Variant FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola, Lenovo
MODEL NAME	:	9850
FCC ID	:	IHDT56VF4
STANDARD	:	FCC Part 15 Subpart E §15.407
CLASSIFICATION	:	(NII) Unlicensed National Information Infrastructure

This is variant report which is only valid together with the original test report. The product was received on Dec. 13, 2016 and testing was completed on Dec. 26, 2016. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR6D1302D	Rev. 01	This is a variant report for 9850, the product equality declaration could be referred to Appendix D. Based on the similarity between current and previous, only the worse cases of Radiated Spurious Emission from original test report (Sporton Report Number FR693004-03D) were verified for the differences. The Conducted item of WLAN5GHz Band III re-use data collected on Model: 9847, FCC ID: IHDT56VF2 (Sporton Report Number FR6D1304D).	Jan. 18, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 8.01 dB at 30.970 MHz
3.2	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.3	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola, Lenovo
Model Name	9850
FCC ID	IHDT56VF4
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20/ WLAN 5GHz 802.11a/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE/ Bluetooth v4.2 LE
S/N Code	Radiation: N/A
HW Version	DVT2(V5.0)
SW Version	cedric-userdebug 7.0 NPP25.127 859 intcfg,test-keys
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5700 MHz
Antenna Type	**<5180 MHz ~ 5240 MHz>** PIFA Antenna **<5260 MHz ~ 5320 MHz>** PIFA Antenna **<5500 MHz ~ 5700 MHz >** PIFA Antenna
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Specification of Accessory

Specification of Accessory				
AC Adapter 1	**Brand Name**	Motorola (Acbel)	**Model Name**	C-P37
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
AC Adapter 2	**Brand Name**	Motorola (Salom)	**Model Name**	SSW-2919UK C-P37 SPN5940A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
AC Adapter 3	**Brand Name**	Motorola (Salom)	**Model Name**	SSW-2919EU C-P36 SPN5944A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
AC Adapter 4	**Brand Name**	Motorola (Acbel)	**Model Name**	C-P35
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
AC Adapter 5	**Brand Name**	Motorola (Salom)	**Model Name**	SSW-2919UMTJ C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
AC Adapter 6	**Brand Name**	Motorola (Acbel)	**Model Name**	C-P48
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
AC Adapter 7	**Brand Name**	Motorola (Salom)	**Model Name**	SSW-2919AU C-P48 SPN5953A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc, 2000mA		
Battery 1	**Brand Name**	Motorola (ATL)	**Model Name**	GK40
	Power Rating	3.8Vdc,2685/2800mAh (Min/Typ)	**Type**	Li-ion
Battery 2	**Brand Name**	Motorola (Sunwoda)	**Model Name**	GK40
	Power Rating	3.8Vdc,2685/2800mAh (Min/Typ)	**Type**	Li-ion
Earphone	**Brand Name**	Motorola	**Model Name**	SJYN1181B
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		
USB Cable 1	**Brand Name**	Motorola (Liqi)	**Model Name**	L25W-051000100AL
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		
USB Cable 2	**Brand Name**	Motorola (Fukangyuan)	**Model Name**	F25W-051000100A
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		

1.6 Modification of EUT

No modifications are made to the EUT during all test items.

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	**Sporton Site No.**	**FCC Registration No.**
	03CH03-KS	306251

Note: The test site complies with ANSI C63.4 2014 requirement.

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.9 Re-use of Measured Data

1.6.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: 9850, FCC ID: IHDT56VF4) is electrically identical to the reference device (Model: 9847, FCC ID: IHDT56VF2) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 178919 D01.

1.6.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Operational Description.

The re-used RF data includes the following bands provided in Appendix E (Sporton RF Report No. FR6D1304D for the reference device Model: 9847, FCC ID: IHDT56VF2):

1.6.3 Spot Check Verification Data Section

In order to confirm hardware similarity of the subject device with the reference device, spot check measurements were performed on the subject device for radiated spurious emission, the test result were consistent with FCC ID: IHDT56VF2.

Assertions concerning the similarity of these devices are based on representations by the applicant. The applicant accepts full responsibility for the validity of the similarity claim, and for the determination that verification test data are sufficient to support it.

1.6.4 Reference detail Section:

Equipment Class	Reference FCC ID	Folder Test/RF Exposure	Report Title/Section
NII (B3)	IHDT56VF2	Part15E(FR6D1304D)	Conducted

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5260-5320 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	-	-	-	-

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5500-5700 MHz Band 3 (U-NII-2C)	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	-	-	134*	5670
	108	5540	136	5680
	110*	5550	140	5700

Note: The above Frequency and Channel in "*" were 802.11n HT40.

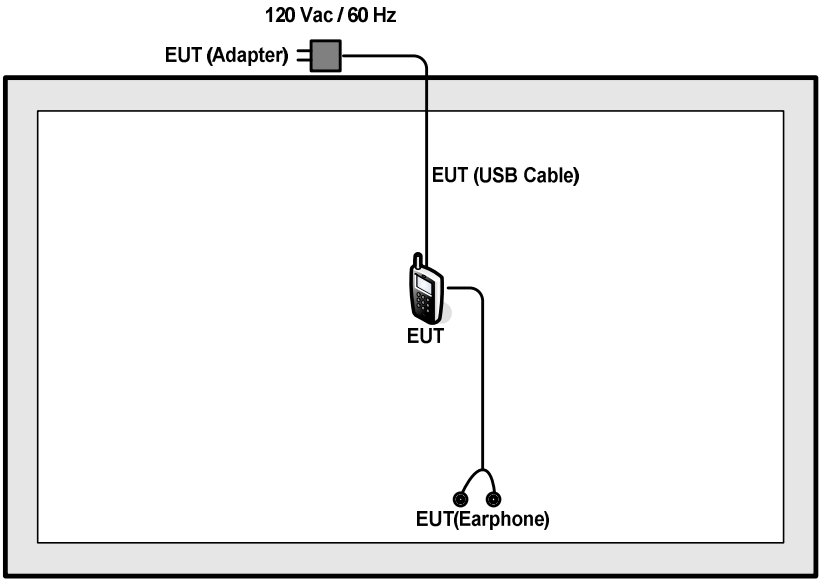
2.2 Test Mode

Modulation	Data Rate
802.11a	6 Mbps

Ch. #		Band II：5260-5320 MHz	Band III：5500-5720MHz
		802.11a	802.11a
L	Low	52	100
M	Middle	60	116
H	High	64	136
			140

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



2.4 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.

3 Test Result

3.1 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.1.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBµV/m)
-17	78.3
- 27	68.3

(3) KDB789033 D02 v01r03 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

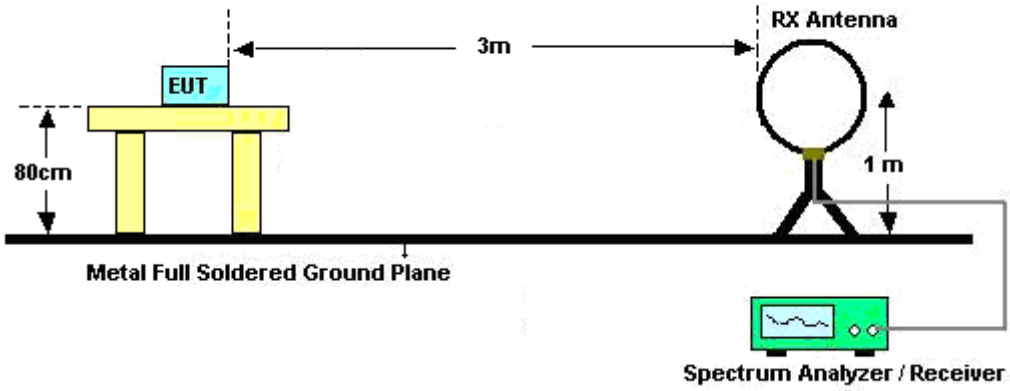
   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

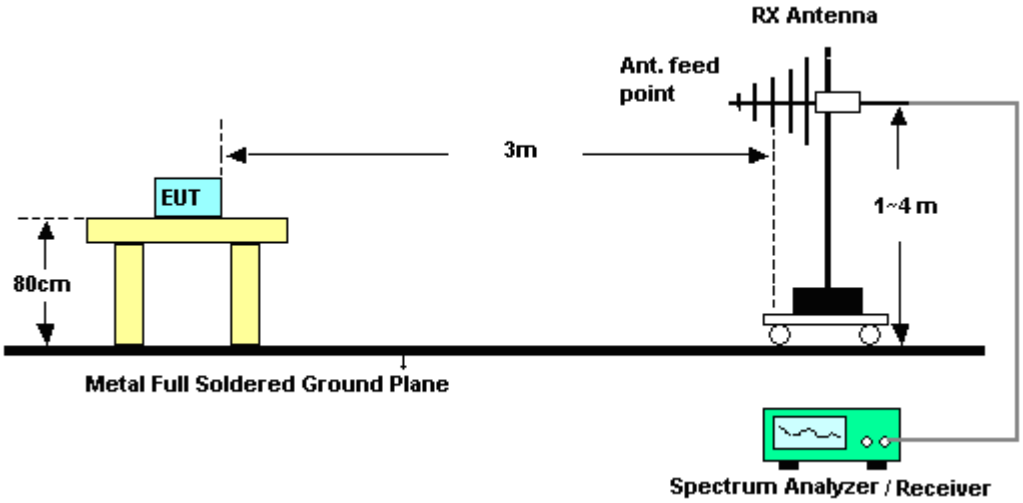
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.1.4 Test Setup

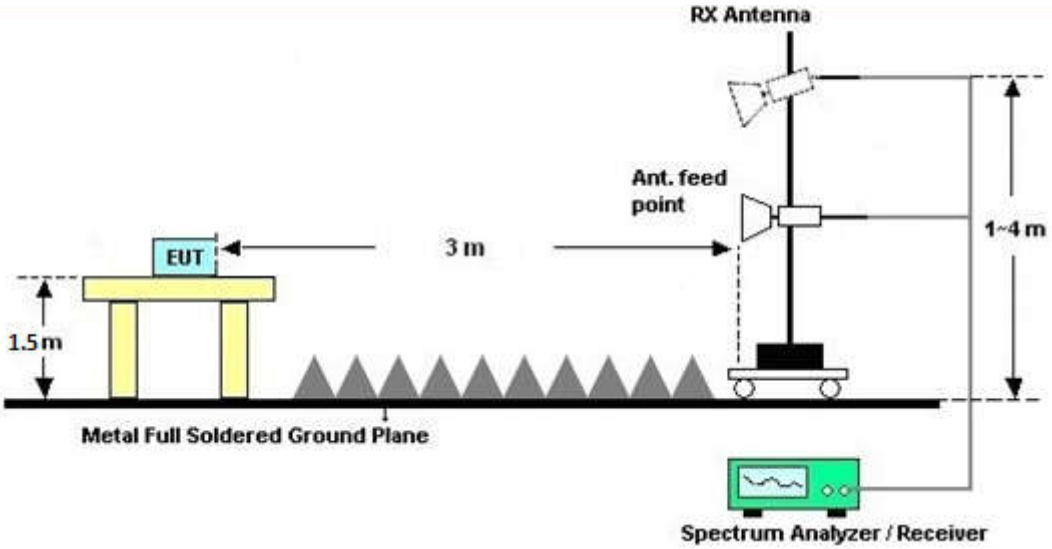
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A.

3.1.7 Duty Cycle

Please refer to Appendix B.

3.1.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix A.

3.2 Automatically Discontinue Transmission

3.2.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.3 Antenna Requirements

3.3.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.3.3 Antenna Gain

The antenna gain is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Dec. 26, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 22, 2016	Dec. 26, 2016	Apr. 21, 2017	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	Dec. 26, 2016	Nov. 22, 2017	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 16, 2016	Dec. 26, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 16, 2016	Dec. 26, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 03, 2016	Dec. 26, 2016	Mar. 02, 2017	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	187289	9kHz~1GHz	Aug. 09, 2016	Dec. 26, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-HG	1887435	18GHz~40GHz	Jan. 20, 2016	Dec. 26, 2016	Jan. 19, 2017	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 13, 2016	Dec. 26, 2016	Oct. 12, 2017	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Dec. 26, 2016	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Dec. 26, 2016	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Dec. 26, 2016	NCR	Radiation (03CH03-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5dB

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5dB

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.6dB

Appendix A. Radiated Spurious Emission

Band 2 - 5250~5350MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 64 5320MHz	*	5326	101.62	-	-	97.96	31.9	8.26	36.5	303	277	P	H
	*	5326	93.99	-	-	90.33	31.9	8.26	36.5	303	277	A	H
		5350.1	52.19	-21.81	74	48.44	31.91	8.34	36.5	303	277	P	H
		5350	42.13	-11.87	54	38.38	31.91	8.34	36.5	303	277	A	H
	*	5316	94.47	-	-	90.81	31.9	8.26	36.5	303	305	P	V
	*	5316	86.7	-	-	83.04	31.9	8.26	36.5	303	305	A	V
		5350.1	48.41	-25.59	74	44.66	31.91	8.34	36.5	303	305	P	V
		5372.3	37.7	-16.3	54	33.9	31.91	8.39	36.5	303	305	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 64 5320MHz		10640	45.85	-28.15	74	52.36	38.18	12.02	56.71	200	360	P	H
		10640	46.12	-27.88	74	52.63	38.18	12.02	56.71	200	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 100 5500MHz		5466.25	55.34	-18.66	74	51.44	31.95	8.35	36.4	100	293	P	H
		5469.85	44.91	-9.09	54	41.01	31.95	8.35	36.4	100	293	A	H
	*	5494	103.61	-	-	99.72	31.95	8.32	36.38	100	293	P	H
	*	5494	96.47	-	-	92.58	31.95	8.32	36.38	100	293	A	H
		5469.85	50.08	-23.92	74	46.18	31.95	8.35	36.4	302	291	P	V
		5470	40.7	-13.3	54	36.8	31.95	8.35	36.4	302	291	A	V
	*	5502	98.38	-	-	94.48	31.96	8.29	36.35	302	291	P	V
	*	5502	91.38	-	-	87.48	31.96	8.29	36.35	302	291	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 100 5500MHz		11000	43.08	-30.92	74	48.43	38.4	12.25	56	160	360	P	H
		11000	41.82	-32.18	74	47.17	38.4	12.25	56	160	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

Emission below 1GHz

WIFI 802.11a (LF @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a LF		31.94	30.68	-9.32	40	34.78	26.52	0.68	31.3	100	0	P	H
		38.73	30.35	-9.65	40	38.11	22.86	0.75	31.37	-	-	P	H
		84.32	28.29	-11.71	40	42.03	16.73	1.11	31.58	-	-	P	H
		306.45	30.23	-15.77	46	40.09	19.32	2.16	31.34	-	-	P	H
		433.52	30.63	-15.37	46	34.56	24.73	2.59	31.25	-	-	P	H
		907.85	32.12	-13.88	46	30.44	28.65	3.87	30.84	-	-	P	H
		30.97	31.99	-8.01	40	35.76	26.86	0.66	31.29	100	0	P	V
		60.07	27.77	-12.23	40	45.28	13	0.92	31.43	-	-	P	V
		85.29	24.88	-15.12	40	38.36	17	1.12	31.6	-	-	P	V
		306.45	28.95	-17.05	46	38.81	19.32	2.16	31.34	-	-	P	V
		437.4	31.68	-14.32	46	35.42	24.91	2.6	31.25	-	-	P	V
		937.92	32.99	-13.01	46	30.54	29.25	3.95	30.75	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

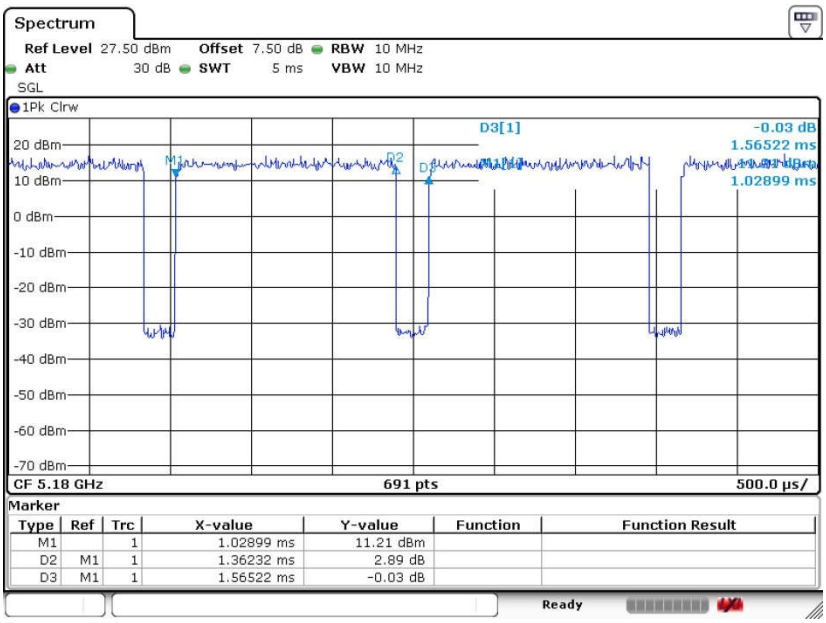
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix B. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.04	1.36	0.73	1KHz

802.11a



Appendix D. Product Equality Declaration

Lenovo Mobile Communication Technology Ltd.
No.999, Qishan North 2nd Road, Information & Optoelectronics Park, Torch Hi-tech Industry Development Zone, Xiamen, P.R.China
Tel: 86-10-58866181; Fax: 86-10-56720293

Date: January 13, 2017

Product Equality Declaration

We, Lenovo Mobile Communication Technology Ltd., declare on our sole responsibility for the product of **Dante-EMEA-APAC SKU** as below:

The differences between **Dante-EMEA-APAC SKU** and previous as below:

Object	1st Source spec		2nd Source spec	
	Specifications	Supplier	Specifications	Supplier
Battery	GK40	Amperex	GK40	SUNWODA
Sim Card	Dual Sims and Single Sim	N\A	Only Single Sim	N\A
Band7 Duplexer	B39272B8674P810	EPCOS	SAYEY2G53BA0F0AR05	Murata
Band28A Duplexer	B8538	EPCOS	SAYEY718MBC0F0A	Murata
Band28B Duplexer	B8539	EPCOS	SAYEY733MBC0F0A	Murata
USB Cable	L25W-051000100AL	Liqi	F25W-051000100A	Fukangyuan
Charger	C-P36 (EU) C-P35 (US)	Acbel	SSW-2919EU C-P36 SPN5944A (EU) SSW-2919UMTJ C-P35 SPN5945A (US)	Salom

Except above, the others are all the same.
Should you have any questions or comments regarding this matter, please have my best attention.
Sincerely yours,

Lin Biaochun

Contact Person: Lin Biaochun
COMPANY: Motorola Mobility LLC.
Tel:86- 18150396560
E-Mail: Linbc@lenovo.com

Lenovo Mobile Communication Technology Ltd.

No.999, Qishan North 2nd Road, Information & Optoelectronics Park, Torch Hi-tech Industry Development Zone, Xiamen, P.R.China

Tel: 86-10-58866181; Fax: 86-10-56720293

Date: January 18, 2017

Product Equality Declaration

We, Lenovo Mobile Communication Technology Ltd., declare on our sole responsibility for the product of Motorola 9369, 9847, 9846, 9845, 9850 and 9844 as below:

The differences between Motorola 9369, 9847 (LATAM), 9846 (Brazil), 9845, 9850 (EMEA), and 9844 (India) are as below:

■ RF section

1. Frequency band difference

Radio Functionality Matrix -Same Row indicates Signal Path is Shared among SKUs				
Bands/Modes	LatAm	Brazil	India	EMEA
	（9369, 9847）	(9846)	(9844)	(9845, 9850)
FCC ID	IHDT56VF2	IHDT56VF3	IHDT56VF5	IHDT56VF4
GSM 850	X	X	X	X
GSM 900	X	X	X	X
GSM1800	X	X	X	X
GSM 1900	X	X	X	X
LTE 1	X	X	X	X
LTE 2	X			
LTE 3	X	X	X	X
LTE 4	X			
LTE 5	X	X	X	X
LTE 7	X	X		X
LTE 8			X	X
LTE 12	X			
LTE 17	X			
LTE 19				X
LTE 20				X
LTE 28	X	X		X
LTE 38				X
WCDMA 1	X	X	X	X
WCDMA 2	X	X		X
WCDMA 4	X			
WCDMA 5	X	X	X	X
WCDMA 8	X	X	X	X
WCDMA 19				X

2. Board difference

		LatAm （9369, 9847）	Brazil (9846)	India (9844)	EMEA (9845, 9850)
WWAN	IC	Same across all SKUs(WTR2965)			
	Component on PCB	See Note1			
	Antenna	Same across all SKUs			
BT	IC	Same across all SKUs			
	Component on PCB	Same across all SKUs			
	Antenna	Same across all SKUs			
WLAN	IC	Same across all SKUs			
	Component on PCB	Same across all SKUs			
	Antenna	Same across all SKUs			
FM	IC	Same across all SKUs			
	Component on PCB	Same across all SKUs			
	Antenna	Headset is used as the antenna			

Note 1

- One more SPDT is applied in PRX chain of LatAm SKU，which is used for B1 & B4 co-existence. B1 & B4 share the same PRX port of WTR .Because there is no B4 in EMEA & India & Brazil SKUs, the SPDT can be saved.
- One more SP3T is applied in DRX chain of EMEA SKU， which is used for B7 & B38 co-existence. B7 & B38 share the same DRX port of WTR .Because there is no B38 in LatAm & India & Brazil SKUs, the SP3T can be saved.
- One more SPDT is applied in PRX chain of EMEA SKU， which is used for B38 & B40 co-existence . B38 & B40 share the same PRX port of WTR .When there is no B38 in India & Brazil & LatAm SKUs, the SPDT can be saved.
- One more SPDT is applied in DRX chain of EMEA & LatAm SKUs， which is used for B20/B28 co-existence or B12(17)/B28 co-existence. B12(17)/B20 & B28 share the same DRX port of WTR .Because there is no B20/B12(17) in Brazil & India SKUs ,the SPDT can be saved.

- SW section

For this particular Motorola project SKUs will be sharing one SW release, in which all SKUs will be sharing the same SW image, but different SKUs will load different configurations automatically according to each HW design.

- Mechanical section

There is no difference in mechanical design and materials used for all SKUs of Dante. There are differences in terms of memory configuration, number of SIMs supported and material vendors across different SKUs.

DVT 2 Samples,

RF Variant	eMCP Capacity	eMCP Vendor& Model	Front camera Vendor& Model	Rear camera Vendor& Model	# Sims	Marketing Model #
LatAm	2G+32G	Hynix H9TQ26ABJTBCUR-KUM	O-film L5695F70	Sunny F13N09U-200	1	9847
	2G+16G	Samsung KMQE10013M-B318	Sunny D5V16C-0JG	O-film L258A70	2	9369
Brazil	2G+32G	Samsung KMQX10013M-B419	O-film L5695F70	Sunny F13N09U-200	2	9846
EMEA	3G+16G	Samsung KMRE1000BM-B512	Sunny D5V16C-0JG	O-film L258A70	1	9850
	3G+16G	Hynix H9TQ17ADFTACUR-KUM	O-film L5695F70	Sunny F13N09U-200	2	9845
India	3G+16G	Samsung KMRE1000BM-B512	O-film L5695F70	Sunny F13N09U-200	2	9844

DVT 3 Samples,

RF Variant	eMCP Capacity	eMCP Vendor& Model	Front camera Vendor& Model	Rear camera Vendor& Model	# Sims	Marketing Model #
LatAm	2G+16G	Samsung KMQE10013M-B318	Sunny D5V16C-0JG	O-film L258A70	1	9847
Brazil	2G+32G	Samsung KMQX10013M-B419	Sunny D5V16C-0JG	O-film L258A70	2	9846
EMEA	2G+16G	Samsung KMQE10013M-B318	Sunny D5V16C-0JG	O-film L258A70	1	9850
India	3G+16G	Samsung KMRE1000BM-B512	O-film L5695F70	Sunny F13N09U-200	2	9844

Except for difference listed above:

- RF trace: same across LatAm, Brazil, India, EMEA SKUs.
- PCB layout: same across LatAm, Brazil, India, EMEA SKUs.
- WLAN/BT antenna type, antenna pattern, antenna location and chipset: Same across LatAm, Brazil, India, EMEA SKUs.
- LatAm, Brazil, India, EMEA SKUs have the same primary antenna and the same diversity GPS antenna.
- Compared with DVT 2 samples, MURATA band 7 and band 28 duplexers are used in DVT 3 samples instead of Epcos duplexers for EMEA, LatAm and Brazil SKUs.
- Second source accessories like Fukangyuan USB cable, Salom adaptor and Sunwoda battery are bundled with DVT 3 samples, compared with those used for DVT 2 samples, like Liqi USB cable, Acbel adaptor and ATL battery.

3 · Overview of the proposed data re-use plan

Radio Functionality Matrix -Same Row indicates Signal Path is Shared among SKUs				
Bands / Modes	LatAm （9369，9847）	Brazil (9846)	India (9844)	EMEA (9845，9850)
GSM 850	RF: verified conducted power, ERP and RSE from original SKU SAR: Verified Worse mode	RF: verified conducted power, ERP and RSE from original SKU SAR: Verified Worse mode	RF: verified conducted power, ERP and RSE from original SKU SAR: Verified Worse mode	RF: verified conducted power, ERP and RSE from original SKU SAR: Verified Worse mode
GSM1900	RF: Not the worse band, so not verified SAR: Verified Worse mode	RF: Not the worse band, so not verified SAR: Verified Worse mode	RF: Not the worse band, so not verified SAR: Verified Worse mode	RF: Not the worse band, so not verified SAR: Verified Worse mode
LTE 2	RF: Not the worse band, so not verified SAR: Verified Worse mode			
LTE 4	RF: Not the worse band, so not verified SAR: Verified Worse mode			
LTE 5	RF: Not the worse band, so not verified SAR: Verified Worse mode	RF: Not the worse band, so not verified SAR: Verified Worse mode	RF: verified conducted power, EIRP and RSE from original SKU SAR: Verified Worse mode	RF: Not the worse band, so not verified SAR: Verified Worse mode
LTE 7	Full tested since change the DPX SAR power full test and verified worse mode	RF: Verified worse mode for conducted power, EIRP and RSE Re-used Part 27M conducted test results from Latam SKU SAR: Verified Worse mode		RF: Verified worse mode for conducted power, EIRP and RSE Re-used Part 27M conducted test results from Latam SKU SAR: Verified Worse mode
LTE 12	RF: Not the worse band, so not verified SAR: Verified Worse mode			
LTE 17	RF: Not the worse band, so not verified SAR: Verified Worse mode			
LTE 38				RF: Not the worse band, so not verified SAR: Verified Worse mode
WCDMA Band 2	RF: Not the worse band, so not verified SAR: Verified Worse mode	RF: Not the worse band, so not verified SAR: Verified Worse mode		RF: Not the worse band, so not verified SAR: Verified Worse mode
WCDMA Band 4	RF: Not the worse band, so not verified SAR: Verified Worse mode			
WCDMA Band 5	RF: Not the worse band, so not verified SAR: Verified Worse	RF: Not the worse band, so not verified SAR: Verified Worse	RF: Not the worse band, so not verified SAR: Verified Worse	RF: Not the worse band, so not verified SAR: Verified

	mode	mode	mode	Worse mode
WLAN 2.4GHz	Worse case of RSE and SAR from original SKU	Worse case of RSE and SAR from original SKU	Worse case of RSE and SAR from original SKU	Worse case of RSE and SAR from original SKU
WLAN 5GHz	Reduce the Conducted Power of band3, retest Conducted item for this band and verified the CH64/100 of 5G WIFI Worse case of RSE and SAR from original SKU	Worse case of RSE and SAR from original SKU Conducted item of WLAN5GHz Band III re-use Latam data	Worse case of RSE and SAR from original SKU Conducted item of WLAN5GHz Band III re-use Latam data	Worse case of RSE and SAR from original SKU Conducted item of WLAN5GHz Band III re-use Latam data
Bluetooth	Worse case of RSE from original SKU	Worse case of RSE from original SKU	Worse case of RSE from original SKU	Worse case of RSE from original SKU

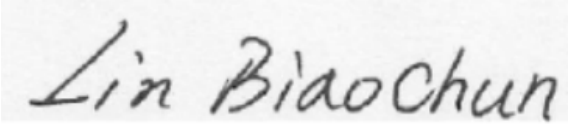
Note:

1. According to the difference between SA sample and original sample for each SKU, verified worse mode for EMC/RF/SAR.
2. For RF test data for Brazil, EMEA SKU re-used for part 27, 15E, spot check is performed to justify the re-used data is representative form Latam SKU.
3. FCC Part 15B verified worse case based on original each SKU.

Except listings above, the others are all the same.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,



Contact Person: Lin Biaochun

COMPANY: Motorola Mobility LLC.

Tel:86- 18150396560

E-Mail: Linbc@lenovo.com

Appendix E. Reference Report

Please refer to Sporton report number FR693004-03D which is issued separately.

Please refer to Sporton report number FR6D1304D as bellow.