



FCC 47 CFR PART 15 Subpart C

TEST REPORT

For

301A POPO 2.4G Laser Mouse

Model Number: MORFBIUL / 00052492 / 98504

Trade Name: Hama / Primax / Jasco

Prepared for

PRIMAX ELECTRONICS LTD

NO.669, RUEY KUANG ROAD, NEIHU 114, TAIPEI, TAIWAN, R.O.C.

Prepared by

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1. TEST RESULT CERTIFICATION

Applicant: PRIMAX ELECTRONICS LTD
NO.669, RUEY KUANG ROAD, NEIHU 114, TAIPEI,
TAIWAN, R.O.C.

Equipment Under Test: 301A POPO 2.4G Laser Mouse

Trade Name: Hama / Primax / Jasco

Model: MORFBIUL / 00052492 / 98504

Date of Test: January 04-15, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements emission limits of FCC Rules Part 15.107, 15.109, 15.207, 15.209 and 15.249.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

Tested By: Henry Ding

Clinton Kao / Manager
COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.

Reviewed By:

Eric Wong / Assistant manager
COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.



2. EUT DESCRIPTION

Product	301A POPO 2.4G Laser Mouse
Trade Name	Hama / Primax / Jasco
Model Number	MORFBIUL / 00052492 / 98504
Model Discrepancy	All the models are identical in electronic level, different model designation applies due to marketing purpose.
Power Supply	TX: DC 1.5V powered by the battery RX: Powered by the notebook
Frequency Range	2402 MHz~2474MHz
Antenna Designation	PCB Antenna

Remark: This submittal(s) (test report) is intended for FCC ID: EMJM8BI01 filing to comply with Section 15.207, 15.209, 15.249 (FCC Part 15, Subpart C Rules.)



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.249.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.107 and 15.109 under the FCC Rules Part 15 Subpart B and Section 15.207, 15.209, 15.249 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.5 DESCRIPTION OF TEST MODES

The EUT had been tested under operating condition.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only, and powerline conducted emission below 30MHz, which worst case was in normal link mode with charging only.

Channel Low (2402MHz), Mid (2444MHz) and High (2474MHz) were chosen for the final testing.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.



4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

MEASUREMENT EQUIPMENT USED

966 RF CHAMBER 2				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
PSA Spectrum Analyzer	Agilent	E4446A	US44300399	02/08/2007
EMI Test Receiver	R&S	ESCI	1166.5950 03	01/13/2007
Pre-Amplifier	MITEQ	N/A	AFS42-00102650-42-10P-42	02/14/2007
Bilog Antenna	SCHWAZBECK	CBL6143	5082	06/09/2007
Turn Table	EMCO	2081-1.21	N/A	N.C.R
Antenna Tower	CT	N/A	N/A	N.C.R
Controller	CT	N/A	N/A	N.C.R
RF Comm. Test set	HP	8920B	US36142090	N.C.R
Site NSA	C&C	N/A	N/A	06/09/2007
Horn Antenna	TRC	N/A	N/A	03/04/2007

Remark: Each piece of equipment is scheduled for calibration once a year.

Conducted Emission Test Site G				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
ESCI EMI TEST RECEIV.ESCI	ROHDE&SCHWARZ	1166.5950 03	100088	02/08/2007
LISN	EMCO	3825/2	1371	02/08/2007
LISN	EMCO	3825/2	8901-1459	02/08/2007

Remark: Each piece of equipment is scheduled for calibration once a year.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 5, Jinao industrial park, No.35 Jukeng Road, Dashuikeng Village, Guanlan Town, Baoan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4: 2003 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	FCC ID	Series No.	Data Cable	Power Cord
1.	Notebook	DELL	PP05L	E2K24CLNS	CN-04Y212-486 43-38L-0491	N/A	Unshielded 1.8m

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

7. FCC PART 15.249 REQUIREMENTS

7.1 BAND EDGES MEASUREMENT

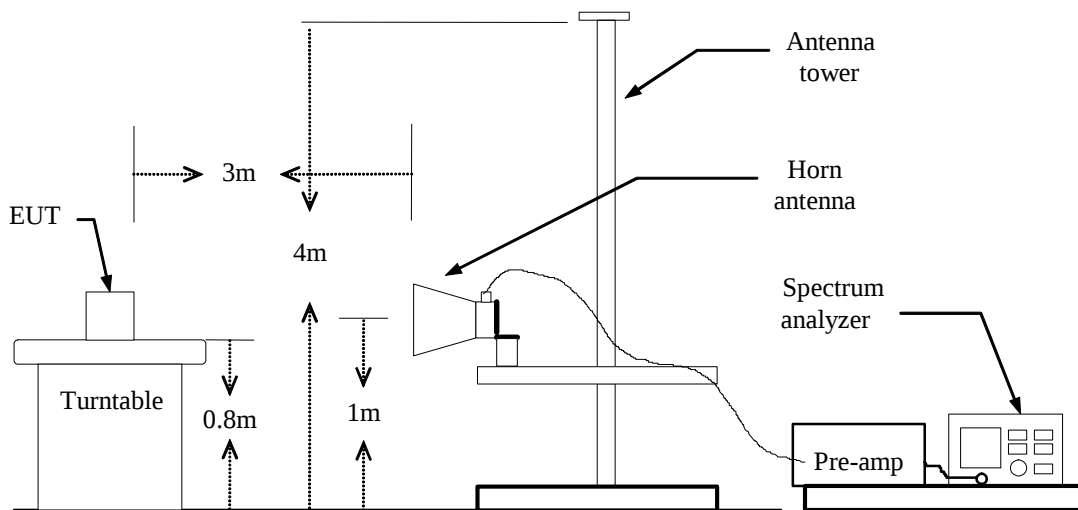
LIMIT

1. In the above emission table, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength ($\text{dB}\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

2. As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

Refer to attach spectrum analyzer data chart.



Band Edges (CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 14:36:42 Jan 9, 2007

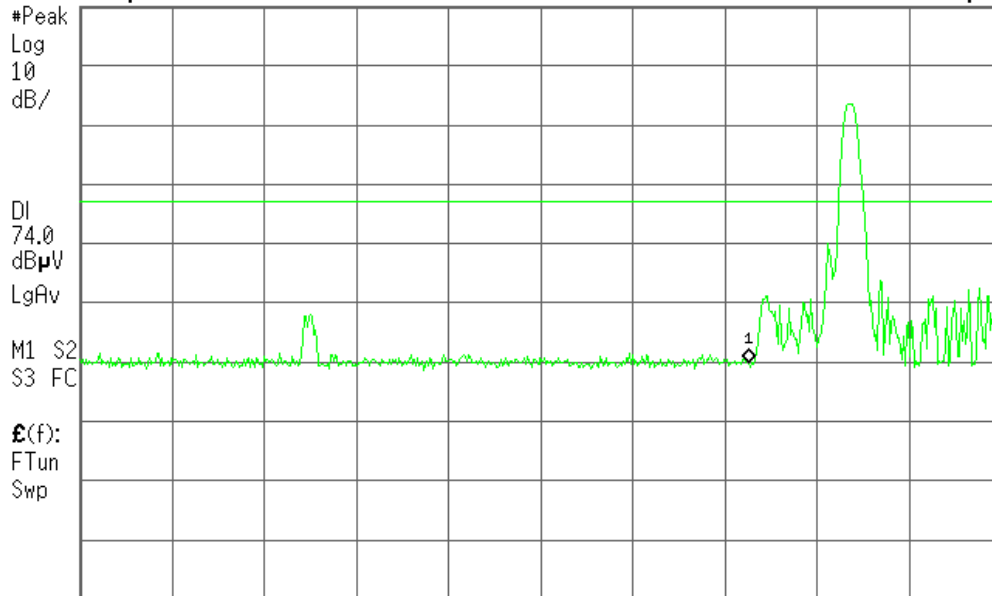
R T

Mkr1 2.390 0 GHz

46.88 dB μ V

Ref 107 dB μ V

#Atten 10 dB



Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

Sweep 1 ms (601 pts)

Detector mode: Average

Polarity: Vertical

Agilent 14:37:37 Jan 9, 2007

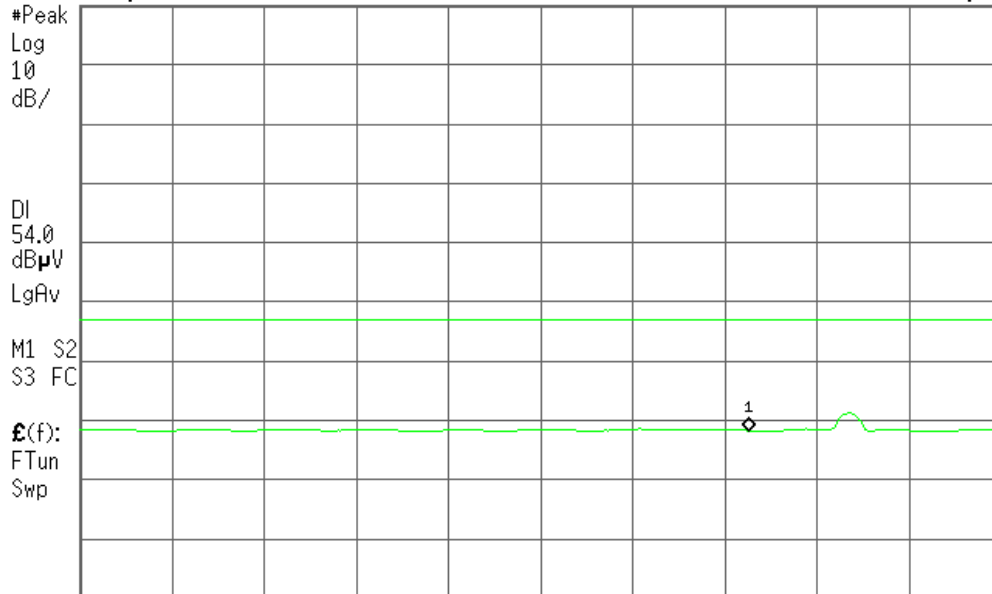
R T

Mkr1 2.390 0 GHz

35.28 dB μ V

Ref 107 dB μ V

#Atten 10 dB



Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

Agilent 14:34:13 Jan 9, 2007

R T

Mkr1 2.390 0 GHz

47.30 dBμV

Ref 107 dBμV

#Atten 10 dB

#Peak
Log
10
dB/

DI
74.0
dBμV
LgAv

M1 S2
S3 FC

£(f):
FTun
Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz
Sweep 1 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent 14:34:58 Jan 9, 2007

R T

Mkr1 2.390 0 GHz

35.31 dBμV

Ref 107 dBμV

#Atten 10 dB

#Peak
Log
10
dB/

DI
54.0
dBμV
LgAv

M1 S2
S3 FC

£(f):
FTun
Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.420 0 GHz
Sweep 8.577 s (601 pts)



Band Edges (CH High)

Detector mode: Peak

Polarity: Vertical

Agilent 14:22:29 Jan 9, 2007

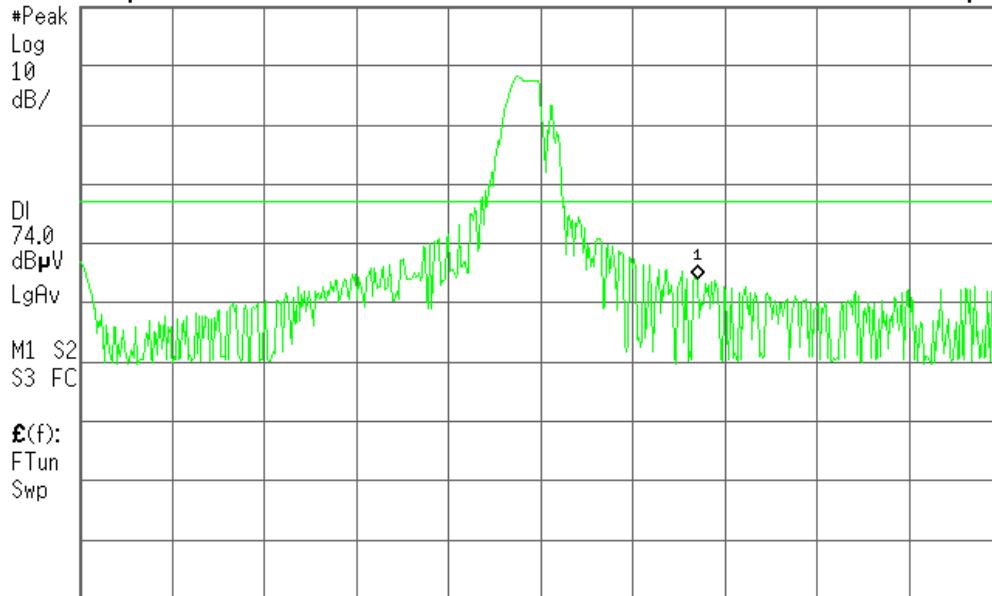
R T

Mkr1 2.483 50 GHz

61.03 dB μ V

Ref 107 dB μ V

#Atten 10 dB



Start 2.450 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

Sweep 1 ms (601 pts)

Detector mode: Average

Polarity: Vertical

Agilent 14:23:28 Jan 9, 2007

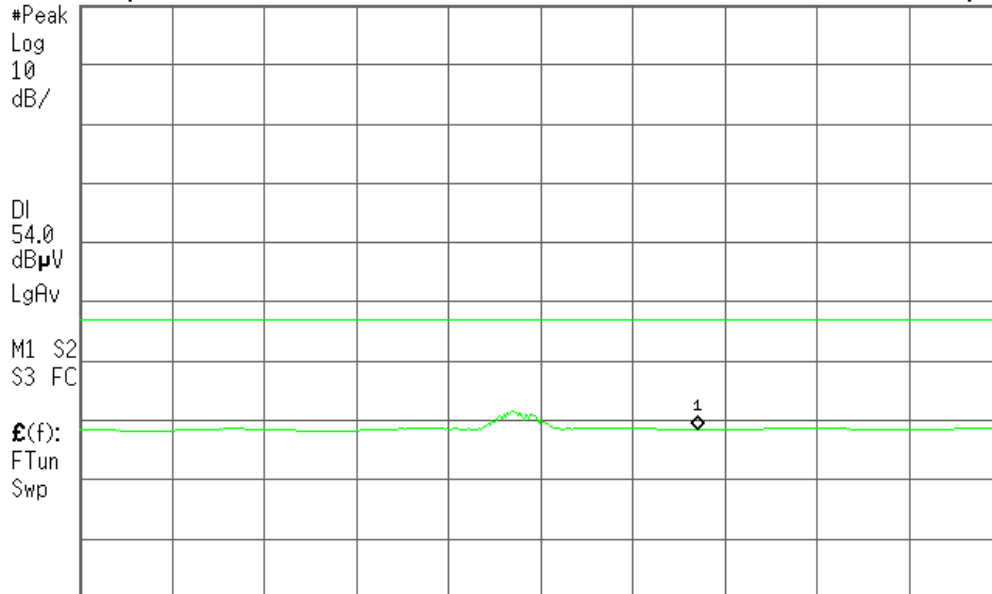
R T

Mkr1 2.483 50 GHz

35.36 dB μ V

Ref 107 dB μ V

#Atten 10 dB



Start 2.450 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 3.899 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

* Agilent 14:24:41 Jan 9, 2007

R T

Mkr1 2.483 50 GHz

56.31 dB μ V

Ref 107 dB μ V

#Atten 10 dB

#Peak
Log
10
dB/

DI
74.0
dB μ V
LgAv

M1 S2
S3 FC

E(f):
FTun
Swp

Start 2.450 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

Sweep 1 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

* Agilent 14:27:20 Jan 9, 2007

R T

Mkr1 2.483 50 GHz

35.36 dB μ V

Ref 107 dB μ V

#Atten 10 dB

#Peak
Log
10
dB/

DI
54.0
dB μ V
LgAv

M1 S2
S3 FC

E(f):
FTun
Swp

Start 2.450 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 3.899 s (601 pts)

7.2 SPURIOUS EMISSION

LIMIT

1. In the section 15.249(a):

Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental Field Strength (mV/m)	Field Strength of Harmonics (μV/m)
902-928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

2. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

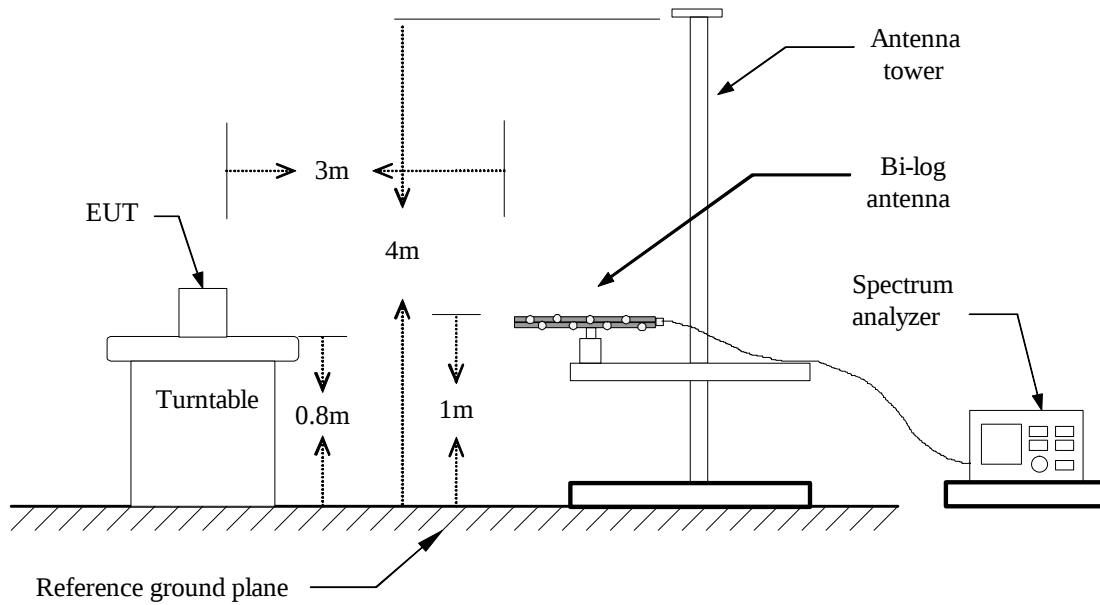
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

3. In the above emission table, the tighter limit applies at the band edges.

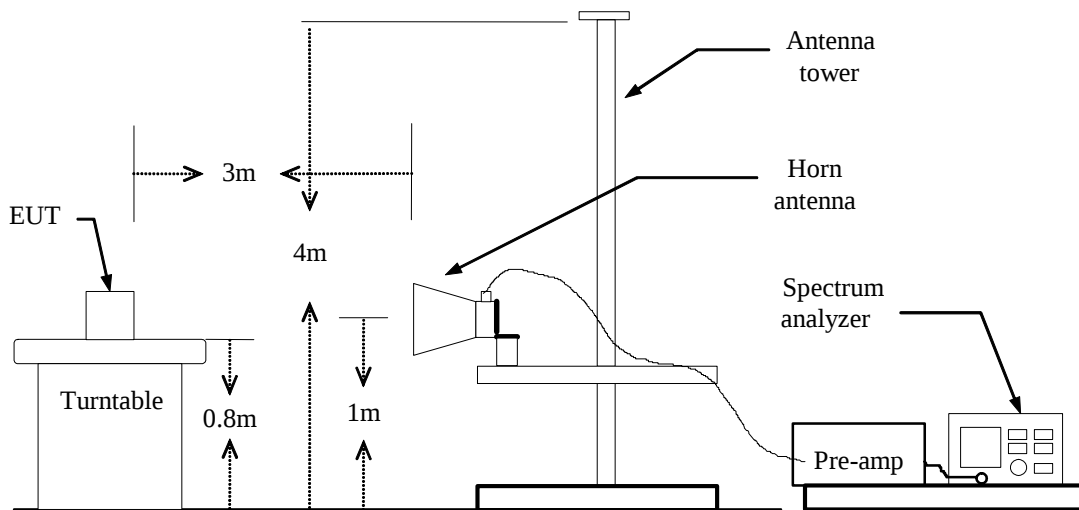
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
Below 1GHz:
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.



TEST RESULTS

Below 1 GHz

Operation Mode: Normal**Temperature:** 23°C**Humidity:** 51% RH**Test Date:** January 04, 2007**Tested by:** Henry**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
82.200	V	Peak	43.14	-16.57	26.57	40.00	-13.43
115.950	V	Peak	45.42	-16.44	28.98	43.50	-14.52
205.050	V	Peak	44.28	-14.10	30.18	43.50	-13.32
278.850	V	Peak	43.03	-11.67	31.36	46.00	-14.64
308.166	V	Peak	44.29	-10.61	33.68	46.00	-12.32
912.500	V	Peak	45.08	-3.39	41.69	46.00	-4.31
56.550	H	Peak	39.95	-16.72	23.23	40.00	-16.77
96.600	H	Peak	36.26	-15.60	20.66	43.50	-22.84
111.450	H	Peak	38.32	-16.15	22.17	43.50	-21.33
115.950	H	Peak	38.69	-16.44	22.25	43.50	-21.25
183.900	H	Peak	39.82	-14.70	25.12	43.50	-18.38
190.650	H	Peak	42.67	-14.57	28.10	43.50	-15.40

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).

**Above 1 GHz****Operation Mode:** Tx / CH Low**Test Date:** January 04, 2007**Temperature:** 23°C**Tested by:** Henry**Humidity:** 51% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Result		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
2402.00	V	91.44	---	-5.86	85.58	---	114.00	94.00	-8.42	Peak
2450.00	V	59.21	---	-5.68	53.53	---	74.00	54.00	-0.47	Peak
2723.33	V	53.16	---	-4.86	48.30	---	74.00	54.00	-5.70	Peak
4800.00	V	61.64	42.70	0.64	62.28	43.34	74.00	54.00	-10.66	AVG.
7183.33	V	47.91	34.49	7.12	55.03	41.61	74.00	54.00	-12.39	AVG.
N/A										
2402.00	H	88.60	---	-5.86	82.74	---	114.00	94.00	-11.26	Peak
2450.00	H	59.70	43.83	-5.68	54.02	38.15	74.00	54.00	-15.85	AVG.
2723.33	H	50.96	---	-4.86	46.10	---	74.00	54.00	-7.90	Peak
4800.00	H	56.82	39.61	0.64	57.46	40.25	74.00	54.00	-13.75	AVG.
7208.33	H	48.87	34.09	7.17	56.04	41.26	74.00	54.00	-12.74	AVG.
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / CH Mid

Test Date: January 04, 2007

Temperature: 23°C

Tested by: Henry

Humidity: 51% RH

Polarity: Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Result		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
2444.00	V	92.92	---	-5.70	87.22	---	114.00	94.00	-6.78	Peak
2290.00	V	48.69	---	-6.31	42.38	---	74.00	54.00	-11.62	Peak
2420.00	V	58.38	---	-5.80	52.58	---	74.00	54.00	-1.42	Peak
4891.66	V	61.37	40.42	0.79	62.16	41.21	74.00	54.00	-12.79	AVG.
7333.33	V	55.37	37.78	7.42	62.79	45.20	74.00	54.00	-8.80	AVG.
N/A										
2444.00	H	92.33	---	-5.70	86.63	---	114.00	94.00	-7.37	Peak
2390.00	H	57.84	---	-5.92	51.92	---	74.00	54.00	-2.08	Peak
2466.66	H	57.57	---	-5.61	51.96	---	74.00	54.00	-2.04	Peak
4891.66	H	54.00	39.53	0.79	54.79	40.32	74.00	54.00	-13.68	AVG.
7333.33	H	53.20	40.12	7.42	60.62	47.54	74.00	54.00	-6.46	AVG.
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m). Peak detector mode and average detector mode of the emission shown in Result column.



Operation Mode: Tx / CH High

Test Date: January 04, 2007

Temperature: 23°C

Tested by: Henry

Humidity: 51% RH

Polarity: Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Result		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
2474.00	V	93.42	---	-5.59	87.83	---	114.00	94.00	-6.17	Peak
2450.00	V	62.81	51.00	-5.68	57.13	45.32	74.00	54.00	-8.68	AVG.
2506.66	V	62.00	50.21	-6.46	55.54	43.75	74.00	54.00	-10.25	AVG.
4950.00	V	56.84	39.62	0.89	57.73	40.51	74.00	54.00	-13.49	AVG.
7425.00	V	56.86	37.22	7.60	64.46	44.82	74.00	54.00	-9.18	AVG.
N/A										
2474.00	H	93.23	---	-5.59	87.64	---	114.00	94.00	-6.36	Peak
2450.00	H	55.24	---	-5.68	49.56	---	74.00	54.00	-4.44	Peak
2573.33	H	58.06	---	-5.28	52.78	---	74.00	54.00	-1.22	Peak
4950.00	H	50.51	---	0.89	51.40	---	74.00	54.00	-2.60	Peak
7425.00	H	53.63	34.74	7.60	61.23	42.34	74.00	54.00	-11.66	AVG.
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m). Peak detector mode and average detector mode of the emission shown in Result column.

7.3 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

Not applicable.

(Since the EUT is battery-powered)

APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST

