



TESTING LABORATORY
CERTIFICATE #4820.01



FCC PART 15 B TEST REPORT

For

MFOURTEL MEXICO S.A. DE C.V.

Av. Ejercito Nacional 436 Piso 3 Chapultepec, Morales Miguel Hidalgo D.F 11570, Mexico

FCC ID: CLNM4R2PLUS

Report Type: Original Report	Product Type: Mobile Phone
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Report Date:	2018-11-23
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

EUT Name:		Mobile Phone
EUT Model:		M4 R2 Plus
FCC ID:		CLNM4R2PLUS
Rated Input Voltage:		DC3.8V from Battery or DC5V from adapter
Adapter Information	Model Name:	M4
	Input:	100-240V, 50/60Hz, 150mA
	Output:	DC5.0V, 1000mA
Highest Operation Frequency:		2690 MHz
External Dimension:		160.5mm(L)*76.7mm(W)*9mm(H)
Serial Number:		181029001
EUT Received Date:		2018.10.29

Objective

This test report is prepared on behalf of *MFOURTEL MEXICO S.A. DE C.V.* in accordance with Part 2, Subpart J, and Part 15-Subparts 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 15C DSS submissions with FCC ID: CLNM4R2PLUS.
FCC Part 15C DTS submissions with FCC ID: CLNM4R2PLUS.
FCC Part 22H, 24E, Part 27 PCE submissions with FCC ID: CLNM4R2PLUS.

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 °C
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 test site has been approved by the FCC 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 test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in operating and downloading mode.

EUT Exercise Software

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

Equipment Modifications

No modification was made to the EUT tested.

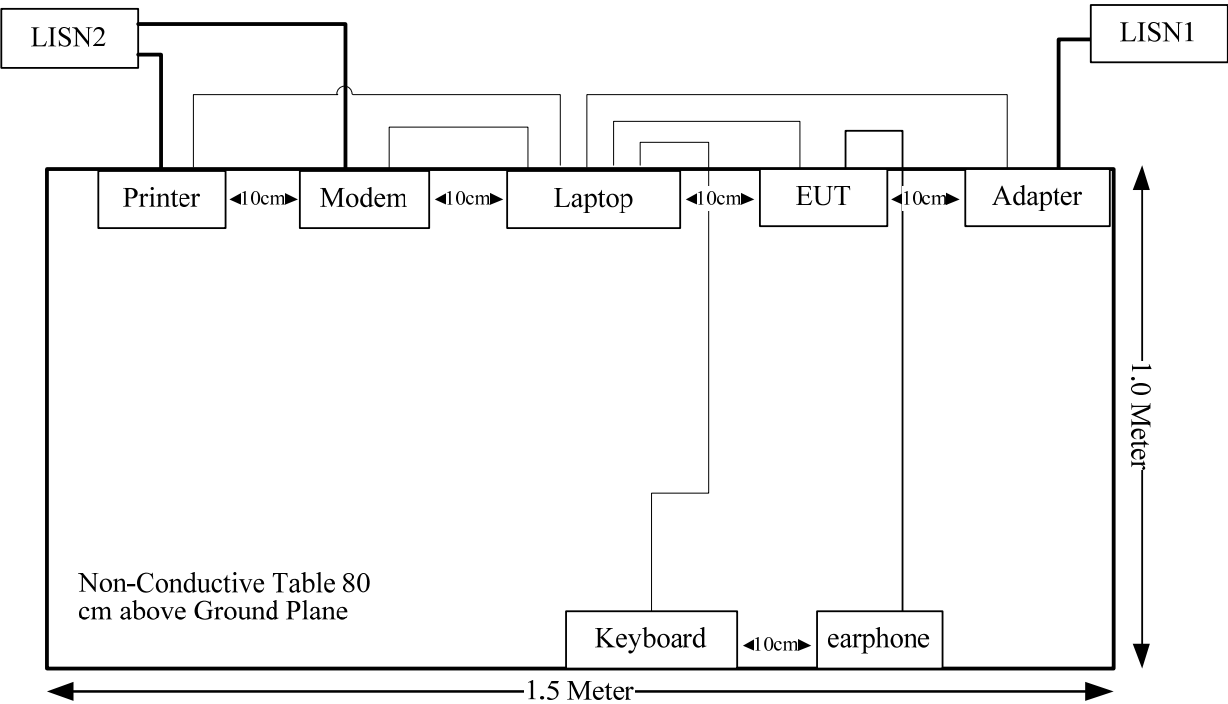
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293

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
Parallel Cable	yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	yes	No	1.8	USB Port of Laptop	Keyboard
USB Cable	yes	No	1.0	USB Port of Laptop	EUT
Earphone Cable	No	No	1.2	EUT	Earphone

Configuration of Test Setup

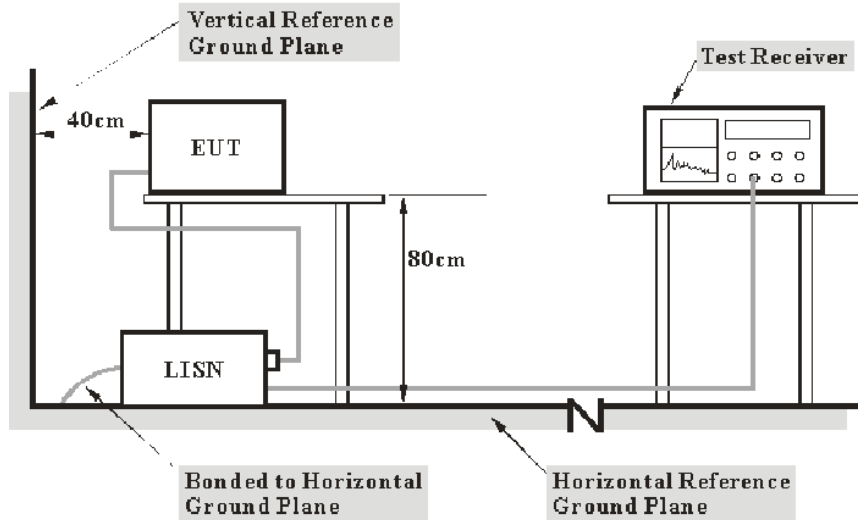


SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance

FCC§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 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2017-12-11	2018-12-11
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2018-09-05	2019-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2017-12-08	2018-12-08
R&S	L.I.S.N	ESH2-Z5	892107/021	2018-09-19	2019-09-19

* **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).

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B.

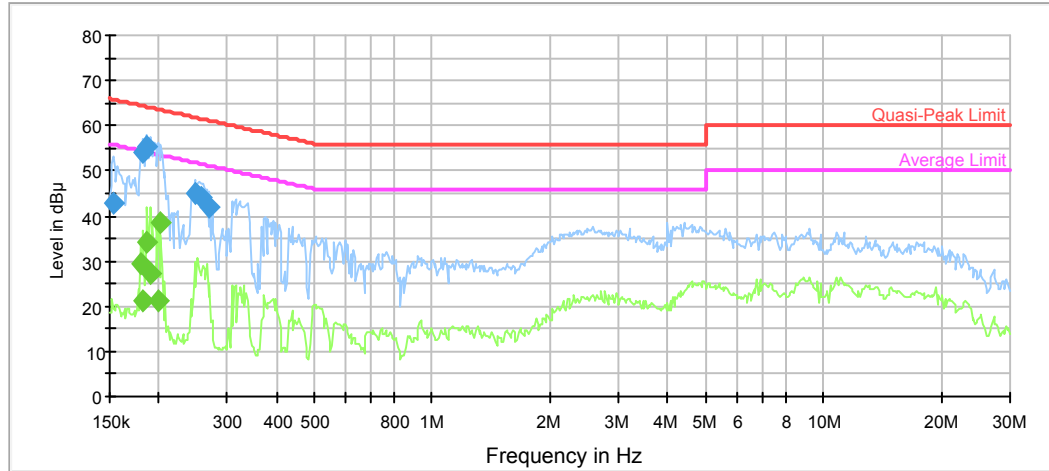
Test Data**Environmental Conditions**

Temperature:	27.4 °C
Relative Humidity:	49 %
ATM Pressure:	100.7 kPa

The testing was performed by Lily Xie on 2018-11-20.

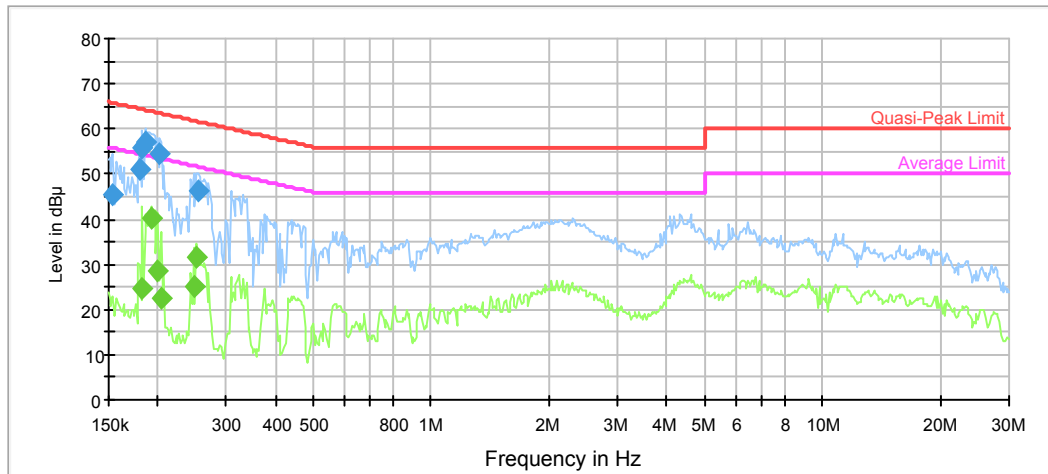
Test Mode: Downloading

AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.153629	42.8	9.000	L1	11.1	23.0	65.8	Compliance
0.183065	54.1	9.000	L1	10.8	10.2	64.3	Compliance
0.186006	55.4	9.000	L1	10.7	8.8	64.2	Compliance
0.247802	45.0	9.000	L1	10.3	16.8	61.8	Compliance
0.257874	44.1	9.000	L1	10.3	17.4	61.5	Compliance
0.270502	42.1	9.000	L1	10.2	19.0	61.1	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.180171	29.4	9.000	L1	10.8	25.1	54.5	Compliance
0.183065	21.0	9.000	L1	10.8	33.3	54.3	Compliance
0.187494	34.4	9.000	L1	10.7	19.7	54.1	Compliance
0.190505	27.3	9.000	L1	10.7	26.7	54.0	Compliance
0.199835	21.1	9.000	L1	10.6	32.5	53.6	Compliance
0.203045	38.5	9.000	L1	10.6	15.0	53.5	Compliance

AC120V, 60Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.153629	45.2	9.000	N	11.1	20.6	65.8	Compliance
0.180171	51.2	9.000	N	10.8	13.3	64.5	Compliance
0.183065	56.0	9.000	N	10.8	8.3	64.3	Compliance
0.186006	57.2	9.000	N	10.7	7.0	64.2	Compliance
0.203045	54.3	9.000	N	10.6	9.2	63.5	Compliance
0.253797	46.1	9.000	N	10.3	15.5	61.6	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.183065	24.7	9.000	N	10.8	29.6	54.3	Compliance
0.192030	40.2	9.000	N	10.7	13.7	53.9	Compliance
0.199835	28.3	9.000	N	10.6	25.3	53.6	Compliance
0.204669	22.6	9.000	N	10.6	30.8	53.4	Compliance
0.247802	25.1	9.000	N	10.3	26.7	51.8	Compliance
0.251783	31.5	9.000	N	10.3	20.2	51.7	Compliance

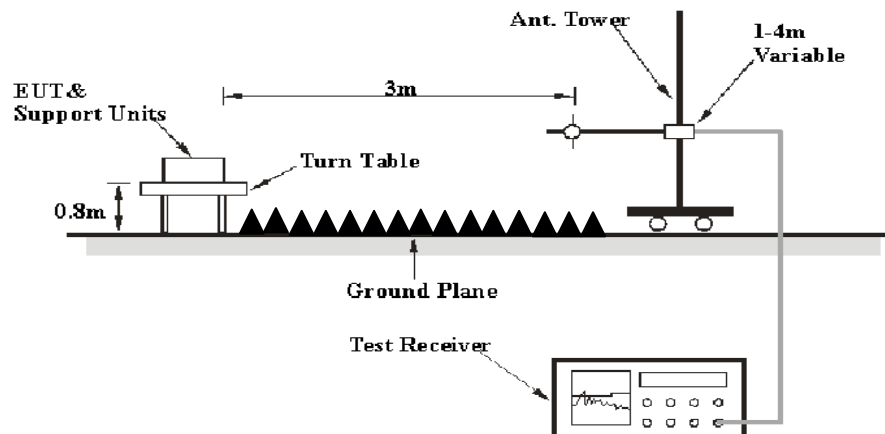
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 10 meters chamber test site for the range 30MHz to 1GHz and the 3 meters chamber test site B for above 1GHz, 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 13.5 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	10 Hz	/	AVG

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
HP	Amplifier	8447F	2443A01912	2018-09-05	2019-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2018-01-04	2019-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MITEQ	Amplifier	AFS42-00101800-2 5-S-42	2001271	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-2200-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
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).

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

Environmental Conditions

Temperature:	24.8~25.3 °C
Relative Humidity:	36~52 %
ATM Pressure:	99.7~101.2 kPa

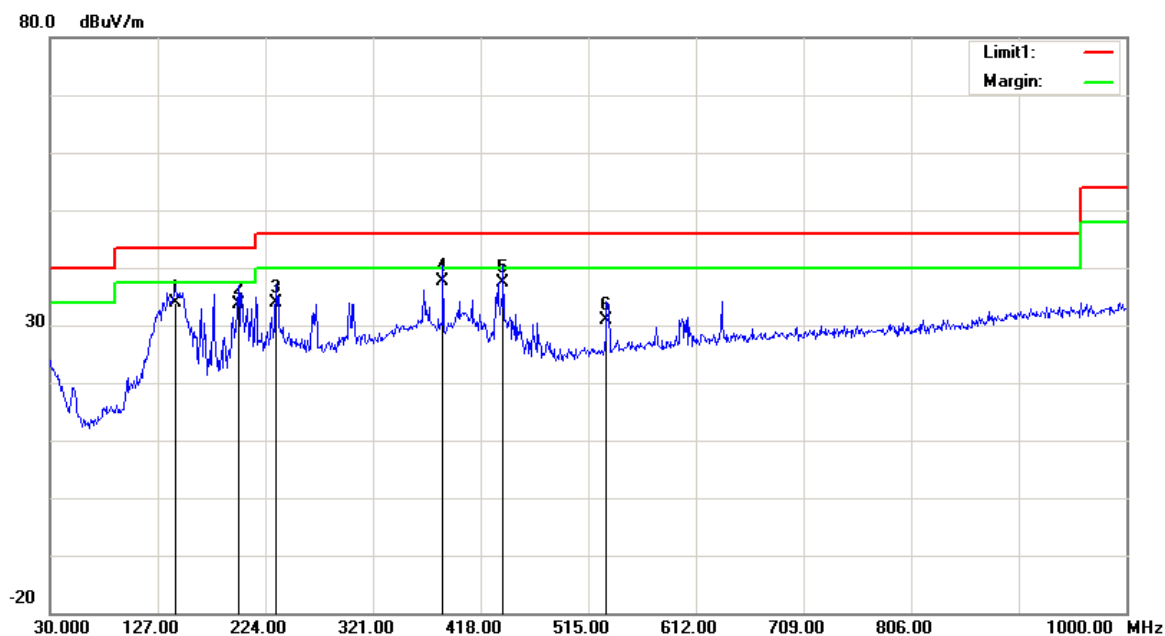
** The testing was performed by Vito Chen & Kami Zhou on 2018-11-08~2018-11-15.*

Test Result: Compliance

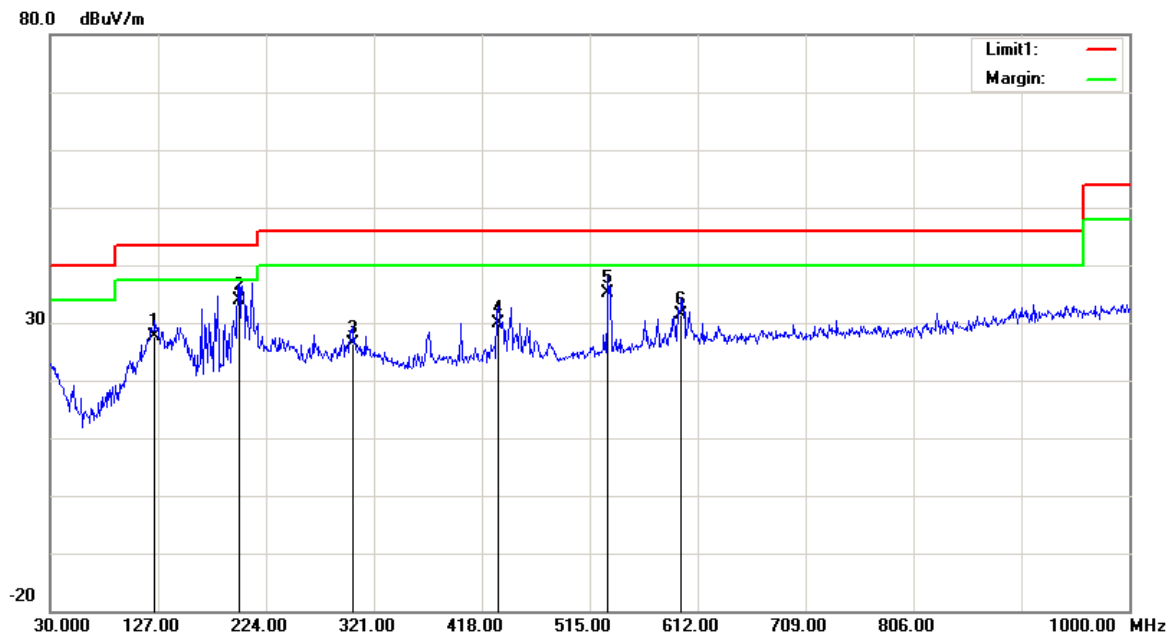
Test Mode: Downloading

1) Below 1GHz:

Horizontal



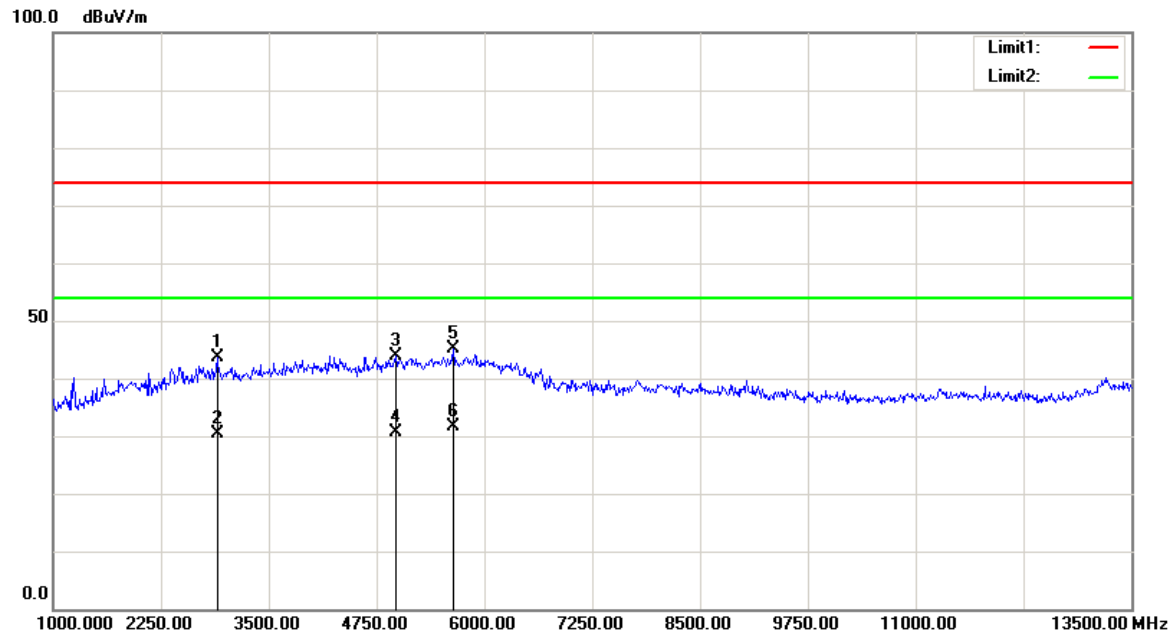
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
143.4900	43.24	QP	-9.34	33.90	43.50	9.60
199.7500	42.88	QP	-9.18	33.70	43.50	9.80
233.7000	44.30	QP	-10.30	34.00	46.00	12.00
384.0500	43.36	QP	-5.76	37.60	46.00	8.40
438.3700	41.94	QP	-4.54	37.40	46.00	8.60
531.4900	33.39	QP	-2.39	31.00	46.00	15.00

Vertical

Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
124.0900	39.47	QP	-11.87	27.60	43.50	15.90
199.7500	43.08	QP	-9.18	33.90	43.50	9.60
301.6000	33.79	QP	-7.39	26.40	46.00	19.60
432.5500	34.49	QP	-4.59	29.90	46.00	16.10
531.4900	37.59	QP	-2.39	35.20	46.00	10.80
597.4500	32.84	QP	-1.44	31.40	46.00	14.60

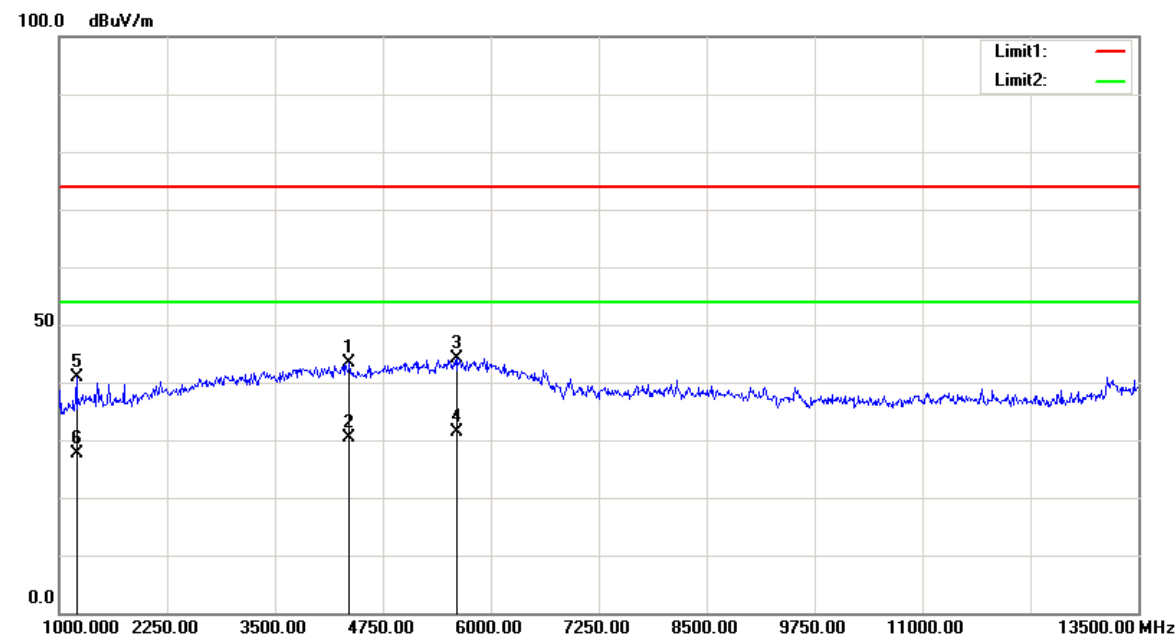
2) Above 1GHz:

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2906.250	48.95	peak	-5.21	43.74	74.00	30.26
2906.250	35.71	AVG	-5.21	30.50	54.00	23.50
4975.000	44.65	peak	-0.80	43.85	74.00	30.15
4975.000	31.47	AVG	-0.80	30.67	54.00	23.33
5637.500	44.78	peak	0.28	45.06	74.00	28.94
5637.500	31.46	AVG	0.28	31.74	54.00	22.26

Vertical



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4368.750	45.16	peak	-1.83	43.33	74.00	30.67
4368.750	32.24	AVG	-1.83	30.41	54.00	23.59
5618.750	44.02	peak	0.20	44.22	74.00	29.78
5618.750	31.17	AVG	0.20	31.37	54.00	22.63
1200.000	50.74	peak	-9.96	40.78	74.00	33.22
1200.000	37.51	AVG	-9.96	27.55	54.00	26.45

END OF REPORT