

## CERTIFICATE OF COMPLIANCE

CERTIFICATION OF COMPLIANCE is hereby issued to the named Applicant and is VALID ONLY for the equipment identified below:

**Date of Tested :** Feb. 25. 2002

**Applicant's Name :** CHANGRIME TELECOM CO., LTD.

**Applicant's Address :** SEWON BLDG. 4F, 714-3, PUNGDUKCHEON  
SUJI-EUP YONIN-CITY, KYUNGKI-DO, KOREA

**Manufacturer's Name :** CHANGRIME TELECOM CO., LTD.

**Manufacturer's Add. :** SEWON BLDG. 4F, 714-3, PUNGDUKCHEON  
SUJI-EUP, YONGIN-CITY, KYUNGKI-DO, KOREA

**Declares that the**

**Product Description :** Beamplus

**Brand Name :**

**Model Number :** CBP105

**FCC ID :** P7NCBP105

Conforms to FCC Rules and Regulations Part 15 Subpart C requirements.

This product herewith complies with the requirements of the FCC Rules and Regulations as listed below:

Part 15.109: Radiated Spurious Emissions.

TESTED and CERTIFIED by:

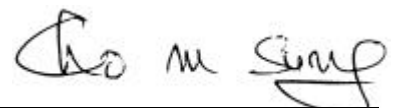
### KOREA EMC LABORATORY

352 Youngduk-Ri, Kihung-Eup,  
Yongin-City, Kyunggi-Do,  
449-908, KOREA

**Date :** Feb. 25. 2002

**Report No :** KEL02-F02031

**Authorized Signature :**



**M. S. CHO / President**

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## 0 . VERIFICATION OF COMPLIANCE

Equipment Under Test : beamplus

Model Number : CBP105

Serial Number : Prototype

Manufacturer : CHANGRIME TELECOM CO., LTD.  
SEWON BLDG, 4F, 714-3, PUNGDUKCHEON SUJI-EUP YONIN  
-CITY, KTUNGKI-DO, KOREA

Type of Test : FCC Rules Part 15, Subpart C

Report Number : KEL02-F02031

Date Tested : Feb. 25. 2002

Tested By : S. J. KIM

The results show that the sample equipment tested as described in this reports is in compliance with the radiated emission limits of FCC Rules Part 15, Subpart C.

## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

The CBP105 is a beamplus made by CHANGRIME TELECOM CO., LTD. in Korea. Refer to the user's manual for more information.

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

N/A

### 1.3 Tested System Details

Type	Model Name	FCC ID	Serial NO	Manufacturer
Beamplus	CBP105	P7NCBP105	Prototype	CHANGRIME TELECOM CO., LTD.

### 1.4 System Configuration

Type	Model Name	Serial NO	Manufacturer	Remark
MAIN B/D		NONE	CHANGRIME TELECOM CO., LTD.	KOREA

## 1.5 General Set-up of the Test Shielded Room

The EUT was set up in accordance with the suggested configuration given in FCC measurement Procedure ANSI C63.4, 1992. The measurement are performed in the shielded room which dimension is 3.0\*7.0\*2.5 (m). The EUT was placed on a non conductive table which is 1.0\*1.5 (m), 80 cm above an earthed ground plane and is kept at least 1m from any other earthed ground plane except the rear of table top being removed 40cm from a vertical conducting plane.

Power to the EUT was provided through the LISN(3725/2,EMCO) which has the Impedance VS Frequency Characteristic in accordance with the Fig.1 Impedance Characteristic of LISN. Peripheral equipment required to provide a functional system(support equipment) for EUT testing was powered through another LISN(NSLK8128,Schwarzbeck).

Power to the LISN was filtered to eliminate ambient signal interference. A coaxial type connector which provides a 50 Ohm terminating impedance was provided for the test instrument. The excess length of the power cord was wrapped in the two non metallic pegs attached to the top of the LISN. The two pegs are 9 cm high, approximately 2.0 cm in diameter and that are spaced 6 cm on the center apart.

## 1.6 Test Facility

Location: Korea EMC Laboratory  
 352 Yungduck-Ri  
 Kihung-Eup,Yongin-City  
 Kyungki-Do,Korea

Site : - 3 m Open Fielded Radiated

The Open Field Radiated sites are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 1992. Korea EMC Lab. was refilled in FCC in Feb. 2002.

### INSTRUMENTATION

Description	Model	Manufacturer	Serial No	Due Cal.
TEST RECEIVER	ESPC	Rohde & Schwarz	844006038	2002.05.29
SPECTRUM ANALYZER	8566B	Hewlett-Packard	2421A00473	2003.03.19
BICONICAL	VHA9103	SCHWARZBECK	1271	2002.05.26
LOG-PERIODIC	USLP9143	SCHWARZBECK	134	2003.06.07
AMPLIFIER	87405A	Hewlett-Packard	2944A06481	2003.07.17

The calibration of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors are applied in accordance with instruments contained in the manual for the measuring instrument.

## 2. MEASUREMENT PROCEDURES

### 2.1 System Test Configuration

#### 2.1.1 Video mode Justification

N/A

#### 2.1.2 EUT Exercise Software

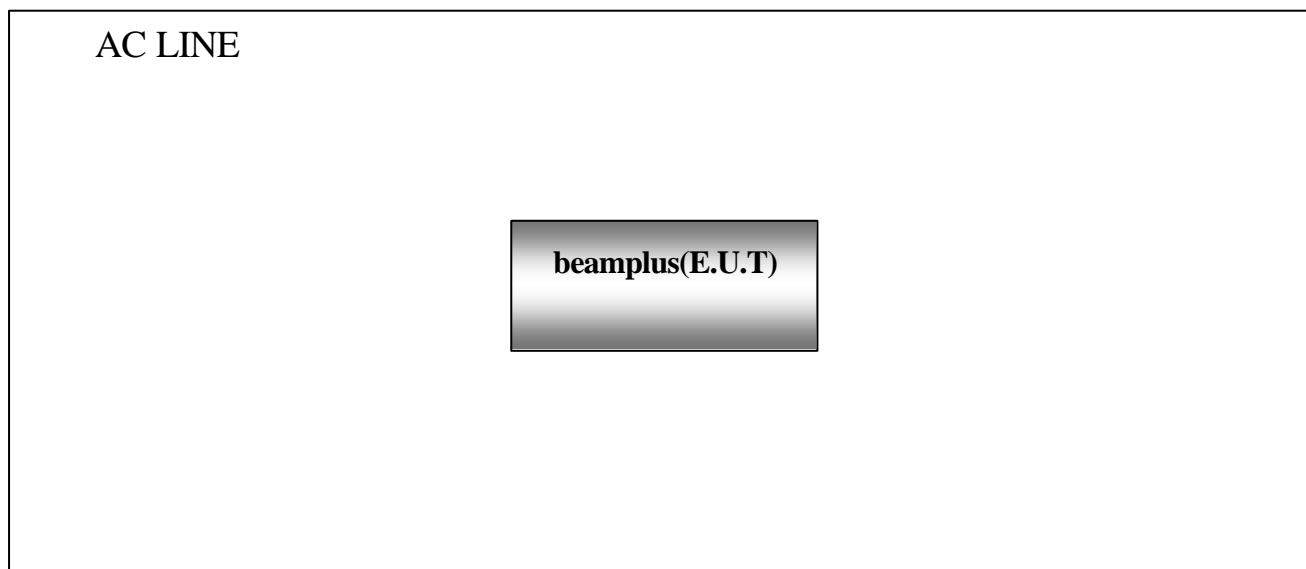
beamplus send it to Antenna then measure while checking the operation status.

### 2.2 Special Accessories

### 2.3 Equipment Modifications

No equipment modifications were performed during testing.

### 2.4 System Configuration Diagram



## 2.5 PRELIMINARY TESTING

It is often valuable to performing preliminary radiated measurements at a closer distance than specified for compliance to determine the emission characteristics of the EUT. At close-in distance, it is easier to determine the spectrum signature of EUT, and if applicable, the EUT configuration that emanate the maximum level of emissions. The data may not be precisely correlatable results.

## 2.6 SHIELDED ENCLOSURE

To search the Radiated frequency outline of an EUT a shielded screen room may be used. If the shielded room is used for radiated data, the data page will state that the EUT was in a shielded enclosure. All data collected in a screen room for radiated emissions is for frequency outline only. If an EUT is placed in screen room for Line Conducted Data, the data page will show that a screen room was used and data frequencies and levels will be correct and used for test data.

## 2.7 DATA REPORTING FORMAT

The measurement results expressed in accordance with C63.4 and specified limits where applicable are presented in tabular or graphical form, or alternatively as recorder charts or photographs of a spectrum analyzer display, showing the level vs. frequency.

## 2.8 OPERATING CONDITIONS

The EUT was operated at the specified load conditions(mechanical and/or electrical)for which it was designed.

## 2.9 CONDITIONING OF THE EUT

The EUT was operated for a sufficient period of time to approximate normal operating conditions.

## 2.10 Open field Radiated Emissions Tests

The EUT and support equipment are set up on the turntable in an open field site. Desktop EUTs are set up on a wooden stand (test-table), 80 cm above the ground plane. All items on the table were placed at least 10 cm apart each other. Interconnecting cables which hang closer than 40 cm to the ground plane are folded back and forth to form a 30 cm by 40 cm long bundle, hanging approximately between the ground plane and table. The highest emissions were also analyzed, in detail, with the tuned aerial to search the precise amplitude of the emissions. On the other hand, the interconnecting cables were moved around the table and if the highest amplitudes is observed, the EUT is rotated in the horizontal plane while changing the antenna polarization to the vertical plane to maximize the field strength. Once the maximum field strength is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings. The position of the peripheral devices are interchanged to check for any changes in emissions. In rare instances, the maximum field strength may occur with the antenna polarized between vertical and horizontal.



### 3. Measurement Data

### 3.1 RADIATED EMISSION DATA

**TEST : beamplus : CBP105**

**DATE: Feb. 25. 2002**

[illegible]

Notes: The test is performed in a distance of 3 m. Af : Antenna factor, Cl : Cable loss

The test is performed in accordance with ANSI C63.4

Test Engineer.

Reviewed by.

李时平

S. G. MOON 2/2

### 3.1.1 Test Manner

- The EUT has been associated with peripherals pursuant to ANSI C63.4-1992 and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
- Frequency range investigated: radiation 30 MHz to 3139MHz.
- The radiated emissions testing was made by rotating three orthogonal axes.(Normal mode, Horizontal mode, Vertical mode).
- The EUT employs a switch that will automatically deactivate the transmitter within no more than 5 seconds of being released.
- Pursuant to 15.231(c) of Part 15. Subpart C, the bandwidth of the emission at the 20dB point shall be no wider than 0.25% of the center frequency for EUT.
- The equipment is tested with new battery.

The carrier frequency of EUT is 315MHz

$$315\text{MHz} * 0.25\% = 787.5\text{KHz}$$

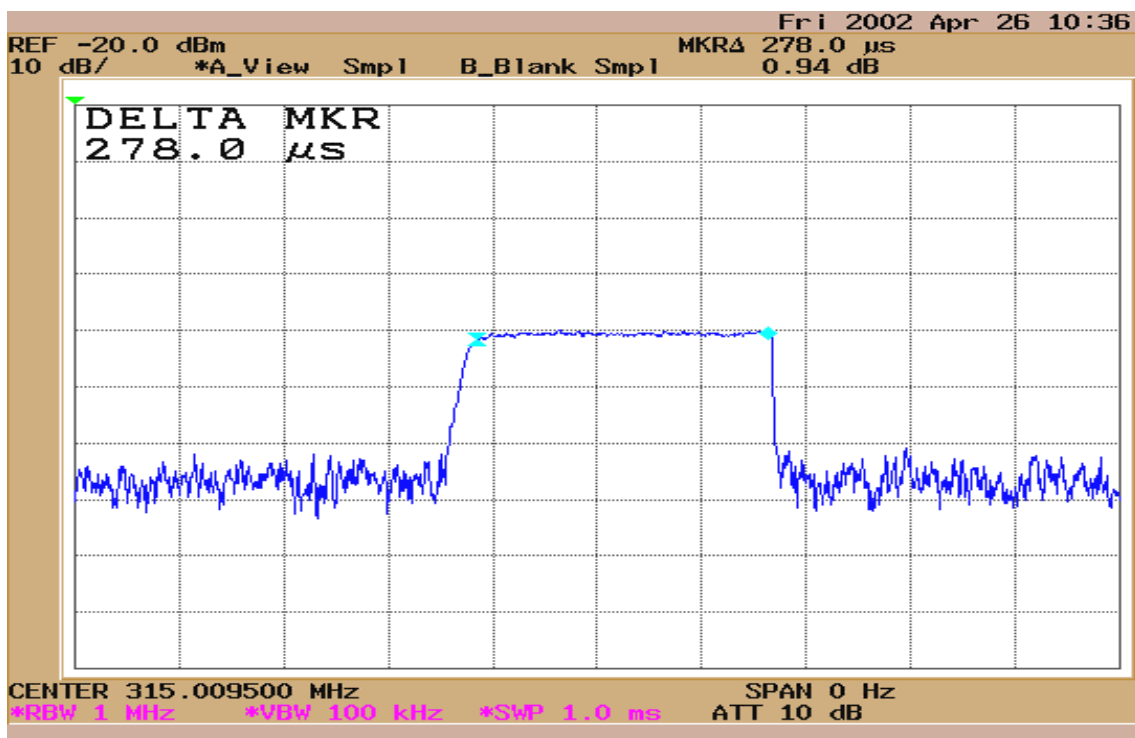
For 315MHz, the bandwidth is 365KHz (as shown in section 3.1.4 of this test report), which is less than 787.5KHz.

The EUT meet the 20dB point bandwidth requirement.

### 3.1.2 Description of Test System

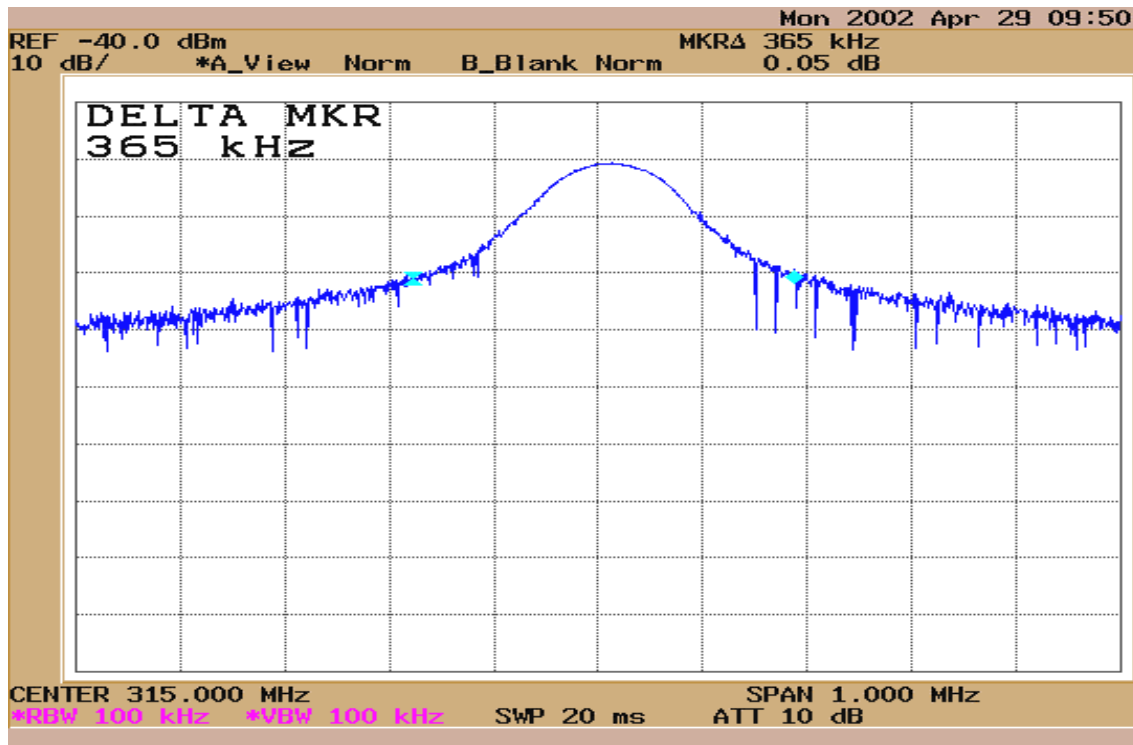
The EUT was tested alone. No support devices is needed for testing.

### 3.1.3 A plot shows the EUT meet the requirement of 15.231(a) (1)



the transmitter operation is completed within 5seconds

### 3.1.4 A plot shows the EUT meet the requirement of 15.231(c)



the bandwidth of the emission at the 20dB point is 365KHz

## 3.2 SUMMARY

Company	: CHANGRIME TELECOM CO., LTD.		
Equipment Under Test	: beamplus		
Model Number	: CBP105	Serial Number: Prototype	
Type of Test	: FCC Rules Part 15, Subpart C	Passed/Failed: PASSED	

The Equipment Under Test(EUT) was configured and operated in a manner which tends to maximize its emission characteristics in a typical application. Power and signal distribution, ground, interconnecting cabling, and physical placement of equipment were simulating the typical application and usage in so far as practicable.

RADIATED TEST: The EUT was placed on a three meter open field test site according to C63.4 test specifications. Preliminary scans ranged from 30 MHz to 1 GHz in both vertical and horizontal polarizations in all possible modes of operation. The highest six point of emission levels were recorded as data each ranges of limit.

***The highest emission was observed at 315.046 MHz(Horizontal) with margin of 11.2 dBuV from the limit.***  
All radiated emissions were within the FCC Rules Part 15, Subpart C requirements for compliance.

## 4. LABELING REQUIREMENT

Section 15.19 of the Code of Federal Regulation

- 1) device subject to certification by the Commission shall be identified pursuant to par. 2.925 et Seq of this chapter. In addition, the label shall include the following statement:

This unit complies with Part 15 of the FCC Rules.  
Operation is subject to following two conditions:  
(1) This Device may not cause harmful interference  
(2) This device must accept any interference received,  
including interference that may cause undesired operation.

Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified in this Section is required to be affixed only to the main control unit.

The users manual or instruction manual for the EUT shall contain the following statement or equivalent.

Caution: Changes or Modifications not expressly approved by the party responsible for compliance could void the users authority to operate the equipment.

If the EUT requires accessories such as special shielded cables and/or connectors to enable compliance with emission limits, the instruction manual for the EUT shall include appropriate instructions on the first page of the text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Note: This equipment has been tested and found to comply with the limits for a device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Appendix

- A : Test set-up Photographs
  - . Radiated Emission Setup Photographs
- B : External Photographs of E.U.T
- C : Internal Photographs of E.U.T
- D : FCC ID label location information and sample
- E : Block Diagram
- F : User' s Manual