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Dates of Tests: May 09 ~ June 10, 2013

Test Report S/N: LR500111306G

Test Site : LTA Co., Ltd.

## CERTIFICATIO OF COMPLIANCE

FCC ID.

**SS4HM45**

APPLICANT

**BLUEBIRD INC.**

<b>FCC Classification</b>	:	<b>Licensed Portable Transmitter Worn on body (PCT)</b>
<b>Manufacturing Description</b>	:	<b>Industrial PDA</b>
<b>Manufacturer</b>	:	<b>BLUEBIRD INC.</b>
<b>Model name</b>	:	<b>HM45</b>
<b>Test Device Serial No.:</b>	:	<b>Identical prototype</b>
<b>Rule Part(s)</b>	:	<b>§24(E), §22(H), §2</b>
<b>TX Frequency Range</b>	:	<b>824.2 ~ 848.8 MHz (GSM850)/1850.2 ~ 1909.8 MHz (PCS1900)</b>
	:	<b>826.40~846.60 MHz (Cellular WCDMA)</b>
	:	<b>1852.4~1907.6 MHz (PCS WCDMA)</b>
<b>RX Frequency Range</b>	:	<b>869.2 ~ 893.8 MHz (GSM850)/1930.2 ~ 1989.8 MHz (PCS1900)</b>
	:	<b>1932.4~1987.6 MHz (Cellular WCDMA)</b>
	:	<b>871.40~891.60 MHz (PCS WCDMA)</b>
<b>RF Output Power</b>	:	<b>1.95 W ERP GSM850/ 0.60 W EIRP PCS1900</b>
	:	<b>0.20 W ERP Cellular WCDMA/ 0.15 W EIRP PCS WCDMA</b>

This test report is issued under the authority of:

The test was supervised by:

Jae-Ho Lee, Manager

Young-Jin Lee, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



NVLAP LAB Code.: 200723-0

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## 1. General information's

### 1-1 Test Performed

Company name : LTA Co., Ltd.  
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822  
 Web site : <http://www.ltalab.com>  
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 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

### 1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:


Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2013-09-30	ECT accredited Lab.
RRA	KOREA	KR0049	2015-03-06	EMC accredited Lab.
FCC	U.S.A	610755	2014-04-27	FCC filing
FCC	U.S.A	649054	Updating	FCC CAB
VCCI	JAPAN	R2133(10m), C2307	2014-06-21	VCCI registration
VCCI	JAPAN	T-2009	2013-12-23	VCCI registration
VCCI	JAPAN	G-563	2015-05-28	VCCI registration
IC	CANADA	5799A-1	2015-06-21	IC filing

## 2. Information's about test item

### 2-1 Client & Manufacturer

Company name : BLUEBIRD INC.  
Address : (Dogok-dong, SEI Tower 13~14), ., 39, Eonju-ro30-gil, Gangnam-gu,  
Seoul, Korea  
Tel / Fax : Tel : +82-70-7730-8210 / Fax :+82-2-548-0870

### 2-2 Equipment Under Test (EUT)

Trade name : 

Model name : HM45

Serial number : Identical prototype

Date of receipt : April 22, 2013

EUT condition : Pre-production, not damaged

GSM/WCDMA Module : Cinterion Wireless Module "PHS8-P"

Antenna type : PIFA Antenna/  
: -3.12dBi@GSM850, Cellular WCDMA  
: -0.19dBi@PCS1900, PCS WCDMA

RF output power : 1.95 W ERP GSM850 (32.90dBm)  
: 0.60 W EIRP PCS1900 (27.80dBm)  
: 0.20 W ERP Cellular WCDMA (23.10dBm)  
: 0.15 W EIRP PCS WCDMA (21.80dBm)

Modulation : GMSK, 8PSK, QPSK

Power Source : 3.7 Vdc from Battery (Li-Ion Polymer Battery)

Power for Adaptor. : Input: 100-240VAC, 0.3A                      Output: 5.0VDC, 2A

Firmware version : V 1.0.0

**2-3 Tested frequency**

Frequency	Ch.	GSM 850	Ch	PCS1900
Low frequency (MHz)	128	824.2	512	1850.2
Middle frequency (MHz)	190	836.6	661	1880.0
High frequency (MHz)	251	848.8	810	1909.8

Frequency	Ch.	Cellular WCDMA	Ch	PCS WCDMA
Low frequency (MHz)	4132	826.4	9262	1852.4
Middle frequency (MHz)	4182	836.4	9400	1880.0
High frequency (MHz)	4233	846.6	9538	1907.6

**2.4 Test conditions**

Temperature	: +15~35 ℃	Humidity	: 30~65 %RH
Pressure	: 860~1030 mbar	Operating mode	: Air link mode

### 3. Test Report

#### 3.1 Summary of tests

FCC Part Section(s)	Parameter	Test Condition	Status (note 1)
22.913(a)(2)	Effective radiated power	Radiated	C
24.232(c)	Effective isotropic radiated power		C
2.1053 22.917(a) 24.238(a)	Spurious radiated emission		C
15.209	Field Strength of Harmonics		C
15.207	AC Conducted Emissions	Line Conducted	C

Note 1: C=Complies    NC=Not Complies    NT=Not Tested    NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

The sample was tested according to the following specification:

ANSI C-63.4-2003

### 3.2 Technical Characteristics Test

#### 3.3.1 Conducted Output Power

Band	Frequency	GSM	EDGE
	(MHz)	(dBm)	(dBm)
GSM850	824.2	33.30	26.80
	836.6	32.80	26.50
	848.8	33.10	26.70
PCS1900	1950.2	29.40	25.10
	1880.0	29.70	25.30
	1909.8	29.60	25.20

Mode		WCDMA(dBm)
BAND	Channel	
V	4132	23.31
	4182	23.15
	4233	23.53
II	9262	22.86
	9400	22.79
	9538	22.84

Mode		HSDPA(dBm)			
Subtests		1	2	3	4
BAND	Channel				
V	4132	22.25	22.42	22.35	22.33
	4182	22.23	22.38	22.27	22.30
	4233	22.10	22.31	22.24	22.27
II	9262	22.08	22.15	22.02	22.08
	9400	22.20	22.11	22.05	22.03
	9538	22.01	22.09	21.99	22.10

We found out the test mode with the highest power level after we analyzer all the data rates. So we chose GSM850/PCS1900/WCDMAV/WCDMA II as a representative

### 3.2.2 Effective Radiated Power Output

#### **Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:**

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For GSM signals, an average detector is used, with RBW=VBW=3MHz, SPAN=10MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

### 3.2.2 Radiation Spurious and Harmonic Emissions

#### **Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:**

Radiation and harmonic emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. The Spectrum was investigated from 30MHz to the 10<sup>th</sup> Harmonic of the fundamental. A peak detector is used. With RBW=VBW=1MHz. The value that we could measure was only reported. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer reading. This level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.



**Effective Radiated Power Output (GSM850)**

Measurement Data: GSM850

Channel	Frequency (MHz)	TEST CONDITIONS Power Step: 5			
		Ref. level (dBm)	Pol. (H/V)	ERP (dBm)	ERP (W)
128	824.2	1.42	V	32.90	1.95
190	836.6	1.19	V	32.50	1.78
251	848.8	1.26	V	32.70	1.86

Note 1: Radiated measurements at 3 meters by Substitution Method.

**Equivalent Isotropic Radiated Power (PCS1900)**

Measurement Data: PCS1900

Channel	Frequency (MHz)	TEST CONDITIONS Power Step: 0			
		Ref. level (dBm)	Pol. (H/V)	EIRP (dBm)	EIRP (W)
512	1850.2	-12.79	V	27.10	0.51
661	1880.0	-11.95	V	27.80	0.60
810	1909.8	-12.26	V	27.60	0.58

Note 2: Radiated measurements at 3 meters by Substitution Method.

**Effective Radiated Power Output (Cellular WCDMA)**

Measurement Data: Cellular WCDMA

Channel	Frequency (MHz)	TEST CONDITIONS			
		Ref. level (dBm)	Pol. (H/V)	ERP (dBm)	ERP (W)
4132	826.4	-12.42	V	22.70	0.19
4182	836.4	-13.16	V	22.40	0.17
4233	846.6	-12.81	V	23.10	0.20

Note 1: Radiated measurements at 3 meters by Substitution Method.

**Equivalent Isotropic Radiated Power (PCS WCDMA)**

Measurement Data: PCS WCDMA

Channel	Frequency (MHz)	TEST CONDITIONS			
		Ref. level (dBm)	Pol. (H/V)	EIRP (dBm)	EIRP (W)
9262	1852.4	-18.53	V	21.70	0.15
9400	1880.0	-18.81	V	21.50	0.14
9538	1907.6	-18.30	V	21.80	0.15

Note 2: Radiated measurements at 3 meters by Substitution Method.

### 3.3.3 Field Strength of spurious Radiation

OPERATING FREQUENCY : 824.2 MHz  
 CHANNEL : 128(Low)  
 MEASURED OUTPUT POWER : 32.90 dBm = 1.95 W  
 MODULATION : GSM850  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10}(W)$  = 45.90 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	RESULT (dBc)	MARGIN (dB)
1649	0.45	9.40	-31.40	V	55.35	9.45
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

--- Blank ---

**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 836.6 MHz  
 CHANNEL : 190(Mid)  
 MEASURED OUTPUT POWER : 32.90 dBm = 1.95 W  
 MODULATION : GSM850  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W)$  = 45.90 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBd)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
1671	0.45	9.40	-31.90	V	55.85	9.95
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

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**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 848.8 MHz  
 CHANNEL : 251(High)  
 MEASURED OUTPUT POWER : 32.90 dBm = 1.95 W  
 MODULATION : GSM850  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W)$  = 45.90 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	RESULT (dBc)	MARGIN (dB)
1697	0.45	9.40	-32.20	V	56.15	10.25
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

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OPERATING FREQUENCY : 1850.2 MHz  
 CHANNEL : 512(Low)  
 MEASURED OUTPUT POWER : 27.80 dBm = 0.60 W  
 MODULATION : PCS1900  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10}(W)$  = 40.80 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBi)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
3701	0.67	10.20	-51.60	V	69.87	29.07
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

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**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 1880.0 MHz  
 CHANNEL : 661(Mid)  
 MEASURED OUTPUT POWER : 27.80 dBm = 0.60 W  
 MODULATION : PCS1900  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W)$  = 40.80 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBi)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
3760	0.67	10.20	-47.20	V	65.47	24.67
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

--- Blank ---

**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 1909.8 MHz  
 CHANNEL : 810 (High)  
 MEASURED OUTPUT POWER : 27.80 dBm = 0.60 W  
 MODULATION : PCS1900  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W)$  = 40.80 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBi)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
3819	0.67	10.20	-49.70	V	67.97	27.17
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

--- Blank ---

### 3.3.3 Field Strength of spurious Radiation

OPERATING FREQUENCY : 826.4 MHz  
 CHANNEL : 4132(Low)  
 MEASURED OUTPUT POWER : 23.10 dBm = 0.20 W  
 MODULATION : Cellular WCDMA  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10}(W)$  = 36.10 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	RESULT (dBc)	MARGIN (dB)
1654	0.45	9.40	-31.60	V	45.75	9.65
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

--- Blank ---



**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 836.4 MHz  
 CHANNEL : 4182(Mid)  
 MEASURED OUTPUT POWER : 23.10 dBm = 0.20 W  
 MODULATION : Cellular WCDMA  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W)$  = 36.10 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBd)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
1673	0.45	9.40	-32.20	V	46.35	10.25
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

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**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 846.6 MHz  
 CHANNEL : 4233(High)  
 MEASURED OUTPUT POWER : 23.10 dBm = 0.20 W  
 MODULATION : Cellular WCDMA  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10}(W)$  = 36.10 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBd)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
1697	0.45	9.40	-30.70	V	44.85	8.75
-	-	-	-	-	-	-

*Note1:* Radiated measurements at 3 meters by Substitution Method.

--- Blank ---

OPERATING FREQUENCY : 1852.4 MHz  
 CHANNEL : 9262(Low)  
 MEASURED OUTPUT POWER : 21.80 dBm = 0.15 W  
 MODULATION : PCS WCDMA  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10}(W)$  = 34.80 dBc

Freq. (MHz)	LEVEL@ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	RESULT (dBc)	MARGIN (dB)
3706	0.67	10.20	-41.20	V	53.47	18.67
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

--- Blank ---

**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 1880.0 MHz  
 CHANNEL : 9400(Mid)  
 MEASURED OUTPUT POWER : 21.80 dBm = 0.15 W  
 MODULATION : PCS WCDMA  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W)$  = 34.80 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBi)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
3761	0.67	10.20	-43.90	V	56.17	21.37
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

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**3.3.3 Field Strength of spurious Radiation****--- Continue**

OPERATING FREQUENCY : 1907.6 MHz  
 CHANNEL : 9538 (High)  
 MEASURED OUTPUT POWER : 21.80 dBm = 0.15 W  
 MODULATION : PCS WCDMA  
 DISTANCE : 3 meters  
 LIMIT :  $43 + 10 \log_{10} (W)$  = 34.80 dBc

<b>Freq.</b> (MHz)	<b>LEVEL@</b> <b>ANTENNA</b> <b>TERMINALS</b> (dBm)	<b>SUBSTITUTE</b> <b>ANTENNA</b> <b>GAIN</b> (dBi)	<b>CORRECT</b> <b>GENERATOR</b> <b>LEVEL</b> (dBm)	<b>POL</b> (H/V)	<b>RESULT</b> (dBc)	<b>MARGIN</b> (dB)
3817	0.67	10.20	-46.20	V	58.47	23.67
-	-	-	-	-	-	

*Note1:* Radiated measurements at 3 meters by Substitution Method.

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### 3.2.4 Field Strength

#### Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.

RBW = 100 kHz ( 30MHz ~ 1 GHz)

VBW ≥ RBW

= 1 MHz (1 GHz ~ 10<sup>th</sup> harmonic )

Span = 100 MHz

Detector function = Quasi-peak

Trace = max hold

Sweep = auto

#### Measurement Data: Complies

→ No other emissions were detected are a level greater than 20dB below limit.

#### Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
0.009 ~ 0.490	2400/F(kHz) (@ 300m)
0.490 ~ 1.705	24000/F(kHz) (@ 30m)
1.705 ~ 30	30(@ 30m)
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

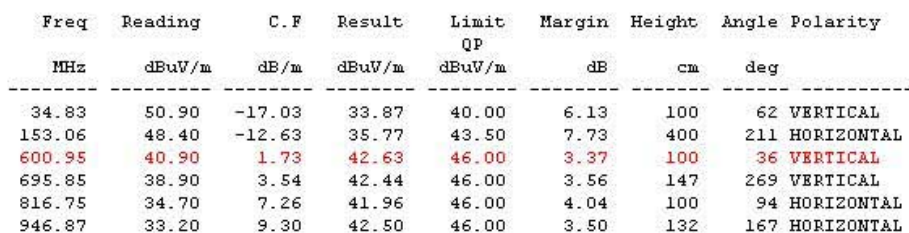
\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.



TEST MODE: WCDMA(850) mode

Tested by: PARK H W

Date: 2013-05-28



Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

**Radiated Emissions –WCDMA(1900) mode**

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Tel +82-31-3236008,9  
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EUT/Model No.: HM45

TEST MODE: WCDMA(1900) mode

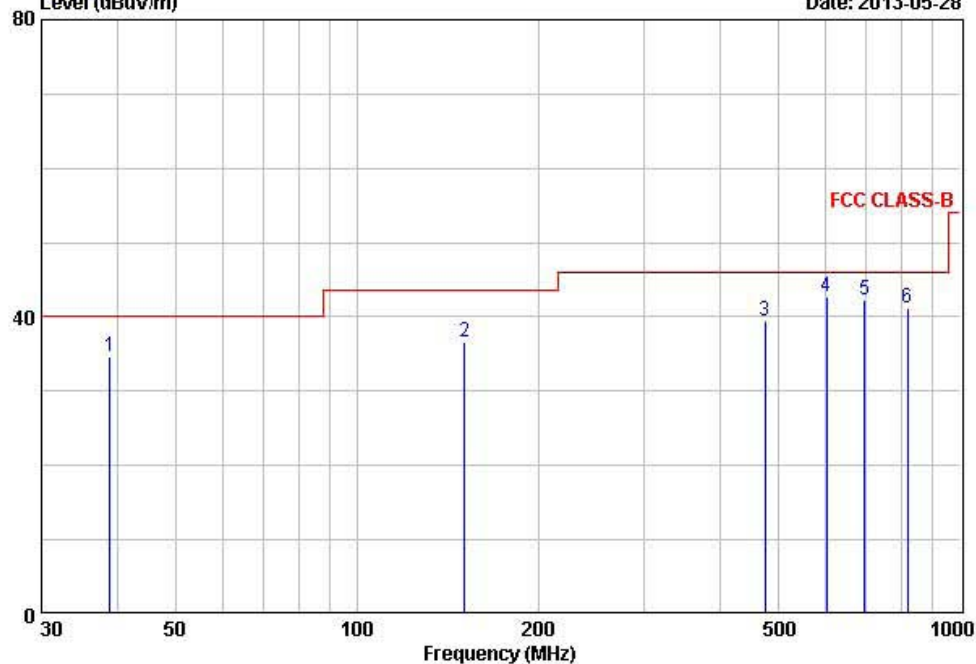
Temp Humi : 25 / 56

Tested by: PARK H W

Data: 137

Level (dBuV/m)

Date: 2013-05-28



	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dBuV/m	dB/m	dBuV/m	QP	dB	cm	deg	
1	38.90	51.00	-16.36	34.64	40.00	5.36	100	25	VERTICAL
2	150.90	49.40	-12.68	36.72	43.50	6.78	216	225	HORIZONTAL
3	475.50	41.90	-2.39	39.51	46.00	6.49	100	74	HORIZONTAL
4	601.15	41.00	1.73	42.73	46.00	3.27	154	321	VERTICAL
5	696.18	38.70	3.54	42.24	46.00	3.76	100	123	VERTICAL
6	817.95	33.90	7.28	41.18	46.00	4.82	101	341	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



APPENDIX

**TEST EQUIPMENT USED FOR TESTS**

	Description	Model No.	Serial No.	Manufacturer	Expiration date of Calibration
1	Spectrum Analyzer	FSV-30	100757	R&S	2014-01-15
2	Spectrum Analyzer	8594E	3649A03649	HP	2014-03-26
3	Spectrum Analyzer	8563E	3425A02505	HP	2014-03-26
4	VECTOR SIGNAL GENERATOR (~6GHz)	8648C	3623A02597	HP	2014-03-25
5	Signal Generator	83711B	US34490456	HP	2014-03-25
6	Attenuator (3dB)	8491A	37822	HP	2014-09-22
7	Attenuator (10dB)	8491A	63196	HP	2014-09-22
8	Test Receiver	ESHS10	828404/009	R&S	2014-03-25
9	EMI Test Receiver	ESCI7	100722	R&S	2013-09-22
10	RF Amplifier	8447D OPT 010	2944A07684	HP	2014-09-22
11	RF Amplifier	8449B	3008A02126	HP	2014-03-25
12	Horn Antenna (1~18GHz)	3115	114105	ETS	2014-01-26
13	DRG Horn (Small) (18~40GHz)	3116B	81109	ETS-Lindgren	2014-03-15
14	DRG Horn (Small) (18~40GHz)	3116B	133350	ETS-Lindgren	2014-03-15
15	TRILOG Antenna	VULB 9160	9160-3172	SCHWARZBECK	2014-09-20
16	Hygro-Thermograph	THB-36	0041557-01	ISUZU	2013-10-12
17	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-
18	Power Divider	11636A	06243	HP	2014-09-22
19	DC Power Supply	6674A	3637A01657	Agilent	-
20	Frequency Counter	5342A	2826A12411	HP	2014-03-25
21	Power Meter	EPM-441A	GB32481702	HP	2014-03-25
22	Power Sensor	8481A	US41030291	HP	2013-09-22
23	Audio Analyzer	8903B	3729A18901	HP	2013-09-22
24	Modulation Analyzer	8901B	3749A05878	HP	2013-09-22
25	TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	2013-09-22
26	Stop Watch	HS-3	601Q09R	CASIO	2014-03-26
27	LISN	ENV216	100408	R&S	2013-09-22
28	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106243	R&S	2014-06-27
29	Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	-
30	Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	-
31	Active Loop Antenna	FMZB 1519	1519-031	SCHWARZBECK	2014-12-14