



TEST REPORT

1. Applicant

Name : POINTMOBILE CO.,LTD

Address : Gasan-dong, B-9F Kabul Great Valley 32, Digital-ro9-gil, Geumcheon

gu, Seoul, Korea 153-709

2. Products

Name : Mobile Computer

Model : PM40

Manufacturer : POINTMOBILE CO.,LTD

3. Test Standard : FCC CFR 47 Part 22, 24

4. Test Method : ANSI C63.4-2009

5. Test Results : Positive

6. Date of Application : October 15, 2013

7. Date of Issue : November 1, 2013

Tested by

Jong-gon Ban

Telecommunication Center

Senior Engineer

Approved by

Jeong-min Kim

Telecommunication Center

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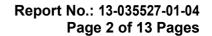
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Long min Kim

Manager

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Korea Testing Laboratory



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Test Report revision History

Revision	Date	Comments			
00	2013-11-01	Initial Version			
01	2013-12-19	ERP sample calculation added			
02	2014-01-29	-			

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1. Administrative Information

1.1. Applicant (Client)

Company Name	POINTMOBILE CO.,LTD
Address	Gasan-dong, B-9F Kabul Great Valley 32, Digital-ro9-gil, Geumcheon-gu, Seoul, Korea 153-709
Contact Person	
Name	Jinny Cho
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1.2. Manufacturer Data (only if different from Applicant)

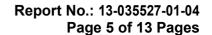
Company Name	
Address	
Contact Person	
Name	
E-mail	
Phone	

1.3. Testing Laboratory Data

The following list shows all places and laboratories involved for test result generation.

Company Name	Korea Testing Laboratory			
Address	723 Haean-ro, Sangnok-Gu, Ansan-Si, Gyeounggi-Do, 426-901 KOREA			
Contact Person				
Name	Jong-gon Ban			
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http://www.ktl.re.kr FP-236-09





2. EUT Information

2.1. General Description of the EUT

The following section lists all specifications of EUT (Equipment Under Test) involved in test. Additionally, KTL has received sufficient documentation from the client and/or manufacturer to perform the tests

Genera	al Information			
FCC ID		V2X-PM40		
Model N	Number	PM40		
Antenna	а Туре	Internal Antenna		
Type of	Transmitter	GSM/GPRS/EDGE850/1900, WCDMA850/1900		
	PM40G152146K0C	BT, WiFi, GSM, UMTS, GPS, Camera, 1D scanner, Standard Battery		
SKUs	PM40G152246K0C	BT, WiFi, GSM, UMTS, GPS, Camera, 1D scanner, Extended Battery		
SKUS	PM40G172146K0C	BT, WiFi, GSM, UMTS, GPS, Camera, 2D scanner, Standard Battery		
	PM40G172246K0C	BT, WiFi, GSM, UMTS, GPS, Camera, 2D scanner, Extended Battery		
Test sar	<u>mple</u>	BT, WiFi, GSM, UMTS, GPS, Camera, 2D scanner, Extended Battery		
Tx Freq	uency	824.2 – 848.8 MHz (GSM850) 826.4 – 846.6 MHz (WCDMA850) 1850.2 – 1909.8 MHz (GSM1900) 1852.4 – 1907.6 MHz (WCDMA1900)		
Antenna	a Gain	GSM850/UMTS850: -1.5 dBi, GSM1900/UMTS1900 : -2.0 dBi		
Battery	options	Li-ion, 3.8 V (standard:1800mAh, extended: 3600mAh)		
Device	Dimension	Overall (Length x width) : 135.5 mm x 67 mm Overall Diagonal :138mm Display Diagonal : 73 mm		
Date(s)	tested	2013.10.28 ~ 2013.10.31		
RF Module certificate info. GSM/UMTS		FCC ID: QIPPHS8-P Name of Grantee: Cinterion Wireless Modules GmbH Report Reference No:. 10_phs8_p_mde_cinte_1108_fcca 10_phs8_p_mde_cinte_1108_fccd 10_phs8_p_mde_cinte_1108_fccd		

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3. SUMMARY OF TEST RESULTS

The following table represents the list of measurements required under the FCC CFR47 Part 22 & 24.

FCC Rules	Test Items	Results	Remarks
*22.913(a), 24.232(c)	Conducted RF power output	N/A	
2.1049	Occupied bandwidth	N/A	
22.917, 24.238	Conducted Spurious Emission	N/A	
22.355, 24.235	Frequency Stability	N/A	
22.913(a), 24.232(c)	ERP & EIRP	Pass	
22.917, 24.238	Radiated Spurious Emissions	Pass	

^{*}refer to the SAR report

Note:

- -Conducted test items are not performed according to reduced test plan.
- -The GSM/WCDMA module reports is used for FCC certification.
- -So only the radiated emission test items are performed.



4. Measurement & Results

4.1. Effective Radiated Power

4.1.1. Test Procedure

The radiated and spurious measurements were made Fully-anechoic chamber at a 3-meter test range. The EUT was placed on the rotating device at 1.5m and at a distance of 3-meters from the receive antenna. The rotating device which can rotate horizontal axis was mounted on the turn unit to facilitate rotation around a vertical axis. The measurement was made for each horizontal/vertical position combination with receive antenna horizontally polarized. This measurement was repeated with receive antenna vertically polarized. The substitution antenna will replace the EUT antenna it the same position and in vertical polarization. The frequency of the signal generator shall be set to the frequencies that were measured on the EUT. The signal generator, output level, shall be adjusted until an equal or a known related level to what was measured from the EUT is obtained in the spectrum analyzer. This level was recorded. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

All modes of operation were investigated, and the worst-case results are reported.

4.1.2. Limit

FCC 22.913(b): The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

FCC 24.232(b): The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

4.1.3. ERP Sample Calculation

Frequency(M	Measured	Substitude	Ant	Cable	Polarization	ERP
Hz)	Level [dBm]	Level(dBm)	Gain (dBd)	Loss (dB)	[H/V]	[dBm]
824.2	-24.29	30.99	-0.48	1.05	Н	30.42

ERP = Substitute Level (dBm) - Ant. Gain - Cable Loss = 30.99 - (-0.48) - 1.05 = 30.42



4.1.4. Test Results

• GSM 850 Test Data

Frequency (MHz)	Measured Level [dBm]	Substitude Level(dBm)	Ant Gain (dBd)	Cable Loss (dB)	Polarization [H/V]	ERP [dBm]
824.2	-24.29	30.99	-0.48	1.05	Н	30.42
836.6	-22.58	31.49	-0.54	1.09	Н	30.94
848.8	-21.80	32.26	-0.62	1.11	Н	31.77
848.8 (EDGE 251ch)	-28.66	26.62	-0.62	1.11	Н	26.13

· GSM 1900 Test Data

Frequency(M Hz)	Measured Level [dBm]	Substitude Level(dBm)	Ant Gain (dBi)	Cable Loss (dB)	Polarization [H/V]	EIRP [dBm]
1850.2	-34.17	30.78	1.85	1.58	Н	27.35
1880.0	-32.73	32.55	1.91	1.62	Н	29.02
1909.8	-31.72	33.79	1.92	1.65	Н	30.22
1909.8 (EDGE 810)	-35.41	30.09	1.92	1.65	Н	26.52

• WCDMA 850 Test Data

Frequency(M Hz)	Measured Level [dBm]	Substitude Level(dBm)	Ant Gain (dBd)	Cable Loss (dB)	Polarization [H/V]	ERP [dBm]
826.6	-31.99	21.87	-0.48	1.05	Н	21.31
835	-31.05	21.53	-0.54	1.09	Н	20.98
846.4	-32.33	23.23	-0.62	1.11	Н	22.73

· WCDMA1900 Test Data

Frequency(M Hz)	Measured Level [dBm]	Substitude Level(dBm)	Ant Gain (dBi)	Cable Loss (dB)	Polarization [H/V]	EIRP [dBm]
1852.4	-37.59	28.26	1.86	1.56	Н	24.84
1880.0	-36.95	28.70	1.91	1.62	Н	25.17
1907.6	-36.69	28.09	1.93	1.64	Н	24.52

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4.2. Field Strength of Spurious Radiation

4.2.1. Limit

FCC 22.917(a) & 24.238(a): The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB. - Limit: -13 dBm

4.2.2. Test Results (GSM850)

Frequency (MHz)	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	E.R.P [dBm]	Polarization [H/V]	Limit [dBm]		
Operating Freque	Operating Frequency : 824.2 MHz						
2472.6	-53.93	10.78	-43.15	V	-13		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Freque	Operating Frequency: 836.6 MHz						
2,509.5	-52.61	10.82	-41.79	Н	-13		
5,126.3	-55.60	10.81	-44.79	V	-13		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Frequency: 848.8 MHz							
1697.6	-48.30	8.02	-40.28	Н	-13		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

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4.2.3. Test Results (GSM1900)

Frequency (MHz)	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	E.R.P [dBm]	Polarization [H/V]	Limit [dBm]		
Operating Freque	Operating Frequency : 1850.2 MHz						
-	-	-	-	-			
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Freque	Operating Frequency : 1880.0 MHz						
-	-	-	-	-			
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Frequency : 1909.8 MHz							
-	-	-	-	-			
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

Note: No emission levels higher than the ambient noise level are detected.

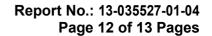
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4.2.4. Results (WCDMA850)

Frequency (MHz)	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	E.R.P [dBm]	Polarization [H/V]	Limit [dBm]		
Operating Freque	Operating Frequency : 826.4 MHz						
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Freque	Operating Frequency: 836.6 MHz						
5,125.8	-69.21	10.81	-58.40	V	-13		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Frequency: 846.6 MHz							
-	-	-	-	-	-		
-	-	-	-	-	-		

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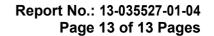


4.2.5. Test Results (WCDMA1900)

Frequency (MHz)	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	E.R.P [dBm]	Polarization [H/V]	Limit [dBm]		
Operating Freque	Operating Frequency : 1852.4 MHz						
3704.8	-66.44	12.09	-54.35	V	-13		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Freque	Operating Frequency: 1880.0 MHz						
3762.0	-67.56	12.23	-55.33	V	-13		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
Operating Frequency: 1907.6 MHz							
3815.2	-68.63	12.35	-56.28	V	-13		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

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5. TEST EQUIPMENTS

No.	Equipment	Manufacturer	Model	S/N	Calibration Due date
1	Spectrum Analyzer	Agilent	E4407B	US41443316	02-21-2014
2	Synthesized Sweeper	HP	83620A	3250A01653	02-04-2014
3	Digital RF Signal Generator	Agilent	E4438C	US41460859	02-21-2014
4	Signal Generator	R&S	SMIQ O3	DE22348	02-04-2014
5	PSA Series Spectrum Analyzer	Agilent	E4448A	US44300484	02-25-2014
6	DC Power Supply	Agilent	E4356A	MY41000296	02-04-2014
7	DC Power Supply	Agilent	E3645A	MY40000851	02-04-2014
8	AC Power Supply	Agilent	6811B	MY41000446	02-01-2014
9	Oscilloscope	Agilent	DSO6054A	MY44001104	02-04-2014
10	Directional Coupler	Agilent	87300C	MY44300126	02-13-2014
11	Directional Coupler	Agilent	773D	MY28390213	02-13-2014
12	VHF Attenuator	HP	355D	2522A45959	03-18-2014
13	Coaxial Attenuator	Weinschel	56-20	N8527	02-13-2014
14	Coaxial Attenuator	Agilent	8491B	50109	02-10-2014
15	Power Divider	HP	11636A	09084	03-18-2014
16	Power Spliter	HP	11667A	21063	03-18-2014
17	Frequency Counter	Anritsu	MF2412B	6200303497	02-08-2014
18	Temp/Humidity Chamber	ESPEC	SH-641	92007482	02-08-2014
19	Function/Arbitrary Waveform Generator	Agilent	33220A	MY44029652	01-20-2014
20	EMI Receiver	R&S	ESIB26	100280	02-06-2014
21	Pre-Amplifier	HP	83017A	MY39500982	03-18-2014
22	Pre-Amplifier	SONA INSTRUMENT	310	284609	01-29-2014
24	Biconi-Log Antenna	Schwarzbeck	VULB9168	9168-181	04-21-2014
25	Double Ridge Wave Guide	ETS-Lindgren	3115	9012-3595	10-21-2014
26	Universal Radio Communication tester	R&S	CMU200	110019	02-12-2014
27	Spectrum Analyzer	R&S	FSP30	100229	02-04-2014
28	Pre-Amplifier	R&S	SCU18	1337144	02-04-2014

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