TESTING LABORATORY
CERTIFICATE #4820.01

FCC PART 15B

TEST REPORT

For

Xstar Smart Power Co.,Limited

9B,Cheong Tai Commercil Building,66 Wing Lok Street,Sheung Wan ,Hong Kong.

FCC ID: 2ARIR-0040A

Report Type: Original Report	**Product Type:** Mobile Phone
Report Number:	RDG190919005-00D
Report Date:	2019-10-14
Reviewed By:	Jerry Zhang EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Mobile Phone
EUT Model:		S2
Highest Operation Frequency:		2480 MHz
Rated Input Voltage:		3.7V DC from battery or 5V DC from adapter
Adapter Information	**Input:**	AC100V-240V 50/60HZ 150mA
	Output:	DC 5.0V 500mA
External Dimension:		123mm(L)*64.5mm(W)*10.5mm(H)
Serial Number:		190919005
EUT Received Date:		2019.09.20
EUT Status:		The test samples were in good condition.

Objective

This report is prepared on behalf of Xstar Smart Power Co.,Limited in accordance with FCC Part 15B Part 2, subpart J, and Part 15, Subpart A and B of the Federal Communications Commission's rules.

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

Related Submittal(s)/Grant(s)

FCC Part 22H, 24E PCE submissions with FCC ID: 2ARIR-0040A
FCC Part 15C DSS submissions with FCC ID: 2ARIR-0040A
FCC Part 15C DTS submissions with FCC ID: 2ARIR-0040A

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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB,200M~1GHz: 5.92 dB,1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Temperature	±1℃
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in downloading mode.

Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

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

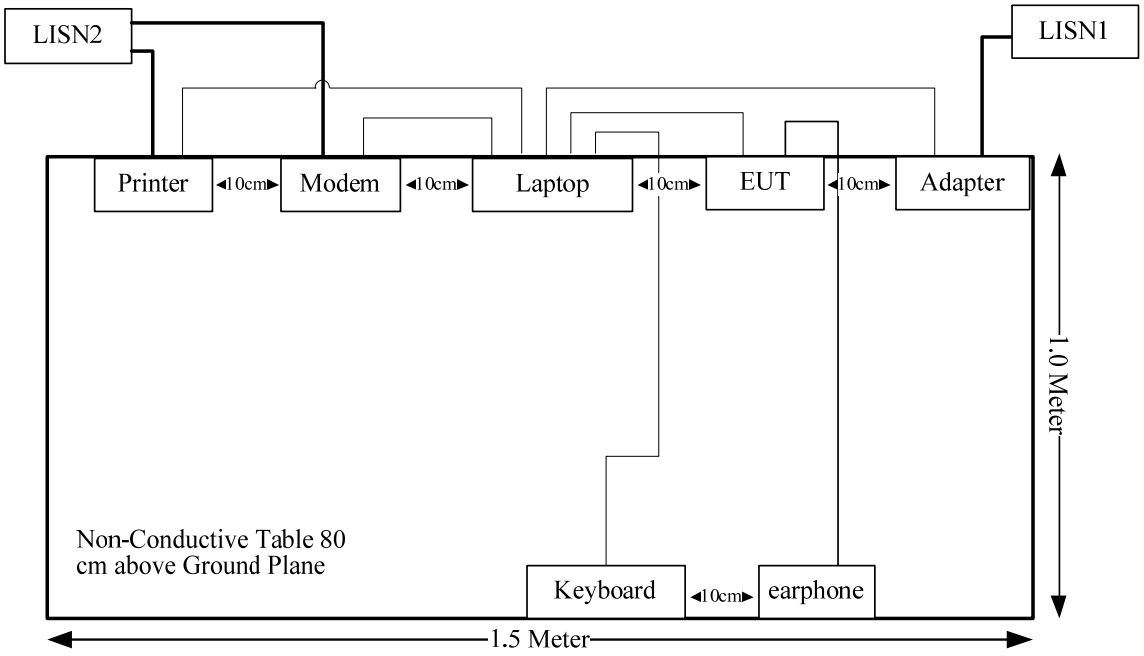
Local Support Equipment List and Details

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

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Earphone Cable	No	No	1.2	EUT	Earphone
USB Cable	Yes	No	0.8	USB Port of Laptop	EUT
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	Yes	Yes	1.8	USB Port of Laptop	Keyboard

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emissions					
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2019-09-05	2020-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2018-12-10	2019-12-10
R&S	EMI Test Receiver	ESCI	101121	2019-05-09	2020-05-09
R&S	L.I.S.N	ESH2-Z5	892107/021	2019-09-19	2020-09-19
Radiated emissions Below 1GHz					
R&S	EMI Test Receiver	ESCI	100035	2019-08-03	2020-08-03
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-2	2017-08-25	2020-08-25
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2018-10-24	2019-10-24
Sonoma	Amplifier	310N	185914	2018-10-13	2019-10-13
Radiated emissions Above 1GHz					
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-05-09	2020-05-09
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
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2019-09-05	2020-09-05

* 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

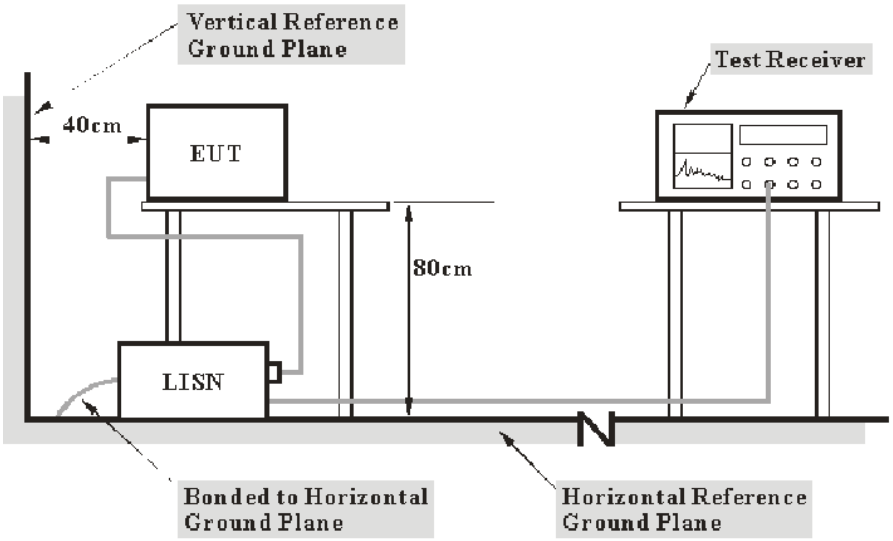
Test Item:	Conducted emissions	Radiated emissions Below 1GHz	Radiated emissions Above 1GHz
Test Date:	2019-09-27	2019-09-29	2019-09-20
Tester:	Sem Xing	Ade Xiao	Tyler Pan
Temperature:	26.1℃	26.1℃	27.3℃
Relative Humidity:	54%	55%	53%
ATM Pressure:	101.5kPa	100.8kPa	100.7kPa

SUMMARY OF TEST RESULTS

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

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 120V/60Hz 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 of Laptop 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.

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$

Herein,
V_C: corrected voltage amplitude

V_R: reading voltage amplitude

A_c: attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

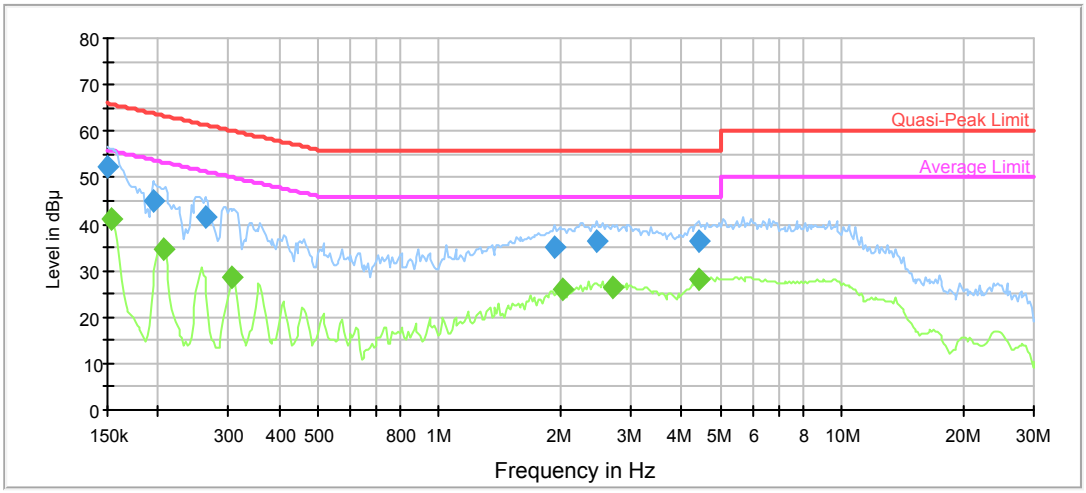
The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Data

Please refer to following table and plots:

Port:	L
Test Mode:	Downloading
Power Source:	AC120V/60Hz



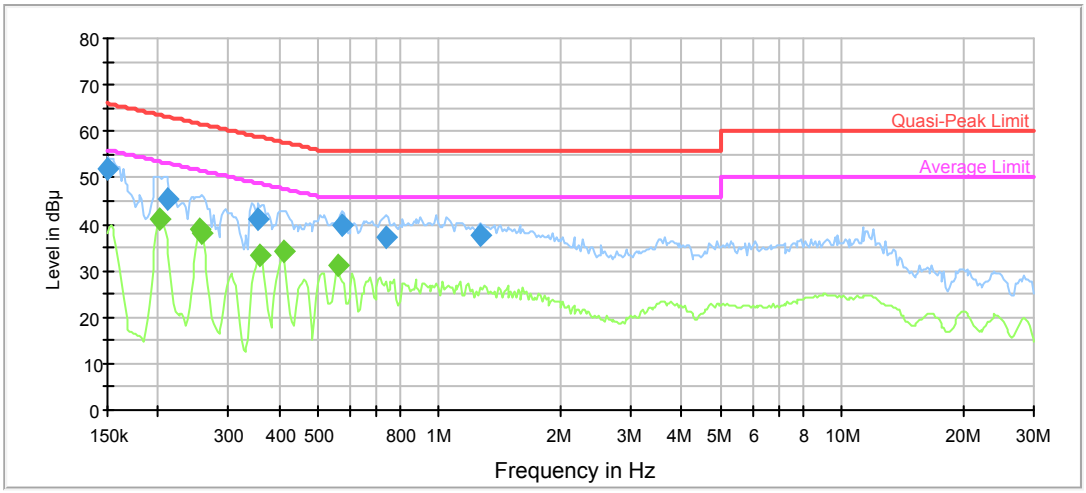
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	52.5	9.000	L1	11.2	13.5	66.0
0.194289	45.0	9.000	L1	10.7	18.9	63.9
0.261872	41.6	9.000	L1	10.3	19.8	61.4
1.935016	34.9	9.000	L1	9.7	21.1	56.0
2.456957	36.4	9.000	L1	9.8	19.6	56.0
4.419352	36.4	9.000	L1	9.8	19.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.153015	41.0	9.000	L1	11.1	14.8	55.8
0.206241	34.8	9.000	L1	10.6	18.6	53.4
0.307065	28.3	9.000	L1	10.1	21.7	50.0
2.033721	25.8	9.000	L1	9.7	20.2	46.0
2.714009	26.5	9.000	L1	9.8	19.5	46.0
4.419352	28.0	9.000	L1	9.8	18.0	46.0

Port: N
Test Mode: Downloading
Power Source: AC120V/60Hz



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	51.8	9.000	N	11.2	14.2	66.0
0.210387	45.6	9.000	N	10.5	17.6	63.2
0.356493	41.2	9.000	N	10.0	17.6	58.8
0.574747	39.7	9.000	N	9.8	16.3	56.0
0.737074	37.3	9.000	N	9.8	18.7	56.0
1.261437	37.6	9.000	N	9.8	18.4	56.0

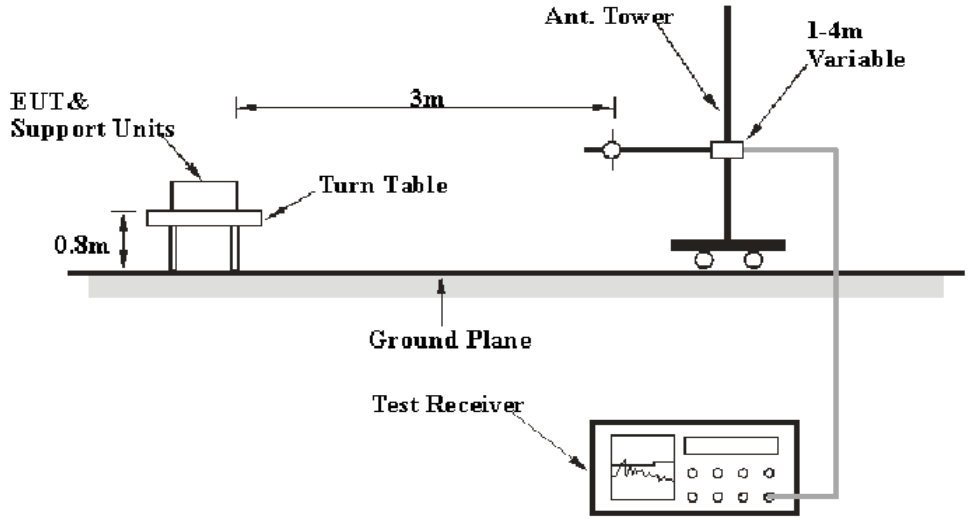
Final Result 2

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.202177	41.1	9.000	N	10.6	12.4	53.5
0.254170	38.8	9.000	N	10.3	12.8	51.6
0.256712	38.1	9.000	N	10.3	13.4	51.5
0.360058	33.5	9.000	N	10.0	15.2	48.7
0.409780	34.1	9.000	N	10.0	13.6	47.7
0.557844	31.1	9.000	N	9.8	14.9	46.0

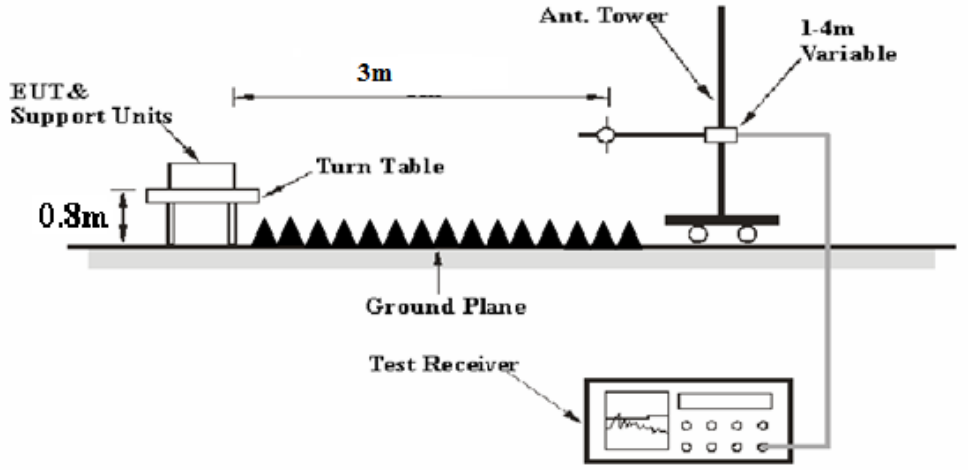
RADIATED EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission below 1GHz tests were performed in the 10 meters chamber test site, above 1GHz tests were performed in the 3 meters chamber test site B, using the setup accordance with the ANSI C63.4-2014. The specification used was with the FCC Part 15 B 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

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

Test Procedure

During the radiated emissions, the adapter of laptop 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Meter Reading+ Corrected

Note:
Corrected = Antenna Factor + Cable Loss - Amplifier Gain

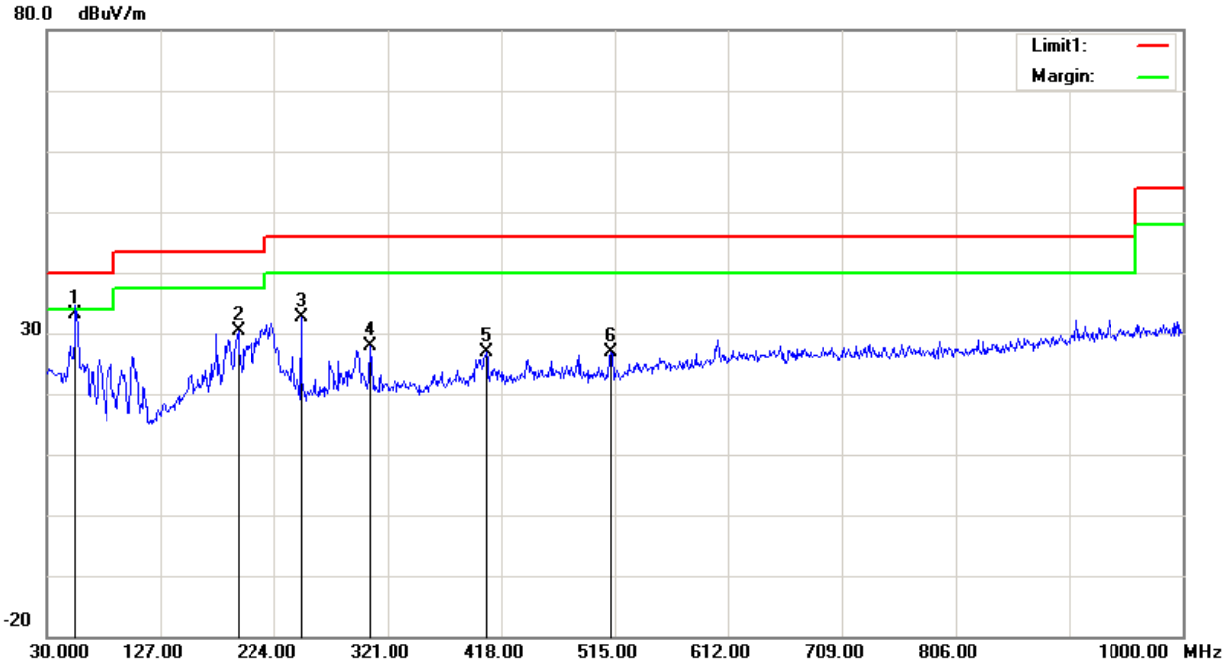
The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation
is as follows:

Margin = Limit – Result

Test Data

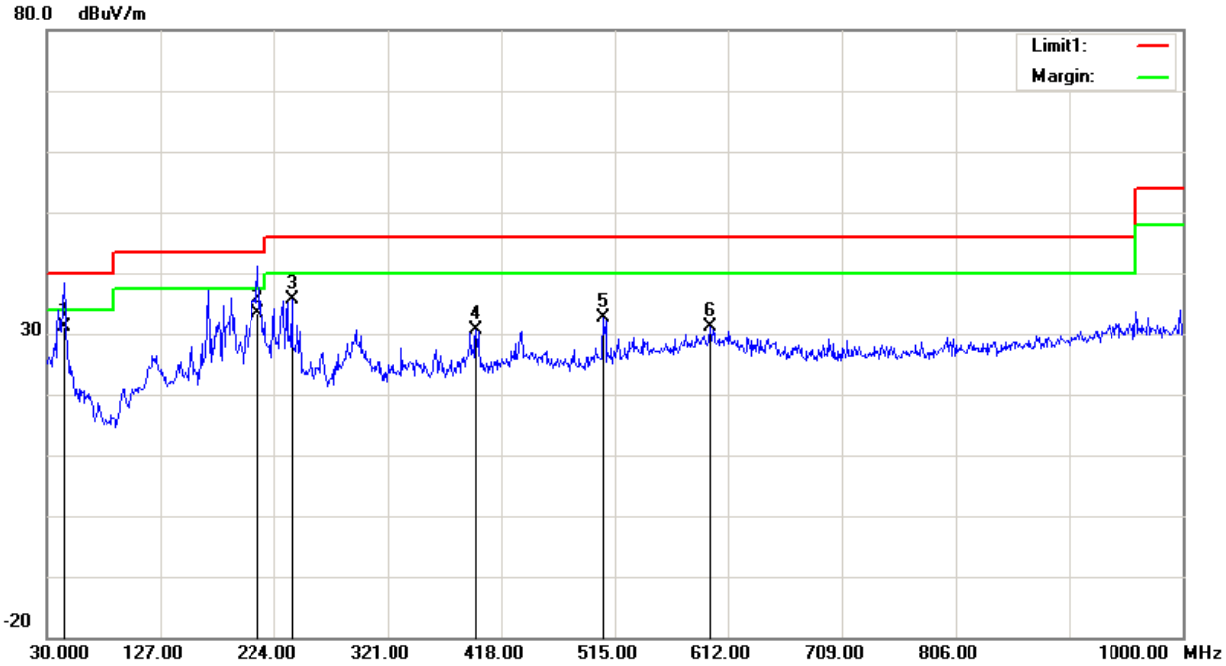
Please refer to following table and plots:

Condition:	FCC Part 15B Class B	**Polarization:**	Horizontal
EUT:	Mobile Phone	**Power:**	AC 120V/60Hz
Test Mode:	Downloading	**Distance:**	3m



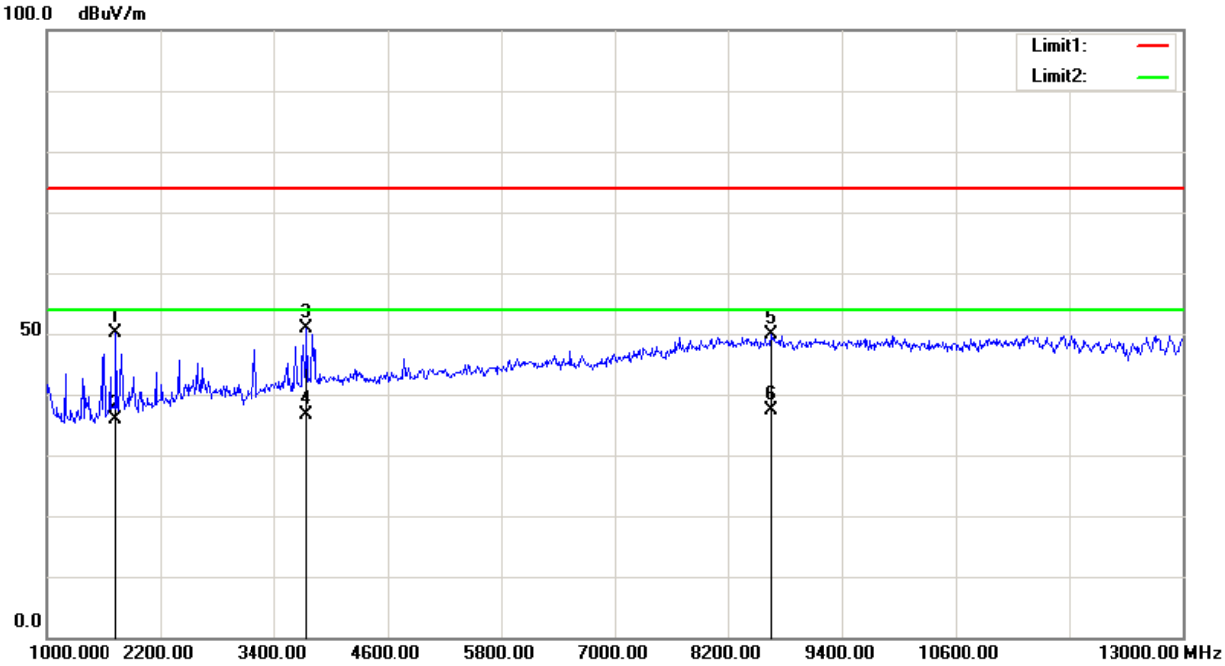
Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
54.2500	49.69	QP	-16.53	33.16	40.00	6.84
192.9600	40.67	peak	-10.33	30.34	43.50	13.16
247.2800	42.63	peak	-9.96	32.67	46.00	13.33
305.4800	35.06	peak	-7.22	27.84	46.00	18.16
405.3900	31.88	peak	-5.02	26.86	46.00	19.14
512.0900	29.86	peak	-2.93	26.93	46.00	19.07

Condition:	FCC Part 15B Class B	**Polarization:**	Vertical
EUT:	Mobile Phone	**Power:**	AC 120V/60Hz
Test Mode:	Downloading	**Distance:**	3m



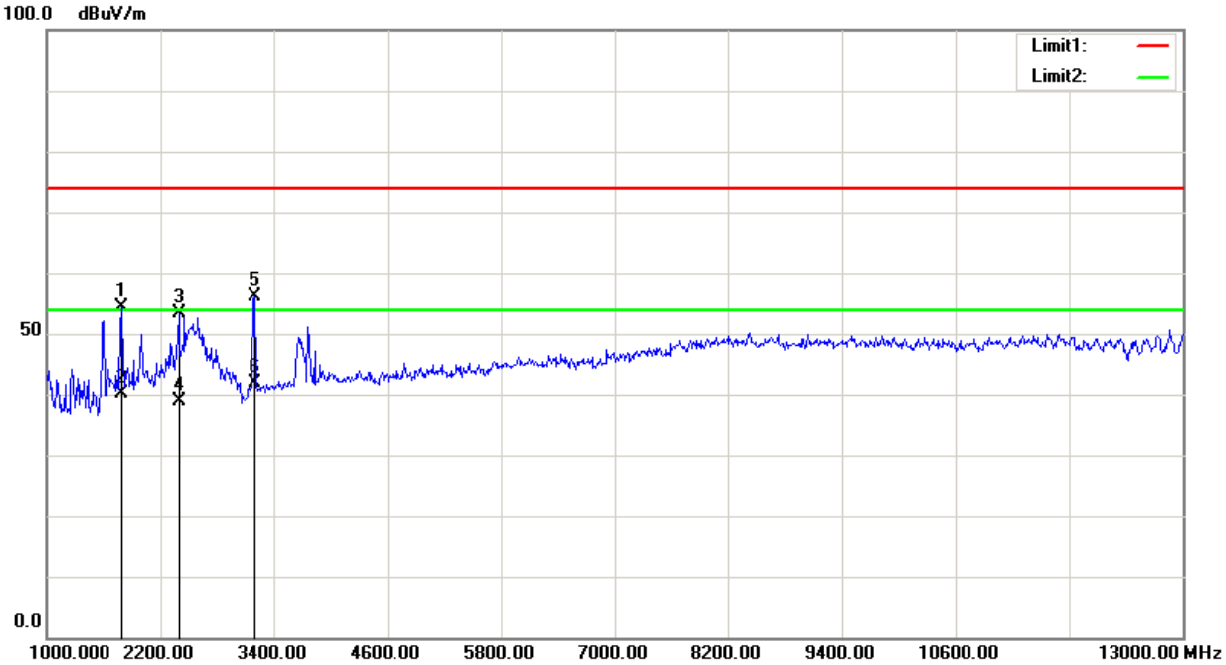
Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
44.5500	43.72	QP	-12.62	31.10	40.00	8.90
210.4200	44.66	QP	-11.36	33.30	43.50	10.20
239.5200	45.83	peak	-10.13	35.70	46.00	10.30
396.6600	35.87	peak	-5.35	30.52	46.00	15.48
505.3000	35.92	peak	-3.19	32.73	46.00	13.27
597.4500	32.69	peak	-1.44	31.25	46.00	14.75

Condition:	FCC Part 15B Class B	**Polarization:**	Horizontal
EUT:	Mobile Phone	**Power:**	AC 120V/60Hz
Test Mode:	Downloading	**Distance:**	3m



Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1738.000	58.33	peak	-8.20	50.13	74.00	23.87
1738.000	44.10	AVG	-8.20	35.90	54.00	18.10
3754.000	53.55	peak	-2.62	50.93	74.00	23.07
3754.000	39.21	AVG	-2.62	36.59	54.00	17.41
8656.000	44.15	peak	5.70	49.85	74.00	24.15
8656.000	31.65	AVG	5.70	37.35	54.00	16.65

Condition:	FCC Part 15B Class B	**Polarization:**	Vertical
EUT:	Mobile Phone	**Power:**	AC 120V/60Hz
Test Mode:	Downloading	**Distance:**	3m



Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1798.000	62.17	peak	-7.79	54.38	74.00	19.62
1798.000	47.86	AVG	-7.79	40.07	54.00	13.93
2392.000	59.88	peak	-6.54	53.34	74.00	20.66
2392.000	45.35	AVG	-6.54	38.81	54.00	15.19
3196.000	60.29	peak	-4.22	56.07	74.00	17.93
3196.000	46.10	AVG	-4.22	41.88	54.00	12.12

Directions

1. The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
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