

Global United Technology Services Co., Ltd.

Report No.: GTS2025020003F01

TEST REPORT

Applicant: LI KUM TRADING CO., LIMITED

SHOP 185 G/F HANG WAI IND CTR NO 6 KIN TAI ST TUEN **Address of Applicant:**

MUN NT, HK, China

LI KUM TRADING CO., LIMITED Manufacturer:

Address of SHOP 185 G/F HANG WAI IND CTR NO 6 KIN TAI ST TUEN

MUN NT, HK, China Manufacturer:

PHUC VINH ELECTRONICS COMPANY LIMITED **Factory:**

Address of Factory: Than Canh Phuc Street, Hung Lam 1 Residential Area, Hong

Thai Ward, Viet Yen Town, Bac Giang Province, Vietnam.

Equipment Under Test (EUT)

Product Name: 3-IN-1 FOLDABLE MAGNETIC WIRELESS CHARGER

Model No.: FWC-35/24, 661640

FCC ID: 2BNL5-661640

Applicable standards: FCC CFR Title 47 Part 15 Subpart C

February 05, 2025 Date of sample receipt:

Date of Test: February 06-20, 2025

Date of report issued: February 20, 2025

PASS * Test Result:

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

Authorized Signature:

Robinson Luo Laboratory Manager



2 Version

Version No.	Date	Description
00	February 20, 2025	Original

Prepared By:	Project Engineer	Date:	February 20, 2025
Check By:	Reviewer	Date:	February 20, 2025



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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Radiated Emission	15.209	Pass
20dB Bandwidth	15.215	Pass

Pass: The EUT complies with the essential requirements in the standard.

4.1 Measurement Uncertainty

No.	Item	Measurement Uncertainty			
1	Radio Frequency	±7.25×10 ⁻⁸			
2	Duty cycle	±0.37%			
3	Occupied Bandwidth	±3%			
4	RF conducted power	±0.75dB			
5	5 RF power density ±3dB				
6	6 Conducted Spurious emissions ±2.58dB				
7	AC Power Line Conducted Emission	±3.44dB (0.15MHz ~ 30MHz)			
		±3.1dB (9kHz-30MHz)			
198	Radiated Spurious emission test	±3.8039dB (30MHz-200MHz)			
8		±3.9679dB (200MHz-1GHz)			
		±4.29dB (1GHz-18GHz)			
		±3.30dB (18GHz-40GHz)			
9	Temperature test	±1°C			
10	Humidity test	±3%			
11	Time	±3%			



5 General Information

5.1 General Description of EUT

3-IN-1 FOLDABLE MAGNETIC WIRELESS CHARGER
FWC-35/24, 661640
FWC-35/24
are identical in the same PCB layout, interior structure and electrical circuits. ance color and model name for commercial purpose.
AA010896B
GTS2025020003-1
Engineer sample
111.5kHz~205kHz and 320kHz
MSK
Inductance Coil Antenna
ANT 1: 0dBi
ANT 2: 0dBi
ANT 3: 0dBi
Input: DC 9V/3A
Phone Output: 5W, 7.5W, 10W, 15W Max
Earbuds Output: 3W Max
Watch Output: 2.5W Max

Remark:

- 1. Antenna gain information provided by the customer
- 2. The relevant information of the sample is provided by the entrusting company, and the laboratory is not responsible for its authenticity.

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5.2 Test mode

Mode	Description	Remark
1	EUT+ Wireless load	99% load
2	EUT+ Wireless load	50% load
3	EUT+ Wireless load	1% load
4	EUT+ Watch	99% load
5	EUT+ Watch	50% load
6	EUT+ Watch	1% load
7	EUT+ Headset	99% load
8	EUT+ Headset	50% load
9	EUT+ Headset	1% load
10	EUT+ Wireless load+ Watch	99% load
11	EUT+ Wireless load+ Watch	50% load
12	EUT+ Wireless load+ Watch	1% load
13	EUT+ Wireless load+ Headset	99% load
14	EUT+ Wireless load+ Headset	50% load
15	EUT+ Wireless load+ Headset	1% load
16	EUT+ Watch+ Headset	99% load
17	EUT+ Watch+ Headset	50% load
18	EUT+ Watch+ Headset	1% load
19	EUT+ Wireless load+ Watch+ Headset	99% load
20	EUT+ Wireless load+ Watch+ Headset	50% load
21	EUT+ Wireless load+ Watch+ Headset	1% load

Keep the EUT in wireless charging status. Wireless output 99% load mode is worse case and reported.

5.3 Description of Support Units

Manufacturer	Description	Model	S/N
YBZ	Wireless charging test load	001	N/A
XIAOMI	USB Charger	MDY-10-EH	N/A
Apple	Watch	Ultra 2	N/A
Apple	AirPods	4	N/A

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.



5.6 Test Facility

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

• FCC—Registration No.: 381383

Designation Number: CN5029

Global United Technology Services 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 files.

• ISED—Registration No.: 9079A

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of ISED for radio equipment testing

• NVLAP (LAB CODE:600179-0)

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480 Fax: 0755-27798960

5.8 Other Information Requested by the Customer

None.



6 Test Instruments list

Radia	Radiated Emission:							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Jun. 22, 2024	Jun. 21, 2027		
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A		
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Apr. 11, 2024	Apr. 10, 2025		
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	Mar. 19, 2023	Mar. 18, 2025		
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	Apr. 17, 2023	Apr. 16, 2025		
6	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	Apr. 11, 2024	Apr. 10, 2025		
7	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov.12, 2024	Nov.11, 2025		
8	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	Apr. 11, 2024	Apr. 10, 2025		
9	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	Apr. 11, 2024	Apr. 10, 2025		
10	Horn Antenna (15GH-40GHz)	SCHWARZBECK	01296	GTS691	Mar. 07, 2024	Mar. 06, 2025		
11	FSV-Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	Mar. 12, 2024	Mar. 11, 2025		
12	Amplifier	1	LNA-1000-30S	GTS650	Apr. 11, 2024	Apr. 10, 2025		
13	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 07, 2024	Nov. 06, 2025		
14	Wideband Amplifier	1	WDA-01004000-15P35	GTS602	Apr. 11, 2024	Apr. 10, 2025		
15	Thermo meter	JINCHUANG	GSP-8A	GTS643	Apr. 18, 2024	Apr. 17, 2025		
16	RE cable 1	GTS	N/A	GTS675	Jul. 02, 2024	Jul. 01, 2025		
17	RE cable 2	GTS	N/A	GTS676	Jul. 02, 2024	Jul. 01, 2025		
18	RE cable 3	GTS	N/A	GTS677	Jul. 02, 2024	Jul. 01, 2025		
19	RE cable 4	GTS	N/A	GTS678	Jul. 02, 2024	Jul. 01, 2025		
20	RE cable 5	GTS	N/A	GTS679	Jul. 02, 2024	Jul. 01, 2025		
21	RE cable 6	GTS	N/A	GTS680	Jul. 02, 2024	Jul. 01, 2025		
22	RE cable 7	GTS	N/A	GTS681	Jul. 05, 2024	Jul. 04, 2025		
23	RE cable 8	GTS	N/A	GTS682	Jul. 05, 2024	Jul. 04, 2025		
24	EMI Test Software	AUDIX	E3-6.100614a	GTS725	N/A	N/A		



Cond	Conducted Emission							
Item Test Equipment		Manufacturer	Manufacturer Model No.		Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	Jul. 12, 2022	Jul. 11, 2027		
2	EMI Test Receiver	R&S	ESCI 7	GTS552	Apr. 11, 2024	Apr. 10, 2025		
3	3 LISN ROHDE & SCHWARZ		ENV216	GTS226	Apr. 11, 2024	Apr. 10, 2025		
4	Coaxial Cable	Coaxial Cable GTS		GTS227	N/A	N/A		
5	Thermo meter	JINCHUANG	GSP-8A	GTS642	Apr. 18, 2024	Apr. 17, 2025		
6 Absorbing clamp		Elektronik- Feinmechanik	MDS21	GTS229	Apr. 11, 2024	Apr. 10, 2025		
7	ISN	SCHWARZBECK	NTFM 8158	GTS565	Apr. 11, 2024	Apr. 10, 2025		
8	High voltage probe	SCHWARZBECK	TK9420	GTS537	Apr. 11, 2024	Apr. 10, 2025		
9	Antenna end assembly	Weinschel	1870A	GTS560	Apr. 11, 2024	Apr. 10, 2025		
10	EMI Test Software	AUDIX	E3-6.100622	GTS726	N/A	N/A		

RF C	RF Conducted Test:							
Item Test Equipment Manufactur		Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	Apr. 13, 2024	Apr. 12, 2025		
2	EMI Test Receiver	R&S	ESCI 7	GTS552	Apr. 13, 2024	Apr. 12, 2025		
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	Apr. 13, 2024	Apr. 12, 2025		
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	Apr. 13, 2024	Apr. 12, 2025		
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	Apr. 13, 2024	Apr. 12, 2025		
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	Apr. 13, 2024	Apr. 12, 2025		
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	Apr. 13, 2024	Apr. 12, 2025		
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	Apr. 13, 2024	Apr. 12, 2025		
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	Apr. 18, 2024	Apr. 17, 2025		
10	EXA Signal Analyzer	Keysight	N9010B	MY60241168	Nov. 02, 2024	Nov. 01, 2025		

Gen	General used equipment:								
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)			
1	Barometer	KUMAO	SF132	GTS647	Apr. 18, 2024	Apr. 17, 2025			

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7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement: FCC Part15 C Section 15.203

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.

EUT Antenna:

The ant is inductance coil antenna, reference to the appendix II for details.



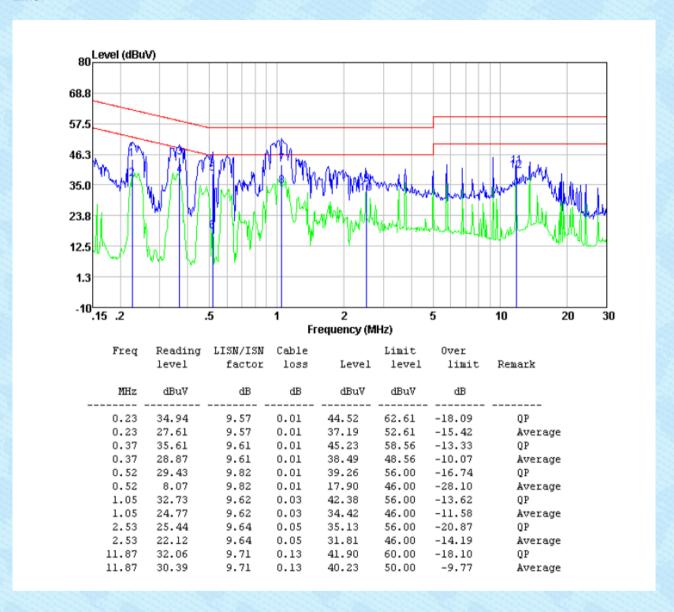
7.2 Conducted Emissions

				The State of the S			
Test Requirement:	FCC Part1	5 C Section 15	5.207				
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						
		Avei					
		0.15-0.5	66 to 56*	56 to	The state of the s		
		0.5-5 5-30		56	4		
					50		
Test setup:	* Decreases with the logarithm of the frequency. Reference Plane						
·	AUX Equipment E.U.T Filter AC power Test table/Insulation plane EMI Receiver Remark E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m						
Test procedure:	 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 500hm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm 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 on conducted measurement. 						
Test Instruments:	Refer to section 6.0 for details						
Test mode:	Refer to section 5.2 for details. Only show the worst case (Mode 19).						
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar	
Test voltage:	AC 120V, 60Hz						
Test results:	Pass						



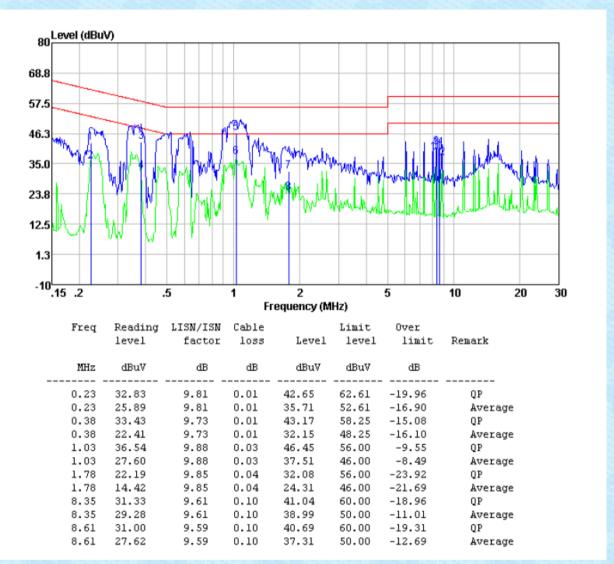
Measurement data:

Line:





Neutral:



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
- 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.

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7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	9kHz to 1GHz						
Test site:	Measurement Distance: 3m						
Receiver setup:	Frequency Detector RBW VBW Remark					Remark	
	9kHz - 30MHz	Quasi-peal			30kHz	Quasi-peak Value	
	30MHz-1GHz	Quasi-peal	k 1	20kHz	300kHz	Quasi-peak Value	
	Above 1GHz			1MHz	3MHz	Peak Value	
		AV 1MHz 10F		10Hz	Average Value		
	Remark: For the frequency bands 9-90 kHz, 110-490 kHz and above 10 MHz. Radiated emission test in these three bands are based on						
	measurements employing an average detector.						
Limit:	Limits for freque						
(Spurious Emissions)	Frequency	Limit (uV/	/m) Meas		surement ance(m)	Remark	
	0.009-0.490 2400/F(F				300	Quasi-peak Value	
	0.490-1.705	24000/F(k	Hz)		30	Quasi-peak Value	
	1.705-30	30		30		Quasi-peak Value	
	Limits for frequency Above 30MHz						
	Frequency		Limit (dBuV/m @3m)			Remark	
	30MHz-88MHz		40.00			Quasi-peak Value	
	88MHz-216	43.50			Quasi-peak Value Quasi-peak Value		
	216MHz-960MHz 960MHz-1GHz		46.00 54.00			Quasi-peak Value	
			54.00			Average Value	
	Above 10	6HZ	74.00			Peak Value	
	Remark: The em						
	measurements e						
	emission limits in					000 MHz. Radiated	
	employing an ave			us are ba	iseu on mea	asurements	
Test Procedure:				of a rota	ating table (0.8 meters above the	
rest ressaute.						360 degrees to	
	determine the	position of the	he hiç	ghest rac	diation.		
	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 						



Report No.: GTS2025020003F01 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 setup: Below 30MHz < 3m > Test Antenna EUT Turn Table < 80cm Receiver 30MHz ~ 1000MHz Test Antenna EUT Turn Table < 80cm Receivere Preamplifier. Test Instruments: Refer to section 6.0 for details Refer to section 5.2 for details. Only show the worst cas (Mode 19). Test mode: 1012mbar Humid.: 52% Press.: Test environment: Temp.: Test voltage: AC 120V, 60Hz Test results: **Pass**



Measurement data:

Below 30MHz

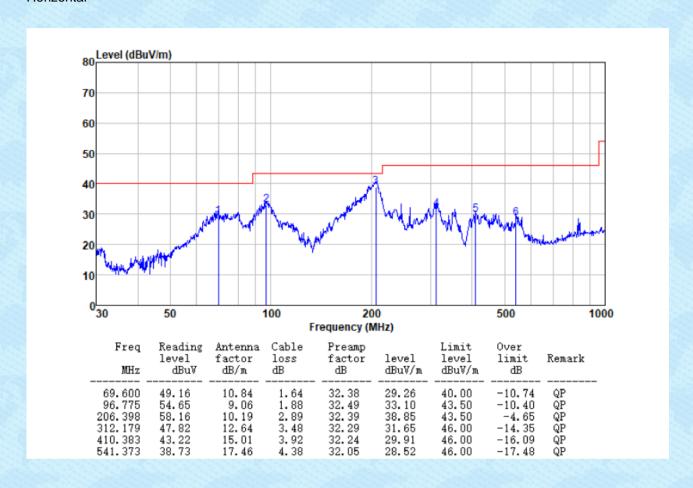
Only the worst case

Only the worst case							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
0.11427	17.53	20.01	0.25	37.79	106.44	-68.65	Average
0.11427	23.07	20.01	0.25	43.33	106.44	-63.11	Peak
0.12742	23.94	19.75	0.25	43.94	105.50	-61.56	Average
0.12742	26.25	19.75	0.25	46.25	105.50	-59.25	Peak
0.3200	38.91	19.95	0.26	59.12	97.48	-38.36	Average
0.3200	44.69	19.95	0.26	64.90	97.48	-32.58	Peak
0.99429	7.69	20.4	0.34	28.43	67.66	-39.23	QP
2.063	-1.66	20.45	0.37	19.16	69.54	-50.38	QP
3.095	-0.88	20.52	0.39	20.03	69.54	-49.51	QP
4.995	-3.38	20.9	0.43	17.95	69.54	-51.59	QP
14.574	-3.33	20.19	0.74	17.6	69.54	-51.94	QP
24.894	-5.29	20.71	0.98	16.4	69.54	-53.14	QP



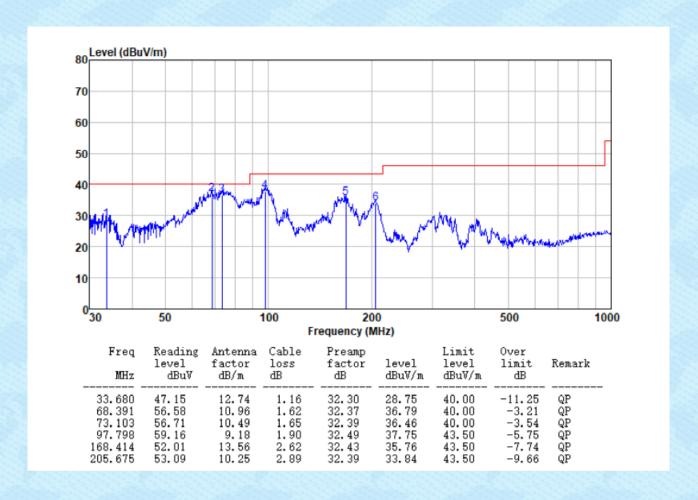
30MHz ~ 1GHz

Horizontal





Vertical

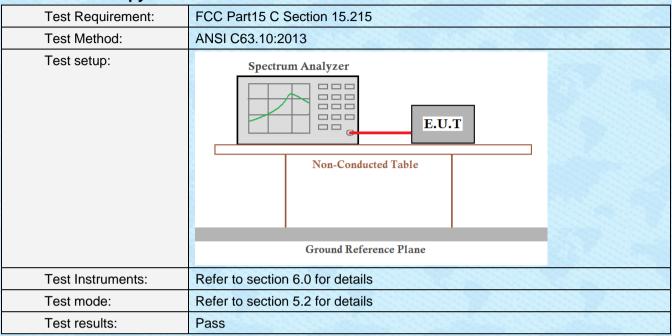


Remark:

Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor



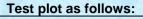
7.4 20dB Occupy Bandwidth

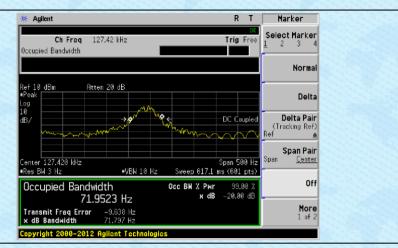


Measurement Data

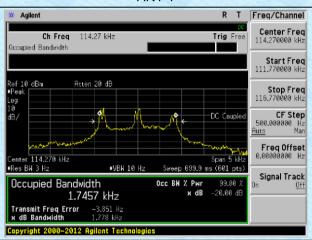
ANT	Test frequency(kHz)	20dB bandwidth(KHz)	Result	
1	127.42	0.072	Pass	
2	114.27	1.778	Pass	
3	320.00	0.239	Pass	







ANT 1



ANT 2



ANT 3



8 Test Setup Photo

Reference to the appendix I for details.

9 EUT Constructional Details

Reference to the appendix II for details.

-----End-----