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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPARTC REQUIREMENT

OF

Mobile Internet Device

MODEL No.: NABIJR-NV5A, nabi-Junior

FCC ID: ZYQ-NABIJR-NV5A

Trade Mark: nabi

REPORT NO: ES121215082E2

ISSUE DATE: January 6, 2013

Prepared for

KEEN HIGH HOLDING (HK) LIMITED
Unit 13, 7/F Technology Park, 18 On Lai street Shatin New Territories HK

Prepared by

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VERIFICATION OF COMPLIANCE

Applicant:	KEEN HIGH HOLDING (HK) LIMITED Unit 13, 7/F Technology Park, 18 On Lai street Shatin New Territories HK
Manufacturer:	KEEN HIGH HOLDING (HK) LIMITED Unit 13, 7/F Technology Park, 18 On Lai street Shatin New Territories HK
Product Description:	Mobile Internet Device
Model Number:	NABIJR-NV5A, nabi-Junior (Note: all the models are the same, except their model number, we take NABIJR-NV5A to test.)
Trade Mark:	nabi
Serial Number:	N/A
File Number:	ES121215082E2
Date of Test:	November 24, 2012 to December 06, 2012

We hereby certify that:

The above equipment was tested by SHENZHEN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247.

The test results of this report relate only to the tested sample identified in this report.

Date of Test : November 24, 2012 to December 05, 2012

Prepared by : Aaron Lai/Editor

Reviewer : King Wang/Supervisor

Approve & Authorized Signer : Lisa Wang/Manager

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1. GENERAL INFORMATION

1.1. Product Description

The KEEN HIGH HOLDING (HK) LIMITED

The EUT is a short range, lower power, Mobile Internet Devicedesigned as a Device. It is designed by way of utilizing the GFSK, 1/4∏-DQPSK and 8DPSK modulation achieves the system operating.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 2402-2480MHz
B). Modulation: GFSK, 1/4∏-DQPSK, 8DPSK
C). Number of Channel: 79
D). Channel space: 1MHz
E). RF Output Power: 1.82dBm
F). BIT Rate of Transmission: 1Mbps, 2Mbps, 3Mbps
G). Antenna Type: PCB antenna
H). Antenna GAIN: 1.35dBi
I). Power Supply: AC 120V, 60Hz with AC Adapter and DC 3.7V from Li-ion Battery
J). Adapter: Model: KSAS000500100VUU
Input: AC 100-240V, 50/60Hz 0.18A
Output: DC 5.0V, 1.0A

1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: ZYQ-NABIJR-NV5A filing to comply with Section 15.247 of the FCC Part 15 Subpart C Rules.

1.3. Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2009) and FCC Public Notice DA 00-705. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4. Special Accessories

Not available for this EUT intended for grant.

1.5. Equipment Modifications

Not available for this EUT intended for grant.

1.6. Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2010.10.29
The certificate is valid until 2013.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2006(identical to ISO/IEC17025: 2005)
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Shenzhen 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, October 28, 2010
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 5, 2010
The Certificate Registration Number is 4480A-2.

Name of Firm : SHENZHEN EMTEK CO., LTD

Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

2. System Test Configuration

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The Transmitter was operated in the normal operating mode. The Tx frequency was fixed which was for the purpose of the measurements.

2.3. Test Procedure

2.3.1 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4. Limitation

(1) Radiated Emission

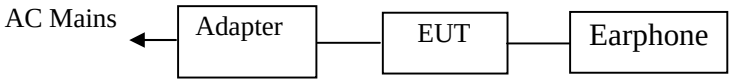
FCC Part 15, Subpart C Section 15.209 limit of radiated emission for frequency below 1000GHz. The emissions from an intentional radiator shall not exceed the field strength level specified in the following table:

Frequency (MHz)	Field strength μV/m	Distance(m)	Field strength at 3m dBμV/m
0.009~0.490	2400/F(KHz)	300	See the remark
0.490~1.705	2400/F(KHz)	30	
1.705~30.0	30	30	
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

2.5. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



2-2 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	Mobile Internet Device	nabi	NABIJR-NV5A	ZYQ-NABIJR-NV5A	N/A	EUT
2	AC Adaptor	Ktec	KSAS000500100VUU	N/A	N/A	

Note:

(1) Unless otherwise denoted as EUT in『Remark』column, device(s) used in tested system is a support equipment.

2.6. Description of test modes

The EUT has been tested under TX operating condition.

This EUT is a FHSS system, were conducted to determine the final configuration from all possible combinations. We use software control the EUT, Let EUT hopping on and transmit with highest power, All the modes GFSK, 1/4Π -DQPSK, 8DPSK have been tested and the worst result was reported with modulation GFSK. 79 Channels are provided by EUT. The 3 channels of lower, medium and higher were chosen for test.

Channel	Frequency(MHz)
1	2402
40	2441
79	2480

3. Summary of Test Results

FCC Rule	Description Of Test	Result
15.247(d)	Radiated Emission	Compliant

4. Radiated Emission Test

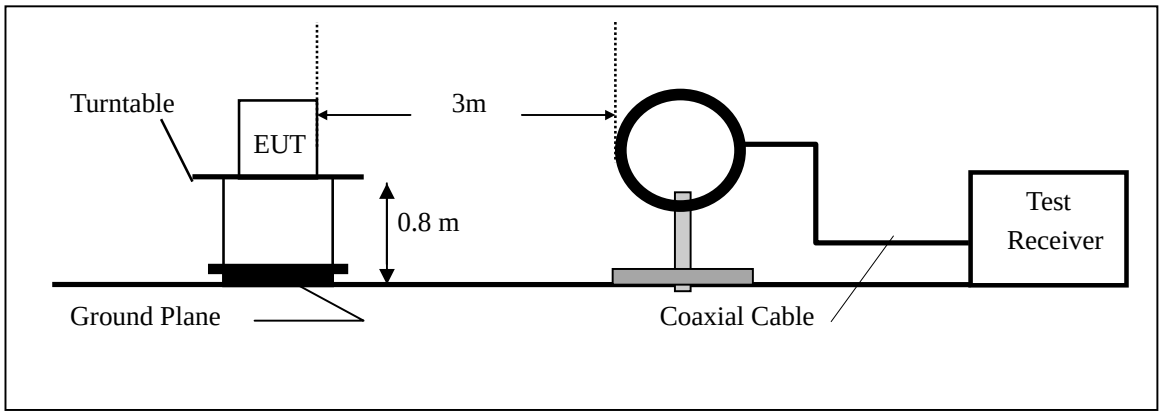
4.1. Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured was complete.

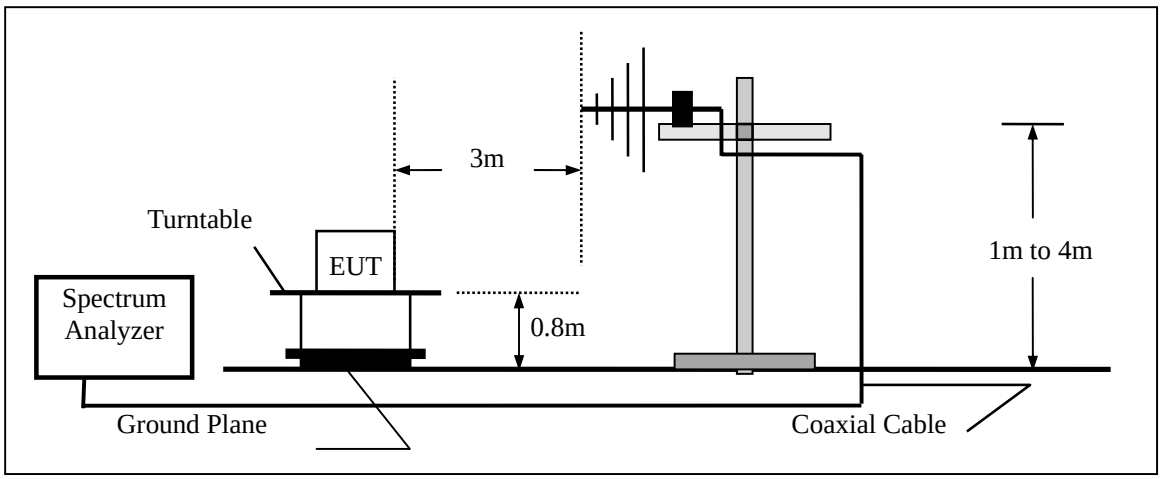
When spectrum scanned from 30 MHz to 1GHz setting resolution bandwidth 100 kHz and video bandwidth 300kHz. And spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 3MHz.

4.2. Test SET-UP (Block Diagram of Configuration)

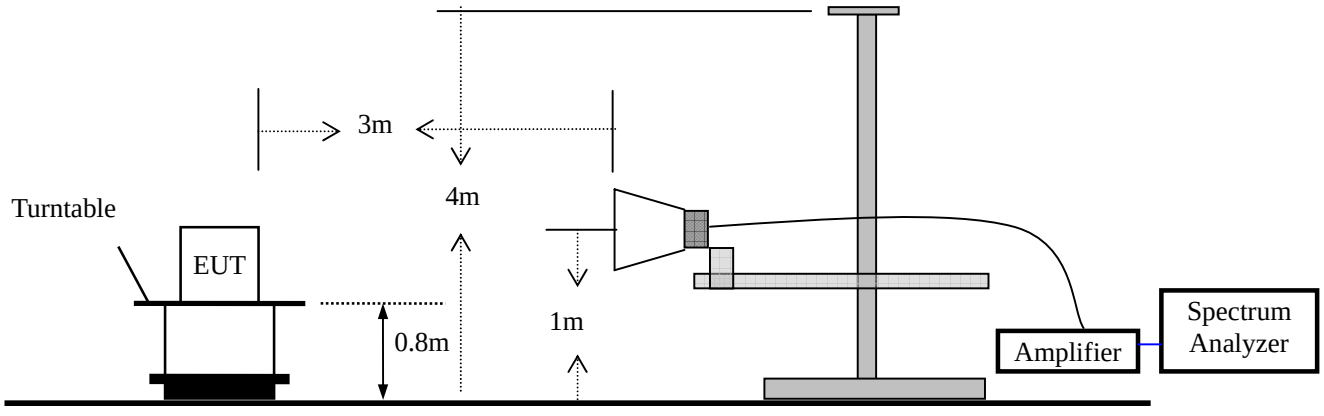
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



4.3. Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSP7	839511/010	05/29/2012	05/28/2013
Spectrum Analyzer	HP	E4407B	839840481	05/29/2012	05/28/2013
EMI Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/29/2012	05/28/2013
Pre-Amplifier	HP	8447D	2944A07999	05/29/2012	05/28/2013
Bilog Antenna	Schwarzbeck	VULB9163	142	05/29/2012	05/28/2013
Loop Antenna	ARA	PLA-1030/B	1029	05/29/2012	05/28/2013
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/29/2012	05/28/2013
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/29/2012	05/28/2013

4.4. Measurement Result

All the modulation modes were tested the data of the worst mode (GFSK) are recorded in the following pages and the others modulation methods do not exceed the limits.

Operation Mode:	Bluetooth Mode	Test Date :	December 20, 2012
Frequency Range:	9KHz~30MHz	Temperature :	28℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	WOLF

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
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Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Operation Mode:	2402MHz	Test Date :	December 20, 2012
Frequency Range:	30~1000MHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	KL

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
47.10	V	32.50	40.00	-7.50	QP
56.43	V	29.45	40.00	-10.55	QP
121.71	V	39.43	43.50	-4.07	QP
179.23	V	31.71	43.50	-11.79	QP
188.56	V	32.99	43.50	-10.51	QP
465.26	V	33.16	46.00	-12.84	QP
118.61	H	37.58	43.50	-5.92	QP
166.80	H	34.79	43.50	-8.71	QP
183.89	H	36.58	43.50	-6.92	QP
266.28	H	35.05	46.00	-10.95	QP
482.36	H	40.05	46.00	-5.95	QP
698.43	H	35.46	46.00	-10.54	QP

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) The average measurement was not performed when the peak measured data under the limit of average detection.
(4) EUT stood on the table position is the worst case result in the report.

Operation Mode:	2441MHz	Test Date :	December 20, 2012
Frequency Range:	30~1000MHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	KL

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
48.65	V	35.82	40.00	-4.18	QP
123.27	V	38.82	43.50	-4.68	QP
187.00	V	33.62	43.50	-9.88	QP
465.26	V	37.34	46.00	-8.66	QP
497.90	V	34.56	46.00	-11.44	QP
898.96	V	36.15	46.00	-9.85	QP
53.32	H	29.37	40.00	-10.63	QP
118.61	H	36.58	43.50	-6.92	QP
187.00	H	36.85	43.50	-6.65	QP
236.75	H	36.45	46.00	-9.55	QP
266.28	H	35.00	46.00	-11.00	QP
482.36	H	39.80	46.00	-6.20	QP

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) The average measurement was not performed when the peak measured data under the limit of average detection.
(4) EUT stood on the table position is the worst case result in the report.

Operation Mode:	2480MHz	Test Date :	December 20, 2012
Frequency Range:	30~1000MHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	KL

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
48.65	V	33.42	40.00	-6.58	QP
121.71	V	37.53	43.50	-5.97	QP
190.11	V	32.55	43.50	-10.95	QP
465.26	V	32.92	46.00	-13.08	QP
497.90	V	33.28	46.00	-12.72	QP
598.94	V	33.82	46.00	-12.18	QP
120.16	H	38.65	43.50	-4.85	QP
180.79	H	35.96	43.50	-7.54	QP
266.28	H	35.90	46.00	-10.10	QP
291.15	H	34.06	46.00	-11.94	QP
303.59	H	33.69	46.00	-12.31	QP
482.36	H	40.06	46.00	-5.94	QP

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) The average measurement was not performed when the peak measured data under the limit of average detection.
(4) EUT stood on the table position is the worst case result in the report.

4.5. Radiated Measurement Photos: