



**Lithium Batteries Test Summary
In Accordance with Subsection 38.3
Of UN Manual of Tests and Criteria**

Effective date: March 5, 2020

Product Manufacturer: Motorola Solutions, Inc.
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The UN38.3 tests were performed by one of the following test houses and were tested to UN Manual Test and Criteria Revision 3 Amendment 1 or subsequent revisions or amendments.

Test House	Address	Contact Information
Cheng Uei Group Fugang Electronic Co., Ltd.	NO.6, Zhengwei West Road Jinxi Town Kunshan, 215324 China	P: +86-51257235288 E: contactus@foxlink.com W: https://www.foxlink.com.tw/
Energy Assurance	2350 Centennial Dr, Gainesville, GA 30504	P: (404) 954-2054 E: information@energy-assurance.com W: http://energy-assurance.com/
Motorola Solutions, Inc., or Motorola Energy System Safety & Test (ESST)	1700 Belle Meade Court, Suite 100 Lawrenceville, GA 30043 USA	P: (866) 358-4901 E: ESST@motorolasolutions.com W: https://www.motorolasolutions.com/en_us/support.html
Motorola Product Testing Services	No. 10, the 4th Avenue TEDA Tanggu Tianjin, P.R. China	P: (866) 358-4901 E: ESST@motorolasolutions.com W: https://www.motorolasolutions.com/en_us/support.html
Motorola Technology SDN BHD	Plot 2 Bayan Lepas Industrial Park MK 12 SWD 11900 Penang Malaysia	P: (866) 358-4901 E: ESST@motorolasolutions.com W: https://www.motorolasolutions.com/en_us/support.html
Shanghai TECH Chemical Industry Testing Co., Ltd	West entrance, No.345 East Yunling Road, Shanghai	P: 021-52569800 E: wyorama@gmail.com W: http://www.ghs.cn/

Shenzhen Beihang Testing Co., Ltd.	Room B201, The Complex Building of Virtual University Park, No.2, Yuexing 3rd Road, South Zone of Technology Park, Yuehai Street, Nanshan District, Shenzhen, Guangdong, China. Room B202 2/F Building F, HaoWei Industrial Park QingSong West Road, PingShan District, Shenzhen, Guangdong, China 518000	P: +86 755 8650 3482 E: not available W: http://www.hc-stc.net
Shenzhen NTEK Testing Technology Co., Ltd.	Building C, Fenda Science Park, Sanwei, Bao'an District, Xixiang Shenzhen Guangdong, China	P: +86-755-6115 6588 E: ntek@ntek.org.cn W: www.ntek.org.cn
TUV SUD PSB Pte. Ltd	No.1 Science Park DR. Singapore, 118221	P: +65 6778 7777 E: info.sg@tuv sud.com W: https://www.tuvsud.com/en-sg
Vkan Certification & Testing Co., Ltd	No. 3, Tiantaiyi Rd., Kaitai Avenue, Science City, Guangzhou China	P: 020 32293888 E: office@cvc.org.cn W: http://www.cvc.org.cn



Product Test Information

Motorola Solutions’s lithium batteries have successfully passed and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3. Test compliance is accomplished through a combination of battery testing and cell testing.

Performed Tests		Results
T1	Altitude Simulation	Pass
T2	Thermal	Pass
T3	Vibration	Pass
T4	Shock	Pass
T5	External Short Circuit	Pass
T6	*Impact/Crush	Pass
T7	Overcharge	Pass
T8	*Force Discharge	Pass

Reference to Assembled Battery Testing requirements (i.e., UN38.3.3 (f) and UN38.3.3 (g)) - Not Applicable

*Tests completed at cell level

Lithium-ion Rechargeable Batteries

A) Description: 3.6V - 4.0V Custom size, rechargeable Li-ion battery integrated into two-way radio/device plastic rigid enclosure

Part Number	Test Report ID	Watt-Hour Rating (Wh)	Mass (grams)	Date of Test Report
PMNN4453A PMNN4453AR	13GEM0254	10.7	90	10/11/2013

B) Description: 3.6V - 4.0V small, label wrapped battery OR rechargeable Li-ion cell + printed circuit board assembly; Used in handsets & similar devices

Part Number	Test Report ID	Watt-Hour Rating (Wh)	Mass (grams)	Date of Test Report
AAL91X001	15GEM0221	5.1	29.56	9/18/2015
HKNN4013A	16GEM0113-B	6.7	38.7	7/15/2016
HKNN4014B	16GEM0114-B	4.2	23.9	6/22/2016
NNTN6923A	16GEM0138-A	5.2	50.9	6/20/2016
PMNN4468A	14GEM0164-B	8.1	47.9	9/19/2014
PMNN4472B	15GEM0145	8.4	47.2	11/16/2015
PMNN4475B	15GEM0210	16.9	95.9	12/11/2015
PMNN4475BC	15GEM0210	16.9	95.9	12/11/2015
PMNN4507A	16GEM0006	7.2	39.8	2/9/2016
PMNN4508A	16GEM0007	10.8	57.8	2/9/2016
PMNN4510B	16GEM0108	8.5	49.5	5/31/2016
PMNN4530A	16GEM0218	13.9	71.6	10/25/2016
PMNN4545A	17GEM0105	9.3	50.2	08/23/17
PMNN4546A	17GEM0106	18.5	97.3	8/23/2017
SNN5706B	DT01-070906	3.8	52	10/15/2007
AAM10X001	16GEM0117-A	8.1	47.9	5/18/2016
HKNN4013ASP01	16GEM0113-B	6.7	38.7	7/15/2016
PMNN4411A	10EMB0109	3.4	20.8	9/8/2010
PMNN4425B	15GEM0220	5.1	29.6	9/18/2015
PMNN4472BC	15GEM0145	8.4	47.2	11/16/2015
AAM10X001	16GEM0117-A	8.1	47.9	5/18/2016
53964	16GEM00138-A	5.2	51	6/20/2016
PMNN4578A	KE2018-10-001	9.3	46.1	10/11/2018
NNTN8023B NNTN8023BC	DT_12GEM0303_C 17GEM0014-A	8.1	84.78	12/12/2012 01/18/2017
PMNN4411B	KE2019-06-001	3.5	20.76	6/13/2019
NNTN8118A	10GEM0209-A	1.0	7.9	5/16/2016
HKNN4014A	16GEM0114-B	4.2	23.9	6/22/2016
PMNN4468B PMNN4468BJ	KE2018-07-001	9.0	46.1	7/26/2018



C) Description: 7.2V -8.0V Custom size, rechargeable Li-ion battery integrated into two-way radio/device plastic rigid enclosure

Part Number	Test Report ID	Watt-Hour Rating (Wh)	Mass (grams)	Date of Test Report
60012000002/ RLN6308D	13GEM015-B	17.3	143	12/4/2014
6080384X65 BT000151A01 RLN6351B RLN6351C	13GEM0158A	7.9	92.3	12/30/2014
AAD82X021	ZUN2013-0333	11.0	92.68	3/12/2013
AAD82X022	RZUN2013-0338	11.0	92.68	3/13/2013
AAD83X021	RZUN2013-0332	17.0	128.01	3/8/2013
AAF21X021	ZUN2013-0339	17.0	128	3/6/2013
AAG40X021	2112060527	11.0	95	6/20/2012
AAG41X021	RZUN2013-0341	17.0	128	3/8/2013
AAH13X002	KE2013-06-001	17.0	135	7/6/2013
AAH86X001	09EMB0087	15.9	146.5	8/26/2010
AAJ60X001	14GEM0279	16.7	136.37	3/31/2015
AAJ60X301	14GEM0279	16.7	136.37	3/31/2015
AAJ61X001	14GEM0280	11.0	125	12/18/2014
AAJ61X301	14GEM0280	11.0	99	12/18/2014
AAJ62X001	14GEM0279	16.7	136.37	3/31/2015
AAJ62X301	14GEM0279	16.7	136.37	3/31/2015
AAJ63X001	13GEM0349	17.0	139.95	1/9/2014
AAJ63X301	14GEM0281	17.0	139.95	12/18/2014
AAJ64X001	14GEM0279	16.7	136.37	3/31/2015
AAJ65X001	14GEM0280	11.0	99.01	12/18/2014
AAJ66X001	14GEM0279	16.7	136.37	3/31/2015
AAJ67X001	14GEM0280	11.0	99	12/18/2014
AAJ67X001	14GEM0280	11.0	102	12/18/2014



AAJ67X501	17GEM0157	11.0	99.01	10/23/2017
AAJ68X001	14GEM0279	16.7	136.37	3/31/2015
AAJ68X501	17GEM0156	17.0	136.57	10/23/2017
AAK66X001	14GEM0040	17.0	146.6	4/25/2014
AAK66X501	14GEM0040	17.0	146.6	4/25/2014
AAL73X001	14GEM0158	23.0	140.81	9/19/2014
AAM29X001 AAM29X601	RSZBHST160826751	17.0	126	9/19/2016
AAM40X001	18GEM0055	9.5	75.52	5/9/2018
AAM40X501	18GEM0006	9.5	75.52	2/20/2018
AAM41X001	18GEM0059	16.0	115.52	5/16/2018
AAM41X501	17GEM0178	16.0	115.52	11/14/2017
CZ083B018B (FNB-Z181Li)	RSZBHST190910602	13.0	102.2	9/23/20109
CZ083B618 (FNB-Z181Li)	RSZBHST190722467	13.3	94.3	8/2/2019
CZ083B618B (FNB-Z181Li)	RSZBHST160725644	13.3	103	8/2/2019
CZ088B001	RSZBHST17060308	13.0	107	7/5/17
CZ088B611 (FNB-Z182LI)	RSZBHST17060308	13.0	107	7/5/17
CZ088B621 (FNB-Z182LI)	RSZBHST17060308	13.0	107	7/5/2017
CZ089B002 FNB-Z165LI	SNB171227004001B	11.5	102	1/18/2018
CZ089B601	SNB171227004001B	11.5	101.9	1/182018
HKNN4013A	16GEM0113-B	6.7	38.7	7/15/2016
HKNN4014B	16GEM0114-B	4.2	23.9	6/22/2016
HNN4003B	13GEM0298	2350.0	144.98	10/25/2013
HNN4003B	09EMB0089	17.4	146	12/16/2009
HNN4003BR	13GEM0298	17.4	144.98	10/25/2013
HNN9013DR	14GEM0002-A	11.1	135	11/24/2015



JMNN4023CR	12GEM0051	7.8	90.6	4/11/2012
JMNN4024CR	14GEM0065	11.1	127.2	5/20/2014
NNTN4497DR	17GEM0065-B	17.6	142.03	6/1/2017
NNTN4970A	13GEM0258-B	12.6	136.3	9/17/2013
NNTN5510DR	13GEM0264	10.8	220.9	9/25/2013
NNTN6034B	UN-12GEM0084	30.7	270	4/5/2012
NNTN6923A	16GEM0138-A	5.2	50.9	6/20/2016
NNTN6944CR	DT_12GEM0327_A	5.2	69	12/13/2012
NNTN7032B	12GEM0045	17.8	198	2/26/2012
NNTN7033A	16GEM0134-A	30.4	302.5	6/10/2016
NNTN7038B	13GEM0184-B	21.0	164.7	7/3/2013
NNTN7335B	12GEM0300	20.0	198	2/26/2012
NNTN7383A	12GEM0247	5.6	163.2	9/12/2012
NNTN7453A	UN-12GEM0086_A	29.2	265.8	4/5/2012
NNTN7554B	UN-12GEM0046_1	15.2	166	02/26/2012
NNTN8020B	17GEM0164-A	6.5	73.1	11/3/2017
NNTN8023C	DT_12GEM0303_B	8.1	84.8	12/11/2012
NNTN8023CC	12GEM0303	8.1	84.8	11/12/2012
NNTN8128BR	13GEM0208	14.1	140	8/16/2013
NNTN8128C	EA3558UN	15.0	128	2/24/2020
NNTN8129AR	16GEM0112-B	17.0	148.5	9/7/2017
NNTN8182B	12GEM0301	22.9	160	12/5/2012
NNTN8287A	UN-12GEM0005	12.9	253.5	2/20/2012
NNTN8305AR	12GEM0201	9.3	98.1	10/3/2012
NNTN8359A	12GEM0255_B	12.6	206.8	10/28/2012
NNTN8359C NNTN8359CR	EA3437UN	15.0	212	1/14/2020
NNTN8386A	15GEM0053-A	13.7	208.2	3/13/2015
NNTN8560A NNTN8560AC	14GEM0166-C	21.5	208	12/15/2015
NNTN8560B	EA3544UN	18.0	168	1/22/2020
NNTN8561AR	14GEM0166-C	18.5	208.4	12/15/2015
NNTN8570B	15GEM0052-B	9.5	132.7	4/8/2015



NNTN8750A	15GEM0053-A	13.7	208.2	3/13/2015
NNTN8840A	15GEM0051-A	15.2	208.7	4/30/2015
NNTN8921A	15GEM0138-B	33.3	314.9	8/20/2015
NNTN8930A	15GEM0101-A	19.8	158.5	6/18/2015
NNTN9216A NNTN9217A	EA3438UN	32.0	194	12/26/2019
NTN9862D	UN-12GEM0085B	20.3	190	4/5/2012
PMNN4023CR	14GEM0002-A	11.1	135	11/24/2015
PMNN4066A PMNN4066AC	14GEM0066-C	11.1	143.773	5/20/2014
PMNN4066B	EA34559UN	13.0	126	1/30/2020
PMNN4069A PMNN4069AC	14GEM0066-C	11.1	143.773	5/20/2014
PMNN4073AR PMNN4073ARJ	14GEM0067	11.8	134.242	5/20/2014
PMNN4074AR PMNN4074ARJ	14GEM0067	11.8	134.242	5/20/2014
PMNN4075AR	14GEM0003	12.6	131.86	1/8/2014
PMNN4077C	14GEM0068	15.9	147.304	5/20/2014
PMNN4077D	17GEM0136	17.8	149.768	9/18/2017
PMNN4077E	EA3554UN	18.0	150	1/30/2020
PMNN4080AR	13GEM0303	15.9	150.62	10/25/2013
PMNN4081BR	12GEM0185	11.1	144.8	9/12/2012
PMNN4083CR	DT-12GEM0327_A	10.4	115	12/13/2012
PMNN4086A	080626-01-DOT/ 08GEM0120	7.4	95.21	8/6/2008
PMNN4087A	080626-02-DOT/ 08GEM0120	7.6	94.448	8/6/2018
PMNN4101A	091111-01-DOT/ 09EMB0087	11.5	146.32	12/24/2009
PMNN4102A	091111-01-DOT/ 09EMB0087	11.1	146.32	12/24/2019
PMNN4103A	091111-01-DOT/ 09EMB0087	16.3	146.32	12/24/2019



PMNN4158AR	091124-02-DOT/ 09EMB0091	11.1	133.783	12/28/2009
PMNN4159AR	16GEM0139	17.4	146.392	6/21/2016
PMNN4201BR	12GEM0097/ 11EXT0220	7.0	96	4/10/2012
PMNN4202AR	09EMB0088	11.8	124.672	12/18/2009
PMNN4253AR	10EMB0115	11.8	137.475	10/15/2010
PMNN4254AR	10EMB0116	17.0	141.017	10/15/2010
PMNN4258AR	14GEM0171	21.5	144.7	9/15/2014
PMNN4259AR	14GEM0097	15.4	135.882	6/20/2014
PMNN4262AR	14GEM0138	21.1	151.257	9/4/2014
PMNN4351B	14GEM0257	7.2	63	12/3/2014
PMNN4351BC	14GEM0257	7.2	63	12/3/2014
PMNN4401B	DT01-100423-10EMB0053	14.1	209.58	5/27/2010
PMNN4403B	12GEM0302-C	15.9	142.2	7/25/2016
PMNN4404BRT	12GEM0185	11.1	144.8	9/12/2012
PMNN4406BR	14GEM0079-C	12.2	122.947	10/16/2015
PMNN4407BR	14GEM0072-C	12.2	124.458	10/16/2015
PMNN4409A	14GEM0080-D	15.9	149	8/24/2016
PMNN4409AR	14GEM0080-D	15.9	149	8/24/2016
PMNN4409BR	14GEM0080-D	15.9	149	8/24/2016
PMNN4409BR	14GEM0080-D	15.9	149	8/24/2016
PMNN4416BR	14GEM0079-C	11.8	122.9	10/16/2015
PMNN4417BR	14GEM0072-C	12.2	124.458	10/16/2015
PMNN4418A	14GEM0080-D	15.9	149	8/24/2016
PMNN4418BR	14GEM0080-D	15.9	149	8/24/2016
PMNN4423BR	RZUN2015-2024	8.1	77.6	10/27/2015
PMNN4424AR	16GEM0112-B	17.0	148.41	9/7/2017
PMNN4424B PMNN4424BC	EA3545UN	17.0	148	12/19/2019
PMNN4434AR	12GEM0299	7.4	91.297	2/4/2013
PMNN4438A	13GEM0180	3.9	79	10/29/2013
PMNN4440AR	13GEM0090	11.8	103.9	4/18/2013



PMNN4448AR	13GEM0138	20.0	153.8	5/23/2013
PMNN4448B	EA3555UN	19.0	150	1/14/2020
PMNN4449AR	13GEM0267	29.6	212.1	11/1/2013
PMNN4450AR	13GEM0260	20.0	144.2	10/23/2013
PMNN4451A	13GEM0180	3.9	79	10/29/2013
PMNN4454AR	13GEM0309	20.0	156.1	1/24/2014
PMNN4455AR	13GEM0282	20.0	149.7	11/15/2013
PMNN4457AR	13GEM0287	15.2	140.3	11/25/2013
PMNN4458BR	17GEM0065-B	16.9	142.03	6/1/2017
PMNN4461A	14GEM0015-B	6.5	59.4	1/26/2016
PMNN4474A	16GEM0042-A	19.6	173.6	4/5/2016
PMNN4474B	19GEM0024-A	21.5	172.2	3/14/2019
PMNN4476A	15GEM0019	11.8	120.6	3/6/2015
PMNN4485A	15GEM0073	18.5	141.2	5/21/2015
PMNN4486A	15GEM0072	25.2	177	10/5/2016
PMNN4487A	7191128486	35.8	320	12/17/2015
PMNN4487A	7191128486-EEC15/01	35.8	320	12/17/2015
PMNN4488A	15GEM0125	22.2	152.9	12/15/2015
PMNN4488AC	15GEM0125	22.2	152.9	12/15/2015
PMNN4489A	14GEM0166-C	21.5	207.99	12/15/2015
PMNN4489A PMNN4490A	14GEM0166-C	21.5	210	12/15/2015
PMNN4489B PMNN4490B	EA3543UN	21.0	198	1/14/2020
PMNN4490A	14GEM0166-C	21.5	207.99	12/15/2015
PMNN4491A	15GEM0102	15.2	131.6	12/15/2015
PMNN4491B PMNN4491BC	15GEM102-C	15.2	131.7	12/15/2015
PMNN4491C	EA3557UN	16.0	134	1/30/2020
PMNN4493A PMNN4493AC	15GEM0125	22.2	152.9	12/15/2015
PMNN4494A	7191128486	37.7	320	12/18/2015
PMNN4495A	15GEM0166-A	25.9	204.1	8/27/2015
PMNN4497AR	7191111827	6.7	39	5/7/2015



PMNN4502A	16GEM0001	22.2	150.8	2/15/2016
PMNN4504A	15GEM0072	25.2	177	10/5/2016
PMNN4505A	7191128486	35.8	320	12/17/2015
PMNN4511A	16GEM0116	21.5	153.5	6/10/2016
PMNN4522A	16GEM0205	12.5	96.3	10/14/2016
PMNN4525A	16GEM0226	16.7	148.6	10/28/2016
PMNN4525B	EA3556UN	14.0	146	1/14/2020
PMNN4533A	14GEM0080-D	15.9	149	8/24/2016
PMNN4534A	16GEM0193	18.5	134.1	9/13/2016
PMNN4543A	17GEM0181	18.1	149.8	11/20/2017
PMNN4544A	17GEM0183	18.1	150.6	11/21/2017
PMNN4547A	17GEM0145	22.9	197.8	9/27/2017
PMNN4548A	17GEM0181	18.1	149.8	11/20/2017
PMNN4549A	17GEM0143	10.8	73.5	9/28/2017
PMNN4573A	18GEM0076-A	34.0	309	7/10/2018
PMNN4579A	EA3439UN	28.0	173	12/5/2019

James Johnson

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Sr. Regulatory Compliance Engineer