

FCC PART 15B

TEST REPORT

For

HONG KONG IPRO TECHNOLOGY CO.,LIMITED

12/F 3 LOCKHART ROAD WANCHAI HK

FCC ID: PQ4IPROS401

Report Type: Original Report	Product Type: Mobile Phone
Report Number:	RDG200924011-00B
Report Date:	2020-10-20
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:		S401
Highest Operation Frequency:		2480 MHz
Rated Input Voltage:		DC 3.7V from battery or DC 5V from adapter
Adapter Information	Model:	NTR-S01
	Input:	100Vac-240Vac 50/60Hz 150mA
	Output:	5.0Vdc 1000mA
Serial Number:		RDG200924011-RF-S1
EUT Received Date:		2020.09.28
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: PQ4IPROS401

FCC Part 15C DSS submissions with FCC ID: PQ4IPROS401

FCC Part 15C DTS submissions with FCC ID: PQ4IPROS401

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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SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in below Downloading mode.

EUT Exercise Software

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

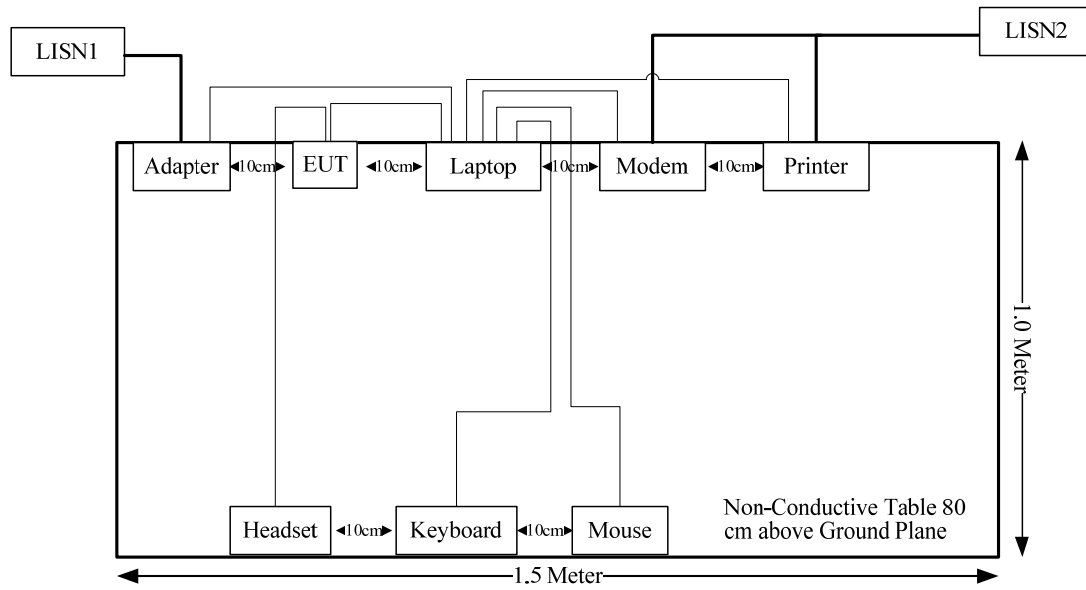
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	293
Victsing	Mouse	PC117A	18H11

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Keyboard Cable	Yes	No	1.5	USB Port of Laptop	Keyboard
Parallel Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
USB Cable	Yes	No	1.2	USB Port of Laptop	EUT
USB Cable	Yes	No	1.2	USB Port of Laptop	Mouse
Headset Cable	No	No	1.2	EUT	Headset

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
COM-POWER	LISN	LI-3P-132	20200003	2020-09-12	2021-09-12
Spurious Emissions					
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESR3	102453	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
HP	Amplifier	8447D	2727A05902	2020-09-05	2021-09-05
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
HUBER+SUHNER	Coaxial Cable	SUCOFLEX 126EA	MY369/26/26EA	2020-09-25	2021-09-25
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2020-09-05	2021-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* 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:	24.8 °C	27.2&27.5 °C	29 °C
Relative Humidity:	63%	37 & 45%	45%
ATM Pressure:	100.8kPa	100.7 & 100.8kPa	100.9kPa
Tester:	Leo Long	Michael Zhang	Bond Qin
Test Date:	2020-09-29	2020-09-29 & 2010-10-14	2020-10-10

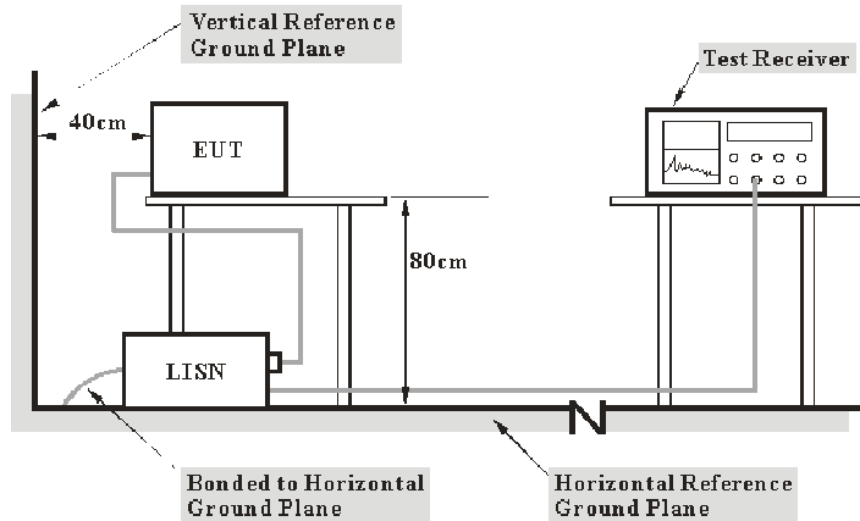
SUMARY OF TEST RESULTS

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.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

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

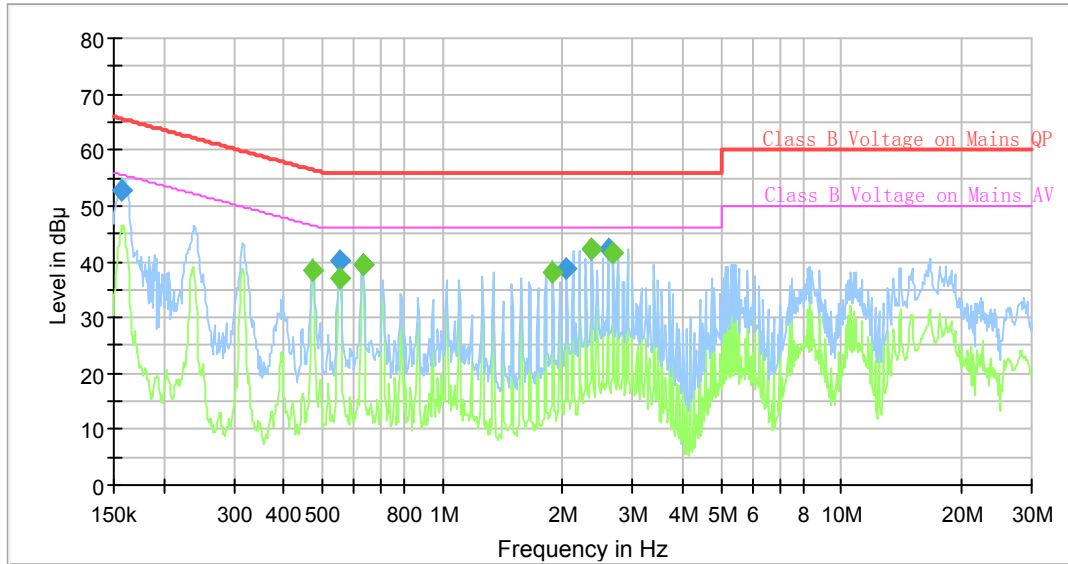
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Result

Test Data

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

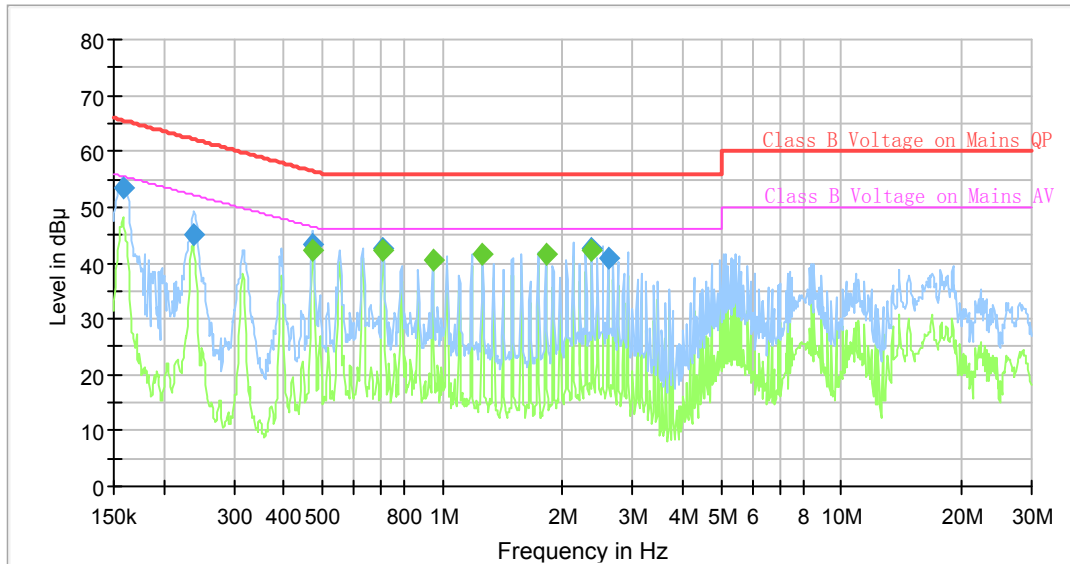
Port: L
 Test Mode: Downloading
 Power Source: AC 120V/60Hz



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.157671	52.87	---	65.59	12.72	9.000	L1	9.6
0.472373	---	38.42	46.47	8.05	9.000	L1	9.6
0.551358	---	37.00	46.00	9.00	9.000	L1	9.6
0.551358	40.30	---	56.00	15.70	9.000	L1	9.6
0.630837	---	39.37	46.00	6.63	9.000	L1	9.6
0.630837	39.41	---	56.00	16.59	9.000	L1	9.6
1.889951	---	38.04	46.00	7.96	9.000	L1	9.7
2.046952	38.76	---	56.00	17.24	9.000	L1	9.7
2.365502	42.44	---	56.00	13.56	9.000	L1	9.7
2.365502	---	42.41	46.00	3.59	9.000	L1	9.7
2.600630	42.39	---	56.00	13.61	9.000	L1	9.7
2.679631	---	41.66	46.00	4.34	9.000	L1	9.7

Port: N
Test Mode: Downloading
Power Source: AC 120V/60Hz
Note:

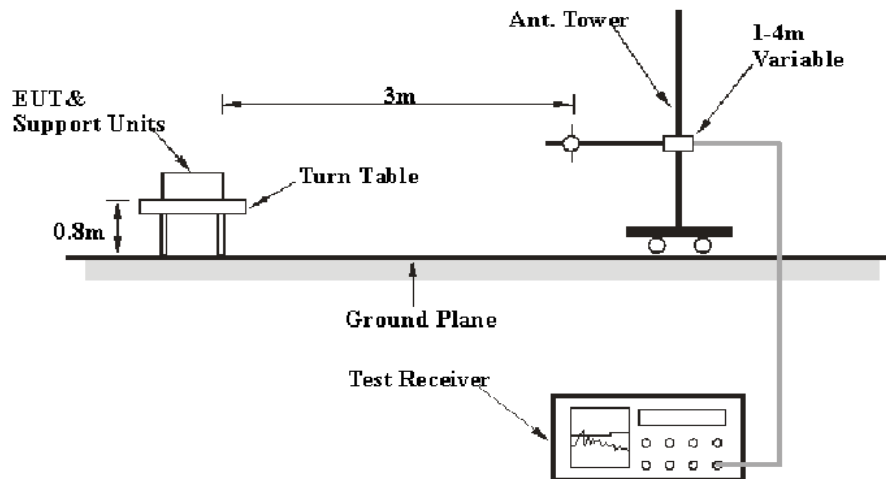


Final Result

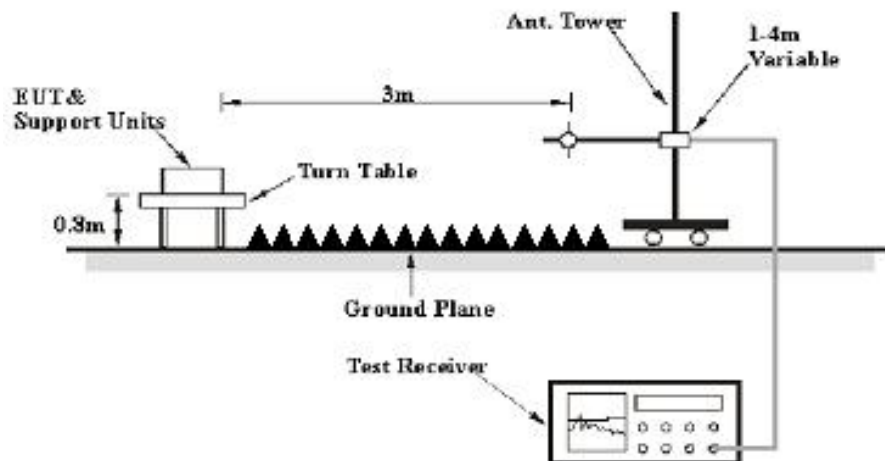
Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.158459	53.43	---	65.54	12.11	9.000	N	9.6
0.238526	45.14	---	62.15	17.01	9.000	N	9.6
0.472373	---	42.43	46.47	4.04	9.000	N	9.6
0.472373	43.36	---	56.47	13.11	9.000	N	9.6
0.711054	---	42.33	46.00	3.67	9.000	N	9.6
0.711054	42.66	---	56.00	13.34	9.000	N	9.6
0.944861	---	40.59	46.00	5.41	9.000	N	9.6
1.261826	---	41.63	46.00	4.37	9.000	N	9.6
1.816026	---	41.69	46.00	4.31	9.000	N	9.6
2.365502	42.63	---	56.00	13.37	9.000	N	9.6
2.365502	---	42.11	46.00	3.89	9.000	N	9.6
2.600630	40.78	---	56.00	15.22	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

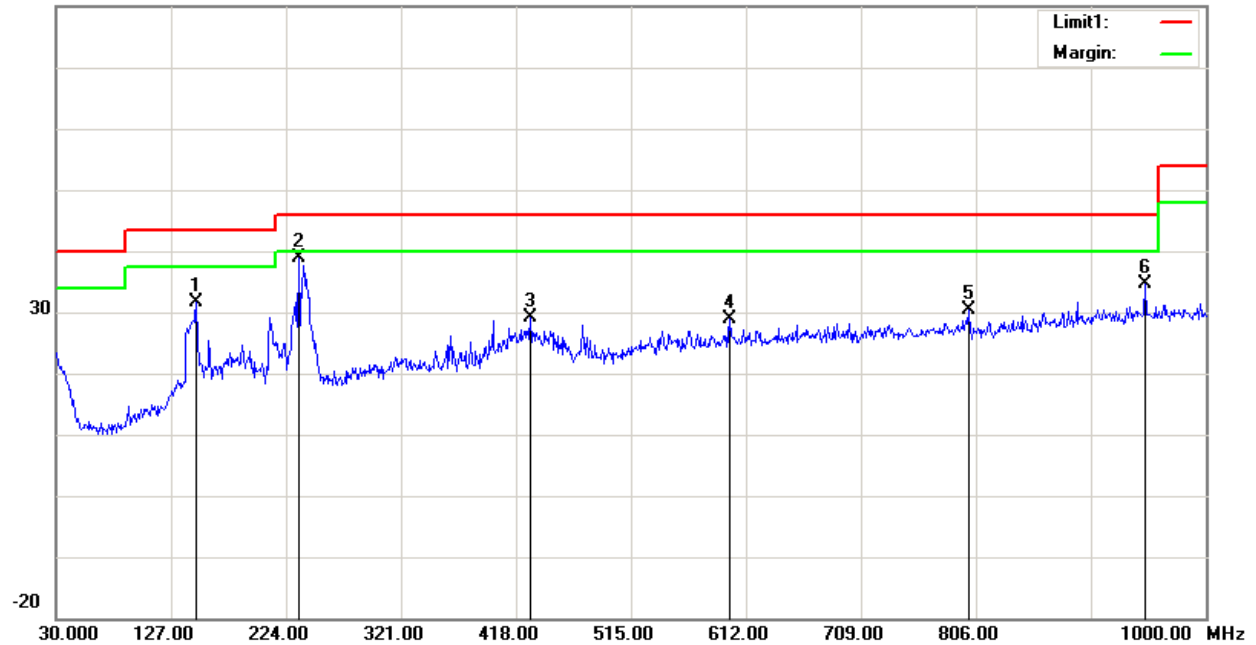
Corrected = Antenna Factor + Cable Loss - Amplifier Gain

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:

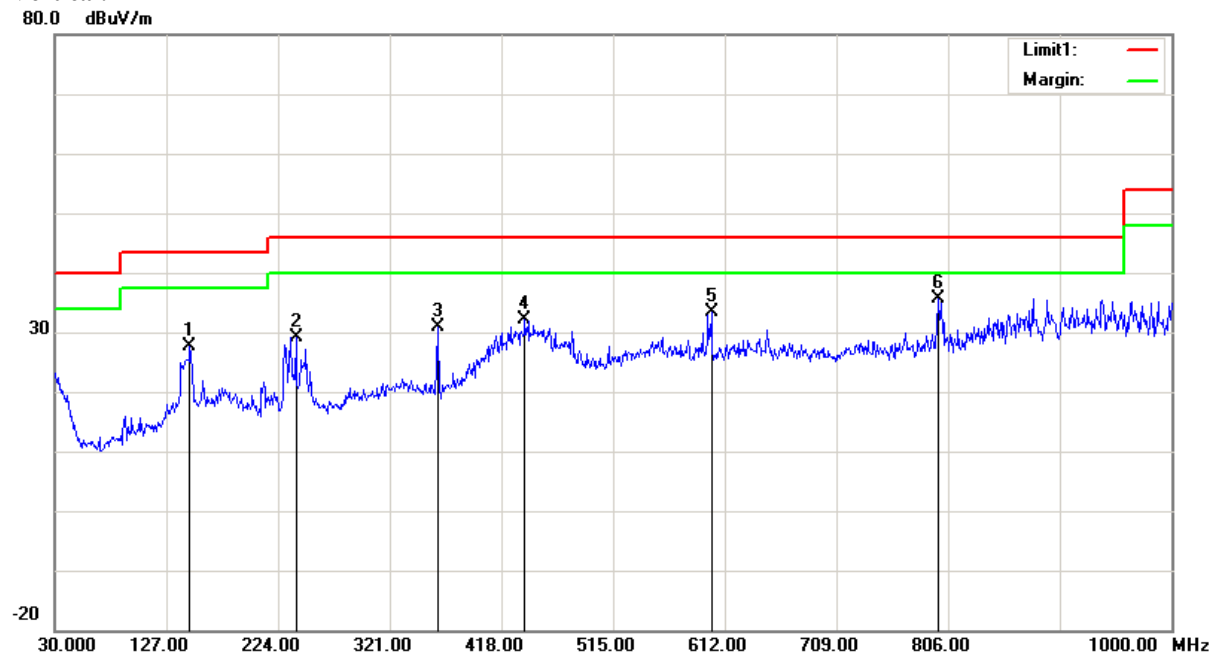
$$\text{Margin} = \text{Limit} - \text{Result}$$

Test Data

Please refer to following table and plots:

Test Mode: Downloading**1) 30MHz-1GHz:****Horizontal:**80.0 dB μ V/m

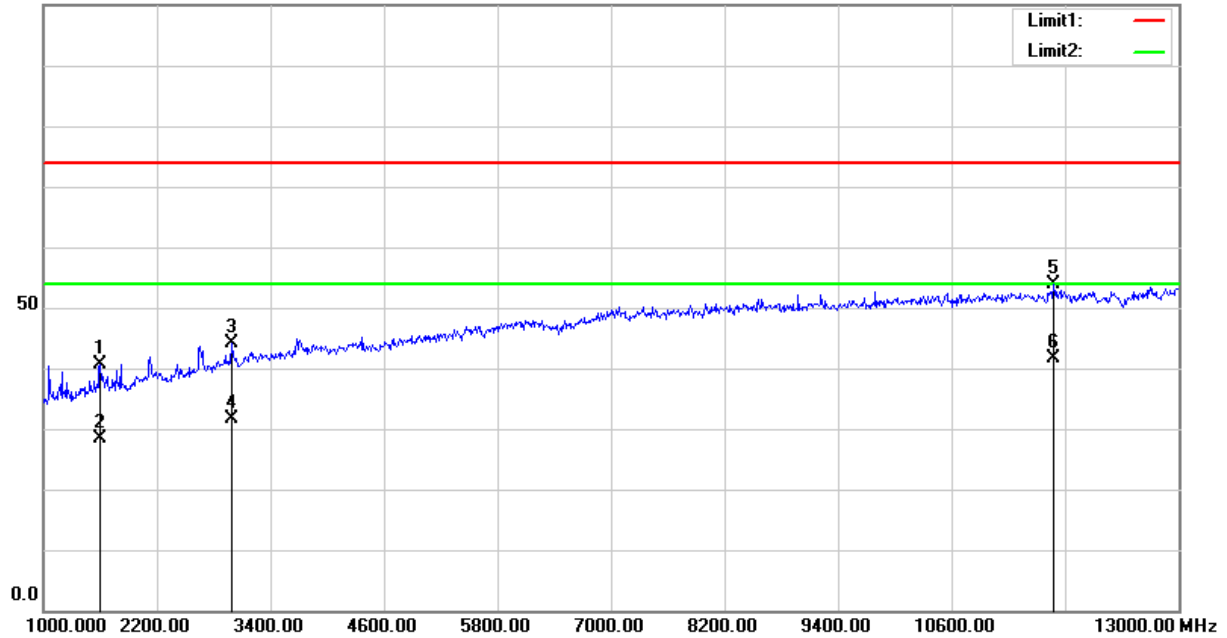
No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	148.3400	40.93	peak	-9.22	31.71	43.50	11.79
2	234.6700	49.00	peak	-10.19	38.81	46.00	7.19
3	429.6400	33.86	peak	-4.65	29.21	46.00	16.79
4	598.4200	30.31	peak	-1.45	28.86	46.00	17.14
5	800.1800	29.27	peak	1.03	30.30	46.00	15.70
6	948.5900	30.04	peak	4.63	34.67	46.00	11.33

Vertical:

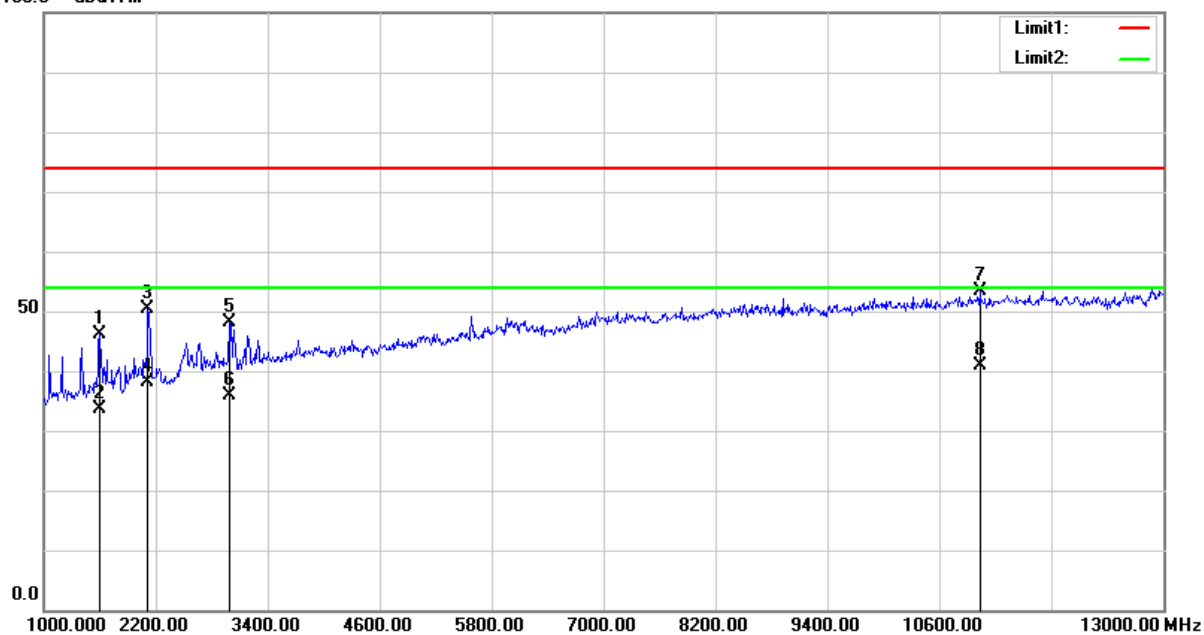
No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	147.3700	36.82	peak	-9.18	27.64	43.50	15.86
2	239.5200	39.20	peak	-10.05	29.15	46.00	16.85
3	362.7100	36.98	peak	-6.04	30.94	46.00	15.06
4	438.3700	36.68	peak	-4.52	32.16	46.00	13.84
5	600.3600	34.84	peak	-1.39	33.45	46.00	12.55
6	797.2700	34.63	peak	1.05	35.68	46.00	10.32

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	1600.000	39.13	peak	1.44	40.57	74.00	33.43
2	1600.000	27.02	AVG	1.44	28.46	54.00	25.54
3	2998.000	37.96	peak	6.18	44.14	74.00	29.86
4	2998.000	25.36	AVG	6.18	31.54	54.00	22.46
5	11686.000	33.59	peak	20.27	53.86	74.00	20.14
6	11686.000	21.36	AVG	20.27	41.63	54.00	12.37

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	1600.000	44.77	peak	1.44	46.21	74.00	27.79
2	1600.000	32.25	AVG	1.44	33.69	54.00	20.31
3	2122.000	46.63	peak	3.82	50.45	74.00	23.55
4	2122.000	34.36	AVG	3.82	38.18	54.00	15.82
5	2998.000	41.98	peak	6.18	48.16	74.00	25.84
6	2998.000	29.58	AVG	6.18	35.76	54.00	18.24
7	11038.000	33.67	peak	19.66	53.33	74.00	20.67
8	11038.000	21.30	AVG	19.66	40.96	54.00	13.04

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