TEST REPORT

Application No.:	GZCR2406000758LM
Applicant:	Gardyn Inc
Address of Applicant:	8120 Woodmont Avenue, Suite #640, Bethesda, Maryland, USA
Manufacturer:	Gardyn inc
Address of Manufacturer:	8120 Woodmont Avenue, Suite #640, Bethesda, MD 20814, U.S.A.
Factory:	Dongguan Heandong Plastic Limited (Onf)
Address of Factory:	Building E, Xingfeng Rd, Fendhuangwei, Tangli village, Fenggang Town, Dongguan, Guangdong, China
Product Name:	Gardyn Home, Gardyn Studio
Model No.:	Gardyn Home: GH-A01, GH A01, Gardyn Studio: GS A01 ♣
♣	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
Trade Mark:	Gardyn
Standard(s) :	47 CFR Part 15, Subpart C 15.247
Date of Receipt:	2024-07-01
Date of Test:	2024-07-02 to 2024-07-30
Date of Issue:	2024-08-27
Test Result:	**Pass***

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

Ricky Liu
Manager

Revision Record			
Version	**Report No.**	**Date**	**Remark**
01	GZEM190901605902 GZEM190901605903	2019-12-13	Original
02	GZEM190901605906 GZEM190901605907	2020-11-26	Copy report: Supplemented the Molex connector (part Number: 43501W9-NP-B3) and photo of it
03	GZEM190901605910 GZEM190901605911	2021-03-31	Copy report: Changed manufacturer information, factory information, EUT Name, Added trade mark, Alternative pumps.
04	GZEM190901605914 GZEM190901605915	2021-09-06	Copy report: Add alternative components IC+ MOSFET+ power switch+ Temperature and humidity sensor and update Address of Applicant & label
05	GZEM190901605918	2022-10-31	Copy report: Changed product name, added one new model, updated spelling of factory and components
06	GZEM190901605924	2024-05-24	Amendment report: Changed manufacturer's information; added new components.
04	GZEM190901605927	2024-08-27	Amendment report: Changed manufacture's information; Added product name and new model.

Authorized for issue by:				
		Jim Li **Jim Li/Project Engineer**		
		Vico Cui **Vico Cui/Reviewer**		

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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	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass**
**: The EUT passed Radiated Spurious Emissions Below 1GHz test after modification.				

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 GZEM190901605906 & 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.

The report **GZEM190901605906** was copied from the **GZEM190901605902** original report, report **GZEM190901605907** was 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 GZEM190901605906 & GZEM190901605907.

Remark for the report GZEM190901605910 & GZEM190901605911:

The report GZEM190901605910 was based on original report GZEM190901605906, report GZEM190901605911 was 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 GZEM190901605910 & GZEM190901605911.

Remark for this report GZEM190901605914 & GZEM190901605915:

The report GZEM190901605914 was based on original report GZEM190901605910, report GZEM190901605915 was based on original report GZEM190901605911,

only added alternative components IC (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, Conducted Emissions at AC Power Line (150kHz-30MHz) & Radiated Spurious Emissions (Below 1GHz) were performed to the models GH-A01 with different IC and MOSFET (sample No. are M3, M4 & M5) and recorded new test results in report GZEM190901605914 & GZEM190901605915.

Original test data please refer to report GZEM1909016059010 & GZEM190901605911 for details.

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Remark for this report GZEM190901605918:

This report GZEM190901605918 was based on original report GZEM190901605914 & GZEM190901605915, only changed product name, added one new model GH A01, updated spelling of Factory and components as below:

1. New part for PoGo connector & cable (light assembly / lid assembly connection);
2. USB hub for FE8.1;
3. Hoses material: Silicone;
4. WOOD-BOARD / Wood cap of material: Rubberwood.
5. AC/DC adapter.

According to the declaration from the applicant, the new model **GH A01** added in this report and model **GH-A01** in original report are identical in the electrical circuit design, layout, components used and internal wiring, only their Model No. and outer decoration are different.

Considering to the changes above, Conducted Emissions at AC Power Line (150kHz-30MHz) and Radiated Spurious Emissions Below 1GHz test items were performed to the model **GH A01** with new components and recorded new test results in this report.

Original test data please refer to report GZEM190901605910, GZEM190901605911, GZEM190901605914 and GZEM190901605915 for details.

According to FCC Part 2 section 2.1043(b)(1), it is ok to update test report by updating components 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.

Remark for the report GZEM190901605924:

This test report GZEM190901605924 based on and only valid with the previous test report GZEM190901605918, just with the following changes:

1. Changed manufacturer's information

2. Added new components as below:

1) New LED Bar: 32 LEDs-LED chip RA80;

2) Alternative cable (more flexible): 24 V Power female connector control PCB input wire (AP05374)

3) Input connectors: 24 V, 7.5 A new supplier;

4) Power supply refer to section 4.1 for details;

5) Added module seal: seals between modules (silicone);

6) Added module lid seal: Seals between lid & modules (PU);

7) Change the pump connector to a bulkhead waterproof pump connector;

8) New metal plate holder – windows flipped;

9) Changed to 2 types of the ferrites in the pump cables.

Considering to the difference above, new Conducted Emissions at AC Power Line (150kHz-30MHz) and Radiated Spurious Emissions Below 1GHz tests were performed on model **GH-A01** with the new components and recorded the new test results in this report GZEM190901605924.

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.

Other tests please refer to original report **GZEM190901605910, GZEM190901605911, GZEM190901605914, GZEM190901605915 and GZEM190901605918** for details.

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♣ Remark for report GZEM190901605927:

This report GZEM190901605927 is based on original report GZEM190901605924, with the following changes:

1. Changed manufacture's information.

2. Added product name and new model GS A01 with 2 options of pumps as below:

Component name	Manufacturer/ trademark	Type/model	Technical data
Pump	Zhongshan Jiayu Electrical Appliance Co., Ltd	B0001-01-03	12Vdc, 780 mA.
Alternate	Shenzhen NTC co. Ltd	TD40A-1248A	12Vdc, 950mA Hmax: 430cm, Qmax: 600L/h

According to the declaration from the applicant, model GS A01 added in this report GZEM190901605927 and models in original report GZEM190901605924 were different only using the same RF module.

Considering to the difference above, Conducted Emissions at AC Power Line (150kHz-30MHz) and Radiated Spurious Emissions Below 1GHz were performed to model GS A01 and recorded the new test results in this report GZEM190901605927.

Other tests please refer to original report GZEM190901605910, GZEM190901605911, GZEM190901605914, GZEM190901605915, GZEM190901605918 and GZEM190901605924 for details.

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3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	DC 24 V powered by AC/DC adapter as below: Model: FY1802404000 Input: AC 100-240 V, 50/60 Hz, 1.5 A, 130VA Output: DC 24 V, 4.0A, 96.0 W
Cable(s):	DC input ports for main unit For AC/DC adapter: AC mains (unshielded, 0.8 m) DC output cables (unshielded, 1.5m)
Test Voltage:	AC 120 V, 60 Hz
For BT	
Antenna Gain	0 dBi according to antenna specification
Antenna Type	PCB Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz
For Wi-Fi	
Antenna Gain	0 dBi according to antenna specification
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

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
NoteBook	Hasee	X5-2021S5	C6711H01510011

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±2.76dB
Radiated Spurious Emissions Below 1GHz	±5.00dB (3m); ±4.38dB (10m)
Remark: The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty) or U_{ETSI}(ETSI Uncertainty). Emission decision rule: – Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report. – Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report.	

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,

No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663

Tel: +86 20 82155555

No tests were sub-contracted.

4.5 Test Facility

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

- **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.

- **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.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Coaxial Cable	HangTianXing	2m	EMC0107	2023-08-24	2025-08-23
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2022-10-16	2025-10-15
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2023-09-08	2024-09-07
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2024-05-13	2025-05-12
Test Software E3r	Audix	Ver.6.11812	GZE100-77	N/A	N/A

Radiated Spurious Emissions Below 1GHz					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2022-04-12	2025-04-11
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-02-19	2025-02-18
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-03-22	2025-03-21
TRILOG Broadband Antenna（25M-2GHz)	SCHWRZBECK	VULB 9168	EMC2238	2022-04-20	2025-04-19
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2023-06-14	2025-06-13
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-08	2026-04-07

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DMM	Fluke	73	EMC0006	2024-06-13	2025-06-12

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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

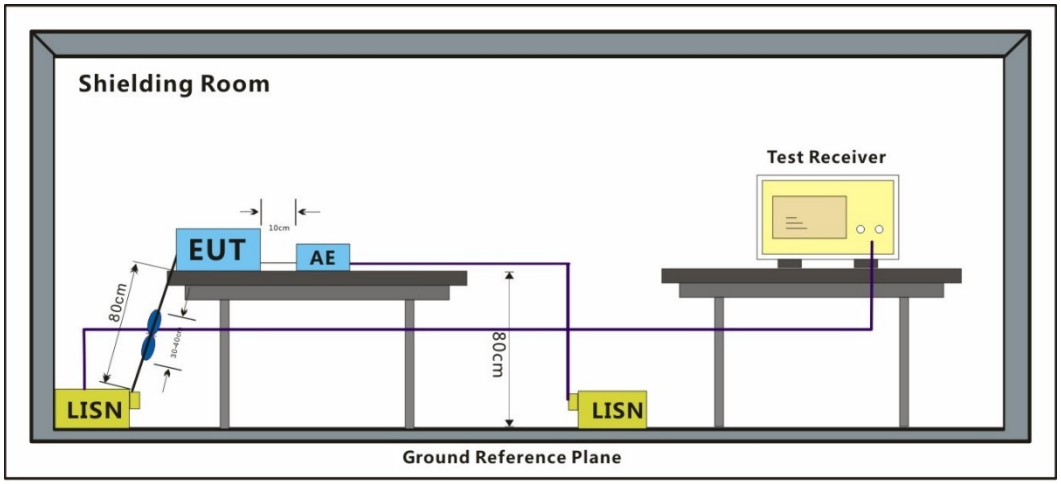
Operating Environment:

Temperature: 24.1 °C Humidity: 56.8 % RH Atmospheric Pressure: 1001 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation for pump 1.
Pre-scan	01	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), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report for pump 1.
Final test	08	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation for pump 2.
Pre-scan	09	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), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report for pump 2.

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.

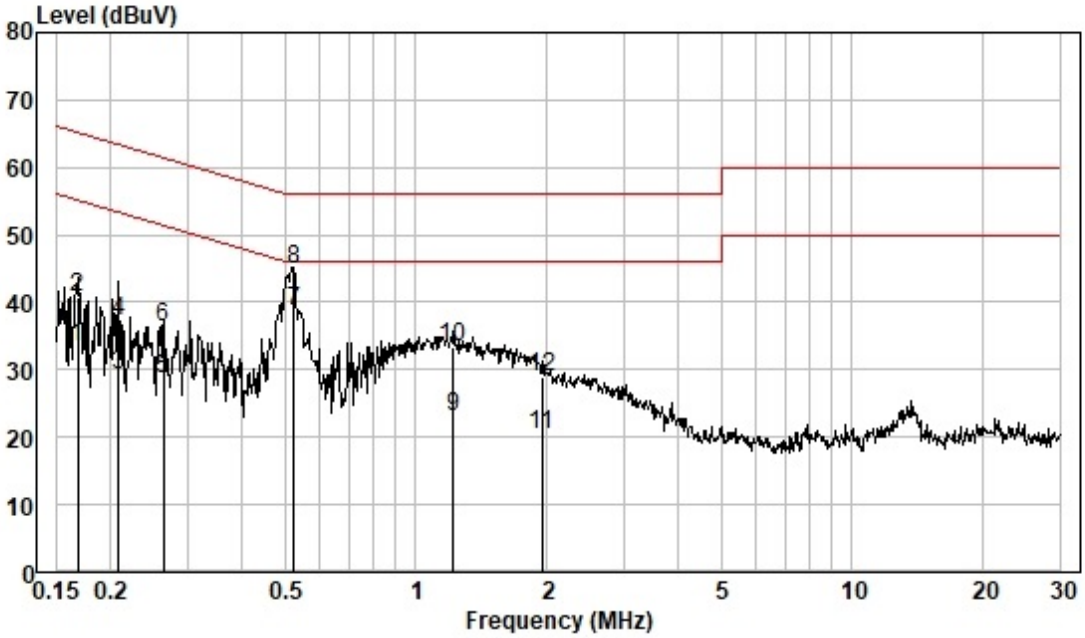
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.

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: Level=Read Level+ Cable Loss+ LISN Factor

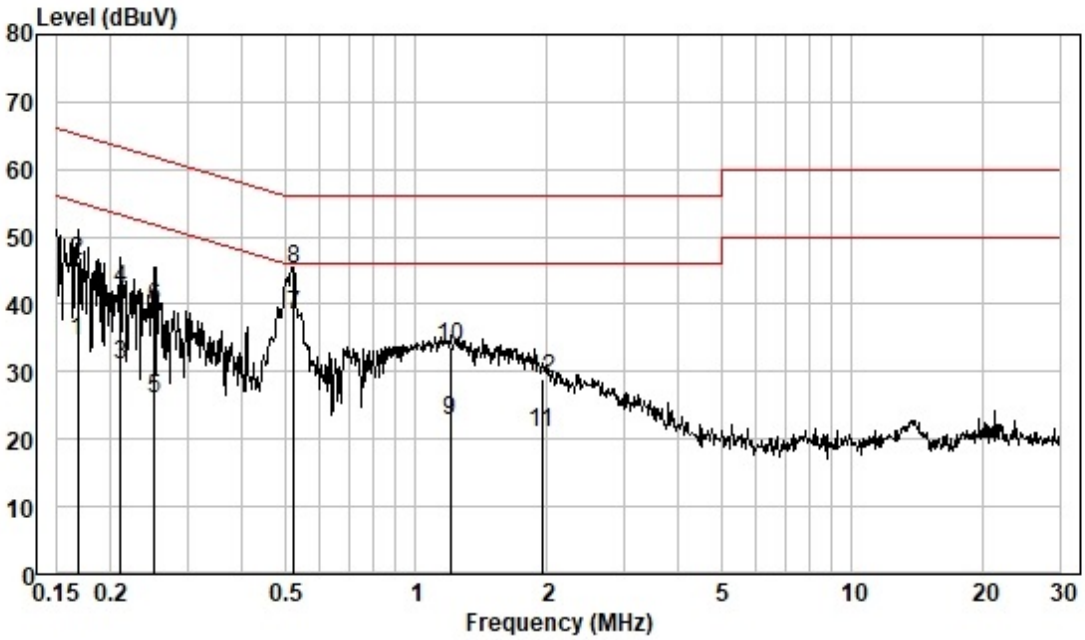
Test Mode: 00; Line: Live line



Pol :LINE
Mode :
Model :
Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.168	23.82	0.04	9.55	33.41	55.08	-21.67	Average
2	0.168	31.13	0.04	9.55	40.72	65.08	-24.36	QP
3	0.208	19.70	0.04	9.55	29.29	53.27	-23.98	Average
4	0.208	27.51	0.04	9.55	37.10	63.27	-26.17	QP
5	0.264	18.93	0.04	9.56	28.53	51.29	-22.76	Average
6	0.264	26.60	0.04	9.56	36.20	61.29	-25.09	QP
7	0.527	29.05	0.05	9.56	38.66	46.00	-7.34	Average
8	0.527	35.37	0.05	9.56	44.98	56.00	-11.02	QP
9	1.216	13.49	0.09	9.56	23.14	46.00	-22.86	Average
10	1.216	23.82	0.09	9.56	33.47	56.00	-22.53	QP
11	1.949	10.79	0.12	9.57	20.48	46.00	-25.52	Average
12	1.949	19.14	0.12	9.57	28.83	56.00	-27.17	QP

Test Mode: 00; Line: Neutral Line



Pol :NEUTRAL
Mode :
Model :
Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.168	24.91	0.04	9.52	34.47	55.08	-20.61	Average
2	0.168	36.92	0.04	9.52	46.48	65.08	-18.60	QP
3	0.211	21.44	0.04	9.53	31.01	53.18	-22.17	Average
4	0.211	32.65	0.04	9.53	42.22	63.18	-20.96	QP
5	0.252	16.53	0.04	9.53	26.10	51.69	-25.59	Average
6	0.252	29.87	0.04	9.53	39.44	61.69	-22.25	QP
7	0.527	28.88	0.05	9.54	38.47	46.00	-7.53	Average
8	0.527	35.51	0.05	9.54	45.10	56.00	-10.90	QP
9	1.197	13.10	0.08	9.55	22.73	46.00	-23.27	Average
10	1.197	24.06	0.08	9.55	33.69	56.00	-22.31	QP
11	1.949	11.25	0.12	9.55	20.92	46.00	-25.08	Average
12	1.949	19.25	0.12	9.55	28.92	56.00	-27.08	QP

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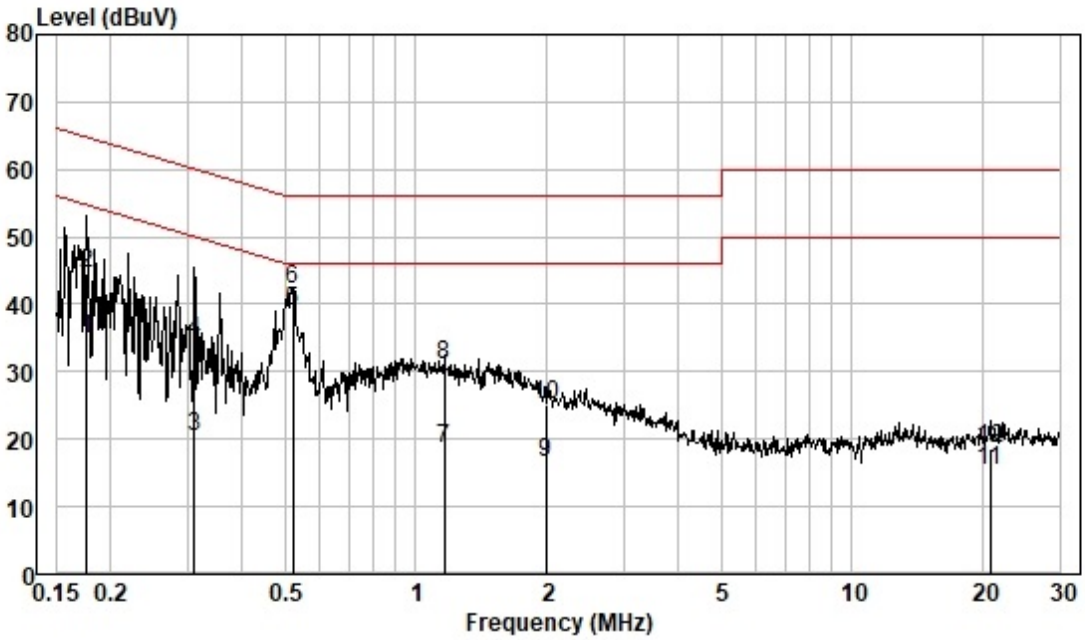
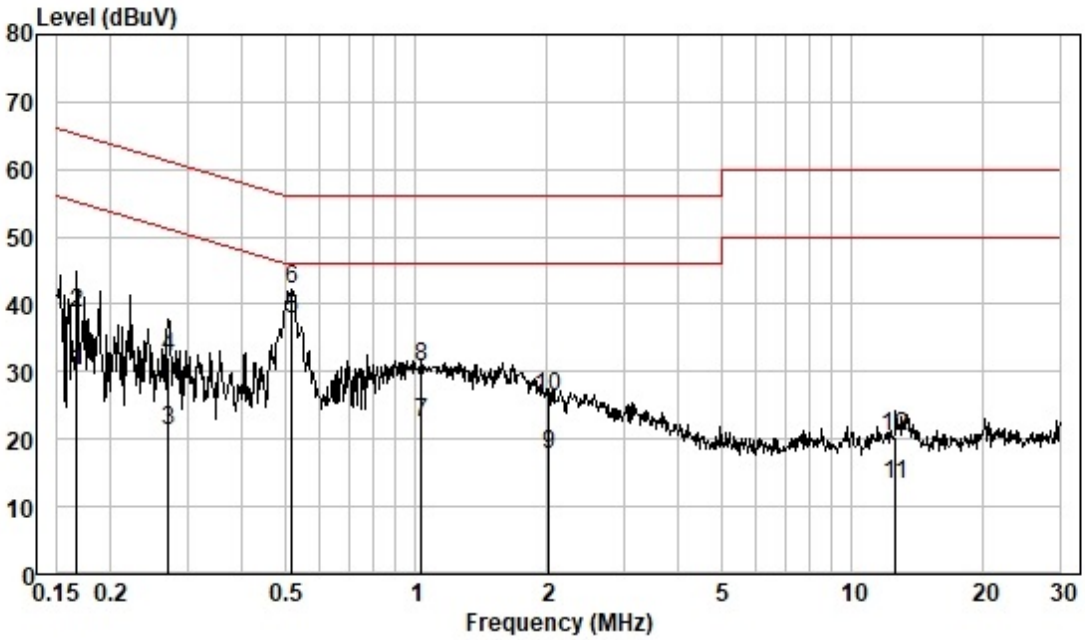
Test Mode: 08; Line: Live line



Pol :LINE
Mode :
Model :
Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.176	25.13	0.04	9.55	34.72	54.68	-19.96	Average
2	0.176	34.88	0.04	9.55	44.47	64.68	-20.21	QP
3	0.310	10.85	0.04	9.56	20.45	49.97	-29.52	Average
4	0.310	24.87	0.04	9.56	34.47	59.97	-25.50	QP
5	0.524	29.25	0.05	9.56	38.86	46.00	-7.14	Average
6	0.524	32.63	0.05	9.56	42.24	56.00	-13.76	QP
7	1.160	8.96	0.08	9.56	18.60	46.00	-27.40	Average
8	1.160	21.44	0.08	9.56	31.08	56.00	-24.92	QP
9	1.991	6.81	0.12	9.57	16.50	46.00	-29.50	Average
10	1.991	15.55	0.12	9.57	25.24	56.00	-30.76	QP
11	20.704	5.06	0.39	9.85	15.30	50.00	-34.70	Average
12	20.704	8.27	0.39	9.85	18.51	60.00	-41.49	QP

Test Mode: 08; Line: Neutral Line



Pol :NEUTRAL
Mode :
Model :
Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.167	20.53	0.04	9.52	30.09	55.12	-25.03	Average
2	0.167	29.04	0.04	9.52	38.60	65.12	-26.52	QP
3	0.270	11.64	0.04	9.53	21.21	51.12	-29.91	Average
4	0.270	22.48	0.04	9.53	32.05	61.12	-29.07	QP
5	0.521	28.23	0.05	9.54	37.82	46.00	-8.18	Average
6	0.521	32.49	0.05	9.54	42.08	56.00	-13.92	QP
7	1.032	12.77	0.07	9.55	22.39	46.00	-23.61	Average
8	1.032	21.13	0.07	9.55	30.75	56.00	-25.25	QP
9	2.023	8.18	0.13	9.55	17.86	46.00	-28.14	Average
10	2.023	16.65	0.13	9.55	26.33	56.00	-29.67	QP
11	12.582	3.04	0.29	9.83	13.16	50.00	-36.84	Average
12	12.582	10.22	0.29	9.83	20.34	60.00	-39.66	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

Limit:

Test Distance: 3 m

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
960-1000	500	3

6.2.1 E.U.T. Operation

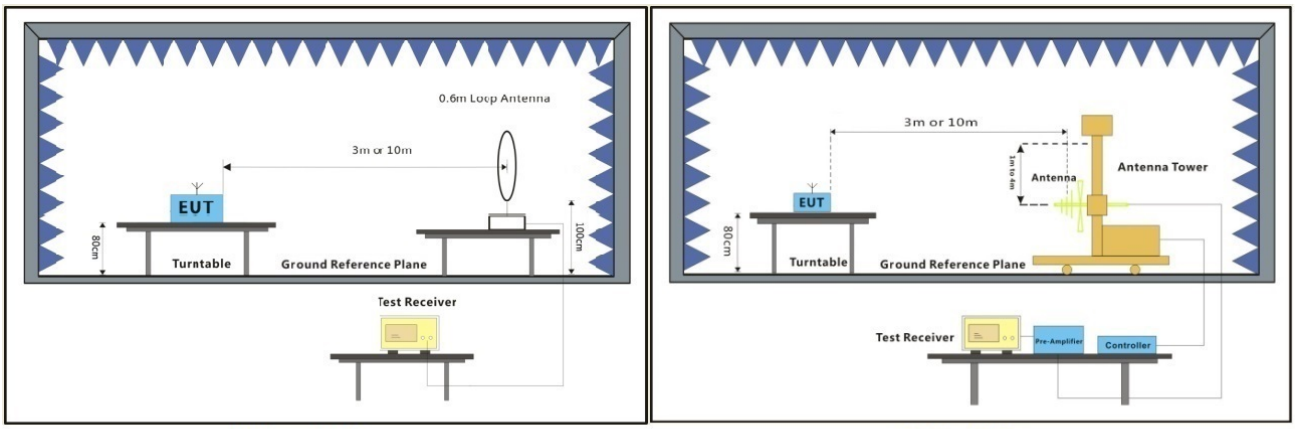
Operating Environment:

Temperature: 22.4 °C Humidity: 52.7 % RH Atmospheric Pressure: 1001 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation for pump 1.
Pre-scan	01	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), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report for pump 1.
Final test	08	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation for pump 2.
Pre-scan	09	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), final test modes are considering the modulation and worse data rates. Only the data of worst case is recorded in the report for pump 2.

6.2.3 Test Setup Diagram



Below 30MHz　　30MHz-1GHz

6.2.4 Measurement Procedure and Data

a. 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.

b. 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.

c. 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.

d. 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.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. 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 quasi-peak method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. 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.

i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

2. Scan from 9kHz to 30MHz, 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.

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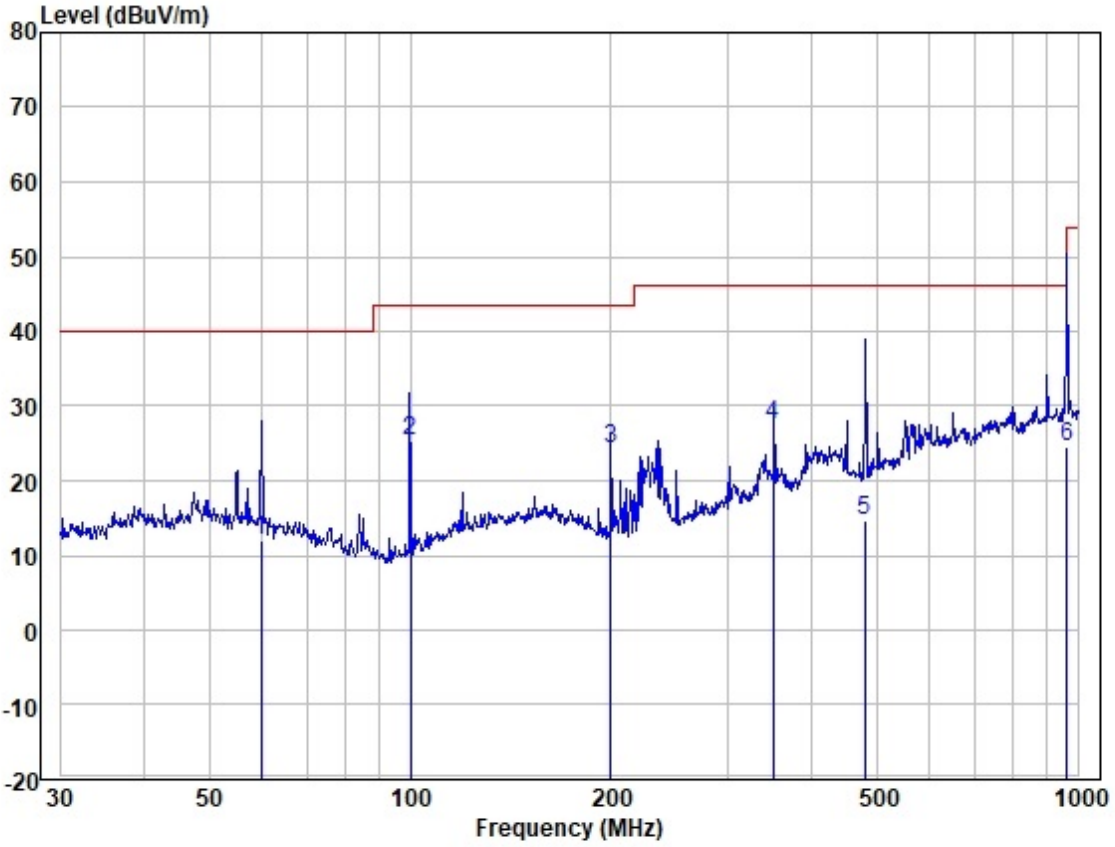
Test Mode: 00; Polarity: Horizontal



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	59.859	25.60	18.79	0.41	32.87	11.93	40.00	-28.07	HORIZONTAL	QP
2	100.000	43.10	14.55	0.54	32.80	25.39	43.52	-18.13	HORIZONTAL	QP
3	199.986	40.40	15.80	0.79	32.84	24.15	43.52	-19.37	HORIZONTAL	QP
4	350.000	38.90	20.29	1.07	32.89	27.37	46.02	-18.65	HORIZONTAL	QP
5	479.471	23.21	23.08	1.27	32.99	14.57	46.02	-31.45	HORIZONTAL	QP
6	962.162	24.60	29.75	1.82	31.71	24.46	53.98	-29.52	HORIZONTAL	QP

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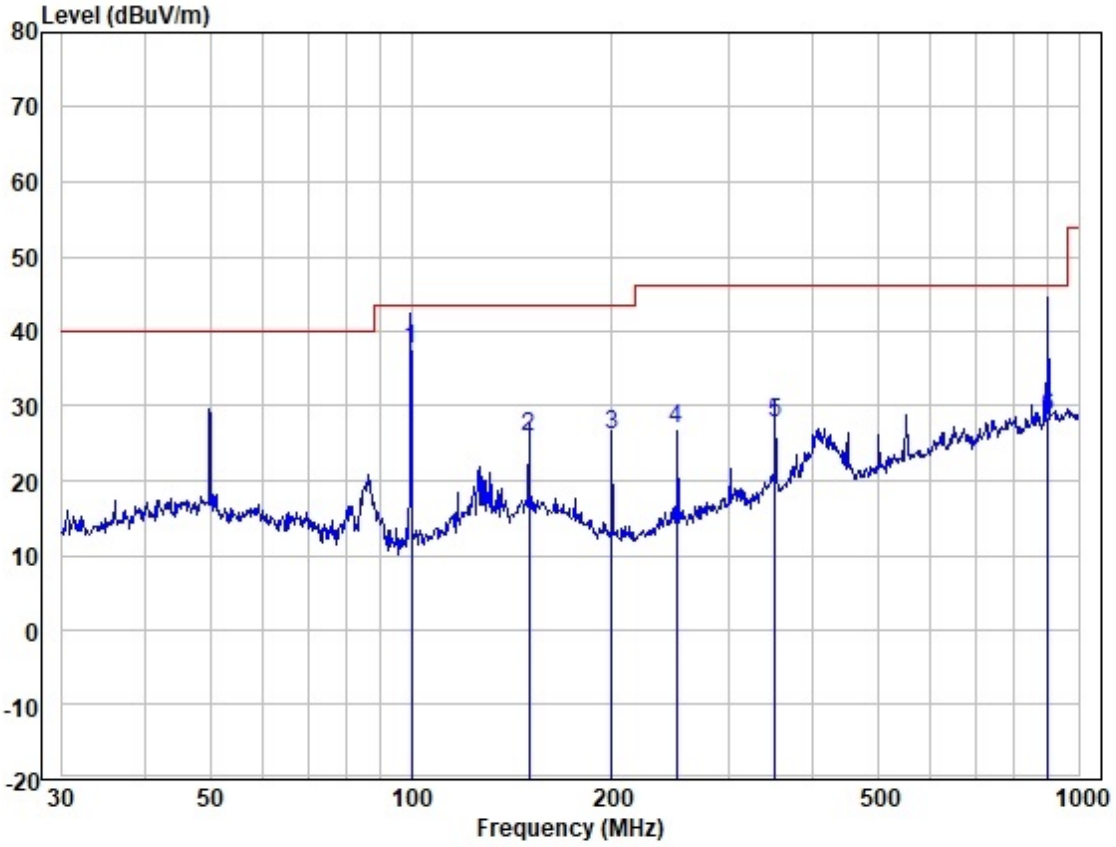
Test Mode: 00; Polarity: Vertical



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	100.005	55.30	14.55	0.54	32.80	37.59	43.52	-5.93	VERTICAL	QP
2	150.011	39.00	19.04	0.67	32.82	25.89	43.52	-17.63	VERTICAL	QP
3	200.000	42.50	15.80	0.79	32.84	26.25	43.52	-17.27	VERTICAL	QP
4	249.690	41.20	17.59	0.88	32.86	26.81	46.02	-19.21	VERTICAL	QP
5	350.477	39.33	20.29	1.07	32.89	27.80	46.02	-18.22	VERTICAL	QP
6	900.147	29.44	29.39	1.76	32.03	28.56	46.02	-17.46	VERTICAL	QP

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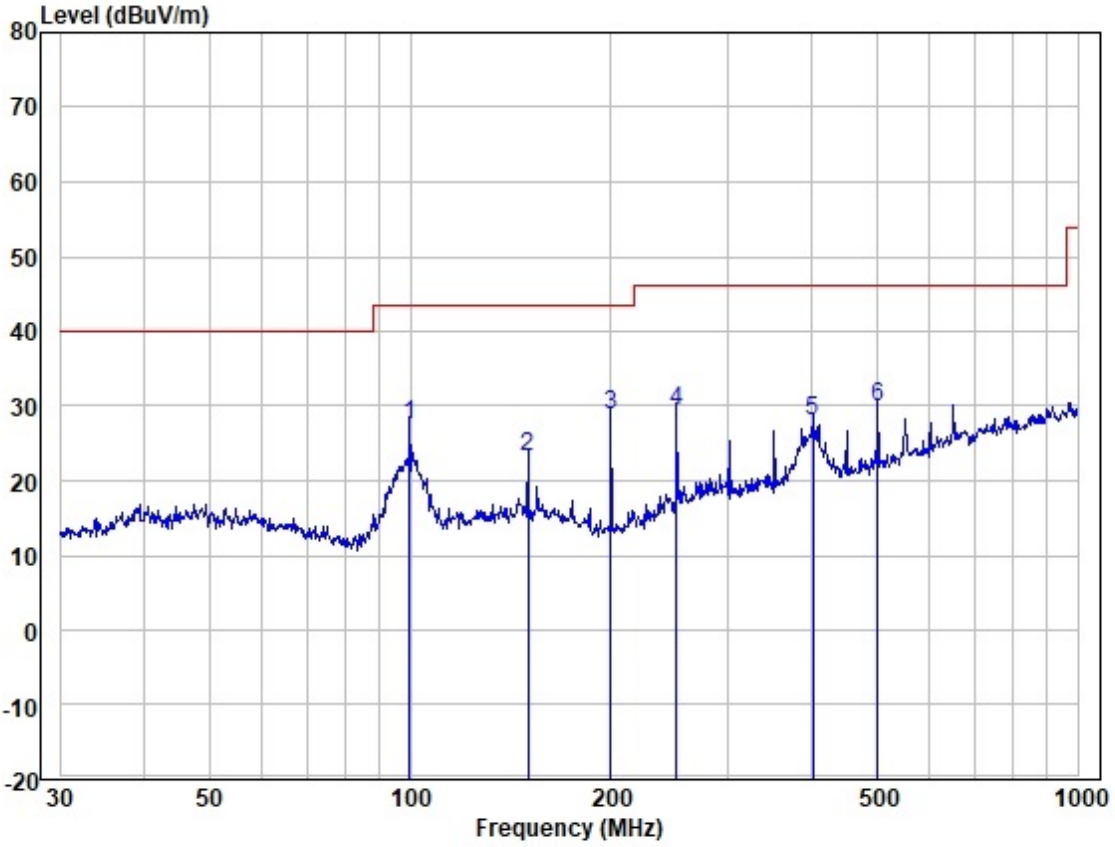
Test Mode: 08; Polarity: Horizontal



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	99.986	45.17	14.55	0.54	32.80	27.46	43.52	-16.06	HORIZONTAL	QP
2	150.011	36.31	19.04	0.67	32.82	23.20	43.52	-20.32	HORIZONTAL	QP
3	199.986	45.07	15.80	0.79	32.84	28.82	43.52	-14.70	HORIZONTAL	QP
4	250.301	43.70	17.62	0.88	32.86	29.34	46.02	-16.68	HORIZONTAL	QP
5	400.432	38.05	21.60	1.16	32.94	27.87	46.02	-18.15	HORIZONTAL	QP
6	501.179	37.87	23.58	1.29	32.99	29.75	46.02	-16.27	HORIZONTAL	QP

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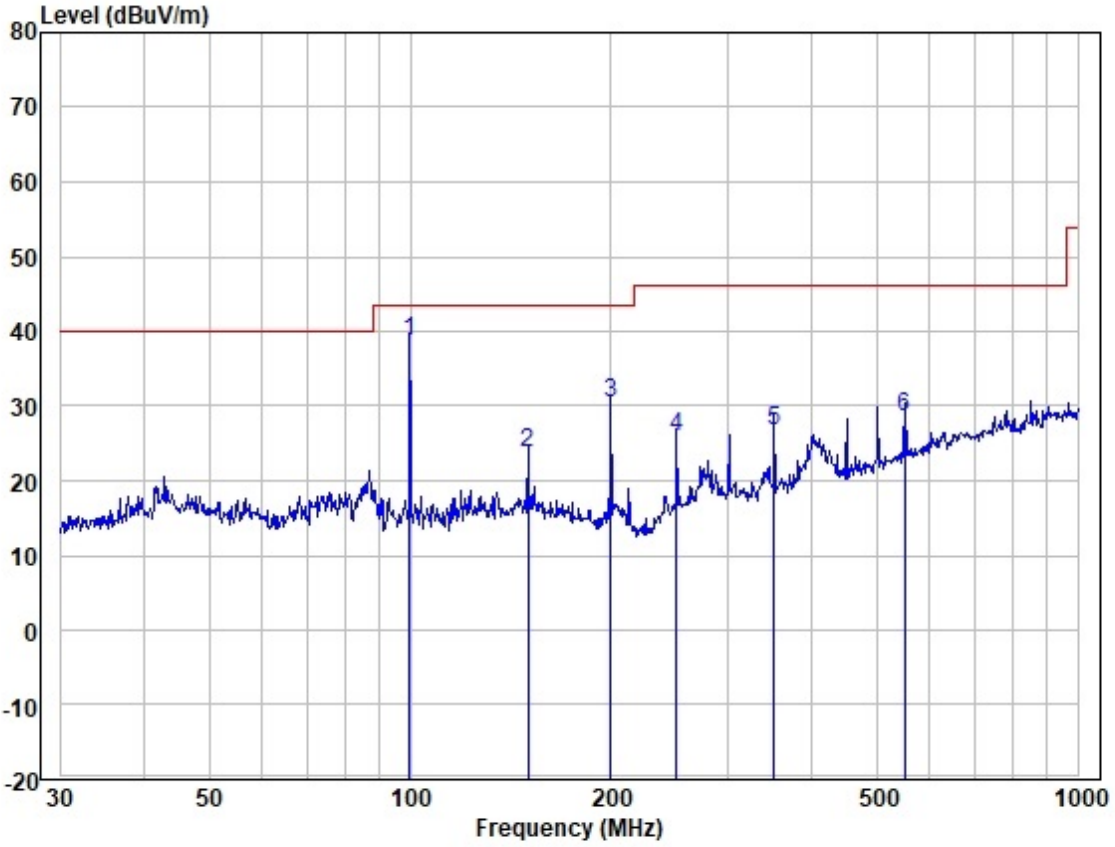
Test Mode: 08; Polarity: Vertical



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	99.878	56.35	14.55	0.54	32.80	38.64	43.52	-4.88	VERTICAL	QP
2	150.011	36.97	19.04	0.67	32.82	23.86	43.52	-19.66	VERTICAL	QP
3	199.986	46.66	15.80	0.79	32.84	30.41	43.52	-13.11	VERTICAL	QP
4	250.301	40.17	17.62	0.88	32.86	25.81	46.02	-20.21	VERTICAL	QP
5	350.477	38.30	20.29	1.07	32.89	26.77	46.02	-19.25	VERTICAL	QP
6	550.948	35.66	24.34	1.36	32.95	28.41	46.02	-17.61	VERTICAL	QP

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7 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZEM190901605927.

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8 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZCR2406000758LM

- End of the Report -

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