

TEST REPORT

Applicant: INGENICO

Address: 9 Avenue de la Gare - Rovaltain TGV, BP25156,26958 Valence Cedex 9 - France

FCC ID: XKB-L2500CLWI

Product Name: Link/2500

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: CR230312549-00D

Date Of Issue: 2023/4/17

Reviewed By: Sun Zhong

Sun Zhong

Title: Manager

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

No. 113, Pingkang Road, Dalang Town, Dongguan,

Guangdong, China

Tel: +86-769-82016888

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.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk “★”.

CONTENTS

TEST FACILITY	2
DECLARATIONS.....	2
DOCUMENT REVISION HISTORY	4
1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
1.2 DESCRIPTION OF TEST CONFIGURATION	6
1.2.2 Support Equipment List and Details	6
1.2.3 Support Cable List and Details	6
1.2.4 Block Diagram of Test Setup.....	7
1.3 MEASUREMENT UNCERTAINTY	8
2. SUMMARY OF TEST RESULTS	9
3. REQUIREMENTS AND TEST PROCEDURES	10
3.1 AC LINE CONDUCTED EMISSIONS.....	10
3.1.1 EUT Setup.....	10
3.1.2 EMI Test Receiver Setup	10
3.1.3 Test Procedure	11
3.1.4 Corrected Amplitude & Margin Calculation.....	11
3.2 RADIATION SPURIOUS EMISSIONS	12
3.2.1 EUT Setup.....	12
3.2.2 EMI Test Receiver Setup	13
3.2.3 Test Procedure	13
3.2.4 Corrected Amplitude & Margin Calculation.....	13
4. TEST DATA AND RESULTS.....	14
4.1 AC LINE CONDUCTED EMISSIONS.....	14
4.2 RADIATION SPURIOUS EMISSIONS	17

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230312549-00D	Original Report	2023/4/17

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Link/2500
EUT Model:	Link/2500 CL/WiFi
Highest Operation Frequency:	5825 MHz
Rated Input Voltage:	5Vdc from adapter or 3.7Vdc from battery
Sample Serial Number:	2390
EUT Received Date:	2022/4/2
EUT Received Status:	Good

Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

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: M1:charging&operating (adapter)
Equipment Modifications:	No
EUT Exercise Software:	No

1.2.2 Support Equipment List and Details

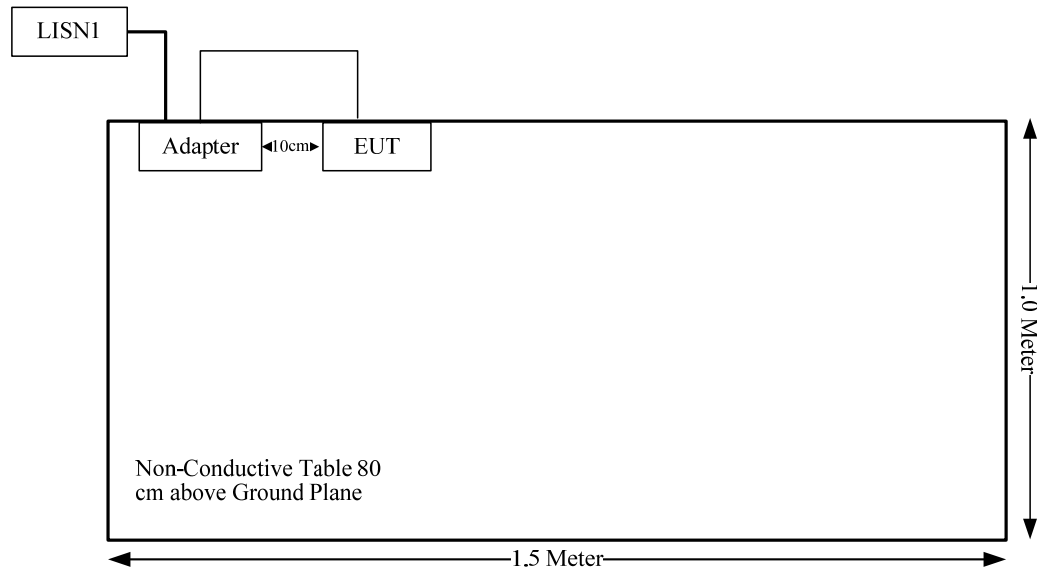
Manufacturer	Description	Model	Serial Number
Huawei	Adapter	HW-050200C3W	H333L5F4M

1.2.3 Support Cable List and Details

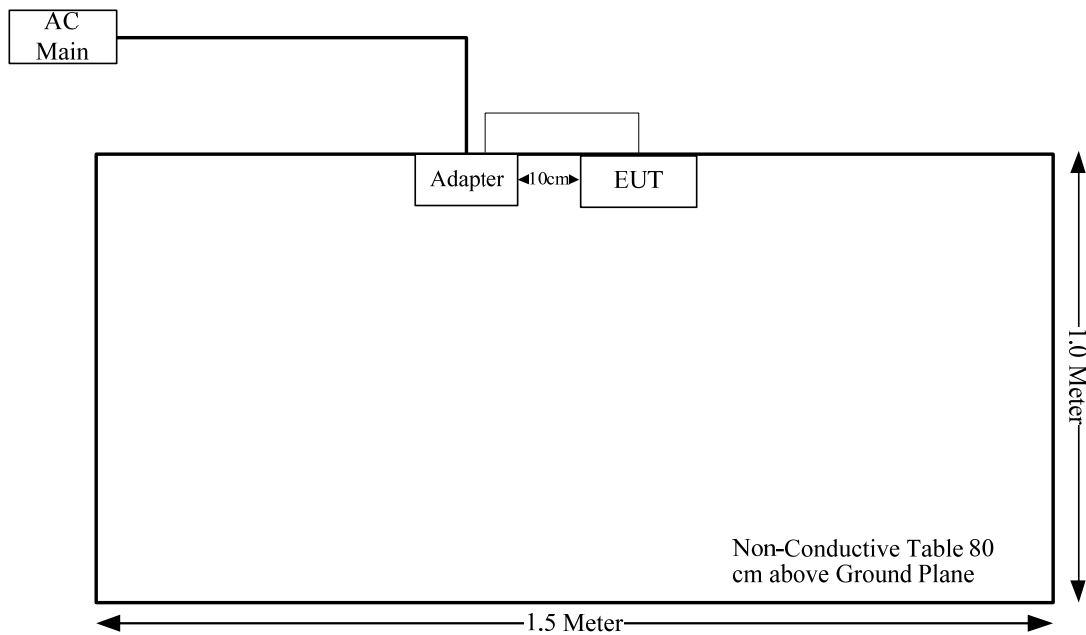
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	No	No	0.8	Adapter	EUT

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



Radiated Emission:



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)

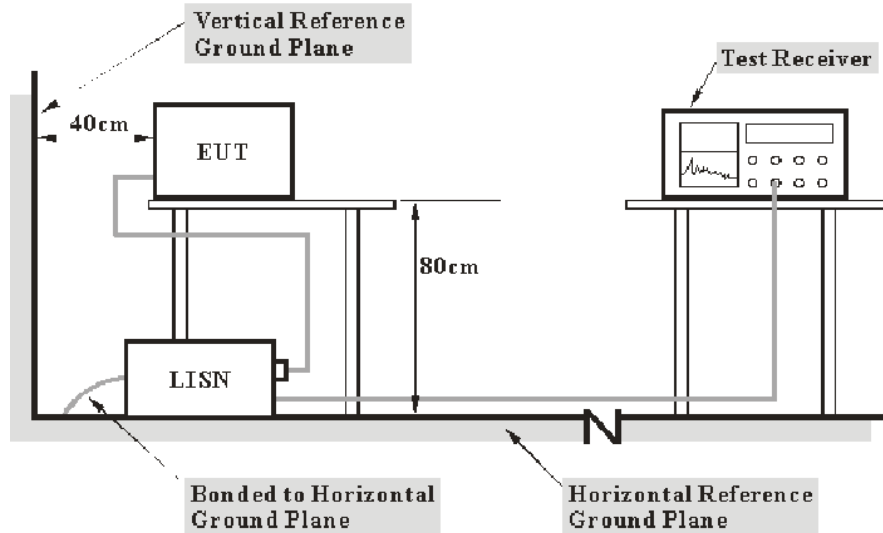
2. SUMMARY OF TEST RESULTS

Standard Clause	Description of Test	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 A 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 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

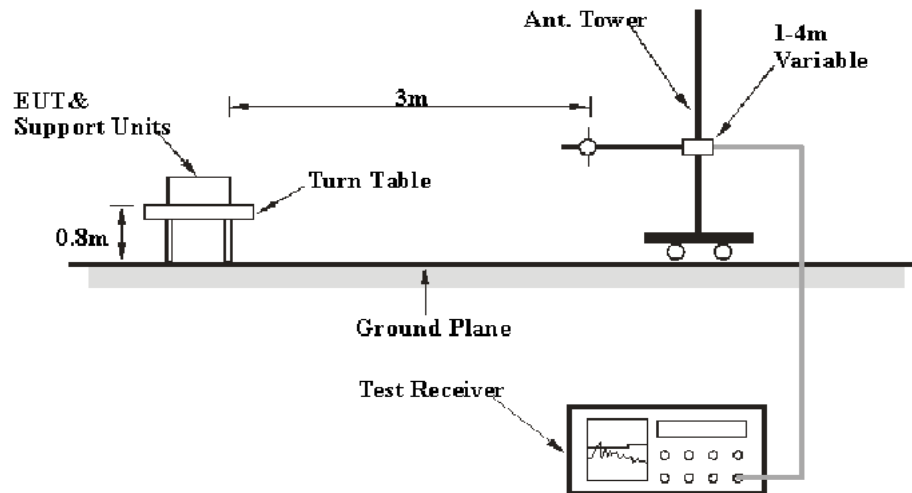
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

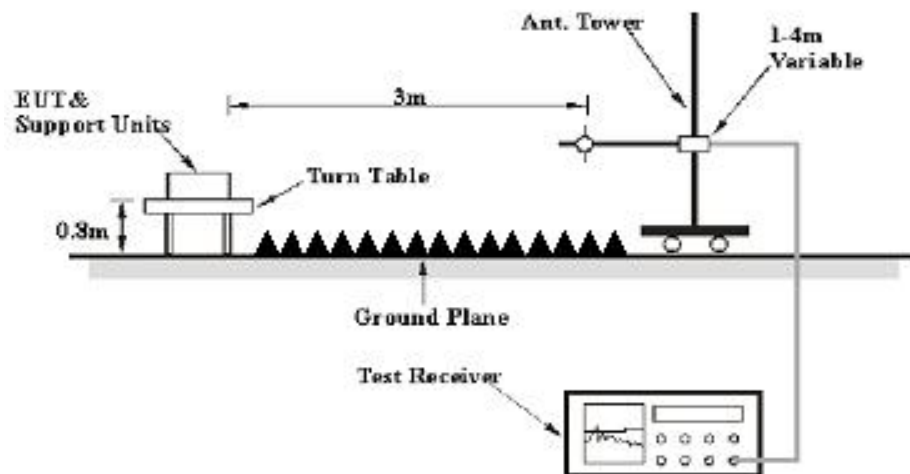
3.2 Radiation Spurious Emissions

3.2.1 EUT Setup

Below 1GHz:



Above 1GHz:



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

3.2.2 EMI Test Receiver Setup

The system was investigated from 30 MHz to 30 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:	2390	Test Date:	2022/06/21
Test Site:	CE	Test Mode:	Operating
Tester:	Vic Du	Test Result:	Pass

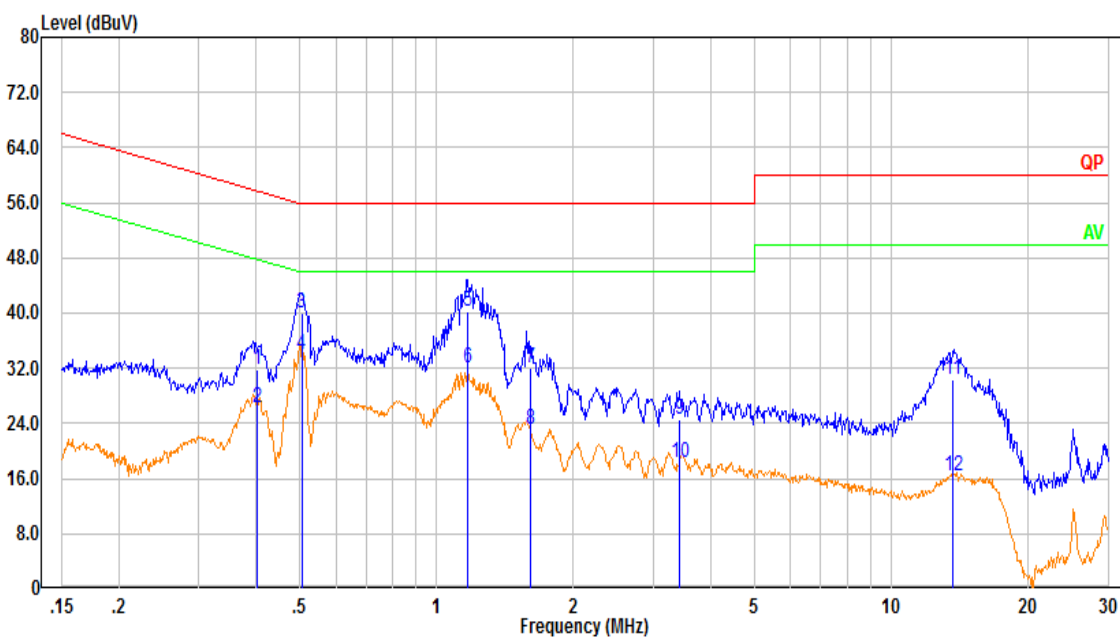
Environmental Conditions:

Temperature: (°C)	29.4	Relative Humidity: (%)	65	ATM Pressure: (kPa)	100.1
----------------------	------	------------------------------	----	------------------------	-------

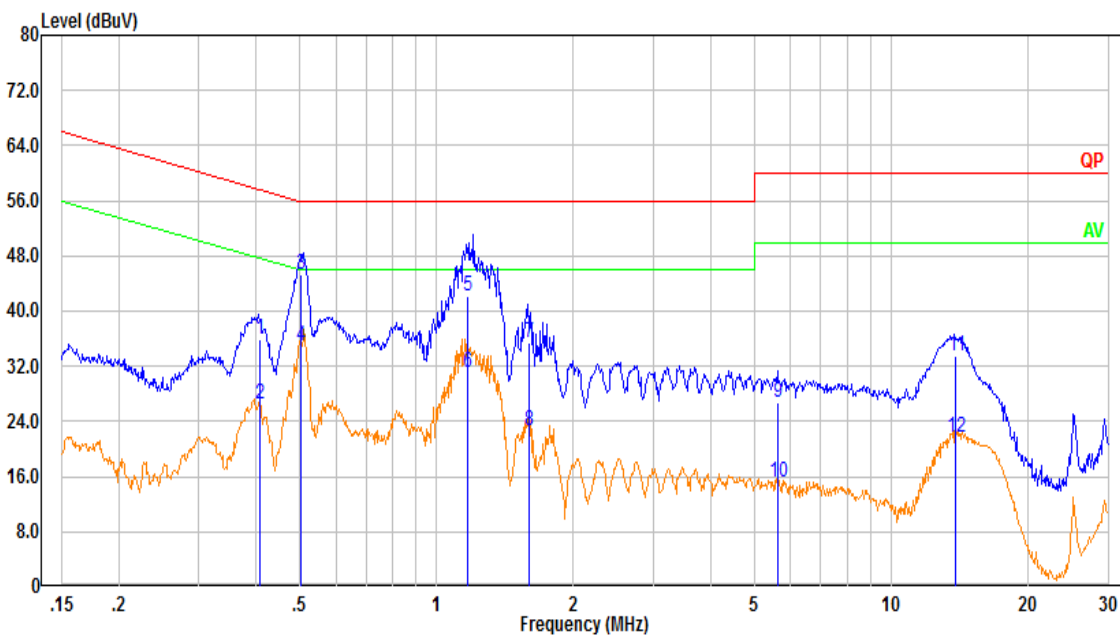
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2022/04/01	2023/03/31
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).

Line:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.404	22.27	9.61	31.88	57.78	25.90	QP
2	0.404	16.75	9.61	26.36	47.78	21.42	Average
3	0.504	30.46	9.61	40.07	56.00	15.93	QP
4	0.504	24.26	9.61	33.87	46.00	12.13	Average
5	1.166	30.59	9.62	40.22	56.00	15.78	QP
6	1.166	22.53	9.62	32.16	46.00	13.84	Average
7	1.613	22.42	9.63	32.05	56.00	23.95	QP
8	1.613	13.44	9.63	23.07	46.00	22.93	Average
9	3.419	14.90	9.65	24.55	56.00	31.45	QP
10	3.419	8.74	9.65	18.39	46.00	27.61	Average
11	13.650	20.72	9.68	30.40	60.00	29.60	QP
12	13.650	6.71	9.68	16.39	50.00	33.61	Average

Neutral:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.408	26.26	9.61	35.87	57.69	21.82	QP
2	0.408	16.87	9.61	26.48	47.69	21.21	Average
3	0.503	35.63	9.61	45.24	56.00	10.76	QP
4	0.503	25.43	9.61	35.04	46.00	10.96	Average
5	1.171	32.59	9.62	42.21	56.00	13.79	QP
6	1.171	21.51	9.62	31.13	46.00	14.87	Average
7	1.600	25.75	9.63	35.37	56.00	20.63	QP
8	1.600	12.93	9.63	22.55	46.00	23.45	Average
9	5.619	17.08	9.66	26.74	60.00	33.26	QP
10	5.619	5.54	9.66	15.20	50.00	34.80	Average
11	13.889	23.85	9.68	33.53	60.00	26.47	QP
12	13.889	11.90	9.68	21.58	50.00	28.42	Average

4.2 Radiation Spurious Emissions

Serial Number:	2390	Test Date:	2022/05/09~2022/06/21
Test Site:	966-2, 966-1	Test Mode:	Operating
Tester:	Carl Liang, Mack Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5~26.8	Relative Humidity: (%)	52~56	ATM Pressure: (kPa)	100.1
----------------------	-----------	------------------------------	-------	------------------------	-------

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
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2021/02/05	2024/02/04
PASTERNAK	Horn Antenna	PE9850/2F-20	072001	2021/02/05	2024/02/04
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
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2021/08/08	2022/08/07
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2021/11/10	2022/11/09
AH	Preamplifier	PAM-1840VH	190	2021/11/19	2022/11/18
E-Microwave	Band Rejection Filter	2400-2483.5MHz	OE01902424	2021/08/08	2022/08/07
E-Microwave	Band Rejection Filter	5150-5850MHz	OE01902423	2021/08/08	2022/08/07

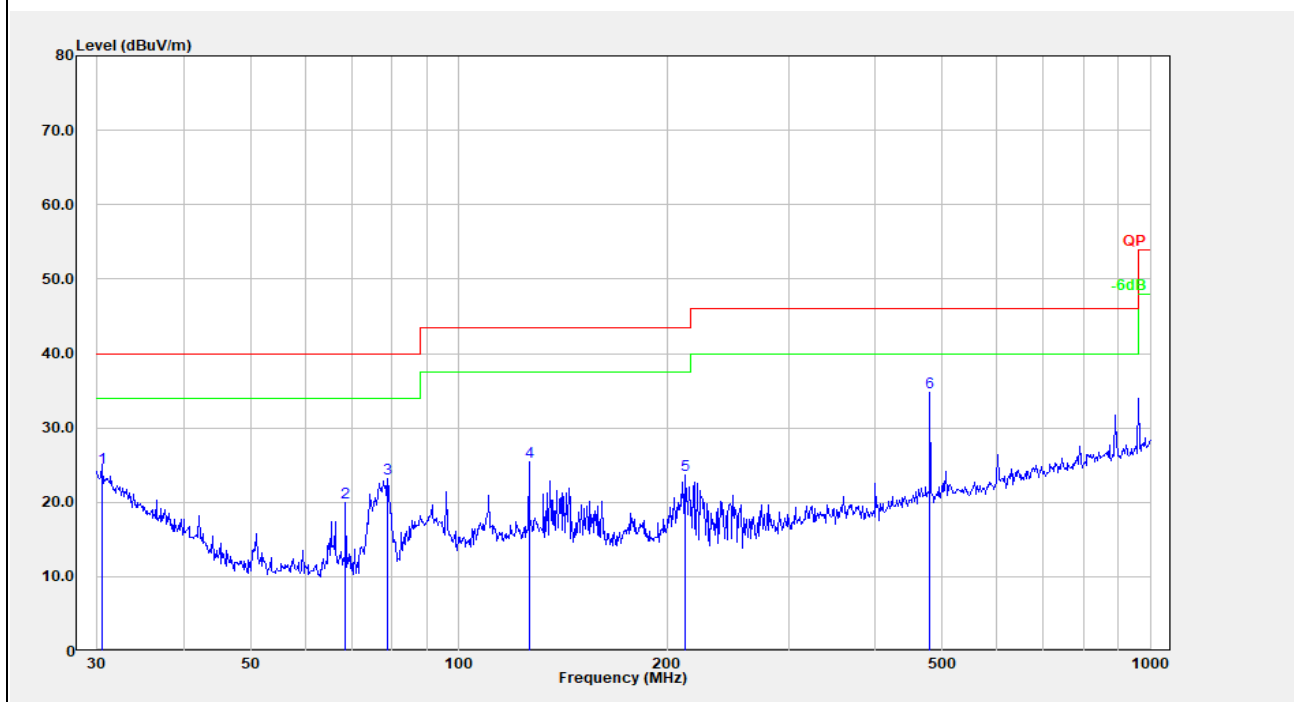
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

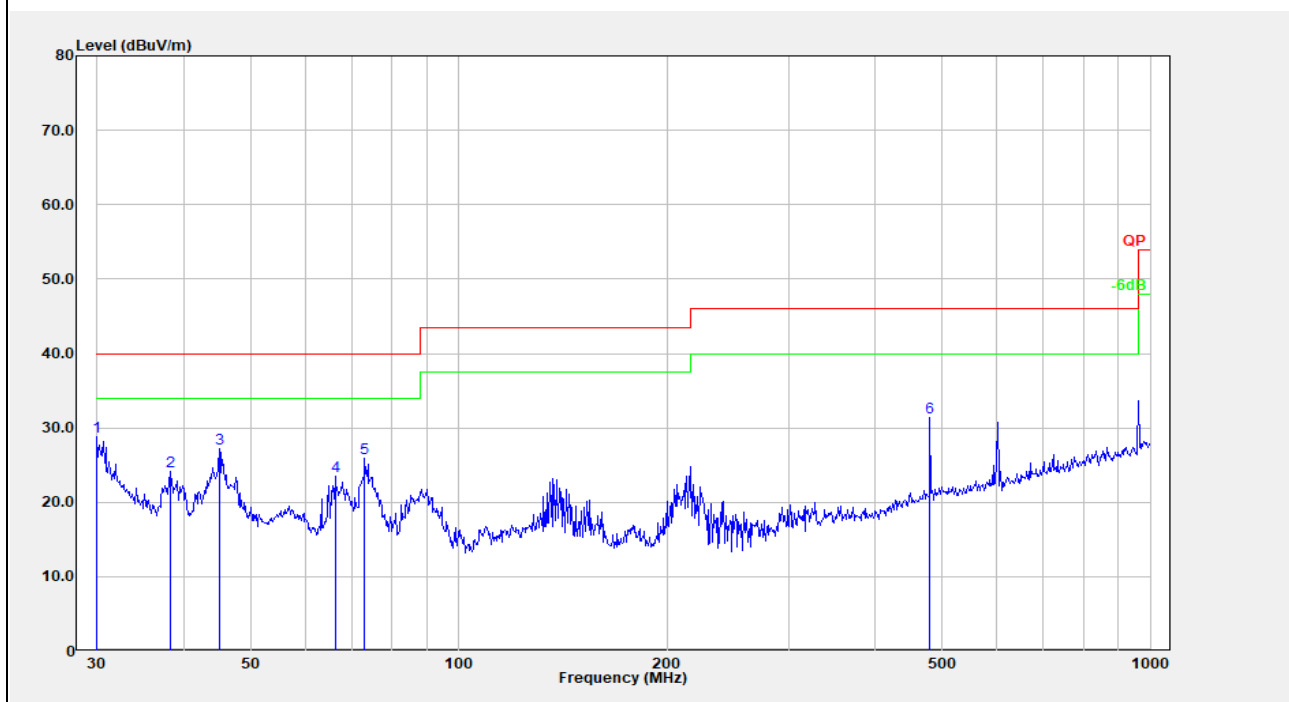
Please refer to the below table and plots.

Note: The device can be mounted in multiple orientations, test was performed with three orthogonal axes according to C63.4 section 8.3.1, the worst orientation was photographed and it's data was recorded.

1) 30MHz-1GHz:

Horizontal:

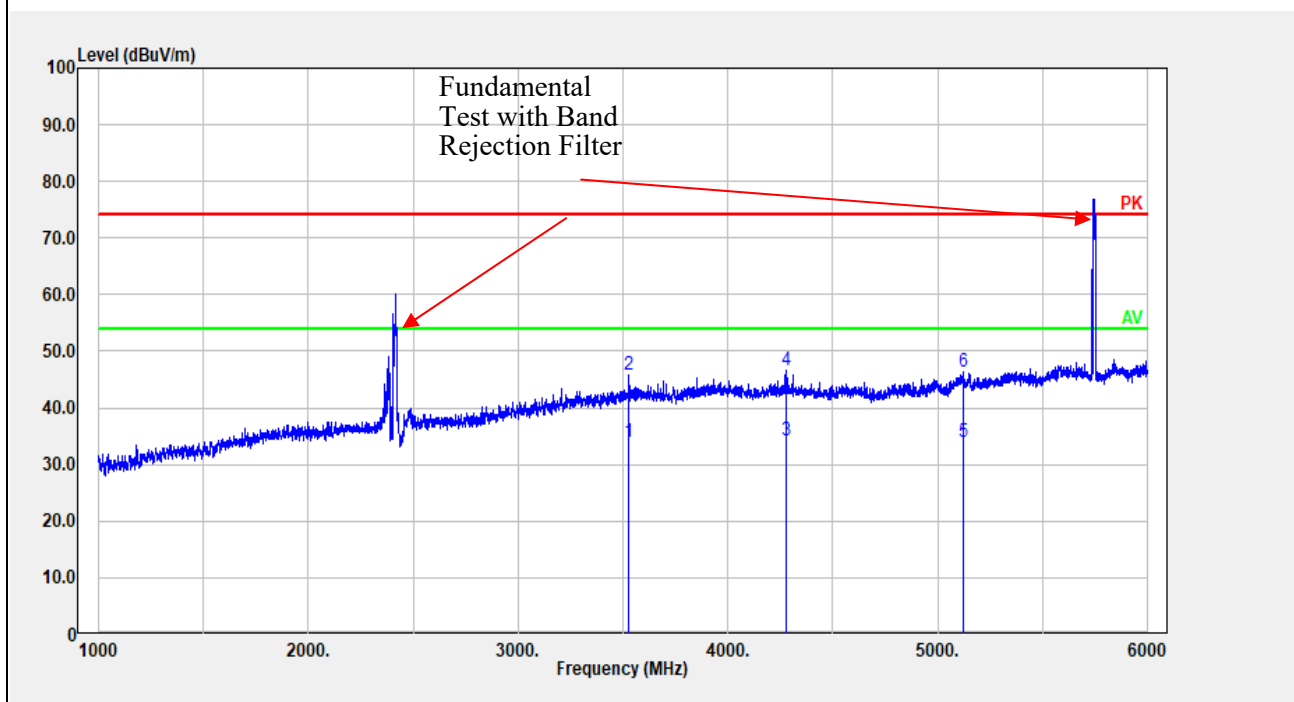
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.531	28.84	-4.20	24.65	40.00	15.35	Peak
2	68.631	36.90	-16.87	20.03	40.00	19.97	Peak
3	78.965	40.74	-17.60	23.14	40.00	16.86	Peak
4	126.329	37.06	-11.57	25.49	43.50	18.01	Peak
5	212.270	36.32	-12.69	23.63	43.50	19.87	Peak
6	480.528	41.24	-6.49	34.75	46.00	11.25	Peak

Vertical:

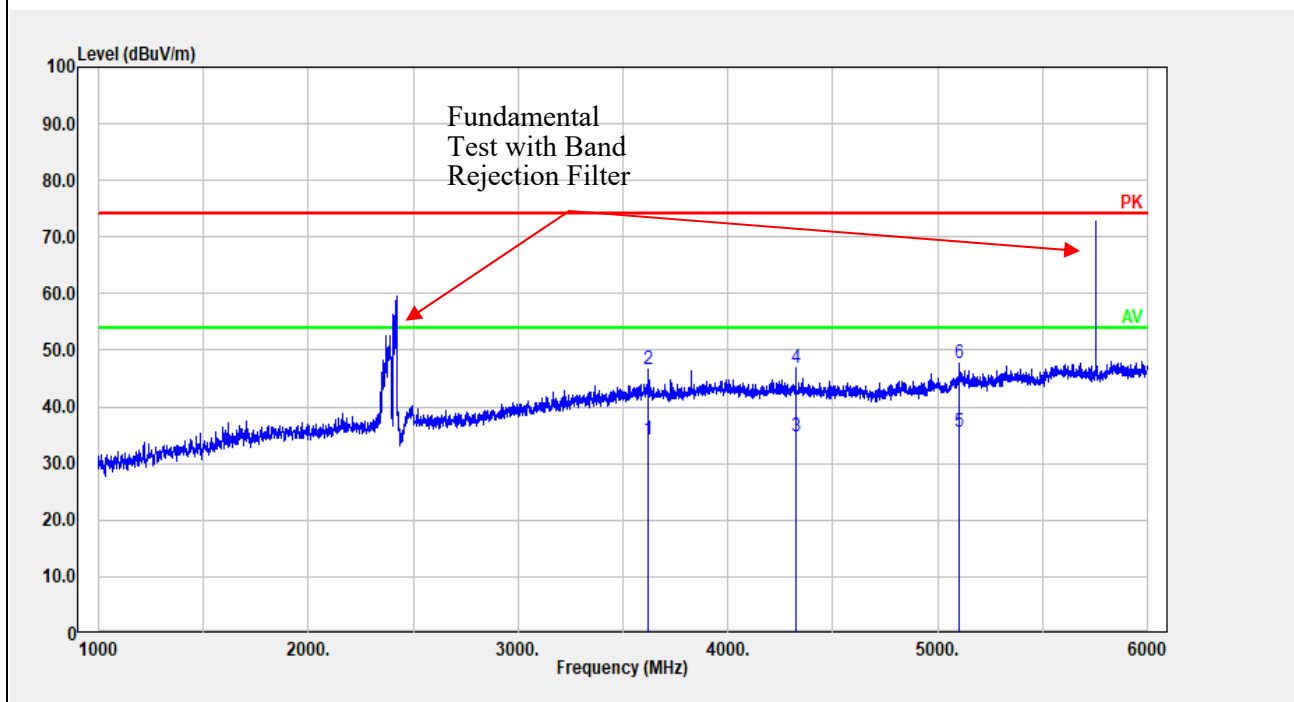
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.000	32.54	-3.79	28.75	40.00	11.25	Peak
2	38.212	34.16	-10.08	24.08	40.00	15.92	Peak
3	45.058	41.63	-14.48	27.15	40.00	12.85	Peak
4	66.266	40.54	-17.07	23.47	40.00	16.53	Peak
5	73.103	42.94	-16.99	25.95	40.00	14.05	Peak
6	480.528	37.95	-6.49	31.46	46.00	14.54	Peak

2) Above 1GHz:

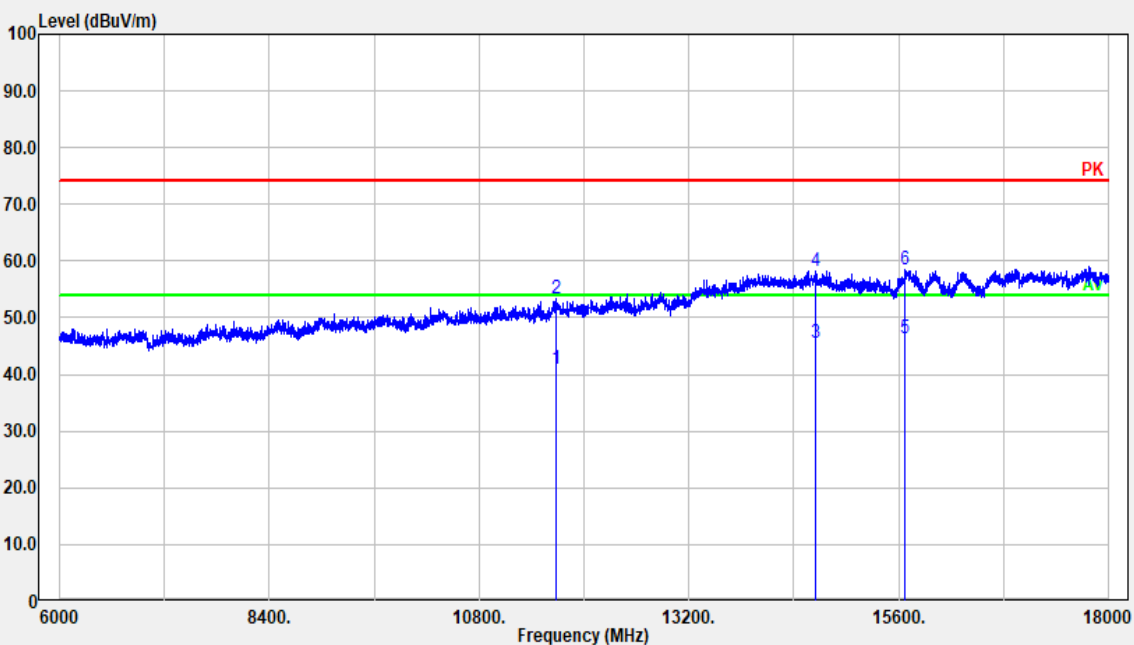
Horizontal:



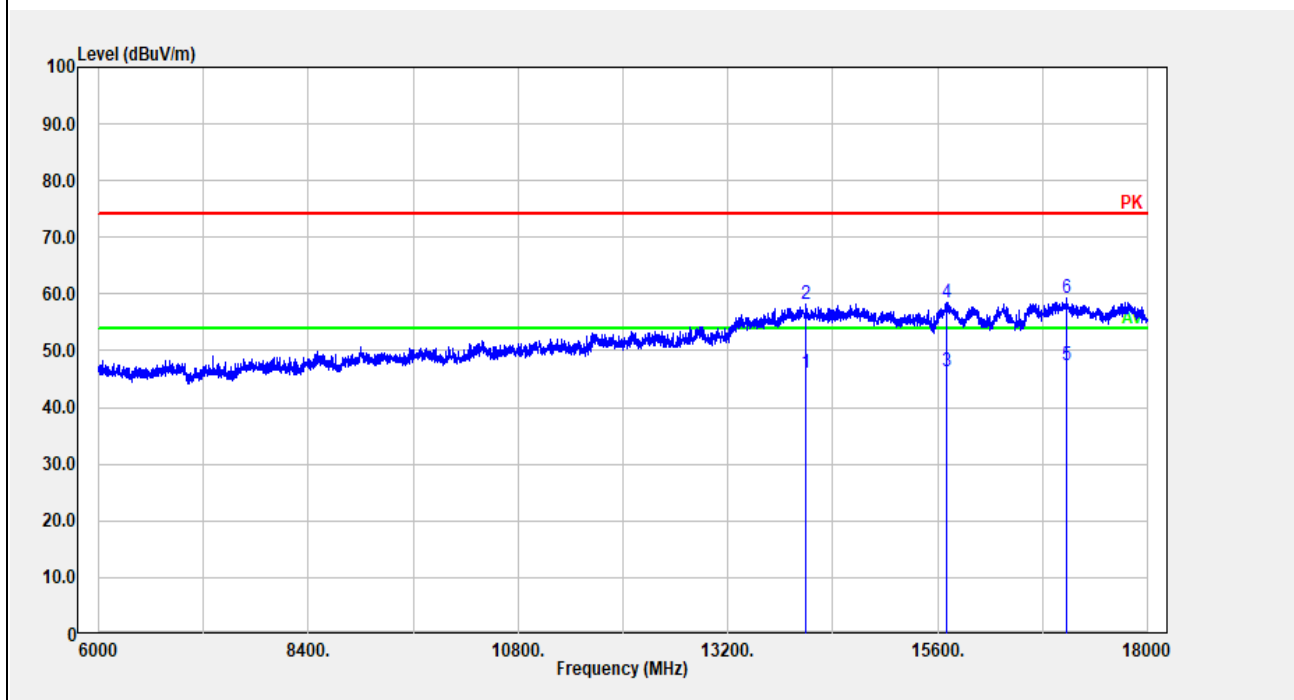
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	3529.506	25.08	8.79	33.87	54.00	20.13	Average
2	3529.506	37.13	8.79	45.92	74.00	28.08	Peak
3	4275.655	24.45	9.68	34.13	54.00	19.87	Average
4	4275.655	36.90	9.68	46.58	74.00	27.42	Peak
5	5125.825	22.45	11.44	33.89	54.00	20.11	Average
6	5125.825	34.89	11.44	46.33	74.00	27.67	Peak

Vertical:

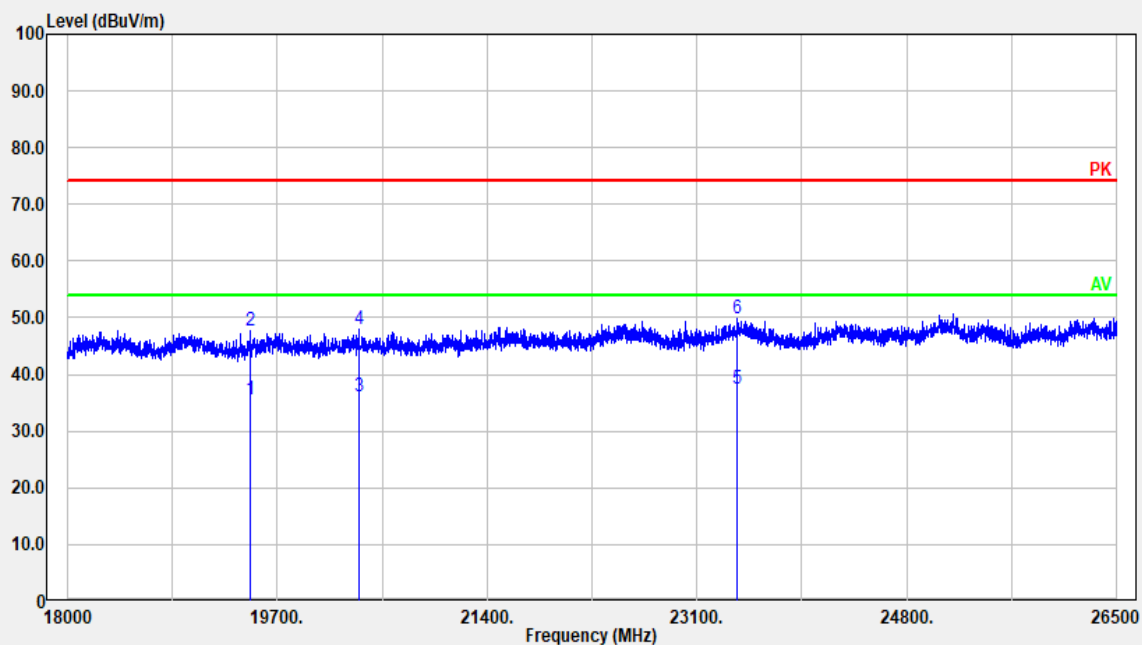
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	3620.524	25.23	9.03	34.26	54.00	19.74	Average
2	3620.524	37.47	9.03	46.50	74.00	27.50	Peak
3	4324.665	25.15	9.68	34.83	54.00	19.17	Average
4	4324.665	37.31	9.68	46.99	74.00	27.01	Peak
5	5105.821	24.23	11.37	35.60	54.00	18.40	Average
6	5105.821	36.46	11.37	47.83	74.00	26.17	Peak

Horizontal:

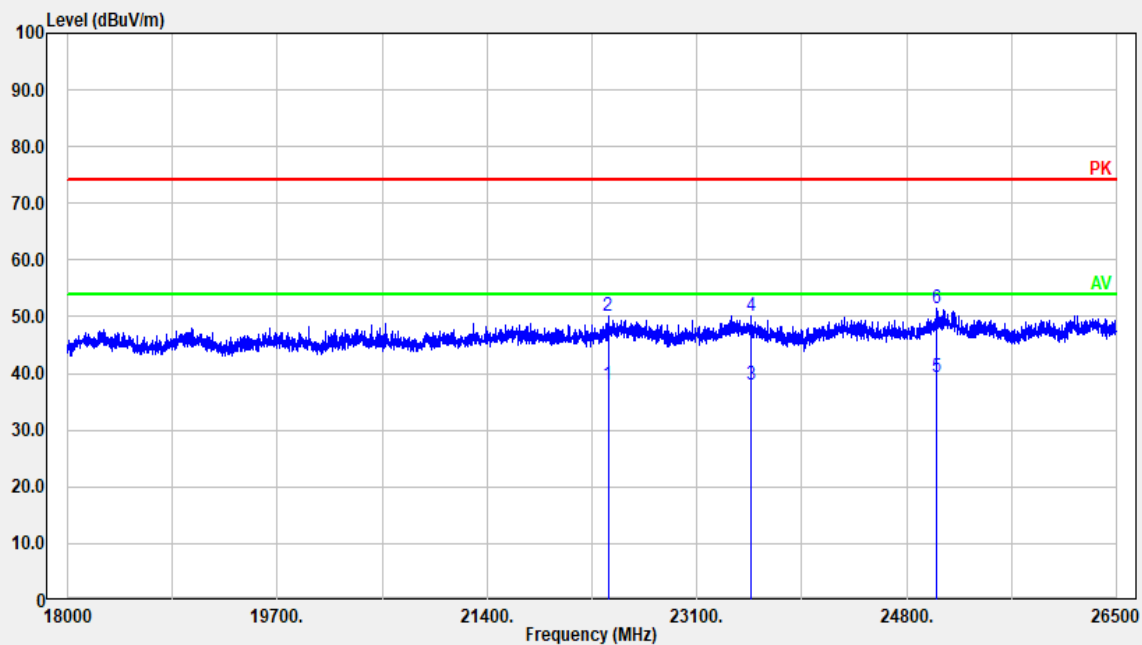
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	11686.740	20.40	20.44	40.84	54.00	13.16	Average
2	11686.740	32.81	20.44	53.25	74.00	20.75	Peak
3	14656.130	21.45	24.13	45.58	54.00	8.42	Average
4	14656.130	34.00	24.13	58.13	74.00	15.87	Peak
5	15673.930	25.10	21.17	46.27	54.00	7.73	Average
6	15673.930	37.23	21.17	58.40	74.00	15.60	Peak

Vertical:

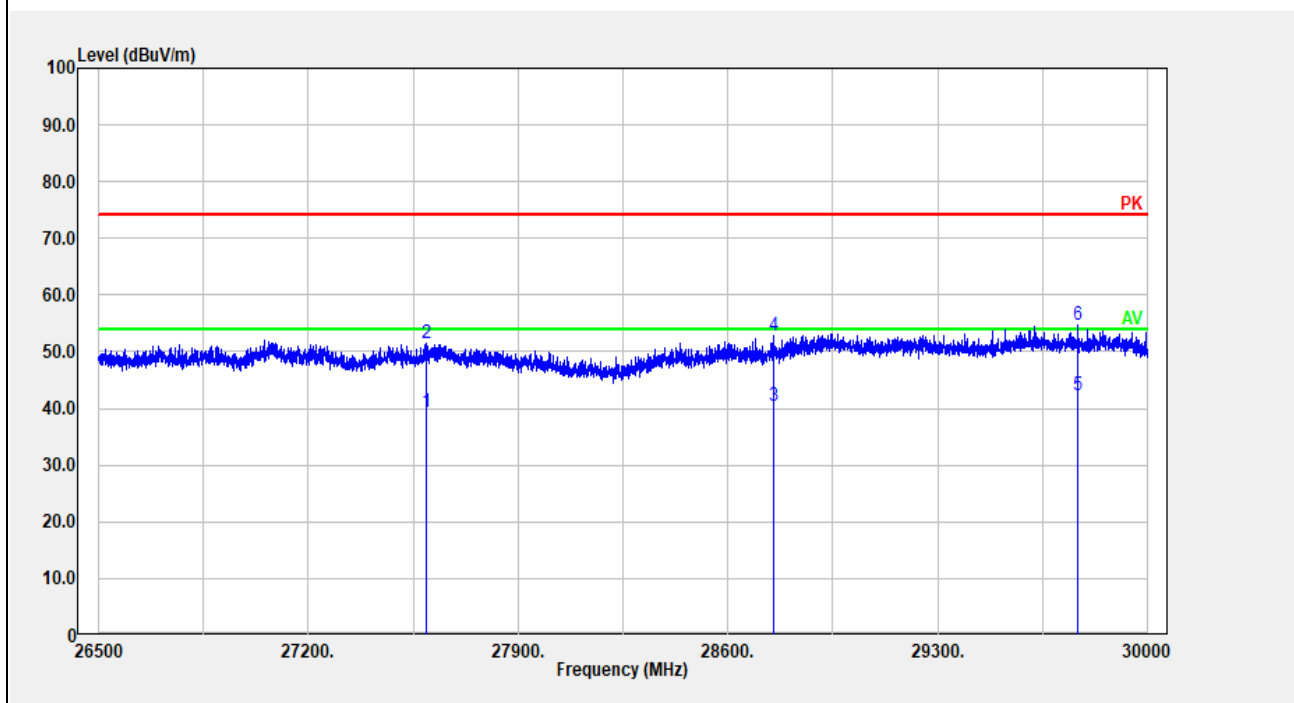
No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	14092.020	22.13	23.90	46.03	54.00	7.97	Average
2	14092.020	34.25	23.90	58.15	74.00	15.85	Peak
3	15702.740	25.10	21.24	46.34	54.00	7.66	Average
4	15702.740	37.21	21.24	58.45	74.00	15.55	Peak
5	17071.010	22.08	25.36	47.44	54.00	6.56	Average
6	17071.010	34.06	25.36	59.42	74.00	14.58	Peak

Horizontal:

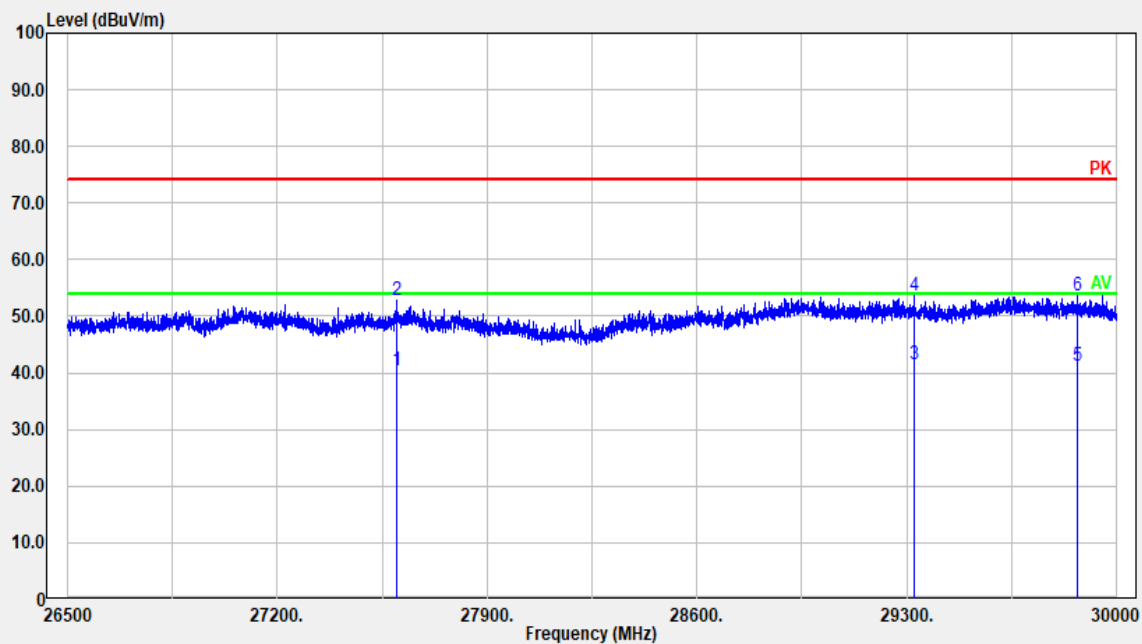
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	19479.290	30.15	5.33	35.48	54.00	18.52	Average
2	19479.290	42.28	5.33	47.61	74.00	26.39	Peak
3	20358.370	29.56	6.44	36.00	54.00	18.00	Average
4	20358.370	41.43	6.44	47.87	74.00	26.13	Peak
5	23430.890	26.34	11.19	37.53	54.00	16.47	Average
6	23430.890	38.68	11.19	49.87	74.00	24.13	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	22380.080	28.24	9.85	38.09	54.00	15.91	Average
2	22380.080	40.31	9.85	50.16	74.00	23.84	Peak
3	23543.110	26.96	11.14	38.10	54.00	15.90	Average
4	23543.110	39.04	11.14	50.18	74.00	23.82	Peak
5	25046.210	26.89	12.36	39.25	54.00	14.75	Average
6	25046.210	39.22	12.36	51.58	74.00	22.42	Peak

Horizontal:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	27595.020	25.42	13.82	39.24	54.00	14.76	Average
2	27595.020	37.74	13.82	51.56	74.00	22.44	Peak
3	28750.950	25.45	15.11	40.56	54.00	13.44	Average
4	28750.950	37.84	15.11	52.95	74.00	21.05	Peak
5	29767.550	27.33	15.03	42.36	54.00	11.64	Average
6	29767.550	39.67	15.03	54.70	74.00	19.30	Peak

Vertical:

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	27596.420	26.53	13.82	40.35	54.00	13.65	Average
2	27596.420	38.98	13.82	52.80	74.00	21.20	Peak
3	29325.770	27.54	13.84	41.38	54.00	12.62	Average
4	29325.770	39.92	13.84	53.76	74.00	20.24	Peak
5	29869.070	26.73	14.56	41.29	54.00	12.71	Average
6	29869.070	39.11	14.56	53.67	74.00	20.33	Peak

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