



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: AKUVOX (XIAMEN) NETWORKS CO., LTD.

Address: 10/F, No.56, Software Park II , Xiamen, China

FCC ID: 2AHCR-IT82X869

Product Name: Indoor Monitor

Model Number: IT82A(869)

Standard(s): 47 CFR Part 15 Subpart B
ANSI C63.4-2014

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: CR21110022-00A

Date Of Issue: 2022-05-05

Reviewed By: Sun Zhong *Sun Zhong*

Title: Manager

Test Laboratory: China Certification ICT Co., Ltd (Dongguan)

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Guangdong, China

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Indoor Monitor
EUT Model:	IT82A(869)
Highest Operation Frequency:	2480 MHz
Rated Input Voltage:	DC 12V from adapter or 48V from POE
Serial Number:	CR21110022-RF-S1
EUT Received Date:	2021.11.18
EUT Received Status:	Good

Accessory Information:

No.

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Typical Use Mode, which was provided by the manufacturer. Test Mode: Operating
Equipment Modifications:	No
EUT Exercise Software:	No

1.2.2 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Ktec	Adapter	KSAS0121200100D5NSK	E215890
Akuvox	PoE Adapter	CN-05	CR21110022-RF-S2
TaoTimeClub	Load	100W40RJ	L03
TaoTimeClub	Load	100W40RJ	L02
TOTO LINK	Router	X5000R	X5000RK9T0560

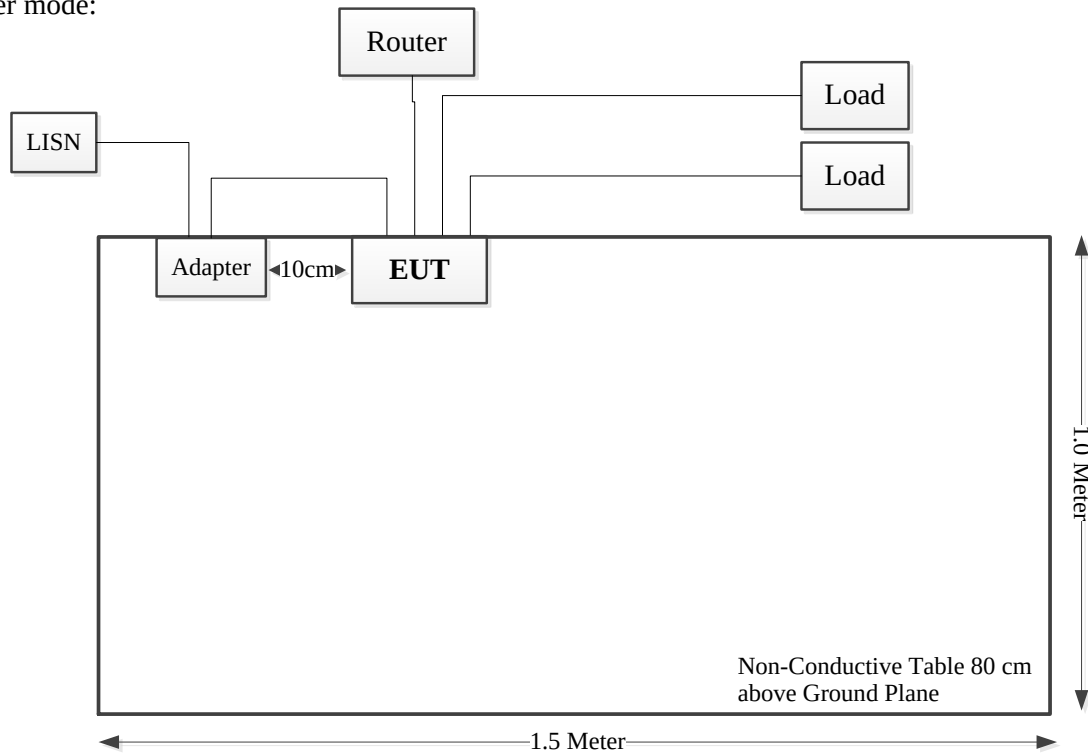
1.2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	Yes	No	3	EUT	Router
RJ45 Cable	Yes	No	3	POE	Router
RJ45 Cable	No	No	1.2	EUT	PoE Adapter
Power Cable	Yes	No	1.4	EUT	Adapter
Cable	No	No	3	EUT	Load
Cable	No	No	3	EUT	Load

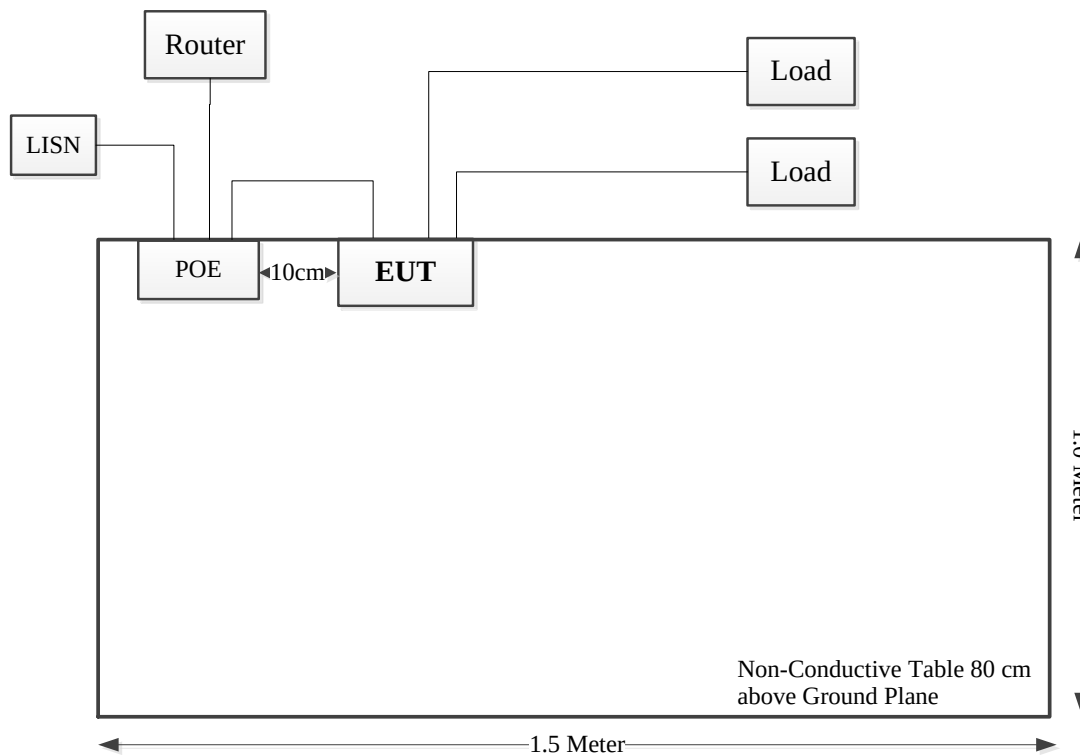
1.2.4 Block Diagram of Test Setup

Conducted emissions:

Adapter mode:

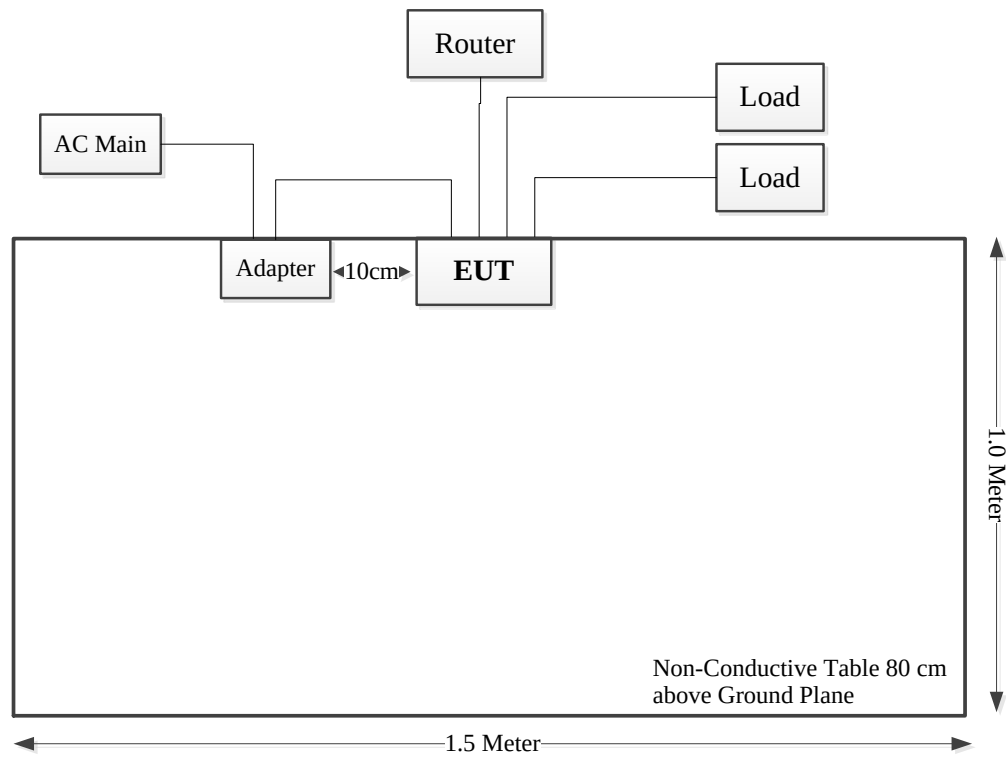


POE adapter mode:

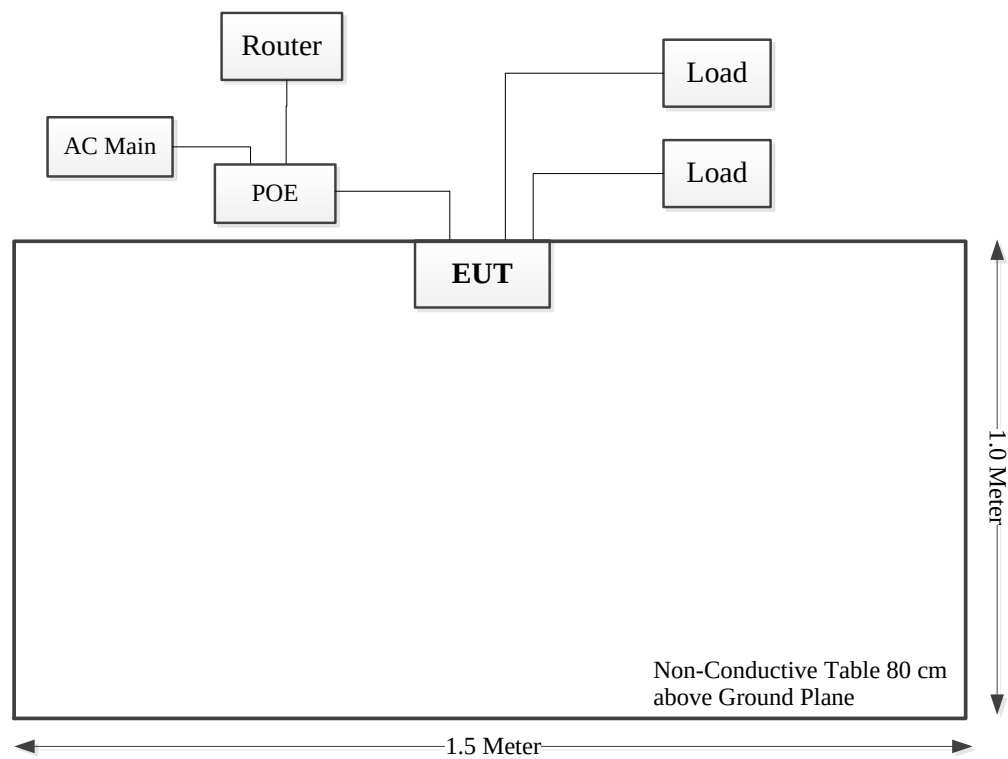


Radiated emissions:

Adapter mode:



POE adapter mode:



1.3 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

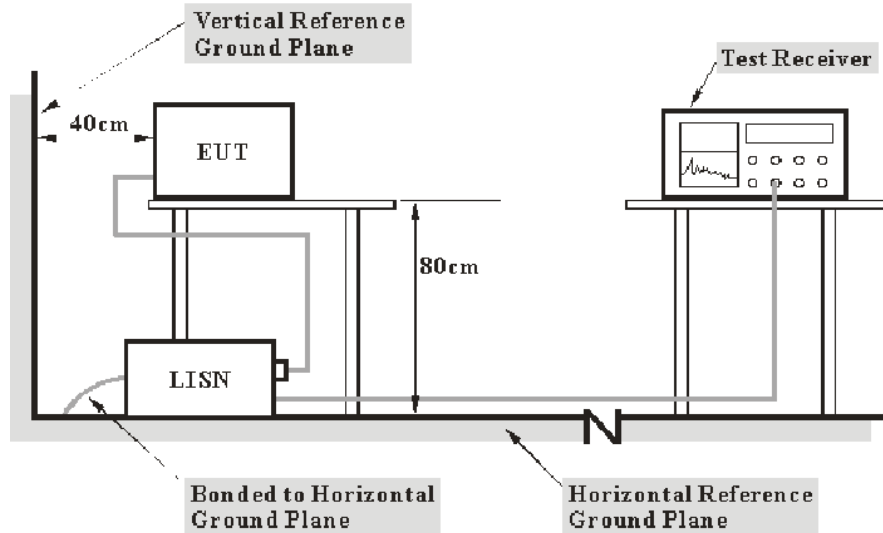
2. SUMMARY OF TEST RESULTS

Standard(s) Section	Description of Test	Result
§15.107	Conducted emissions	Compliant
§15.109	Radiated emissions	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

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

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

3.1.2 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

3.1.3 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT, the report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

All data was recorded in the Quasi-peak and average detection mode.

The report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

3.1.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

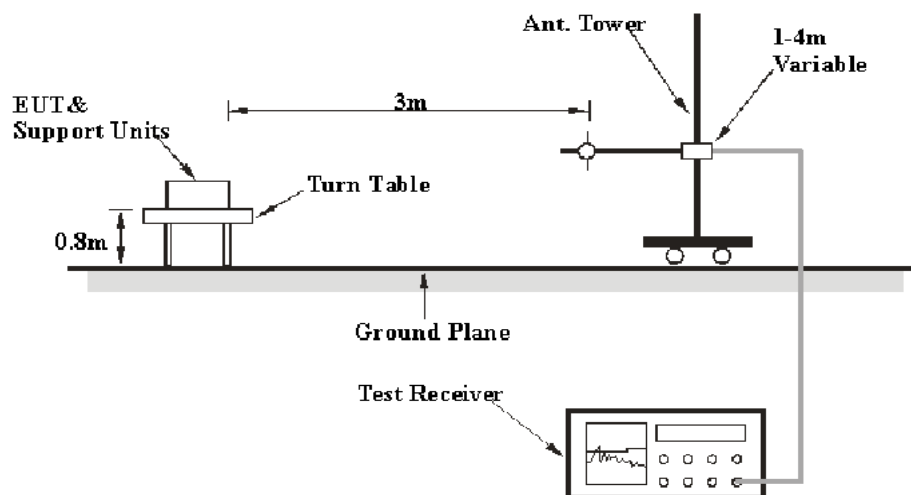
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

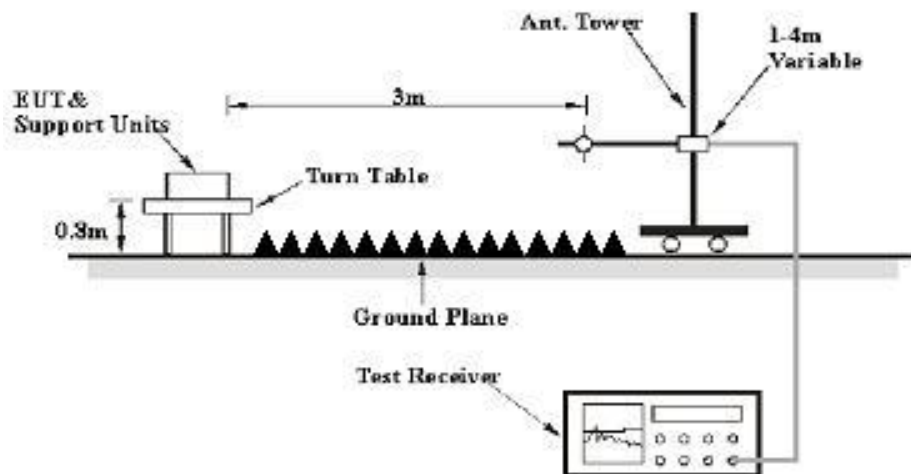
3.2 Radiation Spurious Emissions

3.2.1 EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was with the FCC Part 15 B Class B limits.

3.2.2 EMI Test Receiver Setup

The system was investigated from 30 MHz to 13 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	Reduced video bandwidth	/	AVG

If the maximized peak measured value complies with under the limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

3.2.3 Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

All emissions under the average limit and under the noise floor have not recorded in the report.

3.2.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	CR21110022-RF-S1	Test Date:	2021-12-16
Test Site:	CE	Test Mode:	Operating
Tester:	Nick Tang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.5	Relative Humidity: (%)	69	ATM Pressure: (kPa)	101.1
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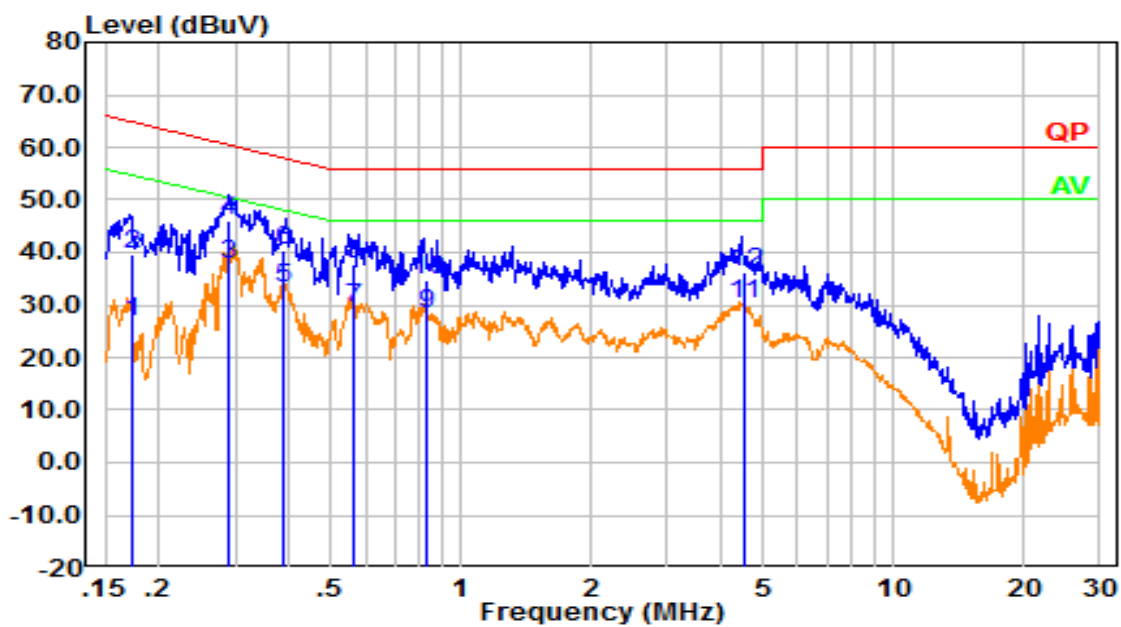
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2021-04-25	2022-04-24
R&S	EMI Test Receiver	ESR3	102726	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2021-08-08	2022-08-07
Audix	Test Software	E3	190306 (V9)	N/A	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

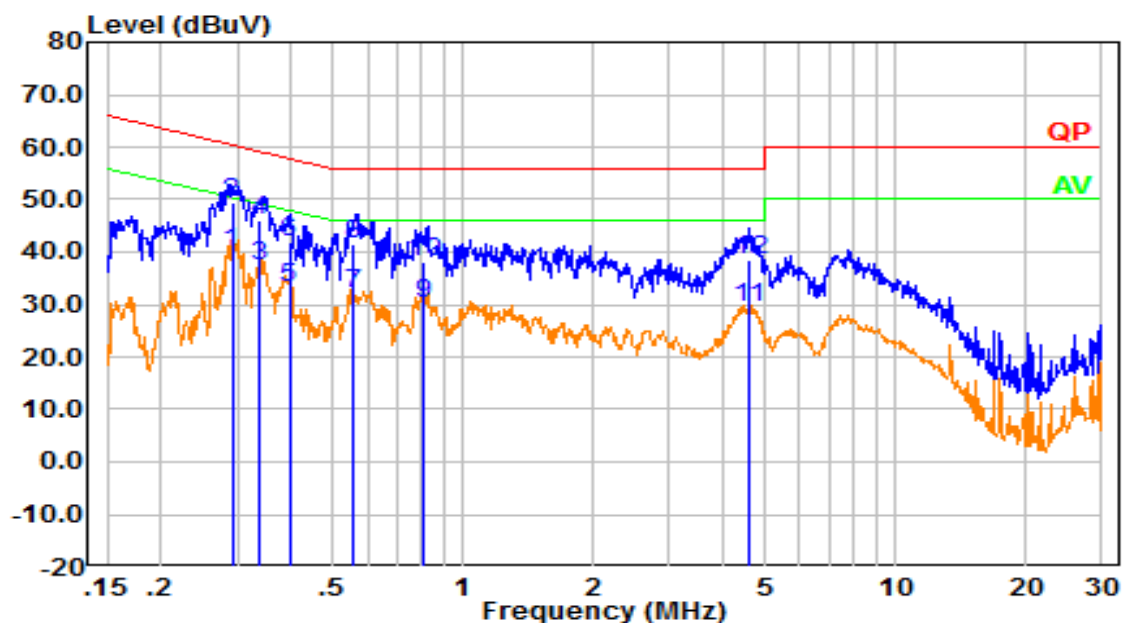
Adapter mode:

Line:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.173	17.24	9.61	26.85	54.83	27.98	Average
2	0.173	29.91	9.61	39.52	64.83	25.31	QP
3	0.288	28.15	9.61	37.76	50.57	12.81	Average
4	0.288	36.50	9.61	46.11	60.57	14.46	QP
5	0.387	23.64	9.61	33.25	48.13	14.88	Average
6	0.387	30.61	9.61	40.22	58.13	17.91	QP
7	0.565	19.73	9.62	29.34	46.00	16.66	Average
8	0.565	28.00	9.62	37.62	56.00	18.38	QP
9	0.830	18.79	9.62	28.41	46.00	17.59	Average
10	0.830	25.17	9.62	34.79	56.00	21.21	QP
11	4.515	20.48	9.66	30.13	46.00	15.87	Average
12	4.515	26.69	9.66	36.35	56.00	19.65	QP

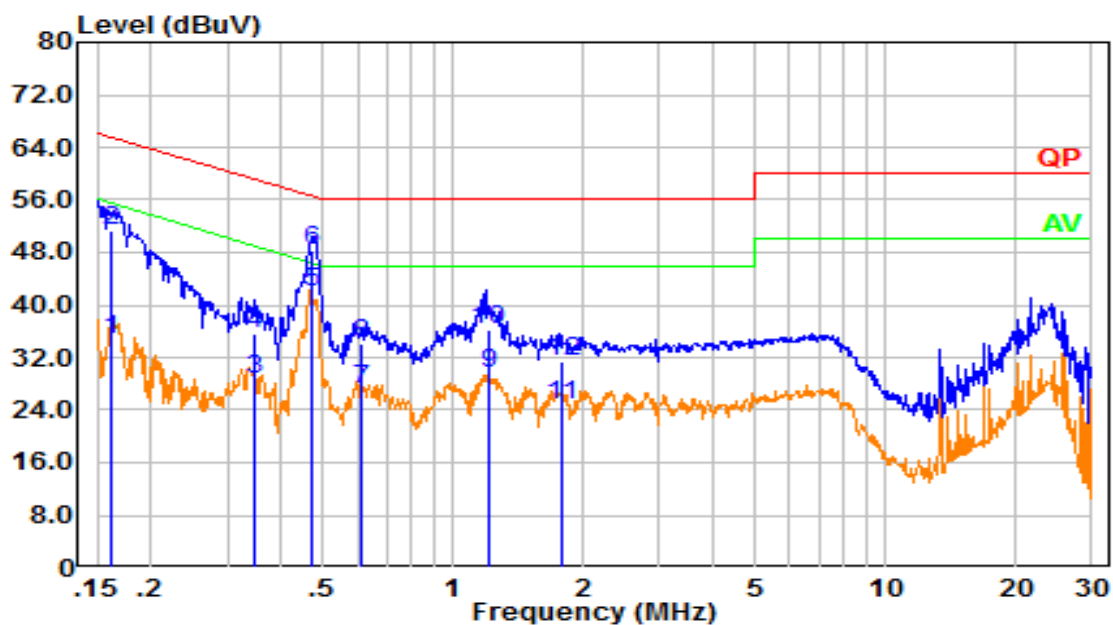
Neutral:



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.292	30.37	9.61	39.98	50.48	10.50	Average
2	0.292	39.91	9.61	49.52	60.48	10.96	QP
3	0.339	27.82	9.61	37.43	49.23	11.80	Average
4	0.339	36.47	9.61	46.08	59.23	13.15	QP
5	0.396	23.48	9.61	33.09	47.94	14.85	Average
6	0.396	32.22	9.61	41.83	57.94	16.11	QP
7	0.558	22.38	9.62	32.00	46.00	14.00	Average
8	0.558	31.90	9.62	41.52	56.00	14.48	QP
9	0.812	20.40	9.62	30.02	46.00	15.98	Average
10	0.812	28.39	9.62	38.01	56.00	17.99	QP
11	4.560	19.70	9.66	29.36	46.00	16.64	Average
12	4.560	28.96	9.66	38.61	56.00	17.39	QP

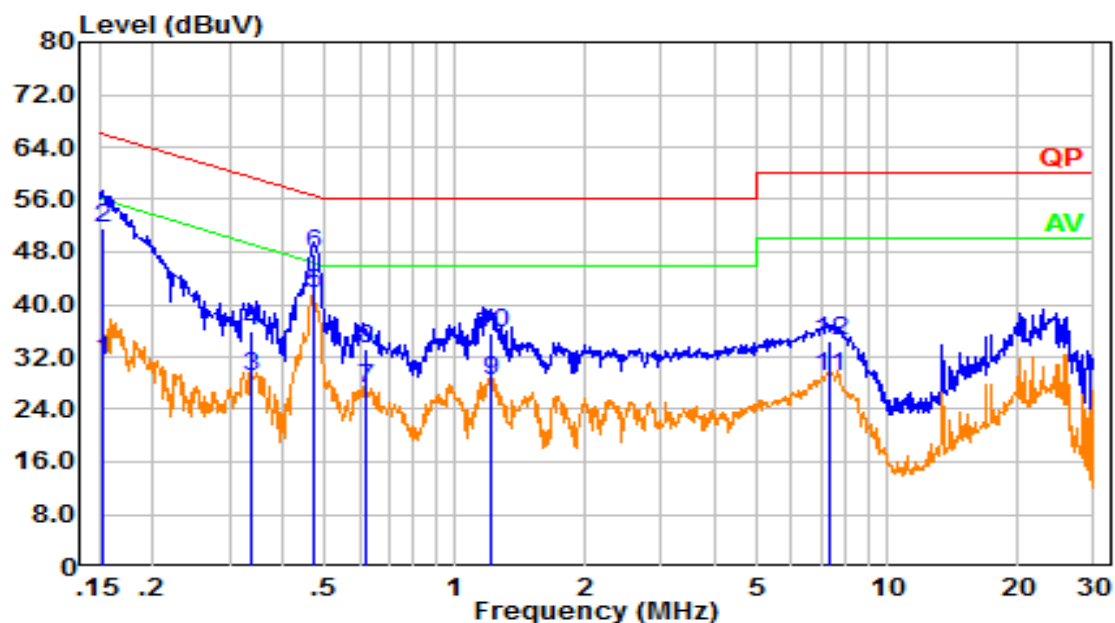
POE adapter mode:

Line:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.162	25.12	9.61	34.73	55.35	20.62	Average
2	0.162	41.85	9.61	51.46	65.35	13.89	QP
3	0.348	19.05	9.61	28.66	49.01	20.35	Average
4	0.348	26.05	9.61	35.66	59.01	23.35	QP
5	0.470	32.38	9.61	41.99	46.51	4.52	Average
6	0.470	38.70	9.61	48.31	56.51	8.20	QP
7	0.612	17.44	9.62	27.06	46.00	18.94	Average
8	0.612	24.36	9.62	33.98	56.00	22.02	QP
9	1.202	19.88	9.62	29.50	46.00	16.50	Average
10	1.202	26.67	9.62	36.30	56.00	19.70	QP
11	1.782	15.25	9.63	24.87	46.00	21.13	Average
12	1.782	21.63	9.63	31.25	56.00	24.75	QP

Neutral:



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.152	21.92	9.61	31.53	55.88	24.35	Average
2	0.152	42.08	9.61	51.69	65.88	14.19	QP
3	0.336	19.27	9.61	28.88	49.29	20.41	Average
4	0.336	26.44	9.61	36.05	59.29	23.24	QP
5	0.469	32.13	9.61	41.74	46.54	4.80	Average
6	0.469	38.08	9.61	47.69	56.54	8.85	QP
7	0.624	17.60	9.62	27.22	46.00	18.78	Average
8	0.624	23.58	9.62	33.20	56.00	22.80	QP
9	1.205	18.86	9.62	28.48	46.00	17.52	Average
10	1.205	25.96	9.62	35.58	56.00	20.42	QP
11	7.317	19.30	9.66	28.96	50.00	21.04	Average
12	7.317	24.65	9.66	34.31	60.00	25.69	QP

4.2 Radiation Spurious Emissions

Serial Number:	CR21110022-RF-S1	Test Date:	2021-12-18~2022-02-15
Test Site:	966-1, 966-2	Test Mode:	Operating
Tester:	Great Qiao, Tommy Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.5~24.3	Relative Humidity: (%)	51~72	ATM Pressure: (kPa)	101.3
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Test Equipment List and Details:

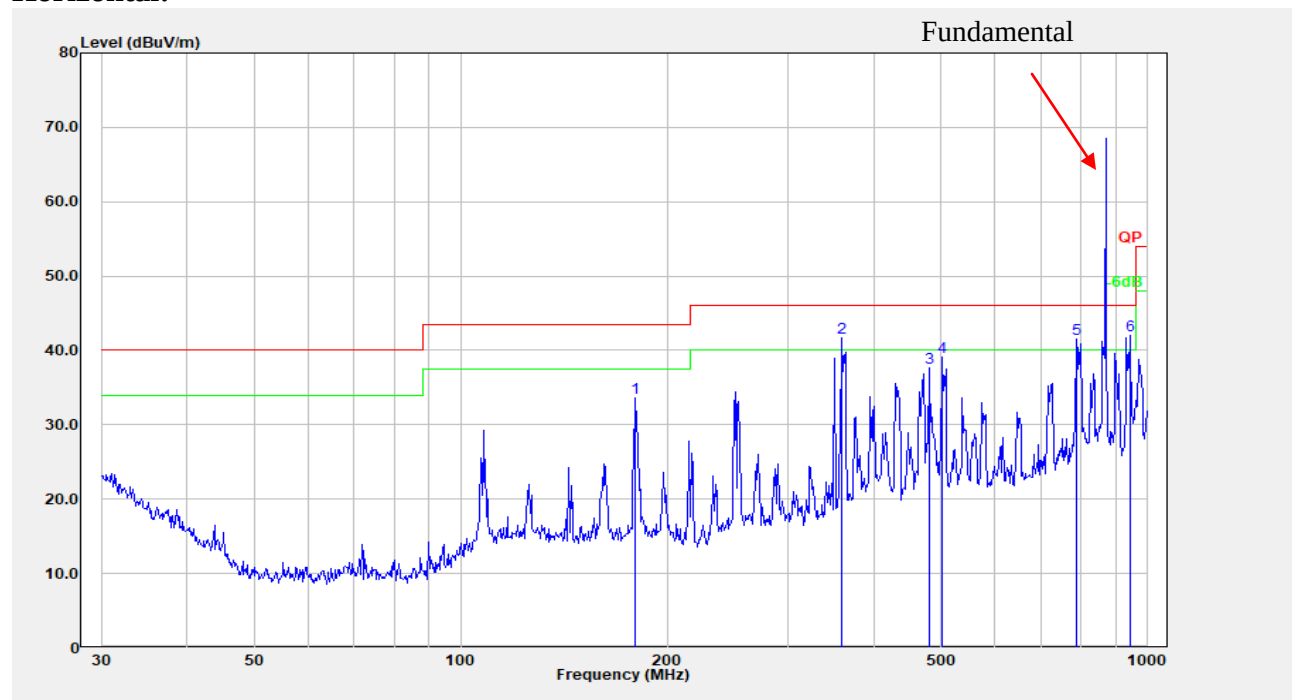
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020-10-19	2023-10-18
R&S	EMI Test Receiver	ESR3	102724	2021-07-22	2022-07-21
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2021-07-18	2022-07-17
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2021-07-18	2022-07-17
Sonoma	Amplifier	310N	186165	2021-07-18	2022-07-17
Audix	Test Software	E3	201021 (V9)	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020-10-13	2023-10-12
R&S	Spectrum Analyzer	FSV40	101591	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2021-08-08	2022-08-07
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2021-08-08	2022-08-07
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2021-11-10	2022-11-09
Audix	Test Software	E3	201021 (V9)	N/A	N/A
E-Microwave	Band Rejection Filter	2400-2483.5MHz	OE01902424	2021-08-08	2022-08-07

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

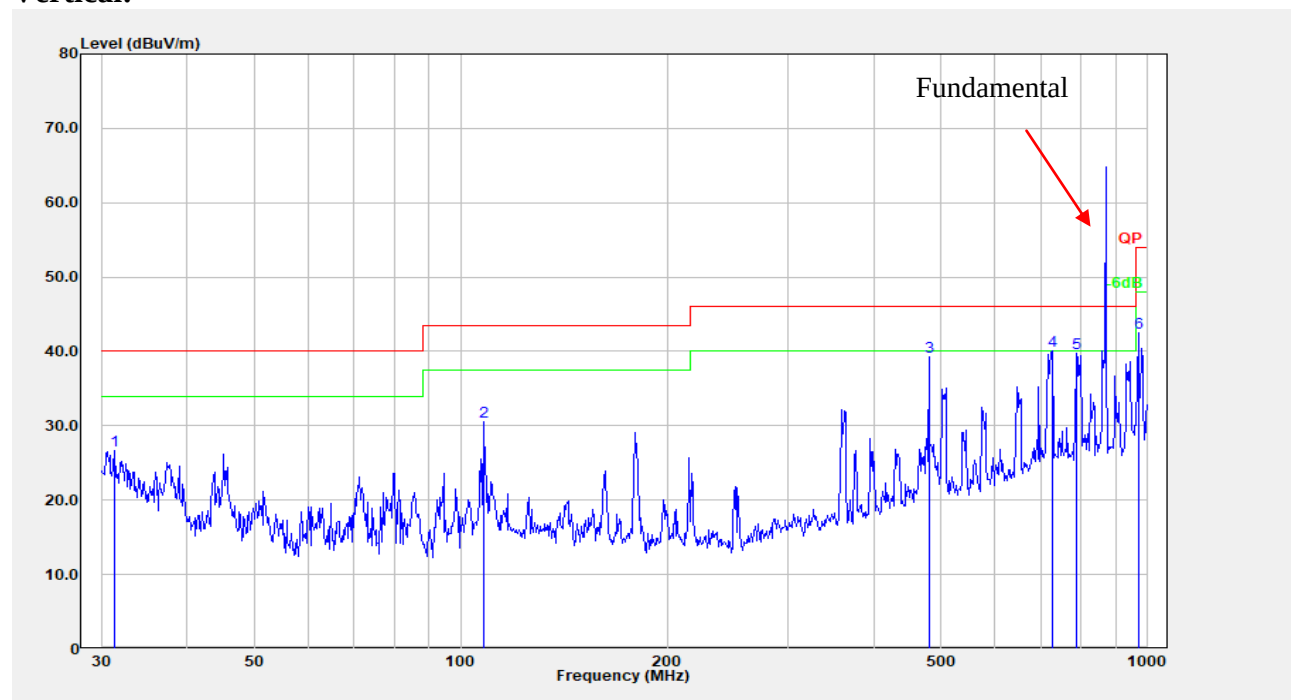
1) 30MHz-1GHz:

Adapter mode:

Horizontal:



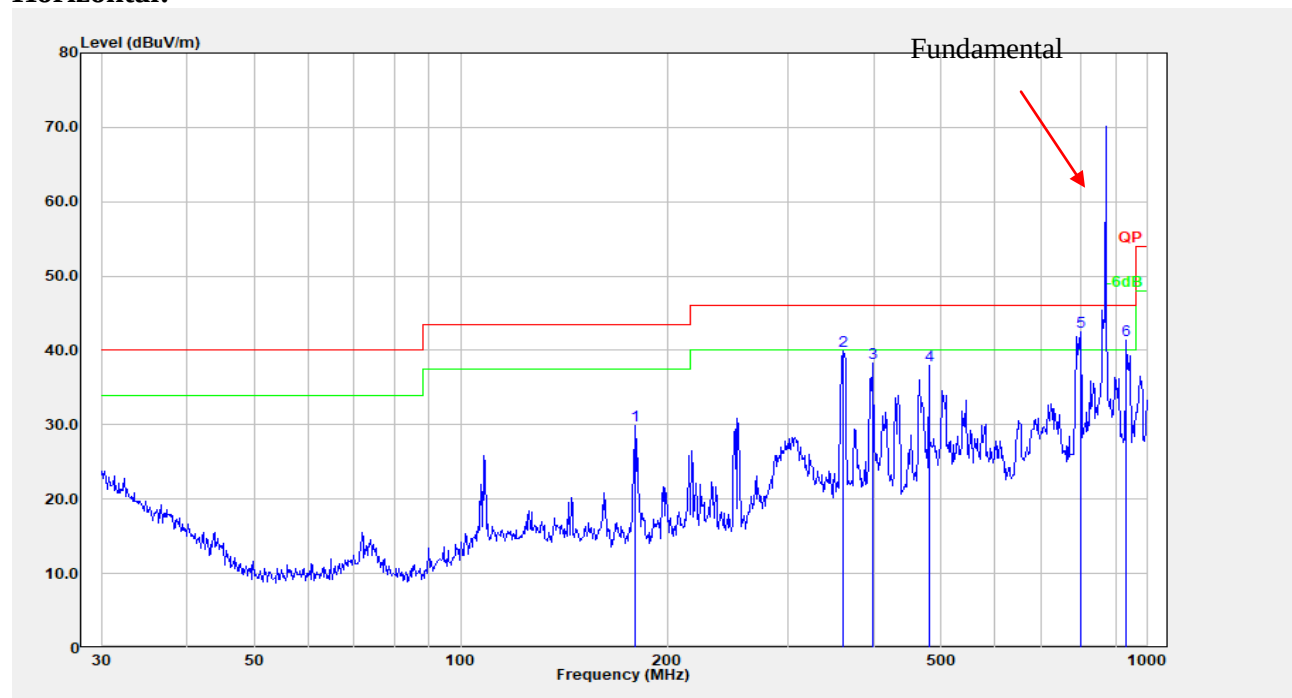
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	179.386	47.44	-13.74	33.70	43.50	9.80	Peak
2	359.186	51.81	-10.07	41.73	46.00	4.27	QP
3	480.528	44.17	-6.49	37.69	46.00	8.32	Peak
4	502.940	45.28	-6.19	39.10	46.00	6.90	Peak
5	787.851	44.07	-2.56	41.51	46.00	4.49	QP
6	942.131	42.53	-0.55	41.98	46.00	4.02	QP

Vertical:

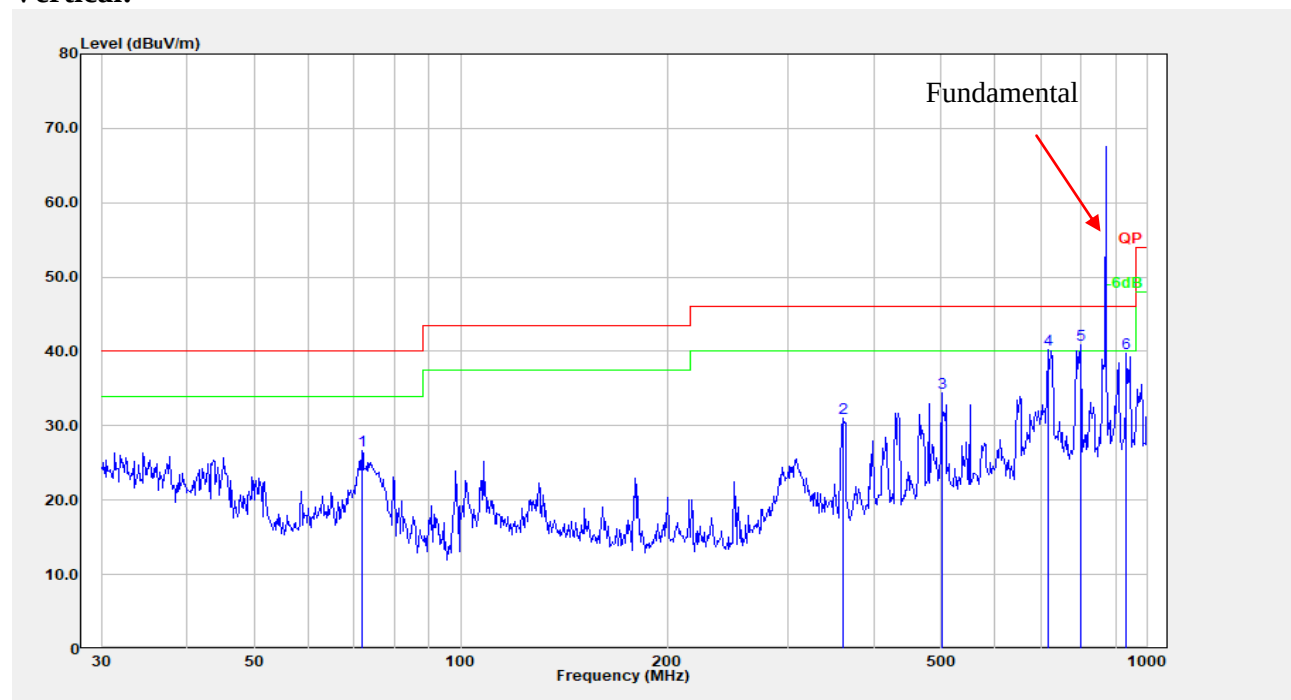
No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	31.289	31.45	-4.78	26.67	40.00	13.33	Peak
2	107.888	43.60	-12.99	30.61	43.50	12.89	Peak
3	480.528	45.78	-6.49	39.29	46.00	6.71	Peak
4	726.805	43.41	-3.31	40.11	46.00	5.89	QP
5	787.851	42.32	-2.56	39.76	46.00	6.24	Peak
6	968.934	42.48	0.05	42.53	54.00	11.47	Peak

POE adapter mode:

Horizontal:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	179.386	43.67	-13.74	29.93	43.50	13.57	Peak
2	360.448	49.90	-10.04	39.85	46.00	6.15	Peak
3	399.030	47.38	-9.02	38.36	46.00	7.64	Peak
4	480.528	44.52	-6.49	38.04	46.00	7.96	Peak
5	798.980	45.03	-2.47	42.55	46.00	3.45	QP
6	932.272	42.12	-0.76	41.36	46.00	4.64	QP

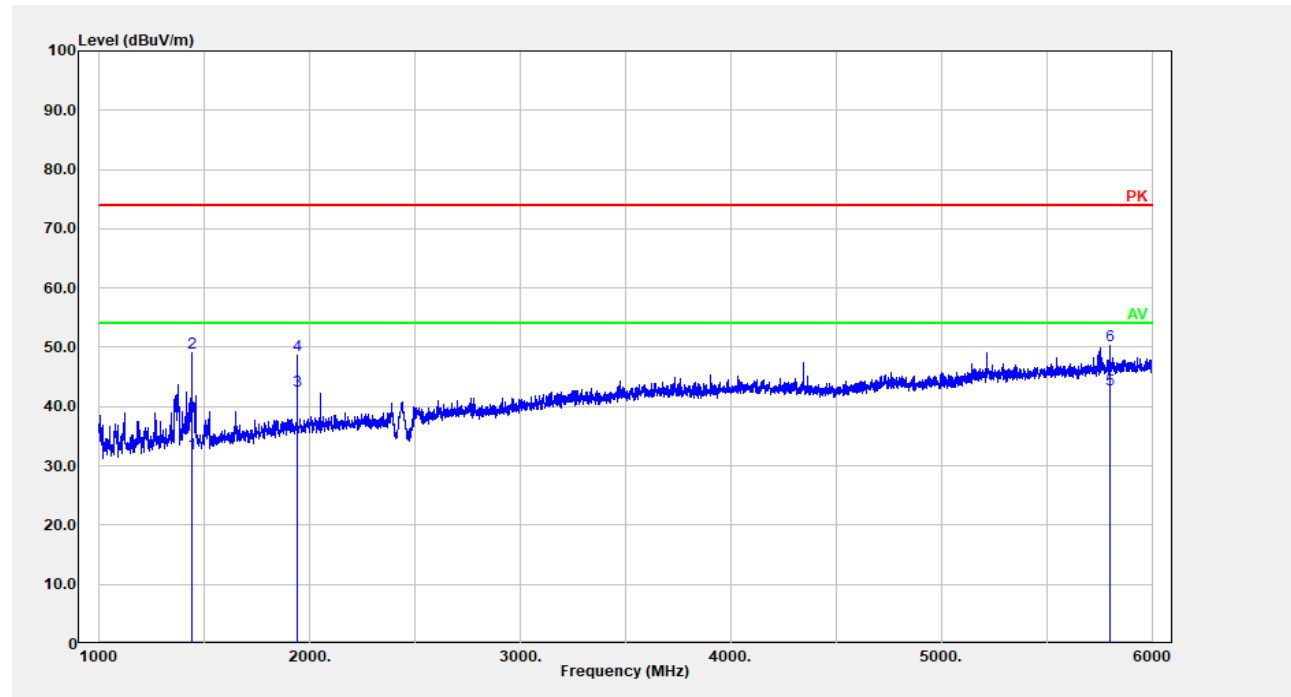
Vertical:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	71.832	43.64	-16.91	26.72	40.00	13.28	Peak
2	360.448	41.07	-10.04	31.02	46.00	14.98	Peak
3	501.179	40.60	-6.22	34.38	46.00	11.62	Peak
4	716.682	43.83	-3.64	40.18	46.00	5.82	QP
5	798.980	43.42	-2.47	40.94	46.00	5.06	QP
6	932.272	40.46	-0.76	39.70	46.00	6.30	Peak

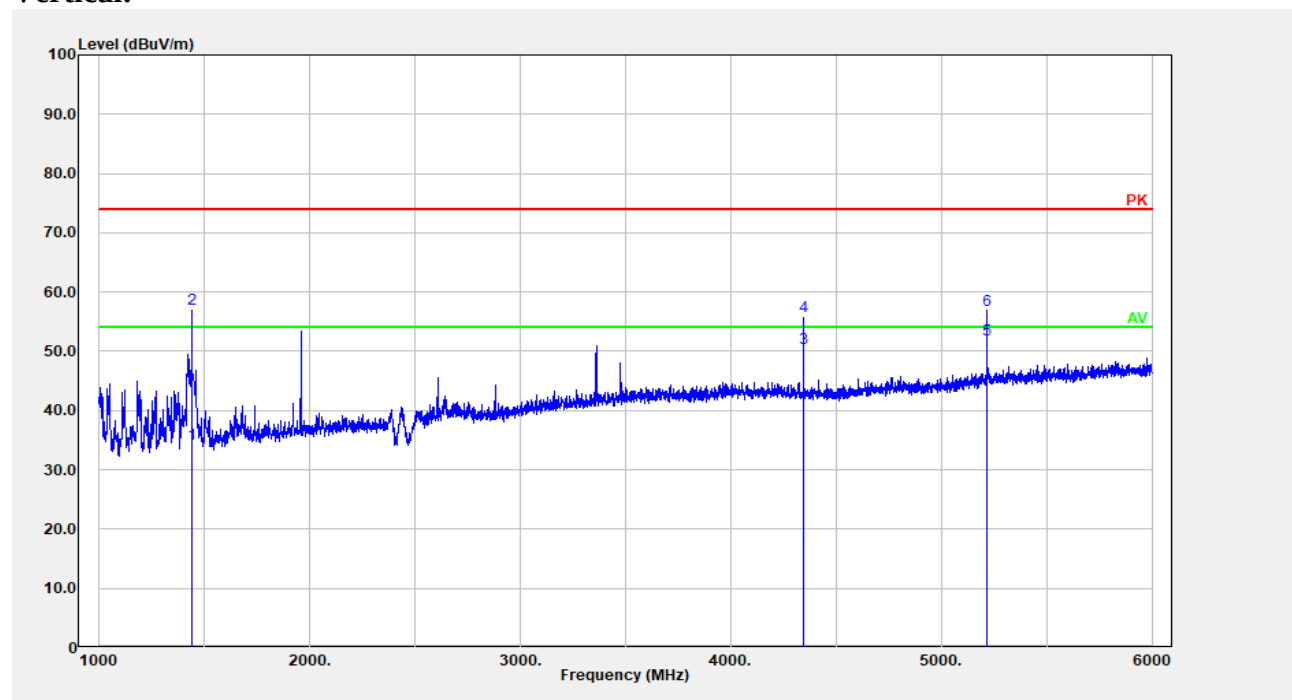
2) Above 1GHz

Adapter mode:

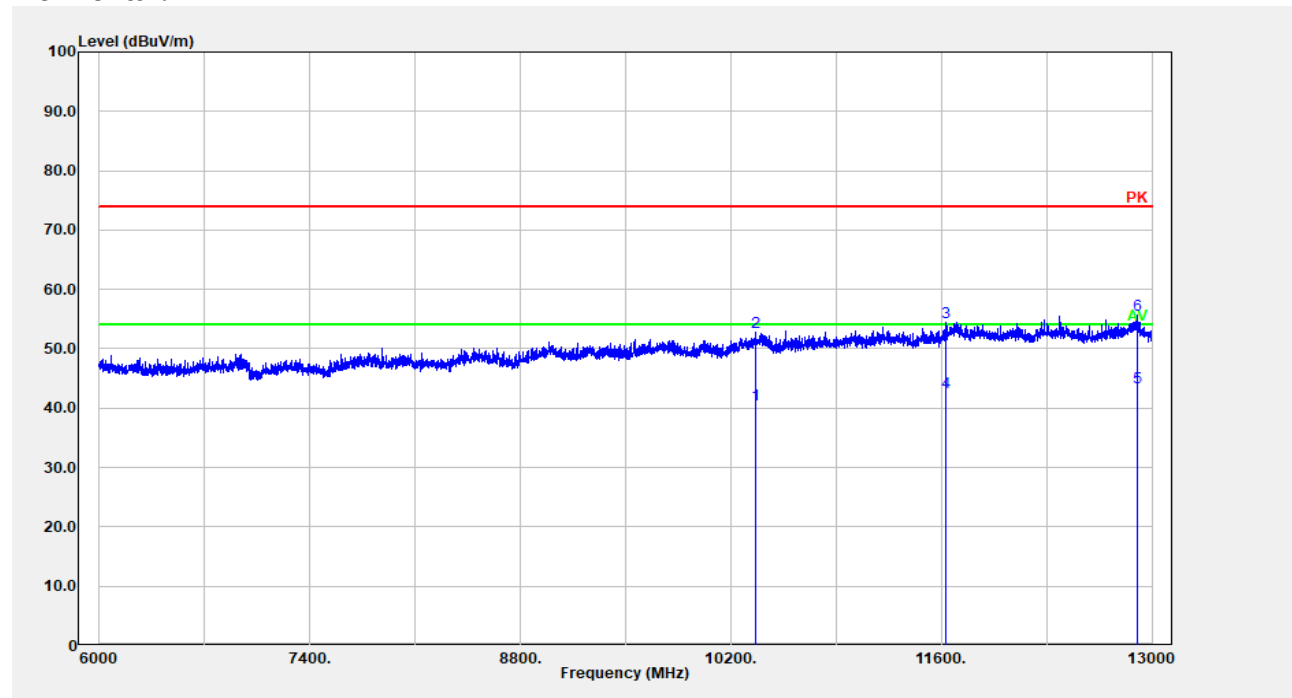
Horizontal:



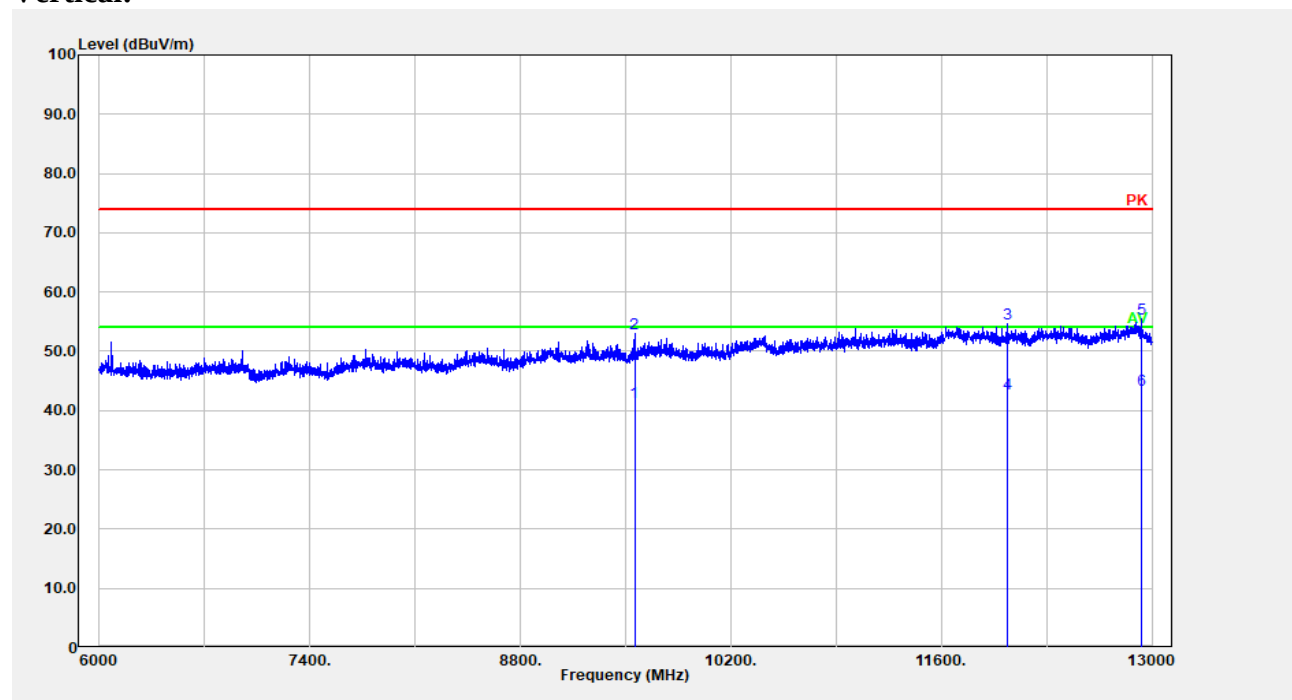
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1440.088	32.70	-0.67	32.03	54.00	21.97	Average
2	1440.088	49.80	-0.67	49.14	74.00	24.86	Peak
3	1941.188	40.60	2.12	42.72	54.00	11.28	Average
4	1941.188	46.51	2.12	48.64	74.00	25.36	Peak
5	5801.960	30.00	12.90	42.90	54.00	11.10	Average
6	5801.960	37.36	12.90	50.26	74.00	23.74	Peak

Vertical:

No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	1440.088	34.95	-0.67	34.28	54.00	19.72	Average
2	1440.088	57.88	-0.67	57.21	74.00	16.79	Peak
3	4344.669	40.79	9.74	50.53	54.00	3.47	Average
4	4344.669	46.08	9.74	55.82	74.00	18.18	Peak
5	5213.843	40.12	11.83	51.95	54.00	2.05	Average
6	5213.843	45.18	11.83	57.01	74.00	16.99	Peak

Horizontal:

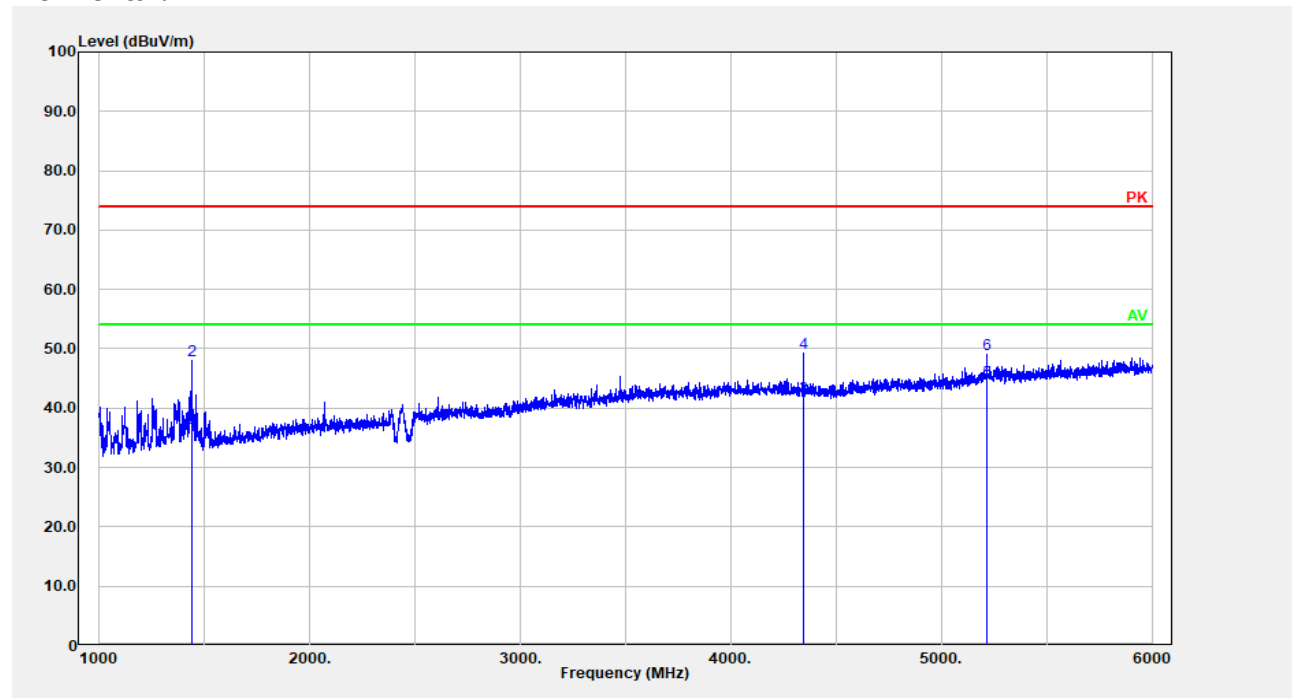
No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	10366.070	22.15	18.43	40.58	54.00	13.42	Average
2	10366.070	34.44	18.43	52.88	74.00	21.12	Peak
3	11631.930	34.65	19.85	54.50	74.00	19.50	Peak
4	11631.930	22.80	19.85	42.65	54.00	11.35	Average
5	12900.580	21.83	21.59	43.42	54.00	10.58	Average
6	12900.580	34.04	21.59	55.63	74.00	18.37	Peak

Vertical:

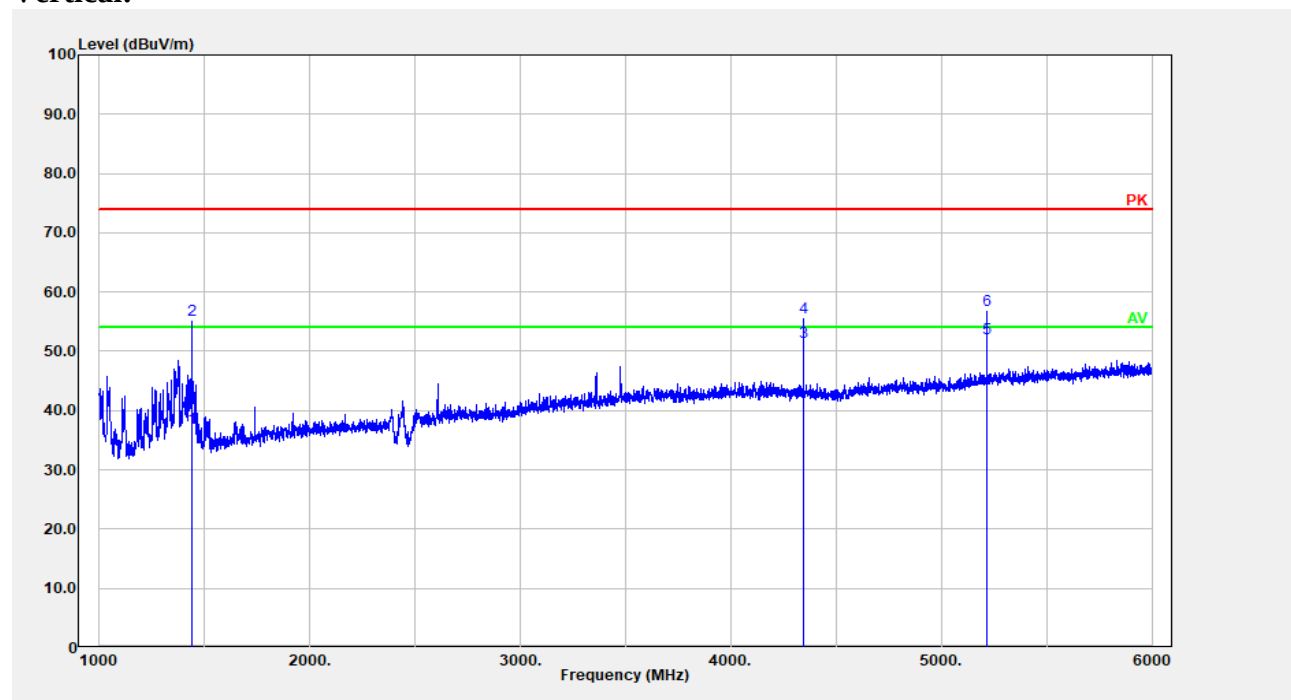
No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	9559.512	23.90	17.61	41.51	54.00	12.49	Average
2	9559.512	35.48	17.61	53.08	74.00	20.92	Peak
3	12040.810	34.35	20.31	54.65	74.00	19.35	Peak
4	12040.810	22.64	20.31	42.95	54.00	11.05	Average
5	12927.190	34.07	21.39	55.47	74.00	18.53	Peak
6	12927.190	22.15	21.39	43.54	54.00	10.46	Average

POE adapter mode:

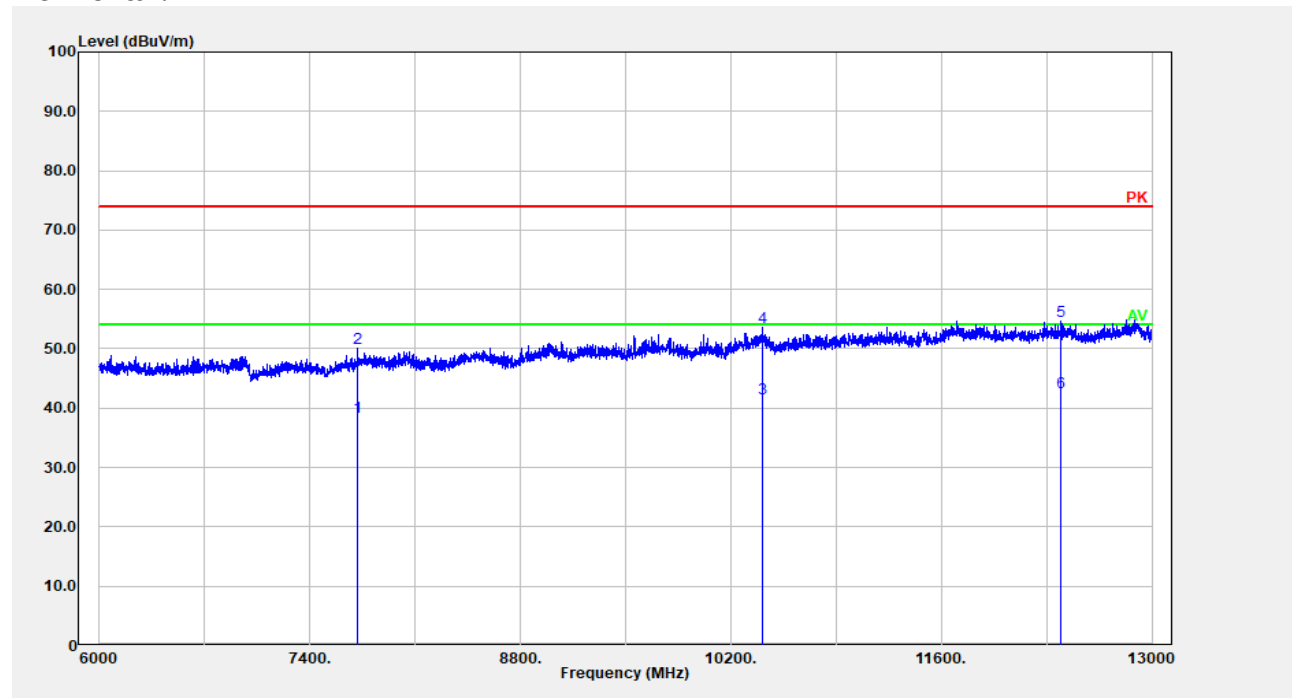
Horizontal:



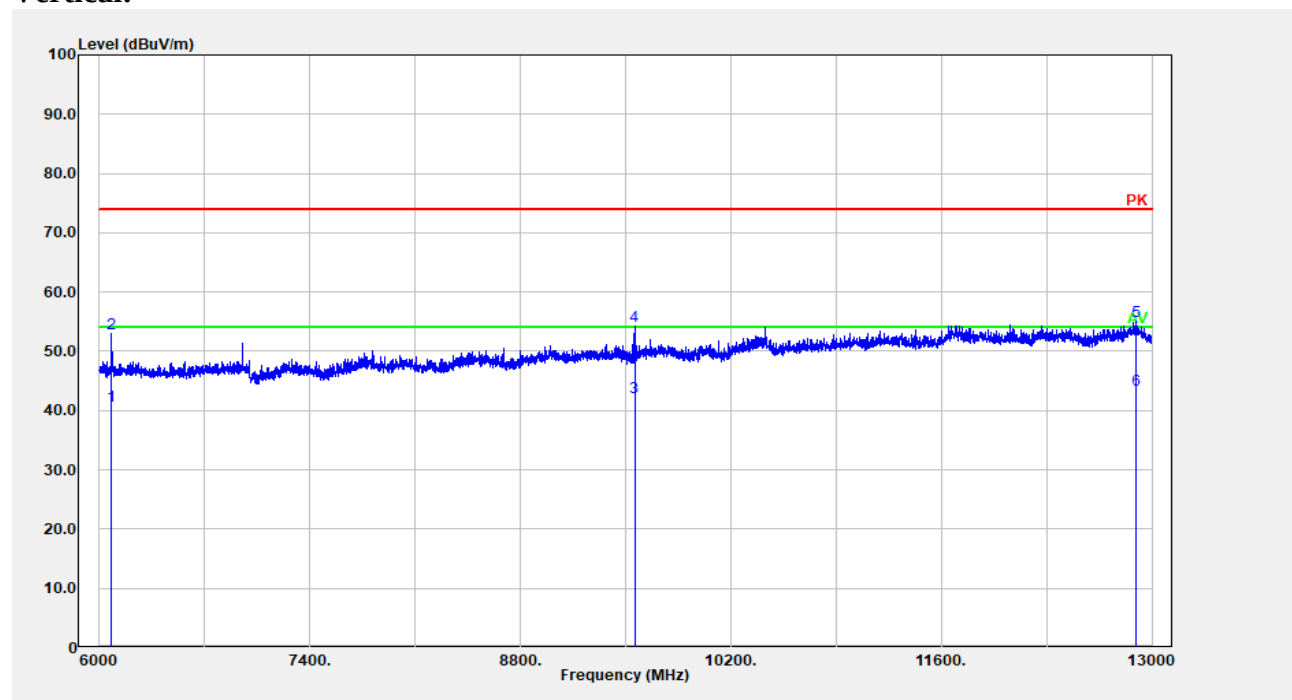
No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	1440.088	36.00	-0.67	35.33	54.00	18.67	Average
2	1440.088	48.60	-0.67	47.94	74.00	26.06	Peak
3	4345.669	32.00	9.74	41.74	54.00	12.26	Average
4	4345.669	39.62	9.74	49.36	74.00	24.64	Peak
5	5213.843	32.60	11.83	44.43	54.00	9.57	Average
6	5213.843	37.21	11.83	49.04	74.00	24.96	Peak

Vertical:

No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	1439.088	37.69	-0.67	37.02	54.00	16.98	Average
2	1439.088	56.01	-0.67	55.34	74.00	18.66	Peak
3	4344.669	41.86	9.74	51.60	54.00	2.40	Average
4	4344.669	45.91	9.74	55.65	74.00	18.35	Peak
5	5213.843	40.35	11.83	52.18	54.00	1.82	Average
6	5213.843	45.02	11.83	56.86	74.00	17.14	Peak

Horizontal:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	7718.144	23.60	14.92	38.52	54.00	15.48	Average
2	7718.144	35.21	14.92	50.14	74.00	23.86	Peak
3	10409.480	23.09	18.43	41.52	54.00	12.48	Average
4	10409.480	35.14	18.43	53.58	74.00	20.42	Peak
5	12390.880	34.49	20.19	54.67	74.00	19.33	Peak
6	12390.880	22.54	20.19	42.73	54.00	11.27	Average

Vertical:

No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	6082.617	27.31	13.52	40.83	54.00	13.17	Average
2	6082.617	39.41	13.52	52.93	74.00	21.07	Peak
3	9559.512	24.69	17.61	42.30	54.00	11.70	Average
4	9559.512	36.57	17.61	54.17	74.00	19.83	Peak
5	12894.980	33.56	21.55	55.11	74.00	18.89	Peak
6	12894.980	21.85	21.55	43.40	54.00	10.60	Average

===== END OF REPORT =====