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Report Template Version: V05 Report Template Revision Date: 2021-11-03

Test Report

	a de the FUT e complie d with the standards are sified above
Test Result:	PASS*
Date of Issue:	2024-10-31
Date of Test:	2024-09-26 to 2024-09-26
Date of Receipt:	2024-09-26
	ANSI C63.10:2013
	KDB558074 D01 15.247 Meas Guidance v05r02
Standards:	47 CFR Part 15, Subpart C
FCC ID:	2AHFT858
Brand Name:	IDO
Test Model No.:	IDW28
Model No.:	IDW28, TGW01
Product:	Smart Watch
Equipment Under Test (E	UT):
Applicant: Address of Applicant:	Shenzhen DO Intelligent Technology Co., Ltd 11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China
Report No.:	CQASZ20240902080E-02

*In the configuration tested, the EUT complied with the standards specified above.

Tested By:	lewis zhou
	(Lewis Zhou)
Reviewed By:	Timo Loj'
, -	(Timo Lei)
	Alex

Approved By:

(Alex Wang)



The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20240902080E-02	Rev.01	Initial report	2024-10-31



2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	ANSI C63.10 2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	PASS
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	ANSI C63.10 2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 2013	PASS
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS



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4 General Information

4.1 Client Information

Applicant:	Shenzhen DO Intelligent Technology Co., Ltd
Address of Applicant:	11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China
Manufacturer:	Shenzhen DO Intelligent Technology Co., Ltd
Address of Manufacturer:	11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China
Factory:	Shenzhen DO Intelligent Technology Co., Ltd
Address of Factory:	11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua District, Shenzhen, China

4.2 General Description of EUT

Product Name:	Smart Watch		
Model No.:	IDW28, TGW01		
Test Model No.:	IDW28		
Trade Mark:	IDO		
Software Version:	V1.00.09		
Hardware Version:	V1.2		
Operation Frequency:	2402MHz~2480MHz		
Bluetooth Version:	V5.3		
Modulation Type:	GFSK		
Transfer Rate:	1Mbps, 2Mbps		
Number of Channel:	40		
Product Type:			
Test Software of EUT:	SiFli_RF_Tool v1.1.6		
Antenna Type:	IDW28:Metal center frame antenna		
	TGW01:FPC antenna		
Antenna Gain:	IDW28:-5.33dBi		
	TGW01:-3.24dBi		
EUT Power Supply:	Li-ion battery: DC 3.85V 350mAh, Charge by DC 5V for adapter		
Simultaneous Transmission	☐ Simultaneous TX is supported and evaluated in this report.		
	⊠ Simultaneous TX is not supported.		



Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

Note:

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

Channel	Frequency
The lowest channel (CH0)	2402MHz
The middle channel (CH19)	2440MHz
The highest channel (CH39)	2480MHz



4.3 Additional Instructions

EUT Test Software Settings:					
Mode:	\boxtimes Special software is used.				
	Through engineering command into engineering command: *#*#3646633#	5 5			
EUT Power level:	Class2 (Power level is built-in set para selected)	meters and cannot be changed and			
Use test software to set the lov	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep				
transmitting of the EUT.					
Mode	Channel Frequency(MHz)				
	СН0	2402			
GFSK	CH19 2440				
	CH39 2480				

Run Software:

	● TX	⊖ rx			
Frequency	2402 MHz -	CH 0	~		
Payload	Repeated 1	1110000	~		
PHY	LE 1M PHY		~		
Data Length	45				
Power level	3		∼ d	в	
□ 连续发射		Start TX		Θ	
	Payload PHY Data Length Power level	Frequency2402 MHz -PayloadRepeated 1PHYLE 1M PHYData Length45Power level3	Frequency2402 MHz - CH 0PayloadRepeated 11110000PHYLE 1M PHYData Length45Power level3	Frequency 2402 MHz - CH 0 ✓ Payload Repeated 11110000 ✓ PHY LE 1M PHY ✓ Data Length 45 Power level 3 ✓ d	Frequency 2402 MHz - CH 0 Payload Repeated 11110000 PHY LE 1M PHY Data Length 45 Power level 3



4.4 Test Environment

Operating Environment	Operating Environment:		
Temperature:	24.5°C		
Humidity:	59% RH		
Atmospheric Pressure:	1009mbar		
Test Mode:	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.		

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Adapter	MI	/	1	CQA
2) Cable				

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
	/	1	1	1



4.6 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

No.	Item	Uncertainty
1	Radiated Emission (Below 1GHz)	5.12dB
2	Radiated Emission (Above 1GHz)	4.60dB
3	Conducted Disturbance (0.15~30MHz)	3.34dB
4	Radio Frequency	3×10 ⁻⁸
5	Duty cycle	0.6 %
6	Occupied Bandwidth	1.1%
7	RF conducted power	0.86dB
8	RF power density	0.74
9	Conducted Spurious emissions	0.86dB
10	Temperature test	0.8°C
11	Humidity test	2.0%
12	Supply voltages	0.5 %
13	Frequency Error	5.5 Hz

Hereafter the best measurement capability for CQA laboratory is reported:



4.7 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

4.8 Test Facility

• A2LA (Certificate No. 4742.01)

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• FCC Registration No.: 522263

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

4.9 Deviation from Standards

None.

4.10Other Information Requested by the Customer

None.



4.11Equipment List

· · ·			Instrument	Calibration	Calibration
Test Equipment	Manufacturer	Model No.	No.	Date	Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU26	CQA-038	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU40	CQA-075	2024/9/2	2025/9/1
Preamplifier	MITEQ	AFS4-00010300-18- 10P-4	CQA-035	2024/9/2	2025/9/1
Preamplifier	MITEQ	AMF-6D-02001800- 29-20P	CQA-036	2024/9/2	2025/9/1
Preamplifier	EMCI	EMC184055SE	CQA-089	2024/9/2	2025/9/1
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2024/9/2	2025/9/1
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2024/9/2	2025/9/1
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2024/9/2	2025/9/1
RF					
cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2024/9/2	2025/9/1
Antenna Connector	CQA	RFC-01	CQA-080	2024/9/2	2025/9/1
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2024/9/2	2025/9/1
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	2024/9/2	2025/9/1
Power meter	R&S	NRVD	CQA-029	2024/9/2	2025/9/1
Power divider	MIDWEST	PWD-2533-02-SMA- 79	CQA-067	2024/9/2	2025/9/1
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
LISN	R&S	ENV216	CQA-003	2024/9/2	2025/9/1
Coaxial cable	CQA	N/A	CQA-C009	2024/9/2	2025/9/1
DC power	KEYSIGHT	E3631A	CQA-028	2024/9/2	2025/9/1

Note:

The temporary antenna connector is soldered on the pcb board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.





5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement: 47 CFR Part 15C Section 15.203 /247(c)

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:



The antenna is Metal center frame antenna.

The connection/connection type between the antenna to the EUT's antenna port is: unique coupling. This is either permanently attachment or a unique coupling that satisfies the requirement.

EUT Antenna:

V5 THOT TGWO1

The antenna is FPC antenna.

The connection/connection type between the antenna to the EUT's antenna port is: unique couplingx. This is either permanently attachment or a unique coupling that satisfies the requirement.



Test Requirement:	47 CFR Part 15C Section 15.207					
Test Method:	ANSI C63.10: 2013					
Test Frequency Range:	150kHz to 30MHz					
Limit:		Limit (dBuV)				
	Frequency range (MHz)	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 o	f the frequency.				
Test Procedure:	1) The mains terminal disturt room.	bance voltage test was	s conducted in a shielded			
	2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50µH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not					
	 exceeded. 3) The tabletop EUT was placed ground reference plane. An placed on the horizontal gr 4) The test was performed will of the EUT shall be 0.4 m for vertical ground reference plane. The LISN unit under test and bonded mounted on top of the group between the closest points the EUT and associated equipment and all of the in ANSI C63.10: 2013 on con 	nd for floor-standing an ound reference plane, th a vertical ground ref from the vertical ground plane was bonded to th 1 was placed 0.8 m fro to a ground reference and reference plane. The of the LISN 1 and the quipment was at least (im emission, the relative terface cables must be	rangement, the EUT was erence plane. The rear d reference plane. The e horizontal ground om the boundary of the plane for LISNs his distance was EUT. All other units of 0.8 m from the LISN 2.			



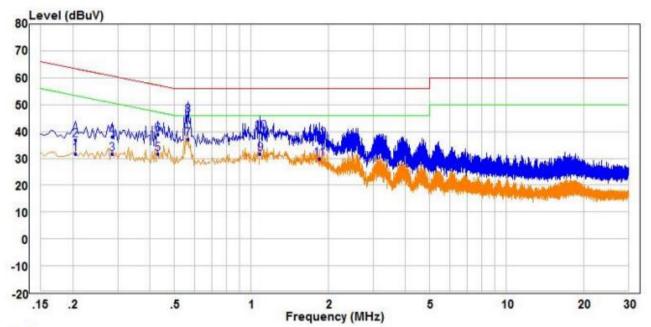
Test Setup:	Shielding Room Test Receiver Test
Test Mode:	Through Pre-scan, find the transmitting mode at the lowest channel is the worst case.
Test Voltage:	AC 120V/60Hz
Test Results:	Pass



IDW28

Measurement Data

Live line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	_	MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.205	21.97	9.61	31.58	53.41	-21.83	Average	Line
23		0.205	27.35	9.61	36.96	63.41	-26.45	QP	Line
3		0.285	22.11	9.51	31.62	50.67	-19.05	Average	Line
4		0.285	28.43	9.51	37.94	60.67	-22.73	QP	Line
5		0.430	21.95	9.64	31.59	47.25	-15.66	Average	Line
6		0.430	29.44	9.64	39.08	57.25	-18.17	QP	Line
7	PP	0.565	27.24	9.77	37.01	46.00	-8.99	Average	Line
8	QP	0.565	36.09	9.77	45.86	56.00	-10.14	QP	Line
9		1.085	21.79	9.92	31.71	46.00	-14.29	Average	Line
10		1.085	29.91	9.92	39.83	56.00	-16.17	QP	Line
11		1.845	18.51	11.42	29.93	46.00	-16.07	Average	Line
12		1.845	25.72	11.42	37.14	56.00	-18.86	QP	Line

Remark:

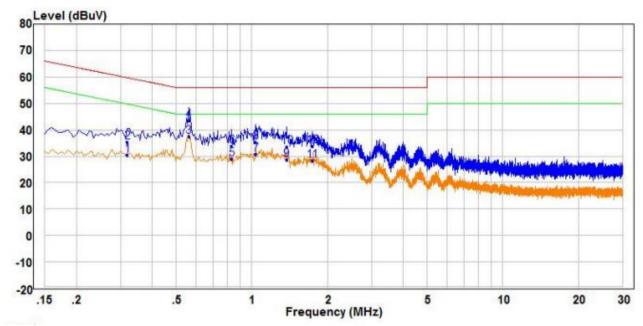
1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.



Neutral line:



		Read			Limit	Over		
	Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase
-	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.320	20.89	9.51	30.40	49.71	-19.31	Average	Neutral
2	0.320	25.91	9.51	35.42	59.71	-24.29	QP	Neutral
3 PP	0.560	27.80	9.76	37.56	46.00	-8.44	Average	Neutral
4 QP	0.560	33.76	9.76	43.52	56.00	-12.48	QP	Neutral
5	0.830	19.05	9.81	28,86	46.00	-17.14	Average	Neutral
6	0.830	23.98	9.81	33.79	56.00	-22.21	QP	Neutral
7	1.035	20.94	9.70	30.64	46.00	-15.36	Average	Neutral
8	1.035	25.76	9.70	35.46	56.00	-20.54	QP	Neutral
9	1.375	18.89	9.72	28.61	46.00	-17.39	Average	Neutral
10	1.375	23.86	9.72	33.58	56.00	-22.42	QP	Neutral
11	1.740	18.68	9.74	28.42	46.00	-17.58	Average	Neutral
12	1.740	24.13	9.74	33.87	56.00	-22.13	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.

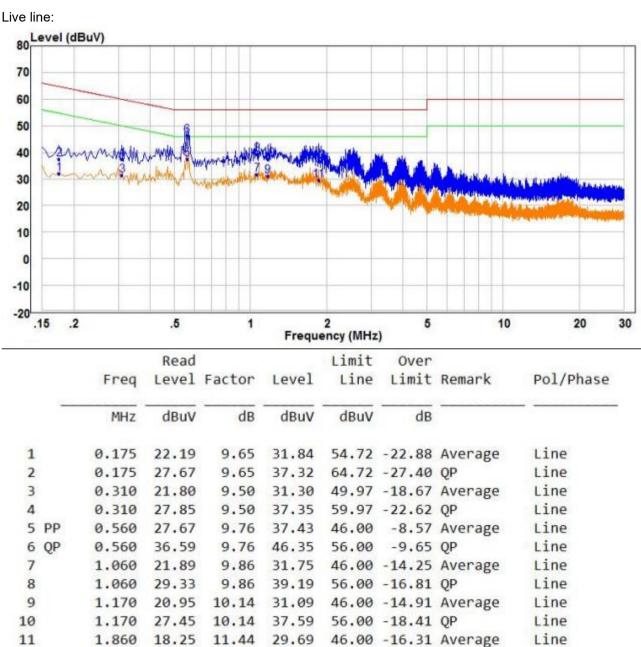


Line

Line

TGW01

Measurement Data



Remark:

11

12

1.860

1.860

1. The following Quasi-Peak and Average measurements were performed on the EUT:

11.44

11.44

29.69

36.70

56.00 -19.30 QP

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

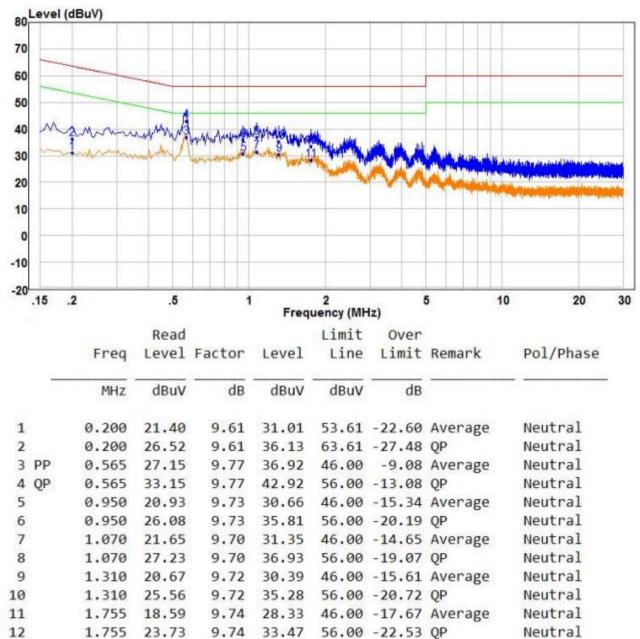
18.25

25.26

3. If the Peak value under Average limit, the Average value is not recorded in the report.



Neutral line:

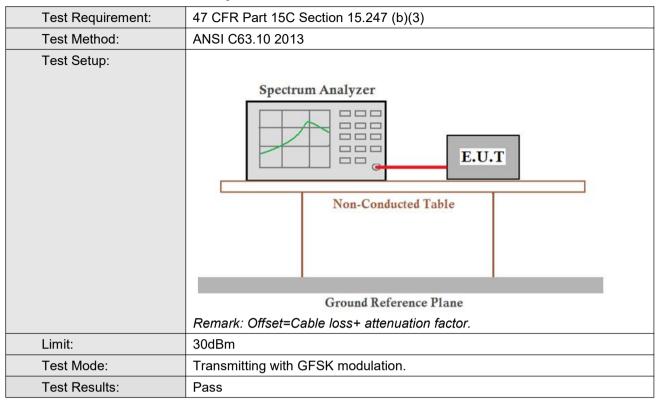


Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.



5.3 Conducted Peak Output Power



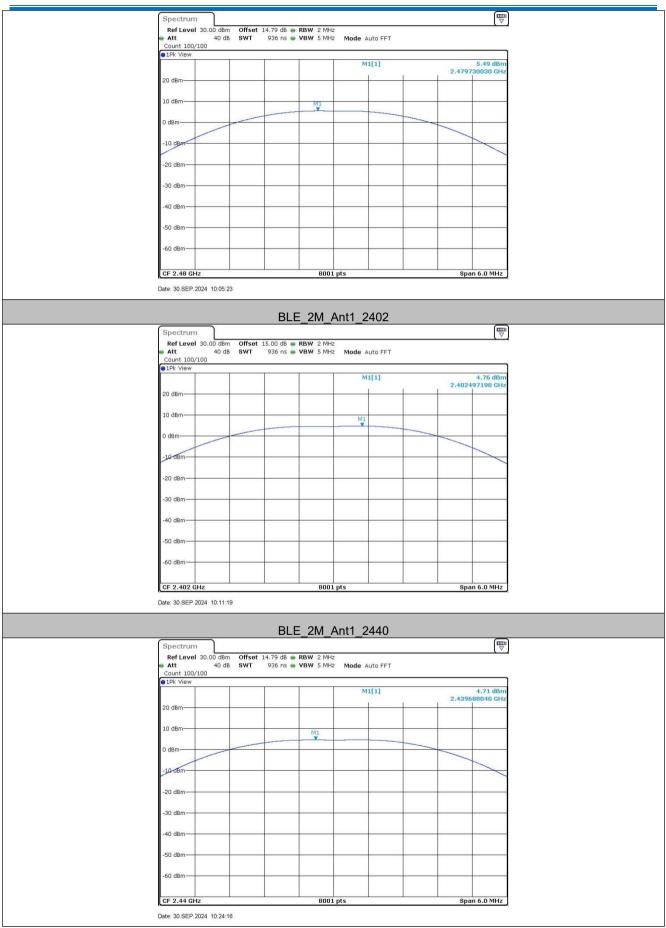
Measurement Data

	GFSK mode (1Mbps)					
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result			
Lowest	4.64	30.00	Pass			
Middle	4.55	30.00	Pass			
Highest	5.49	30.00	Pass			
	GFSK mode (21	Mbps)				
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result			
Lowest	4.76	30.00	Pass			
Middle	4.71	30.00	Pass			
Highest	5.66	30.00	Pass			







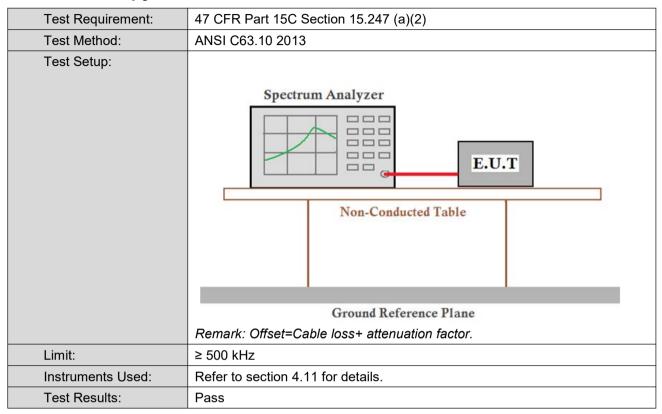




BLE_2M_Ant1_2480	
Ref Level 30.00 dBm Offset 14.79 dB RBW 2 MHz	
Att 40 dB SWT 936 ns VBW 5 MHz Mode Auto FFT	
Count 100/100	
●1Pk View M1[1] S.66 dBm	
MILI] 5.00 dBm 2.479622800 GHz	
20 dBm	
10 dBm	
0 dBm	
_10° dBm	
-20 dBm.	
-30 dBm	
-30 dbit.	
-40 dBm-	
- V GUIT	
-50 dBm-	
-60 dBm	
CF 2.48 GHz 8001 pts Span 6.0 MHz	
Cr 2.40 GHZ OUUL PLS Span 6.0 MHZ	



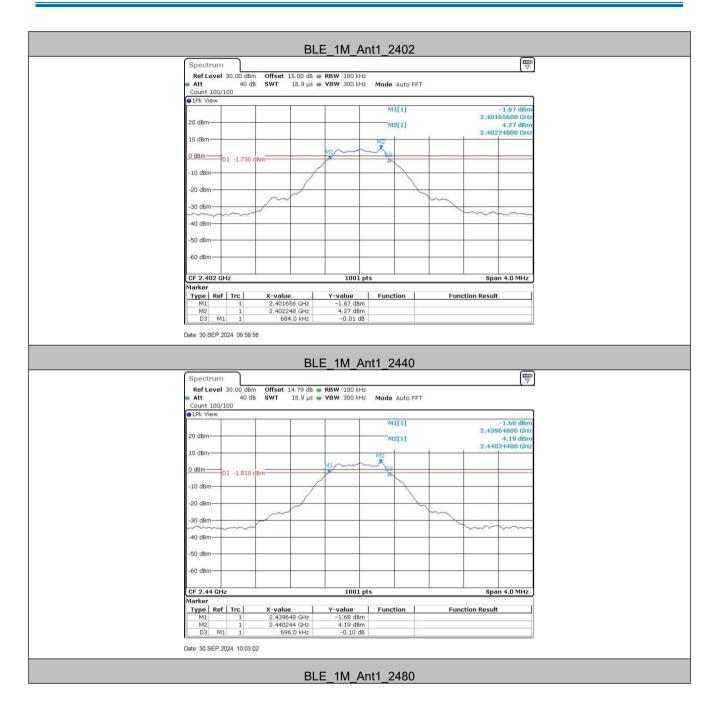
5.4 6dB Occupy Bandwidth



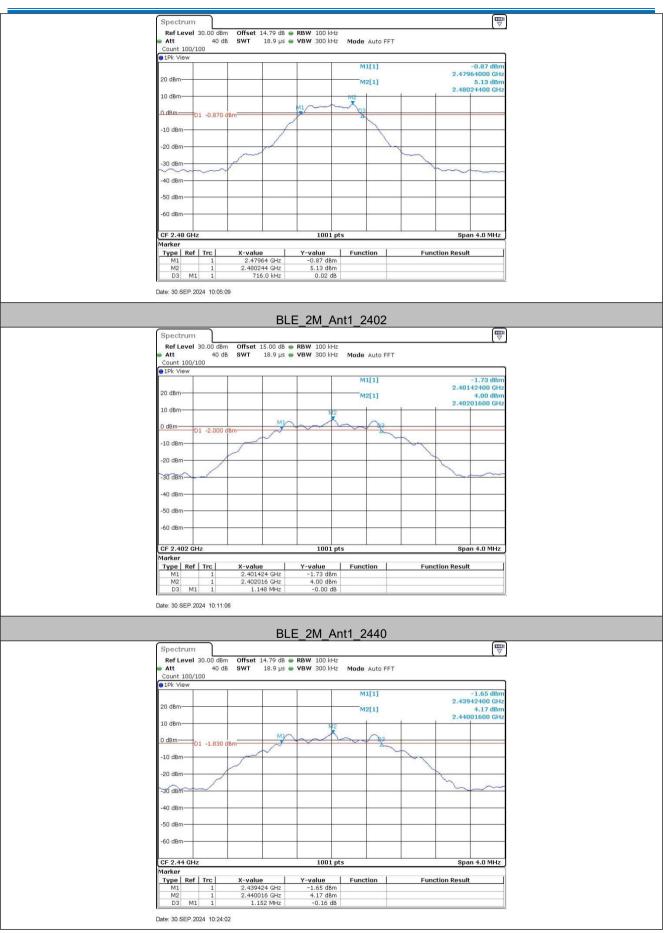
Measurement Data

	GFSK mode (1Mbps)					
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result			
Lowest	0.68	≥500	Pass			
Middle	0.70	≥500	Pass			
Highest	0.72	≥500	Pass			
	GFSK mode (2Mbps))				
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result			
Lowest	1.15	≥500	Pass			
Middle	1.15	≥500	Pass			
Highest	1.15	≥500	Pass			

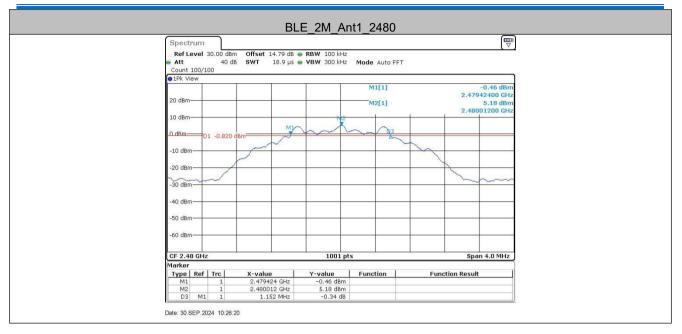






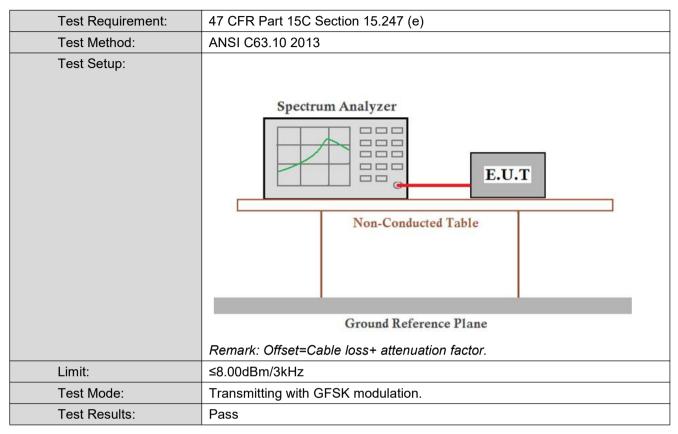








5.5 Power Spectral Density

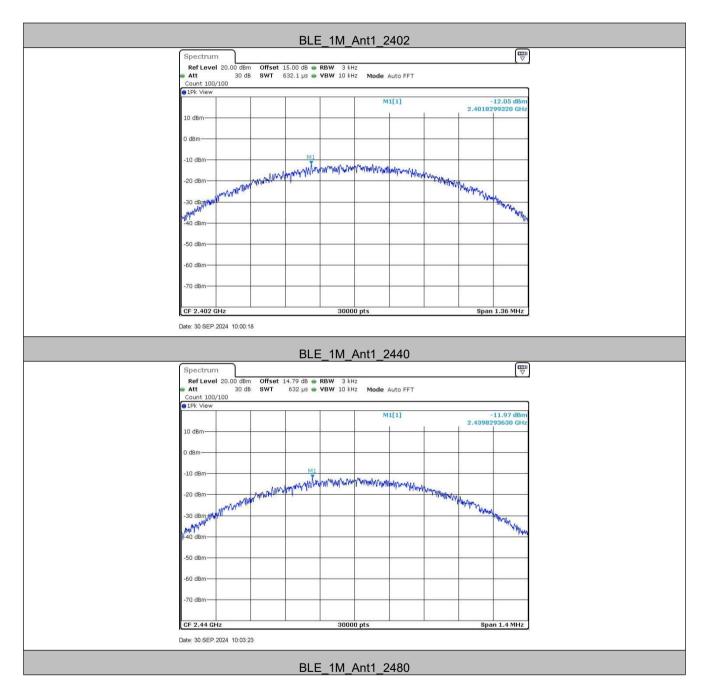


Measurement Data

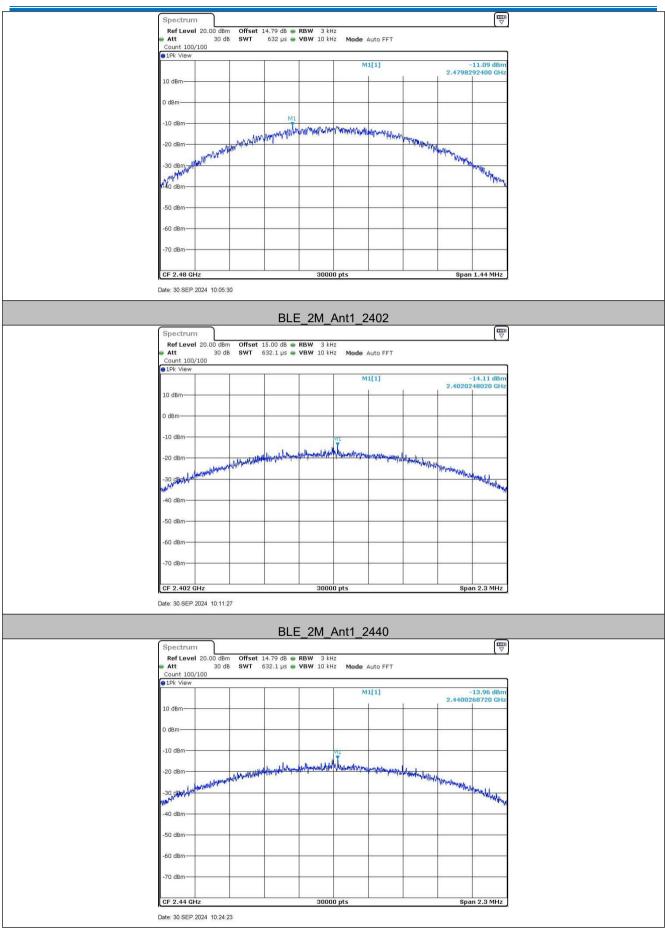
GFSK mode (1Mbps)							
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result				
Lowest	-12.05	≤8.00	Pass				
Middle	-11.97	≤8.00	Pass				
Highest	-11.09	≤8.00	Pass				
GFSK mode (2Mbps)							
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result				
Lowest	-14.11	≤8.00	Pass				
Middle	-13.96	≤8.00	Pass				
Highest	-13.05	≤8.00	Pass				



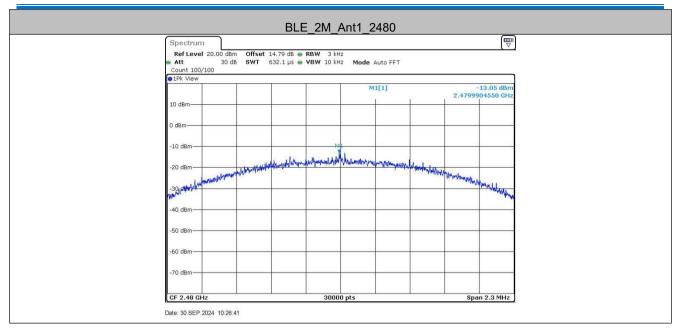
Test plot as follows:





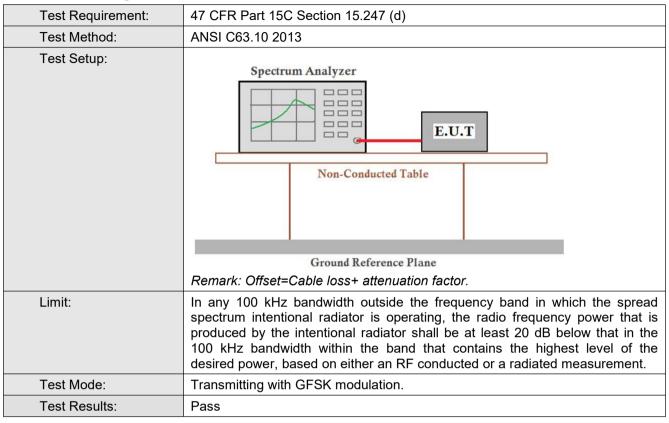








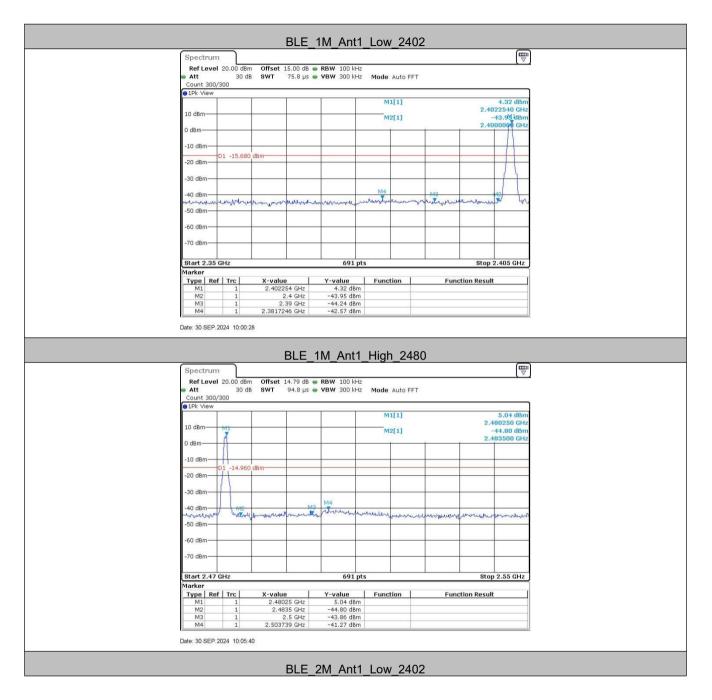
5.6 Band-edge for RF Conducted Emissions



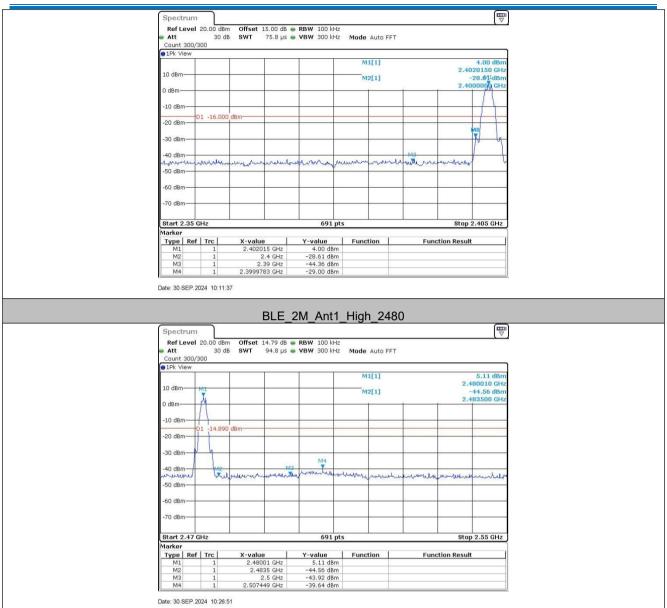
TestMode	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Low	2402	4.32	-42.57	≤-15.68	PASS
	High	2480	5.04	-41.27	≤-14.96	PASS
BLE_2M	Low	2402	4.00	-29	≤-16	PASS
	High	2480	5.11	-39.64	≤-14.89	PASS



Test plot as follows:

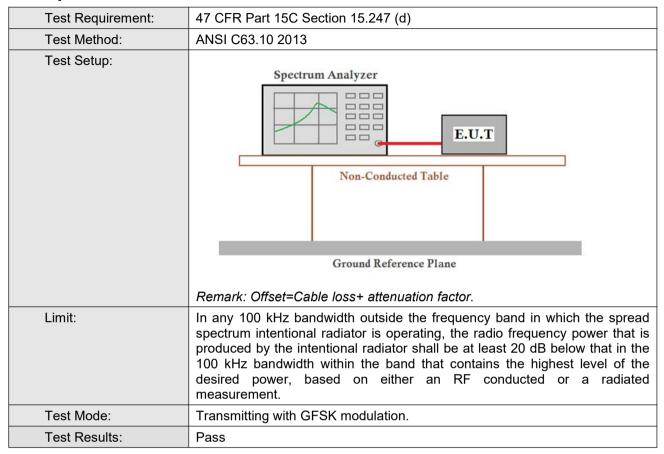






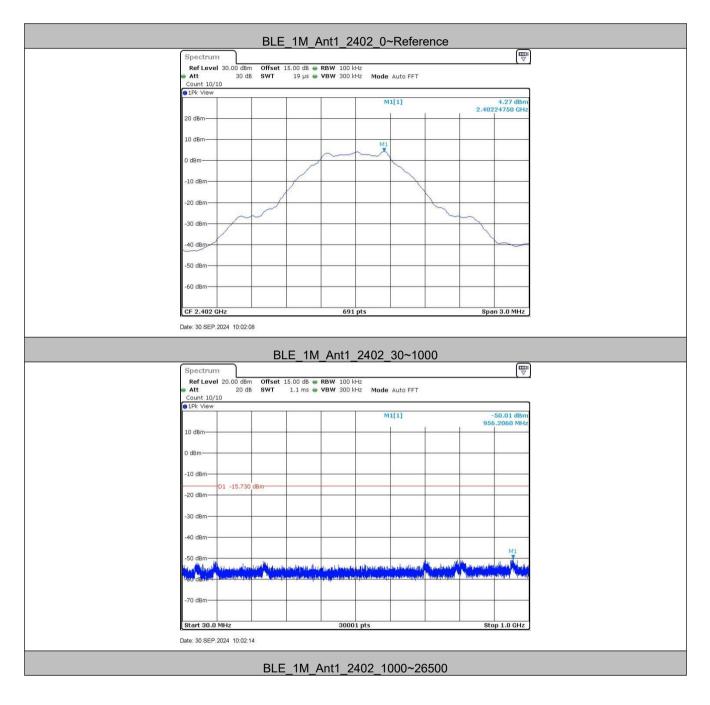


5.7 Spurious RF Conducted Emissions

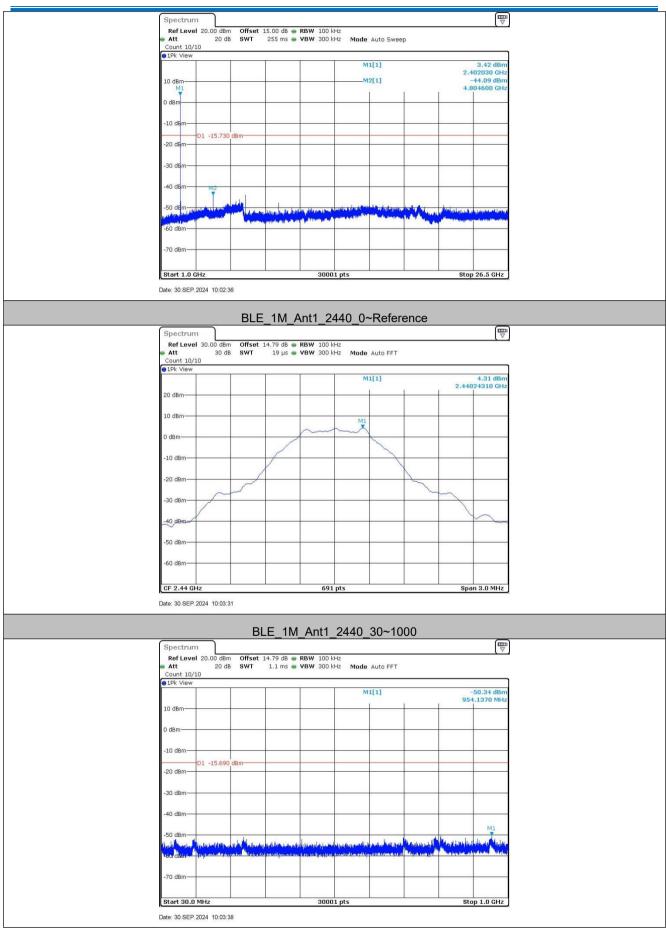




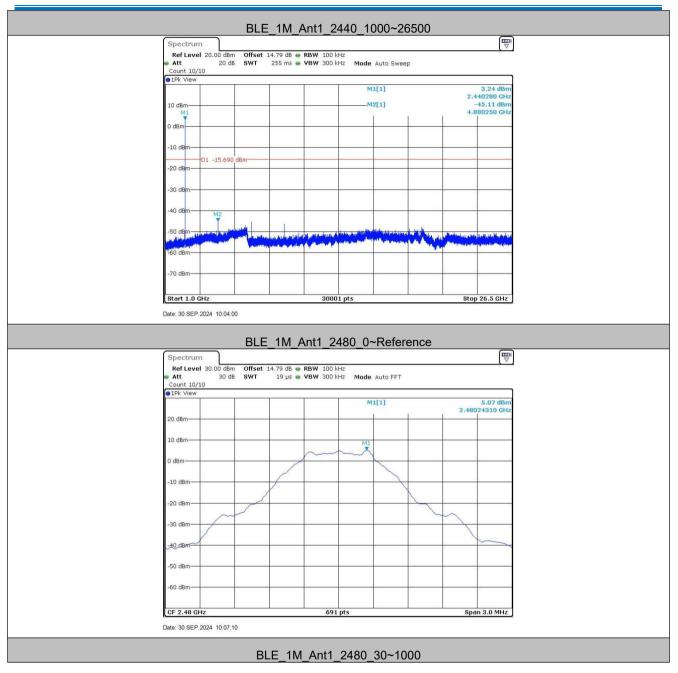
Test plot as follows:



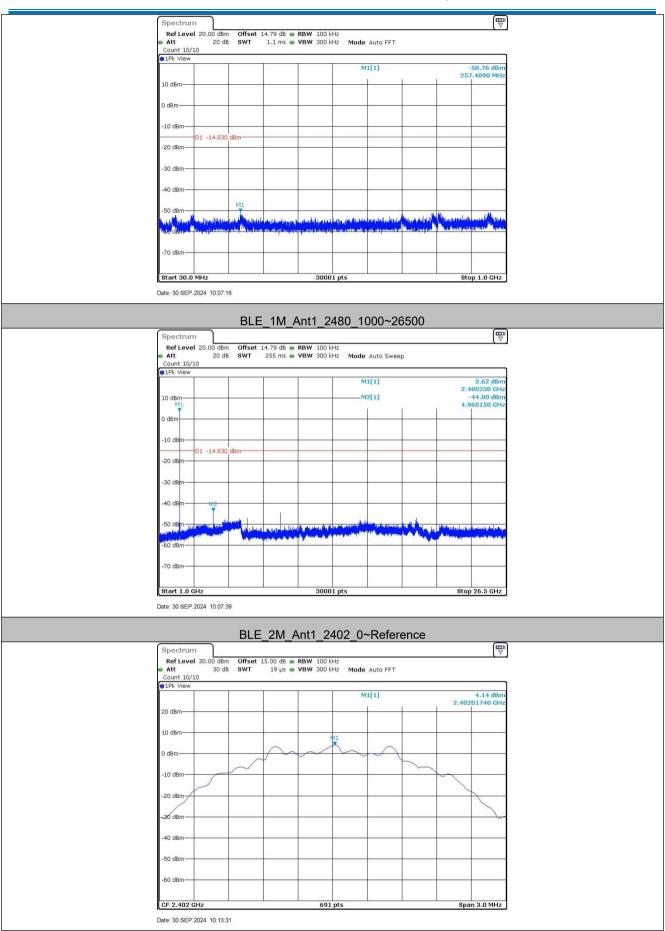




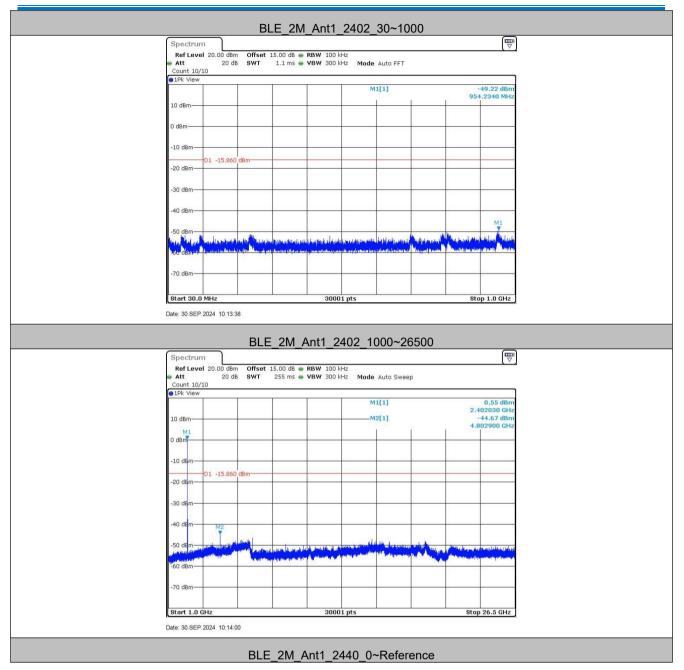




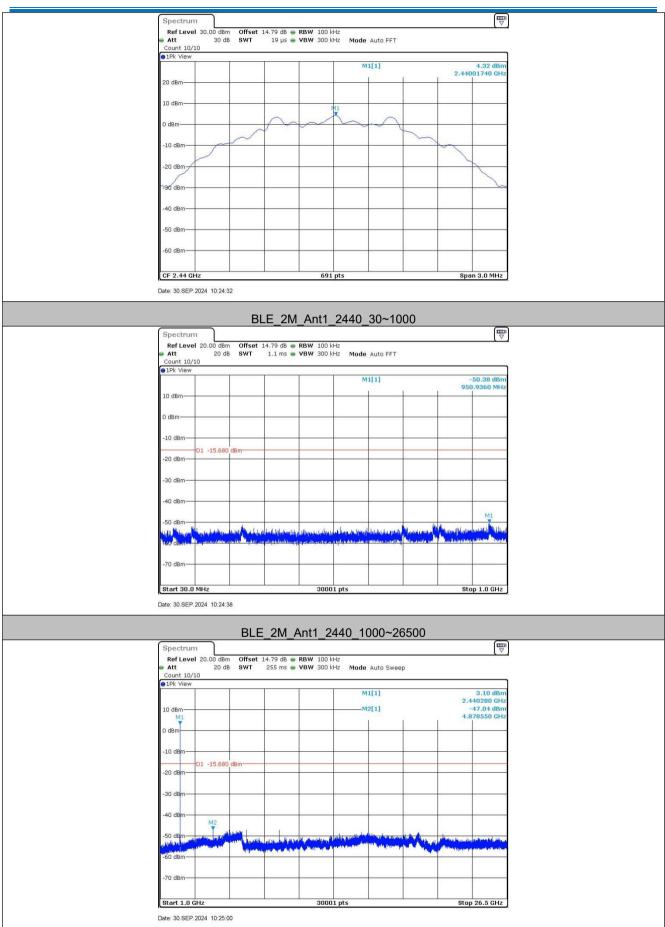




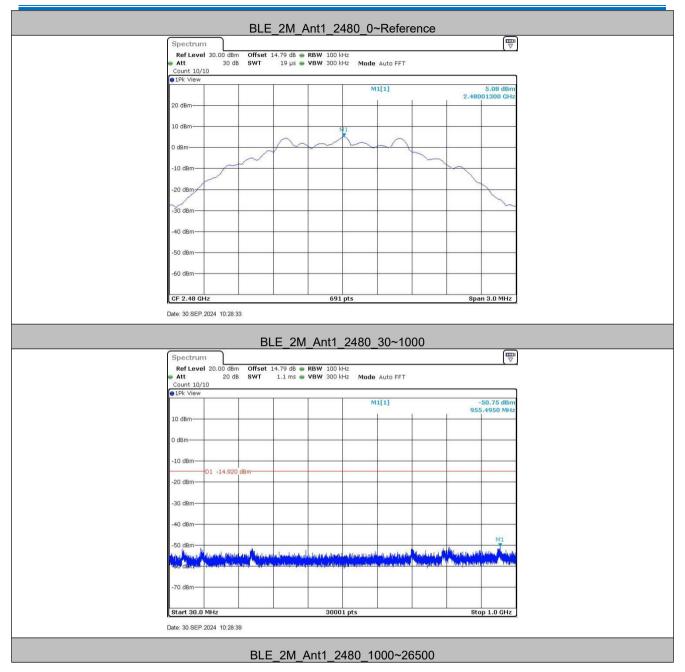






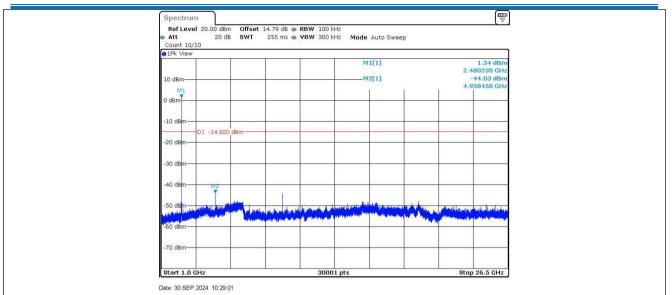








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Remark:

Pretest 9kHz to 25GHz, find the highest point when testing, so only the worst data were shown in the test report. Per FCC Part 15.33 (a) and 15.31 (o) ,The amplitude of spurious emissions from intentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.



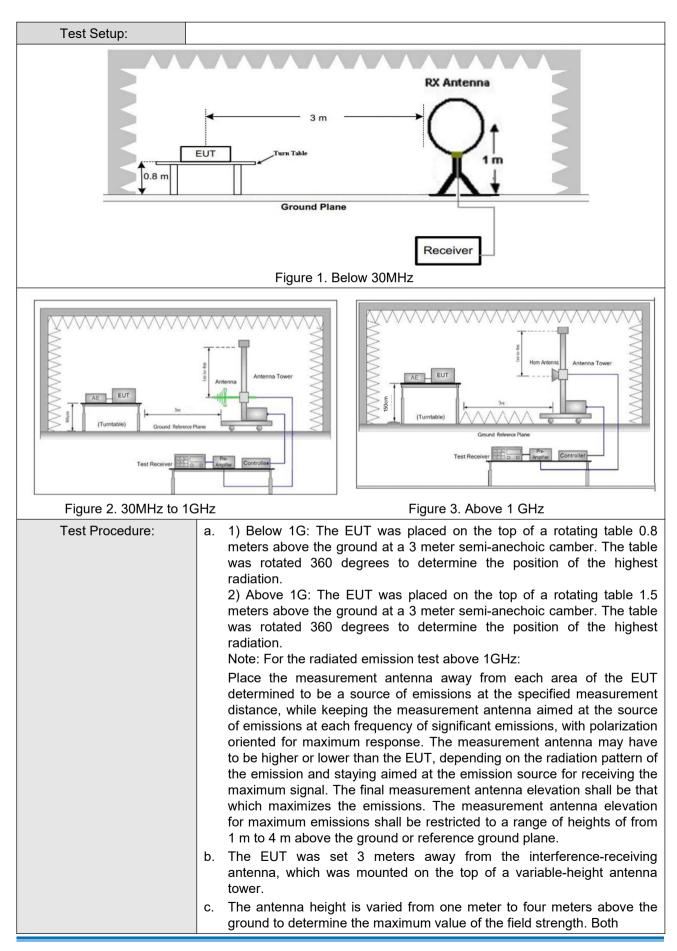
Г

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5.8 Radiated Spurious Emission & Restricted bands

Test Requirement:	47 CFR Part 15C Section	on 1	5.209 and 15	.205		
Test Method:	ANSI C63.10 2013					
Test Site:	Measurement Distance	: 3m	n (Semi-Anecł	noic Cham	ber)	
Receiver Setup:	Frequency		Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz		Peak	10kHz	z 30kHz	Peak
	0.009MHz-0.090MH	z	Average	10kHz	z 30kHz	Average
	0.090MHz-0.110MH	z	Quasi-peak	10kHz	z 30kHz	Quasi-peak
	0.110MHz-0.490MH	z	Peak	10kHz	z 30kHz	Peak
	0.110MHz-0.490MH	z	Average	10kHz	z 30kHz	Average
	0.490MHz -30MHz		Quasi-peak	10kHz	z 30kHz	Quasi-peak
	30MHz-1GHz		Quasi-peak	100 kH	lz 300kHz	Quasi-peak
	Above 1GHz		Peak	1MHz	: 3MHz	Peak
			Peak	1MHz	: 10Hz	Average
Limit:	Frequency		eld strength crovolt/meter)	Limit (dBuV/m)	Remark	Measureme distance (r
	0.009MHz-0.490MHz	2	400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24	1000/F(kHz)	-	-	30
	1.705MHz-30MHz		30	-	-	30
	30MHz-88MHz		100	40.0	Quasi-peak	3
	88MHz-216MHz		150	43.5	Quasi-peak	3
	216MHz-960MHz		200	46.0	Quasi-peak	3
	960MHz-1GHz		500	54.0	Quasi-peak	3
	Above 1GHz		500	54.0	Average	3
	Note: 15.35(b), frequency emissions is limit applicable to the e peak emission level rac	20c quip	IB above the oment under t	maximum est. This p	permitted ave	erage emissio

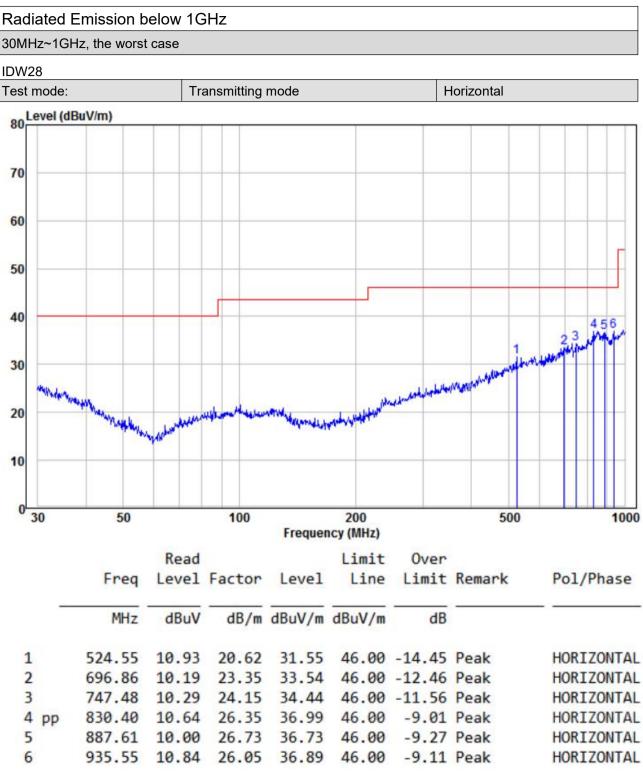






	horizontal and vertical polarizations of the antenna are set to make the measurement.
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
	f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
	 g. Test the EUT in the lowest channel (2402MHz), the middle channel (2440MHz), the Highest channel (2480MHz)
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
	i. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with GFSK modulation. Transmitting mode.
Final Test Mode:	Through Pre-scan, find the 1Mbps of data type and GFSK modulation is the worst case.
	For below 1GHz part, through pre-scan, the worst case is the highest channel.
	Only the worst case is recorded in the report.
Test Results:	Pass





Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor - Preamplifier Factor,

Level = Read Level + Factor,



est mode:		Т	ransmitting	mode			Vertical	
80 Level (dE	BuV/m)							
00								
70								
60								
50								[
40								
30	1						6 mileaneraline	how makes a start of the start
20	mollin	2 3 1	durin his	+hetwangate	performance	hadradehade	ny n	
10		Vire					_	
	50		100	Freque	200 ncy (MHz)		500	100
0 30								
30		Read			Limit	Over		
0 30	Freq		Factor	Level	Limit Line		Remark	Pol/Phas

1 pp	51.48	18.84	8.50	27.34	40.00	-12.66	Peak	VERTICAL
2	57.59	15.55	6.77	22.32	40.00	-17.68	Peak	VERTICAL
3	75.71	13.08	9.99	23.07	40.00	-16.93	Peak	VERTICAL
4	99.88	11.64	11.75	23.39	43.50	-20.11	Peak	VERTICAL
5	162.04	13.42	9.12	22.54	43.50	-20.96	Peak	VERTICAL
6	385.28	13.37	16.50	29.87	46.00	-16.13	Peak	VERTICAL

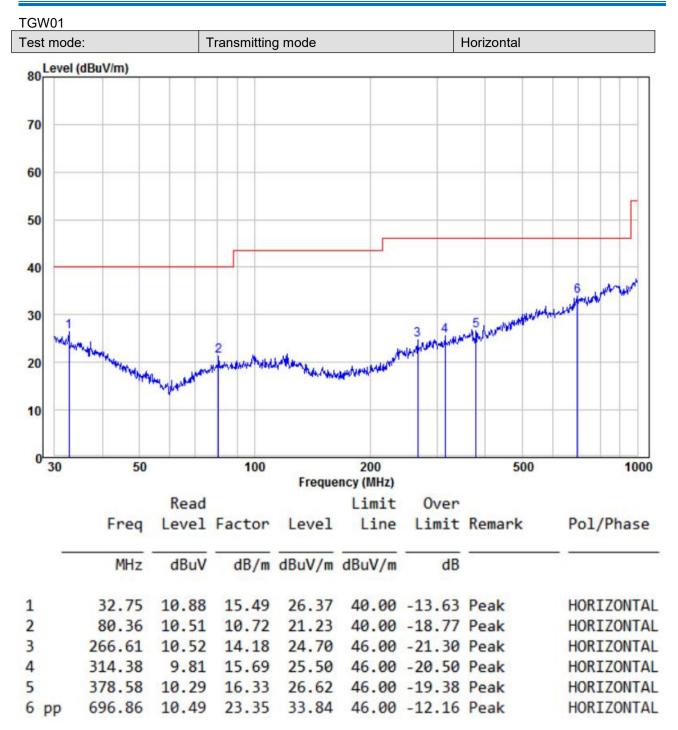
Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,





Remark:

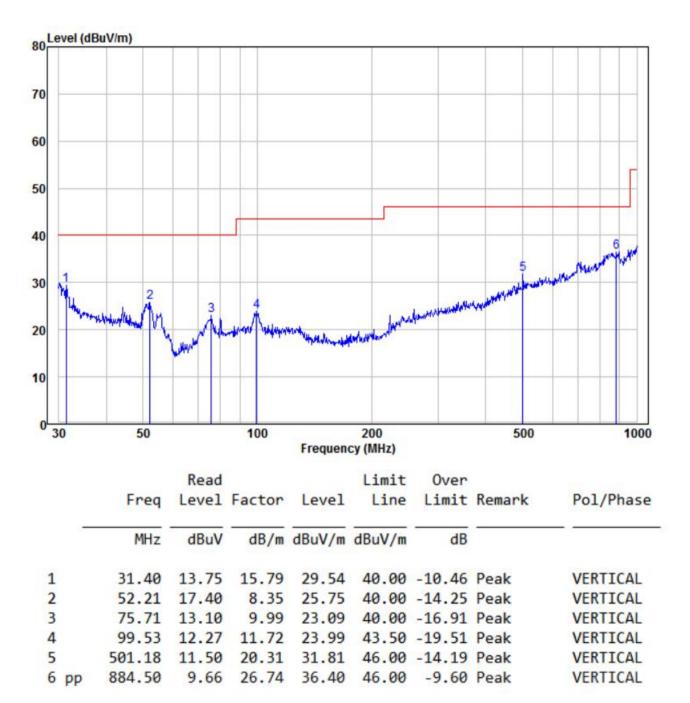
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor - Preamplifier Factor,

Level = Read Level + Factor,



30MHz~1GHz, the worst case						
Test mode:	Transmitting mode	Vertical				



Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,



Transmitter Emission above 1GHz

IDW28

Worse case m	ode:	GFSK(1Mbp	s)	Test channel:		Lowest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2390	53.51	-9.2	44.31	74	-29.69	Peak	н
2400	54.80	-9.39	45.41	74	-28.59	Peak	Н
4804	54.11	-4.33	49.78	74	-24.22	Peak	Н
7206	48.95	1.01	49.96	74	-24.04	Peak	Н
2390	53.03	-9.2	43.83	74	-30.17	Peak	V
2400	52.58	-9.39	43.19	74	-30.81	Peak	V
4804	54.13	-4.33	49.80	74	-24.20	Peak	V
7206	49.73	1.01	50.74	74	-23.26	Peak	V

Worse case m	Worse case mode:		GFSK(1Mbps)		el:	Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
4880	52.03	-4.11	47.92	74	-26.08	peak	Н
7320	49.53	1.51	51.04	74	-22.96	peak	Н
4880	51.95	-4.11	47.84	74	-26.16	peak	V
7320	50.04	1.51	51.55	74	-22.45	peak	V

Worse case m	Vorse case mode:		s)	Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2483.5	56.46	-9.29	47.17	74	-26.83	Peak	н
4960	51.96	-4.04	47.92	74	-26.08	Peak	Н
7440	50.08	1.57	51.65	74	-22.35	Peak	Н
2483.5	56.20	-9.29	46.91	74	-27.09	Peak	v
4960	49.29	-4.04	45.25	74	-28.75	Peak	V
7440	50.89	1.57	52.46	74	-21.54	Peak	V



Worse case m	Worse case mode:		GFSK(2Mbps)		el:	Lowest		
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V	
2390	53.81	-9.2	44.61	74	-29.39	Peak	н	
2400	54.82	-9.39	45.43	74	-28.57	Peak	Н	
4804	52.32	-4.33	47.99	74	-26.01	Peak	Н	
7206	50.50	1.01	51.51	74	-22.49	Peak	Н	
2390	55.03	-9.2	45.83	74	-28.17	Peak	v	
2400	52.09	-9.39	42.70	74	-31.30	Peak	V	
4804	54.35	-4.33	50.02	74	-23.98	Peak	V	
7206	48.40	1.01	49.41	74	-24.59	Peak	V	

Worse case mode:		GFSK(2Mbps)		Test chann	el:	Middle		
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V	
4880	50.39	-4.11	46.28	74	-27.72	peak	Н	
7320	48.56	1.51	50.07	74	-23.93	peak	Н	
4880	51.32	-4.11	47.21	74	-26.79	peak	V	
7320	48.62	1.51	50.13	74	-23.87	peak	V	

Worse case m	ode:	GFSK(2Mbp	s)	Test chann	el:	Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2483.5	54.97	-9.29	45.68	74	-28.32	Peak	н
4960	52.86	-4.04	48.82	74	-25.18	Peak	Н
7440	50.67	1.57	52.24	74	-21.76	Peak	Н
2483.5	57.08	-9.29	47.79	74	-26.21	Peak	v
4960	51.59	-4.04	47.55	74	-26.45	Peak	V
7440	49.60	1.57	51.17	74	-22.83	Peak	V



TGW01

Worse case m	ode:	GFSK(1Mbp	s)	Test chann	el:	Lowest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2390	54.93	-9.2	45.73	74	-28.27	Peak	н
2400	56.84	-9.39	47.45	74	-26.55	Peak	Н
4804	51.61	-4.33	47.28	74	-26.72	Peak	Н
7206	50.30	1.01	51.31	74	-22.69	Peak	Н
2390	53.82	-9.2	44.62	74	-29.38	Peak	v
2400	52.03	-9.39	42.64	74	-31.36	Peak	V
4804	52.32	-4.33	47.99	74	-26.01	Peak	V
7206	49.54	1.01	50.55	74	-23.45	Peak	V

Worse case mode:		GFSK(1Mbps)		Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
4880	50.44	-4.11	46.33	74	-27.67	peak	Н
7320	49.71	1.51	51.22	74	-22.78	peak	Н
4880	53.49	-4.11	49.38	74	-24.62	peak	V
7320	48.48	1.51	49.99	74	-24.01	peak	V

Worse case mode:		GFSK(1Mbps)		Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2483.5	54.79	-9.29	45.50	74	-28.50	Peak	н
4960	50.85	-4.04	46.81	74	-27.19	Peak	Н
7440	50.94	1.57	52.51	74	-21.49	Peak	Н
2483.5	57.21	-9.29	47.92	74	-26.08	Peak	v
4960	50.30	-4.04	46.26	74	-27.74	Peak	V
7440	48.55	1.57	50.12	74	-23.88	Peak	V



Worse case mode:		GFSK(2Mbps)		Test channel:		Lowest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2390	53.50	-9.2	44.30	74	-29.70	Peak	н
2400	54.88	-9.39	45.49	74	-28.51	Peak	Н
4804	51.85	-4.33	47.52	74	-26.48	Peak	Н
7206	48.54	1.01	49.55	74	-24.45	Peak	Н
2390	52.29	-9.2	43.09	74	-30.91	Peak	v
2400	52.96	-9.39	43.57	74	-30.43	Peak	V
4804	52.47	-4.33	48.14	74	-25.86	Peak	V
7206	49.36	1.01	50.37	74	-23.63	Peak	V

Worse case mode:		GFSK(2Mbps)		Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
4880	52.53	-4.11	48.42	74	-25.58	peak	Н
7320	50.20	1.51	51.71	74	-22.29	peak	Н
4880	51.90	-4.11	47.79	74	-26.21	peak	V
7320	49.98	1.51	51.49	74	-22.51	peak	V

Worse case mode:		GFSK(2Mbps)		Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2483.5	54.34	-9.29	45.05	74	-28.95	Peak	н
4960	51.56	-4.04	47.52	74	-26.48	Peak	Н
7440	49.91	1.57	51.48	74	-22.52	Peak	Н
2483.5	56.21	-9.29	46.92	74	-27.08	Peak	v
4960	51.18	-4.04	47.14	74	-26.86	Peak	V
7440	51.01	1.57	52.58	74	-21.42	Peak	V

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

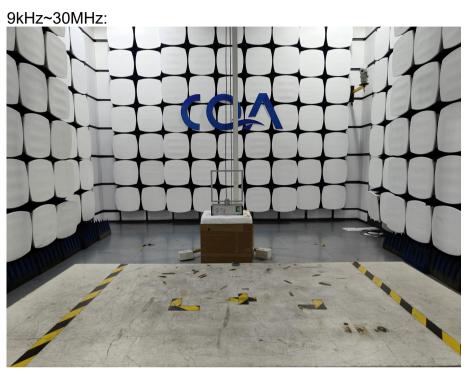
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 25GHz, the disturbance above 10GHz and below 30MHz was very low. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.



6 Photographs - EUT Test Setup

6.1 Radiated Spurious Emission









6.2 Conducted Emissions Test Setup





7 Photographs - EUT Constructional Details

Refer to Photographs - EUT Constructional Details OF EUT for CQASZ20240902080E-01.

*** END OF REPORT ***