



FCC REPORT

Applicant: EASEPAL ENTERPRISES LTD.

Address of Applicant: 18th Floor, 171# East Tapu Road, Siming Dtrict, Xiamen, China.361008

Equipment Under Test (EUT)

Product Name: EMS Foot Massager

Model No.: ER205A

FCC ID: 2AWAKER205A

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 07 December 2023

Date of Test: 07 December 2023 to 22 December 2023

Date of report issued: 22 December 2023

Test Result: PASS *

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

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1 Modified Information

Version No	Date	Description
00	22 December 2023	Original

Prepared by: Leo Zhang
Leo Zhang/Engineer

Date: 22 December 2023

Reviewed by: Louis Ye
Louis Ye/Manager

Date: 22 December 2023

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3 Test Summary

Test Items	Section in CFR 47	Result
Antenna requirement	15.203&15.247 (b)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205&15.209	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: Not Applicable. 3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).		
Test Method:	ANSI C63.4a-2017 ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02	

4 General Information

4.1 Client Information

Applicant:	EASEPAL ENTERPRISES LTD.
Address:	18th Floor, 171# East Tapu Road, Siming Dtrict, Xiamen, China.361008
Manufacturer/ Factory:	EASEPAL ENTERPRISES LTD.
Address:	18th Floor, 171# East Tapu Road, Siming Dtrict, Xiamen, China.361008

4.2 General Description of E.U.T.

Product Name:	EMS Foot Massager
Model No.:	ER205A
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	2402-2480 MHz
Channel numbers:	40
Channel separation:	2 MHz
Modulation technology:	GFSK
Data speed :	1Mbps
Antenna Type:	Internal Antenna
Antenna gain:	3 dBi
Power supply:	DC 3.7V by Battery or charging by AC 120V/60Hz
AC adapter:	N/A
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

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. Channel No. 0, 19& 39 were selected as Lowest, Middle and Highest channel.

4.3 Test environment and test mode

Operating Environment:	
Temperature:	24.2 °C
Humidity:	48 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in continuous transmitting with modulation
The sample was placed 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.	

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Radiated Emission (9kHz ~ 30MHz)	±3.5 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±3.8 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±4.8 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±4.8 dB (k=2)

4.6 Additions to, deviations, or exclusions from the method

No

4.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1279**

Jianyan Testing Group Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 892155.

● **ISED – CAB identifier.: CN0102**

Jianyan Testing Group Co., Ltd. has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with ISED#:26114.

● **CNAS - Registration No.: CNAS L0658**

Jianyan Testing Group Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L0658.

● **A2LA - Registration No.: 5568.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/5568-01.pdf>

4.8 Laboratory Location

JianYan Testing Group Co., Ltd.

Address: No.760, Fengling Road, Tong'an District, Xiamen, Fujian, China

Tel: +86-592-2273071, Fax: +86-592-2273700

Email: info-JYTee@lets.com, Website: <http://jyt.lets.com>

4.9 Test Instruments list

Conducted Emission:				
Test Equipment	Manufacturer	Model No.	Equipment No.	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESR 3	SBE0005-1	2024-06-20
LISN	Rohde & Schwarz	ENV 216	SBE0005-3	2024-06-20
AUX LISN	AFJ/Italy	LS16C\10	SBE0028-1	2024-02-22
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1	

Radiated Emission:				
Test Equipment	Manufacturer	Model No.	Equipment No.	Cal. Due date (mm-dd-yy)
3m Semi-Anechoic Chamber	BOST	CHC-966	SBE0001	2027-11-30
EMI Test Receiver	R&S	ESR 3	SBE0007-1	2024-06-20
Spectrum Analyzer	R&S	FSV40-N	SBE0023-2	2024-02-26
Loop Antenna	ETS	6502	SBE0007-4	2024-03-02
BiConiLog Antenna	SCHWARZBECK	VULB 9163	SBE0007-3	2024-11-27
Horn Antenna	SCHWARZBECK	BBHA 9120 D	SBE0020	2024-03-02
Pre-amplifier	SCHWARZBECK	BBV9743	SBE0007-2	2024-06-20
Pre-amplifier	RF System	TRLA-010180G50B	SBE0021-1	2024-02-29
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1	

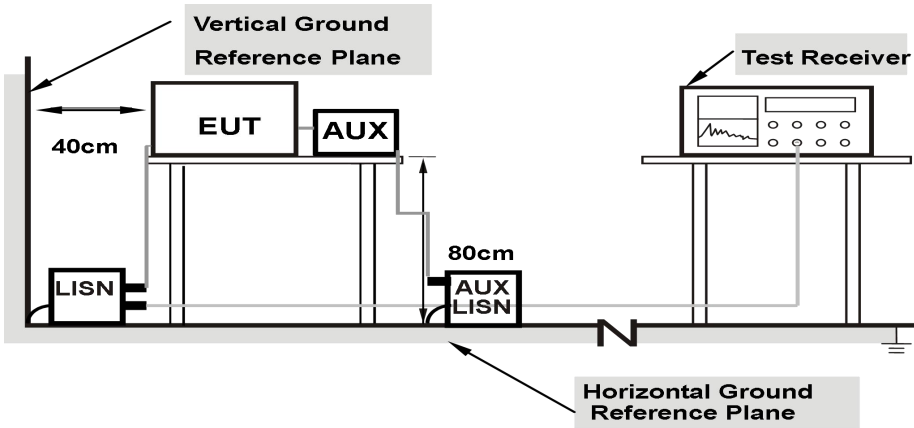
Conducted method:				
Test Equipment	Manufacturer	Model No.	Equipment No.	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	R&S	FSV40-N	SBE0023-2	2024-02-26
Test Software	MWRFTTEST	MTS 8310	Version: 2.0.0.0	

5 Test results and Measurement Data

5.1 Antenna requirement:

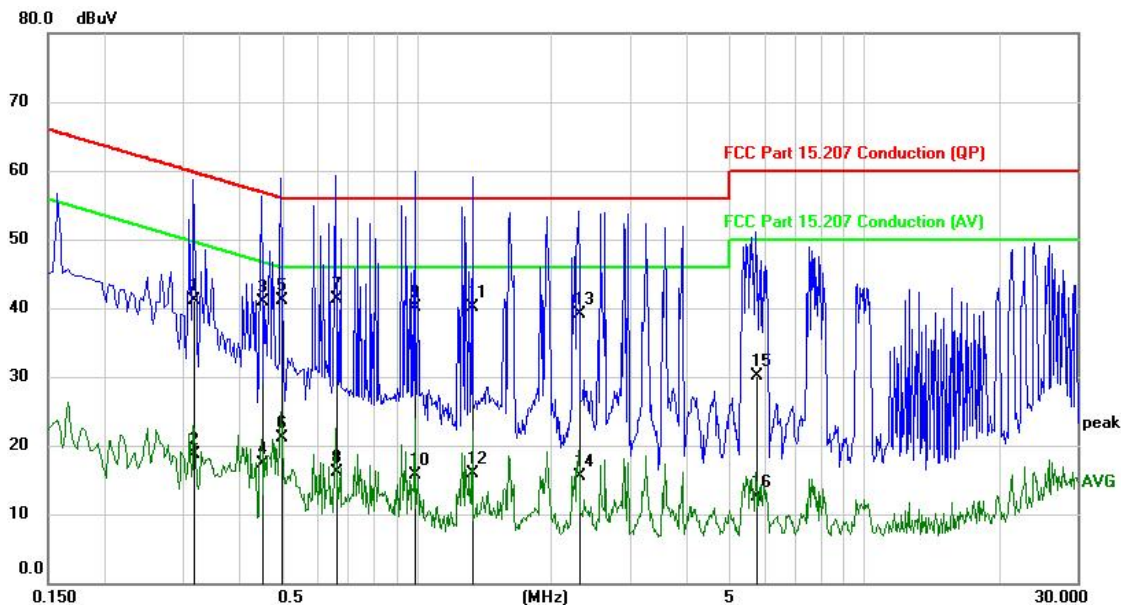
Standard requirement:	FCC Part15 C Section 15.203 /247(b)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique 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: (4) 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.	
E.U.T Antenna:	
The Bluetooth antenna is an Internal antenna which permanently attached, and the best case gain of the antenna is 3 dBi.	

5.2 Conducted Emission

Test Requirement:	FCC Part15 C Section 15.207		
Test Frequency Range:	150 kHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9kHz, VBW=30kHz		
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 procedure:	- The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment. - 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). - 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(latest version) on conducted measurement.		
Test setup:	 Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes		
Test Instruments:	Refer to section 4.9 for details		
Test mode:	Charge+massage max power+BLE Link.		
Test results:	Pass		

Measurement Data:

Product model:	ER205A	Test result:	pass
Test by:	Leo Zhang	Test mode:	Charge+massage max power+ BLE Link
Test voltage:	AC 120V/60Hz	Phase:	Line (N)
Environment:	Temp.: 21.3℃ Humi.: 40%		

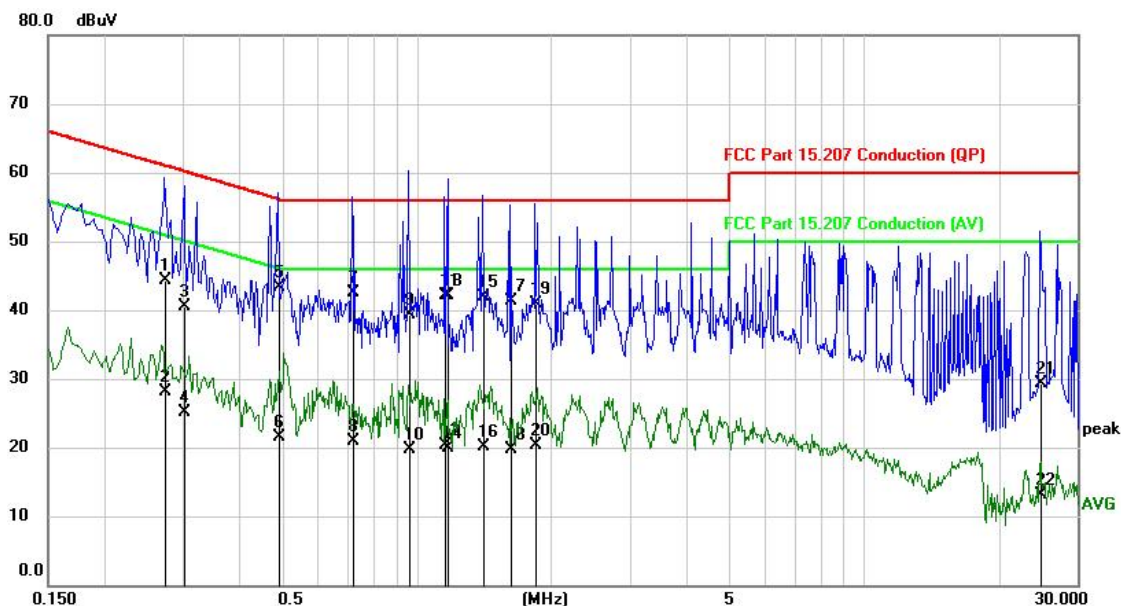


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.3180	31.24	9.86	41.10	59.76	-18.66	QP
2		0.3180	8.84	9.86	18.70	49.76	-31.06	AVG
3		0.4500	31.01	9.89	40.90	56.88	-15.98	QP
4		0.4500	7.41	9.89	17.30	46.88	-29.58	AVG
5		0.4980	31.30	9.90	41.20	56.03	-14.83	QP
6		0.4980	11.30	9.90	21.20	46.03	-24.83	AVG
7	*	0.6580	31.35	9.95	41.30	56.00	-14.70	QP
8		0.6580	6.25	9.95	16.20	46.00	-29.80	AVG
9		0.9940	30.05	10.05	40.10	56.00	-15.90	QP
10		0.9940	5.75	10.05	15.80	46.00	-30.20	AVG
11		1.3340	29.96	10.14	40.10	56.00	-15.90	QP
12		1.3340	5.86	10.14	16.00	46.00	-30.00	AVG
13		2.2980	28.85	10.25	39.10	56.00	-16.90	QP
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
14		2.2980	5.35	10.25	15.60	46.00	-30.40	AVG
15		5.7300	20.15	9.95	30.10	60.00	-29.90	QP
16		5.7300	2.65	9.95	12.60	50.00	-37.40	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. Final Level =Receiver Read level + LISN Factor + Cable Loss.

Product model:	ER205A	Test result:	pass
Test by:	Leo Zhang	Test mode:	Charge+massage max power+ BLE Link
Test voltage:	AC 120V/60Hz	Phase:	Line (L)
Environment:	Temp.: 21.3°C Humi.: 40%		



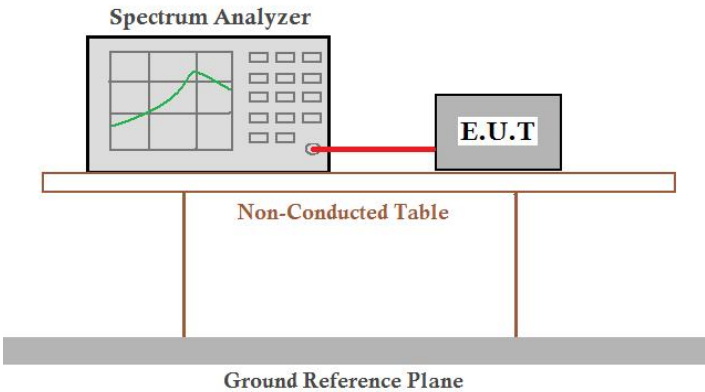
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.2741	34.68	9.69	44.37	60.99	-16.62	QP
2		0.2741	18.44	9.69	28.13	50.99	-22.86	AVG
3		0.3016	30.90	9.69	40.59	60.20	-19.61	QP
4		0.3016	15.41	9.69	25.10	50.20	-25.10	AVG
5	*	0.4898	33.60	9.78	43.38	56.17	-12.79	QP
6		0.4898	11.81	9.78	21.59	46.17	-24.58	AVG
7		0.7179	32.69	9.81	42.50	56.00	-13.50	QP
8		0.7179	11.09	9.81	20.90	46.00	-25.10	AVG
9		0.9617	29.47	9.93	39.40	56.00	-16.60	QP
10		0.9617	9.87	9.93	19.80	46.00	-26.20	AVG
11		1.1580	32.24	9.96	42.20	56.00	-13.80	QP
12		1.1580	10.34	9.96	20.30	46.00	-25.70	AVG
13		1.1780	32.23	9.97	42.20	56.00	-13.80	QP

No. Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
14	1.1780	9.93	9.97	19.90	46.00	-26.10	AVG
15	1.4060	32.00	10.00	42.00	56.00	-14.00	QP
16	1.4060	10.10	10.00	20.10	46.00	-25.90	AVG
17	1.6220	31.25	10.05	41.30	56.00	-14.70	QP
18	1.6220	9.65	10.05	19.70	46.00	-26.30	AVG
19	1.8420	30.89	10.11	41.00	56.00	-15.00	QP
20	1.8420	10.19	10.11	20.30	46.00	-25.70	AVG
21	24.7820	16.27	13.03	29.30	60.00	-30.70	QP
22	24.7820	0.17	13.03	13.20	50.00	-36.80	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. Final Level = Receiver Read level + LISN Factor + Cable Loss.

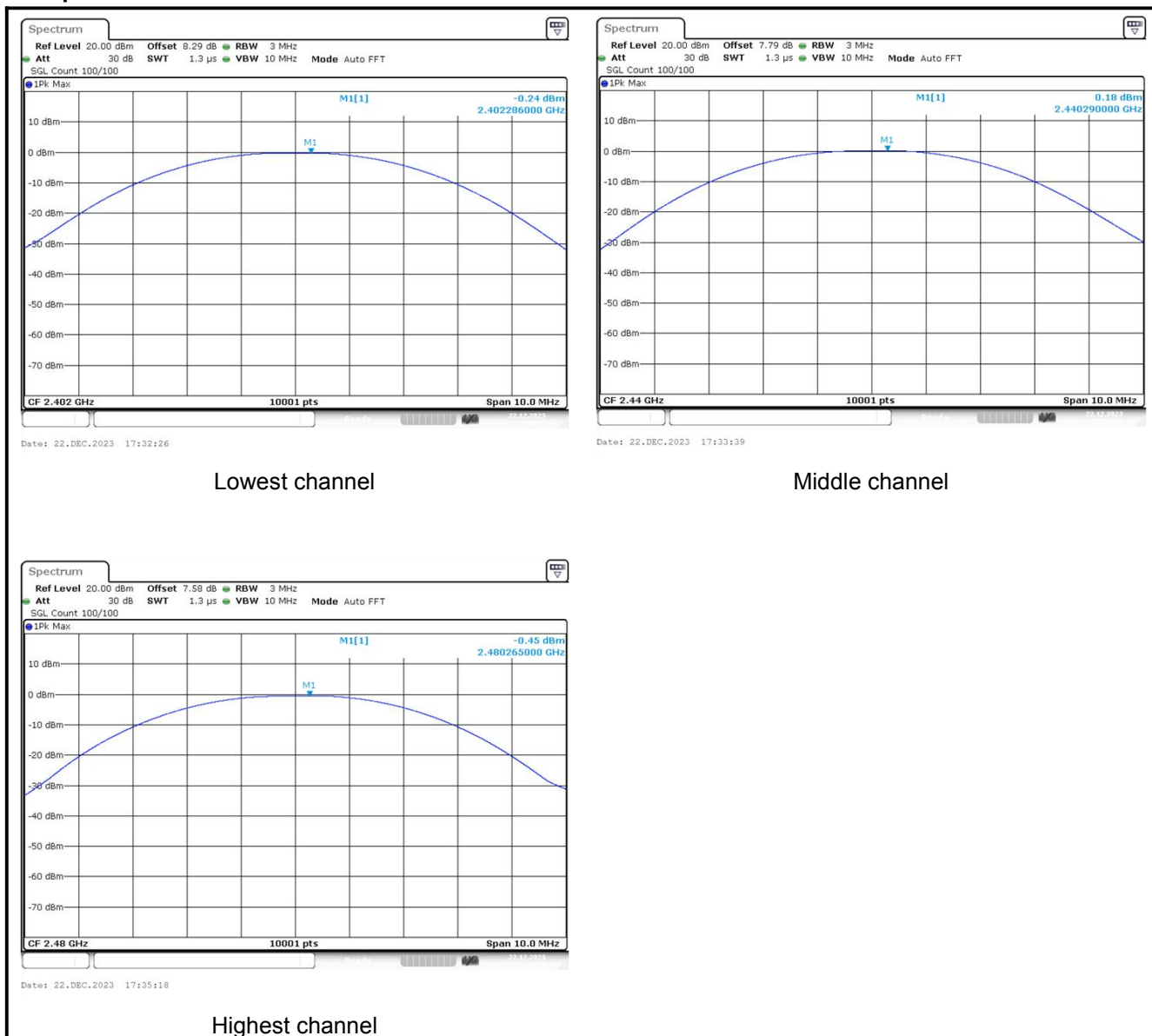
5.3 Conducted Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Limit:	30dBm
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 4.9 for details
Test mode:	Refer to section 4.3 for details
Test results:	Pass

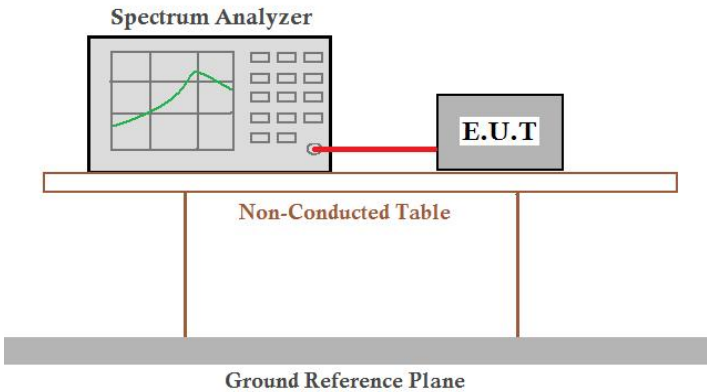
Measurement Data:

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
Lowest	-0.243	30.00	Pass
Middle	0.175		
Highest	-0.449		

Test plot as follows:



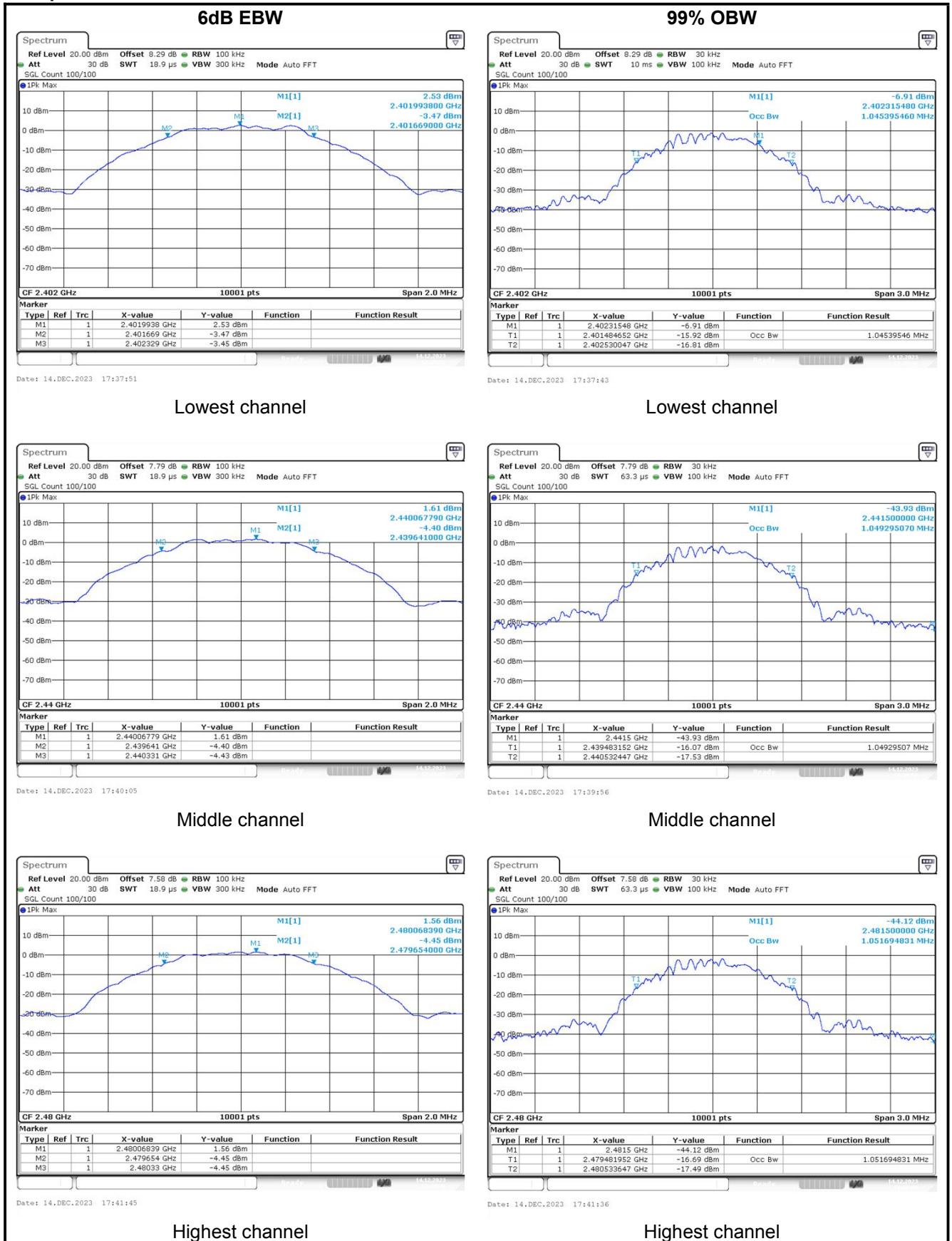
5.4 Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Limit:	>500kHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 4.9 for details
Test mode:	Refer to section 4.3 for details
Test results:	Pass

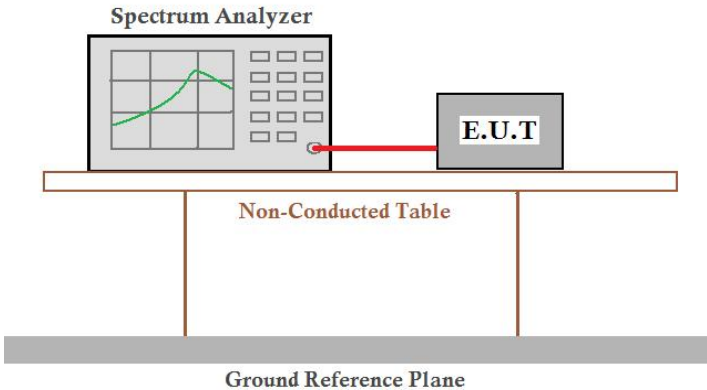
Measurement Data:

Test CH	6dB Emission Bandwidth (MHz)	Limit(kHz)	Result
Lowest	0.660	>500	Pass
Middle	0.689		
Highest	0.676		
Test CH	99% Occupy Bandwidth (MHz)	Limit(kHz)	Result
Lowest	1.045	N/A	N/A
Middle	1.049		
Highest	1.052		

Test plot as follows:



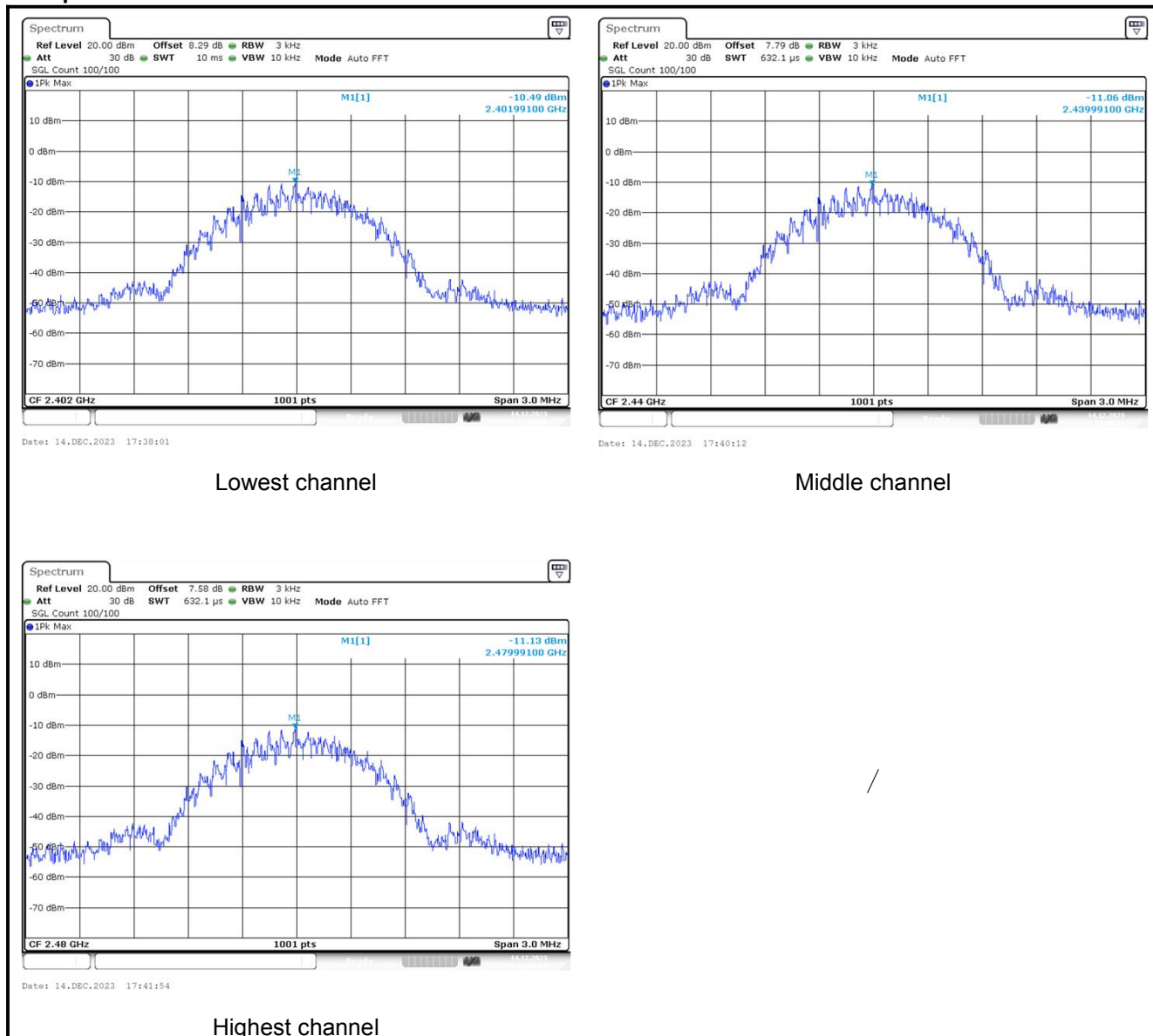
5.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Limit:	8dBm/3kHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 4.9 for details
Test mode:	Refer to section 4.3 for details
Test results:	Pass

Measurement Data:

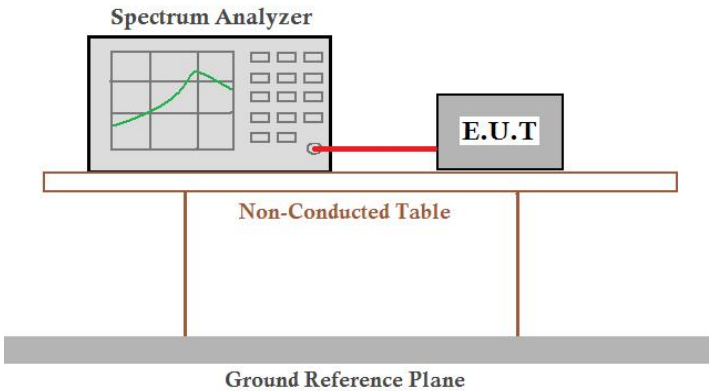
Test CH	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
Lowest	-10.493	8.00	Pass
Middle	-11.058		
Highest	-11.130		

Test plots as follow:

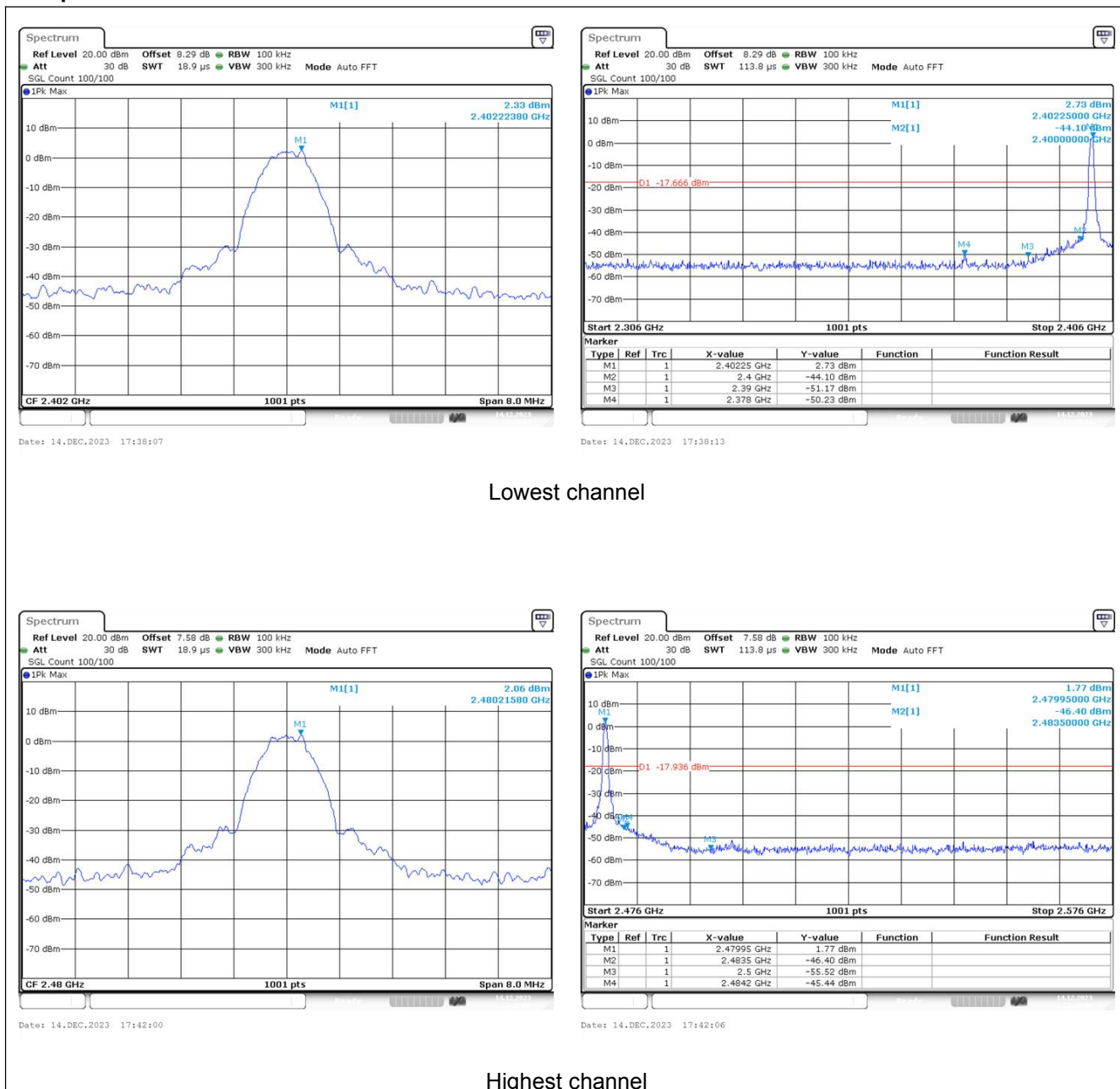


5.6 Band Edge

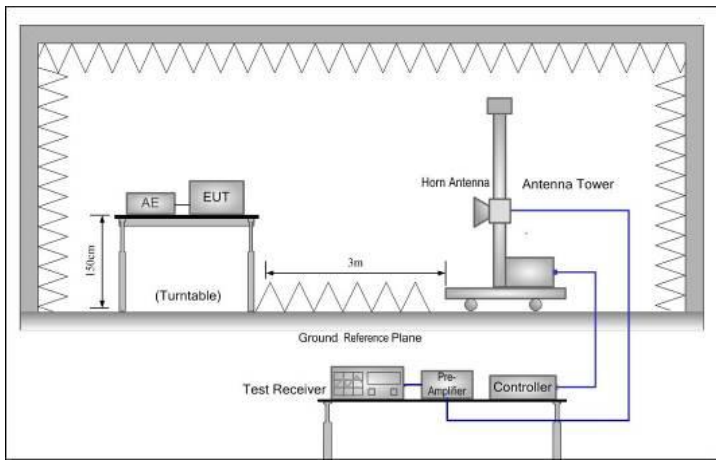
5.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
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:	 The diagram illustrates the test setup for conducted emission measurements. A Spectrum Analyzer is connected to an Equipment Under Test (E.U.T.) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 4.9 for details
Test mode:	Refer to section 4.3 for details
Test results:	Pass

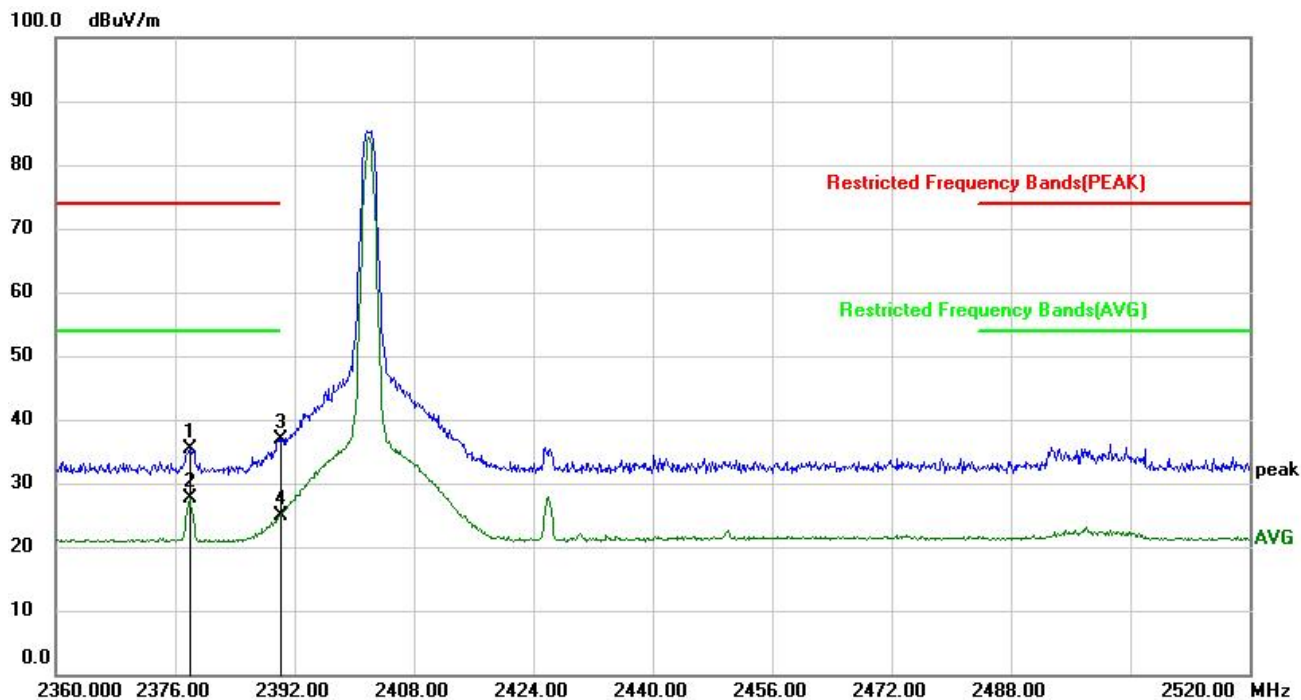
Test plots as follow:



5.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.205 and 15.209				
Test Frequency Range:	2360 MHz to 2520 MHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	Above 1GHz		54.00		Average Value
			74.00		Peak Value
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.				
Test setup:					
Test Instruments:	Refer to section 4.9 for details				
Test mode:	Refer to section 4.3 for details				
Test results:	Pass				

Product Name:	EMS Foot Massager	Product Model:	ER205A
Test By:	Leo Zhang	Test mode:	BLE Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	DC 3.7V	Environment:	Temp.: 24.2°C Humi.: 46%

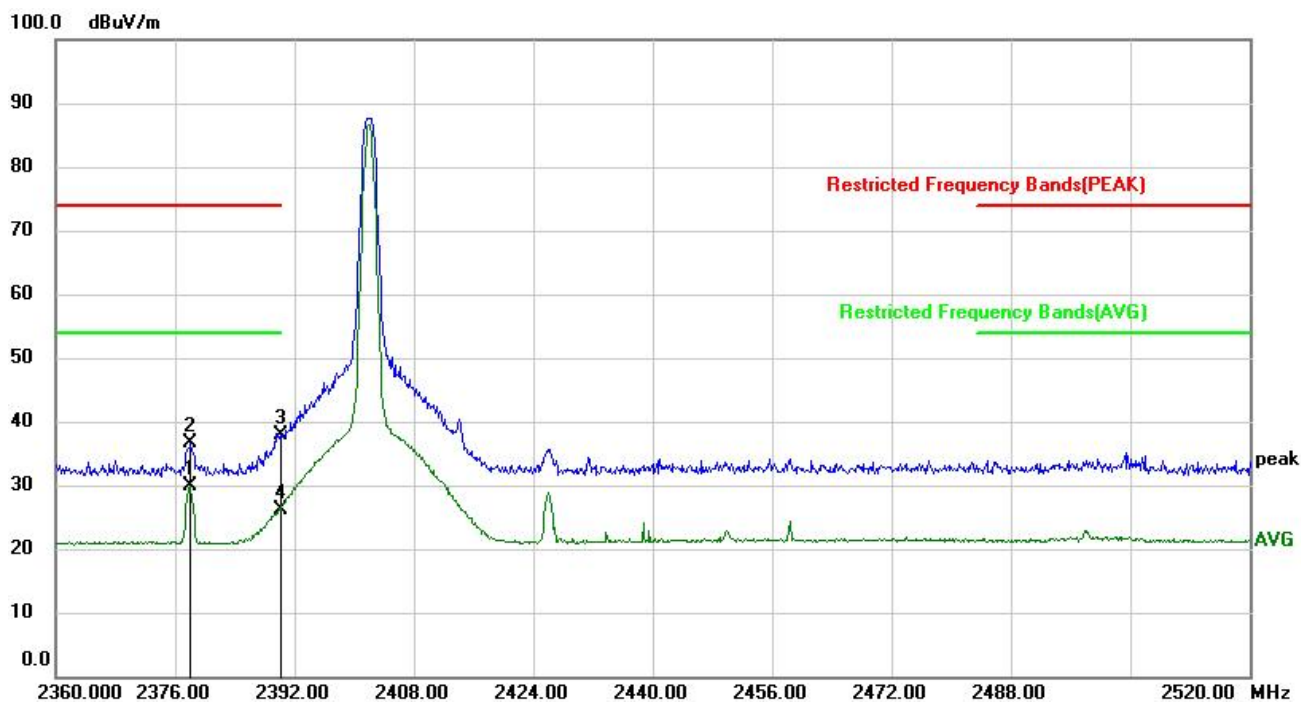


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2377.920	57.96	-22.65	35.31	74.00	-38.69	peak
2	*	2377.920	50.22	-22.65	27.57	54.00	-26.43	AVG
3		2390.000	59.43	-22.62	36.81	74.00	-37.19	peak
4		2390.000	47.46	-22.62	24.84	54.00	-29.16	AVG

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	EMS Foot Massager	Product Model:	ER205A
Test By:	Leo Zhang	Test mode:	BLE Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Environment:	Temp.: 24.2°C Humi.: 46%

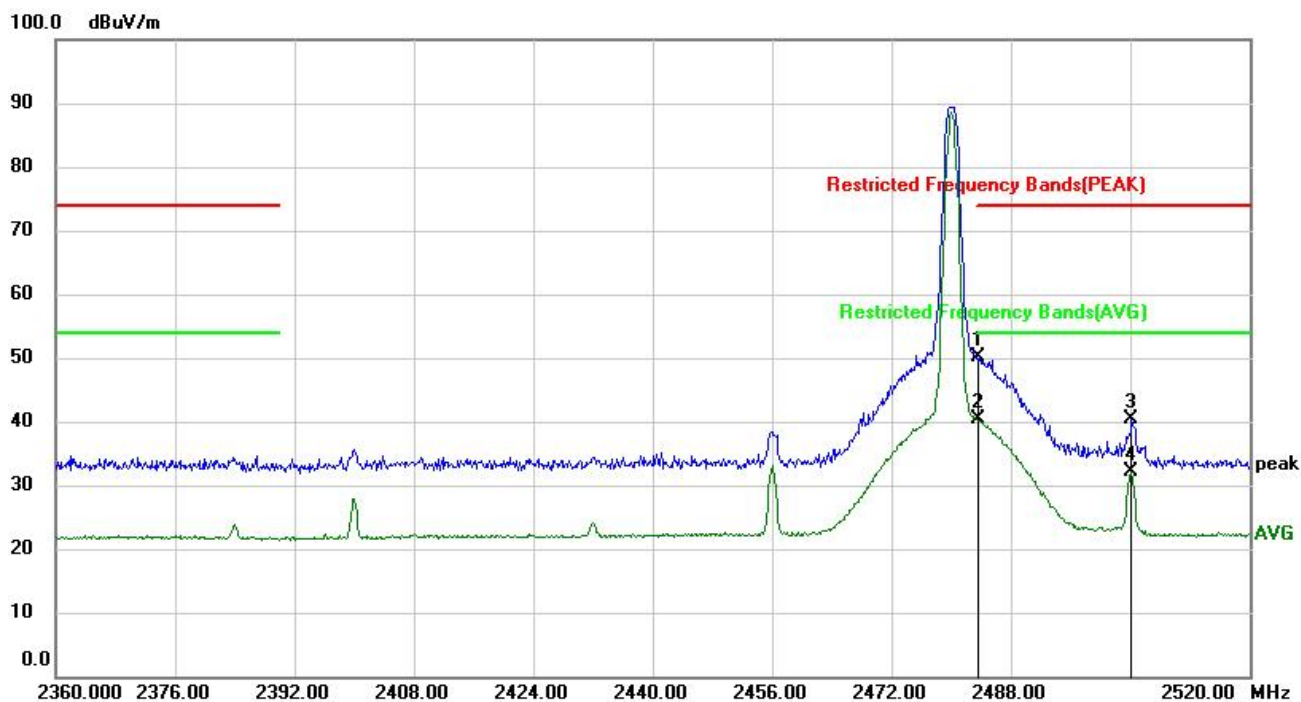


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	2377.920	52.47	-22.65	29.82	54.00	-24.18	AVG
2		2378.080	59.31	-22.65	36.66	74.00	-37.34	peak
3		2390.000	60.48	-22.62	37.86	74.00	-36.14	peak
4		2390.000	48.75	-22.62	26.13	54.00	-27.87	AVG

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	EMS Foot Massager	Product Model:	ER205A
Test By:	Leo Zhang	Test mode:	BLE Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	DC 3.7V	Environment:	Temp.: 24.2°C Humi.: 46%

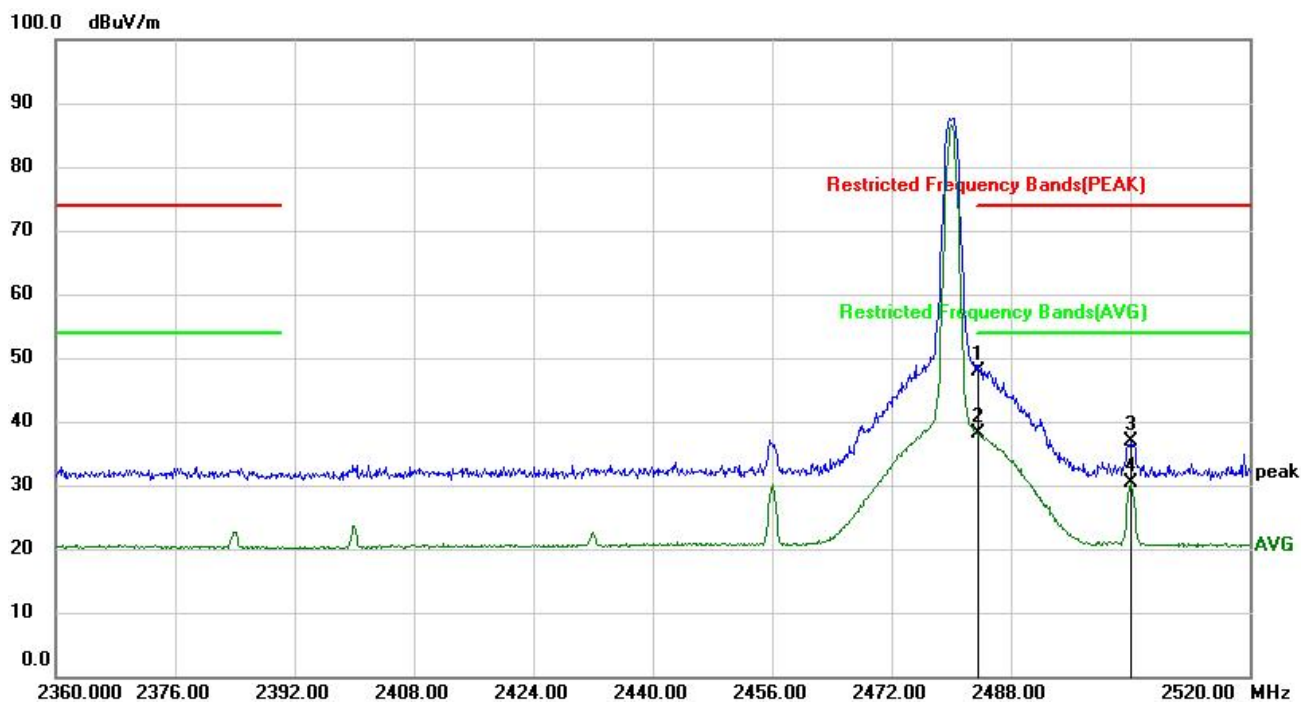


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2483.500	72.34	-22.32	50.02	74.00	-23.98	peak
2	*	2483.500	62.82	-22.32	40.50	54.00	-13.50	AVG
3		2504.160	62.54	-22.26	40.28	74.00	-33.72	peak
4		2504.160	54.36	-22.26	32.10	54.00	-21.90	AVG

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	EMS Foot Massager	Product Model:	ER205A
Test By:	Leo Zhang	Test mode:	BLE Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Environment:	Temp.: 24.2℃ Humi.: 46%



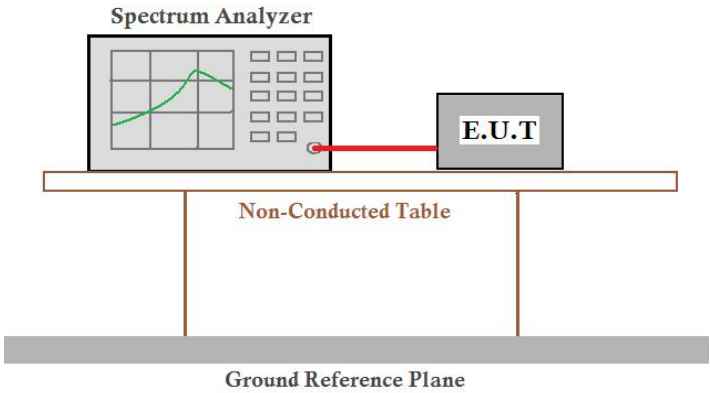
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		2483.500	70.18	-22.32	47.86	74.00	-26.14	peak
2	*	2483.500	60.51	-22.32	38.19	54.00	-15.81	AVG
3		2504.000	59.23	-22.26	36.97	74.00	-37.03	peak
4		2504.000	52.67	-22.26	30.41	54.00	-23.59	AVG

Remark:

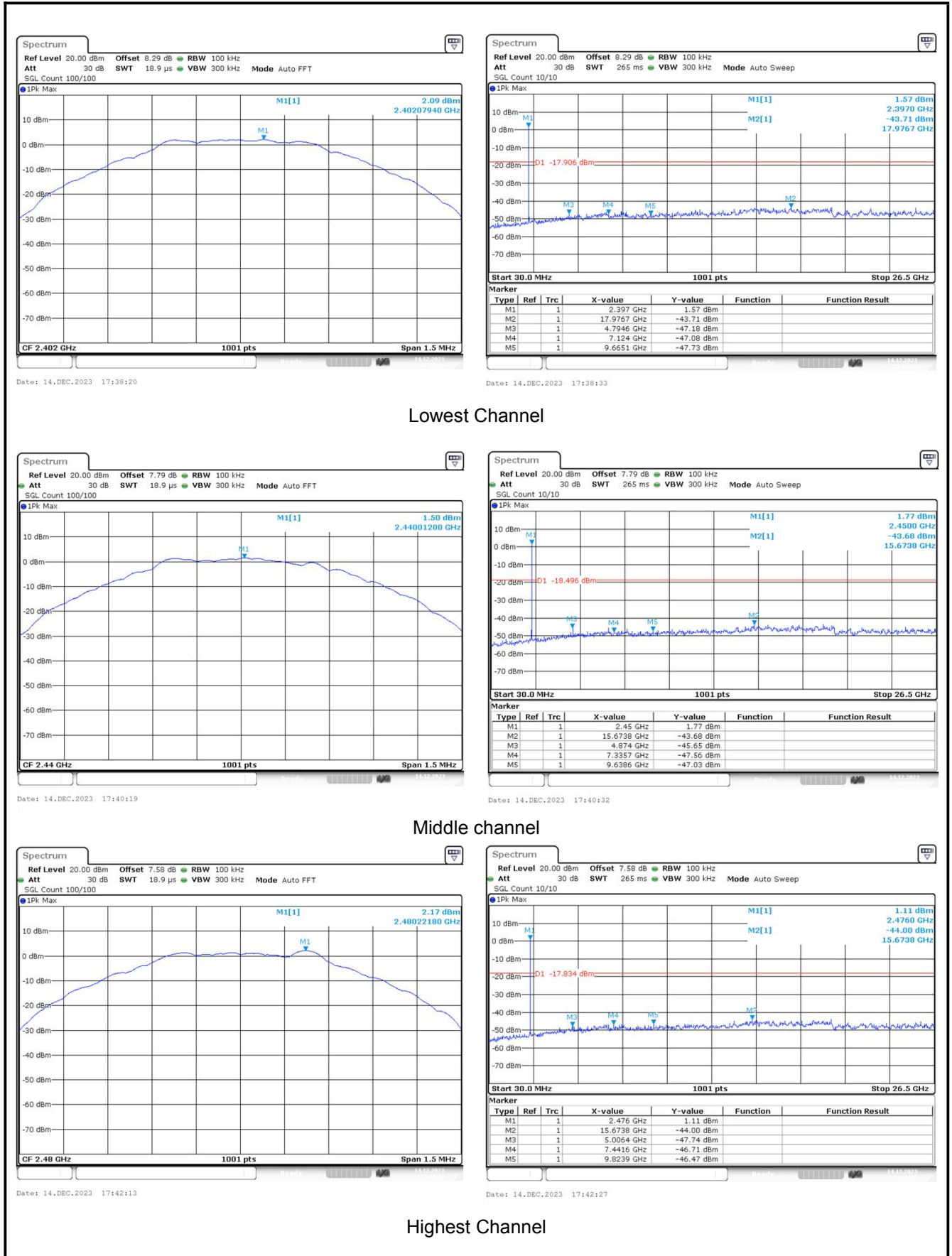
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

5.7 Spurious Emission

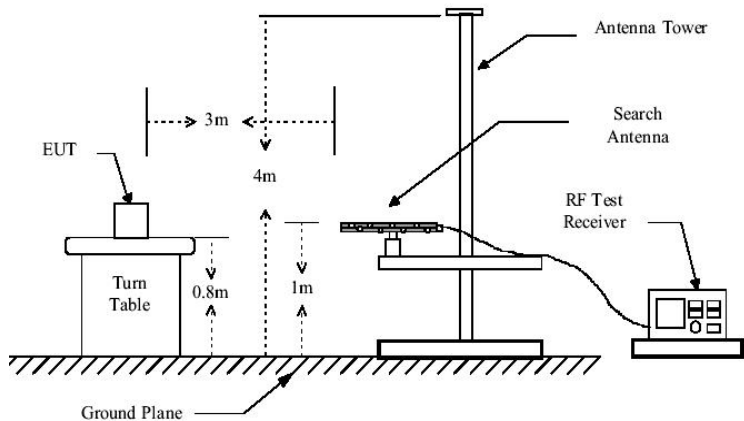
5.7.1 Conducted Emission Method

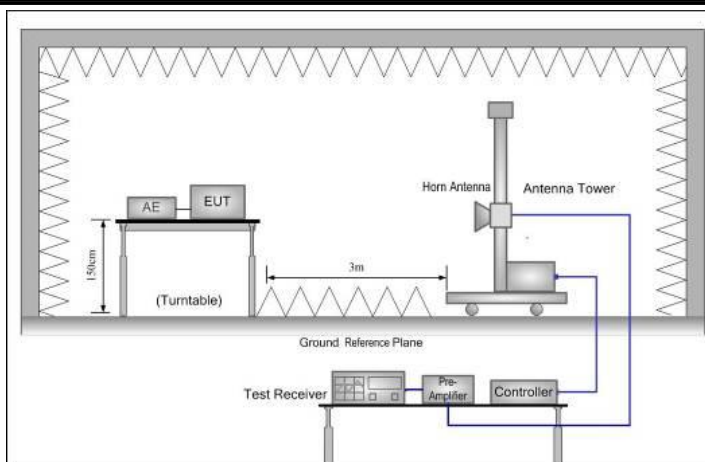
Test Requirement:	FCC Part15 C Section 15.247 (d)
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 The diagram illustrates the test setup for conducted emission measurement. A Spectrum Analyzer is connected via a red cable to an E.U.T (Equipment Under Test). Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is positioned above a Ground Reference Plane.
Test Instruments:	Refer to section 4.9 for details
Test mode:	Refer to section 4.3 for details
Test results:	Pass

Test plot as follows:



5.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.205 and15.209				
Test Frequency Range:	9kHz to 25GHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak RMS	1MHz 1MHz	3MHz 3MHz	Peak Value Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		54.0		Average Value
		74.0		Peak Value	
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) 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.				
Test setup:	Below 1GHz  Above 1GHz				



Test Instruments:

Refer to section 4.9 for details

Test mode:

Refer to section 4.3 for details

Test results:

Pass

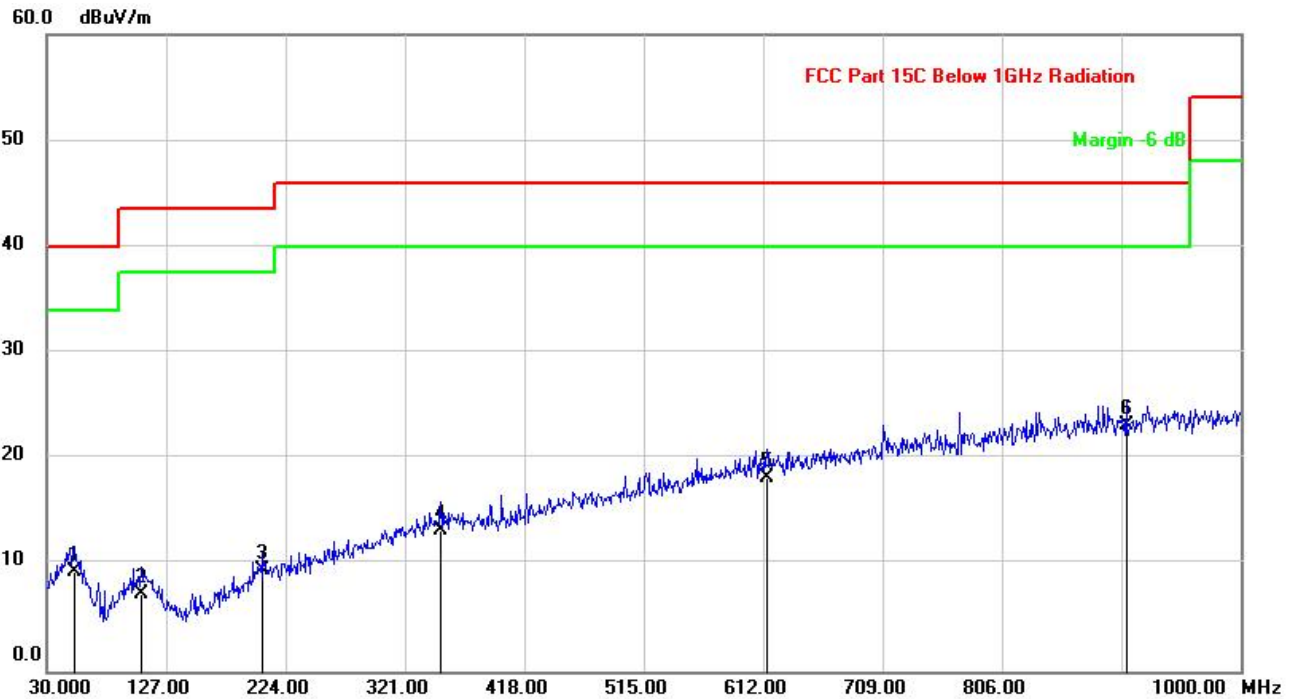
Remark:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.
2. 9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.

Measurement Data(worst case):

Below 1GHz:

Product Name:	EMS Foot Massager	Product Model:	ER205A
Test By:	Leo Zhang	Test mode:	BLE Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	DC 3.7V	Environment:	Temp.: 24.4℃ Humi.: 48%

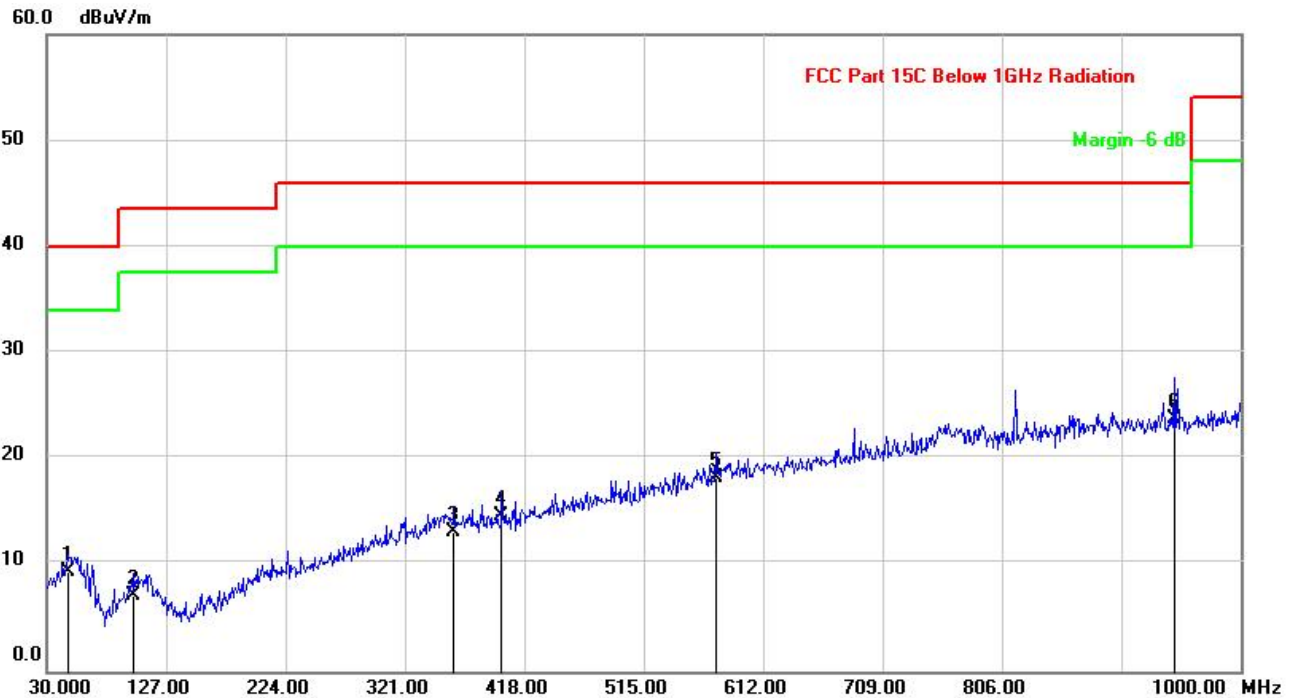


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		52.3100	21.93	-12.63	9.30	40.00	-30.70	QP
2		106.6300	21.72	-14.42	7.30	43.50	-36.20	QP
3		205.5700	23.58	-14.08	9.50	43.50	-34.00	QP
4		350.1000	22.18	-8.88	13.30	46.00	-32.70	QP
5		614.9099	21.57	-3.37	18.20	46.00	-27.80	QP
6	*	906.8800	22.04	1.06	23.10	46.00	-22.90	QP

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	EMS Foot Massager	Product Model:	ER205A
Test By:	Leo Zhang	Test mode:	BLETx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	DC 3.7V	Environment:	Temp.: 24.4℃ Humi.: 48%



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		47.4600	21.86	-12.56	9.30	40.00	-30.70	QP
2		100.8100	21.94	-14.84	7.10	43.50	-36.40	QP
3		360.7700	22.08	-8.88	13.20	46.00	-32.80	QP
4		399.5700	23.62	-8.92	14.70	46.00	-31.30	QP
5		573.2000	22.49	-4.29	18.20	46.00	-27.80	QP
6	*	945.6800	22.63	1.17	23.80	46.00	-22.20	QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Above 1GHz:

Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	67.19	-15.70	51.49	74.00	-22.51	Vertical
4804.00	69.56	-15.70	53.86	74.00	-20.14	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	49.74	-15.70	34.04	54.00	-19.96	Vertical
4804.00	51.45	-15.70	35.75	54.00	-18.25	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4880.00	70.81	-15.42	55.39	74.00	-18.61	Vertical
4880.00	71.40	-15.42	55.98	74.00	-18.02	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4880.00	52.90	-15.42	37.48	54.00	-16.52	Vertical
4880.00	53.72	-15.42	38.30	54.00	-15.70	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	77.38	-15.15	62.23	74.00	-11.77	Vertical
4960.00	76.70	-15.15	61.55	74.00	-12.45	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	58.63	-15.15	43.48	54.00	-10.52	Vertical
4960.00	58.46	-15.15	43.31	54.00	-10.69	Horizontal
Remark: 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor. 2. The emission levels of other frequencies are very lower than the limit and not show in test report.						

-----End of report-----