

TEST REPORT

Reference No...... : WTX23X09210075W007
FCC ID..... : 2BDE5-G40
Applicant : Guangzhou Geosurv Infomation Technology Co.,Ltd
Address : C402, TOPS Beidou Innovation Base, No.83, Kaiyuan Avenue, Huangpu,
Guangzhou, Guangdong, China
Manufacturer : The same as Applicant
Address : The same as Applicant
Product Name : GNSS RECEIVER
Model No...... : G40
Standards : **FCC PART15 SUBPART B**
Date of Receipt sample ... : 2023-09-25
Date of Test..... : 2023-09-25 to 2023-10-27
Date of Issue : 2023-10-30
Test Report Form No. : WTX_FCC PART15B_001
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

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Approved by:



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TABLE OF CONTENTS

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
1.2 TEST STANDARDS	5
1.3 TEST METHODOLOGY	5
1.4 TEST FACILITY	5
1.5 EUT SETUP AND OPERATION MODE	6
1.6 MEASUREMENT UNCERTAINTY	7
1.7 TEST EQUIPMENT LIST AND DETAILS	8
2. SUMMARY OF TEST RESULTS	10
3. CONDUCTED EMISSIONS	11
3.1 TEST PROCEDURE	11
3.2 BASIC TEST SETUP BLOCK DIAGRAM	11
3.3 ENVIRONMENTAL CONDITIONS	11
3.4 SUMMARY OF TEST RESULTS.....	11
4. RADIATED EMISSION	14
4.1 TEST PROCEDURE	14
4.2 BLOCK DIAGRAM OF TEST SETUP.....	14
4.3 TEST RECEIVER SETUP	15
4.4 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	15
4.5 ENVIRONMENTAL CONDITIONS	15
4.6 SUMMARY OF TEST RESULTS.....	15
EXHIBIT 1 - EUT PHOTOGRAPHS	错误!未定义书签。
EXHIBIT 2 - EUT INTERNAL PHOTOGRAPHS	错误!未定义书签。
EXHIBIT 3 - TEST SETUP PHOTOGRAPHS	错误!未定义书签。
EXHIBIT 4 - USERS MANUAL	错误!未定义书签。

Report version

Version No.	Date of issue	Description
Rev.00	2023-10-30	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	GNSS RECEIVER
Trade Name:	GINTEC
Model No.:	G40
Adding Model(s):	G20Plus, G30Plus, G40Plus, G40Pro, MG1, F300, G50
<p><i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model G40, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Rated Voltage:	Battery:DC3.6V
Battery:	6800mAh*2
Rated Power:	/
Adapter Model:	MODEL:DSA-45PDH Input: AC100-240V~ 50/60Hz 1.5A Output: DC5V3A/9V3A/12V/3A/15V3A/20V2.25A
Lowest Internal Frequency:	24MHz
Highest Internal Frequency:	2480MHz
Classification of ITE:	Class B

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15 Subpart B:Unintentional Radiators.

ANSI C63.4-2014:American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. 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 our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	Power Supply Mode
TM1	Charging And Normal working	Connect to the Adapter	AC120V 60Hz for adapter
TM2	Downloading	Connect to the Notebook	AC120V 60Hz for PC

EUT Cable List and Details				
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	With / Without Chip
USB-C to USB-C Cable	1.5	Unshielded	Without Ferrite	/
USB-A to USB-C Cable	1.5	Unshielded	Without Ferrite	/

Special Cable List and Details				
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite	With / Without Chip
USB-A to USB-C Cable	1.0	Unshielded	Without Ferrite	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Computer	Lenovo	L13 Yoga	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB
Radiated Emissions	Radiated	30-200MHz ±4.52dB
		0.2-1GHz ±5.56dB
		1-6GHz ±3.84dB
		6-18GHz ±3.92dB

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
<input type="checkbox"/> Chamber A: Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-02-25	2024-02-24
Amplifier	HP	8447F	2805A03475	2023-02-25	2024-02-24
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-20	2026-03-19
<input type="checkbox"/> Chamber A: Above 1GHz					
Amplifier	C&D	PAP-1G18	14918	2023-02-25	2024-02-24
Horn Antenna	ETS	3117	00086197	2021-03-19	2024-03-18
<input type="checkbox"/> Chamber B: Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2023-02-25	2024-02-24
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2024-04-08
Amplifier	Agilent	8447D	2944A10179	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Chamber C: Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2024-05-27
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
Amplifier	HP	8447F	2944A03869	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Chamber C: Above 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
Horn Antenna	POAM	RTF-11A	LP228060221	2023-03-10	2026-03-09
Amplifier	Tonscend	TAP010180 50	AP22E80623 5	2023-02-25	2024-02-24
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2021-03-19	2024-03-18
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2023-02-25	2024-02-24
<input type="checkbox"/> Conducted Room 1#					
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2023-02-25	2024-02-24

AC LISN	Schwarz beck	NSLK8126	8126-224	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Conducted Room 2#					
EMI Test Receiver	Rohde & Schwarz	ESPI	10129	2023-02-25	2024-02-24
LISN	Rohde & Schwarz	ENV 216	100097	2023-02-25	2024-02-24

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 1#)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission Room 2#)*	SKET	EMC-I	V2.0

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107(a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

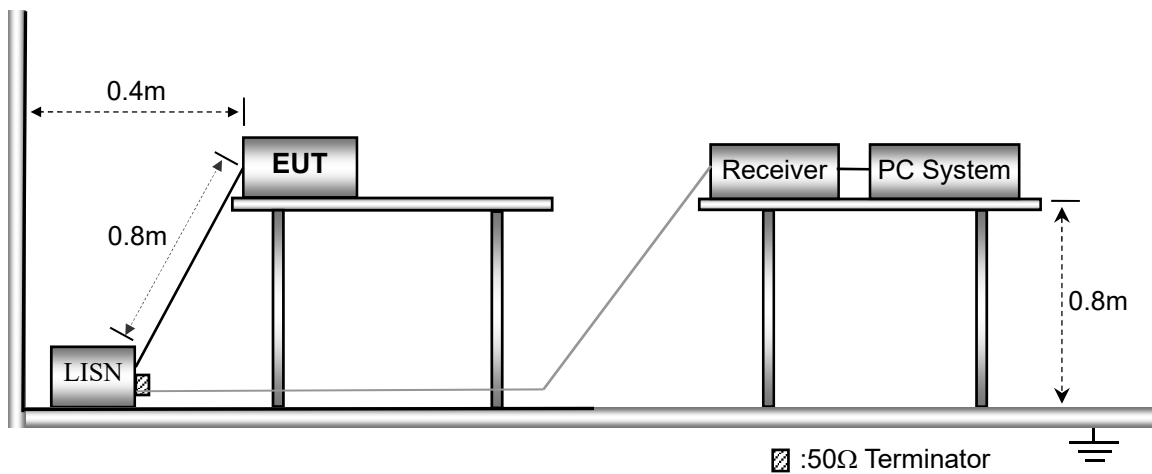
N/A: not applicable

3. Conducted Emissions

3.1 Test Procedure

The test is conducted under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



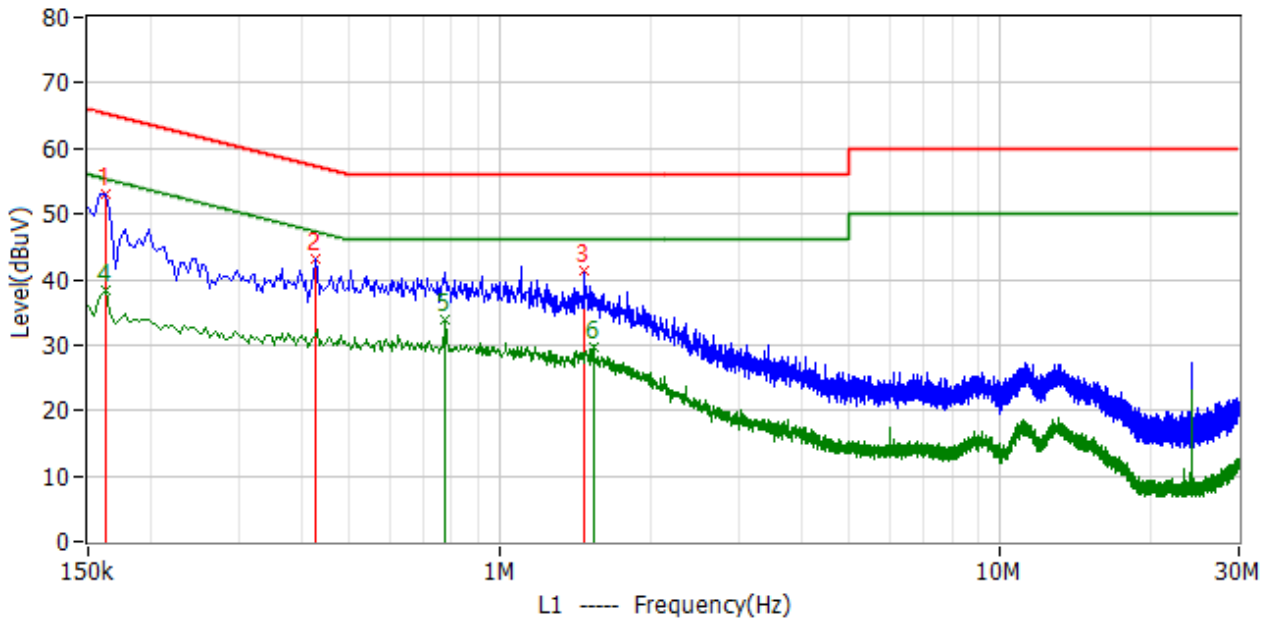
3.3 Environmental Conditions

Temperature:	23.5 °C
Relative Humidity:	54 %
ATM Pressure:	1014 mbar

3.4 Summary of Test Results

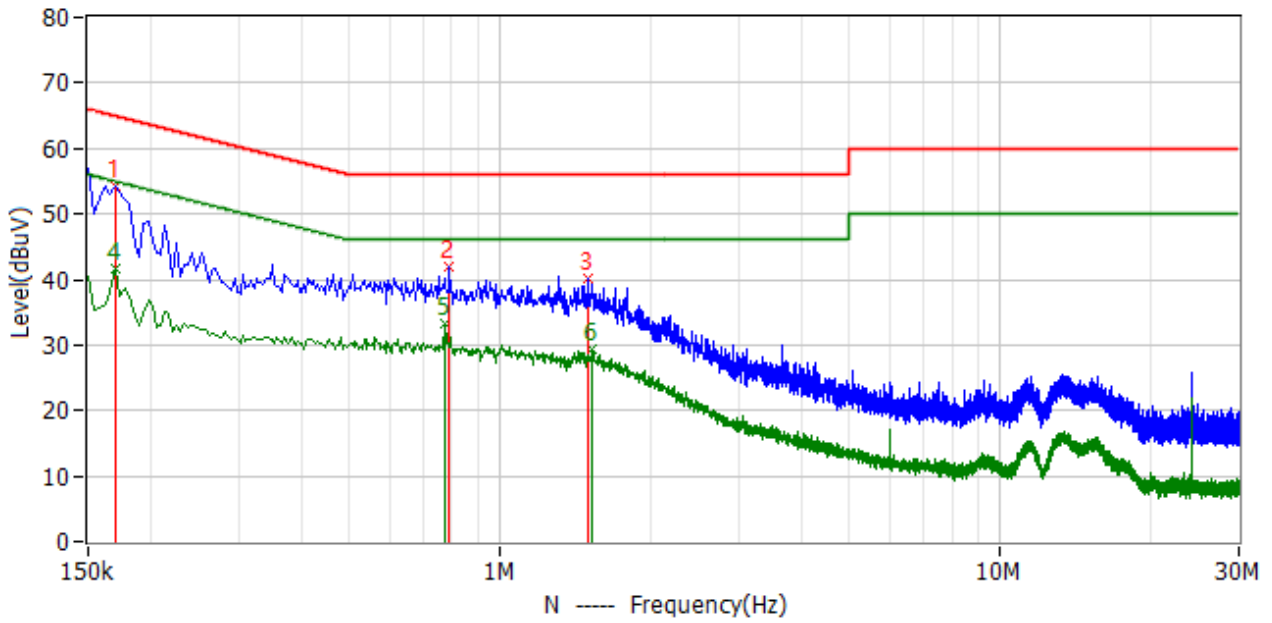
Please find the results below:

Test mode:	TM1	Polarity:	Line
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No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector
1*	162.000kHz	65.4	53.1	-12.2	32.2	20.9	QP
2*	426.000kHz	57.3	43.2	-14.1	22.4	20.8	QP
3*	1.470MHz	56.0	41.2	-14.8	20.4	20.8	QP
4*	162.000kHz	55.4	38.4	-17.0	17.5	20.9	AV
5*	778.000kHz	46.0	33.9	-12.1	13.1	20.8	AV
6*	1.534MHz	46.0	29.8	-16.2	9.0	20.8	AV

Test mode:	TM1	Polarity:	Neutral
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No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Reading dBuV	Factor dB	Detector
1*	170.000kHz	65.0	54.3	-10.7	33.5	20.8	QP
2*	790.000kHz	56.0	41.8	-14.2	21.0	20.8	QP
3*	1.502MHz	56.0	40.1	-15.9	19.3	20.8	QP
4*	170.000kHz	55.0	41.7	-13.2	20.9	20.8	AV
5*	778.000kHz	46.0	33.2	-12.8	12.4	20.8	AV
6*	1.530MHz	46.0	29.4	-16.6	8.6	20.8	AV

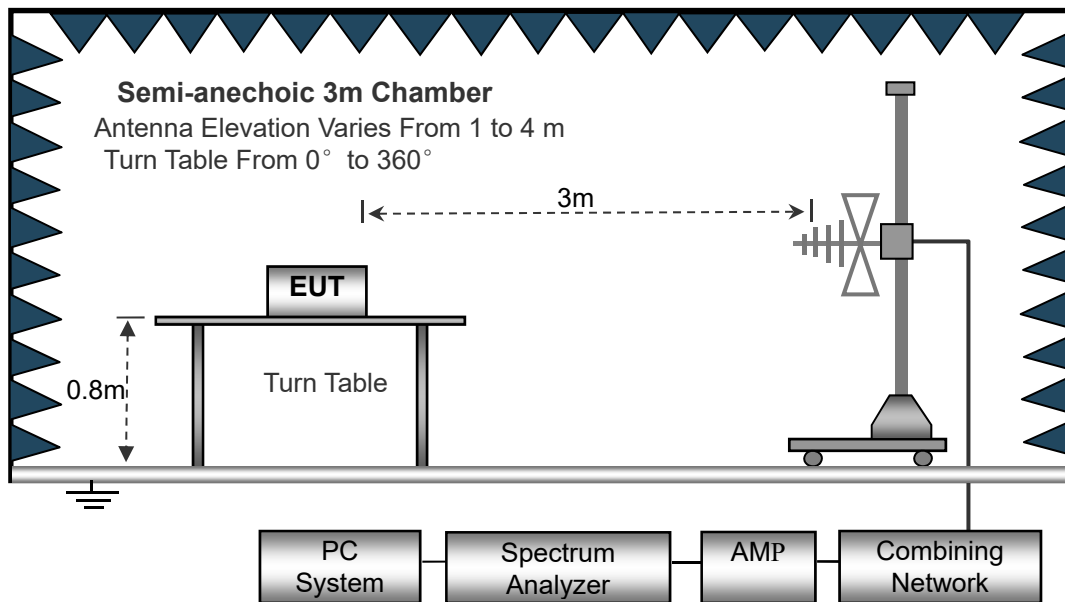
4. RADIATED EMISSION

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

4.2 Block Diagram of Test Setup



4.3 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Correct}$$

$$\text{Correct} = \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.5 Environmental Conditions

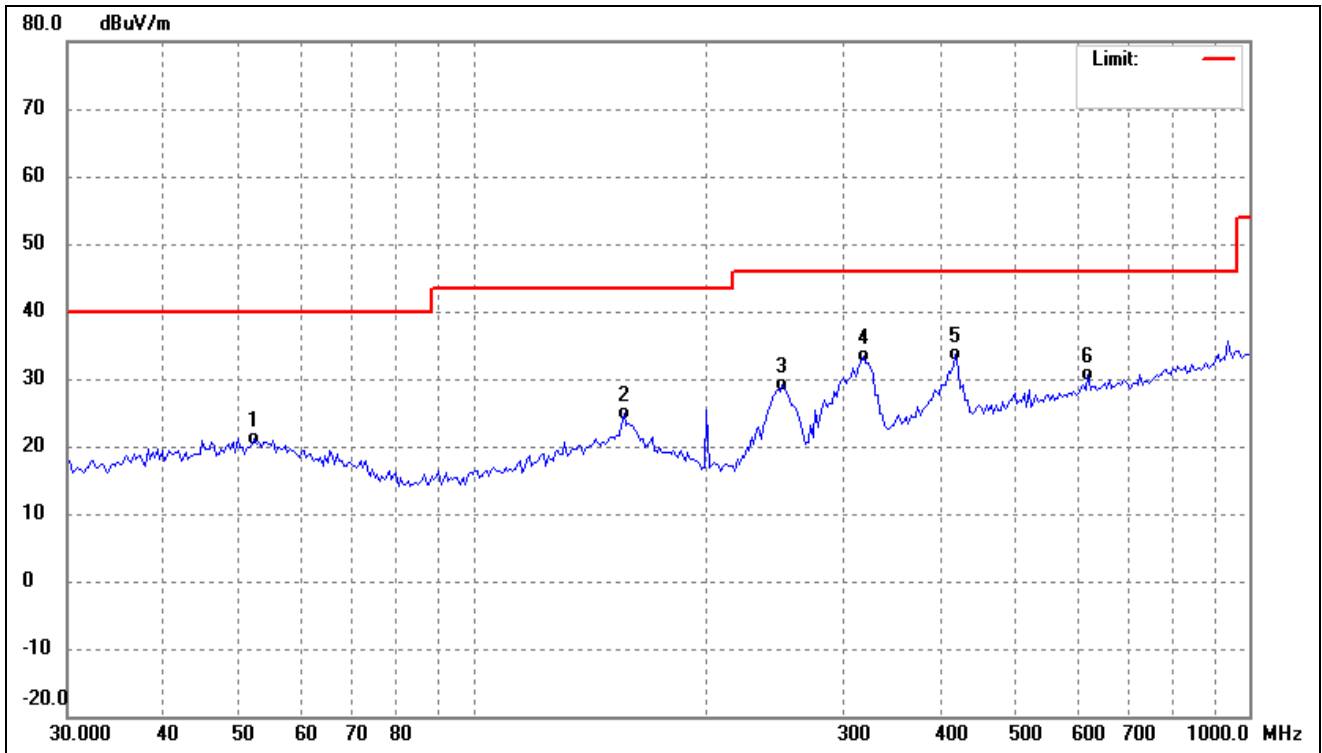
Temperature:	23.5°C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

4.6 Summary of Test Results

Please find the results below:

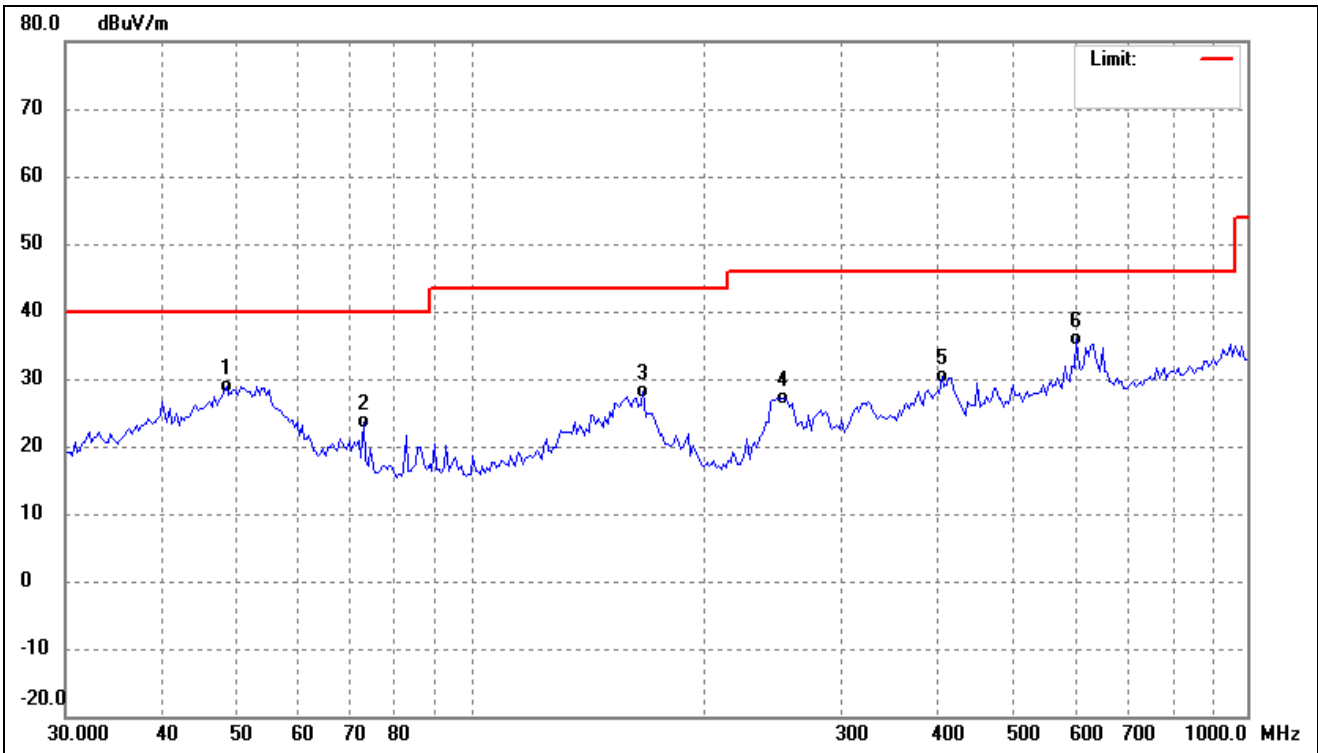
Below 1GHz

Test mode:	TM1	Polarity:	Horizontal
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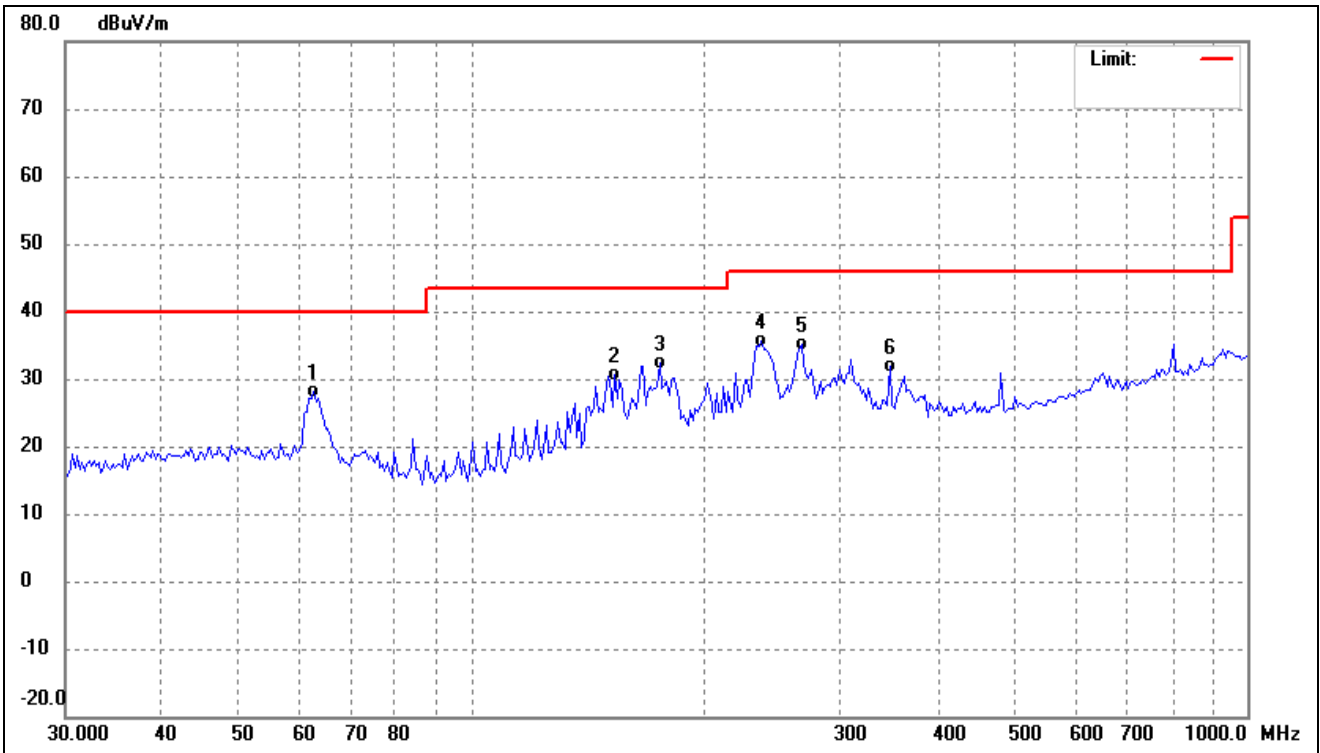
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	52.2659	29.55	-8.33	21.22	40.00	-18.78	-	-	QP
2	156.4259	33.59	-8.60	24.99	43.50	-18.51	-	-	QP
3	250.4859	39.41	-10.18	29.23	46.00	-16.77	-	-	QP
4	318.0875	41.15	-7.75	33.40	46.00	-12.60	-	-	QP
5	418.3784	39.07	-5.47	33.60	46.00	-12.40	-	-	QP
6	620.1167	32.15	-1.46	30.69	46.00	-15.31	-	-	QP

Test mode:	TM1	Polarity:	Vertical
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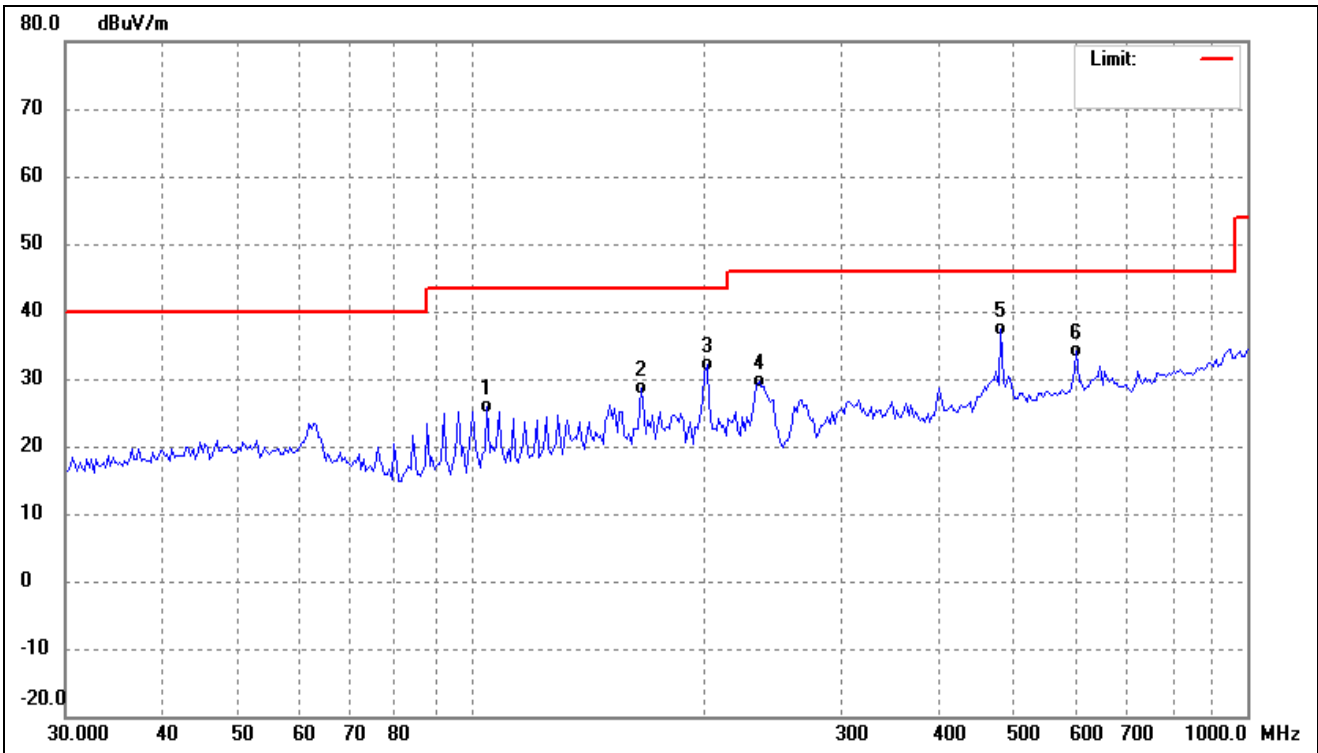
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	48.3780	37.13	-8.21	28.92	40.00	-11.08	-	-	QP
2	72.7203	34.93	-11.36	23.57	40.00	-16.43	-	-	QP
3	166.6385	36.94	-8.79	28.15	43.50	-15.35	-	-	QP
4	252.2523	37.32	-10.10	27.22	46.00	-18.78	-	-	QP
5	403.9335	36.11	-5.85	30.26	46.00	-15.74	-	-	QP
6	602.9287	37.69	-1.71	35.98	46.00	-10.02	-	-	QP

Test mode:	TM2	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	62.7432	37.45	-9.44	28.01	40.00	-11.99	-	-	QP
2	153.1627	39.26	-8.61	30.65	43.50	-12.85	-	-	QP
3	175.0404	41.97	-9.61	32.36	43.50	-11.14	-	-	QP
4	236.7928	46.51	-10.88	35.63	46.00	-10.37	-	-	QP
5	266.8395	44.53	-9.46	35.07	46.00	-10.93	-	-	QP
6	346.0740	39.16	-7.18	31.98	46.00	-14.02	-	-	QP

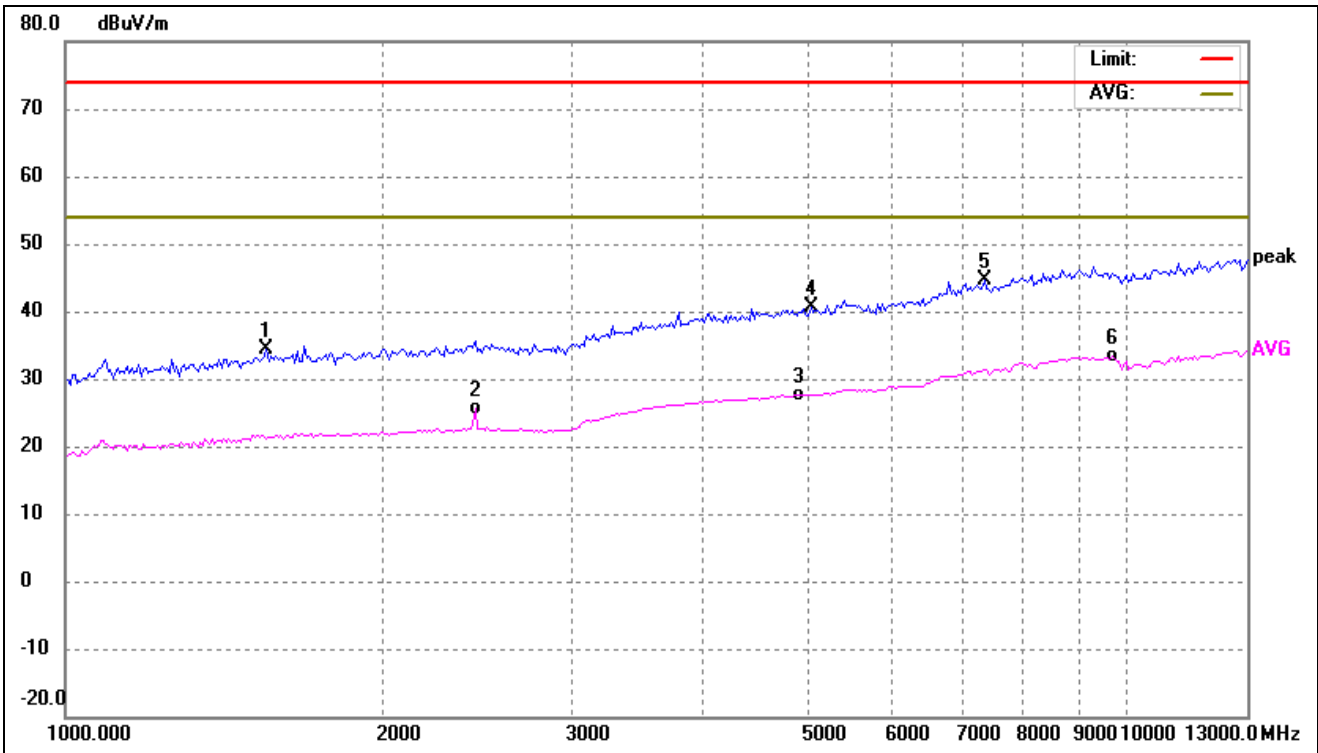
Test mode:	TM2	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	104.7979	37.82	-12.05	25.77	43.50	-17.73	-	-	QP
2	165.4716	37.38	-8.76	28.62	43.50	-14.88	-	-	QP
3	201.4539	44.07	-12.01	32.06	43.50	-11.44	-	-	QP
4	235.1346	40.65	-11.08	29.57	46.00	-16.43	-	-	QP
5	481.5112	41.65	-4.15	37.50	46.00	-8.50	-	-	QP
6	602.9287	35.73	-1.71	34.02	46.00	-11.98	-	-	QP

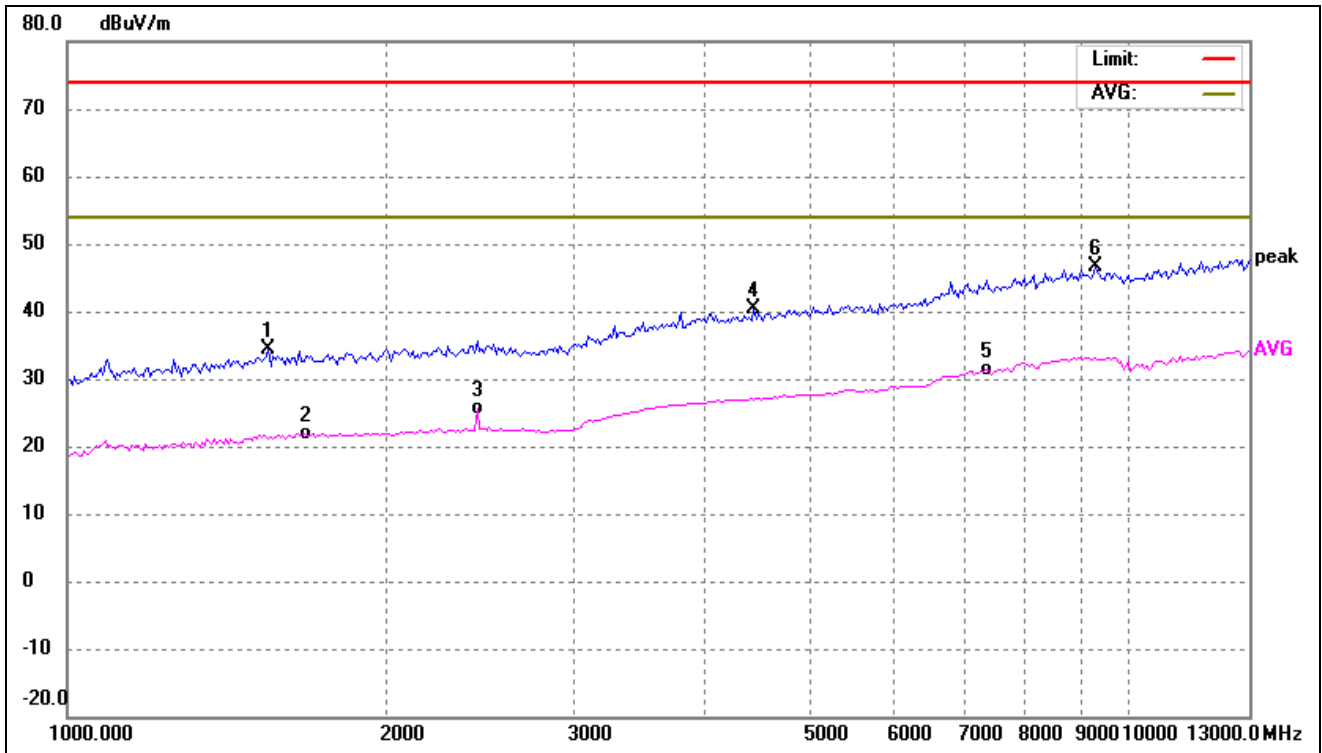
Above 1GHz

Test mode:	TM1 (worst case)	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	1547.925	58.12	-23.77	34.35	74.00	-39.65	-	-	peak
2	2433.306	47.63	-22.02	25.61	54.00	-28.39	-	-	AVG
3	4920.723	44.05	-16.30	27.75	54.00	-26.25	-	-	AVG
4	5048.829	56.84	-16.13	40.71	74.00	-33.29	-	-	peak
5	7347.716	56.37	-11.76	44.61	74.00	-29.39	-	-	peak
6	9698.383	43.15	-9.82	33.33	54.00	-20.67	-	-	AVG

Test mode:	TM1 (worst case)	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	1547.925	58.12	-23.77	34.35	74.00	-39.65	-	-	peak
2	1671.996	45.48	-23.49	21.99	54.00	-32.01	-	-	AVG
3	2433.306	47.63	-22.02	25.61	54.00	-28.39	-	-	AVG
4	4439.989	57.40	-16.93	40.47	74.00	-33.53	-	-	peak
5	7347.716	43.04	-11.76	31.28	54.00	-22.72	-	-	AVG
6	9307.660	56.62	-9.98	46.64	74.00	-27.36	-	-	peak

Remark: '-' Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

APPENDIX PHOTOGRAPHS

Please refer to "ANNEX"

**** END OF REPORT ****