TEST REPORT

Applicant:	CoreTigo Ltd
Address of Applicant:	Giborey Israel 5, Poleg, Natanya 4250405, Israel
Manufacturer:	CoreTigo Ltd
Address of Manufacturer:	Giborey Israel 5, Poleg, Natanya 4250405, Israel
Factory:	BMK professional electronics GmbH
Address of Factory:	Werner-von-Siemens-Strasse 6, 86159 Augsburg, Germany

Equipment Under Test (EUT)

Product Name:	IO-Link Wireless Master with Edge Computing Functionality
Model No.:	TigoGateway 2TE-PN, TigoGateway 2TC-CAT, TigoGateway 2TC-EIP, TigoGateway 2TC-PEC, TigoGateway 2TC-PN, TigoGateway 2TE-CAT, TigoGateway 2TE-EIP, TigoGateway 2TE-PEC, TigoGateway 2TE-MN
Trade Mark:	CoreTigo
FCC ID:	2ATSM-COR2TGW
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	May 09, 2024
Date of Test:	May 10, 2024-July 10, 2024
Date of report issued:	July 10, 2024
Test Result :	PASS *

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

Authorized Signature:

Robinson Luo
Laboratory Manager

TESTING
NVLAP LAB CODE 600179-0

2 Version

Version No.	Date	Description
00	*July 10, 2024*	*Original*

Prepared By: ***Date:*** *July 10, 2024*

Project Engineer

Check By: ***Date:*** *July 10, 2024*

Reviewer

3 Contents

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

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25\times10^{-8}$
2	Duty cycle	±0.37%
3	Occupied Bandwidth	±3%
4	RF conducted power	±0.75dB
5	RF power density	±3dB
6	Conducted Spurious emissions	±2.58dB
7	AC Power Line Conducted Emission	±3.44dB (0.15MHz ~ 30MHz)
8	Radiated Spurious emission test	±3.1dB (9kHz-30MHz)
		±3.8039dB (30MHz-200MHz)
		±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

Product Name:	IO-Link Wireless Master with Edge Computing Functionality
Model No.:	TigoGateway 2TE-PN, TigoGateway 2TC-CAT, TigoGateway 2TC-EIP, TigoGateway 2TC-PEC, TigoGateway 2TC-PN, TigoGateway 2TE-CAT, TigoGateway 2TE-EIP, TigoGateway 2TE-PEC, TigoGateway 2TE-MN
Test Model No.:	TigoGateway 2TE-PN
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are ethernet communication protocol and model name for commercial purpose.	
S/N:	9985772272
Test sample(s) ID:	GTS2024050074-1
Sample(s) Status	Engineered sample
Operation Frequency:	2401MHz~2480MHz
Channel numbers:	80
Modulation type:	GFSK
Antenna Type:	Omnidirectional antenna
Antenna gain:	ANT 1: 1.5dBi ANT 2: 1.5dBi ANT 3: 1.5dBi
Power supply:	DC 24V

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.

Operation Frequency each of channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2401	21	2421	41	2441	61	2461
2	2402	22	2422	42	2442	62	2462
3	2403	23	2423	43	2443	63	2463
4	2404	24	2424	44	2444	64	2464
5	2405	25	2425	45	2445	65	2465
6	2406	26	2426	46	2446	66	2466
7	2407	27	2427	47	2447	67	2467
8	2408	28	2428	48	2448	68	2468
9	2409	29	2429	49	2449	69	2469
10	2410	30	2430	50	2450	70	2470
11	2411	31	2431	51	2451	71	2471
12	2412	32	2432	52	2452	72	2472
13	2413	33	2433	53	2453	73	2473
14	2414	34	2434	54	2454	74	2474
15	2415	35	2435	55	2455	75	2475
16	2416	36	2436	56	2456	76	2476
17	2417	37	2437	57	2457	77	2477
18	2418	38	2438	58	2458	78	2478
19	2419	39	2439	59	2459	79	2479
20	2420	40	2440	60	2460	80	2480

The test frequencies are below:

Channel	Frequency
The lowest channel	2401MHz
The middle channel	2440MHz
The Highest channel	2480MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
MEILI	DC POWER SUPPLY	MCH-305A	011121168

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	Continuous transmitter provided by manufacturer
Power level setup	Default

6 Test Instruments list

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 22, 2024	June 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	April 11, 2024	April 10, 2025
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	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 11, 2024	April 10, 2025
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 11, 2024	April 10, 2025
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 11, 2024	April 10, 2025
11	Horn Antenna (18-26.5GHz)	/	UG-598A/U	GTS664	Oct. 29, 2023	Oct. 28, 2024
12	Horn Antenna (26.5-40GHz)	A.H Systems	SAS-573	GTS665	Oct. 29, 2023	Oct. 28, 2024
13	FSV·Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	March 12, 2024	March 11, 2025
14	Amplifier	/	LNA-1000-30S	GTS650	April 11, 2024	April 10, 2025
15	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov.07, 2024
16	Wideband Amplifier	/	WDA-01004000-15P35	GTS602	April 11, 2024	April 10, 2025
17	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 18, 2024	April 17, 2025
18	RE cable 1	GTS	N/A	GTS675	July 31. 2023	July 30. 2024
19	RE cable 2	GTS	N/A	GTS676	July 31. 2023	July 30. 2024
20	RE cable 3	GTS	N/A	GTS677	July 31. 2023	July 30. 2024
21	RE cable 4	GTS	N/A	GTS678	July 31. 2023	July 30. 2024
22	RE cable 5	GTS	N/A	GTS679	July 31. 2023	July 30. 2024
23	RE cable 6	GTS	N/A	GTS680	July 31. 2023	July 30. 2024
24	RE cable 7	GTS	N/A	GTS681	July 31. 2023	July 30. 2024
25	RE cable 8	GTS	N/A	GTS682	July 31. 2023	July 30. 2024

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 11, 2024	April 10, 2025
3	LISN	ROHDE & SCHWARZ	ENV216	GTS226	April 11, 2024	April 10, 2025
4	Coaxial Cable	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 18, 2024	April 17, 2025
7	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	April 11, 2024	April 10, 2025
8	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 11, 2024	April 10, 2025
9	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 11, 2024	April 10, 2025
10	Antenna end assembly	Weinschel	1870A	GTS560	April 11, 2024	April 10, 2025

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 11, 2024	April 10, 2025
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 11, 2024	April 10, 2025
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 11, 2024	April 10, 2025
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 11, 2024	April 10, 2025
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 11, 2024	April 10, 2025
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 11, 2024	April 10, 2025
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 11, 2024	April 10, 2025
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 11, 2024	April 10, 2025
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 18, 2024	April 17, 2025
10	EXA Signal Analyzer	Keysight	N9010B	MY60241168	Nov. 03, 2023	Nov. 02, 2024

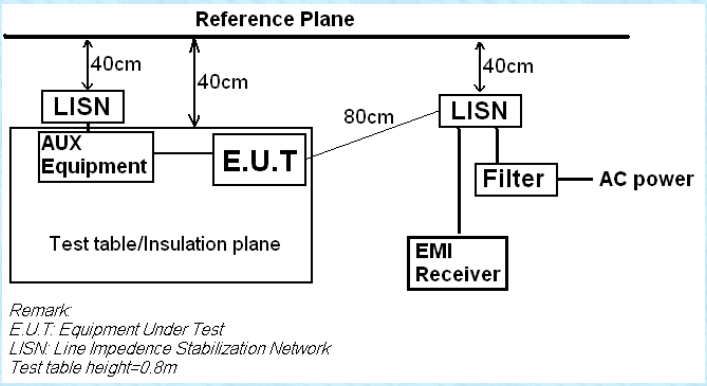
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Barometer	KUMAO	SF132	GTS647	April 18, 2024	April 17, 2025

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 Omnidirectional antenna, reference to the appendix II for details	

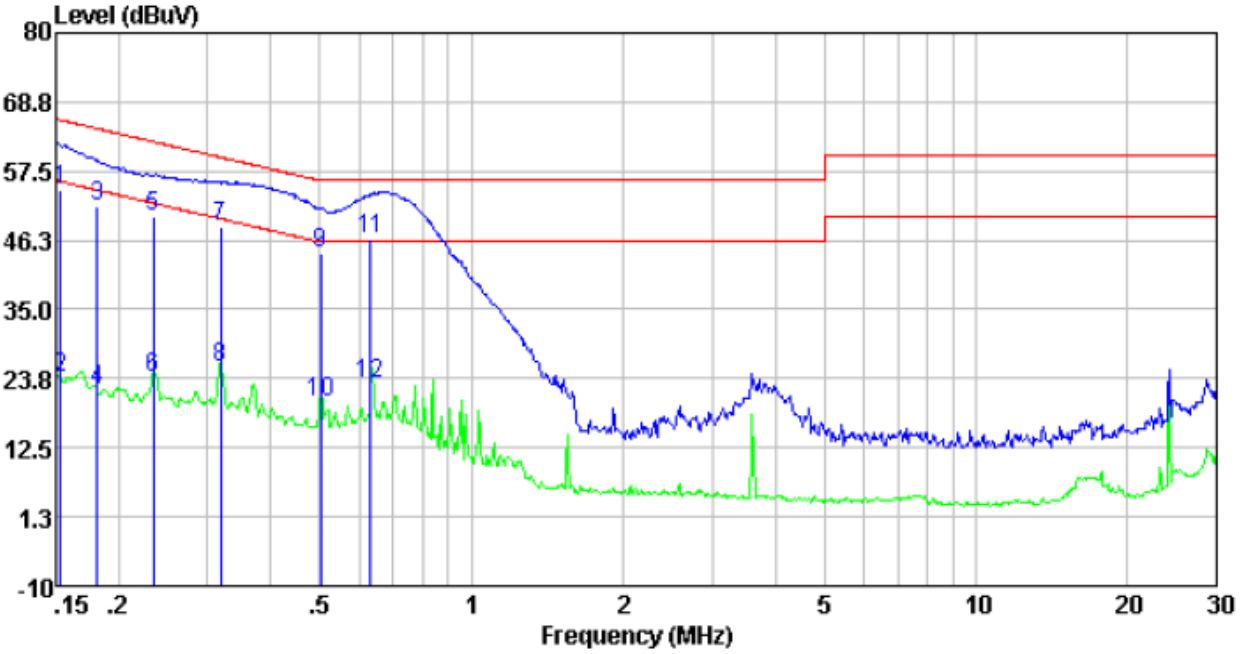
7.2 Conducted Emissions

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 * Decreases with the logarithm of the frequency.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
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 6.0 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C / Humid.: 52% / Press.: 1012mbar
Test voltage:	AC 120V
Test results:	Pass

Measurement data

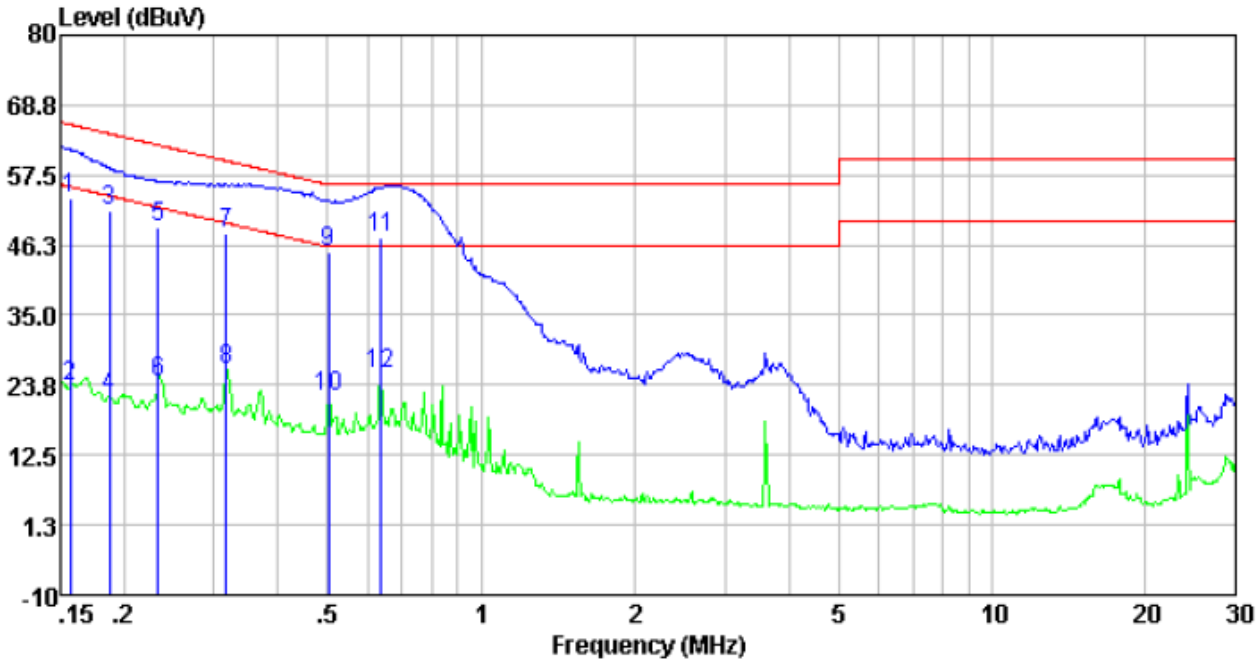
Pre-scan all test modes, found worst case at 2401MHz@ANT 1, and so only show the test result of it.

Line:



Freq	Reading level	LISN/ISN factor	Cable loss	Level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.15	44.84	9.56	0.01	54.41	65.82	-11.41	QP
0.15	14.30	9.56	0.01	23.87	55.82	-31.95	Average
0.18	42.19	9.53	0.01	51.73	64.42	-12.69	QP
0.18	12.21	9.53	0.01	21.75	54.42	-32.67	Average
0.23	40.74	9.51	0.01	50.26	62.30	-12.04	QP
0.23	14.50	9.51	0.01	24.02	52.30	-28.28	Average
0.32	39.08	9.49	0.01	48.58	59.75	-11.17	QP
0.32	15.98	9.49	0.01	25.48	49.75	-24.27	Average
0.50	34.79	9.49	0.01	44.29	56.00	-11.71	QP
0.50	10.43	9.49	0.01	19.93	46.00	-26.07	Average
0.63	36.88	9.50	0.02	46.40	56.00	-9.60	QP
0.63	13.28	9.50	0.02	22.80	46.00	-23.20	Average

Neutral:



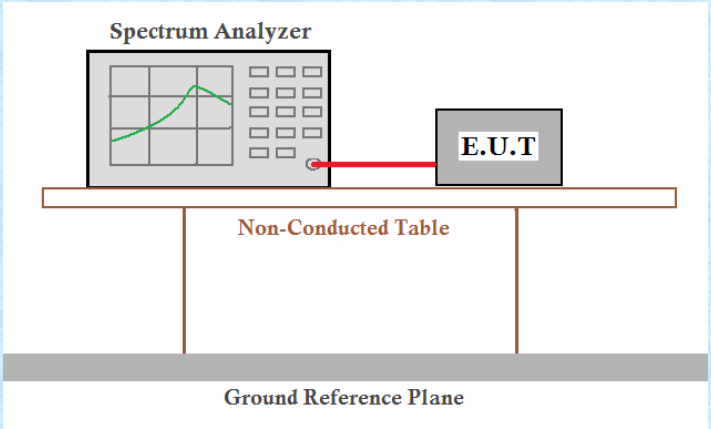
Freq	Reading level	LISN/ISN factor	Cable loss	Level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.16	44.37	9.55	0.01	53.93	65.65	-11.72	QP
0.16	13.85	9.55	0.01	23.41	55.65	-32.24	Average
0.19	42.27	9.56	0.01	51.84	64.15	-12.31	QP
0.19	12.36	9.56	0.01	21.93	54.15	-32.22	Average
0.23	39.68	9.56	0.01	49.25	62.35	-13.10	QP
0.23	14.69	9.56	0.01	24.26	52.35	-28.09	Average
0.32	38.52	9.56	0.01	48.09	59.80	-11.71	QP
0.32	16.46	9.56	0.01	26.03	49.80	-23.77	Average
0.50	35.54	9.57	0.01	45.12	56.00	-10.88	QP
0.50	12.15	9.57	0.01	21.73	46.00	-24.27	Average
0.64	37.77	9.56	0.02	47.35	56.00	-8.65	QP
0.64	16.05	9.56	0.02	25.63	46.00	-20.37	Average

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*

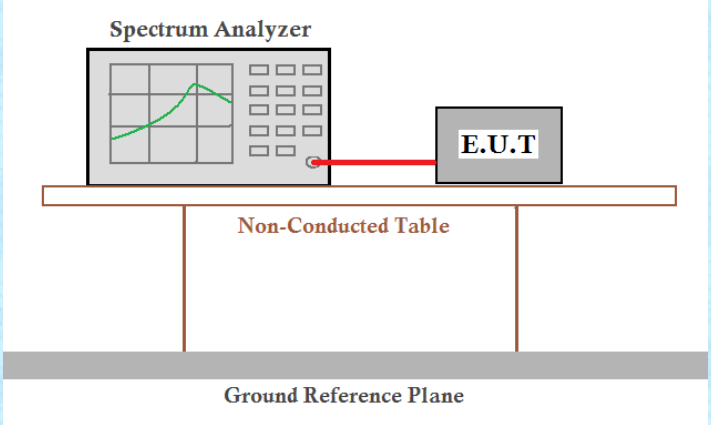
If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

7.3 Conducted Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

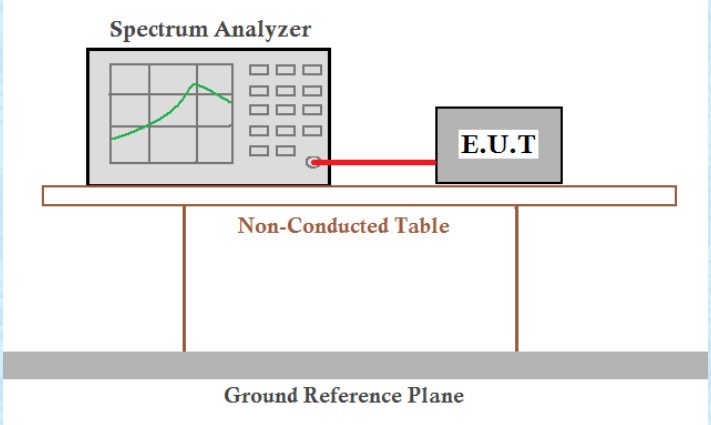
Measurement Data: The detailed test data see Appendix for 2.4G.

7.4 Channel 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 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for 2.4G.

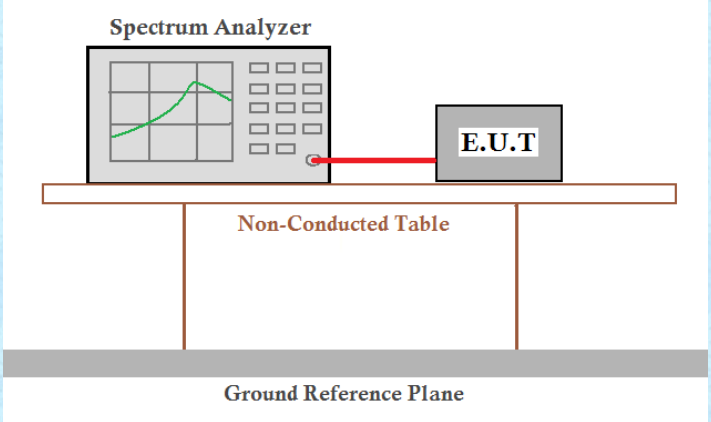
7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for 2.4G.

7.6 Spurious Emission in Non-restricted & restricted Bands

7.6.1 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 30 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 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for 2.4G.

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 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

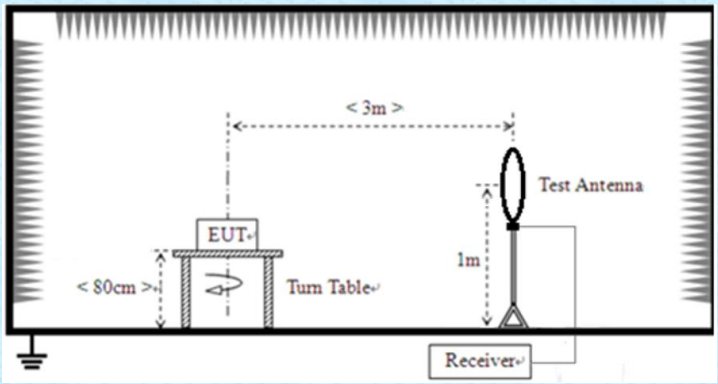
Note: For Duty cycle ≥ 98%, average detector set as aboveFor Duty cycle < 98%, average detector set as below: VBW ≥ 1 / T

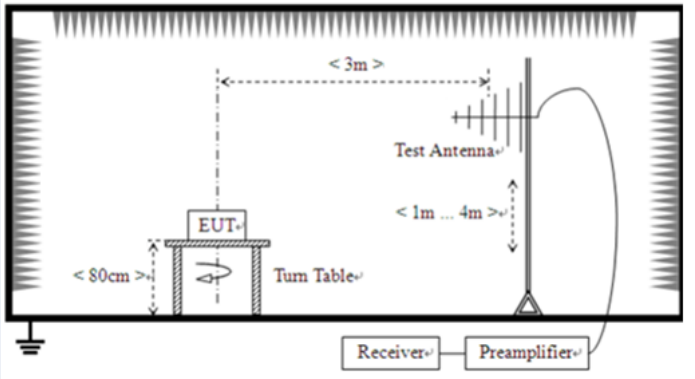
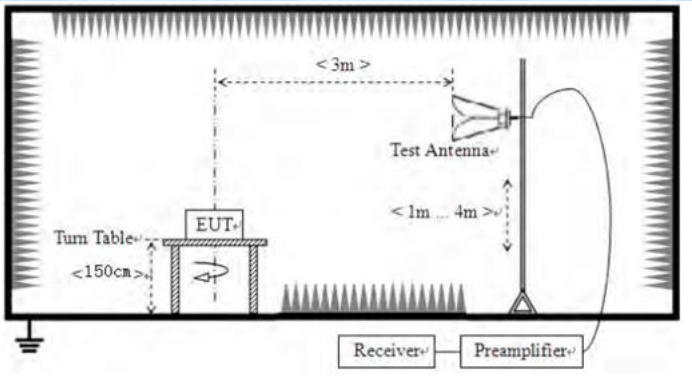
Limit:

Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	30m
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 
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. 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 Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details

Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V					
Test results:	Pass					

Measurement data:

Remark:
Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

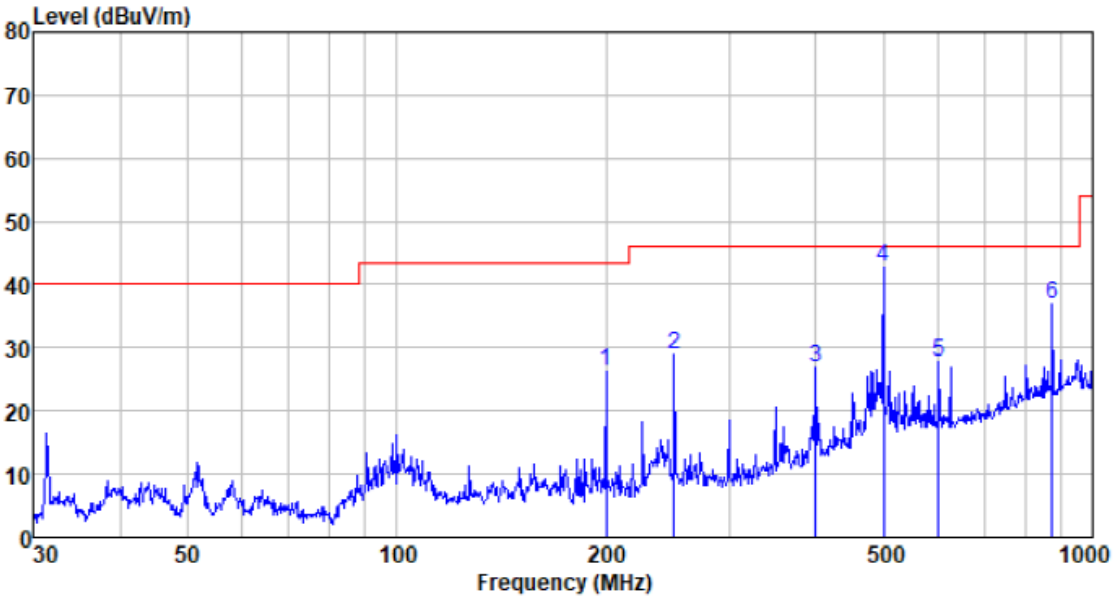
■ **9kHz~30MHz**

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**

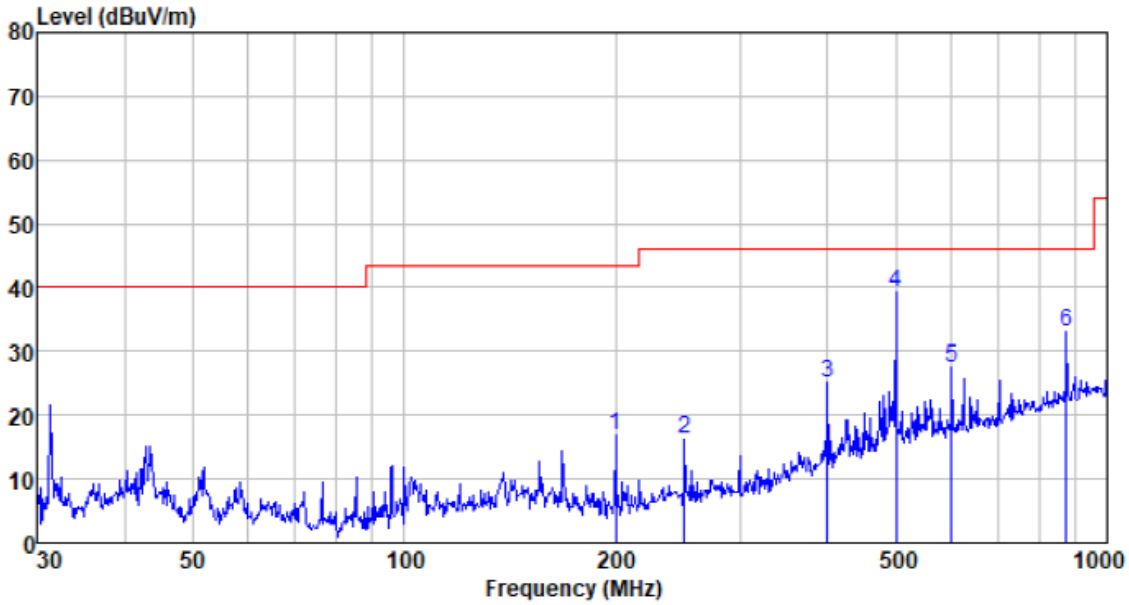
Pre-scan all test modes, found worst case at 2401MHz@ANT 1, and so only show the test result of it.

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
199.986	48.09	9.20	1.84	32.80	26.33	43.50	-17.17	QP
250.301	48.02	11.44	2.12	32.74	28.84	46.00	-17.16	QP
400.432	40.57	15.71	2.85	32.30	26.83	46.00	-19.17	QP
501.179	53.99	17.62	3.31	32.00	42.92	46.00	-3.08	QP
601.427	36.61	19.32	3.73	31.78	27.88	46.00	-18.12	QP
875.247	39.46	23.62	4.76	31.04	36.80	46.00	-9.20	QP

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
199.986	38.46	9.20	1.84	32.80	16.70	43.50	-26.80	QP
250.301	35.51	11.44	2.12	32.74	16.33	46.00	-29.67	QP
400.432	38.75	15.71	2.85	32.30	25.01	46.00	-20.99	QP
501.179	50.21	17.62	3.31	32.00	39.14	46.00	-6.86	QP
601.427	36.06	19.32	3.73	31.78	27.33	46.00	-18.67	QP
875.247	35.65	23.62	4.76	31.04	32.99	46.00	-13.01	QP

- **Above 1GHz**
- **Unwanted Emissions in Non-restricted Frequency Bands**
- **All antennas have test, only the worst case ANT 1 report.**

Test channel:	Lowest channel

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
4802.00	49.18	31.22	4.63	37.68	47.35	74.00	-26.65	Vertical
7203.00	39.71	36.25	6.52	37.81	44.67	74.00	-29.33	Vertical
9604.00	38.48	37.97	7.98	37.93	46.50	74.00	-27.50	Vertical
4802.00	55.89	31.22	4.63	37.68	54.06	74.00	-19.94	Horizontal
7203.00	42.51	36.25	6.52	37.81	47.47	74.00	-26.53	Horizontal
9604.00	39.03	37.97	7.98	37.93	47.05	74.00	-26.95	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
4802.00	35.75	31.22	4.63	37.68	33.92	54.00	-20.08	Vertical
7203.00	27.05	36.25	6.52	37.81	32.01	54.00	-21.99	Vertical
9604.00	25.39	37.97	7.98	37.93	33.41	54.00	-20.59	Vertical
4802.00	41.29	31.22	4.63	37.68	39.46	54.00	-14.54	Horizontal
7203.00	30.01	36.25	6.52	37.81	34.97	54.00	-19.03	Horizontal
9604.00	26.10	37.97	7.98	37.93	34.12	54.00	-19.88	Horizontal

Test channel:	Middle channel

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	47.03	31.33	4.69	37.62	45.43	74.00	-28.57	Vertical
7320.00	38.28	36.43	6.63	37.77	43.57	74.00	-30.43	Vertical
9760.00	37.21	38.10	8.03	37.95	45.39	74.00	-28.61	Vertical
4880.00	53.30	31.33	4.69	37.62	51.70	74.00	-22.30	Horizontal
7320.00	40.89	36.43	6.63	37.77	46.18	74.00	-27.82	Horizontal
9760.00	37.55	38.10	8.03	37.95	45.73	74.00	-28.27	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	34.06	31.33	4.69	37.62	32.46	54.00	-21.54	Vertical
7320.00	25.91	36.43	6.63	37.77	31.20	54.00	-22.80	Vertical
9760.00	24.37	38.10	8.03	37.95	32.55	54.00	-21.45	Vertical
4880.00	39.38	31.33	4.69	37.62	37.78	54.00	-16.22	Horizontal
7320.00	28.73	36.43	6.63	37.77	34.02	54.00	-19.98	Horizontal
9760.00	24.91	38.10	8.03	37.95	33.09	54.00	-20.91	Horizontal

Test channel:	Highest channel

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	47.92	31.41	4.77	37.56	46.54	74.00	-27.46	Vertical
7440.00	38.87	36.62	6.73	37.73	44.49	74.00	-29.51	Vertical
9920.00	37.74	38.27	8.08	37.98	46.11	74.00	-27.89	Vertical
4960.00	54.37	31.41	4.77	37.56	52.99	74.00	-21.01	Horizontal
7440.00	41.56	36.62	6.73	37.73	47.18	74.00	-26.82	Horizontal
9920.00	38.16	38.27	8.08	37.98	46.53	74.00	-27.47	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	35.15	31.41	4.77	37.56	33.77	54.00	-20.23	Vertical
7440.00	26.64	36.62	6.73	37.73	32.26	54.00	-21.74	Vertical
9920.00	25.03	38.27	8.08	37.98	33.40	54.00	-20.60	Vertical
4960.00	40.61	31.41	4.77	37.56	39.23	54.00	-14.77	Horizontal
7440.00	29.55	36.62	6.73	37.73	35.17	54.00	-18.83	Horizontal
9920.00	25.67	38.27	8.08	37.98	34.04	54.00	-19.96	Horizontal

Remarks:

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.*

- **Unwanted Emissions in Restricted Frequency Bands**
- **All antennas have test, only the worst case ANT 1 report.**

Test channel:	Lowest channel

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	60.27	27.14	2.81	38.64	51.58	74.00	-22.42	Horizontal
2390.00	66.54	27.37	2.91	38.84	57.98	74.00	-16.02	Horizontal
2310.00	62.47	27.14	2.81	38.64	53.78	74.00	-20.22	Vertical
2390.00	69.44	27.37	2.91	38.84	60.88	74.00	-13.12	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	46.89	27.14	2.81	38.64	38.20	54.00	-15.80	Horizontal
2390.00	49.16	27.37	2.91	38.84	40.60	54.00	-13.40	Horizontal
2310.00	48.07	27.14	2.81	38.64	39.38	54.00	-14.62	Vertical
2390.00	51.46	27.37	2.91	38.84	42.90	54.00	-11.10	Vertical

Test channel:	Highest channel

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	64.44	27.82	2.99	39.05	56.20	74.00	-17.80	Horizontal
2500.00	60.30	27.70	3.01	39.10	51.91	74.00	-22.09	Horizontal
2483.50	68.19	27.82	2.99	39.05	59.95	74.00	-14.05	Vertical
2500.00	62.96	27.70	3.01	39.10	54.57	74.00	-19.43	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	47.92	27.82	2.99	39.05	39.68	54.00	-14.32	Horizontal
2500.00	45.44	27.70	3.01	39.10	37.05	54.00	-16.95	Horizontal
2483.50	43.85	27.82	2.99	39.05	35.61	54.00	-18.39	Vertical
2500.00	46.81	27.70	3.01	39.10	38.42	54.00	-15.58	Vertical

Remarks:

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------