



TEST REPORT

Application No.: GZCR2107020705LM
Applicant: Gardyn, Inc.
Address of Applicant: 8120 Woodmont Avenue, Suite #640, Bethesda, MD 20614, U.S.A.
Manufacturer: Dongguan He Andong Plastic Products Co.,
Address of Manufacturer: Guangdong province dongguan city fenggang town tangli village fenghuang wai xing feng road E building factory
Factory: Dongguan He Andong Plastic Products Co.,
Address of Factory: Guangdong province dongguan city fenggang town tangli village fenghuang wai xing feng road E building factory
Equipment Under Test (EUT):
EUT Name: Indoor Garden
Model No.: GH-A01
Trade Mark: GARDYN
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2021-07-30
Date of Test: 2021-08-24 to 2021-08-25
Date of Issue: 2019-12-13 (for the original report GZEM190901605903)
2020-11-26 (for the copy report GZEM190901605907)
2021-03-31 (for copy report GZEM190901605911)
2021-09-06 (for the report GZEM190901605915)

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Kobe Jian
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-12-13		Original
02		2020-11-26		Copy report: Supplemented the Molex connector (part Number: 43501W9-NP-B3) and photo of it
03		2021-03-31		Copy report: Changed manufacturer information, factory information, EUT Name, Added trade mark, Alternative pumps.
04		2021-09-06		Copy report: Add alternative components IC+ MOSFET+ power switch+ Temperature and humidity sensor and update Address of Applicant & label

Authorized for issue by:			
		Kevin Zhang	
		Kevin Zhang/Project Engineer	
		Ricky Liu	
		Ricky Liu/Reviewer	

2 Test Summary

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Spurious Emissions (Below 1GHz)		ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

Remark for the report GZEM190901605907:

According to FCC Part 2 section 2.1043(b)(1), it is ok to update test report by adding new connector as below without filing with the Commission.

FCC Part 2 section 2.1043(b)(1):

A Class I permissive change includes those modifications in the equipment which do not degrade the characteristics reported by the manufacturer and accepted by the Commission when certification is granted. No filing with the Commission is required for a Class I permissive change.

This report **GZEM190901605907** was an additional report copied from the **GZEM190901605903** original report, in which the Molex connector (part Number: 43501W9-NP-B3) and photo of it were supplemented which did not affect the RF characterize.

Therefore original data was kept in this report GZEM190901605907.

■ Remark for the report GZEM190901605911:

This report GZEM190901605911 was a supplement report based on original report GZEM190901605907, only Changed manufacturer information, factory information, EUT Name, Added trade mark, Alternative pumps.

1. Changed manufacturer information, factory information, EUT Name, Added trade mark
2. Alternative pumps.

Considering the changes, And evaluation base on the technical information of the same RF module and interior circuit. So, no further testing in this report.

According to FCC Part 2 section 2.1043(b)(1), it is ok to update test report by adding new pumps without filing with the Commission.

FCC Part 2 section 2.1043(b)(1):

A Class I permissive change includes those modifications in the equipment which do not degrade the characteristics reported by the manufacturer and accepted by the Commission when certification is granted. No filing with the Commission is required for a Class I permissive change.

Therefore original data was kept in this report GZEM190901605911.

Remark for this report GZEM190901605915:

This report GZEM190901605915 was a supplement report based on original report GZEM190901605911, only added alternative components (U3)+3 types MOSFET+ power switch+ Temperature as below and humidity sensor and update Address of Applicant & label.

Sample	U3	MOSFET	Temperature & humidity sensor	power switch
M5	LM60430DRPKR (1Mhz)	TSM038N03PQ33	DHT20	HS9
M3	LM60430DRPKR (1Mhz)	RQ3E150GNTB	DHT20	HS9
M4	LM60430ARPKR (400Khz)	RQ3E180BNTB	DHT20	HS9

Considering to the changes above, test items Conducted Emissions at AC Power Line (150kHz-30MHz) and Radiated Spurious Emissions (Below 1GHz) were performed to the models GH-A01 with different IC and MOSFET (sample No. are M3, M4 & M5) recorded new test results in this report.

Original test data please refer to report GZEM1909016059011 for details.

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 24 V powered by AC/DC adapter as below: Model: FY1802407500 Input: AC 100-240 V, 50/60 Hz, 2.6 A Max Output: DC 24 V, 7500 mA
Cable(s):	DC input ports for main unit For AC/DC adapter: AC mains (unshielded, 0.8 m) DC output cables (unshielded, 1.5m)
Channel Spacing:	5MHz
Antenna Gain:	0 dBi declared by applicant
Antenna Type	PCB Antenna
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz
Sample No.:	M3, M4 & M5
Hardware Version:	Rev1.6
Firmware Version:	SV01
Test Software:	VNC Viewer
Power Setting:	Default

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
NoteBook	IBM	T30	S/N78-3VMLX 06/01

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±3.12dB
Radiated Spurious Emissions (Below 1GHz)	±5.06dB (3m); ±4.46dB (10m)

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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4.5 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2021-01-08	2022-01-06
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2020-09-25	2021-09-24
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2021-06-01	2022-05-31

Radiated Spurious Emissions (Below 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2021-07-05	2022-07-05
DMM	Fluke	73	EMC0007	2021-07-05	2022-07-05



6 Radio Spectrum Matter Test Results

6.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission (MHz)	Conducted limit(dBμV)	
	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.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C Humidity: 52 % RH Atmospheric Pressure: 995 mbar

6.1.2 Test Mode Description

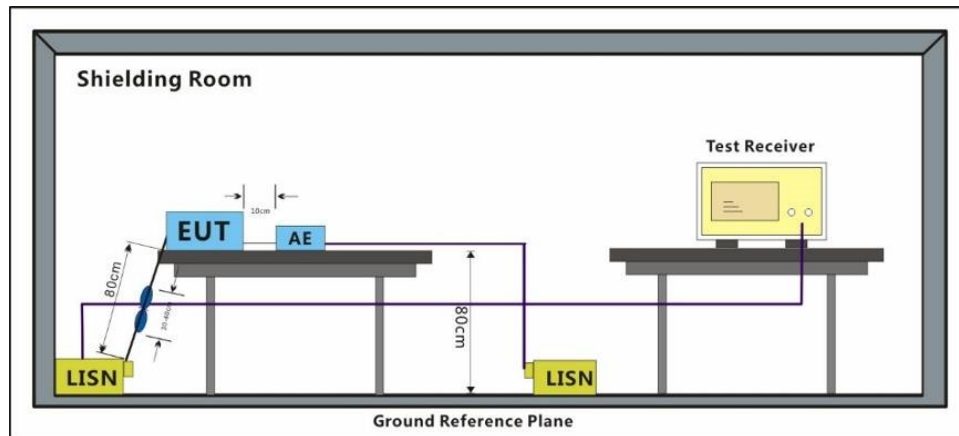
Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40) for M2. Only the data of worst case is recorded in the report.
Final test	13	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40) for M3. Only the data of worst case is recorded in the report.
Final test	14	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40) for M4. Only the data of worst case is recorded in the report.



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6.1.3 Test Setup Diagram

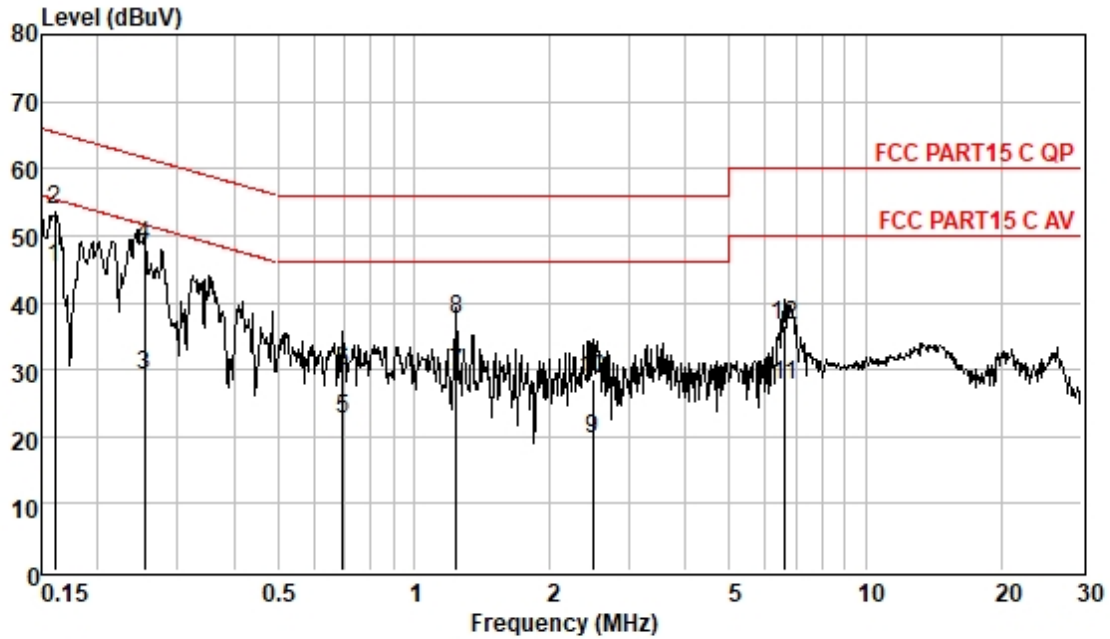


6.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) 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.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor

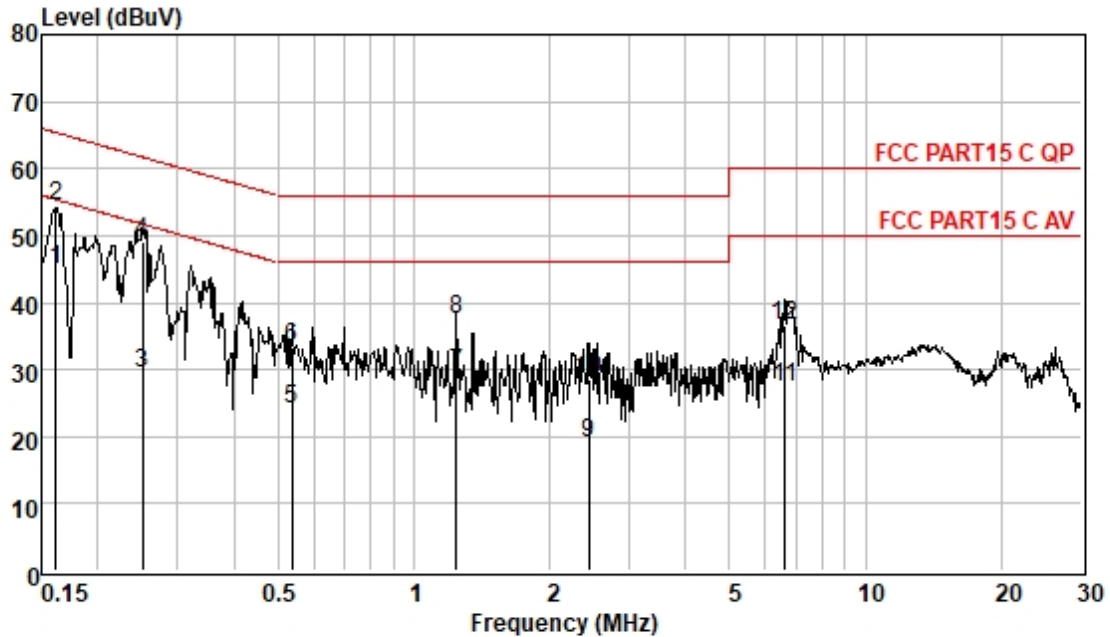
Test Mode: 02; Line: Live line



Pol : LINE
Mode : M2
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	35.39	0.06	9.62	45.07	55.43	-10.36	Average
0.16	44.27	0.06	9.62	53.95	65.43	-11.48	QP
0.25	19.54	0.06	9.62	29.22	51.64	-22.42	Average
0.25	38.93	0.06	9.62	48.61	61.64	-13.03	QP
0.70	12.89	0.07	9.63	22.59	46.00	-23.41	Average
0.70	19.99	0.07	9.63	29.69	56.00	-26.31	QP
1.24	19.62	0.09	9.61	29.32	46.00	-16.68	Average
1.24	27.88	0.09	9.61	37.58	56.00	-18.42	QP
2.49	9.88	0.13	9.62	19.63	46.00	-26.37	Average
2.49	18.86	0.13	9.62	28.61	56.00	-27.39	QP
6.63	17.86	0.20	9.67	27.73	50.00	-22.27	Average
6.63	26.72	0.20	9.67	36.59	60.00	-23.41	QP

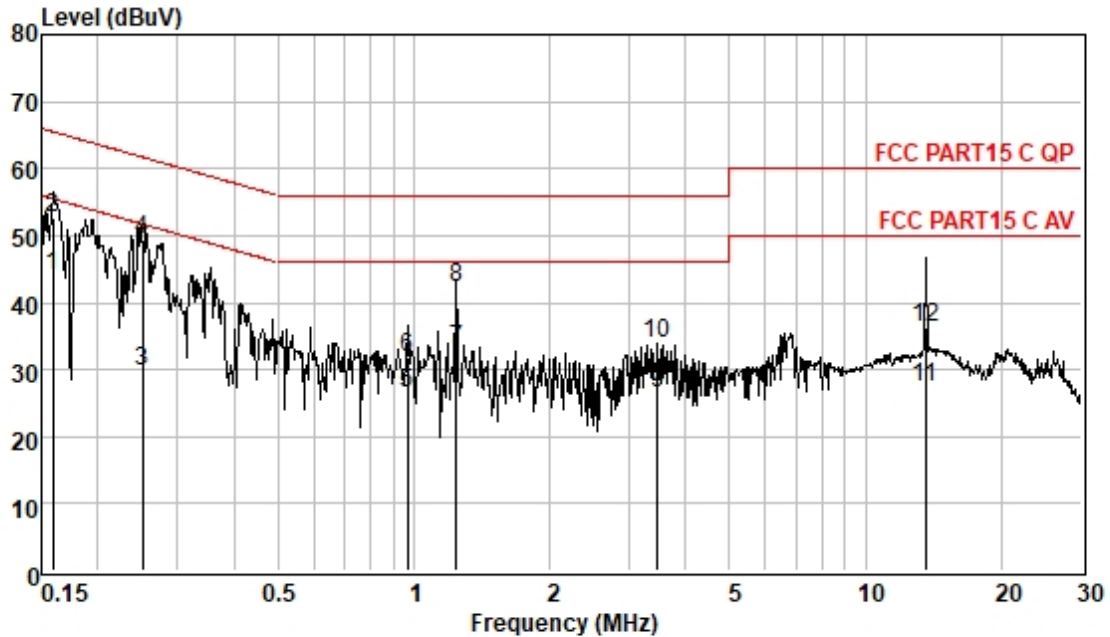
Test Mode: 02; Line: Neutral Line



Pol : NEUTRAL
Mode : M2
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	35.38	0.06	9.55	44.99	55.38	-10.39	Average
0.16	44.70	0.06	9.55	54.31	65.38	-11.07	QP
0.25	19.88	0.06	9.55	29.49	51.73	-22.24	Average
0.25	39.43	0.06	9.55	49.04	61.73	-12.69	QP
0.54	14.61	0.07	9.55	24.23	46.00	-21.77	Average
0.54	23.80	0.07	9.55	33.42	56.00	-22.58	QP
1.24	19.72	0.09	9.55	29.36	46.00	-16.64	Average
1.24	27.96	0.09	9.55	37.60	56.00	-18.40	QP
2.43	9.34	0.13	9.54	19.01	46.00	-26.99	Average
2.43	18.98	0.13	9.54	28.65	56.00	-27.35	QP
6.63	17.50	0.20	9.58	27.28	50.00	-22.72	Average
6.63	26.72	0.20	9.58	36.50	60.00	-23.50	QP

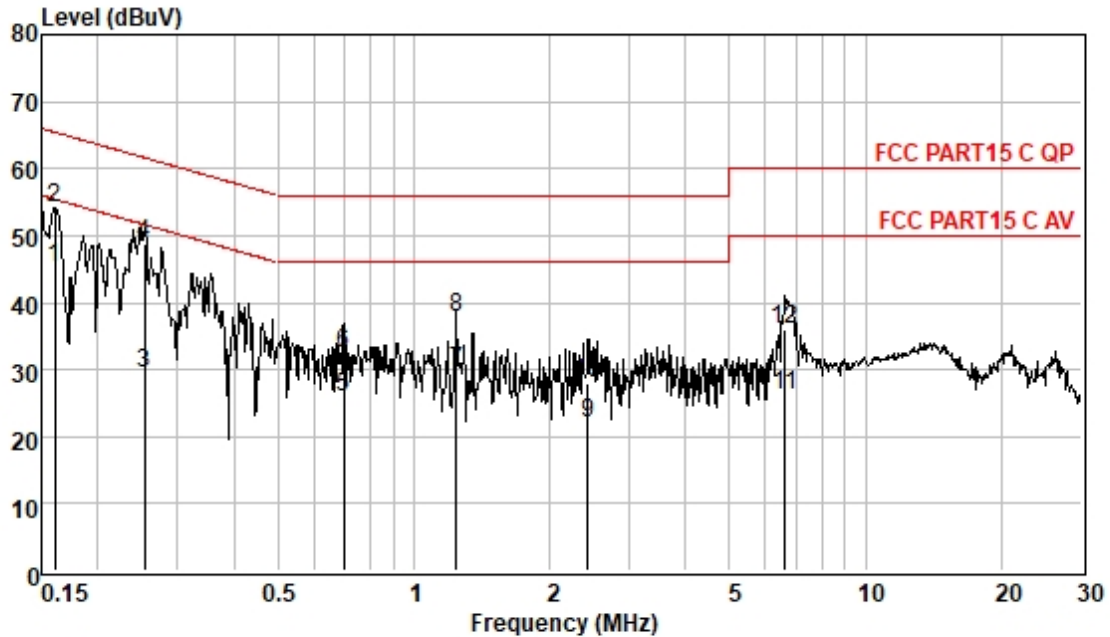
Test Mode: 13; Line: Live line



Pol : LINE
Mode : M3
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	34.26	0.06	9.62	43.94	55.52	-11.58	Average
0.16	42.91	0.06	9.62	52.59	65.52	-12.93	QP
0.25	20.07	0.06	9.62	29.75	51.73	-21.98	Average
0.25	39.62	0.06	9.62	49.30	61.73	-12.43	QP
0.97	16.85	0.07	9.62	26.54	46.00	-19.46	Average
0.97	22.07	0.07	9.62	31.76	56.00	-24.24	QP
1.24	23.25	0.09	9.61	32.95	46.00	-13.05	Average
1.24	32.42	0.09	9.61	42.12	56.00	-13.88	QP
3.45	16.77	0.16	9.62	26.55	46.00	-19.45	Average
3.45	24.20	0.16	9.62	33.98	56.00	-22.02	QP
13.55	17.26	0.29	9.73	27.28	50.00	-22.72	Average
13.55	26.36	0.29	9.73	36.38	60.00	-23.62	QP

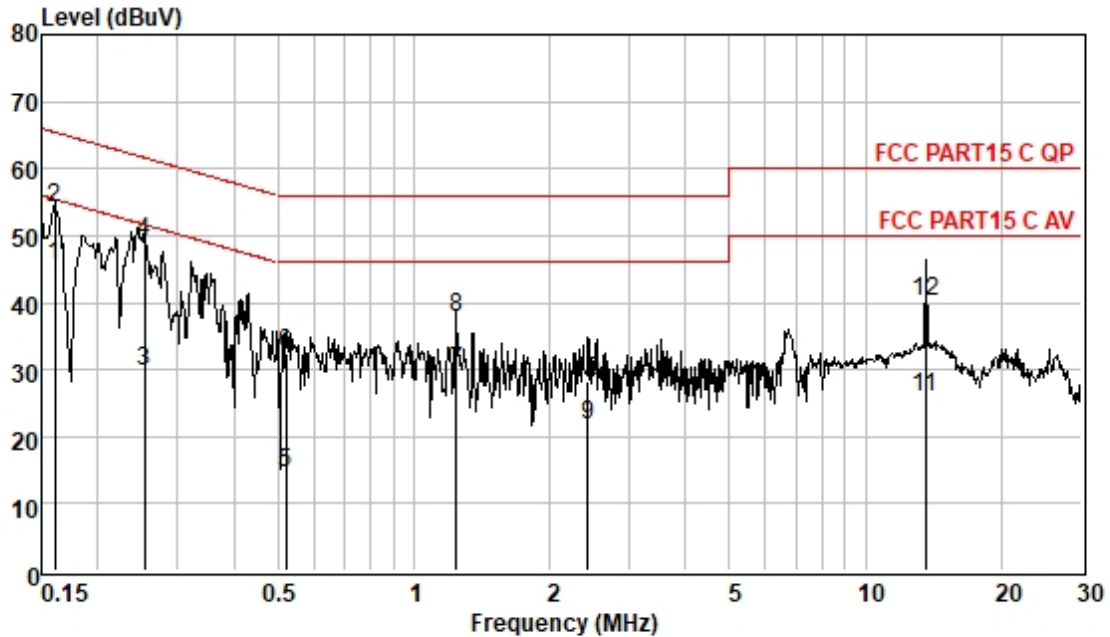
Test Mode: 13; Line: Neutral Line



Pol : NEUTRAL
Mode : M3
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	35.67	0.06	9.55	45.28	55.43	-10.15	Average
0.16	44.52	0.06	9.55	54.13	65.43	-11.30	QP
0.25	19.84	0.06	9.55	29.45	51.64	-22.19	Average
0.25	39.30	0.06	9.55	48.91	61.64	-12.73	QP
0.70	16.21	0.07	9.55	25.83	46.00	-20.17	Average
0.70	22.73	0.07	9.55	32.35	56.00	-23.65	QP
1.24	19.97	0.09	9.55	29.61	46.00	-16.39	Average
1.24	28.09	0.09	9.55	37.73	56.00	-18.27	QP
2.42	12.20	0.13	9.54	21.87	46.00	-24.13	Average
2.42	18.41	0.13	9.54	28.08	56.00	-27.92	QP
6.63	16.35	0.20	9.58	26.13	50.00	-23.87	Average
6.63	26.07	0.20	9.58	35.85	60.00	-24.15	QP

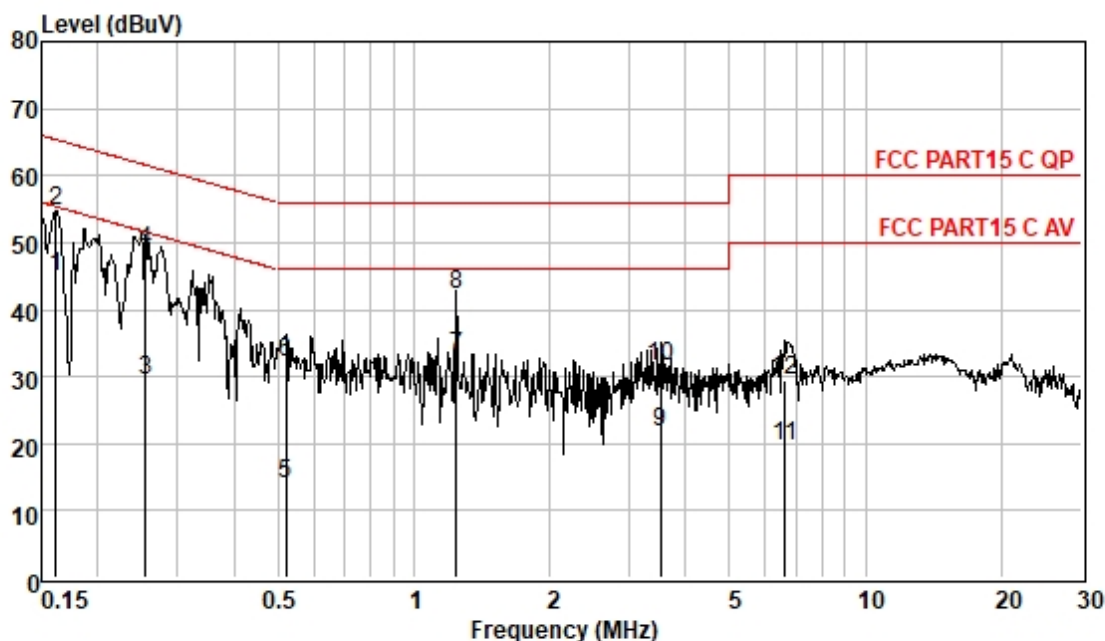
Test Mode: 14; Line: Live line



Pol : LINE
Mode : M4
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	35.74	0.06	9.62	45.42	55.43	-10.01	Average
0.16	44.59	0.06	9.62	54.27	65.43	-11.16	QP
0.25	19.94	0.06	9.62	29.62	51.64	-22.02	Average
0.25	39.40	0.06	9.62	49.08	61.64	-12.56	QP
0.52	5.02	0.07	9.63	14.72	46.00	-31.28	Average
0.52	22.75	0.07	9.63	32.45	56.00	-23.55	QP
1.24	19.94	0.09	9.61	29.64	46.00	-16.36	Average
1.24	28.04	0.09	9.61	37.74	56.00	-18.26	QP
2.42	12.00	0.13	9.62	21.75	46.00	-24.25	Average
2.42	18.57	0.13	9.62	28.32	56.00	-27.68	QP
13.55	15.73	0.29	9.73	25.75	50.00	-24.25	Average
13.55	30.25	0.29	9.73	40.27	60.00	-19.73	QP

Test Mode: 14; Line: Neutral Line



Pol : NEUTRAL
Mode : M4
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	35.19	0.06	9.55	44.80	55.38	-10.58	Average
0.16	45.08	0.06	9.55	54.69	65.38	-10.69	QP
0.25	19.92	0.06	9.55	29.53	51.60	-22.07	Average
0.25	39.24	0.06	9.55	48.85	61.60	-12.75	QP
0.52	4.26	0.07	9.55	13.88	46.00	-32.12	Average
0.52	22.47	0.07	9.55	32.09	56.00	-23.91	QP
1.24	23.44	0.09	9.55	33.08	46.00	-12.92	Average
1.24	32.58	0.09	9.55	42.22	56.00	-13.78	QP
3.51	11.96	0.16	9.56	21.68	46.00	-24.32	Average
3.51	21.67	0.16	9.56	31.39	56.00	-24.61	QP
6.63	9.84	0.20	9.58	19.62	50.00	-30.38	Average
6.63	19.80	0.20	9.58	29.58	60.00	-30.42	QP

6.2 Radiated Spurious Emissions (Below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6

Limit:

Frequency (MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

6.2.1 E.U.T. Operation

Operating Environment:

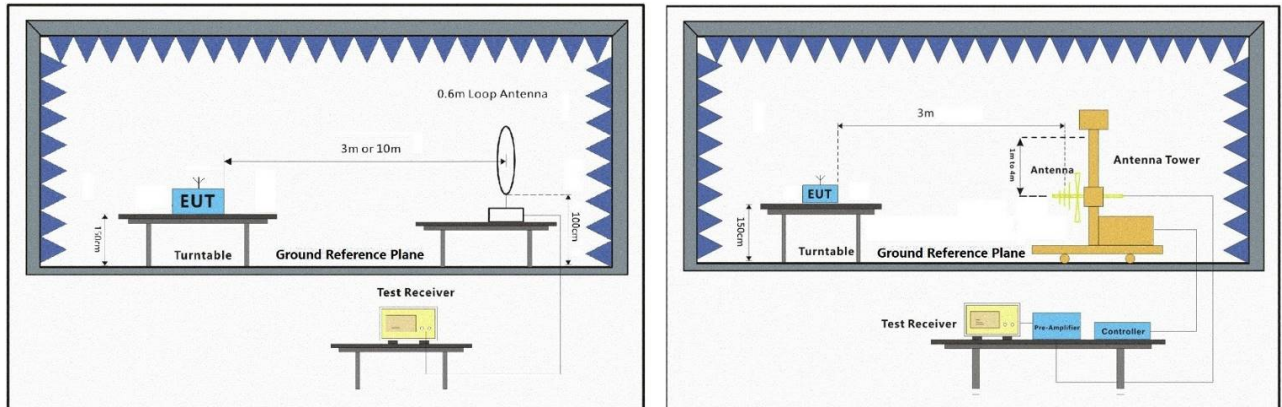
Temperature: 22.8 °C Humidity: 52.6 % RH Atmospheric Pressure: 995 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40) for M2. Only the data of worst case is recorded in the report.
Final test	13	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40) for M3. Only the data of worst case is recorded in the report.
Final test	14	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40) for M4. Only the data of worst case is recorded in the report.



6.2.3 Test Setup Diagram



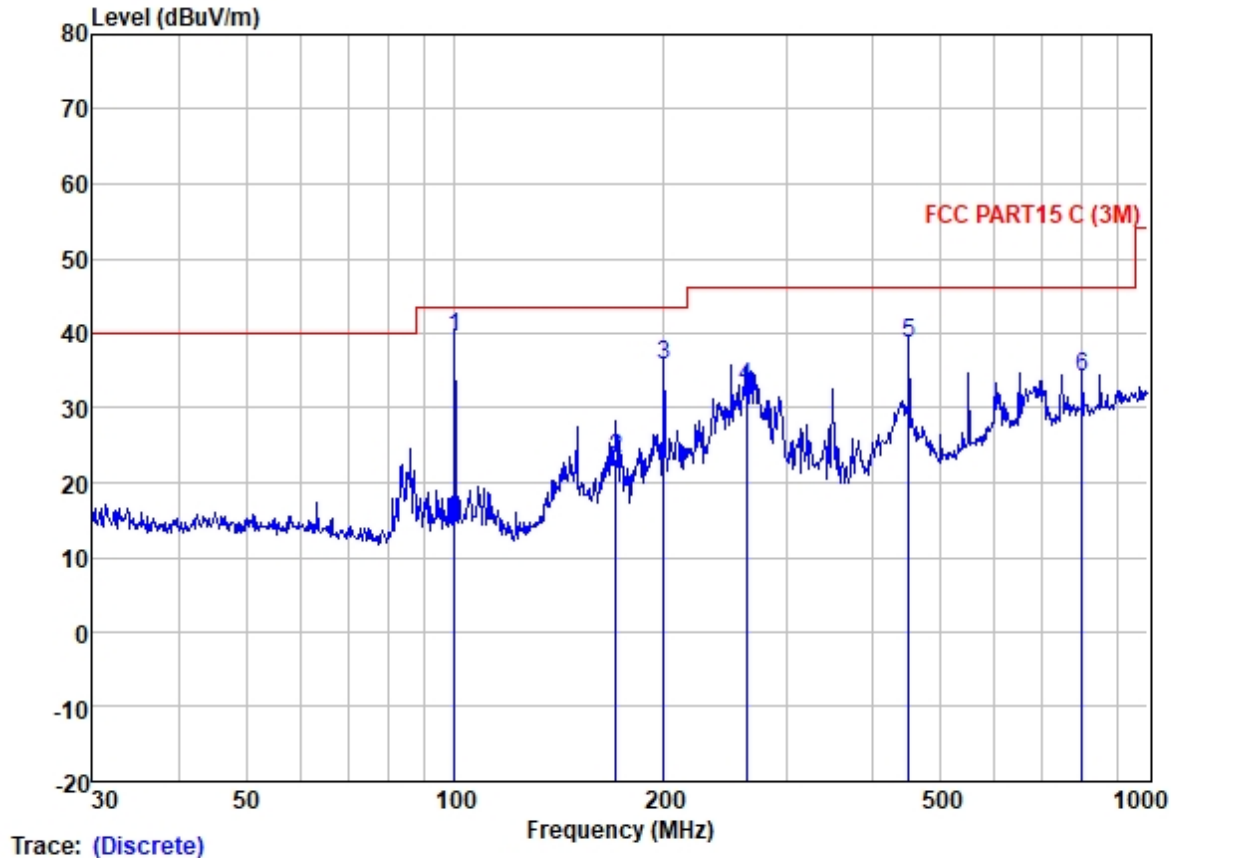
6.2.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 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.
- 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable 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.
- 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 the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

- Through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- Scan from 9kHz to 1 GHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

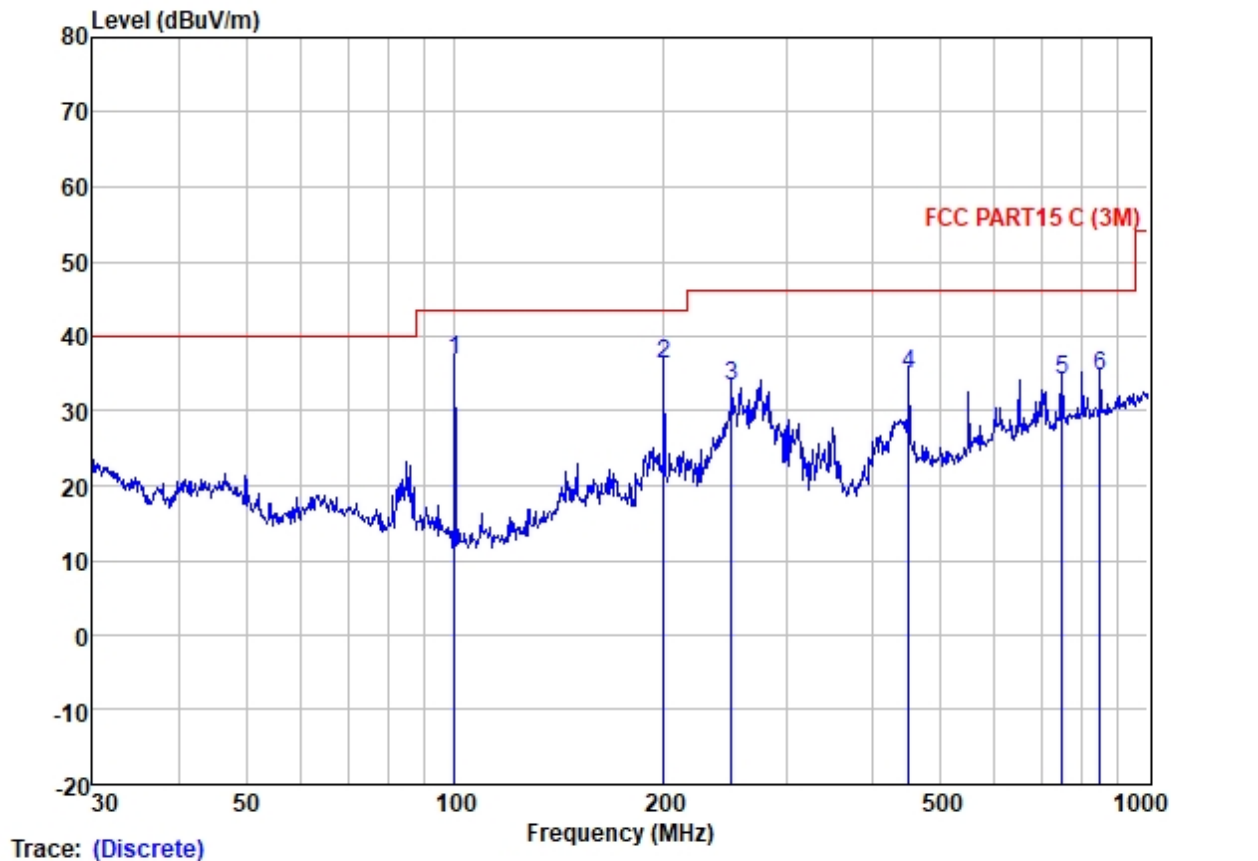
Test Mode: 02; Polarity: Horizontal



Site : SGS
Condition : FCC PART15 C (3M)
Job :
Model : M2
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	99.88	55.67	9.10	1.73	27.08	39.42	43.50	-4.08	HORIZONTAL	QP
2	170.79	34.59	13.07	2.40	26.77	23.29	43.50	-20.21	HORIZONTAL	QP
3	199.99	49.72	10.20	2.52	26.73	35.71	43.50	-7.79	HORIZONTAL	QP
4	262.90	44.06	12.34	3.00	26.59	32.81	46.00	-13.19	HORIZONTAL	QP
5	451.14	44.77	17.33	4.19	27.72	38.57	46.00	-7.43	HORIZONTAL	QP
6	801.79	33.51	22.62	6.17	28.03	34.27	46.00	-11.73	HORIZONTAL	QP

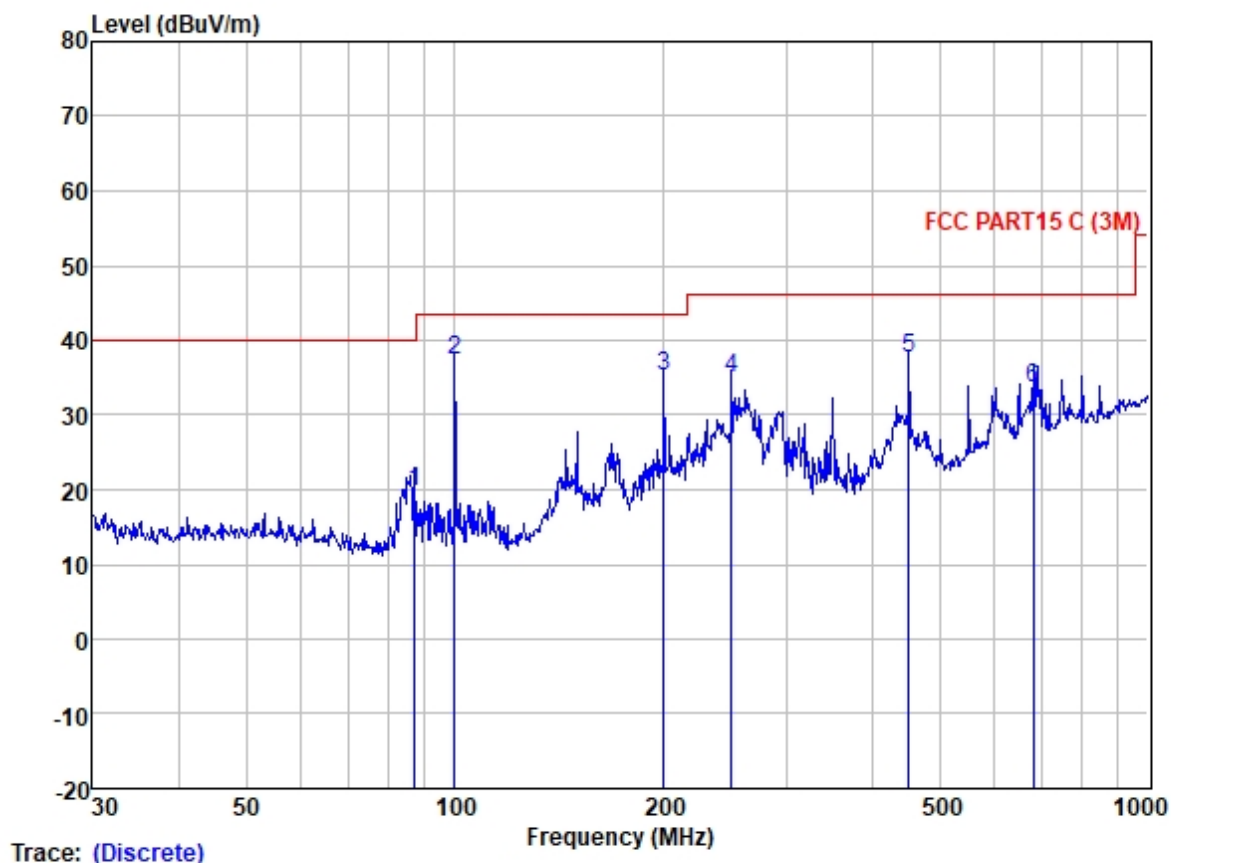
Test Mode: 02; Polarity: Vertical



Site : SGS
Condition : FCC PART15 C (3M)
Job :
Model : M2
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	99.88	52.96	9.10	1.73	27.08	36.71	43.50	-6.79	VERTICAL	QP
2	199.99	50.33	10.20	2.52	26.73	36.32	43.50	-7.18	VERTICAL	QP
3	250.30	44.91	12.10	2.92	26.62	33.31	46.00	-12.69	VERTICAL	QP
4	451.14	41.22	17.33	4.19	27.72	35.02	46.00	-10.98	VERTICAL	QP
5	750.11	34.06	22.20	5.97	28.10	34.13	46.00	-11.87	VERTICAL	QP
6	851.04	33.28	22.80	6.55	27.93	34.70	46.00	-11.30	VERTICAL	QP

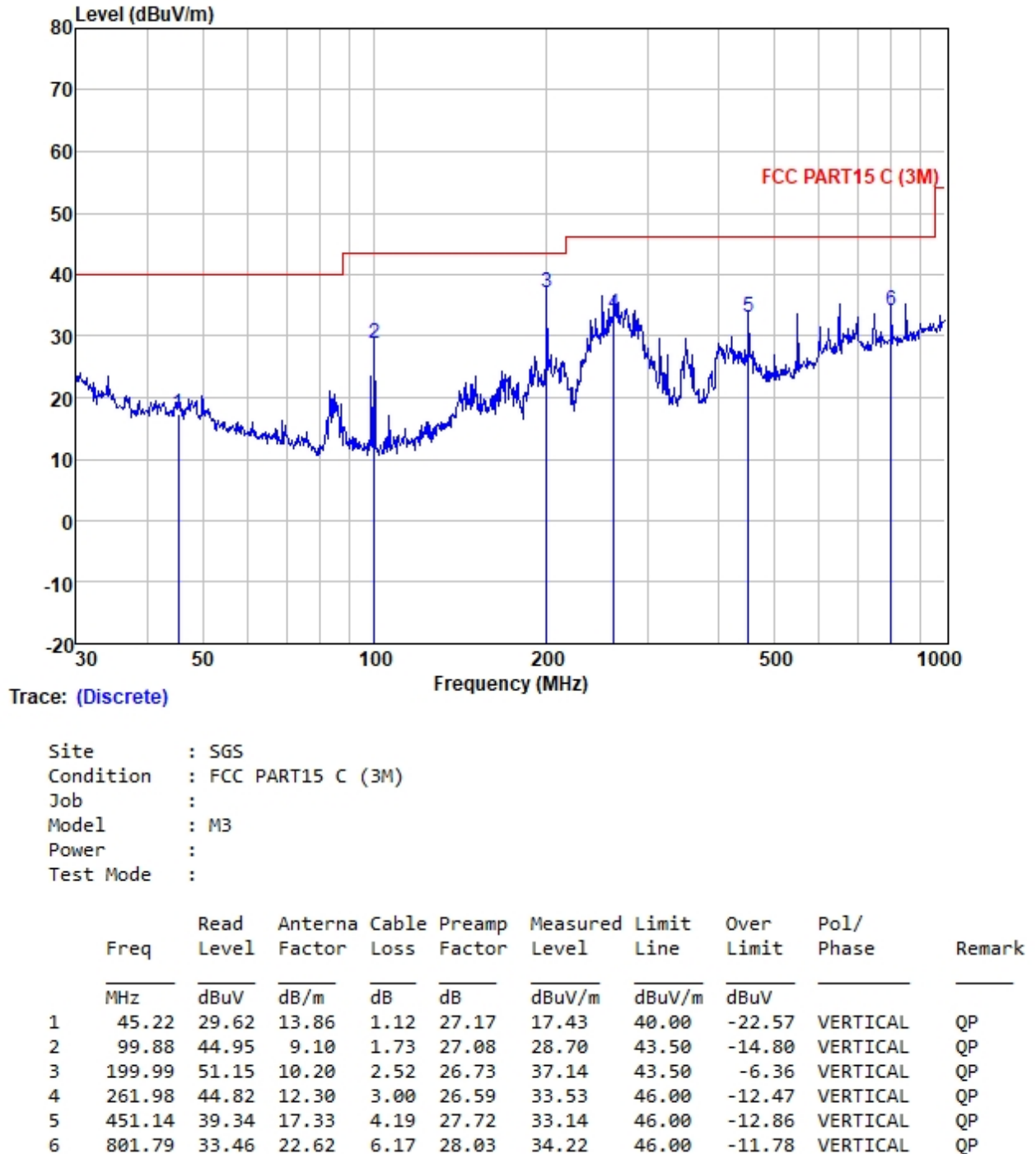
Test Mode: 13; Polarity: Horizontal



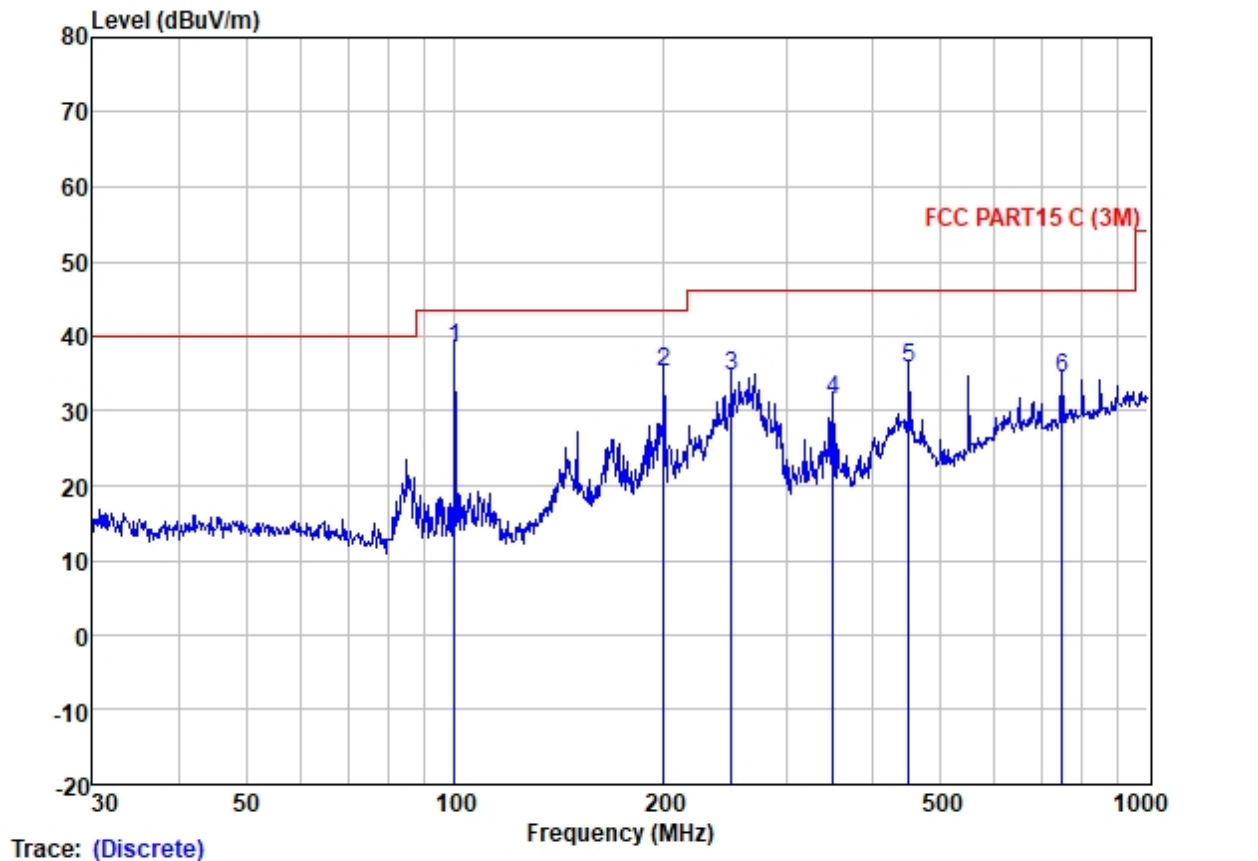
Site : SGS
Condition : FCC PART15 C (3M)
Job :
Model : M3
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	87.42	37.68	7.70	1.57	27.09	19.86	40.00	-20.14	HORIZONTAL	QP
2	99.88	53.71	9.10	1.73	27.08	37.46	43.50	-6.04	HORIZONTAL	QP
3	199.99	49.27	10.20	2.52	26.73	35.26	43.50	-8.24	HORIZONTAL	QP
4	250.30	46.60	12.10	2.92	26.62	35.00	46.00	-11.00	HORIZONTAL	QP
5	451.14	43.88	17.33	4.19	27.72	37.68	46.00	-8.32	HORIZONTAL	QP
6	682.35	35.13	20.85	5.70	28.17	33.51	46.00	-12.49	HORIZONTAL	QP

Test Mode: 13; Polarity: Vertical



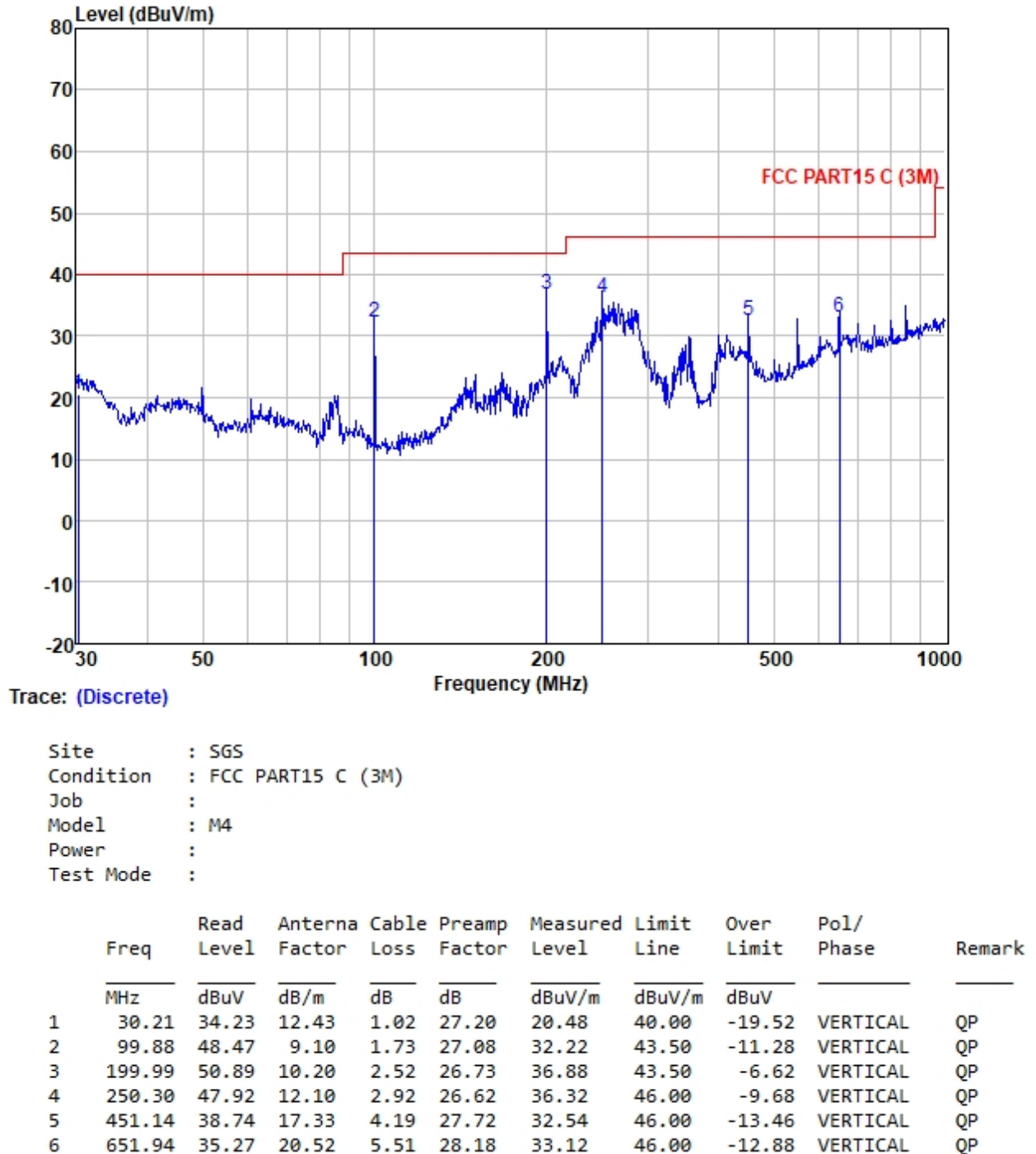
Test Mode: 14; Polarity: Horizontal



Site : SGS
Condition : FCC PART15 C (3M)
Job :
Model : M4
Power :
Test Mode :

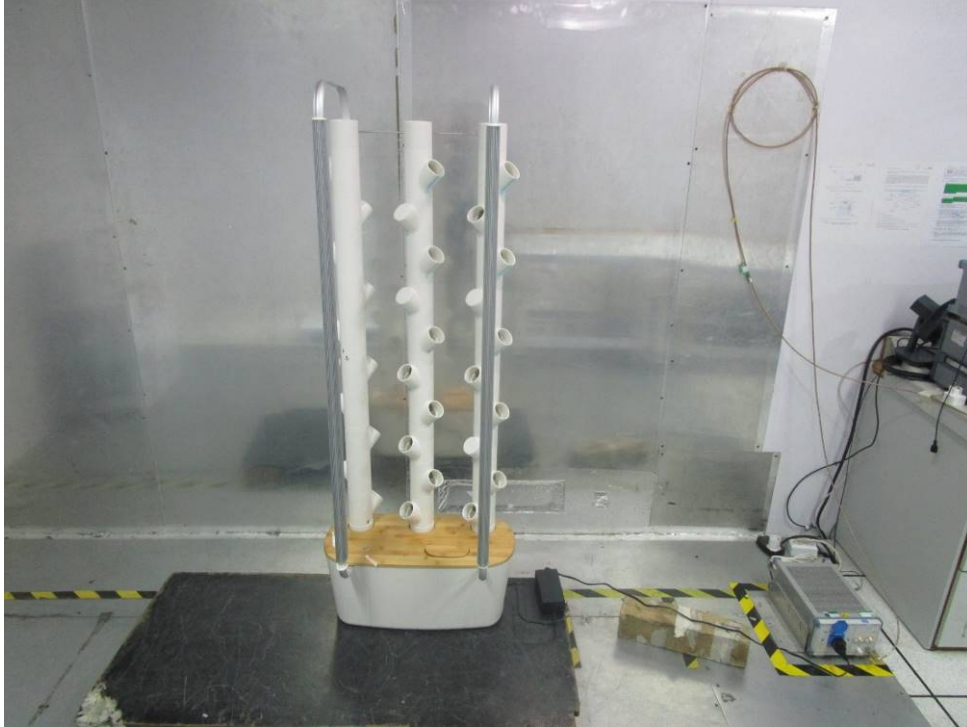
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	99.88	54.61	9.10	1.73	27.08	38.36	43.50	-5.14	HORIZONTAL	QP
2	199.99	49.17	10.20	2.52	26.73	35.16	43.50	-8.34	HORIZONTAL	QP
3	250.30	46.39	12.10	2.92	26.62	34.79	46.00	-11.21	HORIZONTAL	QP
4	350.48	40.43	14.50	3.63	27.01	31.55	46.00	-14.45	HORIZONTAL	QP
5	451.14	41.94	17.33	4.19	27.72	35.74	46.00	-10.26	HORIZONTAL	QP
6	750.11	34.23	22.20	5.97	28.10	34.30	46.00	-11.70	HORIZONTAL	QP

Test Mode: 14; Polarity: Vertical

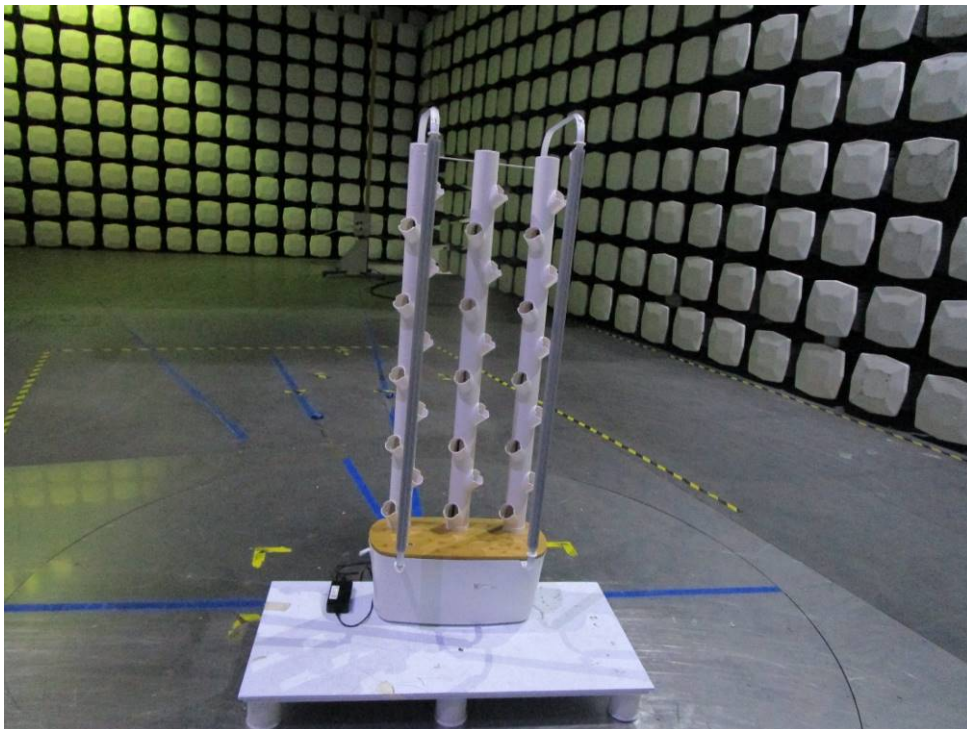


7 Test Setup Photo

Conducted Emissions at AC Power Line (150kHz-30MHz)



adiated Spurious Emissions (Below 1GHz)



8 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for GZCR2107020705LM

- End of the Report -