



**MOBILE DEVICES BUSINESS**

**PRODUCT SAFETY AND COMPLIANCE  
EMC LABORATORY**

**EMC TEST REPORT**

**Test Report Number** – 24726-1JBP

**Report Date** – October 27, 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: Albert J. Patapack

Title: EMC Engineer

Date: October 27, 2011

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THIS REPORT MUST NOT BE USED TO CLAIM PRODUCT ENDORSEMENT BY UKAS OR ANY AGENCY OF THE U.S. GOVERNMENT.



UKAS Certificate Number: 2404

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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  
PH (847) 523-6167 Fax (847) 523-4538  
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, WCDMA 850/1900, GSM 850/1900,  
HSDPA, HSUPA, EDGE, GPRS,  
Bluetooth LE + EDR, 802.11b/802.11g/802.11n

**Note:** The GSM/EDGE/WCDMA network  
functions have been disabled by firmware and are  
SIM locked for all US operators.

FCC ID: IHDP56MN1

Serial Numbers: 99000052951385, 99000052951388

Testing Complete Date: October 27, 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**

This product utilizes an internal battery that is not removable. When applicable, EMC testing was performed with the internal battery fully charged. The test was first performed with a standard battery door installed on the EUT and with the internal battery fully charged. The test was again performed a second time with Inductive Charging Door, model number SJHN0813A, installed on the EUT and the EUT positioned on a representative charging pad (LG WCP-700). In this case, the battery was not fully charged so that battery charging through the charging pad and Inductive Charging Door would occur under normal charging conditions.

The inductive charging door serves as the Wireless Power Receiver in an Inductive Charging System. The receiver is a Wireless Power Consortium (WPC) compliant receiver and requires a WPC compliant transmitter to create the appropriate magnetic field in order to function. The receiver is designed to apply power to the phone when placed in the appropriate magnetic field. Please see a more detailed description in the Operational Description given in Exhibit 12. Please see Exhibit 3 for external photos of the inductive charging 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 in a configuration as specified by ANSI C63.4 2003 Standard requirements.

**Equipment List**

Manufacturer	Equipment Type	Model No.	Serial Number	Calibration Due Date
Rohde & Schwarz	Receiver	ESI26	838786/010	12/21/2012
Rohde & Schwarz	Receiver	ESIB40	100226	3/30/2012
A. H. Systems	DRG Horn Antenna	SAS 200/571	365	8/24/2012
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
Agilent	Microwave Preamplifier	8449B	3008A01442	9/22/2012
Attenuator	Weinschel	AS-6	6675	NCR
Attenuator	Weinschel	AS-6	6677	NCR
ETS	LISN	3810/2NM	00023630	9/02/2012
ETS	LISN	3810/2NM	2179	9/02/2012
ETS	Loop Antenna	6507	00049471	2/17/2012
Rohde & Schwarz	Receiver	ESU40	100268	7/13/2012
Hewlett Packard	Laptop Computer	8440P	CND04111C8	NA
Hewlett Packard	Monitor	HP2311X	CNT101X68Q	NA
Dell	Mouse	M-UVDEL1	HCJ43516737	NA
LG	Wireless Charging Pad	WCP-700	A1103WP005396	NA
LG	AC Adaptor	WCA-D01WT	TA120022106	NA

Note that the power meter, signal generator and microwave preamplifier are on a two-year calibration cycle. All other equipment is on a one-year calibration cycle. All testing was performed using equipment that was within calibration at the time that the test was performed. No equipment listed in the table above was used after the specified calibration due date. If, during the course of product testing, a piece of equipment went out of calibration and that piece of equipment was needed to complete product testing, a similar piece of calibrated equipment was substituted. If a substitution was made, that new piece of equipment would be listed in the above table along with the piece that was removed from service.

The HP 8440P Laptop Computer, HP Monitor and the Dell Mouse are labeled as DoC.

The FCC ID of the LG Wireless Charging Pad is BEJWCP700.

## **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. Initially, for all radiated emissions, the antenna mast is varied from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer using the peak detector function. The final radiated emissions are then measured using an EMI receiver employing a CISPR quasi-peak detector function below 1000 MHz and an average detector function above 1000 MHz. Above 1000MHz, the EMI receiver VBW and RBW are both set to 1MHz. 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 host equipment were setup according to the procedures in ANSI C63.4-2003. The test is first performed with the EUT, with a standard battery door installed, connected to a laptop computer using a USB data cable. The USB data cable is 1 m in length. The USB and the display ports of the computer were populated. The EUT was communicating with the laptop computer continuously. The test was then performed a second time, using the same setup, but with the inductive battery door installed on the EUT and the EUT positioned on the representative charging pad.

Additional EUT information:

Processor Speed – Up to 1.2GHz

Xtal – 32.768kHz, 19.2MHz

TCXO – 26MHz

Memory Size – 1GB LPDDR2 SDRAM, 16GB eMMC

Video Resolution – qHD 950x540

Video Clock – Max 230MHz

Refresh rate – 60Hz

Testing was conducted up to and including 6GHz.

**Measurement Results – Standard Battery Door**

Radiated emissions were measured from 9 kHz to 30 MHz and all emissions were 20 dB below the limit.

Operating Mode – Rx Mode, Data Transfer Mode.

Notes: Worst Case emissions reported.

30 MHz – 1000 MHz

Frequency MHz	Level dBµV/m	Measured dBµV	Transd dB	Cables dB	Limit dBµV/m	Margin dB	Height cm	Angle deg	Pol.
36.80	30.95	11.88	12.0	7.1	40	9.0	99	30	VERT
40.12	32.68	14.19	11.4	7.1	40	7.3	99	38	VERT
114.60	34.08	15.24	10.9	7.9	43.5	9.4	100	97	VERT
140.84	40.77	20.99	11.7	8.1	43.5	2.7	100	19	VERT
142.48	21.97	2.18	11.7	8.1	43.5	21.5	100	326	VERT
281.0	38.44	17.14	12.4	8.9	46	7.6	214	155	VERT
286.08	38.06	16.32	12.8	8.9	46	7.9	209	156	VERT
357.68	35.95	12.22	14.4	9.3	46	10.1	219	15	VERT
702.24	34.13	2.87	20.4	10.8	46	11.9	200	142	HORI
714.92	33.91	1.44	21.6	10.9	46	12.1	191	149	HORI
904.28	33.75	-1.22	23.5	11.4	46	12.3	150	22	HORI

Average Measurements Above 1 GHz

Frequency MHz	Level dB $\mu$ V/m	Measured dB $\mu$ V	Transd dB	Gain dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle deg	Pol.
1001.9	36.43	35.08	23.3	22.0	54	17.6	100	206	VERT
1121.9	34.14	32.19	23.9	21.9	54	19.9	222	170	HORI
1145.2	34.17	32.09	24.0	21.9	54	19.8	210	141	VERT
1193.1	35.56	33.20	24.3	21.9	54	18.4	100	131	VERT
1276.4	34.88	32.18	24.6	21.9	54	19.1	100	141	VERT
1471.2	33.90	30.87	24.8	21.8	54	20.1	98	200	HORI
1484.9	33.82	30.74	24.8	21.8	54	20.2	100	209	HORI
1597.0	37.14	33.48	25.4	21.7	54	16.9	100	359	VERT
3214.1	40.54	28.29	31.8	19.6	54	13.5	100	35	VERT
3996.1	40.67	26.46	32.2	18.0	54	13.3	169	55	HORI
4529.4	41.48	25.91	33.0	17.5	54	12.5	250	293	HORI
4650.0	41.90	25.84	33.4	17.4	54	12.1	150	144	HORI
4678.6	41.97	25.82	33.5	17.3	54	12.0	150	247	VERT
4731.2	41.85	25.55	33.6	17.3	54	12.2	169	97	HORI
4790.8	42.04	25.66	33.6	17.2	54	12.0	100	258	HORI
4825.6	42.04	25.62	33.6	17.2	54	12.0	141	217	VERT
4868.0	42.04	25.53	33.6	17.1	54	12.0	188	271	HORI
4910.7	42.12	25.49	33.7	17.1	54	11.9	170	86	VERT
4983.2	42.18	25.30	33.9	17.0	54	11.8	191	208	VERT
5086.5	42.51	25.18	34.2	16.9	54	11.5	140	188	VERT
5220.4	42.76	25.40	34.0	16.7	54	11.2	170	218	VERT
5446.1	42.14	24.92	33.5	16.3	54	11.9	204	13	HORI
5650.6	42.73	25.09	33.7	16.0	54	11.3	99	320	VERT
5832.8	43.72	25.22	34.3	15.8	54	10.3	100	321	HORI
5996.2	44.91	25.27	35.1	15.5	54	9.1	100	329	HORI

Peak Radiated Data for Emissions Above 1GHz					
Frequency MHz	Level dB $\mu$ V/m	Angle deg	Height cm	Pol.	Limit 74dB $\mu$ V/m
1000.00	52.34	201	100	VER	Pass
1002.00	54.36	201	100	VER	Pass
1120.24	45.84	104	100	HOR	Pass
1122.24	52.79	192	200	HOR	Pass
1142.28	49.76	156	100	VER	Pass
1144.29	53.14	146	200	VER	Pass
1192.38	50.44	150	100	VER	Pass
1194.39	49.30	167	100	VER	Pass
1274.55	49.10	137	200	HOR	Pass
1276.55	50.63	144	100	VER	Pass
1278.56	47.24	209	100	HOR	Pass
1470.94	45.33	212	100	VER	Pass
1472.95	50.65	197	100	HOR	Pass
1482.97	48.81	195	100	HOR	Pass
1484.97	50.78	195	100	HOR	Pass
1486.98	48.68	191	100	HOR	Pass
1595.19	49.51	23	100	VER	Pass
1597.19	49.36	355	100	VER	Pass
1599.20	50.48	357	100	VER	Pass
3210.42	51.78	49	100	VER	Pass
3214.43	53.45	40	100	VER	Pass
3995.99	52.99	49	200	HOR	Pass
4000.00	52.10	0	200	VER	Pass
4529.06	53.57	254	200	VER	Pass
4531.06	55.23	315	200	HOR	Pass
4649.30	53.89	352	200	VER	Pass
4651.30	55.08	155	100	HOR	Pass
4677.35	54.39	233	100	VER	Pass
4679.36	53.92	199	100	VER	Pass
4729.46	54.30	120	200	HOR	Pass
4731.46	53.86	187	100	HOR	Pass
4733.47	53.37	25	100	VER	Pass
4789.58	54.43	258	100	HOR	Pass
4791.58	53.80	296	200	HOR	Pass
4823.65	55.19	224	100	VER	Pass
4825.65	54.10	53	200	HOR	Pass
4827.66	53.64	59	100	HOR	Pass
4867.74	53.46	295	100	HOR	Pass
4869.74	54.83	283	200	HOR	Pass
4909.82	54.33	97	200	VER	Pass
4911.82	54.24	273	200	HOR	Pass

Peak Radiated Data for Emissions Above 1GHz (cont)					
4981.96	53.87	57	200	HOR	Pass
4983.97	55.12	186	200	VER	Pass
5086.18	53.35	324	100	HOR	Pass
5088.18	53.87	62	200	VER	Pass
5218.44	54.21	168	200	VER	Pass
5220.44	53.40	249	200	HOR	Pass
5222.44	54.32	0	100	HOR	Pass
5444.89	53.34	203	200	VER	Pass
5446.89	54.93	11	200	HOR	Pass
5649.30	54.01	133	200	VER	Pass
5651.30	53.70	36	100	HOR	Pass
5831.66	55.76	99	200	VER	Pass
5833.67	56.60	333	100	HOR	Pass
5995.99	56.63	312	100	HOR	Pass
5997.99	56.23	23	200	HOR	Pass
5086.17	53.35	324	100	HOR	Pass

**Measurement Results – Inductive Charging Door**

Radiated emissions were measured from 9 kHz to 30 MHz and all emissions were 20 dB below the limit.

Operating Mode – Rx Mode, Data Transfer Mode.

Notes: Worst Case emissions reported.

30 MHz – 1000 MHz

Frequency MHz	Level dBµV/m	Measured dBµV	Transd dB	Cables dB	Limit dBµV/m	Margin dB	Height cm	Angle deg	Pol.
31.04	23.12	2.73	13.4	7.0	40	16.9	100	359	VERT
31.20	23.16	2.83	13.3	7.0	40	16.8	140	336	VERT
31.36	31.40	11.14	13.3	7.0	40	8.6	150	335	VERT
31.68	23.30	3.16	13.1	7.0	40	16.7	150	357	VERT
32.96	28.24	8.31	12.9	7.0	40	11.8	115	118	VERT
33.12	29.09	9.21	12.9	7.0	40	10.9	100	100	VERT
33.44	26.86	7.10	12.7	7.0	40	13.1	150	144	VERT
34.16	28.30	8.77	12.5	7.0	40	11.7	146	162	VERT
34.32	28.23	8.72	12.5	7.0	40	11.8	115	162	VERT
35.32	25.72	6.39	12.3	7.1	40	14.3	100	68	VERT
37.48	24.33	5.39	11.9	7.1	40	15.7	137	29	VERT
44.16	24.54	6.69	10.7	7.2	40	15.5	100	94	VERT
140.68	22.47	2.70	11.7	8.1	43.5	21	100	35	VERT
142.88	21.19	1.40	11.7	8.1	43.5	22.3	100	17	VERT
278.60	19.92	-1.11	12.2	8.9	46	26.1	204	183	VERT
288.00	32.96	11.31	12.7	8.9	46	13	230	183	VERT
357.80	36.15	12.43	14.4	9.3	46	9.8	250	5	VERT
500.92	32.30	4.51	17.6	10.2	46	13.7	100	171	VERT
716.16	30.65	-1.76	21.5	10.9	46	15.3	246	184	VERT
904.36	33.66	-1.32	23.5	11.4	46	12.3	128	153	VERT
930.52	33.58	-0.51	22.6	11.5	46	12.4	100	167	HORI

Average Measurements Above 1 GHz

Frequency MHz	Level dB $\mu$ V/m	Measured dB $\mu$ V	Transd dB	Gain dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle deg	Pol.
1002.3	35.55	34.20	23.4	22.0	54	18.4	118	188	VERT
1123.2	34.80	32.84	23.9	21.9	54	19.2	118	202	VERT
1134.8	34.61	32.59	24.0	21.9	54	19.4	230	157	VERT
1192.6	34.63	32.28	24.3	21.9	54	19.4	127	165	HORI
1287.8	34.70	31.92	24.6	21.9	54	19.3	146	241	HORI
1336.2	34.04	31.23	24.6	21.8	54	20	169	103	HORI
1474.1	35.33	32.30	24.8	21.8	54	18.7	120	207	VERT
1596.6	36.20	32.55	25.4	21.7	54	17.8	125	359	VERT
3190.1	40.88	28.70	31.8	19.6	54	13.1	151	42	HORI
3226.4	40.82	28.56	31.8	19.5	54	13.2	130	157	HORI
3981.1	40.87	26.71	32.2	18.0	54	13.1	183	0	VERT
4555.9	41.73	26.06	33.1	17.4	54	12.3	100	213	HORI
4786.9	42.18	25.80	33.6	17.2	54	11.8	114	215	HORI
5125.4	42.77	25.35	34.2	16.8	54	11.2	150	301	VERT
5277.0	42.37	25.18	33.8	16.6	54	11.6	132	304	VERT
5479.3	42.87	25.53	33.6	16.3	54	11.1	100	55	VERT
5831.0	43.98	25.49	34.2	15.8	54	10	219	316	HORI
5880.2	44.33	25.40	34.6	15.7	54	9.7	150	90	VERT
5950.2	44.90	25.47	35.0	15.6	54	9.1	169	359	HORI
5999.0	45.23	25.57	35.2	15.5	54	8.8	248	110	HORI

Peak Radiated Data for Emissions Above 1GHz					
Frequency MHz	Level dB $\mu$ V/m	Angle deg	Height cm	Pol.	Limit 74dB $\mu$ V/m
1002.00	54.05	187	100	VER	Pass
1004.01	46.28	149	100	VER	Pass
1122.24	52.91	208	100	VER	Pass
1124.25	50.64	151	200	VER	Pass
1134.27	51.49	213	100	VER	Pass
1136.27	52.28	156	200	VER	Pass
1192.38	49.68	143	100	HOR	Pass
1194.39	48.47	288	200	VER	Pass
1286.57	47.62	131	200	HOR	Pass
1288.58	49.26	220	100	HOR	Pass
1334.67	49.59	125	200	HOR	Pass
1336.67	45.82	46	200	VER	Pass
1472.95	46.60	156	100	VER	Pass
1474.95	50.29	209	100	VER	Pass
1595.19	51.59	351	100	VER	Pass
1597.19	50.87	19	100	VER	Pass
3186.37	51.97	12	100	VER	Pass

Peak Radiated Data for Emissions Above 1GHz (cont.)					
3190.381	52.59	249	200	HOR	Pass
3222.44	52.15	326	200	VER	Pass
3226.45	53.16	144	100	HOR	Pass
3230.46	51.61	56	100	VER	Pass
3979.96	52.49	89	200	VER	Pass
3983.97	54.49	349	200	VER	Pass
4553.11	54.47	208	100	HOR	Pass
4557.11	53.23	161	200	VER	Pass
4785.57	55.65	193	100	HOR	Pass
4789.58	53.83	360	200	HOR	Pass
5122.24	54.09	74	200	HOR	Pass
5126.25	55.28	286	200	VER	Pass
5274.55	55.40	326	100	VER	Pass
5278.56	53.96	306	100	HOR	Pass
5478.96	54.47	112	100	HOR	Pass
5482.97	54.70	70	100	HOR	Pass
5827.66	56.37	338	200	HOR	Pass
5831.67	54.79	142	200	VER	Pass
5879.76	56.52	112	200	VER	Pass
5883.77	55.91	153	100	VER	Pass
5947.90	56.78	360	200	HOR	Pass
5951.90	56.80	360	200	HOR	Pass
5995.99	56.24	334	200	HOR	Pass
6000.00	56.70	132	200	HOR	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  $\Omega$  LISN port, where permitted, terminated into a 50  $\Omega$  noise meter, or where permitted or required, the radio-noise current on the power line sensed by a current probe.

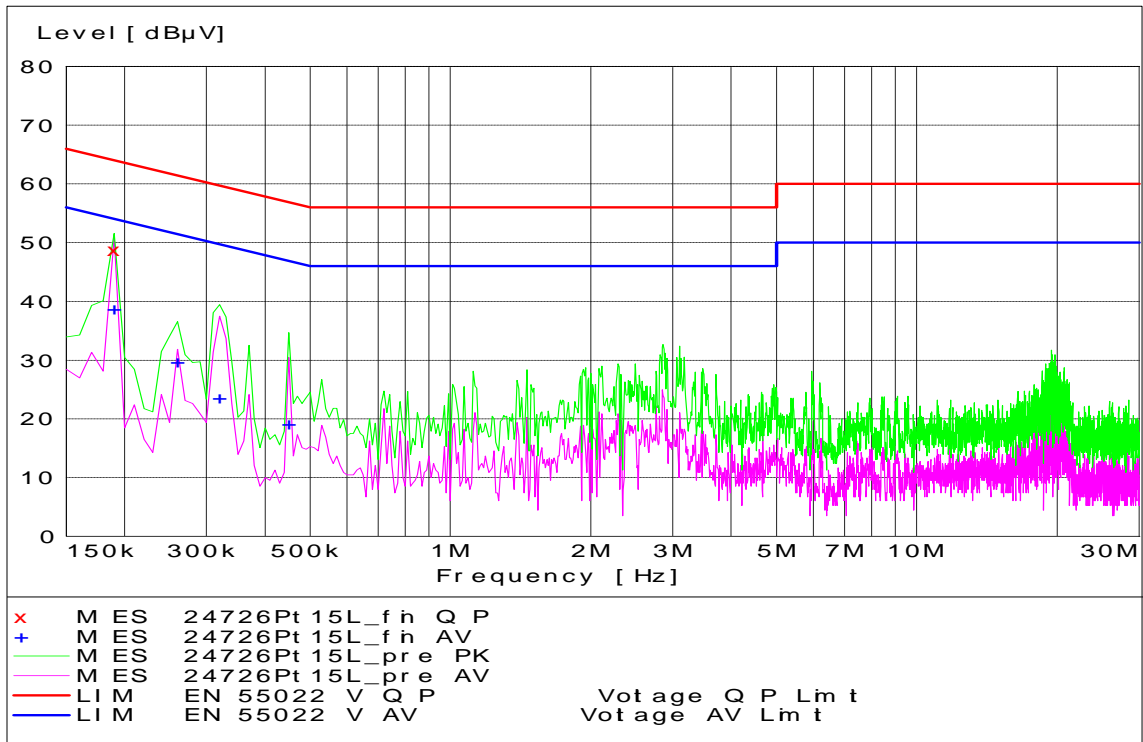
All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN. Equipment shall be tested with power cords that are normally supplied using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

Detectors - Quasi Peak and Average Detector

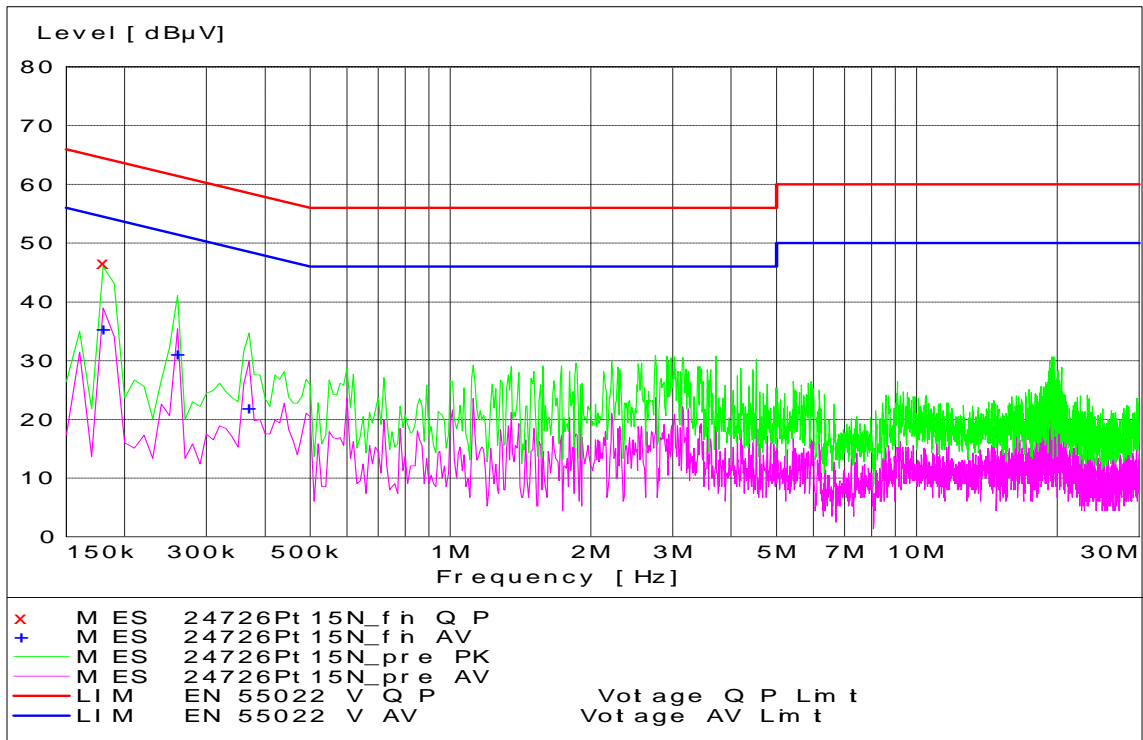
**Test Setup**

The EUT and the host equipment were setup according to the procedures in ANSI C63.4-2003. The test is first performed with the EUT, with a standard battery door installed, connected to a laptop computer using a USB data cable. The USB data cable is 1 m in length. The USB and the display ports of the computer were populated. The EUT was communicating with the laptop computer continuously. The test was then performed a second time, using the same setup, but with the inductive battery door installed on the EUT and the EUT positioned on the representative charging pad.

**Measurement Results – Standard Battery Door**

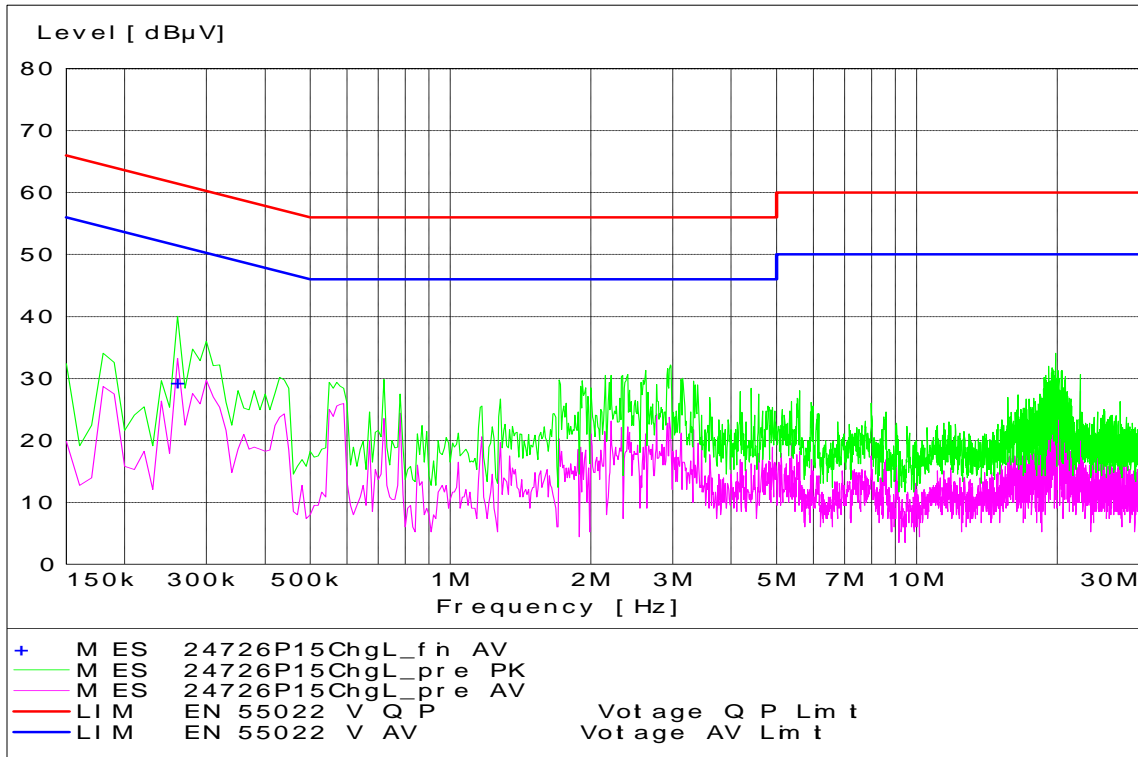


**Tx Mode - Line Coupling**

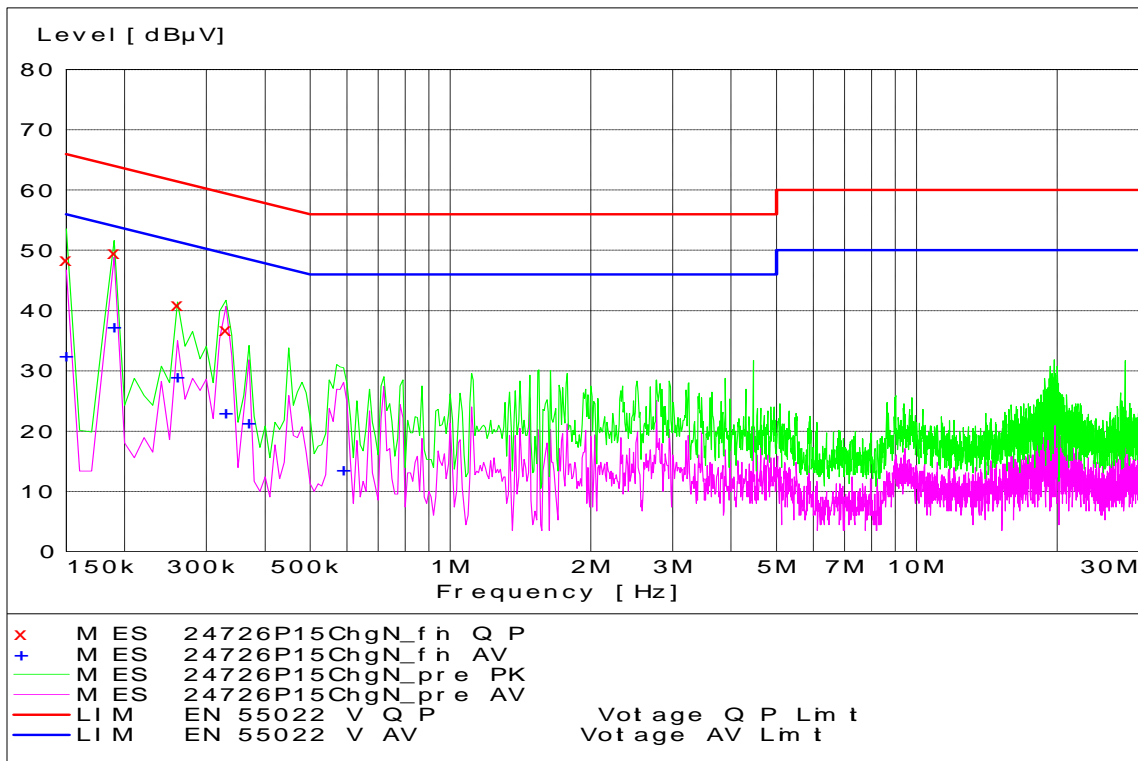


**Tx Mode - Neutral Coupling**

**Measurement Results – Inductive Charging Door**



**Tx Mode - Line Coupling**



**Tx Mode - Neutral Coupling**

**End of Test Report**