

FCC PART 15B

TEST REPORT

For

HONG KONG IPRO TECHNOLOGY CO.,LIMITED

12/F 3 LOCKHART ROAD WANCHAI HK

FCC ID: PQ4IPROSODA6S

Report Type: Original Report	Product Type: Soda6S
Tester:	Mia Huang, Joyce Qiao, <i>Mia Huang Joyce Qiao</i>
Report Number:	DG2210831-45238E-00D
Report Date:	2021-09-14
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TABLE OF CONTENTS

General Information.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
TEST METHODOLOGY	3
MEASUREMENT UNCERTAINTY	3
TEST FACILITY	4
DECLARATIONS.....	4
System Test Configuration.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	5
SUPPORT CABLE LIST AND DETAILS	5
BLOCK DIAGRAM OF TEST SETUP	6
TEST EQUIPMENT LIST	7
ENVIRONMENTAL CONDITIONS	7
Summary of Test Results.....	8
FCC Part 15B §15.107 – Conducted emissions	9
EUT SETUP	9
EMI TEST RECEIVER SETUP.....	9
TEST PROCEDURE	9
CORRECTED AMPLITUDE & MARGIN CALCULATION	10
TEST DATA	10
FCC Part 15B §15.109 – Radiated emissions	13
EUT SETUP	13
EMI TEST RECEIVER SETUP.....	14
TEST PROCEDURE	14
CORRECTED AMPLITUDE & MARGIN CALCULATION	14
TEST DATA	14

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Soda6S
EUT Model:		Soda6S
Highest Operation Frequency:		2480 MHz
Rated Input Voltage:		DC 3.8V from battery or DC 5V from Adapter
Adapter Information	Model:	NTR-S01
	Input:	AC 100-240V 50/60Hz 150mA
	Output:	DC 5.0V 1000mA
Serial Number:		DG2210831-45238E-RF-S1
EUT Received Date:		2021.08.31
EUT Received Status:		Good

Objective

This report is prepared on behalf of **HONG KONG IPRO TECHNOLOGY CO.,LIMITED** in accordance with FCC Part 15B Part 2, Part J, and Part 15, Subpart A and B of the Federal Communications Commission's rules.

The objective is to determine the compliance of EUT with: FCC Part 15B.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~13GHz: 5.23 dB
Temperature	±1 °C
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Note: 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.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, 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. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in downloading mode.

EUT Exercise Software

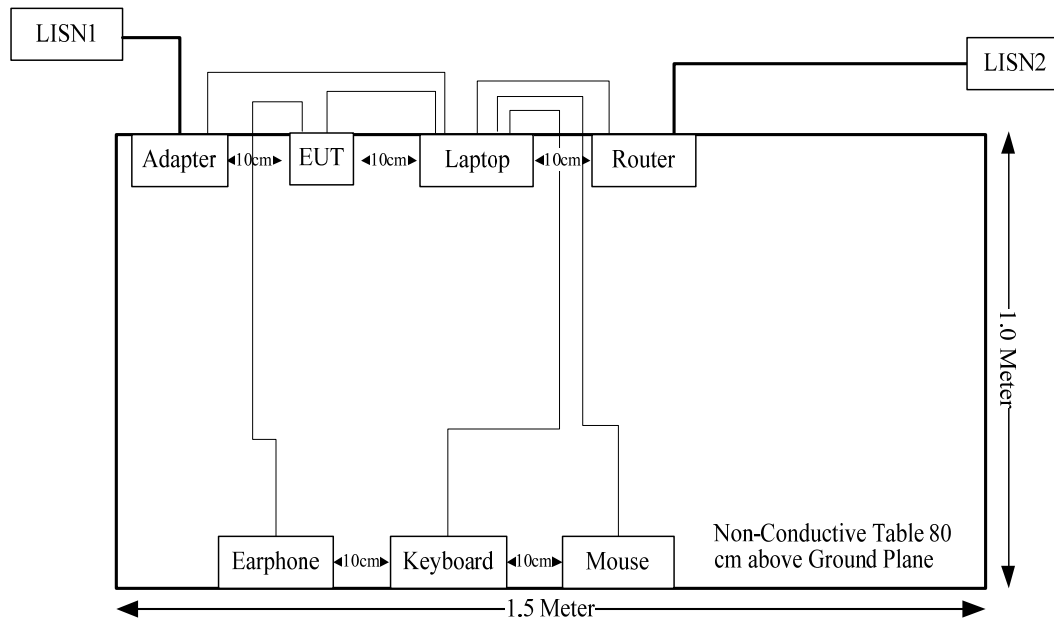
The software "Winthrax.exe" was used during test.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	E6410	9T215
PHILIPS	Keyboard	SPK6234	K234210510743
PHILIPS	Mouse	SPK7214	M214BQ210411115
Unknown	Earphone	Unknown	E001
ZIONCOM	Router	MB-R210-00	MB-R210-00

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Keyboard Cable	No	No	1.8	Keyboard	Laptop
Mouse Cable	No	No	2	Mouse	Laptop
Earphone Cable	No	No	2	Headphone	EUT
RJ45 Cable	No	No	1.2	Laptop	Router

Block Diagram of Test Setup

Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted Emissions					
R&S	LISN	ENV 216	101614	2021-09-11	2022-09-10
R&S	EMI Test Receiver	ESCI	101121	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2021-09-05	2022-09-04
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A
Spurious Emissions					
Sunol Sciences	Antenna	JB3	A060611-1	2020-11-10	2023-11-10
R&S	EMI Test Receiver	ESR3	102453	2020-09-23	2021-09-22
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2021-07-19	2022-07-18
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2021-07-19	2022-07-18
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2021-07-19	2022-07-18
Sonoma	Amplifier	310N	372193	2021-07-18	2022-07-17
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2021-07-22	2022-07-21
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2021-09-04	2022-09-03
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2021-09-04	2022-09-03
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
E-Microwave	Band-stop Filters	OBSF-2400-2483.5-S	OE01601525	2021-06-16	2022-06-15
Mini Circuits	High Pass Filter	VHF-6010+	31118	2021-06-16	2022-06-15

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

Test Item:	Conducted emissions	Radiated emissions (Below 1GHz)	Radiated emissions (Above 1GHz)
Temperature:	26.5 °C	27.8°C	27.7 °C
Relative Humidity:	67%	55%	57 %
ATM Pressure:	100.6kPa	100.5kPa	100.3kPa
Tester:	Mia Huang	Joyce Qiao	Bill Yang
Test Date:	2021-09-13	2021-09-12	2021-09-08

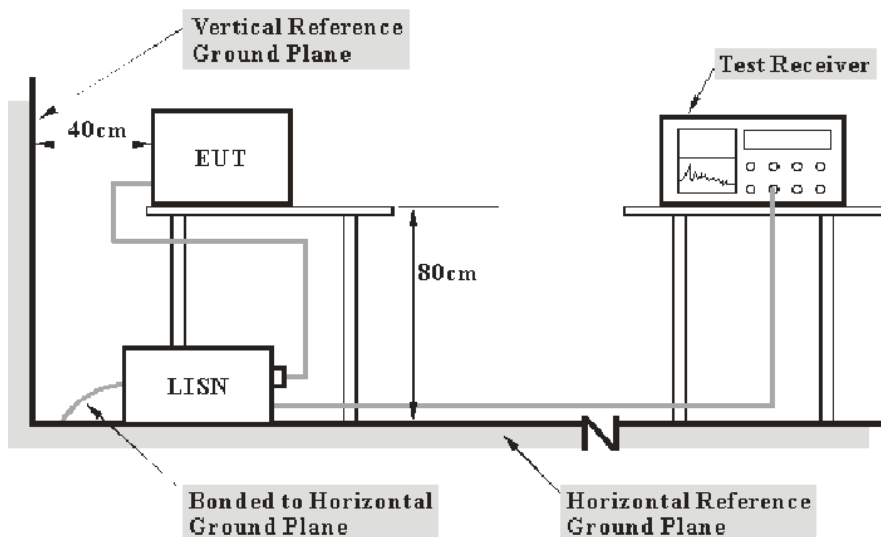
SUMMARY OF TEST RESULTS

FCC Part 15B

Clause	Description of Test	Test Result
§15.107	Conducted emissions	Compliance
§15.109	Radiated emissions	Compliance

FCC PART 15B §15.107 – CONDUCTED EMISSIONS

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

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

Test Procedure

During the conducted emission test, the adapter or EUT was connected to the first 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:

Corr. = Cable loss + Factor of coupling device

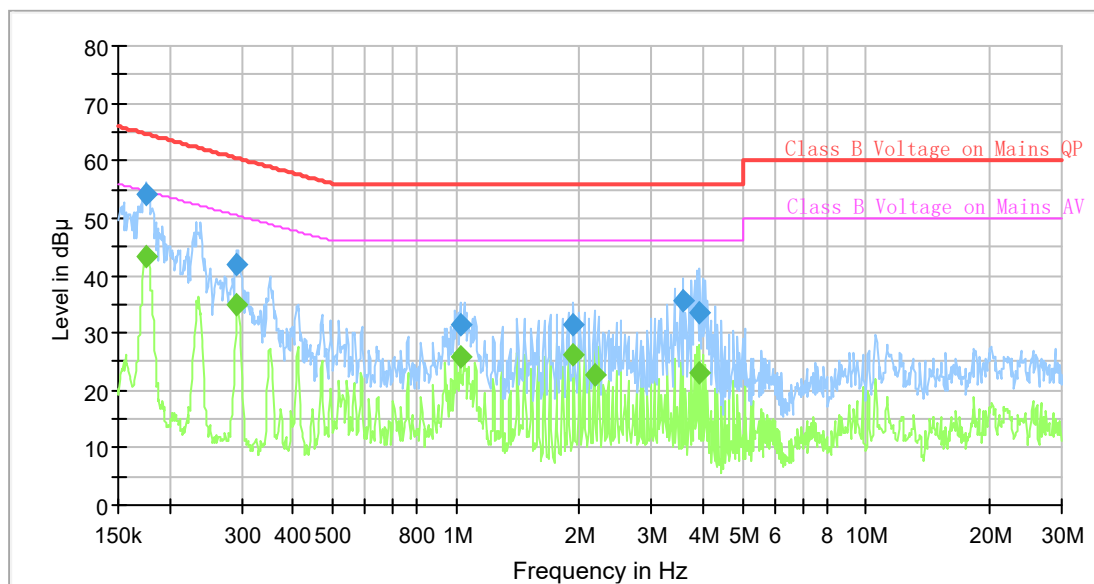
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Result

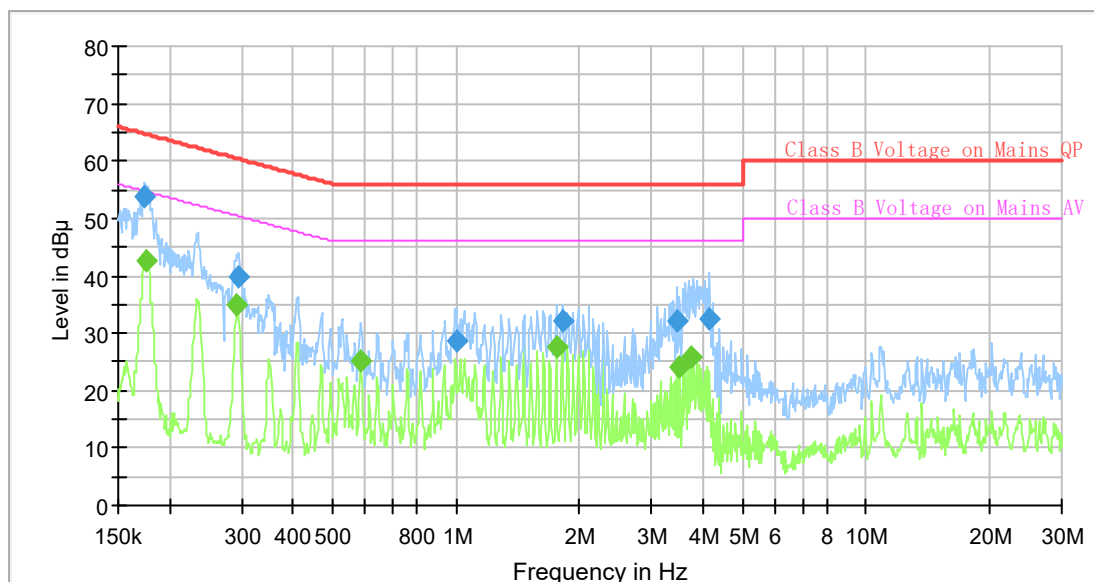
Test Data

Test mode: Downloading

Test Result: Compliance, *Please refer to following table and plots:*

AC120V, 60 Hz, Line:**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.175081	---	43.17	54.72	11.55	9.000	L1	9.6
0.175081	54.02	---	64.72	10.70	9.000	L1	9.6
0.292647	---	34.79	50.45	15.66	9.000	L1	9.6
0.292647	41.76	---	60.45	18.69	9.000	L1	9.6
1.023352	31.43	---	56.00	24.57	9.000	L1	9.7
1.023352	---	25.86	46.00	20.14	9.000	L1	9.7
1.937675	31.55	---	56.00	24.45	9.000	L1	9.7
1.937675	---	26.12	46.00	19.88	9.000	L1	9.7
2.173203	---	22.80	46.00	23.20	9.000	L1	9.7
3.578545	35.73	---	56.00	20.27	9.000	L1	9.7
3.934248	---	23.19	46.00	22.81	9.000	L1	9.7
3.934248	33.69	---	56.00	22.31	9.000	L1	9.7

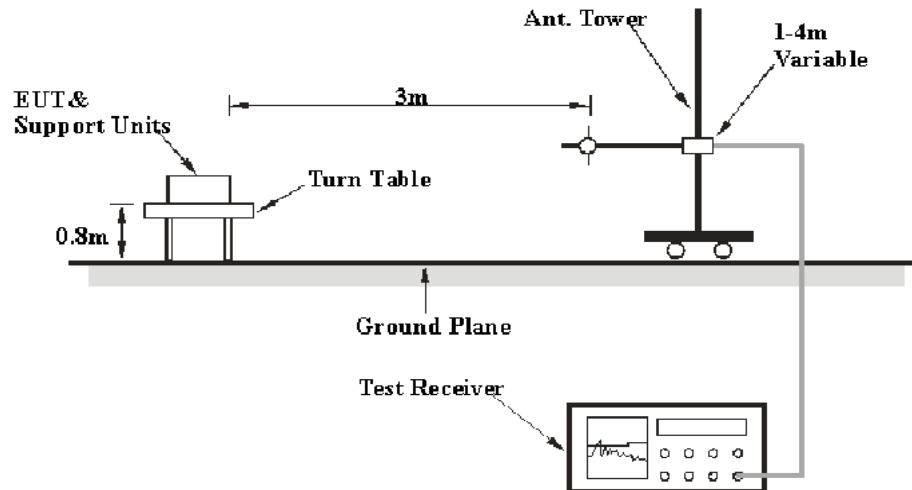
AC120V, 60 Hz, Neutral:**Final Result**

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.174210	53.87	---	64.76	10.89	9.000	N	9.6
0.175081	---	42.66	54.72	12.06	9.000	N	9.6
0.291191	---	34.77	50.49	15.72	9.000	N	9.6
0.295580	39.95	---	60.37	20.42	9.000	N	9.6
0.585364	---	25.08	46.00	20.92	9.000	N	9.6
1.003138	28.55	---	56.00	27.45	9.000	N	9.6
1.753718	---	27.74	46.00	18.26	9.000	N	9.6
1.816026	31.99	---	56.00	24.01	9.000	N	9.6
3.455764	32.23	---	56.00	23.77	9.000	N	9.6
3.507860	---	24.21	46.00	21.79	9.000	N	9.6
3.742839	---	25.90	46.00	20.10	9.000	N	9.6
4.156123	32.42	---	56.00	23.58	9.000	N	9.6

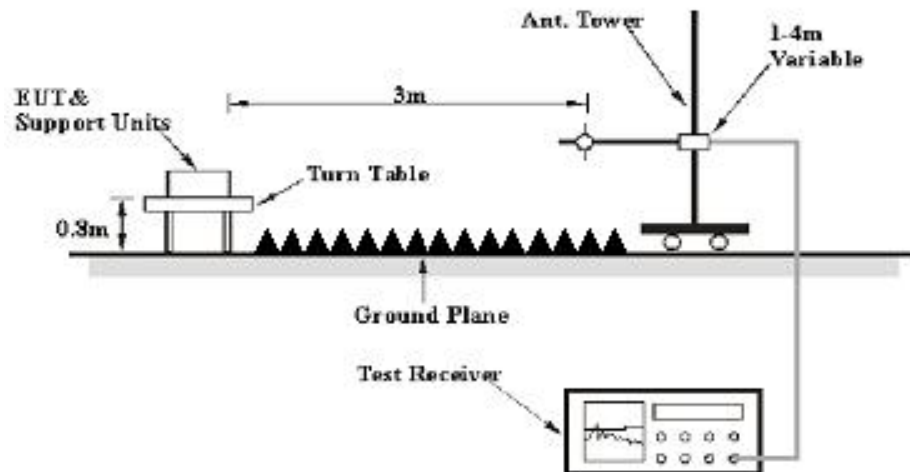
FCC PART 15B §15.109 – RADIATED EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed at the 3 meters distance, above 1GHz were performed at the 3 meters, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

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

Test Procedure

During the radiated emissions, the adapter was connected to the first 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Meter Reading + Corrected

Corrected = Antenna Factor + Cable Loss - Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Result}$$

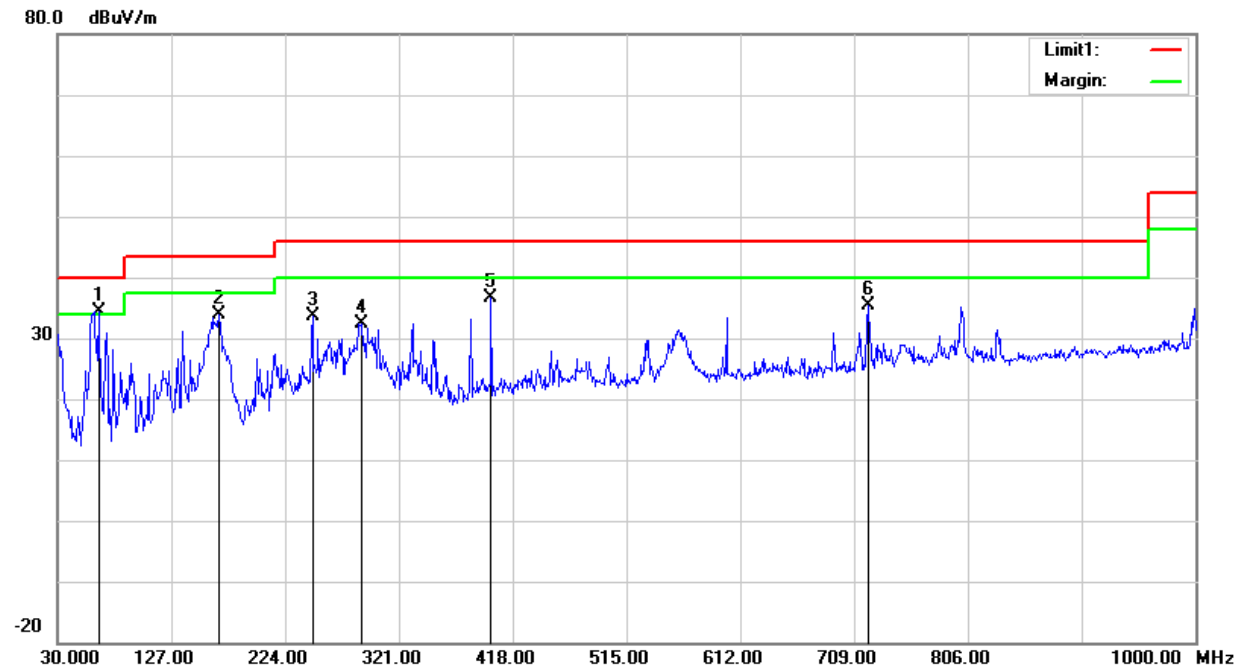
Test Data

Please refer to following table and plots:

Test Mode: Downloading

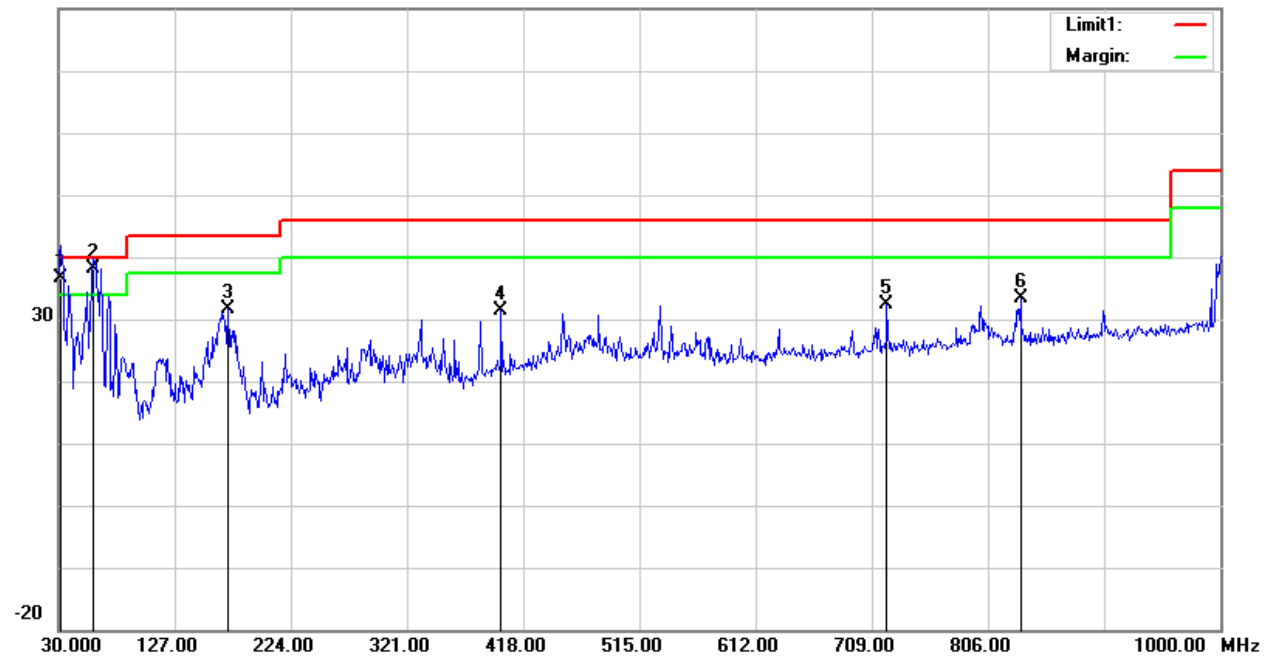
1) 30MHz-1GHz:

Horizontal:



No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	64.9200	51.48	QP	-17.08	34.40	40.00	5.60
2	167.7400	46.45	peak	-12.60	33.85	43.50	9.65
3	247.2800	46.10	peak	-12.59	33.51	46.00	12.49
4	288.9900	42.91	peak	-10.45	32.46	46.00	13.54
5	399.5700	44.71	peak	-8.05	36.66	46.00	9.34
6	720.6400	37.68	peak	-2.24	35.44	46.00	10.56

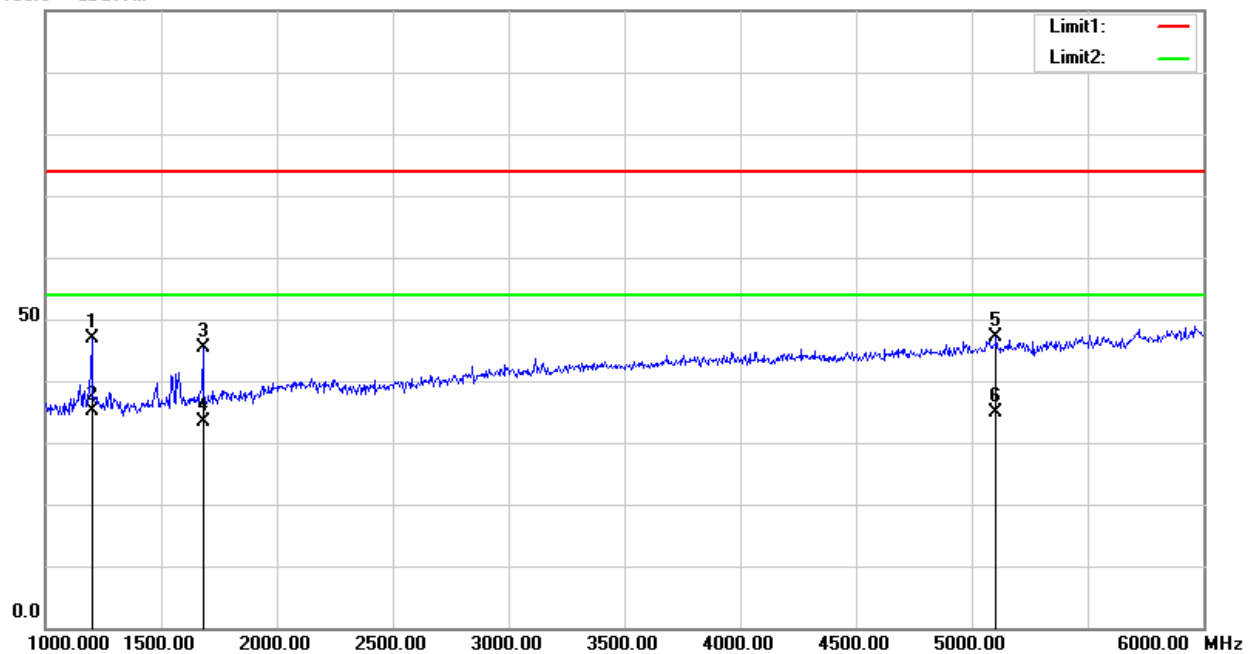
Vertical:

80.0 dB μ V/m

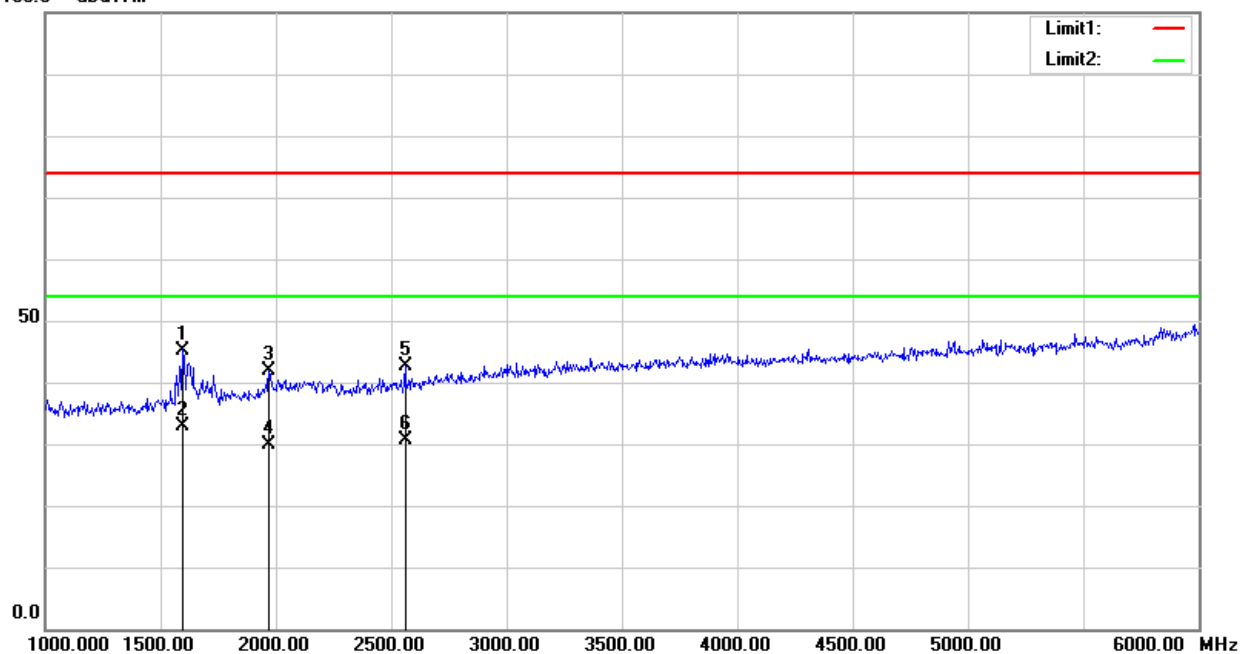
No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	31.9400	41.60	QP	-4.95	36.65	40.00	3.35
2	59.1000	55.70	QP	-17.53	38.17	40.00	1.83
3	171.6200	44.51	peak	-13.00	31.51	43.50	11.99
4	399.5700	39.51	peak	-8.05	31.46	46.00	14.54
5	721.6100	34.56	peak	-2.24	32.32	46.00	13.68
6	833.1600	33.93	peak	-0.50	33.43	46.00	12.57

2) 1GHz-13GHz:

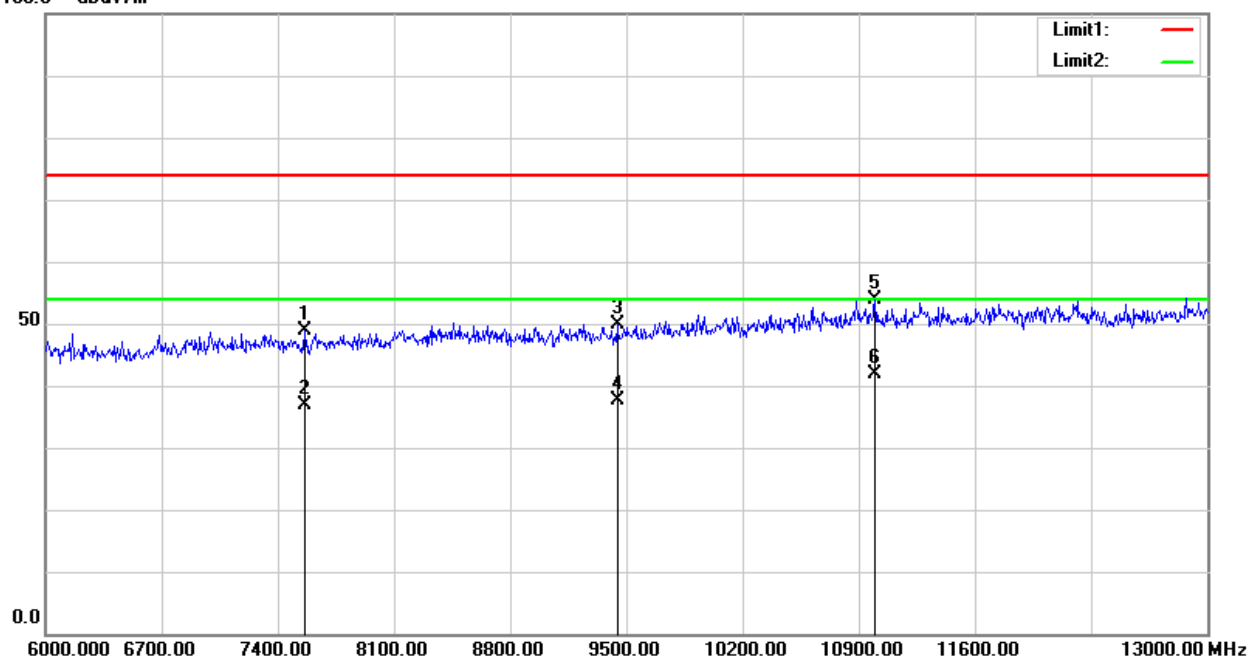
Horizontal:

100.0 dB μ V/m

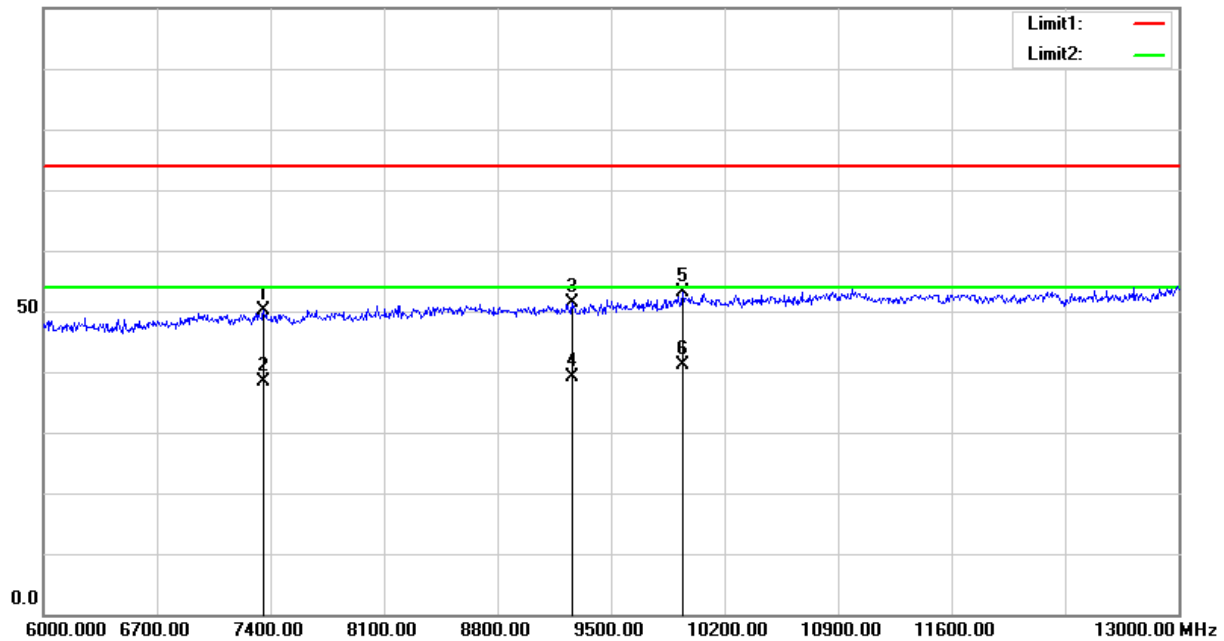
No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	1200.000	47.31	peak	-0.34	46.97	74.00	27.03
2	1200.000	35.36	AVG	-0.34	35.02	54.00	18.98
3	1680.000	43.62	peak	1.78	45.40	74.00	28.60
4	1680.000	31.56	AVG	1.78	33.34	54.00	20.66
5	5105.000	35.84	peak	11.35	47.19	74.00	26.81
6	5105.000	23.56	AVG	11.35	34.91	54.00	19.09

Vertical:100.0 dB μ V/m

No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	1595.000	43.82	peak	1.43	45.25	74.00	28.75
2	1595.000	31.56	AVG	1.43	32.99	54.00	21.01
3	1972.500	38.64	peak	3.31	41.95	74.00	32.05
4	1972.500	26.48	AVG	3.31	29.79	54.00	24.21
5	2562.500	38.45	peak	4.18	42.63	74.00	31.37
6	2562.500	26.56	AVG	4.18	30.74	54.00	23.26

Horizontal:100.0 dB μ V/m

No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	7561.000	33.97	peak	14.97	48.94	74.00	25.06
2	7561.000	21.94	AVG	14.97	36.91	54.00	17.09
3	9444.000	31.74	peak	18.10	49.84	74.00	24.16
4	9444.000	19.63	AVG	18.10	37.73	54.00	16.27
5	11001.500	34.14	peak	19.62	53.76	74.00	20.24
6	11001.500	22.15	AVG	19.62	41.77	54.00	12.23

Vertical:100.0 dB μ V/m

No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	7361.500	35.29	peak	14.92	50.21	74.00	23.79
2	7361.500	23.56	AVG	14.92	38.48	54.00	15.52
3	9265.500	33.51	peak	17.81	51.32	74.00	22.68
4	9265.500	21.23	AVG	17.81	39.04	54.00	14.96
5	9941.000	34.42	peak	18.67	53.09	74.00	20.91
6	9941.000	22.56	AVG	18.67	41.23	54.00	12.77

*******END OF REPORT*******