



Global United Technology Services Co., Ltd.

Report No.: GTS2023110098F04

TEST REPORT

Applicant: Allied Universal Electronic Monitoring US, Inc.

Address of Applicant: 1838 Gunn Highway, Odessa, Florida 33556, United States

Manufacturer: Allied Universal Electronic Monitoring US, Inc.

Address of 1838 Gunn Highway, Odessa, Florida 33556, United States

Manufacturer:

Equipment Under Test (EUT)

Product Name: Tracker 100

Model No.: TRC-100-NA-9-00

FCC ID: NC3TRACKER-100

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

Date of sample receipt: November 10, 2023

Date of Test: November 10, 2023-December 22, 2023

Date of report issued: December 25, 2023

Test Result: PASS *

Authorized Signature:





Laboratory Manager

This 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.

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





2 Version

Version No.	Date	Description
00	December 25, 2023	Original

Prepared By:	Trankly	Date:	December 25, 2023
	Project Engineer		
Check By:	Reviewer	Date:	December 25, 2023





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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Output Power	15.247 (b)(3)	Pass
Channel 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

Remarks:

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

2. Test according to ANSI C63.10:2013

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes	
Radiated Emission	9kHz-30MHz	3.1dB	(1)	
Radiated Emission	30MHz-200MHz	3.8039dB	(1)	
Radiated Emission	200MHz-1GHz	3.9679dB	(1)	
Radiated Emission	1GHz-18GHz	4.29dB	(1)	
Radiated Emission	18GHz-40GHz	3.30dB	(1)	
AC Power Line Conducted 0.15MHz ~ 30MHz 3.44dB				
Note (1): The measurement unce	ertainty is for coverage factor of k	=2 and a level of confidence of 9	95%.	





5 General Information

5.1 General Description of EUT

Product Name:	Tracker 100
Model No.:	TRC-100-NA-9-00
Test sample(s) ID:	GTS2023110098-1
Sample(s) Status:	Engineer sample
S/N:	1PC1039B03110227230003
Operation Frequency:	915MHz
Channel Numbers:	1
Modulation Type:	GFSK
Antenna Type:	Loop Antenna
Antenna Gain:	1.5dBi
Power Supply:	DC 3.6V, 1230mAh for Li-ion battery

Note:

- 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.





5.2 Test mode

Transmitting mode Reep the Lot in continuously transmitting mode.	Transmitting mode	Keep the EUT in continuously transmitting mode.
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5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number	
IMOAIX	USB Charger	MDY-10-EH	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.

Address: 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 Additional Instructions

Test Software	Special test software provided by manufacturer
Power level setup	Default





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	June 23, 2021	June 22, 2024	
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	April 14, 2023	April 13, 2024	
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 19, 2023	March 18, 2025	
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	April 17, 2023	April 16, 2025	
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A	
7	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024	
8	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 14, 2023	April 13, 2024	
9	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 14, 2023	April 13, 2024	
10	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 19, 2023	April 18, 2024	
11	RE cable 1	GTS	N/A	GTS675	July 31. 2023	July 30. 2024	
12	RE cable 2	GTS	N/A	GTS676	July 31. 2023	July 30. 2024	
13	RE cable 3	GTS	N/A	GTS677	July 31. 2023	July 30. 2024	
14	RE cable 4	GTS	N/A	GTS678	July 31. 2023	July 30. 2024	
15	RE cable 5	GTS	N/A	GTS679	July 31. 2023	July 30. 2024	
16	RE cable 6	GTS	N/A	GTS680	July 31. 2023	July 30. 2024	
17	RE cable 7	GTS	N/A	GTS681	July 31. 2023	July 30. 2024	
18	RE cable 8	GTS	N/A	GTS682	July 31. 2023	July 30. 2024	



GTS

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Cond	Conducted Emission							
Item	Test Equipment	Manufacturer	Model No.	Inventory 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	July 12, 2022	July 11, 2027		
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 14, 2023	April 13, 2024		
3	LISN	ROHDE & SCHWARZ	ENV216	GTS226	April 14, 2023	April 13, 2024		
4	Coaxial Cable	GTS	GTS N/A GTS227	N/A	N/A			
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A		
6	Thermo meter	JINCHUANG	GSP-8A	GTS642	April 19, 2023	April 18, 2024		
7	Absorbing clamp Elektronik- Feinmechanik		MDS21	GTS229	April 14, 2023	April 13, 2024		
8	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 14, 2023	April 13, 2024		
9	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 14, 2023	April 13, 2024		
10	Antenna end assembly	Weinschel	1870A	GTS560	April 14, 2023	April 13, 2024		

RF C	RF Conducted Test:							
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)		
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 14, 2023	April 13, 2024		
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 14, 2023	April 13, 2024		
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 14, 2023	April 13, 2024		
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 14, 2023	April 13, 2024		
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 14, 2023	April 13, 2024		
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 14, 2023	April 13, 2024		
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 14, 2023	April 13, 2024		
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 14, 2023	April 13, 2024		
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 19, 2023	April 18, 2024		
10	EXA Signal Analyzer	Keysight	N9010B	MY60241168	Nov. 03, 2023	Nov. 02, 2024		

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	April 19, 2023	April 18, 2024		



7 Test results and Measurement Data

7.1 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.

E.U.T Antenna:

The antenna is loop antenna, reference to the appendix II for details





7.2 Conducted Emissions

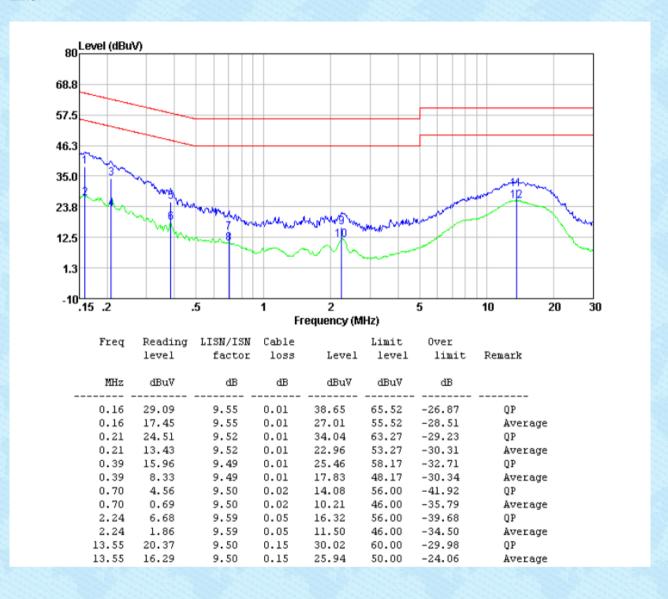
Test Requirement:	FCC Part15 C Section 15.207							
Test Method:	ANSI C63.10:2013							
Test Frequency Range:	150KHz to 30MHz							
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto							
Limit:	Frequency range (MHz) Limit (dBuV)							
		Quasi-peak	Average					
	0.15-0.5	66 to 56*	56 to 46*					
	0.5-5	56	46					
	5-30	60	50					
Tankankan	* Decreases with the logarithm							
Test setup:	Reference Plane	^						
	40cm 40cm	40cm						
	LICH	0cm LISN						
	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							
rest procedure.	line impedance stabilization							
	50ohm/50uH coupling impe							
	2. The peripheral devices are							
	LISN that provides a 50ohr							
	termination. (Please refer to							
	photographs).							
	3. Both sides of A.C. line are	checked for maximur	n conducted					
	interference. In order to fine							
	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 6.0 for details							
Test mode:	Refer to section 5.2 for details							
Test environment:	Temp.: 25 °C Hun	nid.: 52%	Press.: 1012mbar					
Test voltage:	AC 120V, 60Hz							
Test results:	Pass							
			A SECULAR STREET, SECULAR SECU					





Measurement data

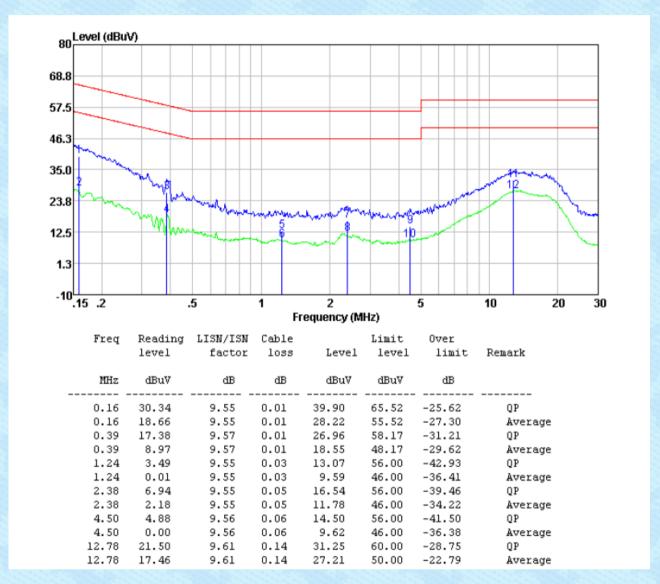
Line:







Neutral:



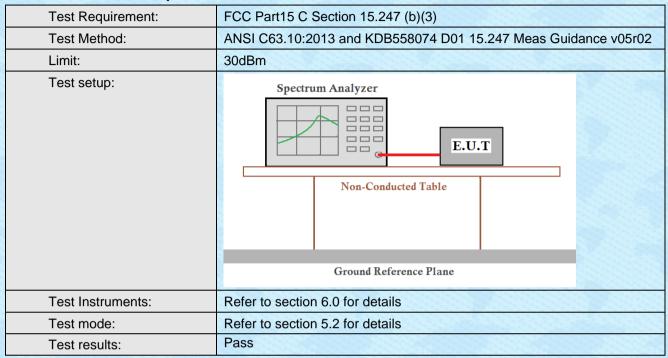
Notes

- 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.





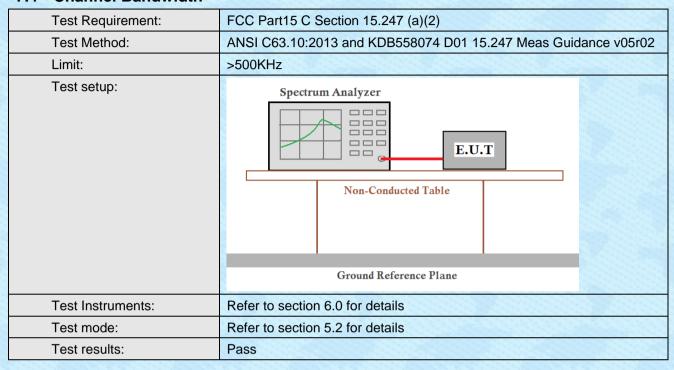
7.3 Conducted Output Power







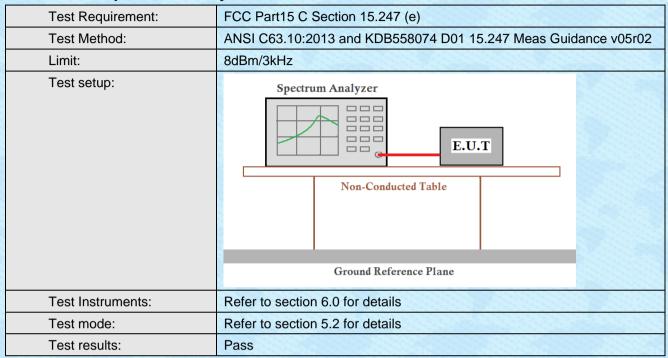
7.4 Channel Bandwidth







7.5 Power Spectral Density







7.6 Spurious Emission in Non-restricted & restricted Bands

7.6.1 Conducted Emission Method

Total Dan Survey	500 Part 5 0 0 and 5 4 5 0 4 7 (1)					
Test Requirement:	FCC Part15 C Section 15.247 (d)					
Test Method:	ANSI C63.10:2013 and KDB558074 D01 15.247 Meas Guidance v05r02					
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:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					



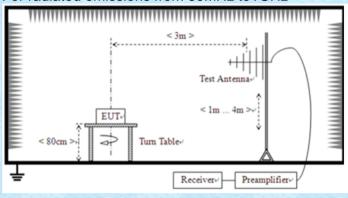


7.6.2 Radiated Emission Method

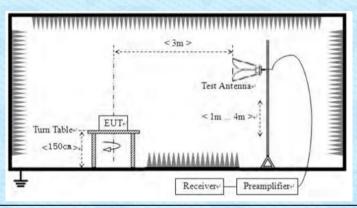
Test Requirement:	FCC Part15 C Section 15.209							
Test Method:	ANSI C63.10:2013							
Test Frequency Range:	9kHz to 10GHz							
Test site:	Measurement Distance: 3m							
Receiver setup:	Frequency Detector RBW VBW Value					Value		
	9KHz-150KHz Qu		i-peak	200Hz		600Hz	Quasi-peak	
	150KHz-30MHz	Quasi	i-peak	9KHz		30KHz	Quasi-peak	
	30MHz-1GHz	Quasi	i-peak	120K	120KHz 300KHz		Quasi-peak	
	Above 1GHz	Peak		1MHz		3MHz	Peak	
	7,0000 10112	Pe	eak	1MH	Hz 10Hz		Average	
Lineite	Note: For Duty cyc cycle < 98%, averag			THE RESERVE OF THE PARTY.				
Limit:	Frequency		Limit (uV	//m)	Value		Measurement Distance	
	0.009MHz-0.490M	1Hz 2	2400/F(K			PK/AV	300m	
	0.490MHz-1.705M		4000/F(I	(Hz)		QP	30m	
	1.705MHz-30MHz		30			QP	30m	
	30MHz-88MHz		100		QP			
	88MHz-216MHz		150		QP			
	216MHz-960MH		200			QP	3m	
	960MHz-1GHz		500		QP			
	Above 1GHz		500		Average Peak			
Toot cotup:			5000					
Test setup:	For radiated emiss	sions fro	om 9kHz	z to 30	MHz			
	Test Antenna < 80cm > Tum Table Receiver							



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



Test Procedure:

- 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.
- 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.
- 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 Instruments:

Refer to section 6.0 for details

Test mode:

Refer to section 5.2 for details





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	Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
	Test voltage:	DC 3.6V					
	Test results:	Pass					

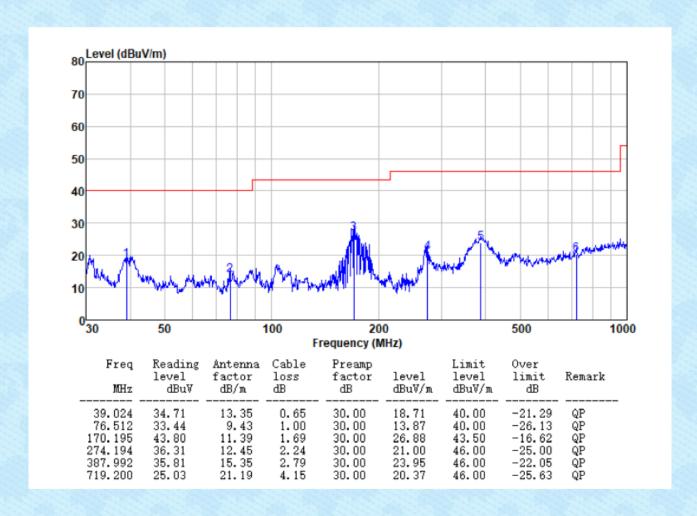
Measurement data:

■ 9kHz~30MHz

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

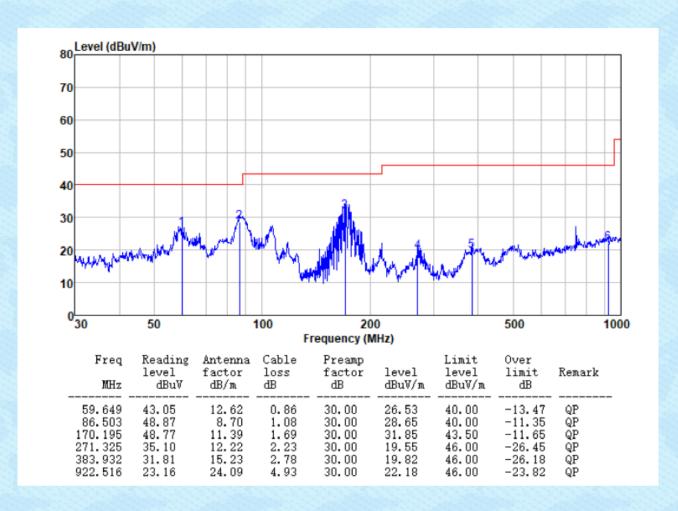
■ Below 1GHz

Horizontal:





Vertical:



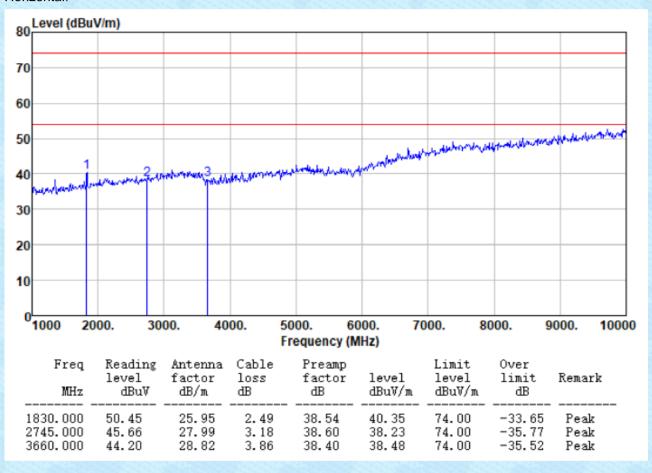




■ Above 1GHz

Unwanted Emissions in Restricted Frequency Bands

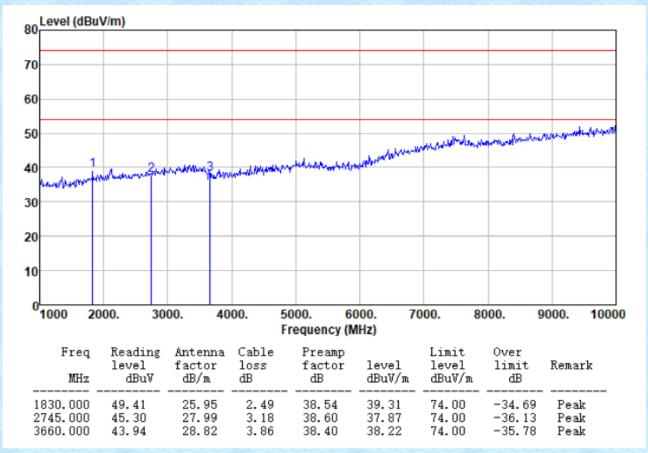
Horizontal:







Vertical:



Notes:

- 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.





8 Test Setup Photo

Reference to the appendix I for details.

9 EUT Constructional Details

Reference to the appendix II for details.

-----End-----