



MOBILE DEVICES BUSINESS

**PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY**

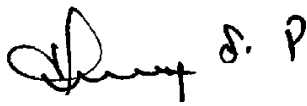
EMC TEST REPORT

Test Report Number – 24449-1 Computing Device

Report Date – June 22, 2011

The test results contained herein relate only to the model(s) identified. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Engineer, I hereby declare that the equipment tested as specified in this report conforms to the requirements indicated.

Signature: 

Name: Thanigaiselvan Palaniswami

Title: EMC Engineer

Date: June 22, 2011

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Test Report Details

Tests Performed By:	ADR Testing Service Location Code: ADR LV Motorola Mobility Inc Product Safety and Compliance Group 600 North US Hwy 45 Libertyville, IL 60048 FCC Registration Number: 316588 Industry Canada Number: 1090-1
Tests Requested By:	Motorola Mobility Inc. 600 North US Hwy 45 Libertyville, IL 60048
Product Type:	Cellular Phone
Signaling Capability:	CDMA 800/1900, CDMA 1X/EV-DO Release A, LTE Band 13, Bluetooth, 802.11b/802.11g/802.11n
FCC ID:	IHDT56MX1
Serial Numbers:	TA047049FK
Testing Complete Date:	June 22, 2011

Applicable Standards

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47:

 X Part 15 Subpart B – Unintentional Radiators

Applicable Standards: ANSI 63.4 2003, RSS-210 Issue 8

Summary of Testing

Test #	Test Name	Pass/Fail
1	Field Strength of Spurious Emissions from Unintentional Radiators	Pass
2	AC Line Conducted Emissions	Pass
Test #	Test Name	Margin with respect to the Limit
1	Field Strength of Spurious Emissions from Unintentional Radiators	see results
2	AC Line Conducted Emissions	see results

The margin with respect to the limit is the minimum margin for all modes and bands.

General and Special Conditions

All testing for this report was performed with a fully charged Model SNN5892A 1735mAH Battery and standard battery door.

All testing was done in an indoor controlled environment. The temperature and the relative humidity were maintained within the ANSI C63.4 2003 Standard requirements during the entire duration of testing.

Equipment and Cable Configurations

The EUT was tested with all the available ports populated.

Equipment List

Manufacturer	Equipment Type	Model No.	Serial Number	Calibration Due Date
Rohde & Schwarz	Receiver	ESIB26	100001	09/23/2011
ETS	DRG Horn Antenna	SAS 200/571	265	9/09/2011
ETS	Log-Periodic Antenna	3148	1189	1/19/2012
ETS	Biconical Antenna	3110B	3370	1/19/2012
Agilent	Microwave Preamplifier	8449B	3008A00535	10/05/2011
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
ETS	LISN	3810/2	00062907	9/08/2011
ETS	LISN	3810/2	00062912	9/08/2011
Dell	Laptop Computer	M20	NA	NA
HP	Monitor	HP2311X	CNT101X68Q	NA
Toshiba	TV	19AV600U	912127C38491L1	NA

All equipment is on a one-year calibration cycle.

All test equipment was within their calibration date during the time of testing. When equipment went out of calibration during testing it was replaced using a similar piece of calibrated equipment. All these equipments are listed in the equipment list.

The Dell M20 Laptop Computer, HP Monitor and the Toshiba TV are labeled as DoC.

Measurement Procedures and Data

FIELD STRENGTH OF EMISSIONS FROM UNINTENTIONAL RADIATORS

Measurement Procedure

The equipment under test is placed inside the semi-anechoic chamber on a wooden table on the turntable center. For each radiated emission, the antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum peak reading on the spectrum analyzer. The final radiated emissions are then measured using an EMI receiver employing a CISPR quasi-peak detector function below 1000 MHz and an average and peak detector function above 1000 MHz. This is repeated for both horizontal and vertical polarizations of the receive antenna.

The field strength of each radiated emission is calculated by correcting the EMI receiver level for cable loss, amplifier gain and antenna correction factors.

Field Strength (dBuV/m) = EMI Receiver Level (dBuV) + Cable Loss (dB) - Amplifier Gain (dB) + Antenna Correction Factor (1/m)

Test Setup

The EUT and the peripheral equipment were setup according to the procedures in ANSI C63.4- 2003. The EUT was connected to a laptop computer using a USB data cable. The USB data (SKN6378A) cable is 1 m in length. The EUT was communicating with the laptop computer continuously. The HDMI port of the EUT was connected to a monitor/TV via HDMI cable SKN6414A and the EUT screen was mirrored on the monitor. A 1080p monitor and 720p TV was used as the display.

Additional EUT information:

Processor Speed – Up to 1 GHz
Xtal – 32.768 KHz
TCXO – 19.2MHz, 26 MHz
Memory Size – 1GB LPDDR2 SDRAM, 16GB eMMC
Video Resolution – 540x960 (qHD)
Video Clock - 1GHz
Refresh rate – 60Hz

Testing was conducted up to and including 5 GHz.

Measurement Results

Operating Mode –Data Transfer Mode and Video Display @1080p

Notes: Worst Case emissions reported.

30 MHz – 1000 MHz

Frequency	Level	Measured	Transd	Cables	Limit	Margin	Height	Angle	Pol.
MHz	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
39.36	32.98	14.35	11.5	7.1	40	7	99	259	VERT
70.56	34.05	17.27	9.3	7.5	40	5.9	150	233	VERT
281	37.55	16.25	12.4	8.9	46	8.5	235	186	VERT
297	40.29	18.68	12.6	9	46	5.7	196	231	VERT
357.56	38.27	14.54	14.4	9.3	46	7.7	100	50	HORI
594	45.89	16.51	18.9	10.5	46	0.1	245	210	VERT
742.48	41.18	9.21	21	11	46	4.8	178	160	VERT
891.04	39.88	6.94	21.5	11.4	46	6.1	100	175	HORI

Above 1 GHz

Frequency	Level	Measured	Transd	Gain	Limit	Margin	Height	Angle	Pol.
MHz	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1063.7	30.68	30.2	23.3	22.8	54	23.3	150	8	VERT
1116.9	30.11	29.27	23.5	22.7	54	23.9	214	86	VERT
1336.5	49.64	46.73	24.8	21.9	54	4.4	100	214	VERT
1502.4	31.72	28.49	24.6	21.4	54	22.3	99	261	VERT
1513	30.96	27.66	24.6	21.3	54	23	200	86	VERT
1594	35.46	31.58	24.9	21	54	18.5	100	155	VERT
1597.1	35.54	31.64	24.9	21	54	18.5	101	166	VERT
1598	32.92	29.01	24.9	21	54	21.1	98	165	VERT
1633.3	39.87	35.78	25	20.9	54	14.1	99	196	VERT
2245.9	35.83	27.45	27.6	19.2	54	18.2	100	191	VERT
3165.3	38.86	25.06	31.2	17.4	54	15.1	166	217	HORI
3200.8	39.03	24.99	31.4	17.4	54	15	182	76	HORI
3863.1	38.6	23.53	31.1	16.1	54	15.4	250	71	VERT
3969.7	39.02	23.37	31.5	15.9	54	15	119	334	VERT
3981.8	39.09	23.39	31.5	15.8	54	14.9	250	295	VERT
4934.7	41.45	22.6	33.4	14.5	54	12.5	100	125	VERT
4951.4	41.74	22.78	33.4	14.5	54	12.3	170	294	VERT
4984.8	42.15	22.98	33.6	14.4	54	11.8	164	149	VERT

Peak Radiated Data for Emissions Above 1GHz

Frequency	Level	Angle	Height	Pol.	Limit	Result
MHz	dBμV/m	deg	cm		dBμV/m	
1064.12	46.73	9	200	VER	74	Pass
1116.23	45.28	8	200	VER	74	Pass
1336.67	51.74	209	100	VER	74	Pass
1501.00	48.01	265	100	VER	74	Pass
1503.00	47.57	268	100	VER	74	Pass
1513.02	50.65	78	200	VER	74	Pass
1593.18	51.17	158	100	VER	74	Pass
1595.19	49.58	157	100	VER	74	Pass
1633.26	47.76	208	100	VER	74	Pass
1635.27	46.85	205	100	VER	74	Pass
2244.48	50.66	195	100	VER	74	Pass
2248.49	48.97	236	100	HOR	74	Pass
3158.31	51.03	344	100	VER	74	Pass
3162.32	50.86	174	200	HOR	74	Pass
3166.33	51.32	239	200	HOR	74	Pass
3202.40	51.06	98	200	HOR	74	Pass
3206.41	50.97	76	200	VER	74	Pass
3863.72	50.85	93	200	VER	74	Pass
3967.93	50.88	312	100	VER	74	Pass
3971.94	50.74	316	200	VER	74	Pass
4933.86	53.78	147	100	VER	74	Pass
4935.87	52.72	66	200	VER	74	Pass
4983.96	52.7	22	200	VER	74	Pass
4985.97	53.97	128	200	VER	74	Pass

Operating Mode –Data Transfer Mode and Video Display @ 720p

Notes: Worst Case emissions reported.

30 MHz – 1000 MHz

Frequency	Level	Measured	Transd	Cables	Limit	Margin	Height	Angle	Pol.
MHz	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
31	33.71	13.3	13.4	7	40	6.3	100	229	VERT
33.96	35.81	16.25	12.5	7	40	4.2	100	229	VERT
87.8	30.52	13.43	9.4	7.7	40	9.5	149	218	VERT
297	43.77	22.15	12.6	9	46	2.2	250	22	HORI
366.44	34.89	11.61	13.9	9.4	46	11.1	150	181	VERT
428.56	43.14	17.96	15.4	9.7	46	2.9	209	189	HORI
445.52	42.59	16.52	16.2	9.8	46	3.4	99	211	HORI
594	41.6	12.22	18.9	10.5	46	4.4	250	261	VERT
742.52	40.83	8.87	21	11	46	5.2	100	329	HORI
906.92	34.67	-0.51	23.7	11.4	46	11.3	209	70	HORI

Above 1 GHz

Frequency	Level	Measured	Transd	Gain	Limit	Margin	Height	Angle	Pol.
MHz	dBuV/m	dBuV	dB	dB	dBuV/m	dB	cm	deg	
1117.7	30.14	29.28	23.5	22.7	54	23.9	169	357	VERT
1321.1	36.96	34.28	24.6	22	54	17	135	232	HORI
1339.4	33.89	31.11	24.7	21.9	54	20.1	99	221	HORI
1399.9	37.49	34.35	24.8	21.7	54	16.5	101	172	VERT
1503.2	31.48	28.25	24.6	21.4	54	22.5	100	261	VERT
1599.1	36.04	32.13	24.9	21	54	18	100	164	VERT
1669.5	32.67	28.39	25.1	20.8	54	21.3	150	195	VERT
1677.4	32.7	28.38	25.1	20.8	54	21.3	150	195	VERT
3191.9	39.01	24.99	31.4	17.4	54	15	149	38	VERT
3961.8	39.09	23.53	31.4	15.9	54	14.9	150	299	HORI
4047.8	39.01	23.28	31.5	15.7	54	15	201	1	HORI
4137.6	39.32	23.58	31.3	15.6	54	14.7	128	239	HORI
4754.2	41.06	22.87	33	14.8	54	12.9	250	333	VERT
4868.4	41.37	22.84	33.1	14.6	54	12.6	99	27	VERT
4969.9	41.91	22.97	33.4	14.5	54	12.1	179	49	HORI
4982.8	42.02	23.04	33.4	14.4	54	12	146	359	HORI
4999.5	42.54	23.27	33.7	14.4	54	11.5	170	359	VERT

Peak Radiated Data for Emissions Above 1GHz

Frequency	Level	Angle	Height	Pol.	Limit	Result
MHz	dB μ V/m	deg	cm		dB μ V/m	
1118.23	48.46	3	200	VER	74	Pass
1322.64	52.43	232	100	HOR	74	Pass
1338.67	49.15	219	100	HOR	74	Pass
1340.68	51.88	219	100	HOR	74	Pass
1398.79	47.08	213	100	HOR	74	Pass
1400.80	49.18	161	100	VER	74	Pass
1503.00	46.99	239	100	VER	74	Pass
1505.01	49.3	239	100	VER	74	Pass
1597.19	51.5	159	100	VER	74	Pass
1599.19	50.82	159	100	VER	74	Pass
1667.33	51.27	213	200	VER	74	Pass
1669.33	46.73	170	100	HOR	74	Pass
1677.35	46.64	211	100	VER	74	Pass
1679.35	52.38	203	100	VER	74	Pass
3190.38	50.16	92	100	HOR	74	Pass
3959.91	51.29	277	200	HOR	74	Pass
3963.92	50.51	304	100	HOR	74	Pass
4048.09	53.29	360	200	HOR	74	Pass
4136.27	52.53	226	100	HOR	74	Pass
4753.50	52.19	215	200	HOR	74	Pass
4755.51	53.89	350	200	VER	74	Pass
4869.73	53.27	38	100	VER	74	Pass
4967.93	54.39	68	200	HOR	74	Pass
4969.93	53.4	278	200	VER	74	Pass
4981.96	54.51	7	100	HOR	74	Pass
4997.99	53.89	356	200	VER	74	Pass

AC LINE CONDUCTED EMISSIONS

Measurement Procedure

Measured levels of ac power line conducted emission shall be the radio-noise voltage from the line probe or across the 50 Ω LISN port, where permitted, terminated into a 50 Ω noise meter, or where permitted or required, the radio-noise current on the power line sensed by a current probe.

All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN. Equipment shall be tested with power cords that are normally supplied using an LISN, the 50 Ω measuring port is terminated by a 50 Ω radio-noise meter or a 50 Ω resistive load. All other ports are terminated in 50 Ω .

Detectors - Quasi Peak and Average Detector

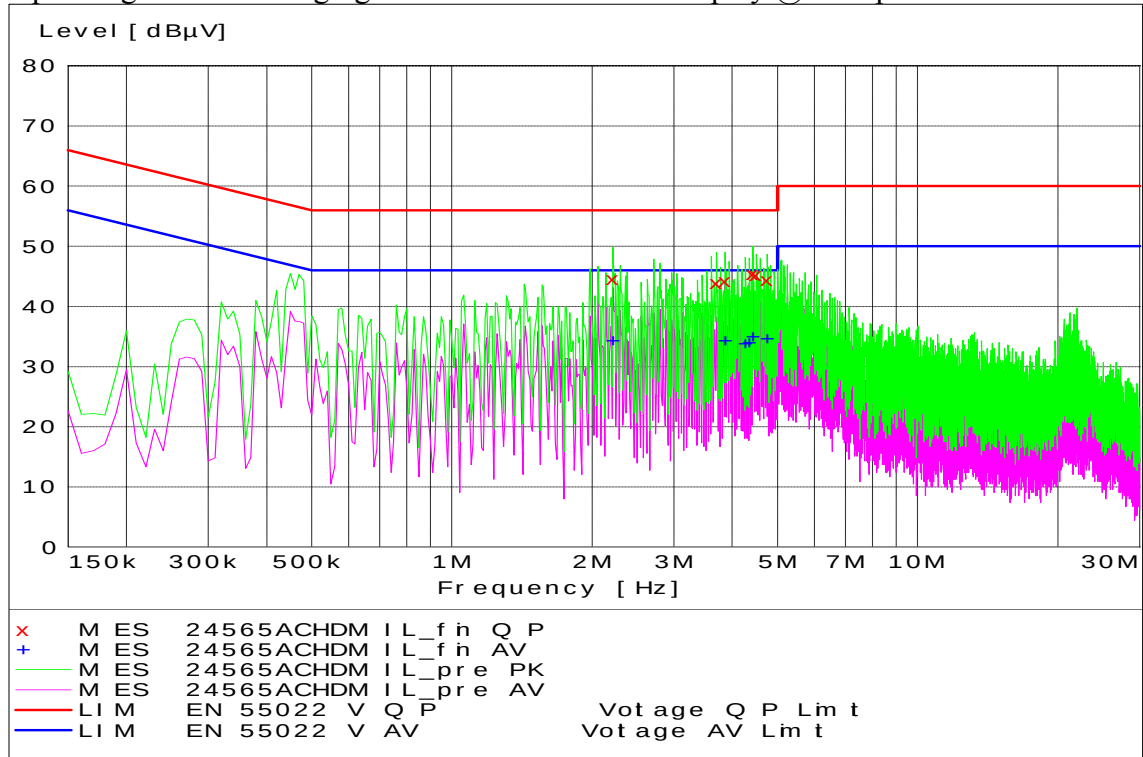
Test Setup

The EUT and the peripheral equipment were setup according to the procedures in ANSI C63.4- 2003. The HDMI port of the EUT was connected to a monitor/TV via HDMI cable SKN6414A and the EUT screen was mirrored on the monitor. A 1080P monitor and 720P TV was used as the display. The EUT was connected to the LISN via the USB port.

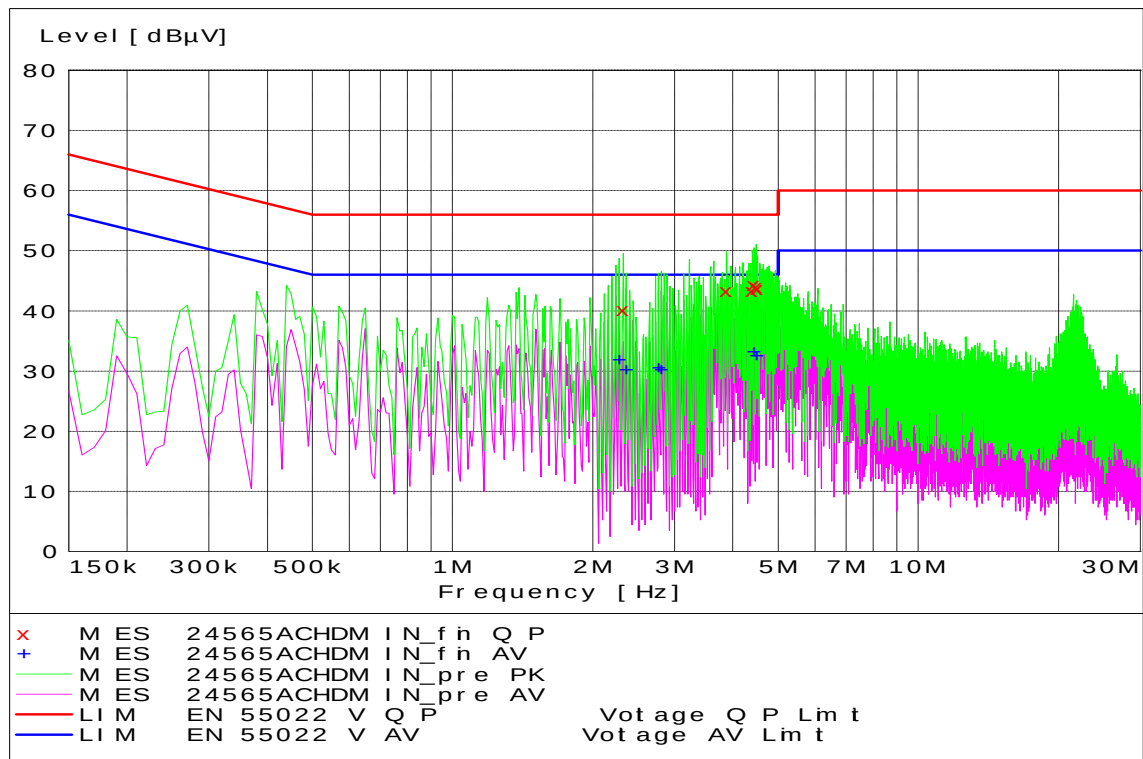
Measurement Results

See attached:

Operating Mode – Charging and attached to Video Display @ 1080p via HDMI

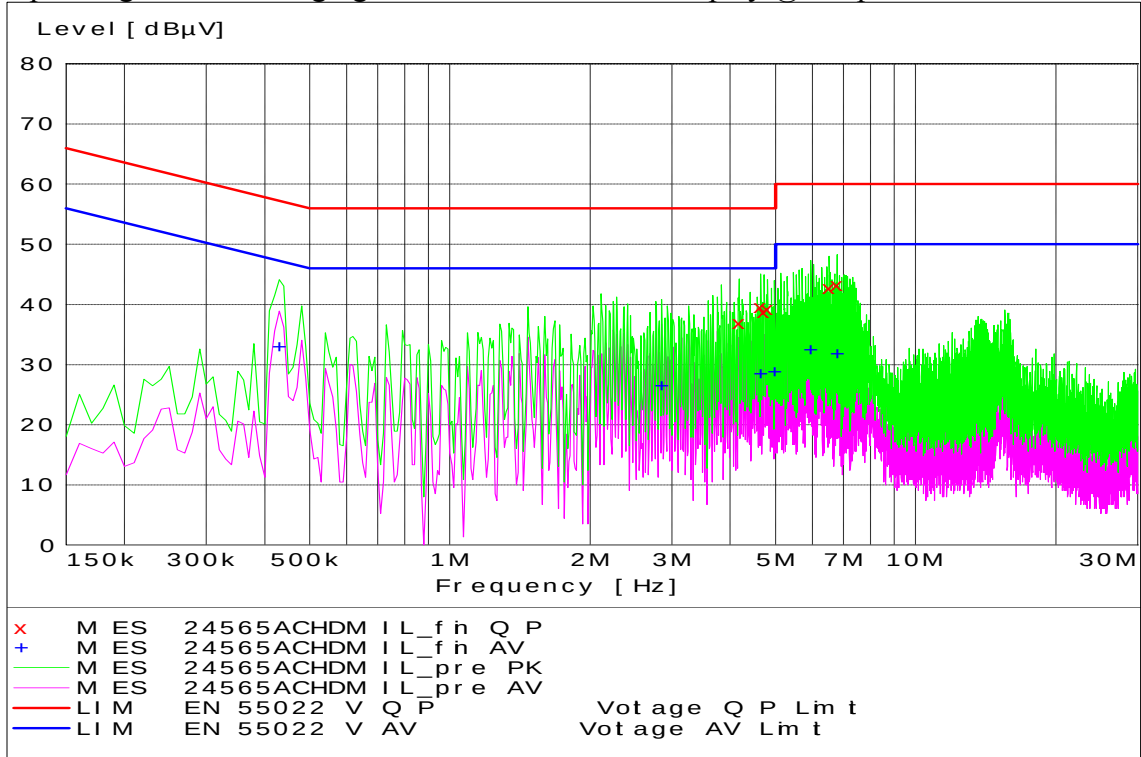


Tx Mode - Line Coupling

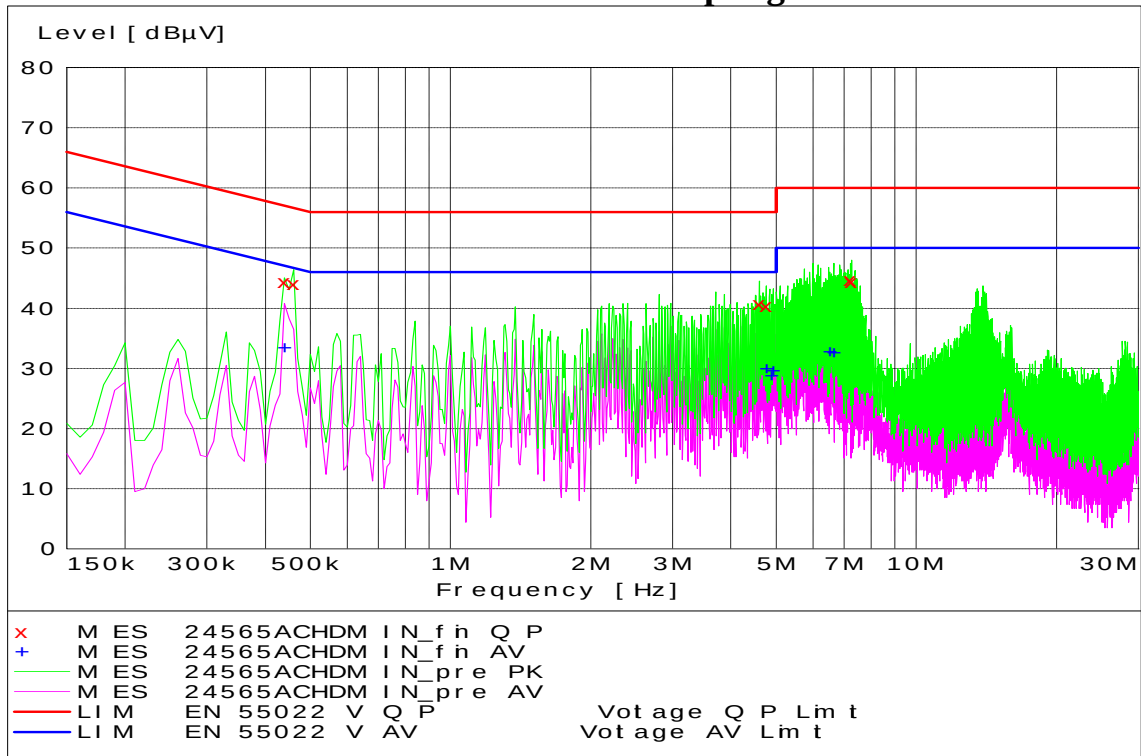


Tx Mode - Neutral Coupling

Operating Mode – Charging and attached to Video Display @ 720p via HDMI



Tx Mode - Line Coupling



Tx Mode - Neutral Coupling

End of Test Report