	AVG	
11		25.6860	15.26	10.87	26.13	50.00	-23.87	AVG	
12		25.8860	22.49	10.88	33.37	60.00	-26.63	QP	

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TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1660	38.16	10.10	48.26	65.15	-16.89	QP	
2		0.1660	34.78	10.10	44.88	55.15	-10.27	AVG	
3		0.4140	30.98	10.07	41.05	57.57	-16.52	QP	
4	*	0.4140	28.87	10.07	38.94	47.57	-8.63	AVG	
5		1.1539	22.44	10.07	32.51	46.00	-13.49	AVG	
6		1.1660	29.70	10.07	39.77	56.00	-16.23	QP	
7		2.6980	17.65	10.04	27.69	46.00	-18.31	AVG	
8		2.7180	28.19	10.04	38.23	56.00	-17.77	QP	
9		7.6700	31.41	10.26	41.67	60.00	-18.33	QP	
10		8.0900	20.14	10.28	30.42	50.00	-19.58	AVG	
11		25.1060	25.46	10.84	36.30	60.00	-23.70	QP	
12		25.9020	17.00	10.88	27.88	50.00	-22.12	AVG	

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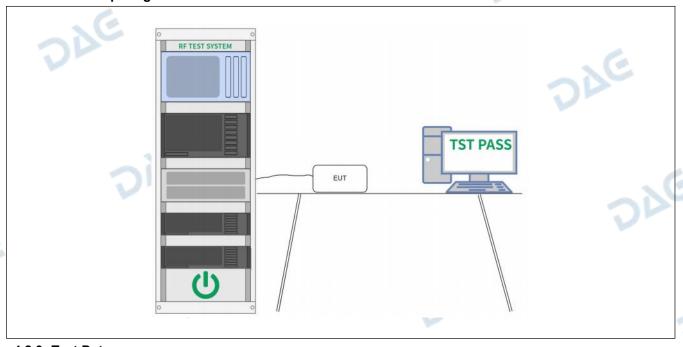
4.2 6dB Bandwidth

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:	22 °C		Humidity:	46 %	Atmospheric Pressure:	102 kPa		
Pretest mode: TM1, TM			TM2, TM3			C		
Final test mode: TM1, TM2, T								

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

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)

4.3.1 E.U.T. Operation:

Operating Environment:								
Temperature:	22 °C		Humidity:	46 %	-	Atmospheric Pressure:	102 kPa	- 2/
Pretest mode:		TM1,	TM2, TM3					SI
Final test mode		TM1,	TM2, TM3					

4.3.2 Test Setup Diagram:

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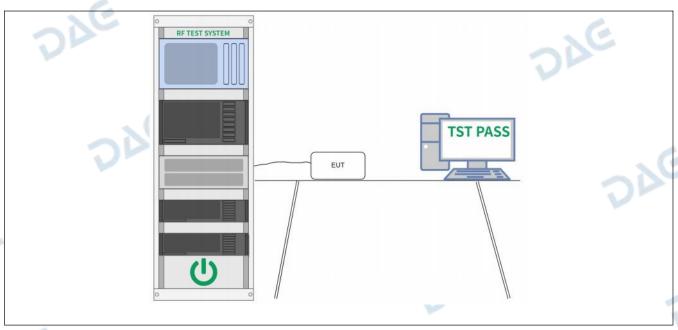
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4.3.3 Test Data:

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Please Refer to Appendix for Details.

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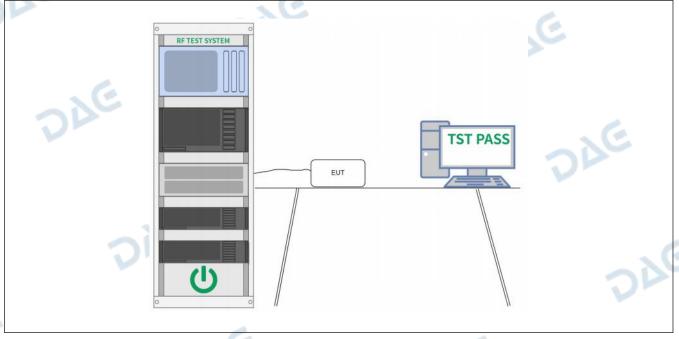
4.4 Power Spectral Density

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:	22 °C		Humidity:	46 %	Atmospheric Pressure:	102 kPa		
Pretest mode:	TM1,	TM2, TM3			4			
Final test mode:			TM2, TM3					

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to Appendix for Details.

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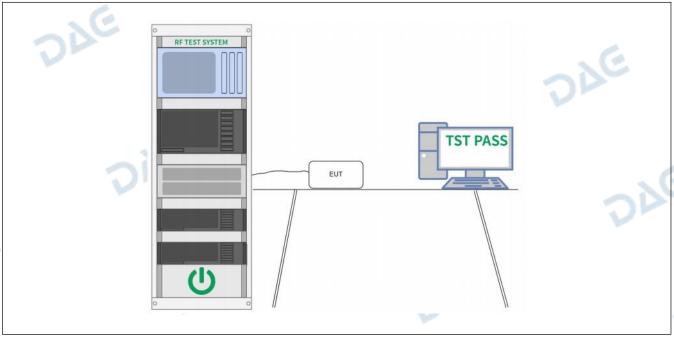
4.5 Emissions in non-restricted frequency bands

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:	22 °C		Humidity:	46 %	Atmospheric Pressure:	102 kPa		
Pretest mode: TM1, TM2, TM3			TM2, TM3			C		
Final test mode: TM1, TM2, TM3			TM2, TM3					

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)

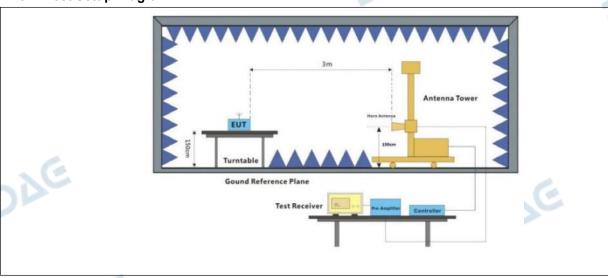
Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`						
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	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				
1	Above 960	500	3				
Ve	radiators operating under 54-72 MHz, 76-88 MHz, 1 these frequency bands is and 15.241. In the emission table above The emission limits shown employing a CISPR quasi-110–490 kHz and above 1	aragraph (g), fundamental emission this section shall not be located in to 74-216 MHz or 470-806 MHz. Howe permitted under other sections of the tighter limit applies at the ball in the above table are based on mepeak detector except for the frequence 000 MHz. Radiated emission limits employing an average detector.	the frequency bands ever, operation within his part, e.g., §§ 15.231 and edges. heasurements ency bands 9–90 kHz, in these three bands				
Test Method:	ANSI C63.10-2013 section						
Dua addusta	KDB 558074 D01 15.247						
Procedure:	ANSI C63.10-2013 section	10.10.5.2	- XC				

Report No.: DACE241101016RL002

4.6.1 E.U.T. Operation:

Operating Environment:								
Temperature:	22 °C		Humidity:	46 %	Atmospheric Pressure:	102 kPa		
Pretest mode:		TM1,	TM2, TM3		. 6			
Final test mode		TM1,	TM2, TM3					

4.6.2 Test Setup Diagram:



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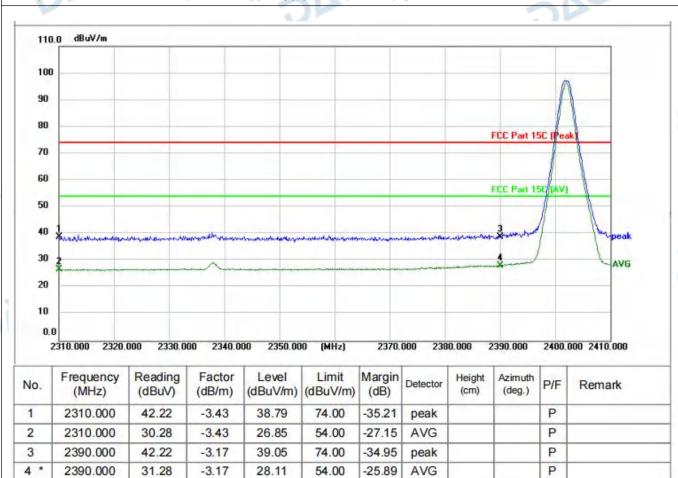
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DAG

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4.6.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L



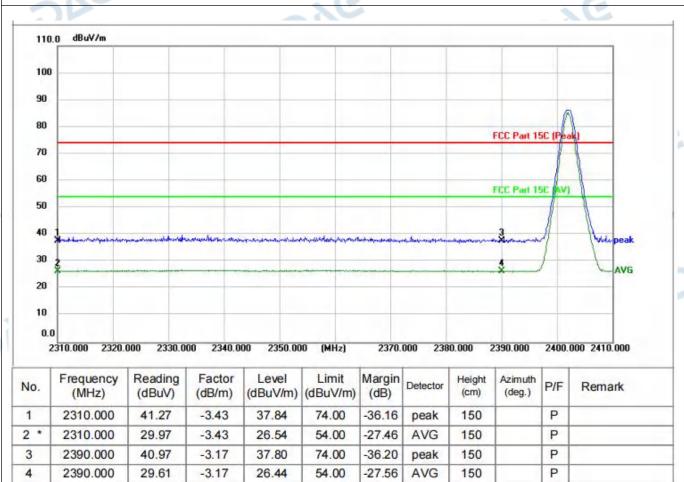
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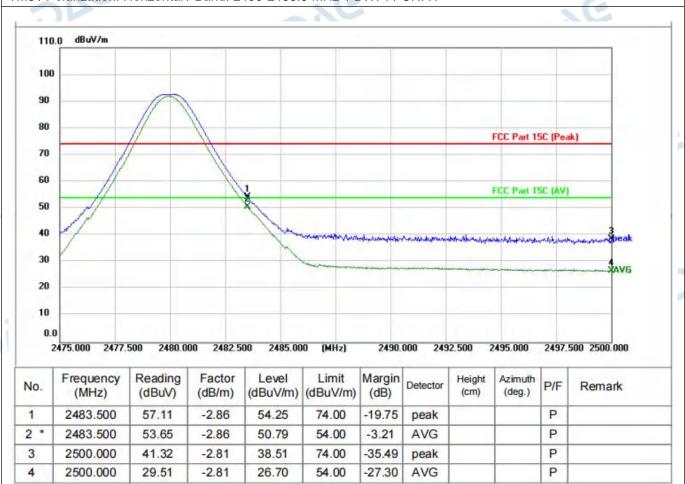
TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L



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TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H



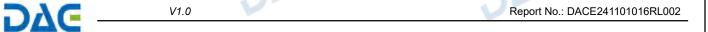
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TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H

2500.000

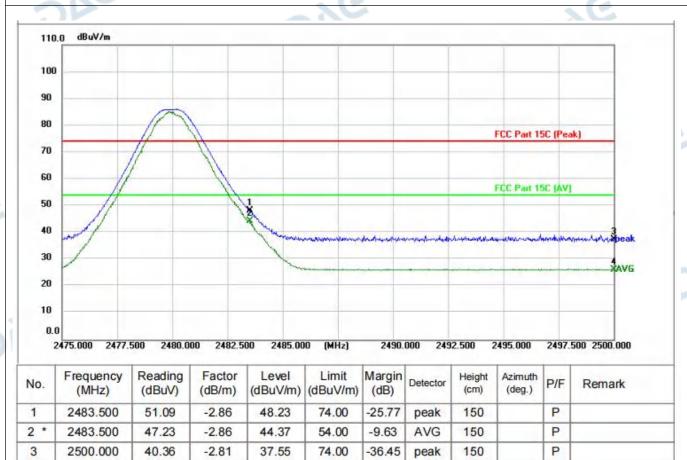
4

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29.18

-2.81

26.37



54.00

-27.63

AVG

150

P



4.7 Emissions in frequency bands (below 1GHz)

Test Requirement:	restricted bands, as defined	In addition, radiated emissions whin § 15.205(a), must also comply § 15.209(a)(see § 15.205(c)).`	nich fall in the 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				
	Above 960	500	3				
	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 1 360 degrees to determine the b. For above 1GHz, the EUT above the ground at a 3 met degrees 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 valupolarizations of the antenna e. For each suspected emissible the antenna was tuned to he below 30MHz, the antenna was tare to the second to the se	was placed on the top of a rotation of meter semi-anechoic chamber. The position of the highest radiation was placed on the top of a rotation of the highest radiation. The tastion of the highest radiation of the highest radiation. The tastion of the highest radiation of the field strength antenna to the field strength. Both horize are set to make the measurement of the EUT was arranged to its highest from 1 meter to 4 meters (for was tuned to heights 1 meter) and of 360 degrees to find the maximum of the semi-arrange to the field strength.	The table was rotated in the table was rotated in the table 1.5 meters able was rotated 360 ereceiving antenna, ower. It is above the ground to contal and vertical int. If worst case and then for the test frequency of the rotatable table				
	f. The test-receiver system verification. Bandwidth with Maximum Higg. If the emission level of the specified, then testing could reported. Otherwise the emistested one by one using peareported in a data sheet. h. Test the EUT in the lowes i. The radiation measurement Transmitting mode, and four j. Repeat above procedures Remark:	vas set to Peak Detect Function a	wer than the limit of the EUT would be rgin would be reas specified and then e Highest channel. Positioning for sthe worst case.				

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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

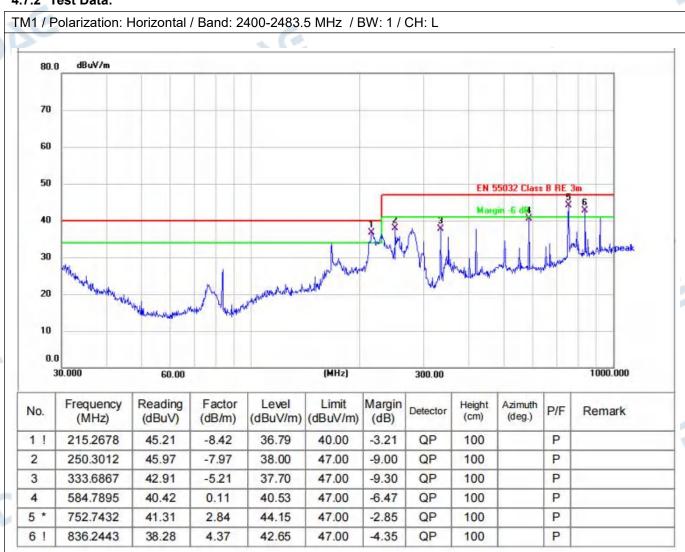
Report No.: DACE241101016RL002

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:	22 °C	- >	Humidity:	46 %	Atmospheric Pressure:	102 kPa		
Pretest mode: TN					. 6			
Final test mode:	1	TM1			270			

4.7.2 Test Data:



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TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L dBuV/m 80.0 70 60 50 EN 55032 Class B RE 3r 40 30 20 10 0.0 30.000 60.00 (MHz) 300.00 1000.000

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!	42.4508	42.77	-7.86	34.91	40.00	-5.09	QP	100		Р	
2 !	166.6514	43.47	-7.44	36.03	40.00	-3.97	QP	100		Р	
3	250.3012	46.48	-7.97	38.51	47.00	-8.49	QP	100		Р	
4	417.6411	42.78	-2.72	40.06	47.00	-6.94	QP	100		Р	
5 *	584.7895	44.35	0.10	44.45	47.00	-2.55	QP	100		Р	
6	919.2866	34.38	5.65	40.03	47.00	-6.97	QP	100		Р	

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4.8 Emissions in frequency bands (above 1GHz)

	15.205(a), must also comply	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 total	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

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:

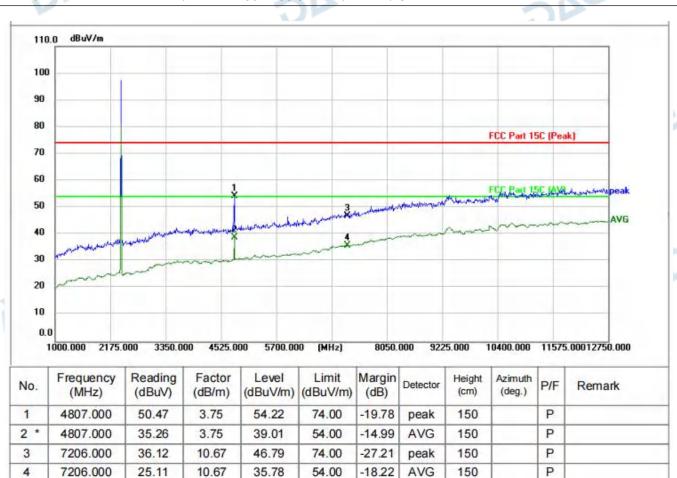
Operating Environment:								
Temperature:	22 °C	- >	Humidity:	46 %	Atmospheric Pressure:	102 kPa		
Pretest mode: TM1			TM2, TM3		. 6			
Final test mode: TM1, TM2, TM			TM2, TM3		200			

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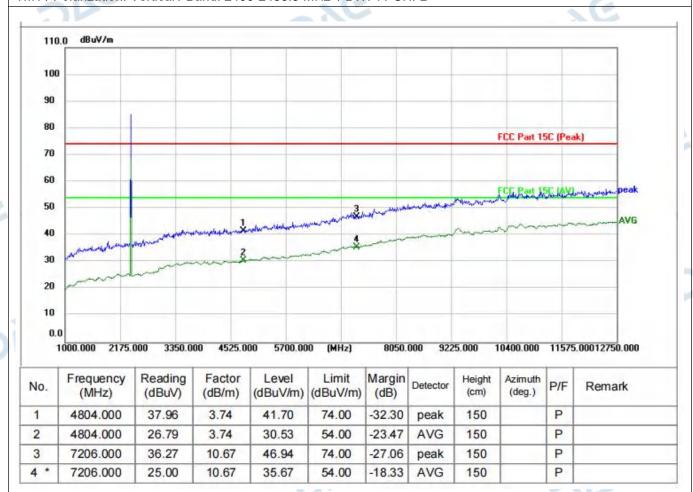
4.8.2 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L



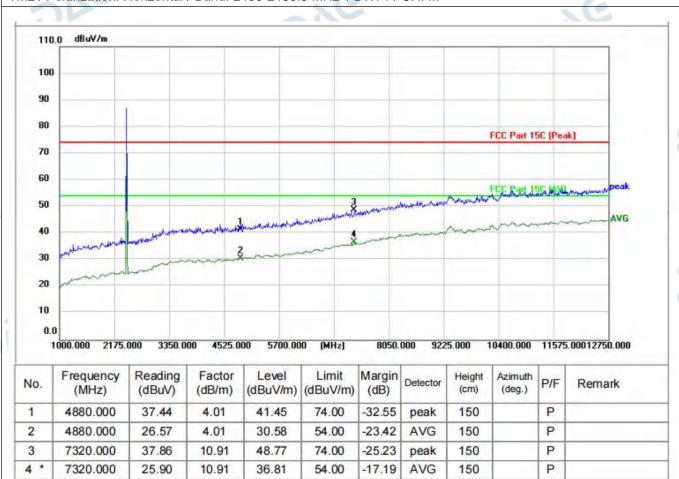


TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L



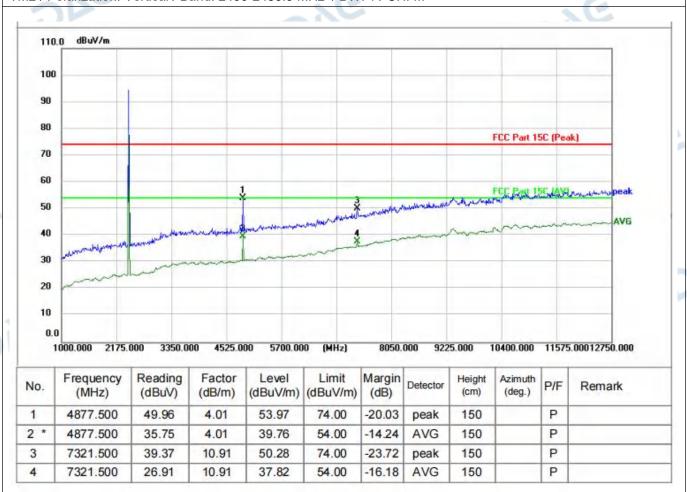


TM2 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: M





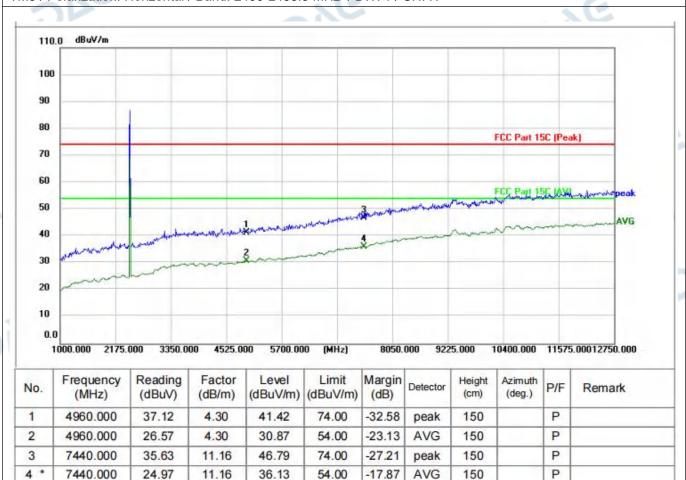
TM2 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: M



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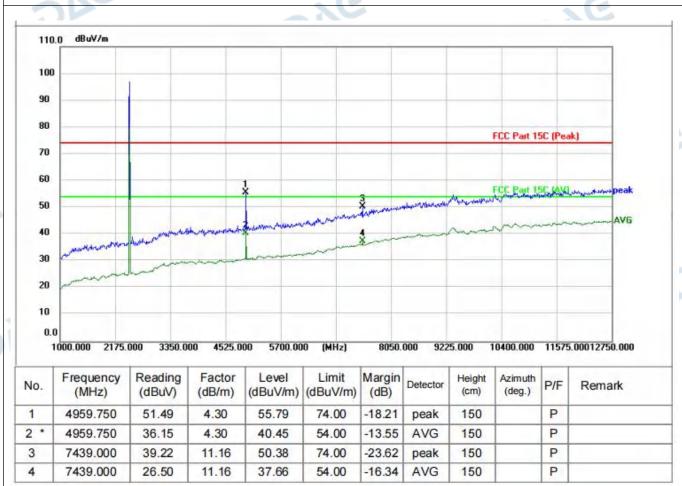


TM3 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H

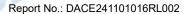




TM3 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H



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5 TEST SETUP PHOTOS

Reference to the Test setup file for details.

6 PHOTOS OF THE EUT

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Reference to the external photos file and internal photos file for details.

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Appendix

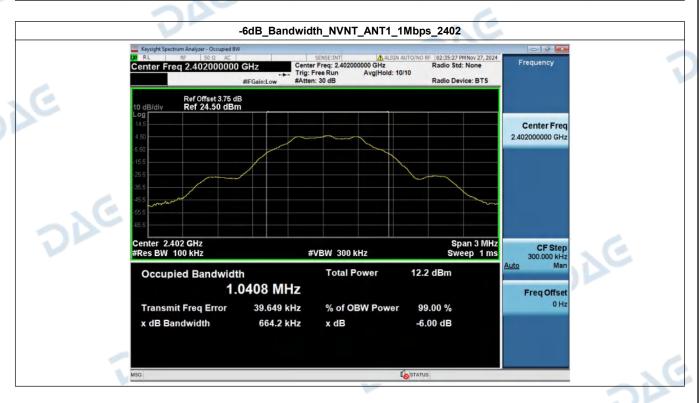
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HT241011020--0106_2_00--BLE--FCC FCC_BLE (Part15.247) Test Data

1. -6dB Bandwidth

Condition	Antenna	Rate	Frequency (MHz)	-6dB BW(kHz)	limit(kHz)	Result
NVNT	ANT1	1Mbps	2402.00	664.23	500	Pass
NVNT	ANT1	1Mbps	2440.00	670.20	500	Pass
NVNT	ANT1	1Mbps	2480.00	665.18	500	Pass
NVNT	ANT1	2Mbps	2402.00	1144.05	500	Pass
NVNT	ANT1	2Mbps	2440.00	1104.50	500	Pass
NVNT	ANT1	2Mbps	2480.00	1140.20	500	Pass

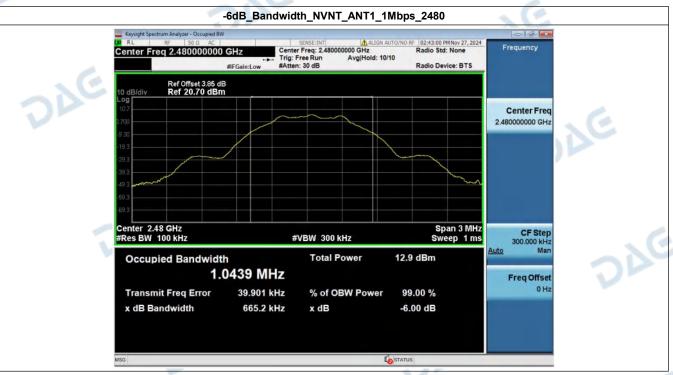


-6dB_Bandwidth_NVNT_ANT1_1Mbps_2440

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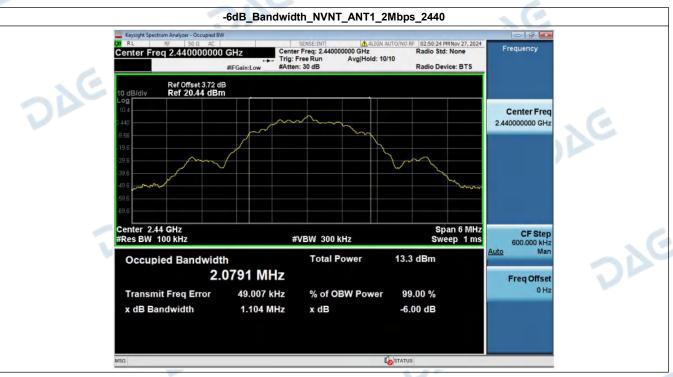


-6dB_Bandwidth_NVNT_ANT1_2Mbps_2402

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-6dB_Bandwidth_NVNT_ANT1_2Mbps_2480

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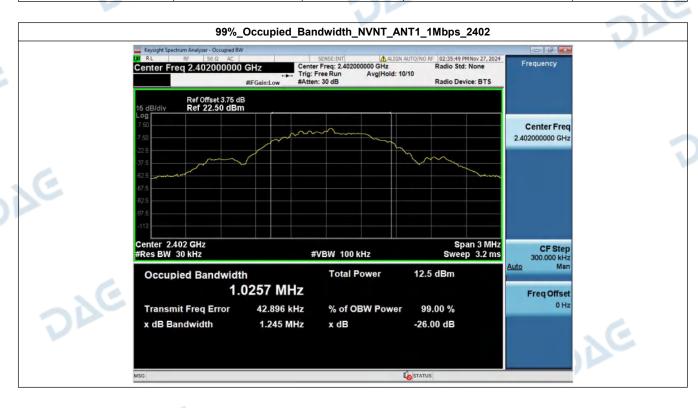
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2. 99% Occupied Bandwidth

Condition	Antenna	Rate	Frequency (MHz)	99%%BW(MHz)
NVNT	ANT1	1Mbps	2402.00	1.026
NVNT	ANT1	1Mbps	2440.00	1.028
NVNT	ANT1	1Mbps	2480.00	1.033
NVNT	ANT1	2Mbps	2402.00	2.064
NVNT	ANT1	2Mbps	2440.00	2.048
NVNT	ANT1	2Mbps	2480.00	2.046

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99%_Occupied_Bandwidth_NVNT_ANT1_1Mbps_2440

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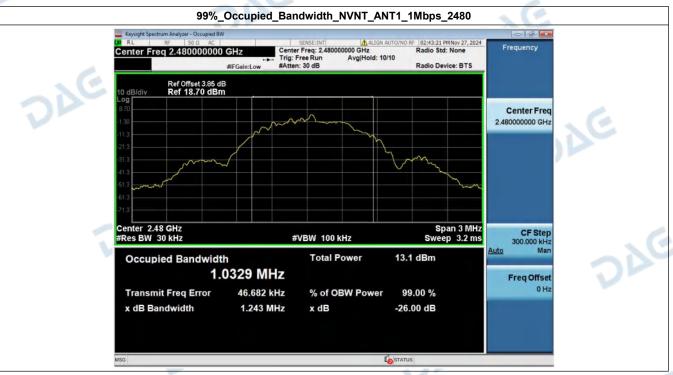
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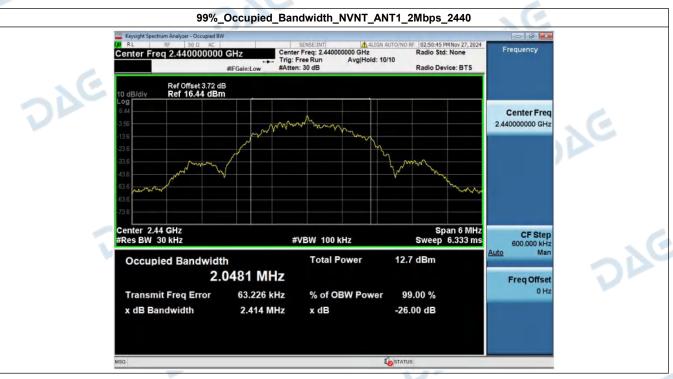


99%_Occupied_Bandwidth_NVNT_ANT1_2Mbps_2402

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99%_Occupied_Bandwidth_NVNT_ANT1_2Mbps_2480

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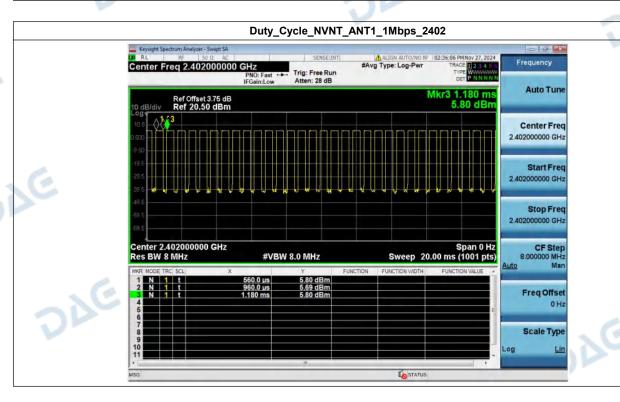
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3. Duty Cycle

V1.0

Condition	Antenna	Rate	Frequency (MHz)	Dutycycle(%)	Duty_factor
NVNT	ANT1	1Mbps	2402.00	67.74	1.69
NVNT	ANT1	1Mbps	2440.00	67.74	1.69
NVNT	ANT1	1Mbps	2480.00	64.52	1.90
NVNT	ANT1	2Mbps	2402.00	32.26	4.91
NVNT	ANT1	2Mbps	2440.00	32.26	4.91
NVNT	ANT1	2Mbps	2480.00	32.26	4.91

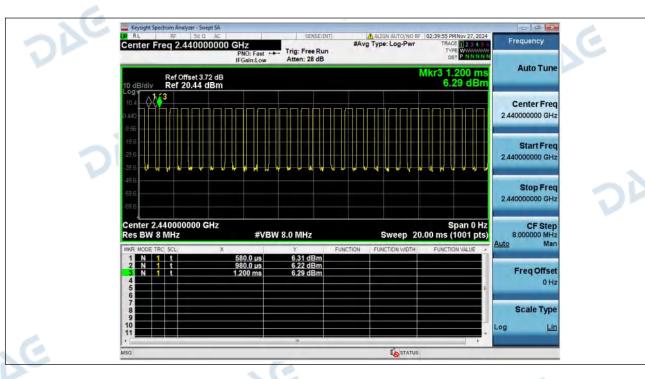


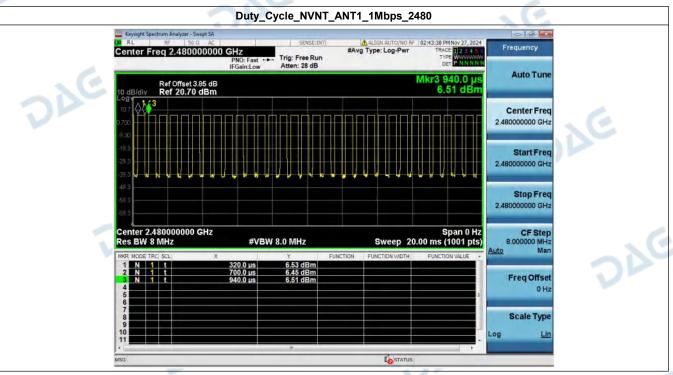
Duty_Cycle_NVNT_ANT1_1Mbps_2440

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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Duty_Cycle_NVNT_ANT1_2Mbps_2402

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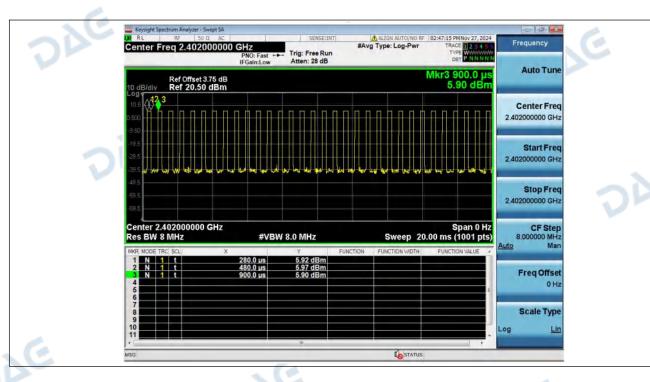
Web: http://www.dace-lab.com

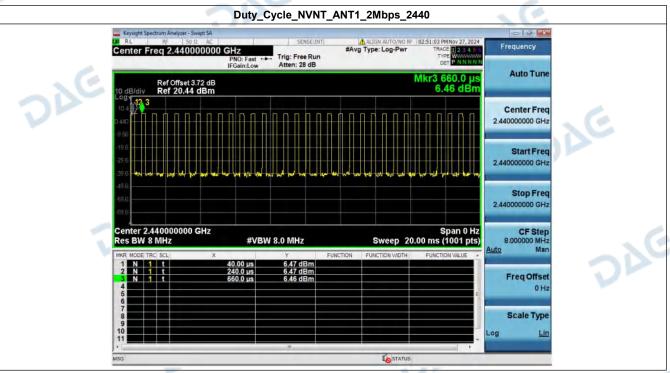
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Duty_Cycle_NVNT_ANT1_2Mbps_2480

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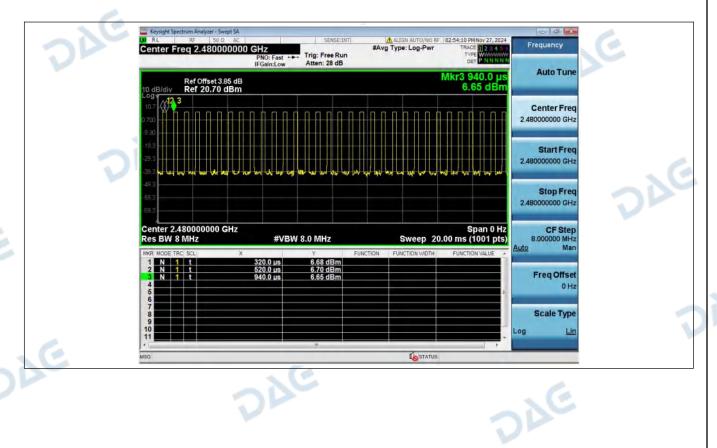


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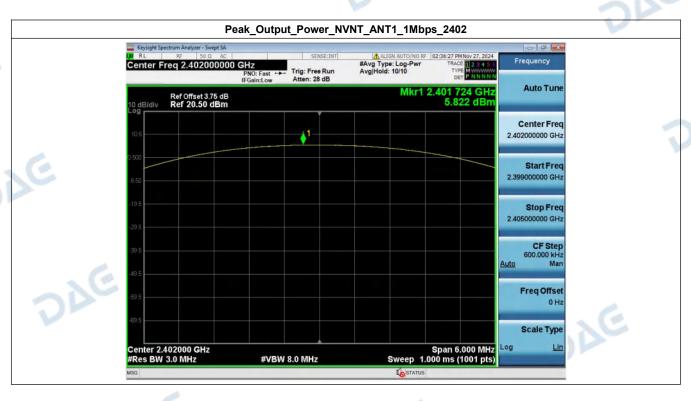
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4. Peak Output Power

V1.0

Condition	Antenna	Rate	tate Frequency Max. Conducted Max. Conducted (MHz) Power(dBm) Power(mW)			Limit(mW)	Result
NVNT	ANT1	1Mbps	2402.00	5.82	3.82	1000	Pass
NVNT	ANT1	1Mbps	2440.00	6.32	4.29	1000	Pass
NVNT	ANT1	1Mbps	2480.00	6.53	4.49	1000	Pass
NVNT	ANT1	2Mbps	2402.00	5.94	3.93	1000	Pass
NVNT	ANT1	2Mbps	2440.00	6.49	4.45	1000	Pass
NVNT	ANT1	2Mbps	2480.00	6.71	4.69	1000	Pass

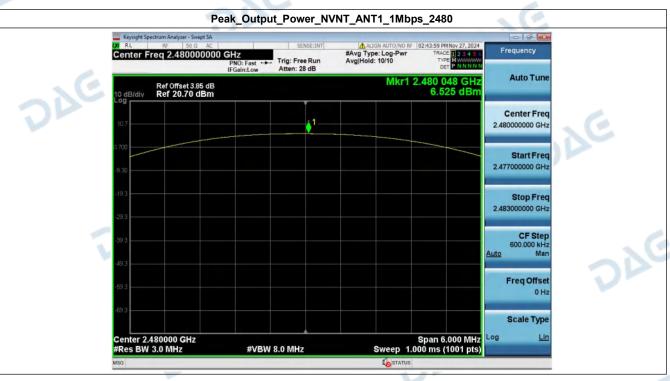


Peak_Output_Power_NVNT_ANT1_1Mbps_2440

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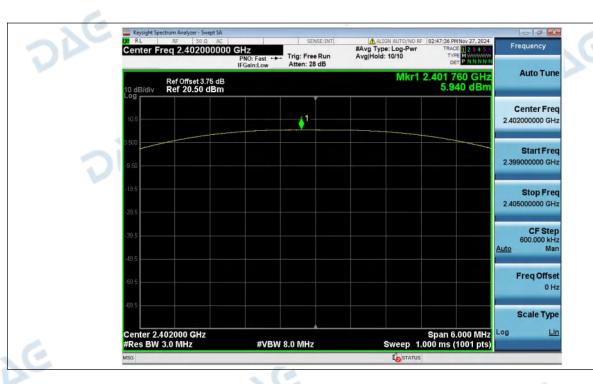


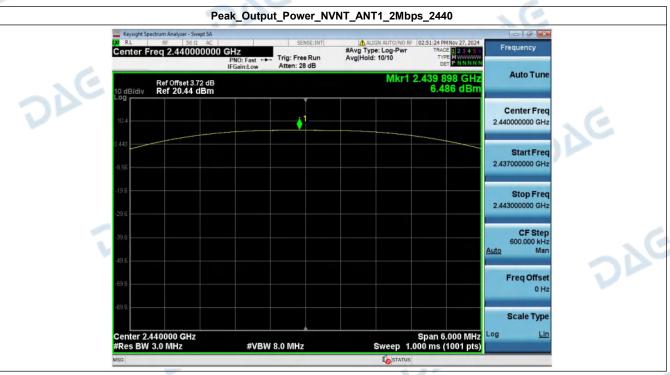


Peak_Output_Power_NVNT_ANT1_2Mbps_2402

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V1.0





Peak_Output_Power_NVNT_ANT1_2Mbps_2480

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V1.0



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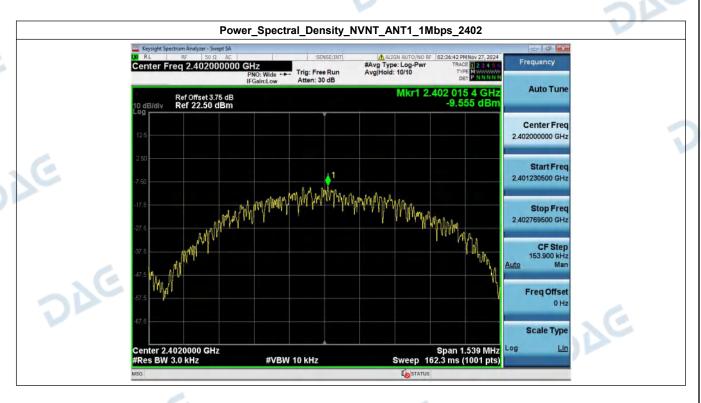
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Report No.: DACE241101016RL002

5. Power Spectral Density

Condition	Antenna	Rate	Frequency (MHz)	Power Spectral Density(dBm/3kHz)	Limit(dBm/3kHz)	Result
NVNT	ANT1	1Mbps	2402.00	-9.55	8	Pass
NVNT	ANT1	1Mbps	2440.00	-8.41	8	Pass
NVNT	ANT1	1Mbps	2480.00	-9.42	8	Pass
NVNT	ANT1	2Mbps	2402.00	-12.37	8	Pass
NVNT	ANT1	2Mbps	2440.00	-10.45	8	Pass
NVNT	ANT1	2Mbps	2480.00	-10.62	8	Pass



Power_Spectral_Density_NVNT_ANT1_1Mbps_2440

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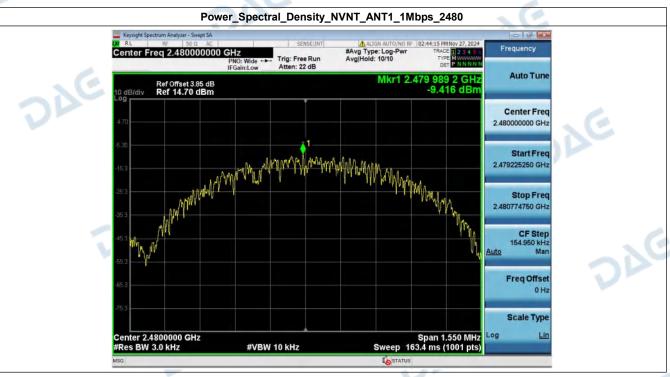
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Power_Spectral_Density_NVNT_ANT1_2Mbps_2402

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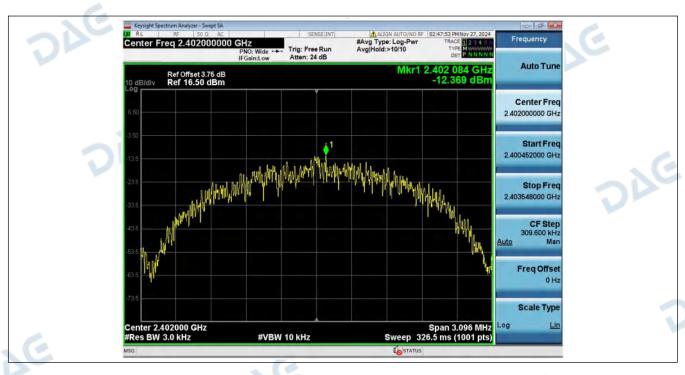
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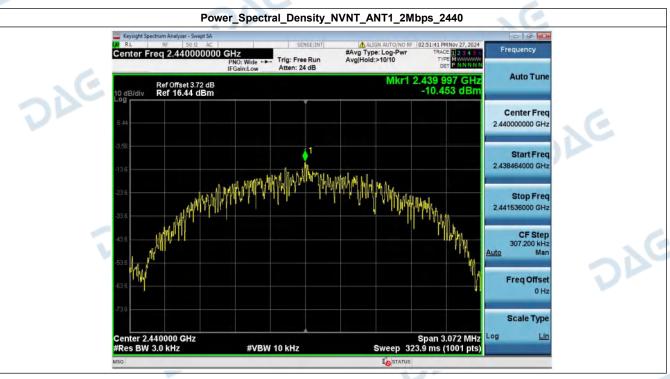
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Power_Spectral_Density_NVNT_ANT1_2Mbps_2480

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V1.0



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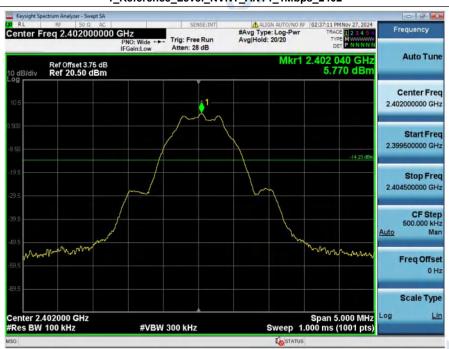


6. Bandedge

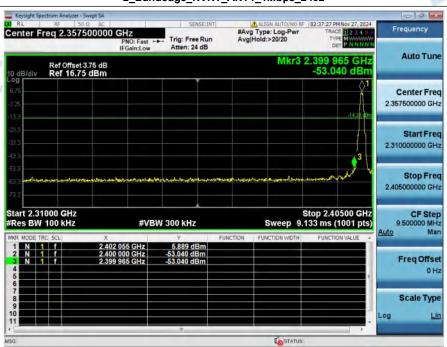
V1.0

Condition	Antenna	Rate	TX_Frequency (MHz)	Max. Mark Frequency (MHz)	Spurious level(dBm)	limit(dBm)	Result
NVNT	ANT1	1Mbps	2402.00	2399.965	-53.040	-14.230	Pass
NVNT	ANT1	1Mbps	2480.00	2487.850	-58.228	-13.519	Pass
NVNT	ANT1	2Mbps	2402.00	2399.965	-27.650	-14.303	Pass
NVNT	ANT1	2Mbps	2480.00	2483.675	-55.950	-13.524	Pass





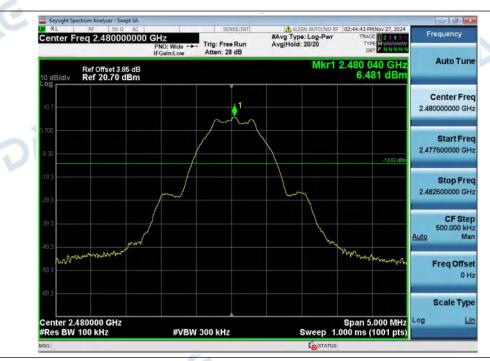
2_Bandedge_NVNT_ANT1_1Mbps_2402



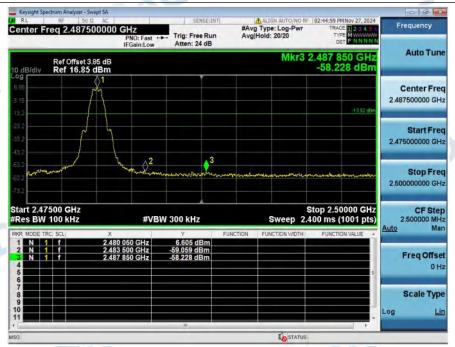
1_Reference_Level_NVNT_ANT1_1Mbps_2480

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2_Bandedge_NVNT_ANT1_1Mbps_2480



1_Reference_Level_NVNT_ANT1_2Mbps_2402

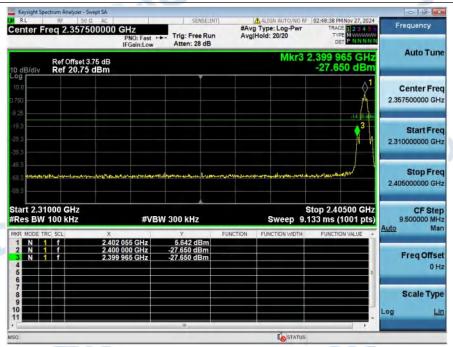
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2_Bandedge_NVNT_ANT1_2Mbps_2402



1_Reference_Level_NVNT_ANT1_2Mbps_2480

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2_Bandedge_NVNT_ANT1_2Mbps_2480



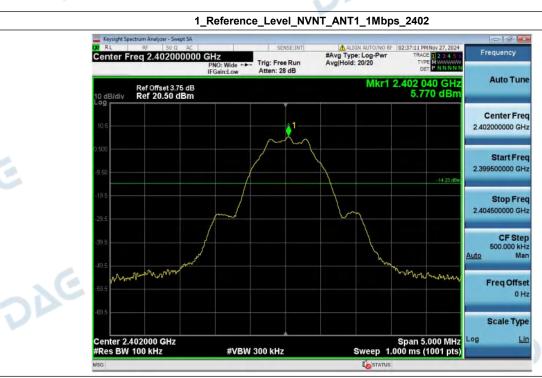
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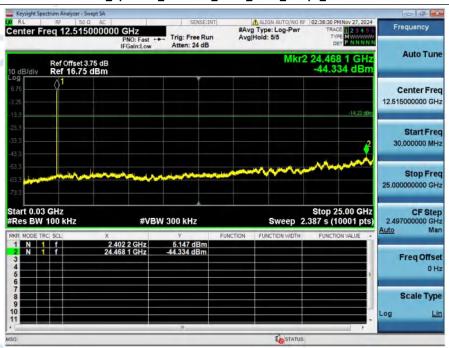


7. Spurious Emission

Condition	Antenna	Rate	TX_Frequency(MHz)	Spurious MAX.Value(dBm)	Limit	Result
NVNT	ANT1	1Mbps	2402.00	-44.334	-14.230	Pass
NVNT	ANT1	1Mbps	2440.00	-45.494	-13.718	Pass
NVNT	ANT1	1Mbps	2480.00	-44.355	-13.519	Pass
NVNT	ANT1	2Mbps	2402.00	-41.433	-14.303	Pass
NVNT	ANT1	2Mbps	2440.00	-44.305	-13.733	Pass
NVNT	ANT1	2Mbps	2480.00	-45.041	-13.524	Pass

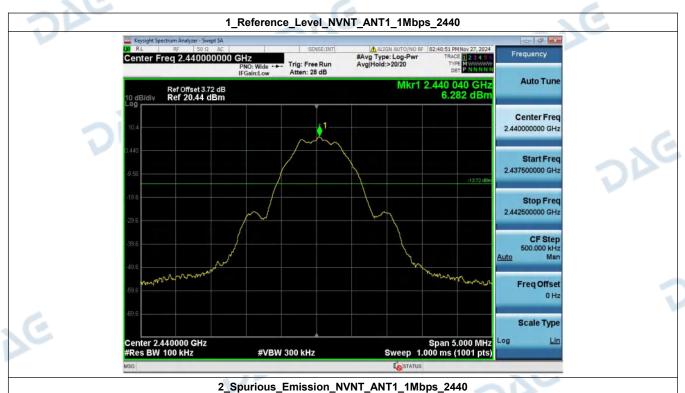


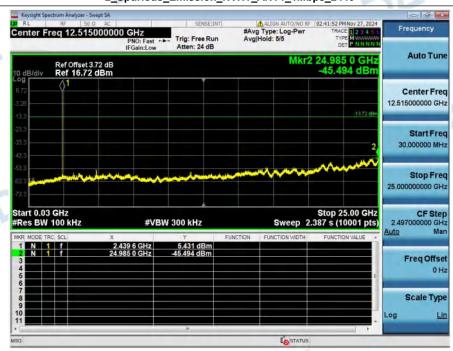




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1_Reference_Level_NVNT_ANT1_1Mbps_2480

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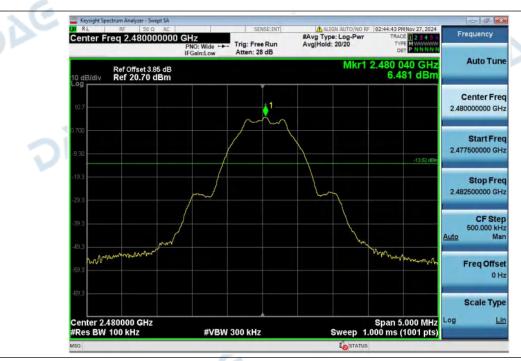
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2_Spurious_Emission_NVNT_ANT1_1Mbps_2480



1_Reference_Level_NVNT_ANT1_2Mbps_2402

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2_Spurious_Emission_NVNT_ANT1_2Mbps_2402



1_Reference_Level_NVNT_ANT1_2Mbps_2440

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2_Spurious_Emission_NVNT_ANT1_2Mbps_2440



1_Reference_Level_NVNT_ANT1_2Mbps_2480

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2_Spurious_Emission_NVNT_ANT1_2Mbps_2480



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