

FCC PART 15B

TEST REPORT

For

HONG KONG IPRO TECHNOLOGY CO.,LIMITED

12/F 3 LOCKHART ROAD WANCHAI HK

FCC ID: PQ4IPROA20S

Report Type: Original Report	Product Type: Mobile Phone
Report Number:	RDG201027001-00B
Report Date:	2020-11-26
Reviewed By:	Ivan Cao Assistant Manager 
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Mobile Phone
EUT Model:		A20S
Highest Operation Frequency:		2480 MHz
Rated Input Voltage:		DC 3.7V from battery or DC 5V from Adapter
Adapter Information	Model:	NTR-01
	Input:	100Vac-240Vac 50/60Hz 150mA
	Output:	5.0Vdc 500mA
Serial Number:		RDG200910002-RF-S1
EUT Received Date:		2020.09.11
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.

Related Submittal(s)/Grant(s)

FCC Part 22H, 24E PCE submissions with FCC ID: PQ4IPROA20S

FCC Part 15C DSS submissions with FCC ID: PQ4IPROA20S

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℃
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.

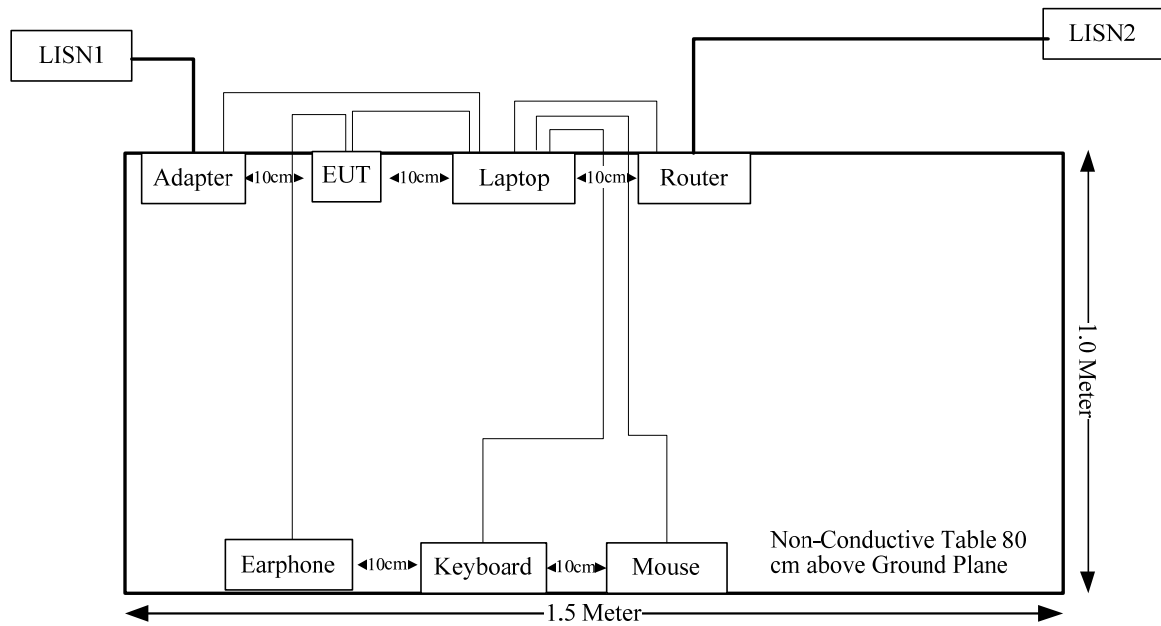
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
ThinkPad	Laptop	E450	PF-0MR8KV 16/08
DELL	Laptop	PP11L	QDS-BRCM1017
TOTO Link	Wireless Router	LR1200	190924004S1
DELL	Mouse	MO56UOA	F0Y02P7Y
DELL	Keyboard	L100	CNORH656658907BL05DC

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	No	No	1.5	USB Port of Laptop	Keyboard
USB Cable	No	No	1.5	USB Port of Laptop	Mouse
RJ45 Cable	No	No	10	Router	Laptop
USB Cable	No	No	1.5	USB Port of Laptop	EUT
Earphone Cable	No	No	1.15	EUT	Earphone

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	2020-09-12	2021-09-12
R&S	EMI Test Receiver	ESCI	101121	2020-07-07	2021-07-07
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2020-09-05	2021-09-05
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A
Spurious Emissions					
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05

* 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:	24.1 °C	27.8°C	24.1 °C
Relative Humidity:	46 %	42%	40 %
ATM Pressure:	101.9kPa	101kPa	101.8kPa
Tester:	Barry Yang	Asa Chen	Felix Wang
Test Date:	2020-11-12	2020-11-15	2020-11-09

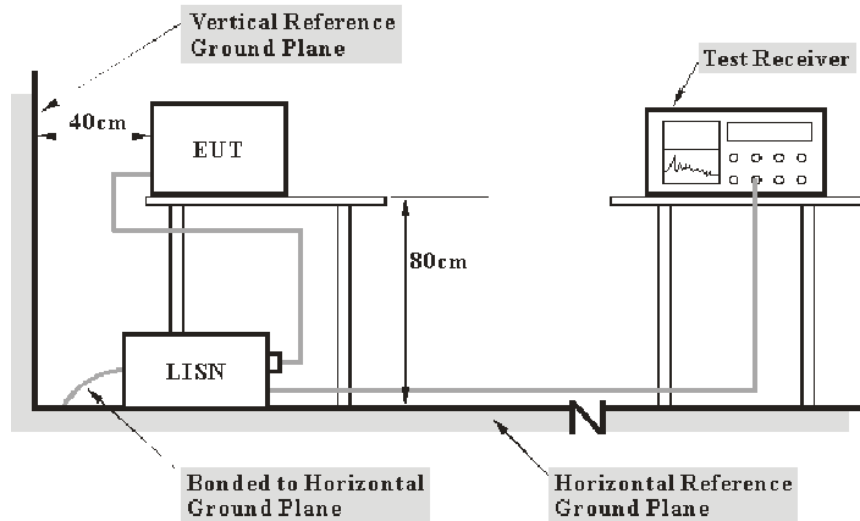
SUMMARY OF TEST RESULTS

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

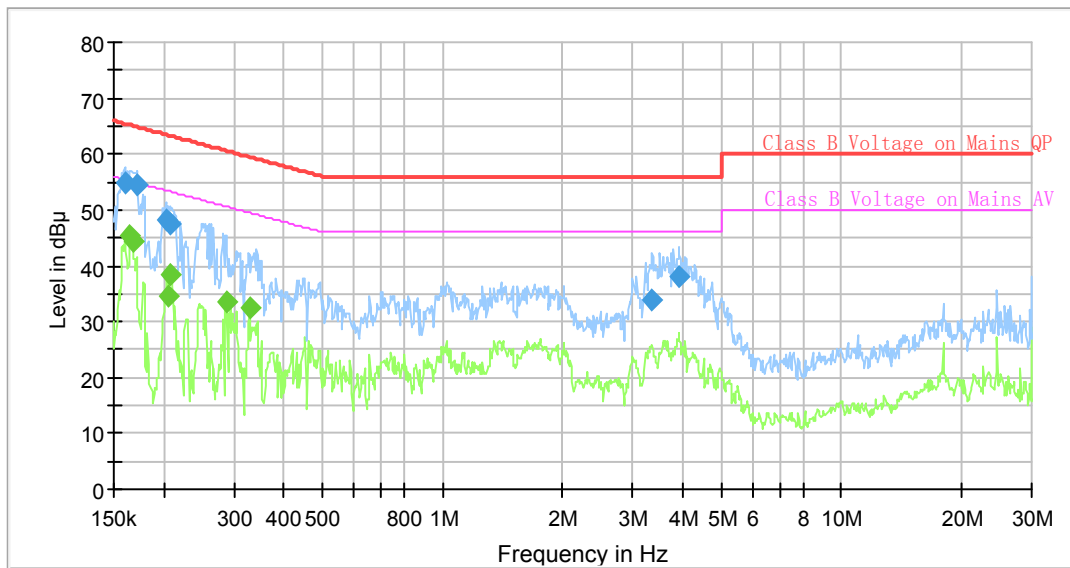
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Result

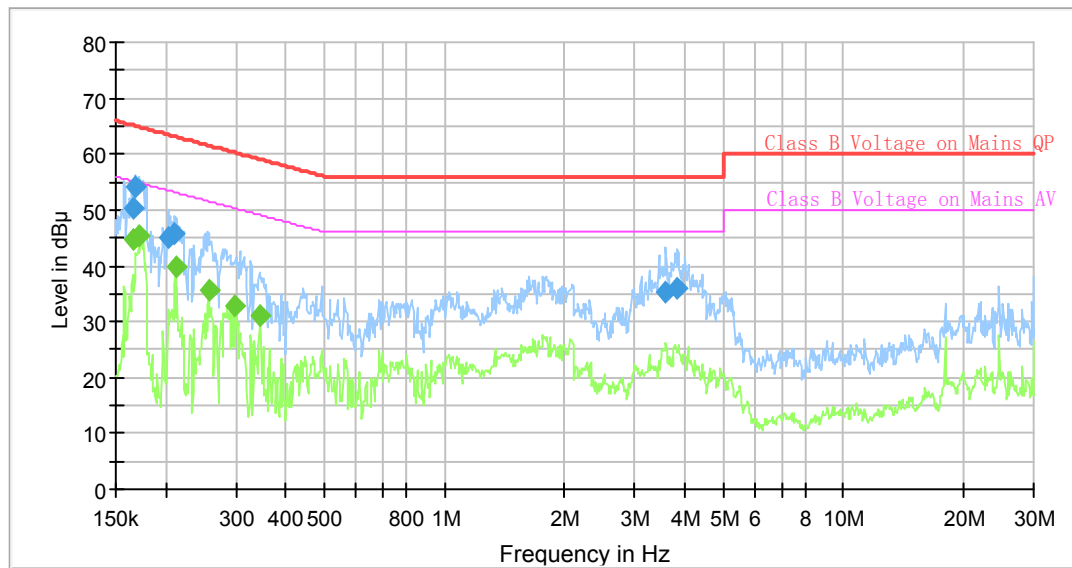
Test Data

Test mode: Downloading

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

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

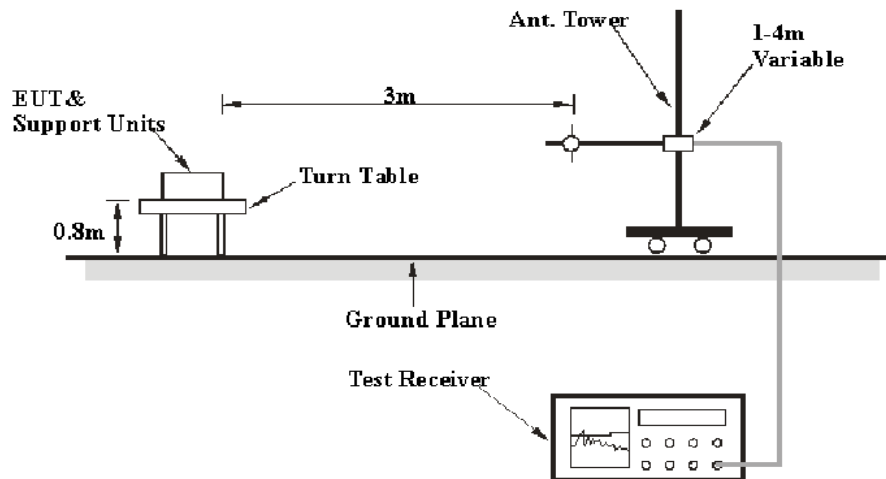
Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.160048	54.75	---	65.46	10.71	9.000	L1	9.6
0.164910	---	45.58	55.21	9.63	9.000	L1	9.6
0.167396	---	44.53	55.09	10.56	9.000	L1	9.6
0.171623	54.40	---	64.88	10.48	9.000	L1	9.6
0.202328	48.36	---	63.51	15.15	9.000	L1	9.6
0.205378	---	34.52	53.39	29.87	9.000	L1	9.6
0.207437	47.41	---	63.31	15.90	9.000	L1	9.6
0.207437	---	38.41	53.31	14.90	9.000	L1	9.6
0.286866	---	33.43	50.61	16.18	9.000	L1	9.6
0.328218	---	32.42	49.50	17.08	9.000	L1	9.6
3.353882	34.05	---	56.00	21.95	9.000	L1	9.7
3.914674	37.96	---	56.00	18.04	9.000	L1	9.7

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

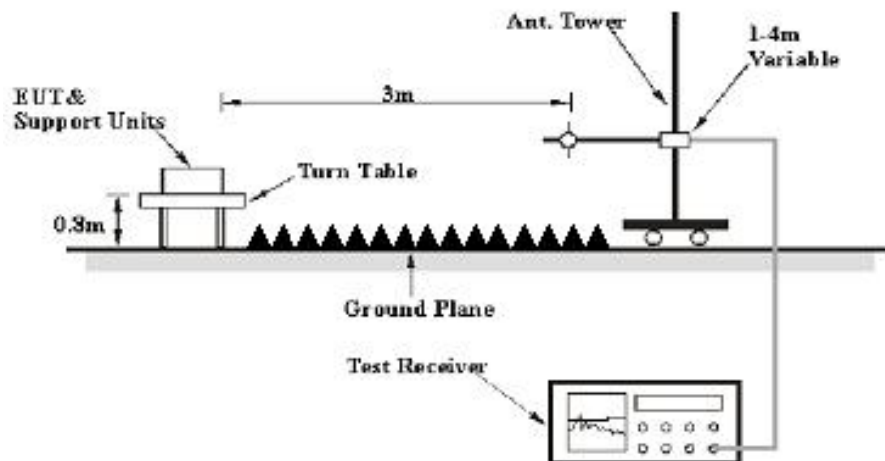
Frequency (MHz)	QuasiPeak (dB μV)	Average (dB μV)	Limit (dB μV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.165734	---	44.67	55.17	10.50	9.000	N	9.6
0.165734	50.48	---	65.17	14.69	9.000	N	9.6
0.168233	54.07	---	65.05	10.98	9.000	N	9.6
0.171623	---	45.45	54.88	9.43	9.000	N	9.6
0.203339	45.11	---	63.47	18.36	9.000	N	9.6
0.210564	45.60	---	63.18	17.58	9.000	N	9.6
0.211616	---	39.80	53.14	13.34	9.000	N	9.6
0.257055	---	35.54	51.53	15.99	9.000	N	9.6
0.297058	---	32.80	50.32	17.52	9.000	N	9.6
0.346729	---	31.05	49.04	17.99	9.000	N	9.6
3.596438	35.41	---	56.00	20.59	9.000	N	9.6
3.837350	36.15	---	56.00	19.85	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:

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

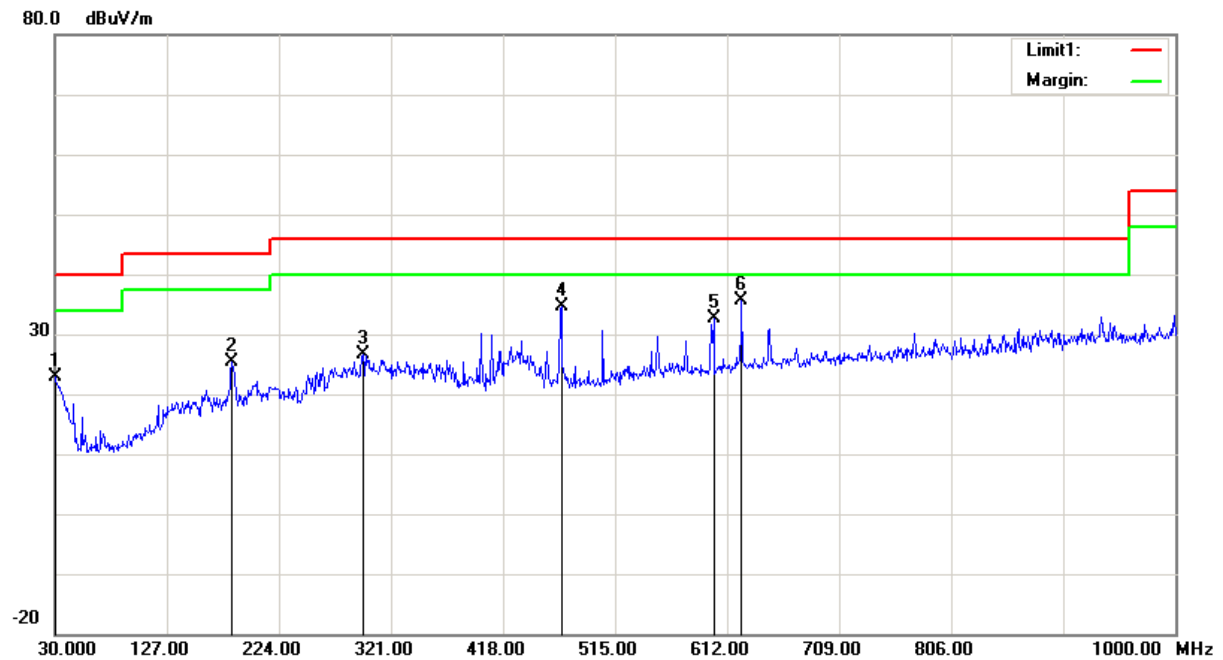
Test Data

Please refer to following table and plots:

Test Mode: Downloading

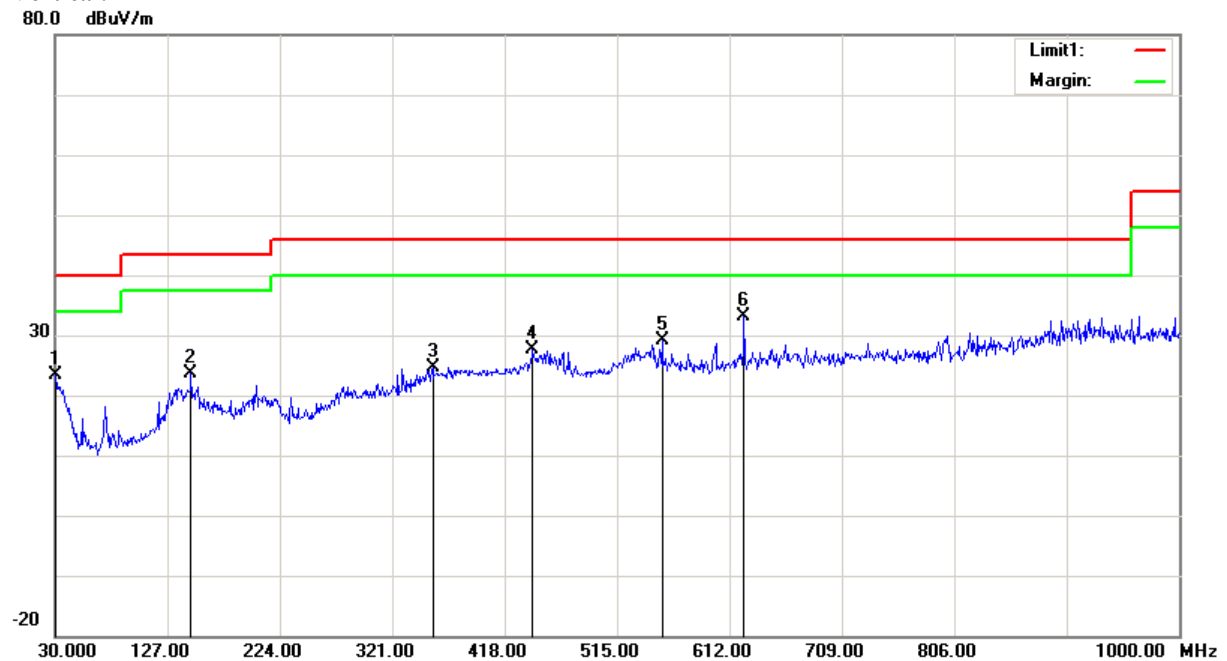
1) 30MHz-1GHz:

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	30.0000	26.93	peak	-4.10	22.83	40.00	17.17
2	183.2600	35.46	peak	-9.99	25.47	43.50	18.03
3	296.7500	34.24	peak	-7.60	26.64	46.00	19.36
4	468.4400	38.61	peak	-3.97	34.64	46.00	11.36
5	600.3600	34.01	peak	-1.39	32.62	46.00	13.38
6	624.6100	36.39	peak	-0.83	35.56	46.00	10.44

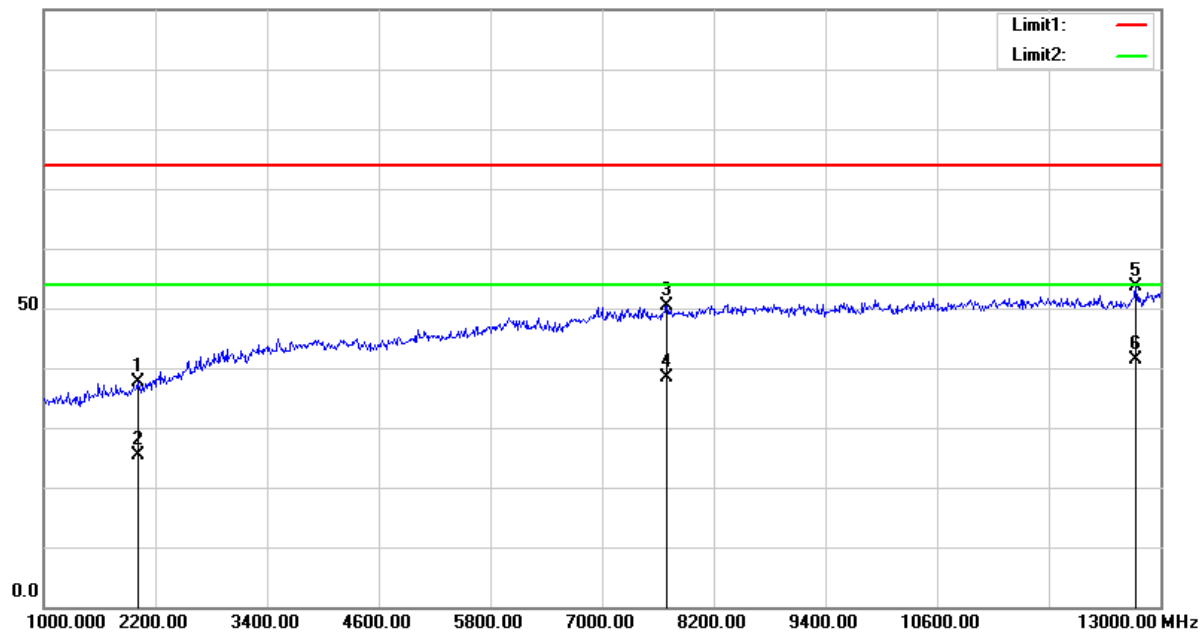
Vertical:



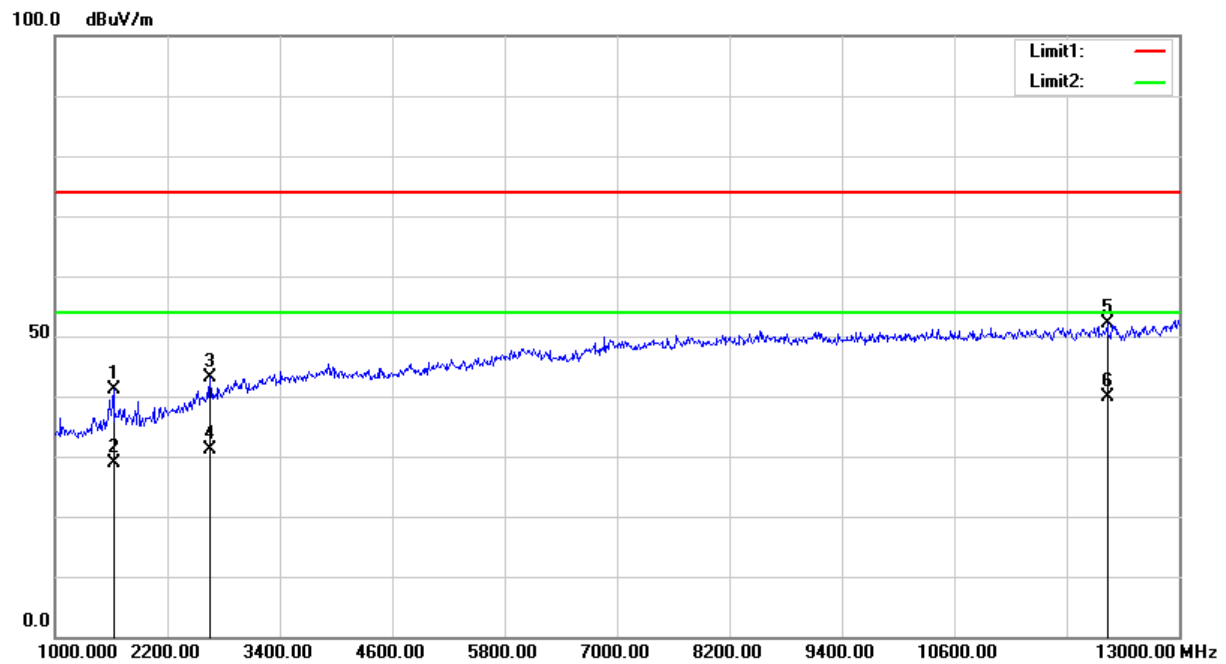
No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	30.9700	27.98	peak	-4.66	23.32	40.00	16.68
2	147.3700	32.93	peak	-9.18	23.75	43.50	19.75
3	355.9200	30.99	peak	-6.35	24.64	46.00	21.36
4	442.2500	31.97	peak	-4.45	27.52	46.00	18.48
5	553.8000	30.85	peak	-1.72	29.13	46.00	16.87
6	624.6100	33.90	peak	-0.83	33.07	46.00	12.93

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	2014.000	33.84	peak	3.71	37.55	74.00	36.45
2	2014.000	21.75	AVG	3.71	25.46	54.00	28.54
3	7696.000	35.28	peak	15.15	50.43	74.00	23.57
4	7696.000	23.19	AVG	15.15	38.34	54.00	15.66
5	12742.000	32.46	peak	21.07	53.53	74.00	20.47
6	12742.000	20.29	AVG	21.07	41.36	54.00	12.64

Vertical:

No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	1624.000	39.53	peak	1.53	41.06	74.00	32.94
2	1624.000	27.35	AVG	1.53	28.88	54.00	25.12
3	2656.000	38.63	peak	4.58	43.21	74.00	30.79
4	2656.000	26.58	AVG	4.58	31.16	54.00	22.84
5	12232.000	31.56	peak	20.48	52.04	74.00	21.96
6	12232.000	19.37	AVG	20.48	39.85	54.00	14.15

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