

EMC TEST REPORT

FCC ID: 2BN7F-GR-301

Report No. : SSP25030055-1E

Applicant : shenzhen you chu pin ke ji you xian gong si

Product Name : GNSS Repeater

Model Name : GR-301

Test Standard : FCC Part 15 Subpart B

Date of Issue : 2025-03-11







Shenzhen CCUT Quality Technology Co., Ltd.

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This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen CCUT Quality Technology Co., Ltd.

Test Report Basic Information

Applicant:	shenzhen you chu pin ke ji you xian gong si	
Address of Applicant:	Bu Ji Town, Long gang District, Room 703, Building 5, Dexin town, Ji hua Road,Shenzhen City, 518000 China	
Manufacturer:	shenzhen you chu pin ke ji you xian gong si	
Address of Manufacturer:	Bu Ji Town, Long gang District, Room 703, Building 5, Dexin town, Ji hua Road,Shenzhen City, 518000 China	
Product Name:	GNSS Repeater	
Brand Name:	VFAN	
Main Model:	GR-301	
Series Models:	-	
Test Standard:	FCC Part 15 Subpart B ANSI C63.4-2014	
Date of Test	2025-03-07 to 2025-03-11	
Test Result:	PASS	
Tested By	 (Walker Wu)	
Reviewed By:	 (Lieber Ouyang)	
Authorized Signatory:	 (Lahm Peng)	
Note : This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen CCUT Quality Technology Co., Ltd.. All test data presented in this test report is only applicable to presented test sample.		

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Revision History

Revision	Issue Date	Description	Revised By
V1.0	2025-03-11	Initial Release	Lahm Peng

1. General Information

1.1 Product Information

Product Name:	GNSS Repeater
Trade Name:	VFAN
Main Model:	GR-301
Series Models:	-
Class of Equipment:	<input type="checkbox"/> Class A <input checked="" type="checkbox"/> Class B
Highest Internal Frequency:	<108MHz
Rated Voltage:	DC 5V
Note 1: The test data is gathered from a production sample, provided by the manufacturer.	

1.2 Test Setup Information

List of Test Modes			
Test Mode	Description	Remark	
TM1	Working	Full load	
-	-	-	
List and Details of Auxiliary Cable			
Description	Length (cm)	Shielded/Unshielded	With/Without Ferrite
-	-	-	-
-	-	-	-
List and Details of Auxiliary Equipment			
Description	Manufacturer	Model	Serial Number
Adapter	Xiaomi	HW-100225C00	HC78E2N6A23645
-	-	-	-
-	-	-	-
The equipment under test (EUT) was configured to measure its highest possible emission and immunity level. The test modes were adapted according to the operation manual for use.			

1.3 Compliance Standards

Compliance Standards	
FCC Part 15 Subpart B	FEDERAL COMMUNICATIONS COMMISSION, RADIO FREQUENCY DEVICES, Unintentional Radiators
All measurements contained in this report were conducted with all above standards	
According to standards for test methodology	
FCC Part 15 Subpart B	FEDERAL COMMUNICATIONS COMMISSION, RADIO FREQUENCY DEVICES, 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 or applicant. Any modification of the product, which result is lowering the emission, should be checked to ensure compliance has been maintained.	

1.4 Test Facilities

Laboratory Name:	Shenzhen CCUT Quality Technology Co., Ltd. 1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China
CNAS Laboratory No.:	L18863
A2LA Certificate No.:	6893.01
FCC Registration No:	583813
ISED Registration No.:	CN0164
All measurement facilities used to collect the measurement data are located at 1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China.	

1.5 Measurement Uncertainty

Test Item	Conditions	Uncertainty
Conducted Disturbance	9kHz ~30MHz	±1.64 dB
Radiated Disturbance	30MHz ~ 1GHz	±3.32 dB
Radiated Disturbance	1GHz ~ 18GHz	±3.50 dB

1.6 List of Test and Measurement Instruments

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Conducted Emissions					
AMN	ROHDE&SCHWARZ	ENV216	101097	2024-08-07	2025-08-06
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	100242	2024-08-07	2025-08-06
EMI Test Software	FARA	EZ-EMC	EMEC-3A1+	N/A	N/A
Radiated Emissions					
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	100154	2024-08-07	2025-08-06
Spectrum Analyzer	KEYSIGHT	N9020A	MY48030972	2024-08-07	2025-08-06
Amplifier	SCHWARZBECK	BBV 9743B	00251	2024-08-07	2025-08-06
Amplifier	HUABO	YXL0518-2.5-45	--	2024-08-07	2025-08-06
Loop Antenna	DAZE	ZN30900C	21104	2024-08-03	2025-08-02
Broadband Antenna	SCHWARZBECK	VULB 9168	01320	2024-08-03	2025-08-02
Horn Antenna	SCHWARZBECK	BBHA 9120D	02553	2024-08-03	2025-08-02
EMI Test Software	FARA	EZ-EMC	FA-03A2 RE+	N/A	N/A

2. Summary of Test Results

FCC Rule	Description of Test Item	Result
FCC Part 15.107	Conducted Emissions	Passed
FCC Part 15.109	Radiated Emissions	Passed
Passed: The EUT complies with the essential requirements in the standard Failed: The EUT does not comply with the essential requirements in the standard N/A: Not applicable		

3. Conducted Emissions

3.1 Standard and Limit

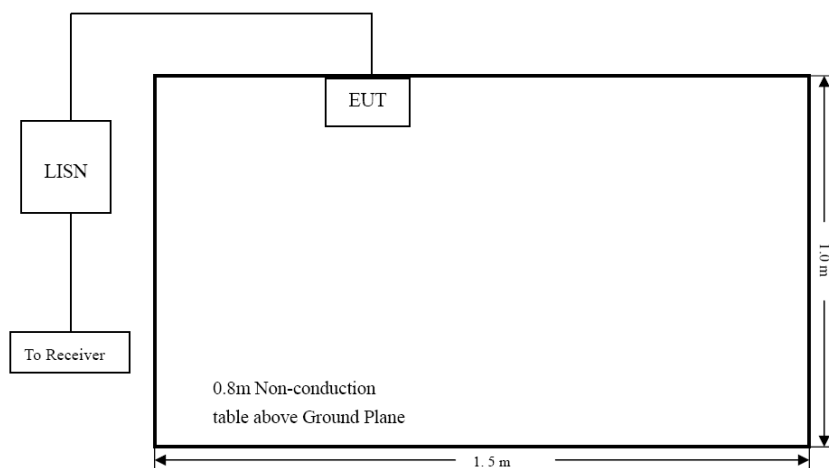
According to the rule FCC Part 15.107, Conducted limit, the limit for a class A and class B device as below:

Frequency of Emission (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15-0.5	79	66	66 to 56	56 to 46
0.5-5	73	60	56	46
5-30	73	60	60	50

Note 1: Decreases with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz
 Note 2: The lower limit applies at the band edges

3.2 Test Procedure

Test is conducting 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.



Test Setup Block Diagram

3.3 Test Data and Results

Based on all tested data, the EUT complied with the FCC Part 15.107 standard limit for a Class B device, and with the worst case as below:

Remark: Level = Reading + Factor, Margin = Level - Limit

Test Plots and Data of Conducted Emissions

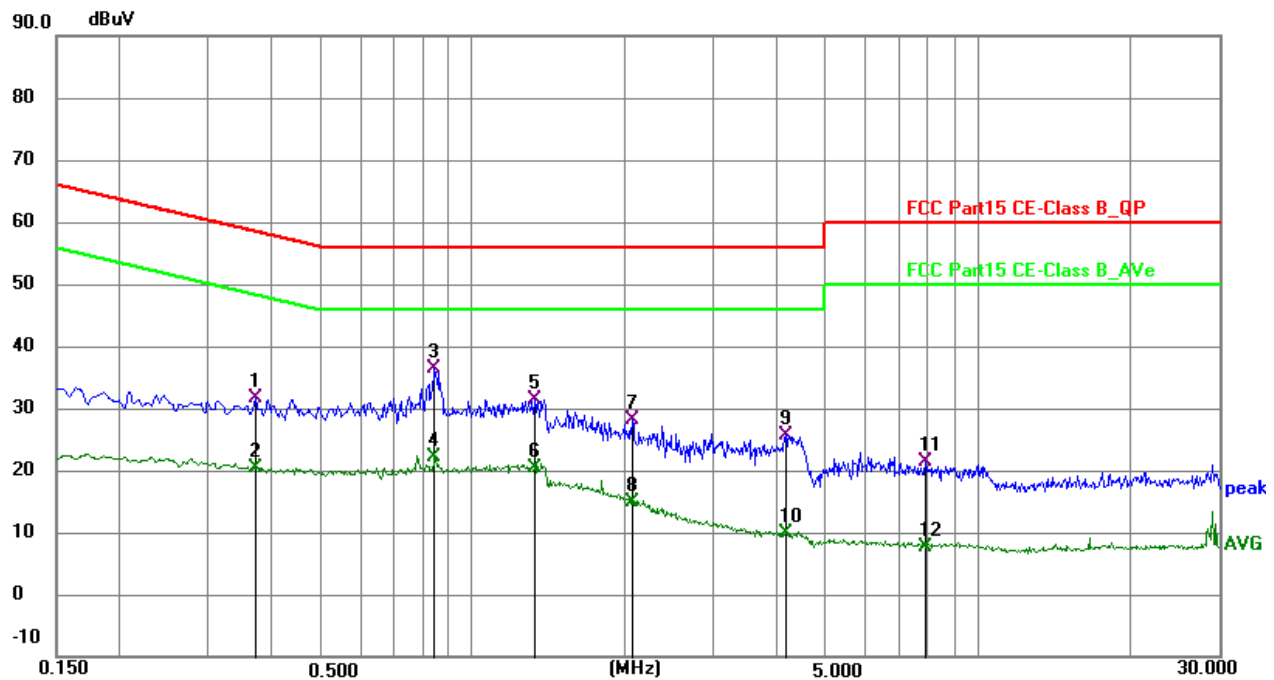
Tested Model: GR-301

Tested Mode: TM3

Test Voltage: AC 120V/60Hz

Test Power Line: Neutral

Remark:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.3704	22.17	9.39	31.56	58.49	-26.93	QP	P	
2	0.3704	10.94	9.39	20.33	48.49	-28.16	AVG	P	
3 *	0.8430	26.93	9.40	36.33	56.00	-19.67	QP	P	
4	0.8430	12.85	9.40	22.25	46.00	-23.75	AVG	P	
5	1.3245	21.98	9.44	31.42	56.00	-24.58	QP	P	
6	1.3245	10.98	9.44	20.42	46.00	-25.58	AVG	P	
7	2.0760	18.76	9.47	28.23	56.00	-27.77	QP	P	
8	2.0760	5.31	9.47	14.78	46.00	-31.22	AVG	P	
9	4.1685	16.21	9.54	25.75	56.00	-30.25	QP	P	
10	4.1685	0.41	9.54	9.95	46.00	-36.05	AVG	P	
11	7.8540	11.78	9.57	21.35	60.00	-38.65	QP	P	
12	7.8540	-1.93	9.57	7.64	50.00	-42.36	AVG	P	

Test Plots and Data of Conducted Emissions

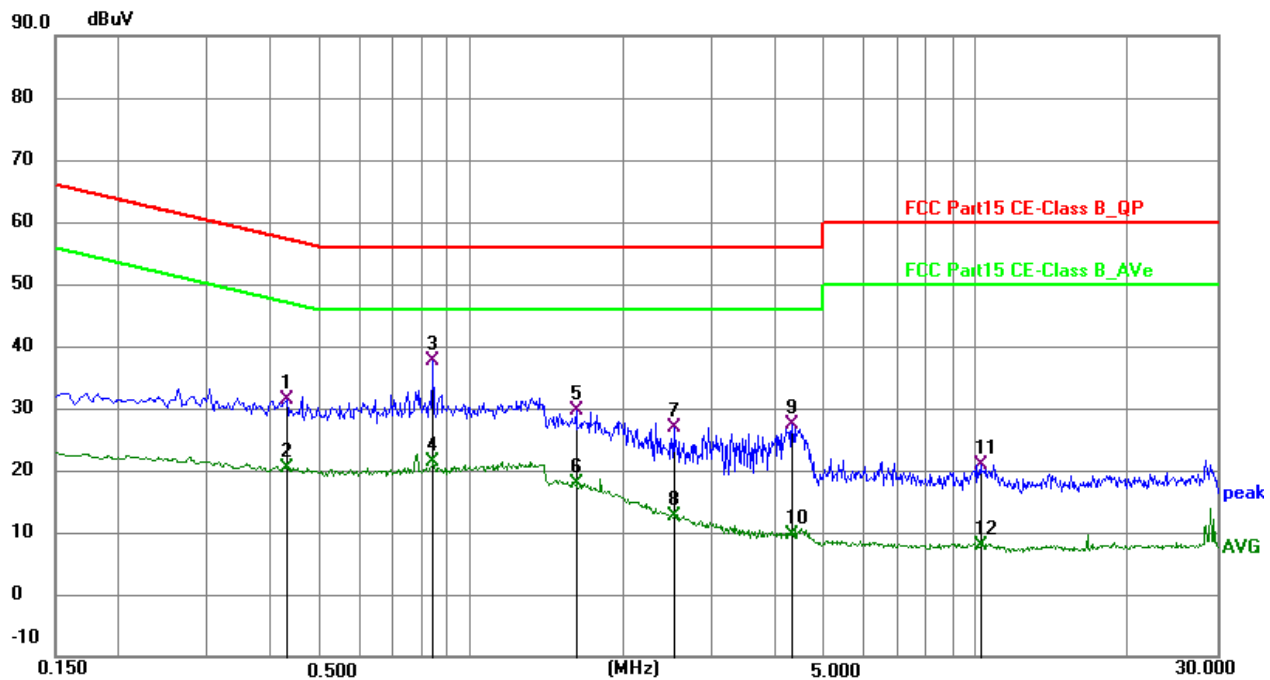
Tested Model: GR-301

Tested Mode: TM3

Test Voltage: AC 120V/60Hz

Test Power Line: Live

Remark:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.4290	21.70	9.57	31.27	57.27	-26.00	QP	P	
2	0.4290	10.81	9.57	20.38	47.27	-26.89	AVG	P	
3 *	0.8430	28.11	9.59	37.70	56.00	-18.30	QP	P	
4	0.8430	11.67	9.59	21.26	46.00	-24.74	AVG	P	
5	1.6125	19.91	9.65	29.56	56.00	-26.44	QP	P	
6	1.6125	8.15	9.65	17.80	46.00	-28.20	AVG	P	
7	2.5215	17.23	9.68	26.91	56.00	-29.09	QP	P	
8	2.5215	2.98	9.68	12.66	46.00	-33.34	AVG	P	
9	4.3304	17.59	9.73	27.32	56.00	-28.68	QP	P	
10	4.3304	-0.04	9.73	9.69	46.00	-36.31	AVG	P	
11	10.1895	11.02	9.76	20.78	60.00	-39.22	QP	P	
12	10.1895	-1.83	9.76	7.93	50.00	-42.07	AVG	P	

4. Radiated Disturbance

4.1 Standard and Limit

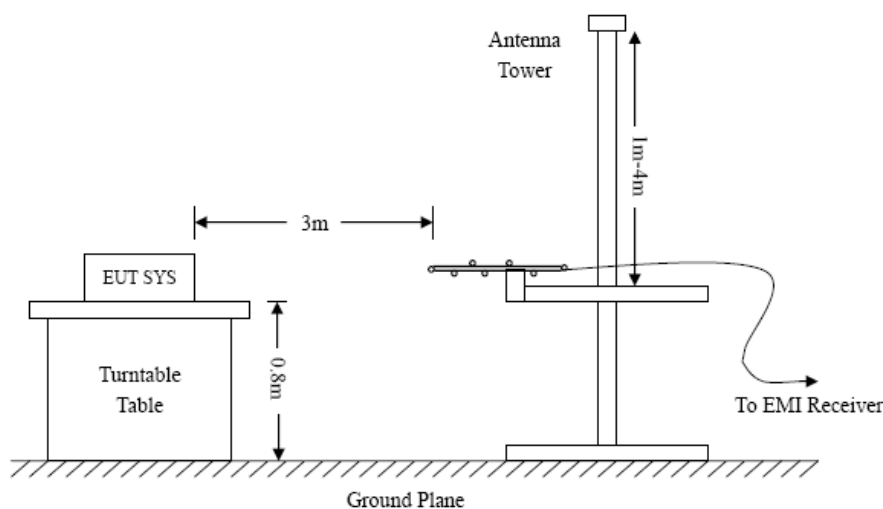
According to the rule FCC Part 15.109, Radiated emission limit for a class A and class B device as below:

Frequency of Emission (MHz)	Class A (3m)	Class B (3m)
	Quasi-peak (dBuV/m)	Quasi-peak (dBuV/m)
30-88	50	40
88-216	54.0	43.5
216-960	57.0	46
Above 960	60	54

Note: The more stringent limit applies at transition frequencies.

4.2 Test Procedure

Test is conducting 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.



Test Setup Block Diagram

4.3 Test Data and Results

Based on all tested data, the EUT complied with the FCC Part 15.109 standard limit for a Class B device, and with the worst case as below:

Remark: Level = Reading + Factor, Margin = Level - Limit

Test Plots and Data of Radiated Emissions

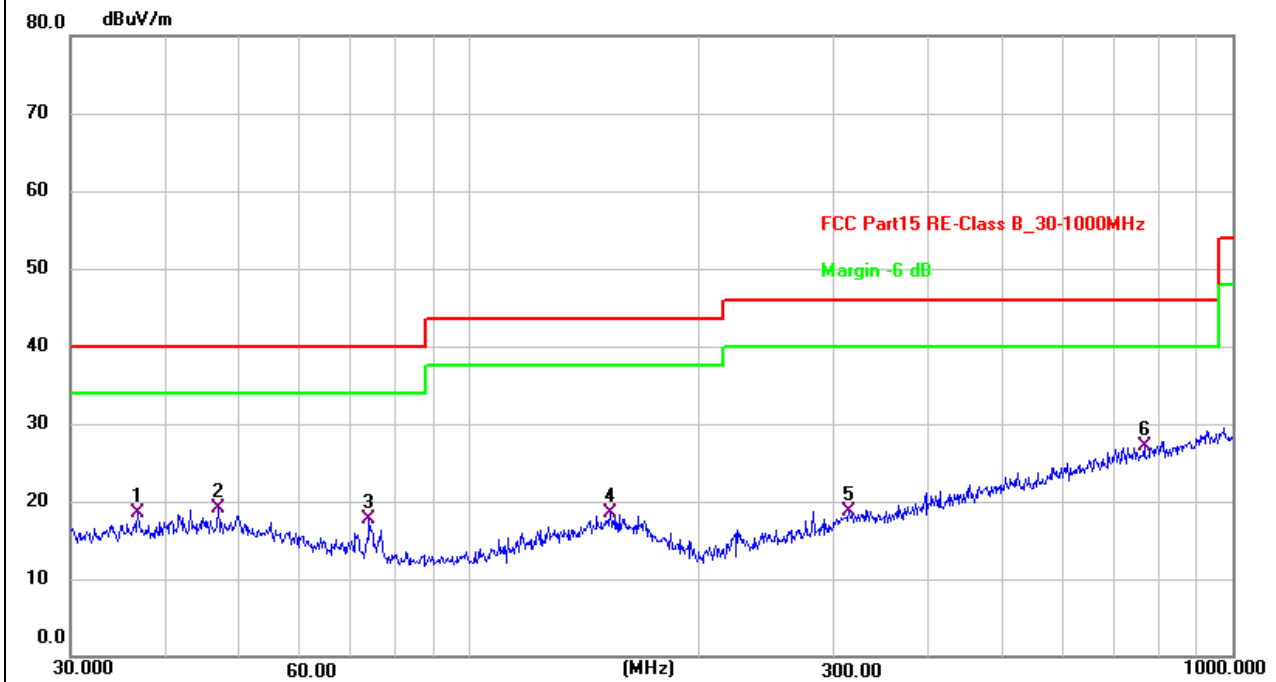
Tested Model: GR-301

Tested Mode: TM1

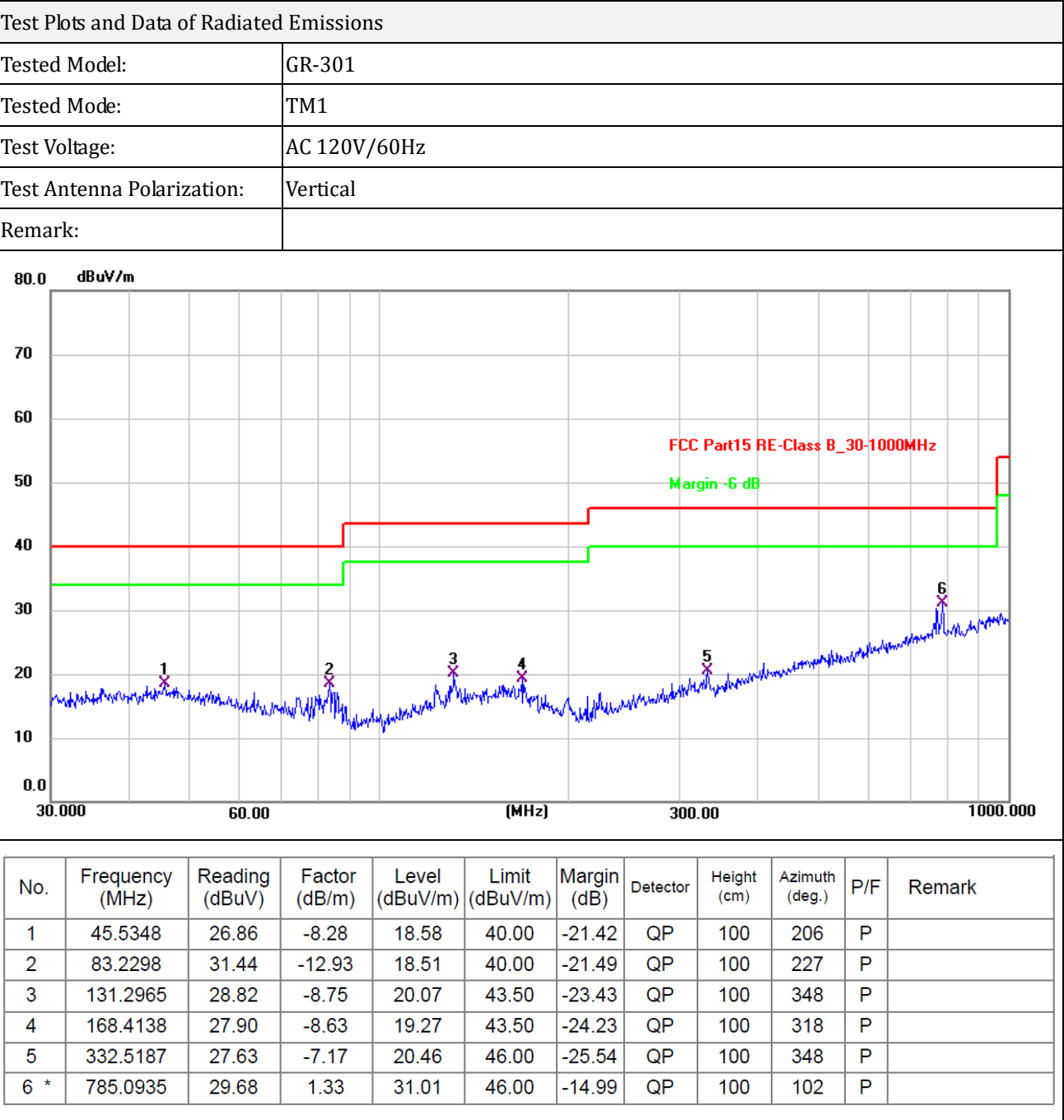
Test Voltage: AC 120V/60Hz

Test Antenna Polarization: Horizontal

Remark:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	36.7662	27.36	-8.82	18.54	40.00	-21.46	QP	100	43	P	
2	46.8303	27.44	-8.31	19.13	40.00	-20.87	QP	100	156	P	
3	73.8756	29.90	-12.15	17.75	40.00	-22.25	QP	100	355	P	
4	153.2004	26.22	-7.77	18.45	43.50	-25.05	QP	100	359	P	
5	314.3765	26.17	-7.48	18.69	46.00	-27.31	QP	100	22	P	
6 *	766.0571	26.06	1.07	27.13	46.00	-18.87	QP	100	259	P	



Other emissions are attenuated 20dB below the limits from 9kHz to 30MHz, so it does not recorded in report.