Report No.: ET-25040967E

TEST REPORT

Applicant:	DXRACER Technology Wuxi Co., Ltd
Address of Applicant:	Unit 2-17F, No. 108，Huishan Avenue, Huishan District, Wuxi City，Jiangsu Province, China
Manufacturer:	DXRACER Technology Wuxi Co., Ltd
Address of Manufacturer:	Unit 2-17F, No. 108，Huishan Avenue, Huishan District, Wuxi City，Jiangsu Province, China
Product Name:	Single motor lifting table controller
Model No.:	GD/TA241400/N,GD/TA241000/N,GD/TA241200/N,GD/TA241000/W,GD/TA241200/W,GD/TA241400/W
Trade Mark:	N/A
FCC ID:	2BO63-TA241400
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of Test:	Apri.09, 2025-Apri.25, 2025
Date of report issued:	Apri.27, 2025

Remark:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

Address: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Compiled by:	Reviewed by:	Approved by:
Carr Kang	Smith chen	Smith chen
Project Engineer	Project Manager	Authorized Signature

This test report is valid for the tested samples only. It cannot be reproduced except in full without prior written consent of Shenzhen ETR Standard Technology Co., Ltd.

Report Revision History		
Report No.	Description	Issue Date
ET-25040967E	Original	Apri.27, 2025

Contents

Page

1. TEST SUMMARY 4

2. GENERAL INFORMATION 5

2.1 GENERAL DESCRIPTION OF EUT 5
2.2 TEST MODE 7
2.3 DESCRIPTION OF SUPPORT UNITS 7
2.4 DEVIATION FROM STANDARDS 7
2.5 ABNORMALITIES FROM STANDARD CONDITIONS 7
2.6 TEST FACILITY 7
2.7 TEST LOCATION 7
2.8 ADDITIONAL INSTRUCTIONS 7

3. TEST INSTRUMENTS LIST 8

4. TEST RESULTS AND MEASUREMENT DATA 9

4.1 ANTENNA REQUIREMENT 9
4.2 CONDUCTED EMISSIONS 10
4.3 DUTY CYCLE 13
4.4 CONDUCTED PEAK OUTPUT POWER 15
4.5 6DB BANDWIDTH 16
4.6 POWER SPECTRAL DENSITY 18
4.7 BAND EDGES 20
Conducted Emission Method 20
Radiated Emission Method 22
4.8 SPURIOUS EMISSION 24
Conducted Emission Method 24
Radiated Emission Method 26

5. TEST SETUP PHOTO 34

6. EUT CONSTRUCTIONAL DETAILS 34

1. Test Summary

Test Item	Section	Result	Test by
Antenna requirement	FCC part 15.203/15.247 (c)	Pass	/
AC Power Line Conducted Emission	FCC part 15.207	Pass	Jason Huang
Conducted Peak Output Power	FCC part 15.247 (b)(3)	Pass	Kara Wu
6dB Bandwidth	FCC part 15.247 (a)(2)	Pass	Kara Wu
Power Spectral Density	FCC part 15.247 (e)	Pass	Kara Wu
Band Edge	FCC part 15.247(d) ,15.205,15.209	Pass	Kara Wu
Spurious Emission	FCC part 15.247(d) ,15.205,15.209	Pass	Jason Huang

Remarks:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *Test according to ANSI C63.10:2013*
3. *Note: Compliance determination rules*

1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.

2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

Measurement Uncertainty

Test Item	Uncertainty Criterion	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	±5%	0.55%	(1)
RF output power, conducted	±1.5dB	±0.57dB	(1)
Power Spectral Density, conducted	±3dB	±0.61dB	(1)
Unwanted Emissions, conducted	±3dB	±0.64dB	(1)
AC Power Line Conducted Emission	±6dB	± 2.55 dB	(1)
Radiated emissions Below 1GHz	±6dB	± 4.24 dB	(1)
Radiated emissions Above 1GHz	±6dB	± 4.26 dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

2. General Information

2.1 General Description of EUT

Product Name:	Single motor lifting table controller
Model No.:	GD/TA241400/N,GD/TA241000/N,GD/TA241200/N,GD/TA241000/W,GD/TA241200/W,GD/TA241400/W
Difference of model(s)	All the model are the same circuit and RF module, except the model names.
Test Model:	GD/TA241400/N
Hardware version:	N/A
Software version:	N/A
Sample(s) Status	Engineer sample
Operation Frequency:	2402MHz~2480MHz
Channel Numbers:	40
Channel separation:	2MHz
Modulation technology:	GFSK
Battery:	N/A
Adapter:	N/A
Antenna Type:	PCB Antenna
Antenna gain:	1.08 dBi(Declare by applicant) Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.
Power supply:	DC 24V From Adapter

For more details, refer to the user's manual of the EUT.

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 below:

Test channel	**Frequency (MHz)**
Lowest channel	2402MHz
Middle channel	2440MHz
Highest channel	2480MHz

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

2.3 Description of Support Units

No.	Description	Manufacturer	Model	Serial Number
1	ADAPTER	GANGQI	GQ48-240250-E1	/
2	ELECTRICAL MACHINERY	DXRACER	M45F-09001-03	/
3	LIGHT BAR	DXRACER	/	/

2.4 Deviation from Standards

None.

2.5 Abnormalities from Standard Conditions

None.

2.6 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064

2.7 Test Location

All tests were performed at:	
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392

2.8 Additional Instructions

Test Software	COM special commands
Power level setup	Default

3. Test Instruments list

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	100605	2025.3.06	2026.3.05
2	EMI Test Receiver	Rohde&schwarz	ESCI3	102696	2025.3.06	2026.3.05
3	Loop Antenna	schwarabeck	FMZB 1519 B	FMZB 1519 B	2024.3.22	2026.3.21
4	Broadband antenna	schwarabeck	VULB9168	1064	2024.3.26	2026.3.25
5	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2024.3.22	2026.3.21
6	amplifier	EMtrace	RP01A	50117	2025.3.06	2026.3.05
7	Artificial power network	schwarabeck	NSLK8127	8127483	2025.3.06	2026.3.05
8	Artificial power network	ETS	3186/2NM	1132	2025.3.06	2026.3.05
9	10dB attenuator	HUBER+SUHNER	10dB	/	2025.3.06	2026.3.05
10	amplifier	Space-Dtronics	EWLAN0118 G-P40	19113001	2025.3.06	2026.3.05
11	Filter	Xingbo	XBLBQ-GTA19	210410-3-1	2025.3.06	2026.3.05
12	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2025.3.06	2026.3.05
13	Power detector box	MWRFtest	MW100-PSB	MW201020JYT	2025.3.06	2026.3.05
14	Power meter	Rohde&Schwarz	NRP-Z11	1138.3004.02-117725-vh	2025.3.06	2026.3.05
15	Horn antenna	schwarabeck	BBHA 9170	946	2024.3.22	2026.3.21
16	Amplifier	SKET	LNPA_1840-50	SK2019040302	2025.3.06	2026.3.05

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

Software Name	Manufacturer	Model	Version
RF test software	MWRFtest	MTS 8310	V2.0.0.0
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4. Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:	FCC Part15 C 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(c) (1)(i) requirement:** (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is PCB antenna, the best case gain of the antenna is 1.08 dBi, reference to the appendix II for details.	

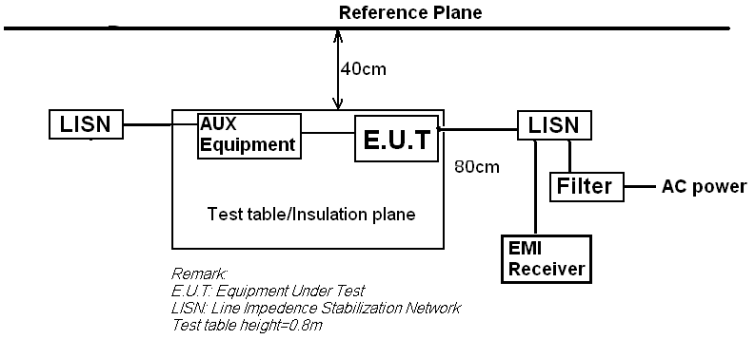
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	

Frequency range (MHz)	Limit (dBuV)	
	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 setup:



Test procedure:

1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.

Test Instruments:	Refer to section 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	28.1°C	Humid.:	62%	Press.:	1012mbar
Test voltage:	DC 24V From Adapter					
Test results:	Pass					

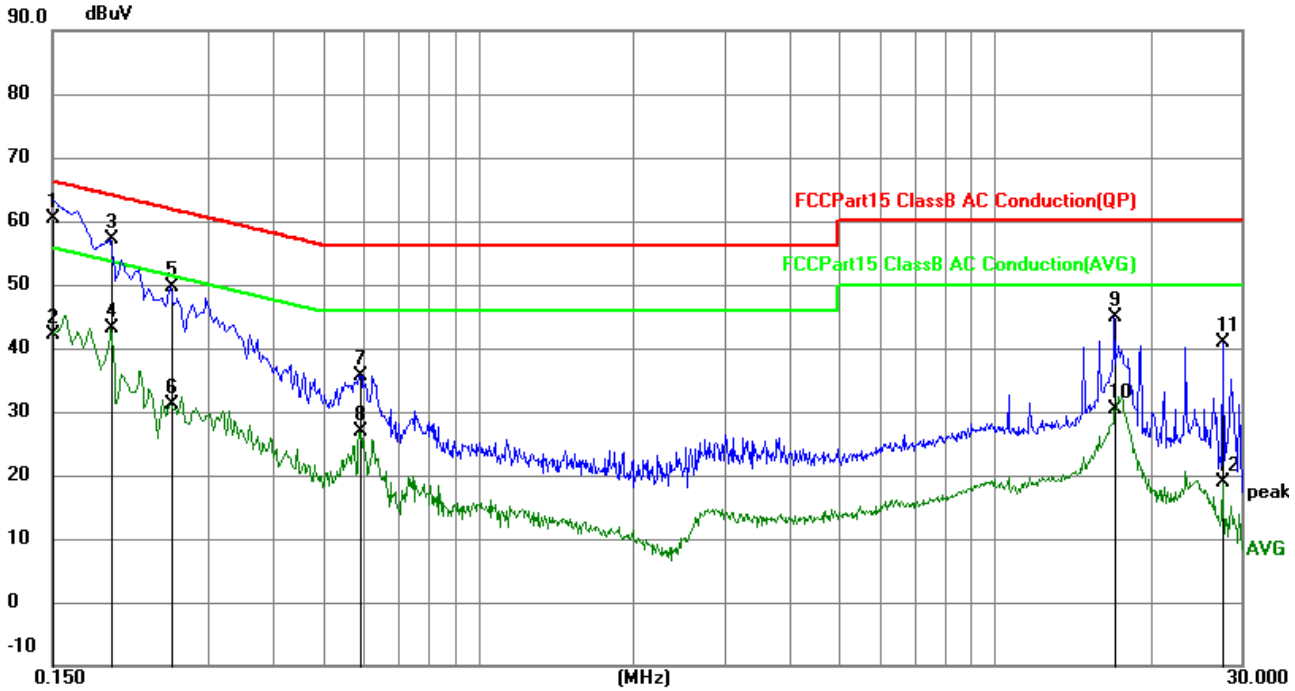
Remark:

1. Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.

2. All mode have been tested, the report only shows the worst mode (2402MHz) data.

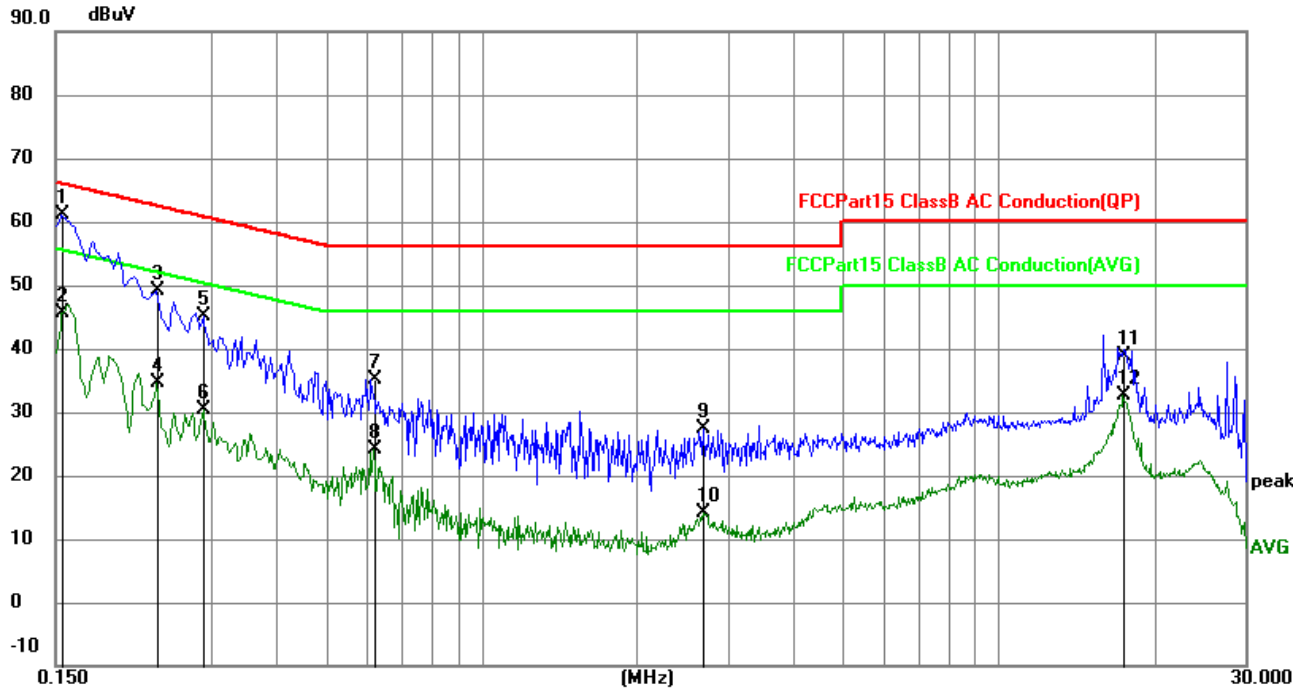
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	50.70	9.80	60.50	66.00	-5.50	QP
2	0.1500	32.43	9.80	42.23	56.00	-13.77	AVG
3	0.1949	47.27	9.81	57.08	63.83	-6.75	QP
4	0.1949	33.29	9.81	43.10	53.83	-10.73	AVG
5	0.2535	39.81	9.83	49.64	61.64	-12.00	QP
6	0.2535	21.25	9.83	31.08	51.64	-20.56	AVG
7	0.5909	25.81	9.94	35.75	56.00	-20.25	QP
8	0.5909	16.93	9.94	26.87	46.00	-19.13	AVG
9	17.0925	35.05	9.72	44.77	60.00	-15.23	QP
10	17.0925	20.64	9.72	30.36	50.00	-19.64	AVG
11	27.6765	31.47	9.53	41.00	60.00	-19.00	QP
12	27.6765	9.45	9.53	18.98	50.00	-31.02	AVG

Neutral:

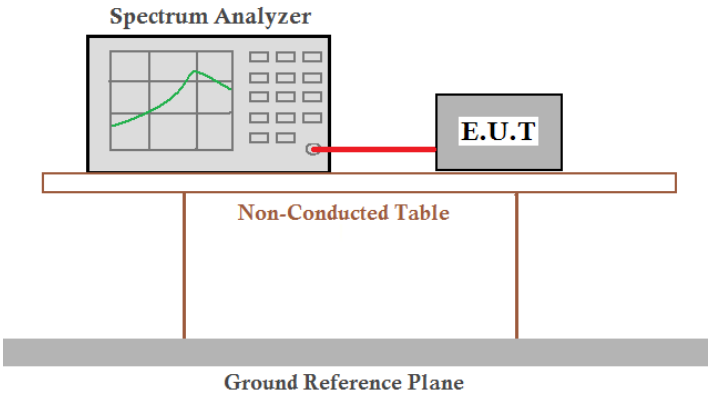


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1548	51.22	9.80	61.02	65.74	-4.72	QP
2	0.1548	35.88	9.80	45.68	55.74	-10.06	AVG
3	0.2355	39.26	9.82	49.08	62.25	-13.17	QP
4	0.2355	24.92	9.82	34.74	52.25	-17.51	AVG
5	0.2895	35.33	9.84	45.17	60.54	-15.37	QP
6	0.2895	20.60	9.84	30.44	50.54	-20.10	AVG
7	0.6179	25.07	9.94	35.01	56.00	-20.99	QP
8	0.6179	14.26	9.94	24.20	46.00	-21.80	AVG
9	2.6835	17.65	9.85	27.50	56.00	-28.50	QP
10	2.6835	4.24	9.85	14.09	46.00	-31.91	AVG
11	17.4255	29.24	9.71	38.95	60.00	-21.05	QP
12	17.4255	22.90	9.71	32.61	50.00	-17.39	AVG

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Level =Receiver Read level + Factor (Factor= LISN Factor + Cable Loss+ Attenuator Factor)
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

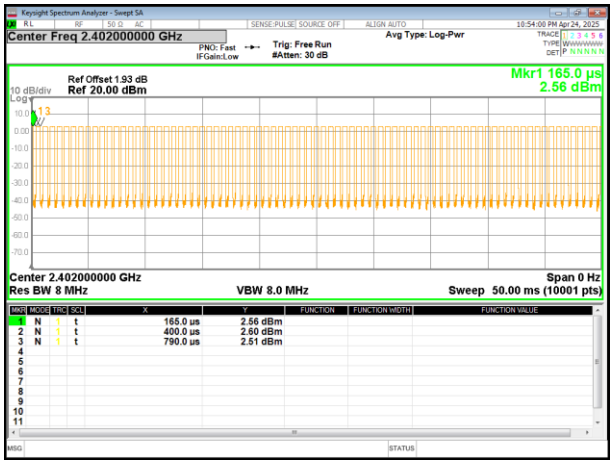
4.3 Duty cycle

Test Method :	ANSI C63.10:2013	
Limit:	/	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.5°C	Humid.:63%RH
Test voltage:	DC 24V From Adapter	
Test results:	Pass	

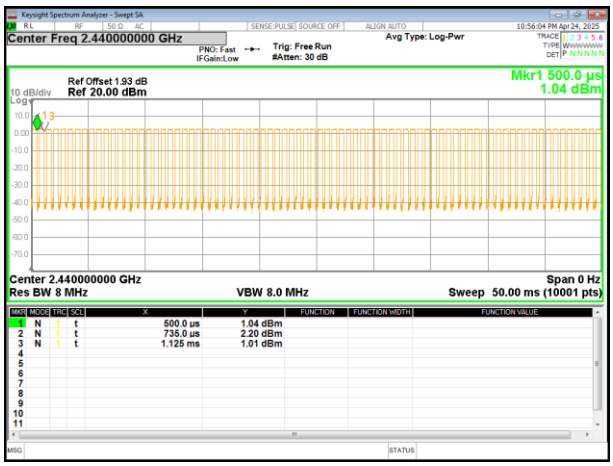
Measurement Result

Test channel	Duty Cycle (%)	Correction Factor (dB)
Lowest	62.4	2.05
Middle	62.4	2.05
Highest	62.4	2.05

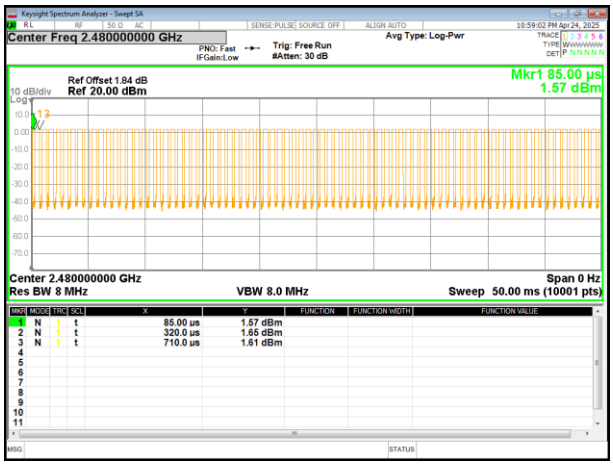
Test plot as follows:



Lowest channel

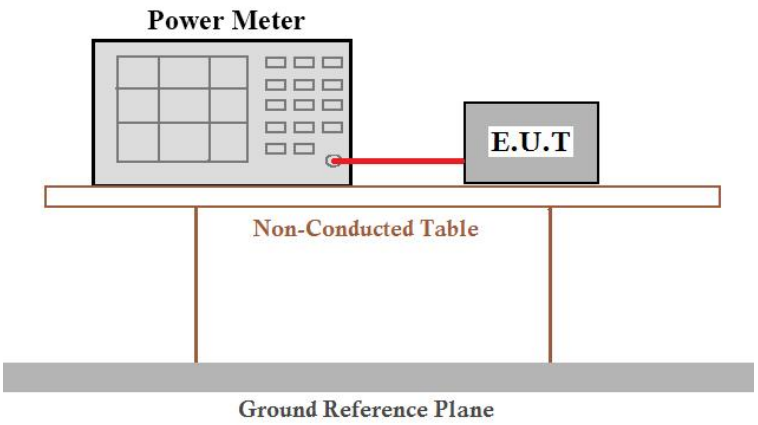


Middle channel



Highest channel

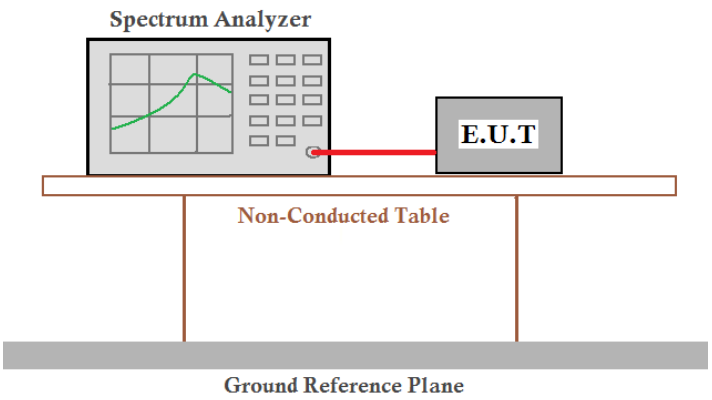
4.4 Conducted Peak Output Power

Test Requirement :	FCC Part15 C Section 15.247 (b)(3)	
Test Method :	ANSI C63.10:2013 and KDB558074 D01 15.247 Meas Guidance v05r02	
Limit:	30dBm	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.5°C	Humid.:63%RH
Test voltage:	DC 24V From Adapter	
Test results:	Pass	

Measurement Result

Test channel	Peak Output Power (dBm)	Limit(dBm)	Result
Lowest	2.89	30.00	Pass
Middle	2.28		
Highest	1.68		

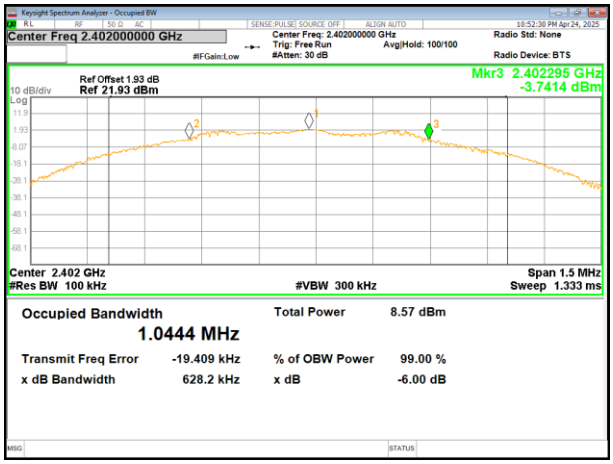
4.5 6dB Bandwidth

Test Requirement :	FCC Part15 C Section 15.247 (a)(2)	
Test Method :	ANSI C63.10:2013	
Limit:	>500KHz	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.5°C	Humid.:63%RH
Test voltage:	DC 24V From Adapter	
Test results:	Pass	

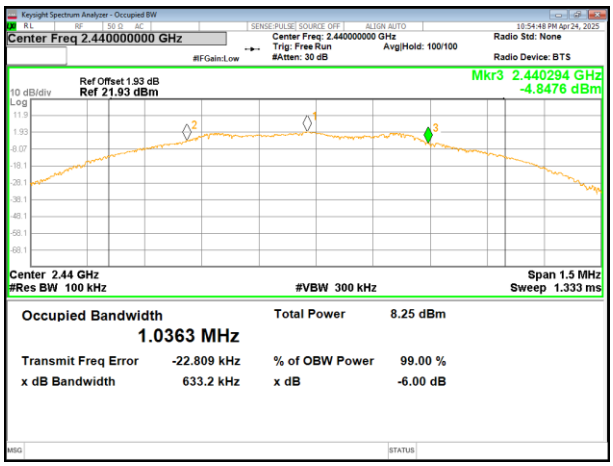
Measurement Result

Test channel	6dB Bandwidth (MHz)	Limit(KHz)	Result
Lowest	0.6282	>500	Pass
Middle	0.6332		
Highest	0.6410		

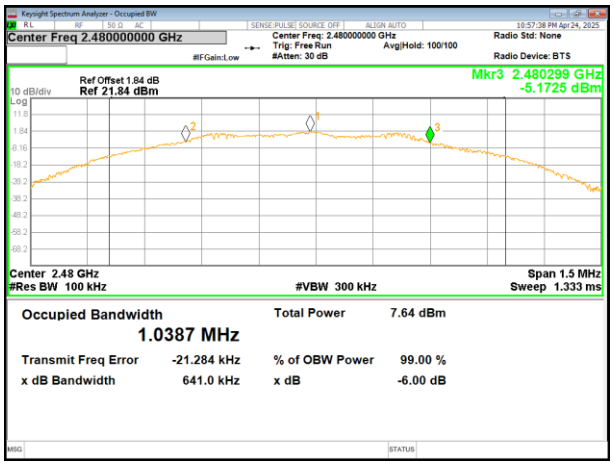
Test plot as follows:



Lowest channel

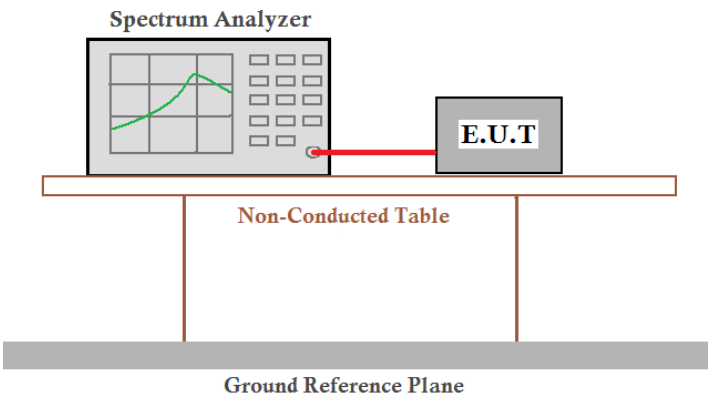


Middle channel



Highest channel

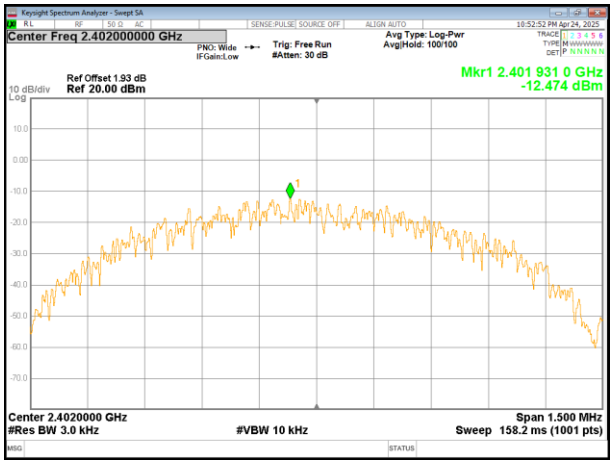
4.6 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)	
Test Method:	ANSI C63.10:2013 and KDB558074 D01 15.247 Meas Guidance v05r02	
Limit:	8dBm/3kHz	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.5°C	Humid.:63%RH
Test voltage:	DC 24V From Adapter	
Test results:	Pass	

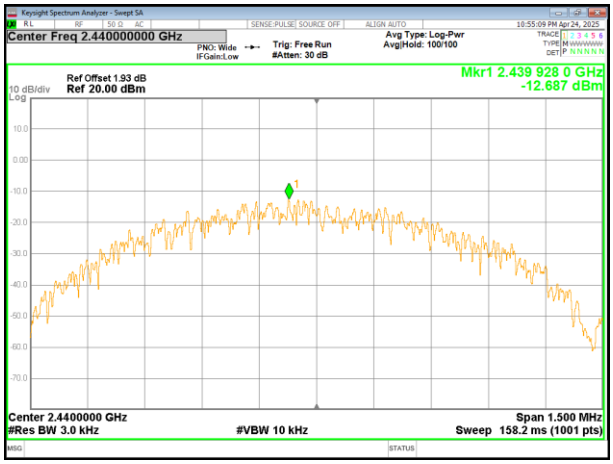
Measurement Result

Test channel	Power Spectral Density (dBm/3kHz)	Limit(dBm/3kHz)	Result
Lowest	-12.474	8.00	Pass
Middle	-12.687		
Highest	-13.247		

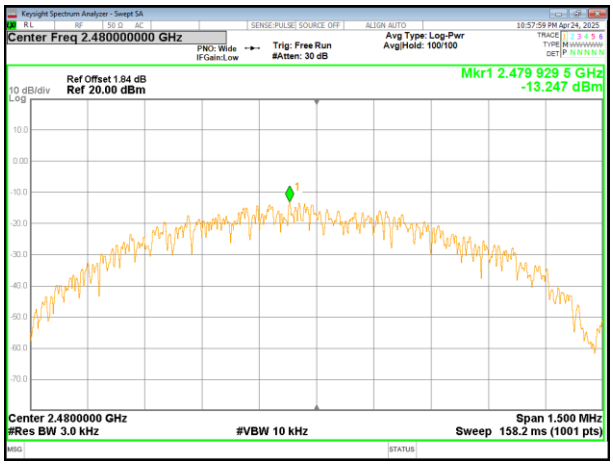
Test plot as follows:



Lowest channel



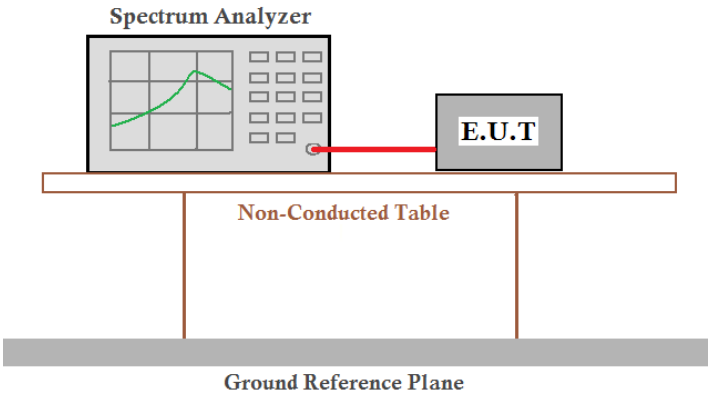
Middle channel



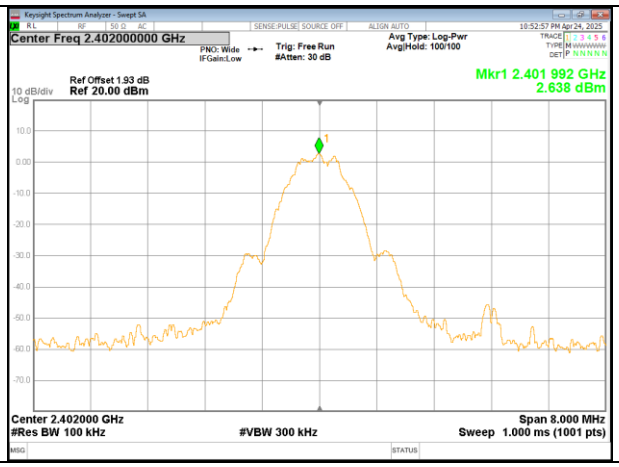
Highest channel

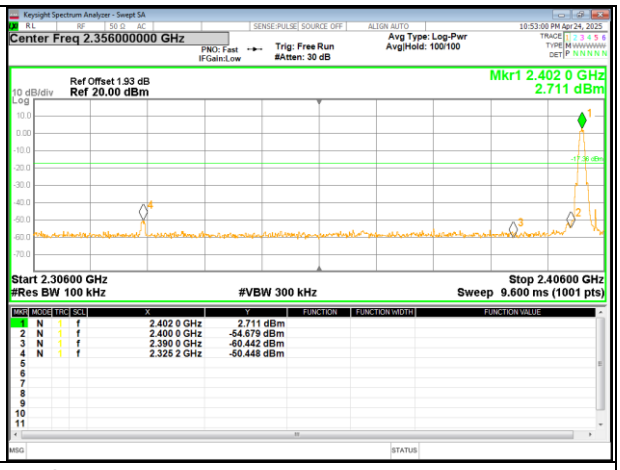
4.7 Band edges

Conducted Emission Method

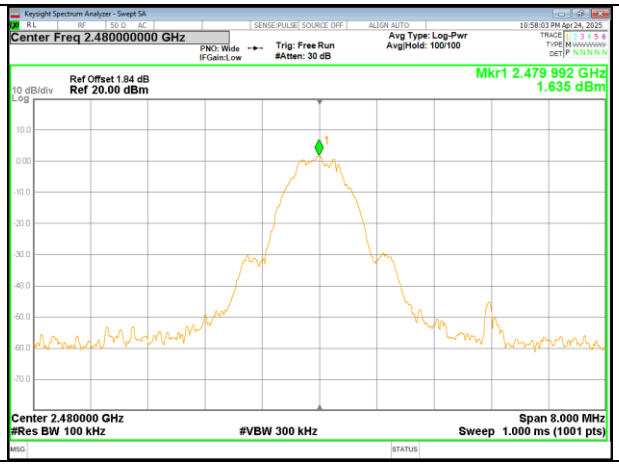
Test Requirement:	FCC Part15 C Section 15.247 (d)	
Test Method:	ANSI C63.10:2013	
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below 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.	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.5°C	Humid.:63%RH
Test voltage:	DC 24V From Adapter	
Test results:	Pass	

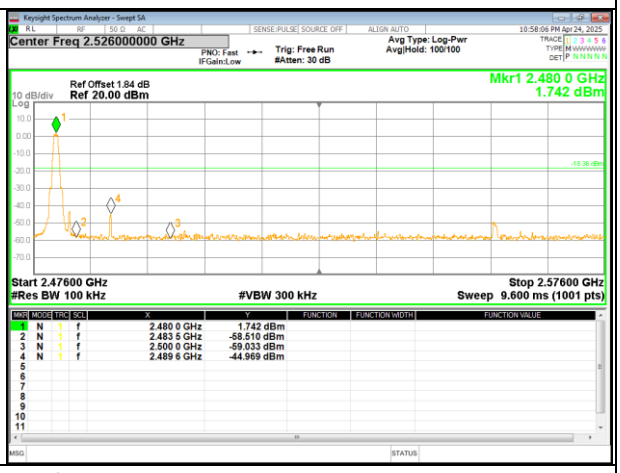
Test plot as follows:





Lowest channel





Highest channel

Radiated Emission Method

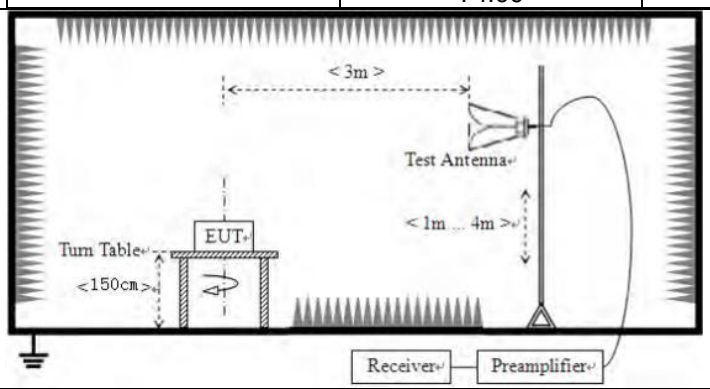
Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
Above 1GHz	Peak	1MHz	3MHz	Peak
	Average	1MHz	3MHz	Average

Limit:

Frequency	Limit (dBuV/m @3m)	Value
Above 1GHz	54.00	Average
	74.00	Peak

Test setup:



Test Procedure:

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. 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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. 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.
7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.5°C	Humid.:63%RH
Test voltage:	DC 24V From Adapter	
Test results:	Pass	

Measurement Result:

Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	63.30	27.40	4.61	44.50	50.81	74.00	-23.19	Horizontal
2390.00	67.65	27.50	4.61	44.50	55.26	74.00	-18.74	Horizontal
2310.00	62.66	27.40	4.61	44.50	50.17	74.00	-23.83	Vertical
2390.00	66.36	27.50	4.61	44.50	53.97	74.00	-20.03	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	51.78	27.40	4.61	44.50	39.29	54.00	-14.71	Horizontal
2390.00	56.45	27.50	4.61	44.50	44.06	54.00	-9.94	Horizontal
2310.00	52.74	27.40	4.61	44.50	40.25	54.00	-13.75	Vertical
2390.00	56.92	27.50	4.61	44.50	44.53	54.00	-9.47	Vertical

Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	71.17	27.90	4.84	44.90	59.01	74.00	-14.99	Horizontal
2500.00	63.17	27.90	4.84	44.90	51.01	74.00	-22.99	Horizontal
2483.50	71.83	27.90	4.84	44.90	59.67	74.00	-14.33	Vertical
2500.00	63.05	27.90	4.84	44.90	50.89	74.00	-23.11	Vertical

Average value:

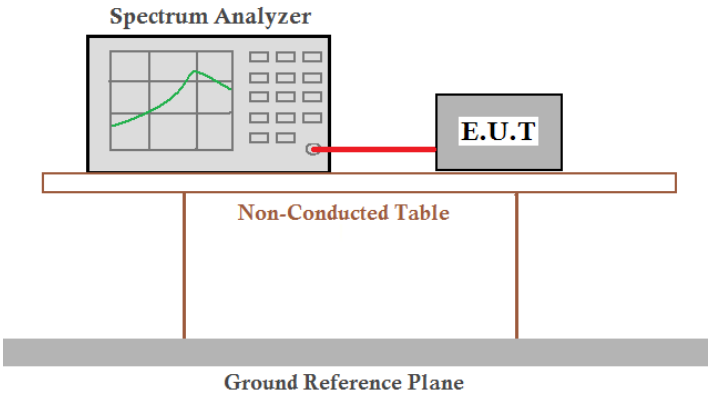
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	57.24	27.80	4.84	44.90	44.98	54.00	-9.02	Horizontal
2500.00	52.94	27.80	4.84	44.90	40.68	54.00	-13.32	Horizontal
2483.50	56.09	27.80	4.84	44.90	43.83	54.00	-10.17	Vertical
2500.00	53.55	27.80	4.84	44.90	41.29	54.00	-12.71	Vertical

Remarks:

1. *Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *Emissions more than 20 dB below the limit do not need to be reported.*
3. *The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.*

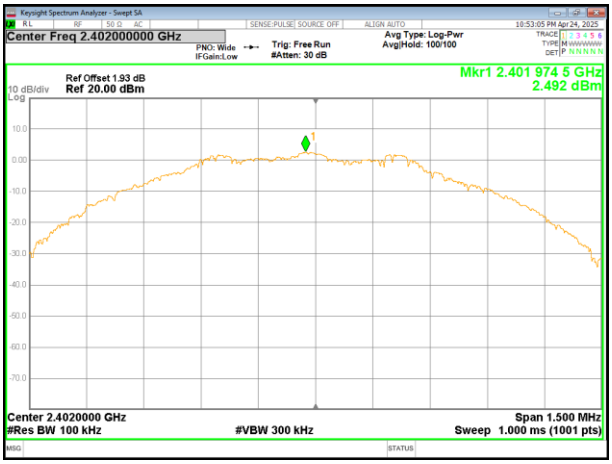
4.8 Spurious Emission

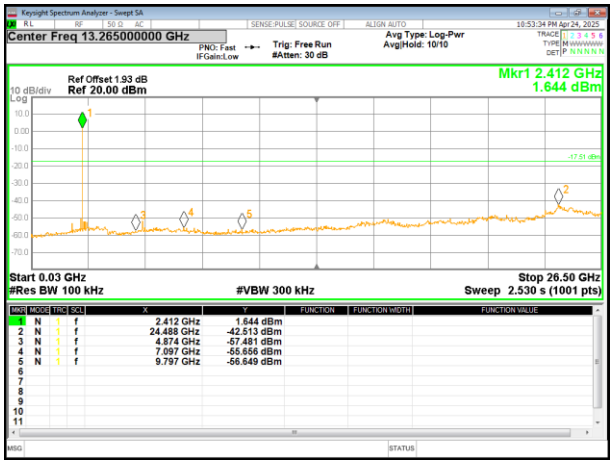
Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d) ,15.205,15.209	
Test Method:	ANSI C63.10: 2013	
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.	
Test setup:		
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test environment:	Temp.: 21.5°C	Humid.:63%RH
Test voltage:	DC 24V From Adapter	
Test results:	Pass	

Test plot as follows:

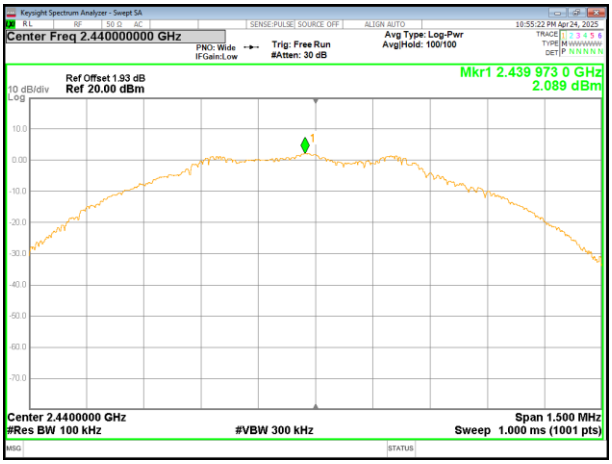
Lowest channel

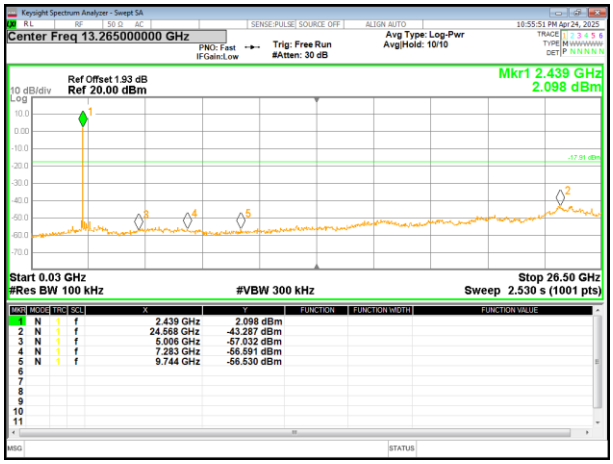




30MHz~26.5GHz

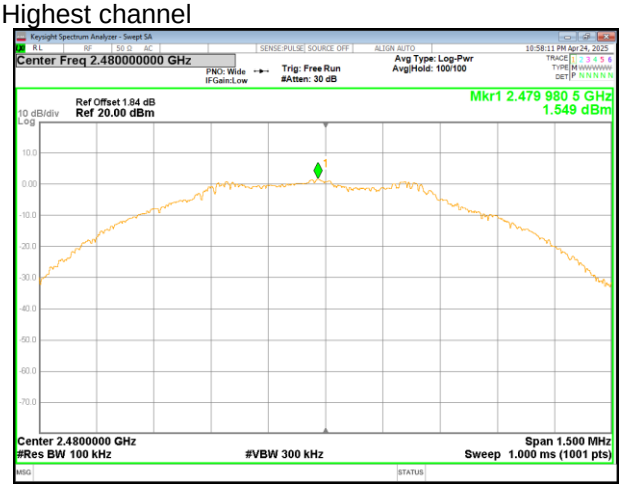
Middle channel

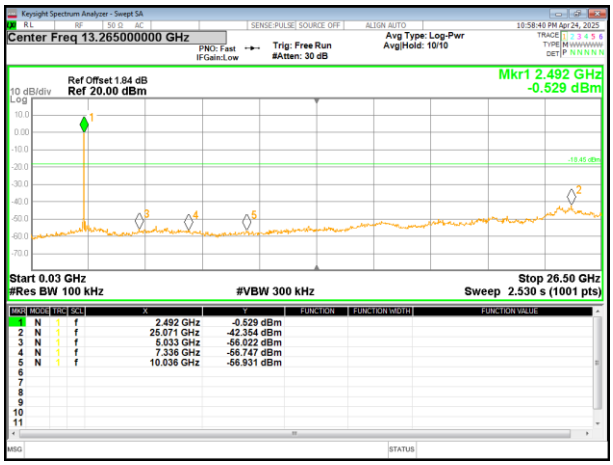




30MHz~26.5GHz

Highest channel





30MHz~26.5GHz

Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d) ,15.205,15.209
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	9kHz to 25GHz
Test site:	Measurement Distance: 3m

Receiver setup:

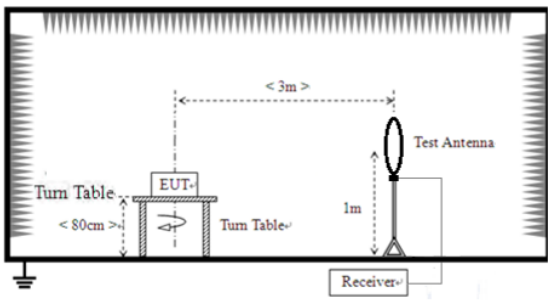
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

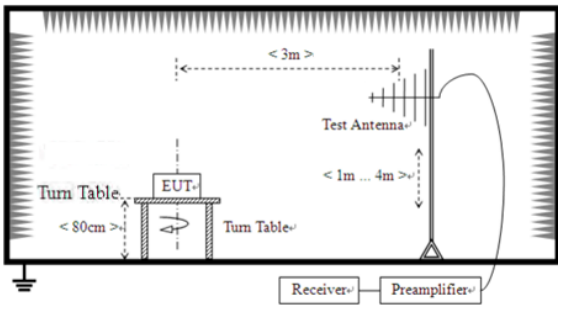
Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	300m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	
Above 1GHz	500	Average	
	5000	Peak	

Test setup:

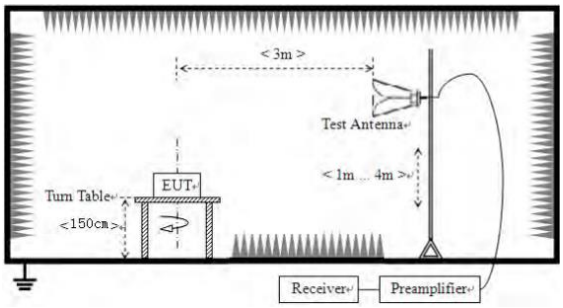
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz

<table>
<tr><td></td><td colspan="6"> 
</td></tr>
<tr><td>Test Procedure:</td><td colspan="6">1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. 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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. 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.</td></tr>
<tr><td>Test Instruments:</td><td colspan="6">Refer to section 3.0 for details</td></tr>
<tr><td>Test mode:</td><td colspan="6">Refer to section 2.2 for details</td></tr>
<tr><td>Test voltage:</td><td colspan="6">DC 3.8V From Battery</td></tr>
<tr><td>Test environment:</td><td>Temp.:</td><td>21.5°C</td><td>Humid.:</td><td>63%</td><td>Press.:</td><td>1012mbar</td></tr>
<tr><td>Test results:</td><td colspan="6">Pass</td></tr>
</table>

Remarks:

1. *The report only shows the worst mode.*
2. *Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

Measurement Result:

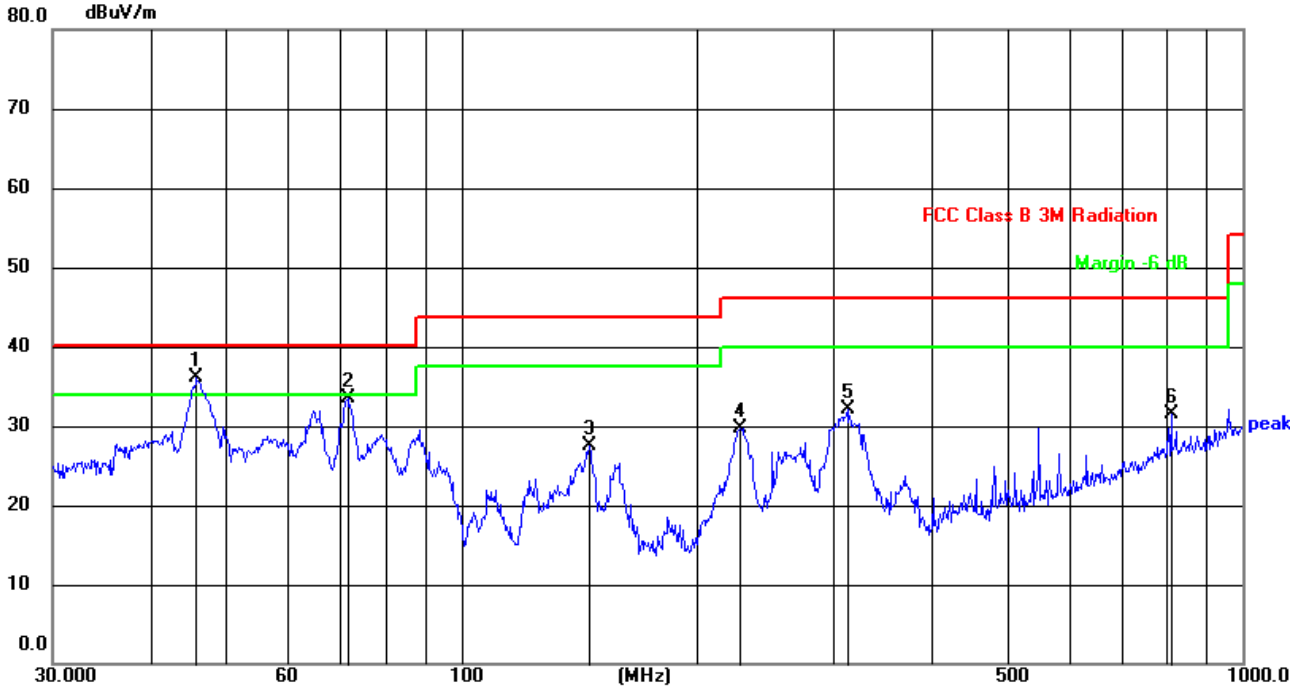
- **9kHz~30MHz**

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

■ **Below 1GHz**

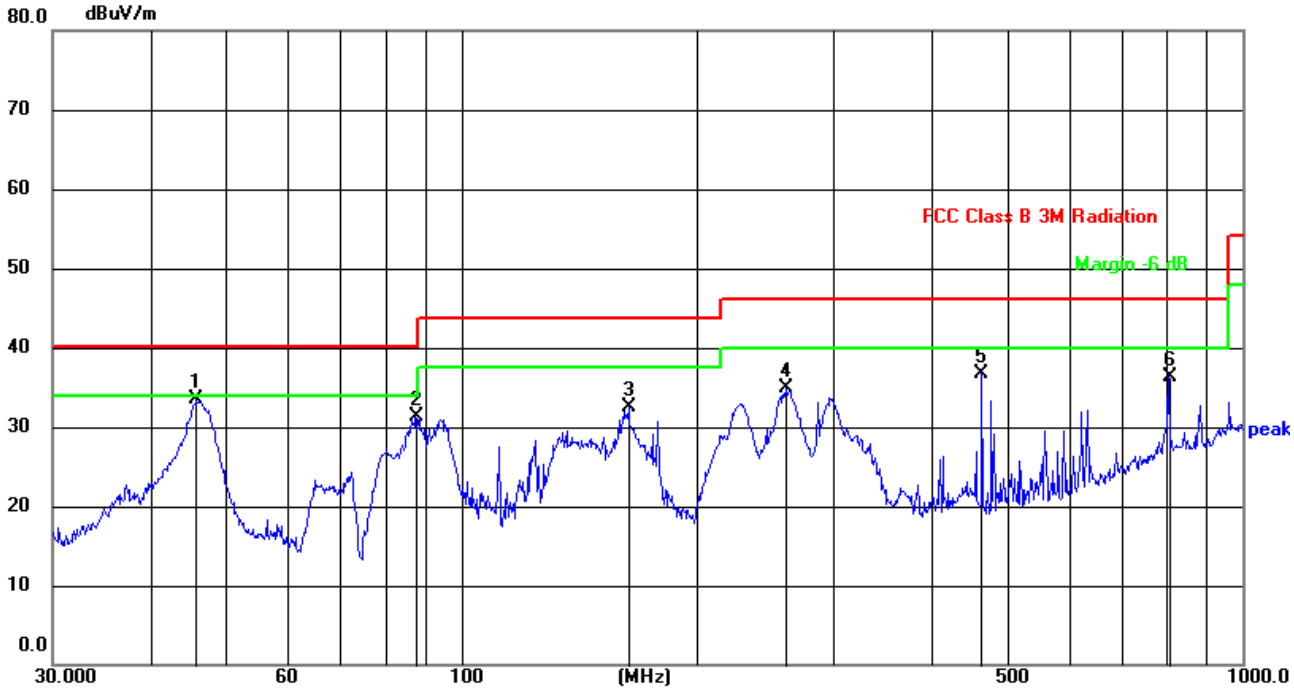
All mode has been tested, the report only shows the worst mode (2402MHz) data.

Test polarization:	Vertical	Test voltage:	DC 24V From Adapter



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	45.8551	57.31	-21.30	36.01	40.00	-3.99	QP
2	71.5806	57.98	-24.47	33.51	40.00	-6.49	QP
3	145.8608	48.40	-20.96	27.44	43.50	-16.06	QP
4	227.6904	52.91	-23.15	29.76	46.00	-16.24	QP
5	312.1794	51.79	-19.78	32.01	46.00	-13.99	QP
6	810.2653	37.90	-6.45	31.45	46.00	-14.55	QP

Test polarization:	Horizontal	Test voltage:	DC 24V From Adapter



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	45.8553	54.84	-21.30	33.54	40.00	-6.46	QP
2	87.4177	56.93	-25.58	31.35	40.00	-8.65	QP
3	163.7550	53.14	-20.72	32.42	43.50	-11.08	QP
4	260.1444	56.99	-22.05	34.94	46.00	-11.06	QP
5	463.9696	52.33	-15.53	36.80	46.00	-9.20	QP
6	804.6028	42.78	-6.48	36.30	46.00	-9.70	QP

Remarks:

Level =Receiver Reading + Factor

Factor= Antenna Factor + Cable Factor – Preamplifier Factor

■ **Above 1GHz**

Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4804.00	51.73	32.40	6.99	44.40	46.72	74.00	-27.28	Vertical
7206.00	47.55	36.60	8.15	42.30	50.00	74.00	-24.00	Vertical
9608.00	45.61	38.50	9.44	42.40	51.15	74.00	-22.85	Vertical
12010.00	*	--	--	--	--	74.00	--	Vertical
14412.00	*	--	--	--	--	74.00	--	Vertical
4804.00	51.39	32.40	6.99	44.40	46.38	74.00	-27.62	Horizontal
7206.00	47.85	36.60	8.15	42.30	50.30	74.00	-23.70	Horizontal
9608.00	46.62	38.50	9.44	42.40	52.16	74.00	-21.84	Horizontal
12010.00	*	--	--	--	--	74.00	--	Horizontal
14412.00	*	--	--	--	--	74.00	--	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4804.00	41.03	32.10	6.99	45.70	34.42	54.00	-19.58	Vertical
7206.00	37.85	36.10	8.15	45.50	36.60	54.00	-17.40	Vertical
9608.00	35.04	38.30	9.44	46.20	36.58	54.00	-17.43	Vertical
12010.00	*	--	--	--	--	54.00	--	Vertical
14412.00	*	--	--	--	--	54.00	--	Vertical
4804.00	41.91	32.10	6.99	45.70	35.30	54.00	-18.70	Horizontal
7206.00	38.04	36.10	8.15	45.50	36.79	54.00	-17.21	Horizontal
9608.00	35.49	38.30	9.44	46.20	37.03	54.00	-16.97	Horizontal
12010.00	*	--	--	--	--	54.00	--	Horizontal
14412.00	*	--	--	--	--	54.00	--	Horizontal

Remarks:

1. *Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*
3. *Emissions more than 20 dB below the limit do not need to be reported.*

Test channel:	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	54.46	32.10	6.99	45.70	47.85	74.00	-26.15	Vertical
7320.00	50.80	36.80	8.15	45.50	50.25	74.00	-23.75	Vertical
9760.00	50.29	38.40	9.44	46.20	51.93	74.00	-22.07	Vertical
12200.00	*	--	--	--	--	74.00	--	Vertical
14640.00	*	--	--	--	--	74.00	--	Vertical
4880.00	53.64	32.10	6.99	45.70	47.03	74.00	-26.97	Horizontal
7320.00	51.39	36.80	8.15	45.50	50.84	74.00	-23.16	Horizontal
9760.00	48.64	38.40	9.44	46.20	50.28	74.00	-23.72	Horizontal
12200.00	*	--	--	--	--	74.00	--	Horizontal
14640.00	*	--	--	--	--	74.00	--	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880.00	43.86	32.10	6.99	45.70	37.25	54.00	-16.75	Vertical
7320.00	40.78	36.80	8.15	45.50	40.23	54.00	-13.77	Vertical
9760.00	39.73	38.40	9.44	46.20	41.37	54.00	-12.63	Vertical
12200.00	*	--	--	--	--	54.00	--	Vertical
14640.00	*	--	--	--	--	54.00	--	Vertical
4880.00	42.86	32.10	6.99	45.70	36.25	54.00	-17.75	Horizontal
7320.00	40.94	36.80	8.15	45.50	40.39	54.00	-13.61	Horizontal
9760.00	37.49	38.40	9.44	46.20	39.13	54.00	-14.88	Horizontal
12200.00	*	--	--	--	--	54.00	--	Horizontal
14640.00	*	--	--	--	--	54.00	--	Horizontal

Remarks:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*
3. *Emissions more than 20 dB below the limit do not need to be reported.*

Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	53.05	32.70	6.99	45.70	47.04	74.00	-26.96	Vertical
7440.00	50.96	36.40	8.15	45.50	50.01	74.00	-23.99	Vertical
9920.00	49.02	38.00	9.44	46.20	50.26	74.00	-23.74	Vertical
12400.00	*	--	--	--	--	74.00	--	Vertical
14880.00	*	--	--	--	--	74.00	--	Vertical
4960.00	53.57	32.70	6.99	45.70	47.56	74.00	-26.44	Horizontal
7440.00	49.36	36.40	8.15	45.50	48.41	74.00	-25.59	Horizontal
9920.00	50.00	38.00	9.44	46.20	51.24	74.00	-22.76	Horizontal
12400.00	*	--	--	--	--	74.00	--	Horizontal
14880.00	*	--	--	--	--	74.00	--	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	42.91	32.70	6.99	45.70	36.90	54.00	-17.10	Vertical
7440.00	40.04	36.40	8.15	45.50	39.09	54.00	-14.91	Vertical
9920.00	37.94	38.00	9.44	46.20	39.18	54.00	-14.82	Vertical
12400.00	*	--	--	--	--	54.00	--	Vertical
14880.00	*	--	--	--	--	54.00	--	Vertical
4960.00	42.39	32.70	6.99	45.70	36.38	54.00	-17.62	Horizontal
7440.00	41.07	36.40	8.15	45.50	40.12	54.00	-13.88	Horizontal
9920.00	39.24	38.00	9.44	46.20	40.48	54.00	-13.52	Horizontal
12400.00	*	--	--	--	--	54.00	--	Horizontal
14880.00	*	--	--	--	--	54.00	--	Horizontal

Remarks:

1. *Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *"*", means this data is the too weak instrument of signal is unable to test.*
3. *Emissions more than 20 dB below the limit do not need to be reported.*

5. Test Setup Photo

Reference to the **appendix I** for details.

6. EUT Constructional Details

Reference to the **appendix II** for details.

------End------