



Test Report

Report No.: E202409184352-5

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Verified code: 617798

Customer:	Huizhou Foryo	u General Electro	onics Co., Ltd.		
Address:		-	ry Park, No. 1 Nort city, Guangdong Pr	- / //	
Sample Name:	Intelligent cabi	n controller			
Sample Model:	HS7024				
Receive Sample	Sep.18,2024				
Date:					
Test Date:	Sep.26,2024 ~	Oct.02,2024			
Deferrer	AT CED ECC I				
Reference Document:		Part 15 Subpart C UENCY DEVIC	- ES:Subpart C—Inte	entional Radiators	
Test Result:	Pass				
			(B)		
Prepared by: Wa	New Warder Ven Wenwen	Reviewed by:	Fag Humi	Approved by:	Zhao Zethan
W	Ven Wenwen		Peng Huarui		Zhao Zetian
			GRG METRO	LOGY & TEST G	ROUP CO., LTD.
				Issued Date:	2024-10-21
			EST GROUP CO		China -
			angpu Avenue, Gua 020-38698685 We		-
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Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.

2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.

3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.

4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.

5. This testing report is only for scientific research, teaching, internal quality control, etc.

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REPORT ISSUED HISTORY

1.0 E202409184352-5 Original Issue 2024-10 Blank space below this page Galaxie Galaxie Galaxie Galaxie Galaxie Galaxie Galaxie	REPORT ISSUED HISTORY		
Blank space below this page	Report No. Description	Report Version	Compile Date
	E202409184352-5 Original Issue	1.0	2024-10-15
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1. TEST RESULT SUMMARY

Fechnical Requirements						
47 CFR, FCC Part 15 Subpart C 1 ANSI C63.10-2020 KDB 558074 D01 15.247 measure						
Limit / Severity	Item	Result				
§15.203	Antenna Requirement	Pass				
§15.207(a)	Conducted Emission	N/A				
§15.247(d)&15.205& 15.209	Radiated Spurious Emission	Pass				
§15.247(b)(3)	Maximum Peak Output Power	Pass				
§15.247(e)	Power Spectral Density	Pass				
§15.247(a)(2)	6dB bandwidth	Pass				
§15.247(d)	Conducted band edges and Spurious Emission	Pass				
§15.247(d)&15.205& 15.209	Restricted bands of operation	Pass				

Note:

1) The antenna is Internal antenna. The max gain of antenna is 4.98dBi.which accordance 15.203.is considered sufficient to comply with the provisions of this section.

2) N/A is not applied. The EUT is DC battery powered.

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

- Name: Huizhou Foryou General Electronics Co., Ltd.
- Address: No.2 District A, Foryou Industry Park, No. 1 North Shangxia Road, Dongjiang Hi tech Industry Park, 516005 Huizhou city, Guangdong Province, China(PROC)

2.2 MANUFACTURER

Name: Huizhou Foryou General Electronics Co., Ltd.

Address: No.2 District A, Foryou Industry Park, No. 1 North Shangxia Road, Dongjiang Hi tech Industry Park, 516005 Huizhou city, Guangdong Province, China(PROC)

2.3 FACTORY

Name :	Huizhou Foryou General Electronics Co., Ltd.
--------	--

Address : No.2 District A, Foryou Industry Park, No. 1 North Shangxia Road, Dongjiang Hi tech Industry Park, 516005 Huizhou city, Guangdong Province, China(PROC)

2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment:	Intelligent cabin controller
Model No.:	HS7024
Trade Mark:	ADAYO
FCC ID:	2AEIN-HS7024
Power Supply:	DC 12V
Battery:	Ni-MH BATTERY AA1000mAh, LTT-HS7012A, LTT-AAP1000X3 3.6V
Frequency Band:	2402MHz-2480MHz
Transmit Power:	GFSK for 1Mbps: 2.33dBm
Modulation type:	GFSK
Channel space:	2MHz
Antenna Specification:	Internal Antenna with 4.98dBi gain (Max)
Temperature Range:	-40°C ~75°C
Voltage Range	9V~16V
Hardware Version:	B.0.1
Software Version:	SWC.0007
Sample submitting	■Provided by customer □Sampling
way:	

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Sample No:

Note:

E202409184352-0001, E202409184352-0002

1. The EUT antenna gain is provided by the applicant. This report is made solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions.

2. This EUT (Intelligent cabin controller) the model name HS7024 with High, Low two configuration. The two configuration have the same technical construction including circuit diagram, PCB LAYOUT, hardware version, software, except the High configuration with full function but the Low configuration without some functions as below table. These difference which are not affect the RF performance. So only tested the high configuration of HS7024.

	1501011011107024.	(
	HS7024 Function	Configuration		
		High	Low	
	4MIC port	Y	Ν	
2	DMS port	Y	Ν	
	Ethernet port	Y	Ν	
	Support PTZ camera port	Y	Ν	
	Integrated projection	Y	Ν	
	headlights port		/	

2.5 CHANNELLIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
*00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	*19	2440	29	2460	*39	2480

* is the test frequency.

2.6 TEST OPERATION MODE

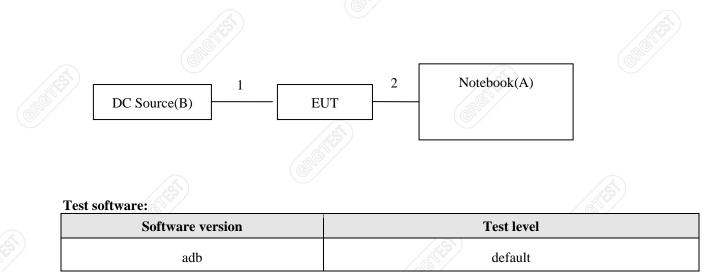
Mode No.	Description of	the modes	
1	Bluetooth (BLE) fixed frequency transmitting	15	
× /			

2.7 LOCAL SUPPORTIVEINSTRUMENTS

No.	Name of Equipment	Manufacturer	Model	Serial Number
А	Notebook	DELL	Latitude3400	8RZFJW2
В	DC source	KEYSIGHT	E36131A	MY59001135
•	•			•

No.	Cable Type	Qty.	Shielded Type	Ferrite Core(Qty.)	Length
1	DC cable	1	No	0	0.8m
2	Serial cable	1	No	0	2.0m

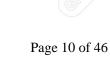
2.8 CONFIGURATION OF SYSTEM UNDER TEST



2.9 DUTY CYCLE

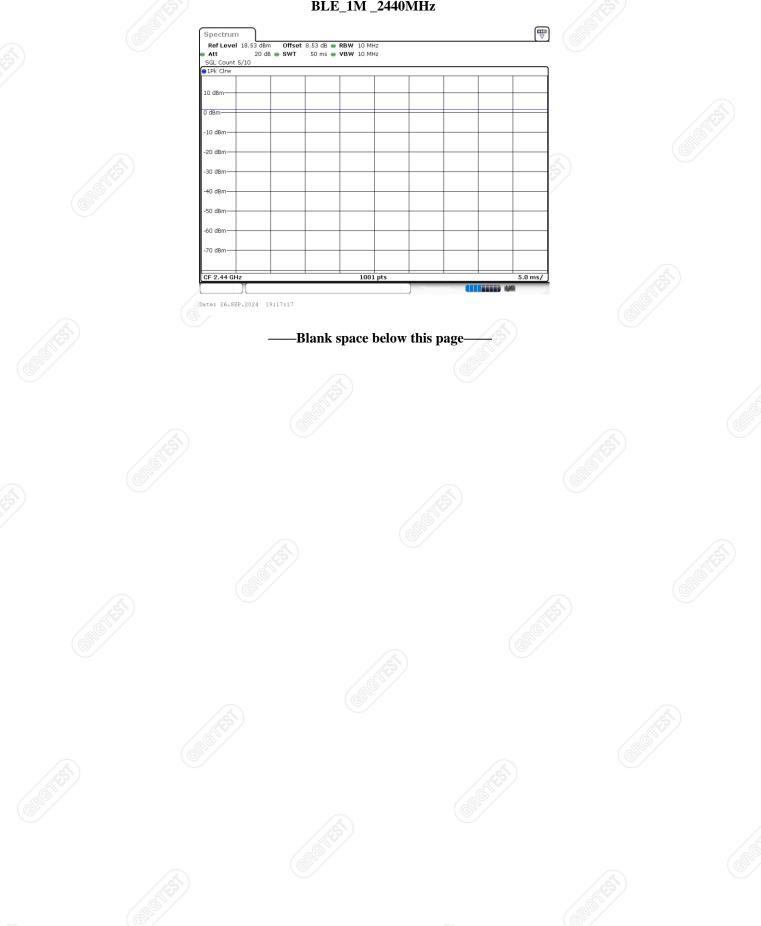
Environment: 25.6°C/65%RH/101.0kPa Tested By:Zhu rongting Voltage: DC 12V Date: 2024-09-26

Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	DC [%]	T [s]
BLE_1M	Ant1	2440	50	50	100.00	/



Y

BLE_1M _2440MHz



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3. LABORATORY AND ACCREDITATIONS

3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

Add.: No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China

P.C.:	518110	

Tel : 0755-61180008

Fax: 0755-61180008

3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA A2LA(Certificate #2861.01)

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

Canada	ISED (Company Number: 24897, CAB identifier:CN0069)
USA	FCC (Registration Number: 759402, Designation Number:CN1198)

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

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4. MEASUREMENT UNCERTAINTY

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

Measure	nent	Frequency	Uncertainty
	X	9kHz~30MHz	4.4dB ¹⁾
	Y	9kHz~30MHz	4.4dB ¹⁾
	Z	9kHz~30MHz	4.4dB ¹⁾
		30MHz~200MHz	4.6dB ¹⁾
		200MHz~1000MHz	4.8dB ¹⁾
Radiated Emission	Horizontal	1GHz~18GHz	5.0dB ¹⁾
		18GHz~26.5GHz	5.2dB ¹⁾
		30MHz~200MHz	4.7dB ¹⁾
		200MHz~1000MHz	4.7dB ¹⁾
	Vertical	1GHz~18GHz	5.1dB ¹⁾
	(5)	18GHz~26.5GHz	5.4dB ¹⁾

Measurement	Uncertainty
RF frequency	6.0×10 ⁻⁶
RF power conducted	0.80dB
Power spectral density conducted	0.80dB
Occupied channel bandwidth	0.40dB
Unwanted emission, conducted	0.70dB
Humidity	6.0%
Temperature	2.0°C

Note:

¹⁾ This uncertainty represents an expanded uncertainty expressed at approximately the 95%. This uncertainty represents an expanded uncertainty factor of k=2.



5. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Radiated Spurious E	nission & Restri	cted bands of operati	on	·	
Loop Antenna	Schwarzbeck	FMZB 1513-60	1513-60-56	2025-05-07	
Preamplifier	SHIRONG ELECTRONIC	DLNA-30M1G-G40	20200928001	2025-01-30	
Bi-log Antenna	Schwarzbeck	VULB9160	VULB9160-3402	2025-09-24	
Horn Antenna	Schwarzbeck	BBHA 9120D	02143	2025-06-15	
Test Receiver	R&S	ESR26	101758	2025-09-10	
Spectrum Analyzer	Agilent	N9010A	MY52221469	2025-04-19	
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2025-08-24 2025-03-01	
Amplifier	Tonscend	TAP01018048	AP20E8060075		
Amplifier	Tonscend	TAP184050	AP20E806071	2025-03-01	
Amplifier	SHIRONG ELECTRONIC	DLNA-1G18G-G40	20200928005	2025-07-19	
Test S/W	Tonscend	JS36-RE/2.5.1.5			
6dB Bandwidth &Co	nducted band ed	ges and Spurious Em	ission &Power Spectral I	Density	
Spectrum Analyzer	R&S	FSV30	1321.3008K30 -104381-rH	2025-09-22	
Automatic power test unit	TONSCEND	JS0806-2	21B8060365	2024-12-28	
BT/WIFI System	Tonscend	JS1120-3			
Maximum peak outp	ut power				
Pulse power sensor	Anristu	MA2411B	1126150	2025-01-11	
Power meter	Anristu	ML2495A	1204003	2025-01-11	
	1	/ (05~ /			

Note: The calibration cycle of the above instruments is 12 months.

6. RADIATED SPURIOUS EMISSIONS

6.1 LIMITS

In any 100kHz 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 20dB below that in the 100kHz 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 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required.

Frequency (MHz)	Quasi-peak(µV/m)	Measurement distance(m)	Quasi-peak(dBµV/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

NOTE:

- (1) The emission limits for the ranges 9-90kHz and 110-490kHz are based on measurements employing a linear average detector.
- (2) The lower limit shall apply at the transition frequencies.
- (3) Above 18GHz test distance is 1m, so the Peak Limit= $74+20*\log(3/1)=83.54$ (dBµV/m). The Avg Limit= $54+20*\log(3/1)=63.54$ (dBµV/m).

6.2 TEST PROCEDURES

a) Sequence of testing 9kHz to 30MHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

- --- If the EUT is a tabletop system, a rotatable table with 0.8m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground.
- --- Auxiliary equipment and cables were positioned to simulate fixed frequency transmitting conditions.
- --- The EUT is power by battery.
- --- The measurement distance is 3meter.
- --- The EUT was set into operation.

Pre measurement:

- --- The turntable rotates from 0 ° to 360 °.
- --- The antenna height is 1.0 meter.
- --- The antenna is polarized X, Y and Z.
- --- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the pre measurement the software maximizes by rotating the turntable

position (0 $^{\circ}$ to 360 $^{\circ}$) and by rotating the elevation axes (0 $^{\circ}$ to 360 $^{\circ}$).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QP detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

b) Sequence of testing 30MHz to 1GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate fixed frequency transmitting conditions.

--- The EUT is power by battery.

---- The measurement distance is 3 meter.

--- The EUT was set into operation.

Pre measurement:

--- The turntable rotates from 0 ° to 360 °.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 4 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of pre measurement the software maximize the peaks by changing turntable rotates from 0° to 360 and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

c) Sequence of testing 1GHz to 18GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

- --- If the EUT is a tabletop system, a rotatable table with 1.5m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- --- Auxiliary equipment and cables were positioned to simulate fixed frequency transmitting conditions.
- --- The EUT is power by battery.
- --- The measurement distance is 3 meter.
- --- The EUT was set into operation.



Pre measurement:

--- The turntable rotates from 0 ° to 360 °.

- --- The antenna is polarized vertical and horizontal.
- --- The antenna height scan range is 1 meter to 4 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of pre measurement the software maximize the peaks by changing turntable rotates from 0° to 360° and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

d) Sequence of testing above 18GHz Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

- --- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- --- Auxiliary equipment and cables were positioned to simulate fixed frequency transmitting conditions.
- --- The EUT is power by battery.
- --- The measurement distance is 1 meter.
- --- The EUT was set into operation.

Pre measurement:

- --- The turntable rotates from 0° to 360°.
- --- The antenna is polarized vertical and horizontal.
- --- The antenna height scan range is 1 meter to 4 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of pre measurement the software maximize the peaks by changing turntable rotates from 0° to 360° and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

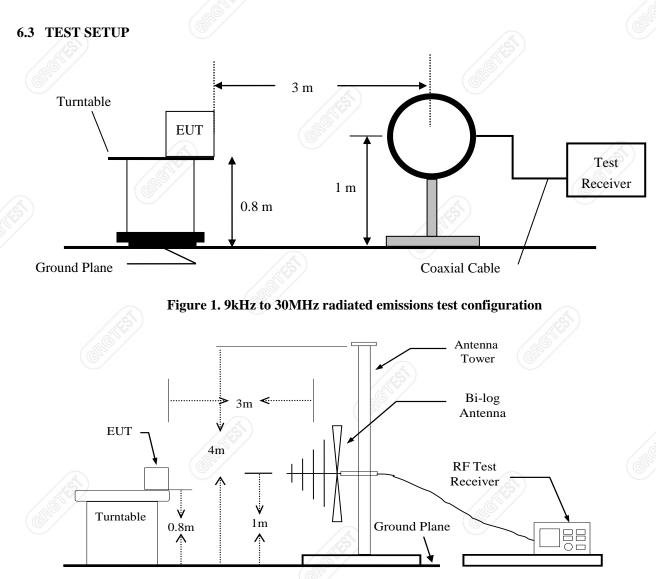
--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

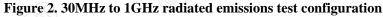
--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

NOTE:

(1).The frequency from 9kHz to 150kHz, Set RBW=300Hz(for Peak&AVG), VBW=300Hz(for Peak&AVG). The frequency from 150kHz to 30MHz, Set RBW=9kHz, VBW=9kHz, (for QP Detector).
(2).The frequency from 30MHz to 1GHz, Set RBW=120kHz, VBW=300kHz, (for QP Detector).
(3).The frequency above 1GHz, for Peak detector: Set RBW=1MHz,VBW=3MHz.
(4). The frequency above 1GHz, for Avg detector: Set RBW=1MHz,if the EUT is configured to transmit

with duty cycle \geq 98%, set VBW \leq RBW/100 (i.e.,10kHz) but not less than 10 Hz. If the EUT duty cycle is <98%, set VBW \geq 1/T, Where T is defined in section 2.9.





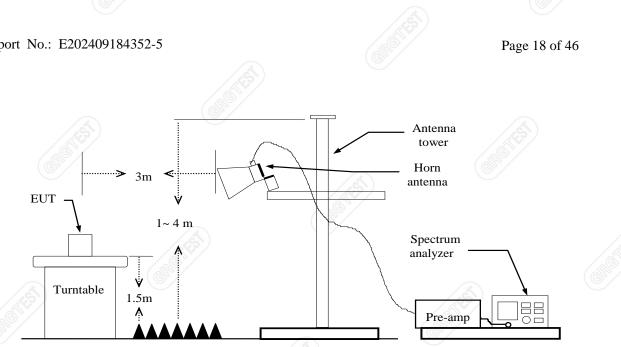


Figure 3. 1GHz to 18GHz radiated emissions test configuration

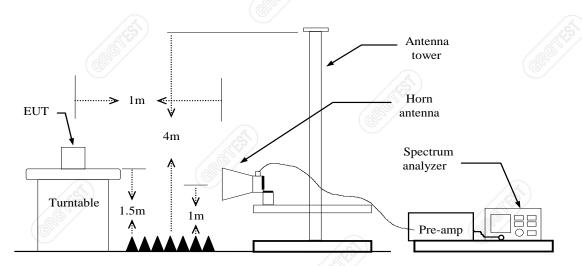


Figure 4. 18GHz to 26.5GHz radiated emissions test configuration

6.4 DATA SAMPLE

	[MHz][dB μ V/m][dB][dB μ V/m][dB]x86.509667.5533.83-33.7240.006.17Frequency (MHz)= Emission frequency in MHzReading (dBuV)= Uncorrected Analyzer / ReceiverFactor (dB)= Antenna factor + Cable loss - AmLevel (dBuV/m)= Reading (dBuV) + Factor (dB)Limit (dBuV/m)= Limit stated in standard										
NO.	-	U				-	Trace	Height [cm]	Angle	Polarity	Verdict
XXX	86.5096	67.55	33.83	-33.72	40.00	6.17	QP	200	118	Horizontal	PASS
	IC. $[MHz]$ $[dB\mu V/m]$ $[dB\mu V/m]$ $[dB]$ $[dB\mu V/m]$ $[dB]$ $[Trace$ $[cm]$ $[cm]$ xx86.509667.5533.83-33.7240.006.17QP20011Frequency (MHz)= Emission frequency in MHzReading (dBuV)= Uncorrected Analyzer / Receiver readingFactor (dB)= Antenna factor + Cable loss - Amplifier gainLevel (dBuV/m)= Reading (dBuV) + Factor (dB)Limit (dBuV/m)= Limit stated in standard										

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1GHz-18GHz

No.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle []	Polarity
xxx	xxxx	78.01	55.30	-22.71	74.00	18.70	100	50	Horizontal
xxx	XXXX	66.37	43.66	-22.71	54.00	10.34	100	50	Horizontal
			\bigcirc		(Gr				

Above 18GHz

NO.	Freq. [MHz]	Reading [dBµV/m]	Level for 1m [dBµV/m]	Level for 3m [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle	Polarity
xxx	XXX	62.46	45.31	35.77	-17.15	74	38.23	100	19	Horizontal
Frec	juency (N	IHz)	= Em	ission freque	ency in M	Hz	(G)			

= Emission frequency in MHz

= Reading (dBuV/m) + Factor (dB)

= Level for 1m (dBuV/m) + 20*log(1/3)

Reading (dBuV/m)

= Uncorrected Analyzer / Receiver reading

= Antenna factor + Cable loss – Amplifier gain

Factor (dB) Level for 1m (dBuV/m)

Level for 3m (dBuV/m) Limit (dBuV/m)

Margin (dB)

Polarity

Peak

AVG

= Limit stated in standard

= Limit (dBuV/m) – Level (dBuV/m)

= Antenna polarization

= Peak Reading

= Average Reading

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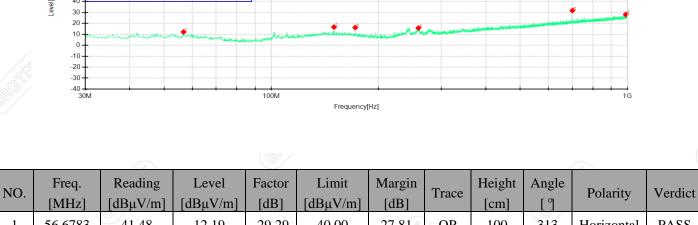
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6.5 TEST RESULTS

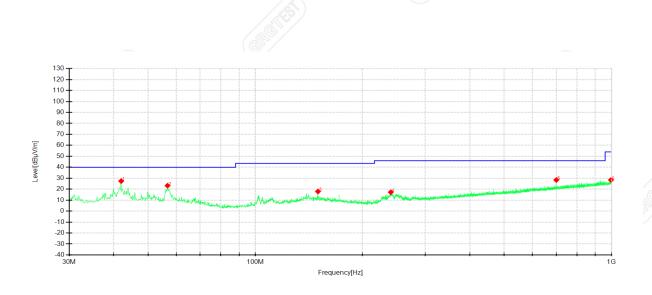
Below 1GHz

Note: Pre-scan all modes, only the worst case(TX_BLE_1M_2440MHz) is recorded, in this report.

Test Engineer:	Zhao yaru	Test Date:	2024-09-29			
Power supply:	DC 12V	Environmental Conditions:	24.8°C/62%RH/101.0kPa			
¹³⁰ T			· · · · · · · · · · · · · · · · · · ·			
120 -						
110 +						
90						
80 +						
70						
30						



				[uD]		[[G D]		lemi	LJ		
1	56.6783	41.48	12.19	-29.29	40.00	27.81	QP	100	313	Horizontal	PASS
2	149.9312	44.79	16.63	-28.16	43.50	26.87	QP	100	160	Horizontal	PASS
3	172.0015	45.37	16.20	-29.17	43.50	27.30	QP	200	138	Horizontal	PASS
4	258.7061	45.01	15.76	-29.25	46.00	30.24	QP	200	70	Horizontal	PASS
5	700.1113	49.65	31.72	-17.93	46.00	14.28	QP	100	173	Horizontal	PASS
6	988.6011	42.37	28.11	-14.26	54.00	25.89	QP	200	289	Horizontal	PASS



											R	
	NO.	Freq.	Reading	Level	Factor	Limit	Margin	Trace	Height	Angle	Polarity	Verdict
		[MHz]	[dBµV/m]	[dBµV/m]	[dB]	[dBµV/m]	[dB]		[cm]	[]	y	
	1/6	42.0053	56.61	27.40	-29.21	40.00	12.60	QP	100	214	Vertical	PASS
2	2	56.6783	52.52	23.23	-29.29	40.00	16.77	QP	100	72	Vertical	PASS
0	3	149.9312	46.06	17.90	-28.16	43.50	25.60	QP	100	46	Vertical	PASS
	4	240.0313	46.85	17.21	-29.64	46.00	28.79	QP	100	20	Vertical	PASS
	5	699.9900	46.30	28.37	-17.93	46.00	17.63	QP	200	45	Vertical	PASS
	6	996.3620	42.48	28.38	-14.10	54.00	25.62	QP	100	20	Vertical	PASS

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.

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1GHz-18GHz:

Mode: TX/ BLE_1M Lowest Frequency (2402MHz) Environment: 24.8°C/62%RH/101.0kPa Tested By: Zhao yaru

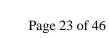
Voltage: DC 12V Date: 2024-09-29

Suspect	ted Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle []	Polarity
1	2494.4000	47.14	46.72	-0.42	74.00	27.28	200	353	Horizontal
2	3157.5000	59.55	46.53	-13.02	74.00	27.47	100	122	Horizontal
3	5701.5000	55.94	50.66	-5.28	74.00	23.34	200	200	Horizontal
4	6750.0000	48.48	48.03	-0.45	74.00	25.97	200	170	Horizontal
5	7357.5000	45.98	47.72	1.74	74.00	26.28	200	155	Horizontal
6	9951.0000	40.18	49.10	8.92	74.00	24.90	200	139	Horizontal
7	2494.6000	36.69	36.26	-0.43	54.00	17.74	200	271	Horizontal
8	3157.5000	53.15	40.13	-13.02	54.00	13.87	100	122	Horizontal
9	5730.0000	46.87	41.87	-5.00	54.00	12.13	200	200	Horizontal
10	6750.0000	42.43	41.98	-0.45	54.00	12.02	200	170	Horizontal
11	7305.0000	37.55	38.96	1.41	54.00	15.04	200	155	Horizontal
12	9934.5000	30.63	39.42	8.79	54.00	14.58	200	155	Horizontal
				(3)					/

Suspect	ted Data List					_			
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle []	Polarity
1	1985.6000	48.60	44.66	-3.94	74.00	29.34	200	177	Vertical
2	2506.8000	47.57	46.92	-0.65	74.00	27.08	200	209	Vertical
3	3355.5000	55.43	42.33	-13.10	74.00	31.67	200	200	Vertical
4	5718.0000	53.80	48.92	-4.88	74.00	25.08	200	152	Vertical
5	6750.0000	46.49	46.24	-0.25	74.00	27.76	100	232	Vertical
6	9664.5000	39.34	47.48	8.14	74.00	26.52	100	167	Vertical
7	1995.0000	38.02	34.12	-3.90	54.00	19.88	100	160	Vertical
8	2502.2000	37.05	36.59	-0.46	54.00	17.41	200	209	Vertical
9	3358.5000	45.26	32.18	-13.08	54.00	21.82	200	184	Vertical
10	5734.5000	44.65	39.97	-4.68	54.00	14.03	200	152	Vertical
11	6750.0000	39.58	39.33	-0.25	54.00	14.67	100	232	Vertical
12	9687.0000	29.99	38.04	8.05	54.00	15.96	100	167	Vertical





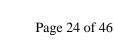


Mode: TX/ BLE_1M Middle Frequency (2440MHz) Environment: 24.8°C/62%RH/101.0kPa Tested By: Zhao yaru

Voltage: DC 12V
Date: 2024-09-29

Suspec	ted Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle	Polarity
1	2472.2000	47.77	47.14	-0.63	74.00	26.86	100	146	Horizontal
2	3157.5000	61.50	48.48	-13.02	74.00	25.52	100	118	Horizontal
3	5766.0000	55.97	51.31	-4.66	74.00	22.69	200	196	Horizontal
4	6750.0000	48.35	47.90	-0.45	74.00	26.10	200	181	Horizontal
5	7332.0000	47.09	48.71	1.62	74.00	25.29	200	149	Horizontal
6	9844.5000	40.41	48.88	8.47	74.00	25.12	200	149	Horizontal
7	2494.8000	36.61	36.19	-0.42	54.00	17.81	200	21	Horizontal
8	3157.5000	52.38	39.36	-13.02	54.00	14.64	100	118	Horizontal
9	5737.5000	46.85	41.93	-4.92	54.00	12.07	200	212	Horizontal
10	6750.0000	40.85	40.40	-0.45	54.00	13.60	200	102	Horizontal
11/	7308.0000	36.54	37.97	1.43	54.00	16.03	200	166	Horizontal
12	9940.5000	31.13	39.97	8.84	54.00	14.03	200	149	Horizontal
						\odot /			

ed Data List	_							
Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle []	Polarity
1885.4000	48.83	44.80	-4.03	74.00	29.20	100	179	Vertical
2503.4000	47.71	47.19	-0.52	74.00	26.81	200	196	Vertical
3157.5000	55.14	41.78	-13.36	74.00	32.22	100	324	Vertical
5695.5000	54.52	49.46	-5.06	74.00	24.54	200	149	Vertical
6750.0000	47.11	46.86	-0.25	74.00	27.14	100	211	Vertical
9894.0000	39.38	47.94	8.56	74.00	26.06	200	166	Vertical
1891.4000	37.58	33.69	-3.89	54.00	20.31	100	148	Vertical
2496.6000	37.07	36.62	-0.45	54.00	17.38	200	360	Vertical
3157.5000	46.40	33.04	-13.36	54.00	20.96	100	34	Vertical
5700.0000	44.69	39.60	-5.09	54.00	14.40	100	226	Vertical
6750.0000	39.00	38.75	-0.25	54.00	15.25	100	211	Vertical
9666.0000	29.72	37.86	8.14	54.00	16.14	100	162	Vertical
	Freq. [MHz] 1885.4000 2503.4000 3157.5000 5695.5000 6750.0000 9894.0000 1891.4000 2496.6000 3157.5000 5700.0000 6750.0000	Freq. [MHz]Reading [dBμV/m]1885.400048.832503.400047.713157.500055.145695.500054.526750.000047.119894.000039.381891.400037.582496.600037.073157.500046.405700.000044.696750.000039.00	Freq. [MHz]Reading $[dB\muV/m]$ Level $[dB\muV/m]$ 1885.400048.8344.802503.400047.7147.193157.500055.1441.785695.500054.5249.466750.000047.1146.869894.000039.3847.941891.400037.5833.692496.600037.0736.623157.500044.6939.606750.000039.0038.75	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$



Mode: TX/ BLE_1M Highest Frequency (2480MHz) Environment: 24.8°C/62%RH/101.0kPa Tested By: Zhao yaru

Voltage: DC 12V
Date: 2024-09-29

Suspec	Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle	Polarity		
1	2471.2000	47.48	46.84	-0.64	74.00	27.16	100	193	Horizontal		
2	3157.5000	59.38	46.36	-13.02	74.00	27.64	100	106	Horizontal		
3	5731.5000	56.49	51.51	-4.98	74.00	22.49	200	200	Horizontal		
4	6750.0000	48.40	47.95	-0.45	74.00	26.05	200	169	Horizontal		
5	7306.5000	46.40	47.82	1.42	74.00	26.18	200	154	Horizontal		
6	9943.5000	40.43	49.30	8.87	74.00	24.70	200	138	Horizontal		
7	2480.2000	40.43	39.87	-0.56	54.00	14.13	100	307	Horizontal		
8	3157.5000	52.24	39.22	-13.02	54.00	14.78	100	122	Horizontal		
9	5730.0000	47.22	42.22	-5.00	54.00	11.78	200	200	Horizontal		
10	6750.0000	41.48	41.03	-0.45	54.00	12.97	200	107	Horizontal		
11	7306.5000	36.89	38.31	1.42	54.00	15.69	200	154	Horizontal		
12	9903.0000	31.36	39.87	8.51	54.00	14.13	200	154	Horizontal		
(6.50)	/					6% /					

Suspect	Suspected Data List											
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle []	Polarity			
1	2480.2000	48.08	47.24	-0.84	74.00	26.76	200	314	Vertical			
2	3148.5000	55.16	41.78	-13.38	74.00	32.22	100	40	Vertical			
3	5734.5000	54.30	49.62	-4.68	74.00	24.38	100	168	Vertical			
<u>2</u> 4	6748.5000	45.12	44.87	-0.25	74.00	29.13	100	214	Vertical			
5	9640.5000	39.67	47.71	8.04	74.00	26.29	100	168	Vertical			
6	11775.0000	37.23	48.53	11.30	74.00	25.47	100	340	Vertical			
7	2480.0000	41.14	40.30	-0.84	54.00	13.70	200	314	Vertical			
8	3157.5000	47.34	33.98	-13.36	54.00	20.02	100	40	Vertical			
9	5695.5000	44.79	39.73	-5.06	54.00	14.27	200	154	Vertical			
10	6750.0000	38.92	38.67	-0.25	54.00	15.33	100	231	Vertical			
11	9691.5000	30.01	38.05	8.04	54.00	15.95	200	169	Vertical			
12	11827.5000	27.43	38.55	11.12	54.00	15.45	200	340	Vertical			

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3 Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4 Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

18GHz to 26.5GHz

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Note: Pre-scan all modes, only the worst case(TX/BLE_1M_2440MHz) in the worst power supply is recorded in this report.

Environment: 26.5°C/57%RH/101.0kPa Tested By: Zhao yaru Voltage: DC 12V Date: 2024-10-02

Suspe	Suspected Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Level for 1m [dBµV/m]	Level for 3m [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [ງ	Polarity	
1	19304.75	49.01	33.01	23.47	-16.00	74	50.53	100	200	Horizontal	
2	20249.525	51.13	35.65	26.11	-15.48	74	47.89	100	160	Horizontal	
3	20872.575	47.96	32.83	23.29	-15.13	74	50.71	200	19	Horizontal	
4	22147.575	48	32.9	23.36	-15.10	74	50.64	100	301	Horizontal	
5	22894.3	46.79	32.49	22.95	-14.30	74	51.05	100	301	Horizontal	
6	24675.9	45.31	31.75	22.21	-13.56	74	51.79	200	118	Horizontal	

Susp	Suspected Data List											
NO.	Freq. [MHz]	Reading [dBµV/m]	Level for 1m [dBµV/m]	Level for 3m [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle []	Polarity		
1	19304.75	49.46	33.96	24.42	-15.50	74	49.58	100	1	Vertical		
2	20249.525	50.11	35.03	25.49	-15.08	74	48.51	100	138	Vertical		
3	21327.75	47.92	33.38	23.84	-14.54	74	50.16	200	97	Vertical		
4	22675.425	46.67	32.73	23.19	-13.94	74	50.81	100	318	Vertical		
5	24459.575	44.71	31.64	22.1	-13.07	9 74	51.90	100	178	Vertical		
6	25369.075	44.72	31.66	22.12	-13.06	74	51.88	200	300	Vertical		

Remark:

1

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2 Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
 - Above 18G test distance is 1m, so the Level for 3m= Level for 1m + 20*log(1/3)



7. 6dB BANDWIDTH

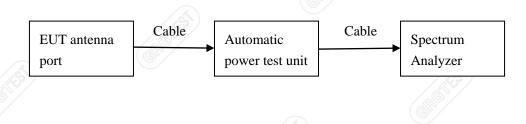
7.1 LIMITS

Systems using digital modulation techniques may operate in the 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz bands. The minimum 6dB bandwidth shall be at least 500kHz.

7.2 TEST PROCEDURES

- a) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the Automatic power measuring unit.
- b) Set resolution bandwidth (RBW) = 100kHz.Set the video bandwidth (VBW) $\ge 3 \times RBW$. Detector = Peak. Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize, record 6dB bandwidth value.
- c) Repeat above procedures until all frequencies measured were complete.

7.3 TEST SETUP



7.4 TEST RESULTS

Environment: 25.6°C/65%RH/101.0kPa Tested By:Zhu rongting Voltage: DC 12V Date: 2024-09-26

				S* /
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	676		PASS
Middle	2440	676	≥500	PASS
Highest	2480	672	15	PASS



Lowest Frequency (2402MHz)

Att Count	100/1	30.00 dB 40 c 00		RBW 100 kHz VBW 300 kHz	Mode Auto FFT		
1Pk Vi 20 dBm					M1[1]		-6.28 dBr 2.40166000 GH -0.39 dBr 2.40174800 GH
10 dBm	-						2.40174800 GH
0 dBm—	_			M2 M1	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
-10 dBm		1 -6.390	dBm				
-20 dBm	-				\rightarrow		
-30 dBm	-			+			
40 dBr							
-50 dBm	-						
-60 dBm	-						
CF 2.4	02 GH	Iz		1001 pt:	5		Span 4.0 MHz
1arker			X	N			
Type M1	Ket	Trc 1	2.40166 GHz	-6.28 dBm	Function	Fund	tion Result
M2		1	2.401748 GHz	-0.39 dBm			
M1 M2 D3	M1	1 1	2.40166 GHz 2.401748 GHz 676.0 kHz	-6.28 dBm -0.39 dBm -0.11 dB			

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Middle Frequency (2440 MHz)

Att Count		30.00 de 40 00			RBW 100 kHz VBW 300 kHz		Auto FFT		
⊖1Pk Vi	e₩								
						м	1[1]		-4.69 dBr
20 dBm	_								2.43966000 GH
						M	2[1]		1.12 dBr 2.43974800 GH
10 dBm									2.43974800 01
0 dBm-					M2	~			
U UBIII-		1 -4.880	1 dBm			~~~ Q3			
-10 dBm		1.000			$4 \rightarrow$	25			
-20 dBm			+ +	-/	++				
-30 dBm									
-30 ubii	' T								
-40 dBm		<u> </u>	4		++				
-50 dBm	·+-		+ +		-				
-60 dBm									
-00 ubii	'								
CF 2.4	4 GHz				1001	ots			Span 4.0 MHz
Marker									
Туре	Ref	Trc	X-value		Y-value	Func	tion	Functi	on Result
M1		1	2.4396		-4.69 dBn				
M2		1	2.43974		1.12 dBn				
D3	M1	1	6/6	.0 kHz	-0.10 dB	3			

Date: 26.SEP.2024 18:57:06



Highest Frequency (2480MHz)

Count		00						
∋1Pk Vi	ew				M1	[1]		-4.87 dBr
20 dBm								2.47966000 GH
10 dBm					M2	2[1]		2.48024800 GH
TO OBIU					M2			
0 dBm—		1 -4.910						
-10 dBm		1 -4.910	i dBm		-	~		
-20 dBm						\mathbf{X}		
-20 abri	' _							
-30 dBm	+-י		+ - +	+ +		— \	\sim	
-40 dBn								
-50 dBm								
-J0 UBI	1							
-60 dBm	+-י			+ +				
CF 2.4	B GHz			1001 pt	s			Span 4.0 MHz
Marker								
Type M1	Ref	Trc 1	2.47966 GHz	Y-value -4.87 dBm	Funct	ion	Functi	on Result
M1 M2		1	2.480248 GHz	1.09 dBm				
D3	M1	1	672.0 kHz	0.06 dB				

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8. MAXIMUM PEAK OUTPUT POWER

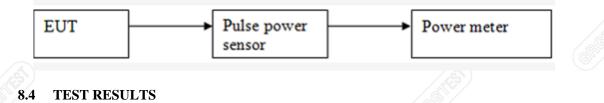
8.1 LIMITS

The maximum Peak output power measurement is 1W

8.2 TEST PROCEDURES

- a) RF output of EUT was connected to the broadband peak RF power meter by RF cable. The path loss was compensated to the results for each measurement.
- b) Set to the maximum power setting and enable the EUT transmit continuously.
- c) Measure the conducted output power and record the results in the test report.

8.3 TEST SETUP



Environment: 25.6°C/65%RH/101.0kPa Tested By:Zhu rongting Voltage: DC 12V Date: 2024-09-26

Channel	Frequency (MHz)	Maximum Power (dBm)	Limit	Peak/ Average	Result
Lowest	2402	1.22			Pass
Middle	2440	2.33	1W (30dBm)	Peak	Pass
Highest	2480	2.27	(Joubili)		Pass

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9. POWER SPECTRAL DENSITY

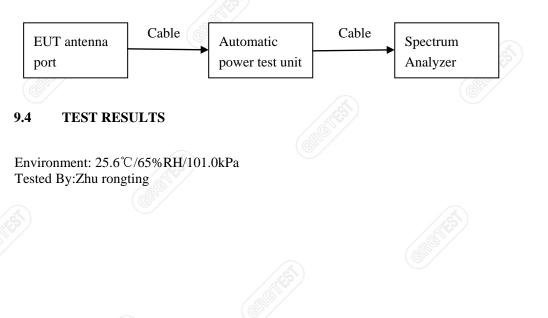
9.1 LIMITS

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz 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.

9.2 TEST PROCEDURES

- a) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- b) Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:
 - a) Set analyzer center frequency to DTS channel center frequency.
 - b) Set the span to at least 1.5 times the DTS bandwidth.
 - c) Set the RBW to 3 kHz \leq RBW \leq 100 kHz.
 - d) Set the VBW \geq [3 × RBW].
 - e) Detector = peak
 - f) Sweep time = auto couple.
 - g) Trace mode = max hold.
 - h) Allow trace to fully stabilize.
 - i) Use the peak marker function to determine the maximum amplitude level within the RBW.
 - j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
- d) Repeat above procedures until all frequencies measured were complete.

9.3 TEST SETUP

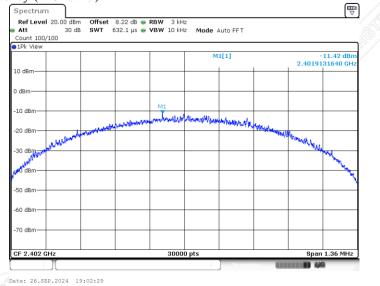


Voltage: DC 12V Date: 2024-09-26

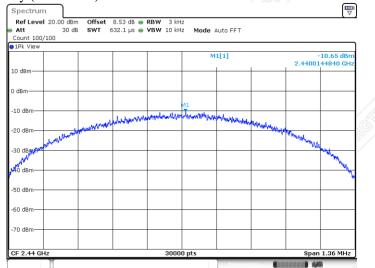
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Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Test Result
Lowest	2402	-11.42		PASS
Middle	2440	-10.65	8.00	PASS
Highest	2480	-11.08		PASS

Lowest Frequency (2402MHz)

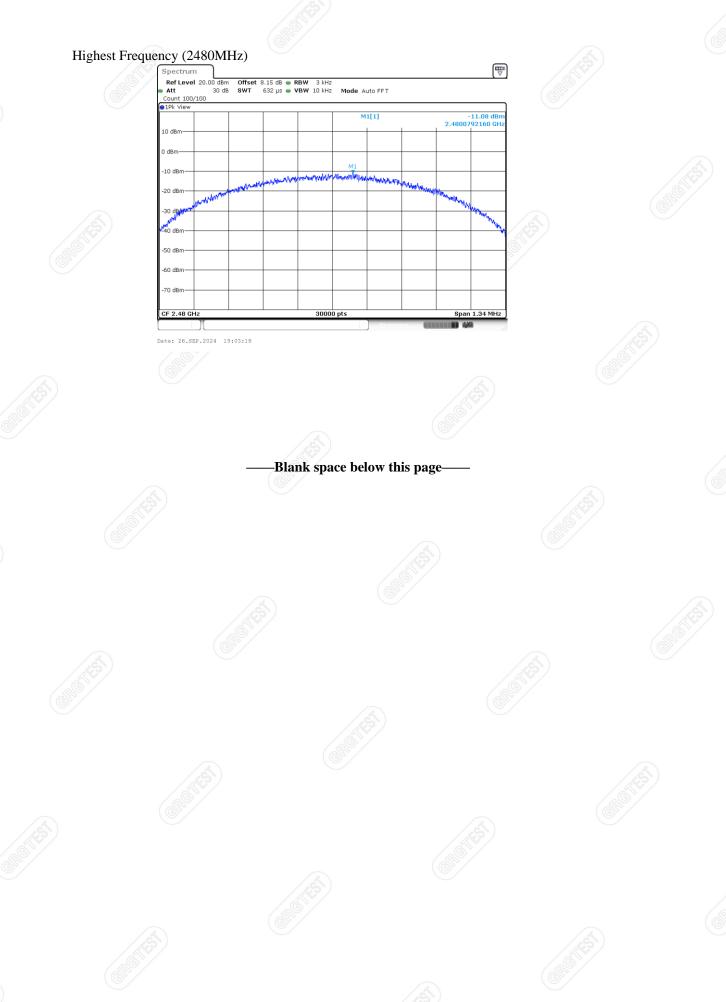


Middle Frequency (2440 MHz)



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10. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

10.1 LIMITS

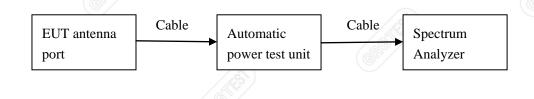
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the 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 30dB instead of 20dB.

10.2 TEST PROCEDURES

Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.

- a) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- b) Set the spectrum analyzer: RBW =100kHz; VBW =300kHz, Frequency range = 30MHz to 26.5GHz; Sweep = auto; Detector Function = Peak. Trace = Max, hold.
- c) Measure and record the results in the test report.
- d) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

10.3 TEST SETUP



10.4 TEST RESULTS

Environment: 25.6°C/65%RH/101.0kPa Tested By:Zhu rongting

Band edge measurements

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
		Low	2402	-0.18	-48.11	≤-20.18	PASS
BLE_1M	Ant1	High	2480	1.04	-47.37	≤-18.96	PASS

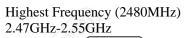
Voltage: DC 12V Date: 2024-09-26



Lowest Frequency (2402MHz) 2.35GHz-2.405GHz

Ref L	evel :	20.00 dB	m Offset 8.22 dB 🖷	• RBW 100 kHz			
Att		30 d	lB SWT 75.8 μs 🧉	VBW 300 kHz	Mode Auto FF1	r	
Count	300/3	00					
∋1Pk Vi	e₩						
					M1[1]		-0.18 dBm
10 dBm							2.4017760 GHz
10 000					M2[1]		-51.40 dBm
0 dBm-					<u> </u>		2.4000000 GHz
							<u> </u>
-10 dBm	⊢ −ι						
20 dBm	م ا ر	1 -20.18	0 dBm				
-30 dBm							
-30 UBI	-						175
-40 dBm							
14						M3	M2
50 dBh	1 things	man	mun million	and a more my long while	- month and the	moule marke	- to another the
-60 dBm	+-י						
-70 dBm							
-70 ubii	-						
Start 2	25.0	4.2		691 pts			Stop 2.405 GHz
arker	.33 G	12		091 pts			atop 2.403 GHz
Type	Ref	Trc	X-value	Y-value	Function	Funct	ion Result
M1		1	2.401776 GHz	-0.18 dBm		- unoc	
M2		1	2.4 GHz	-51.40 dBm			
MЗ		1	2.39 GHz	-50.67 dBm			
M4		1	2.350558 GHz	-48.11 dBm			

Date: 26.SEP.2024 19:06:04



Att	evel 3		dBm Off dB SW		RBW 100 kH		Auto FFT			
Count		00								
						м	1[1]		2.4	1.04 dBn 480250 GH
10 dBm		M1				м	2[1]			-51.69 dBn 483500 GH
0 dBm-		ſ.						1	1	
-10 dBn	η 	A—	_							
-20 dBn	1 D	1 -18.	960 dBm—							
-30 dBn	1	4								
-40 dBn	− ∰	+	M4	+						
450 dBn	nor	M		Mainterner	and the second second	turneration	-	-	tular	marcan
-60 dBn	-		_							
-70 dBn	<u>ا</u> ر		_							
Start 2	.47 G	Hz			691	pts			Sto	p 2.55 GHz
Marker										
Туре	Ref			value	Y-value	Func	tion	Fun	ction Resul	t
M1		1		2.48025 GHz	1.04 dB					
M2		1		2.4835 GHz	-51.69 dB					
M3 M4		1	0	2.5 GHz 489826 GHz	-50.32 dB -47.37 dB					

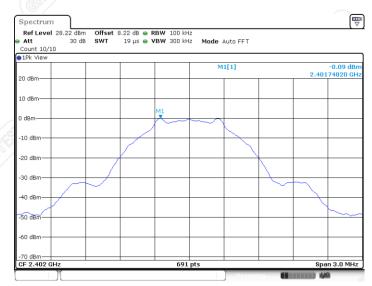
Date: 26.SEP.2024 19:06:35



Conducted Spurious Emission

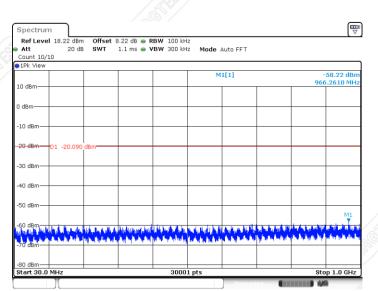
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
			Reference	-0.09	-0.09		PASS
		2402	30~1000	-0.09	-58.22	≤-20.09	PASS
			1000~26500	-0.09	-44.66	≤-20.09	PASS
		Ant1 2440	Reference	1.39	1.39		PASS
BLE_1M	Ant1		30~1000	1.39	-58.07	≤-18.61	PASS
			1000~26500	1.39	-44.36	≤-18.61	PASS
			Reference	1.26	1.26		PASS
		2480	30~1000	1.26	-57.95	≤-18.74	PASS
			1000~26500	1.26	-44.16	≤-18.74	PASS

Lowest Frequency (2402MHz)



Date: 26.SEP.2024 19:07:43

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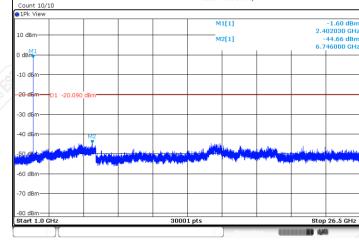


Date: 26.SEP.2024 19:07:48

Ref Level 18.22 dBm Att 30 dB







Mode Auto Sweep

Offset 8.22 dB
 RBW 100 kHz
 SWT 255 ms
 VBW 300 kHz



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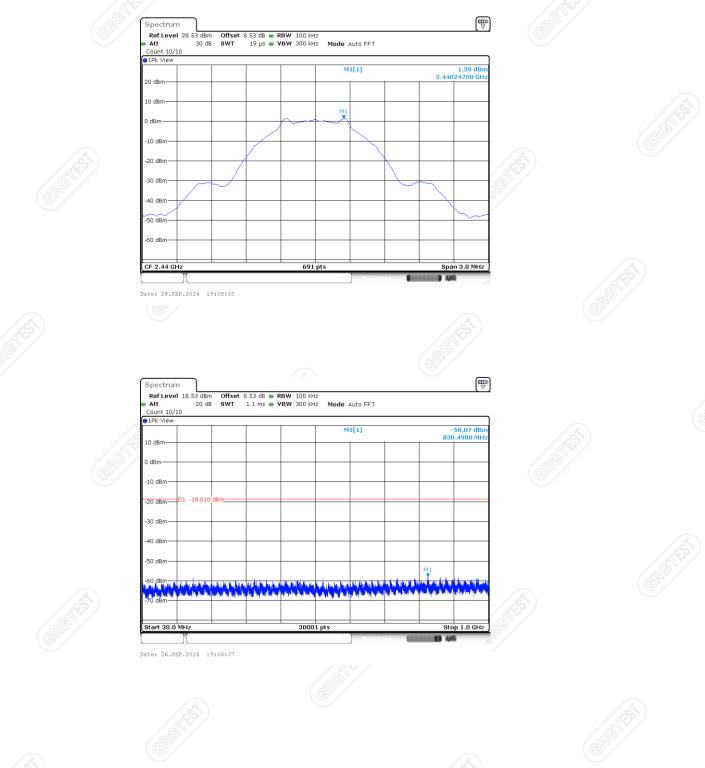


Date: 26.SEP.2024 19:08:11

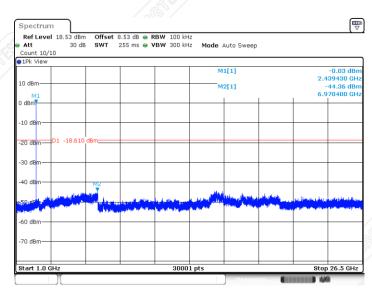


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Middle Frequency (2440MHz)



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Date: 26.SEP.2024 19:09:01

Highest Frequency (2480MHz)











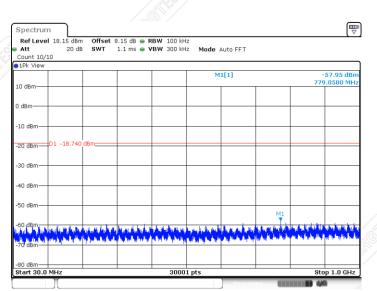


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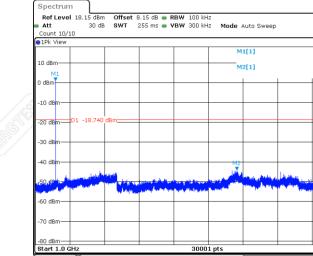
1.08 dBm 2.480230 GHz -44.16 dBm 15.863100 GHz

Stop 26.5 GH



Date: 26.SEP.2024 19:09:24









11. RESTRICTED BANDS OF OPERATION

11.1 LIMITS

Section 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)).

MHz	MHz	GHz
16.42 - 16.423	399.9 - 410	4.5 - 5.15
16.69475 - 16.69525	608 - 614	5.35 - 5.46
16.80425 - 16.80475	960 - 1240	7.25 - 7.75
25.5 - 25.67	1300 - 1427	8.025 - 8.5
37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
74.8 - 75.2	1660 - 1710	10.6 - 12.7
108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
123 - 138	2200 - 2300	14.47 - 14.5
149.9 - 150.05	2310 - 2390	15.35 - 16.2
156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
156.7 - 156.9	2655 - 2900	22.01 - 23.12
162.0125 - 167.17	3260 - 3267	23.6 - 24.0
167.72 - 173.2	3332 - 3339	31.2 - 31.8
240 - 285	3345.8 - 3358	36.43 - 36.5
322 - 335.4	3600 - 4400	
		C C C C C C C C C C C C C C C C C C C
	$\begin{array}{c} 16.42 - 16.423 \\ 16.69475 - 16.69525 \\ 16.80425 - 16.80475 \\ 25.5 - 25.67 \\ 37.5 - 38.25 \\ 73 - 74.6 \\ 74.8 - 75.2 \\ 108 - 121.94 \\ 123 - 138 \\ 149.9 - 150.05 \\ 156.52475 - 156.52525 \\ 156.7 - 156.9 \\ 162.0125 - 167.17 \\ 167.72 - 173.2 \\ 240 - 285 \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

Encourance (MIIa)	Oneri neek(uV/m)	Measurement	Quagi nagh(dDuV/m)@diatanag 2m
Frequency (MHz)	Quasi-peak(µV/m)	distance(m)	Quasi-peak(dBµV/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

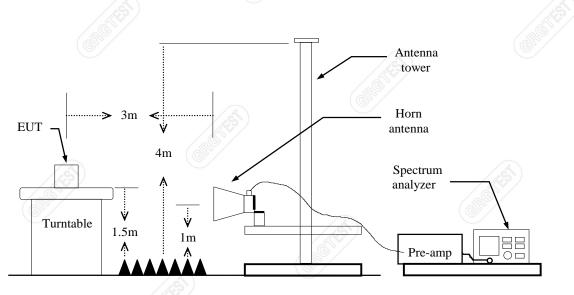
11.2 TEST PROCEDURES

- a) The EUT is placed on a turntable, which is 1.5m above the ground plane.
- b) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- c) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- d) Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - a) PEAK: RBW=1MHz / VBW=1MHz / Sweep=AUTO.
 - b) AVERAGE: RBW=1MHz / VBW=1/T / Sweep=AUTO.

If the EUT is configured to transmit with duty cycle $\ge 98\%$, set VBW \le RBW/100 (i.e.,10kHz) but not less than 10 Hz. If the EUT duty cycle is $\le 98\%$, set VBW $\ge 1/T$, Where T is defined in section 2.9.

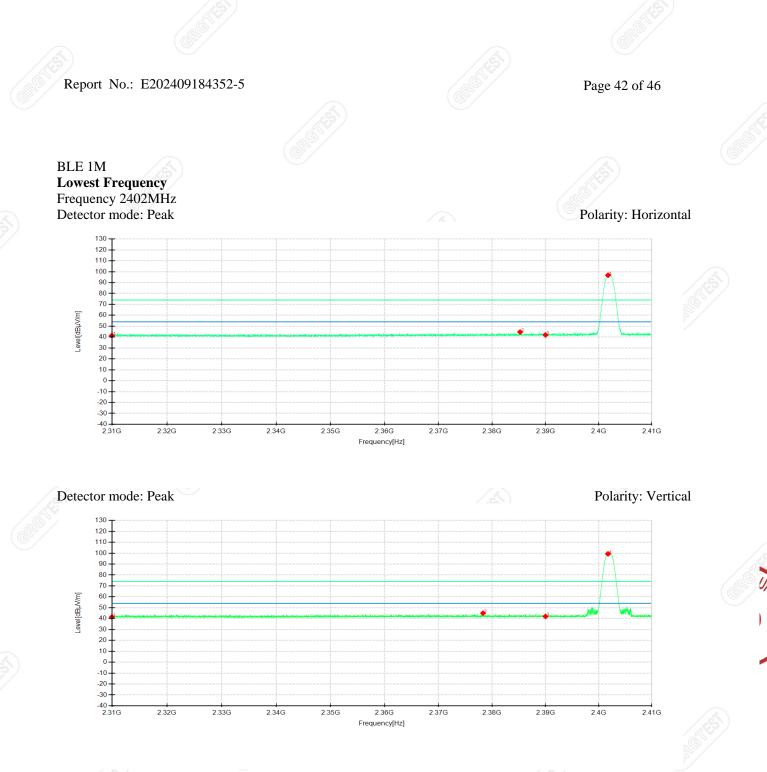
e) Repeat the procedures until all the PEAK and AVERAGE versus polarization are measured.

11.3 TEST SETUP

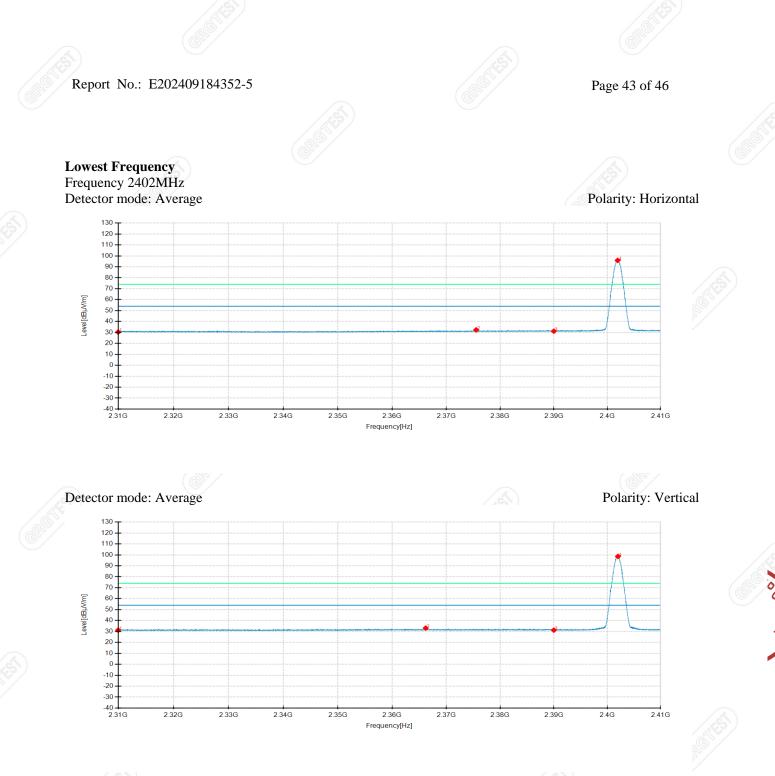




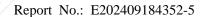
Test Voltage:	DC 12V	Test Engineer:	Zhao yaru
Test Date	2024-10-01	Environmental Conditions	25.7°C/59%RH/101.0kPa



No.	Frequency	Reading	Level	Factor	Limit	Margin	Height	Angle	Pole	Remark
	MHz	dBµV/m	dBµV/m	dB	dBuV/m	dB	cm 🤇	~		
1	2310.0000	46.88	41.40	-5.48	74.00	32.60	100	31	Horizontal	/
2	2385.2375	50.07	44.62	-5.45	74.00	29.38	100	237	Horizontal	/
3	2390.0000	47.40	42.01	-5.39	74.00	31.99	100	44	Horizontal	/
4	2401.7625	101.97	96.72	-5.25	74.00	-22.72	100	301	Horizontal	No limit
1	2310.0000	46.75	41.43	-5.32	74.00	32.57	100	226	Vertical	/
2	2378.3125	50.44	44.97	-5.47	74.00	29.03	100	111	Vertical	/
3	2390.0000	47.46	41.99	-5.47	74.00	32.01	200	120	Vertical	/
4	2401.7625	104.87	99.40	-5.47	74.00	-25.40	200	314	Vertical	No limit

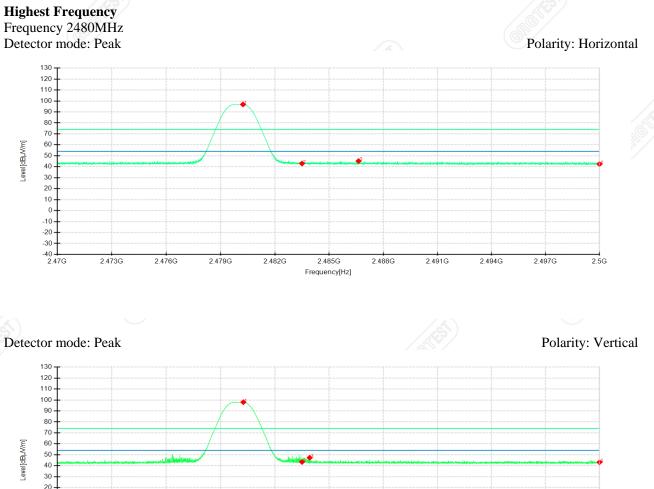


No.	Frequency	Reading	Level	Factor	Limit	Margin	Height	Angle	Pole	Remark
	MHz	$dB\mu V/m$	dBµV/m	dB	dBuV/m	dB	cm	° í		
1	2310.0000	35.85	30.37	-5.48	54.00	23.63	100	58	Horizontal	/
2	2375.5375	37.92	32.36	-5.56	54.00	21.64	100	72	Horizontal	/
3	2390.0000	36.56	31.17	-5.39	54.00	22.83	200	71	Horizontal	
4	2401.9375	101.10	95.86	-5.24	54.00	-41.86	100	313	Horizontal	No limit
1	2310.0000	36.52	31.20	-5.32	54.00	22.80	200	314	Vertical	/
2	2366.1875	38.54	33.07	-5.47	54.00	20.93	200	164	Vertical	/
3	2390.0000	36.67	31.20	-5.47	54.00	22.80	200	62	Vertical	/
4	2402.0000	104.03	98.57	-5.46	54.00	-44.57	200	314	Vertical	No limit





C.C.1....



		0	2.473G	2.476G	2.479G	2.482G	2.485G	2.488G	2.491G	2.494G	2.497G	2.5
+		+										
		+										

No.	Frequency	Reading	Level	Factor	Limit	Margin	Height @	Angle	Pole	Remark
	MHz	dBµV/m	dBµV/m	dB	dBuV/m	dB	cm	0		
1	2480.2413	101.63	96.82	-4.81	74.00	-22.82	100	310	Horizontal	No limit
2	2483.5000	47.76	42.93	-4.83	74.00	31.07	100	126	Horizontal	/
3	2486.6313	50.08	45.21	-4.87	74.00	28.79	100	61	Horizontal	/
4	2500.0000	47.38	42.39	-4.99	74.00	31.61	100	113	Horizontal	/
1	2480.2600	103.09	98.00	-5.09	74.00	-24.00	200	314	Vertical	No limit
2	2483.5000	48.52	43.45	-5.07	74.00	30.55	100	360	Vertical	/
3	2483.9238	52.37	47.31	-5.06	74.00	26.69	200	301	Vertical	/
4	2500.0000	48.22	43.23	-4.99	74.00	30.77	100	19	Vertical	1

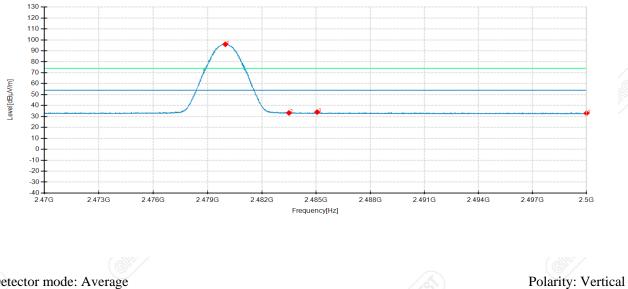


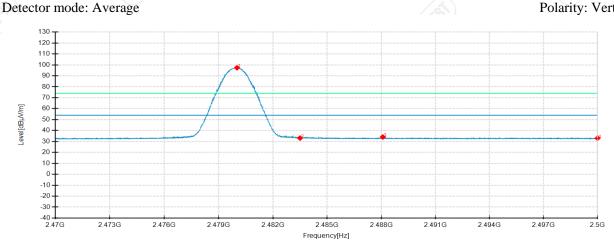


Highest Frequency Frequency 2480MHz Detector mode: Average

Polarity: Horizontal

5





No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.9863	100.78	95.97	-4.81	54.00	-41.97	100	314	Horizontal	No limit
2	2483.5000	38.06	33.23	-4.83	54.00	20.77	100	24	Horizontal	/
3	2485.0600	38.86	34.01	-4.85	54.00	19.99	200	47	Horizontal	
4	2500.0000	37.91	32.92	-4.99	54.00	21.08	200	224	Horizontal	/ /
1	2480.0200	102.43	97.34	-5.09	54.00	-43.34	200	313	Vertical	No limit
2	2483.5000	38.18	33.11	-5.07	54.00	20.89	200	313	Vertical	/
3	2488.0825	39.13	34.08	-5.05	54.00	19.92	100	198	Vertical	/
4	2500.0000	37.90	32.91	-4.99	54.00	21.09	200	149	Vertical	/

Remark: Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

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APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E202409184352-test setup photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202409184352-EUT photo.

----- End of Report ------