



---

## **FCC Permissive Change Class2 for the NG GSM 18000 Outdoor BTS introduction (FCC ID AB6BTS18OUT)**

---

Document number:	PE/BTS/DJD/023593
Document issue:	01.01 / EN
Document status:	Standard
Date:	06/May/2008

---

### **External document**

Copyright© 2008 Nortel Networks, All Rights Reserved

Printed in France

### **NORTEL CONFIDENTIAL**


The information contained in this document is the property of Nortel Networks. Except as specifically authorized in writing by Nortel Networks, the holder of this document shall keep the information contained herein confidential and shall protect same in whole or in part from disclosure and dissemination to third parties and use same for evaluation, operation and maintenance purposes only.

The content of this document is provided for information purposes only and is subject to modification. It does not constitute any representation or warranty from Nortel Networks as to the content or accuracy of the information contained herein, including but not limited to the suitability and performances of the product or its intended application.

This is the Way. This is Nortel, Nortel, the Nortel logo, and the Globemark are trademarks of Nortel Networks. All other trademarks are the property of their owners.

---

## PUBLICATION HISTORY

Main TCF Version	Date	Content of evolution	Comments	Author
01.01/EN	06/May/2008	Creation	NG GSM18000 Outdoor BTS introduction	A. CAILLE 

## CONTENTS

<b>1 INTRODUCTION .....</b>	<b>4</b>
1.1.    OBJECT.....	4
1.2.    AUDIENCE FOR THIS DOCUMENT.....	4
<b>2.    RELATED DOCUMENTS.....</b>	<b>5</b>
2.1.    REFERENCE DOCUMENTS .....	5
2.2.    APPLICABLE DOCUMENTS .....	6
<b>3.    EVOLUTION DESCRIPTION .....</b>	<b>8</b>
<b>4.    ANALYSIS.....</b>	<b>10</b>
<b>5.    CONCLUSION.....</b>	<b>11</b>
<b>6.    ABBREVIATIONS AND DEFINITIONS.....</b>	<b>12</b>
6.1.    ABBREVIATIONS .....	12

# 1 INTRODUCTION

## 1.1. OBJECT

This document describes the introduction of New GSM18000 Outdoor pre-cabled Cabinet  
“New Generation (NG) GSM 18000 Outdoor BTS “Nortel product.

The GSM18000 Outdoor BTS is already certified according to FCC Part 22 & 24, under the  
following FCC Id: **AB6BTS18OUT (GSM 18000 Outdoor)**

## 1.2. AUDIENCE FOR THIS DOCUMENT

This document is addressed to Nortel Networks R&D and representative external organization.

**IMPORTANT: In no case shall this document be out of Nortel Networks responsibility.  
The access to this document is not granted to external people without agreement from  
responsible department. Only consultation with authorized Nortel Networks person is  
possible.**

## 2. RELATED DOCUMENTS

### 2.1. REFERENCE DOCUMENTS

[R1]	PE/DCL/DD/0001 411-9001-001	BSS overview
[R2]	PE/DCL/DD/0160 411-9001-160	BTS18000 Reference Manual
[R3]	PE/BTS/DD/05282	BTS18000 System Design Specification
[R4]	79502-568197	EMC Laboratory Test Report FCC NG GSM 18000 Outdoor BTS
[R5]	79502-568199-C-TP-18NG-FCC	EMC Test plan for the qualification of NG 18000 Outdoor BTS (FCC)
[R6]	79502-568197-C-TR-18NG-FCC	EMC Test Report FCC NG GSM 18000 Outdoor BTS
[R7]	PE/BTS/DPL/023486	FCC Radio Test Plan for GSM850/PCS1900 NG Outdoor 18000 BTS (FCCID AB6BTS18OUT)
[R8]	75473-563553-R-TR-FCC	Radio Test Report in extreme conditions for the qualification of NG 18000 Outdoor BTS (Standard version) - FCC Marking
[R9]	PE/BTS/DJD/023592	Radio Test Report in extreme conditions for the qualification of NG 18000 Outdoor BTS (ETR version) - FCC Marking

## **2.2. APPLICABLE DOCUMENTS**

Only regulatory documents are listed below, detailed standards regarding testing are not described below.

### **GENERAL**

[A1]	1999/5/EC	RTTE Directive of the European parliament
[A2]	47 CFR Part 1	PRACTICE AND PROCEDURE
[A3]	47 CFR Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

### **EMC DOCUMENTS**

[A4]	47 CFR Part 15	RADIO FREQUENCY DEVICES
[A5]	ICES 003	Digital apparatus
[A6]	CISPR 22	Limits and methods of measurement of radio disturbance characteristics of information technology equipment
[A7]	EN 301 489-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
[A8]	EN 301 489-8	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services ; Part 8 : Specific requirements for GSM base stations(2002). V.1.2.1
[A9]	EN 301 489-23	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 23: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) Base Station (BS) radio, repeater and ancillary equipment
[A10]	3GPP TS 25.113	3GPP; 3 <sup>rd</sup> Generation Partnership Project; Technical Specification Group Radio Access Networks; Base Station Electromagnetic Compatibility
[A11]	EN 55022	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
[A12]	EN 61000-3-2	Electromagnetic Compatibility (EMC) Part 3-2: Limit of harmonic current emissions (equipment input current up to and including 16A per phase)
[A13]	EN 61000-3-3	Electromagnetic Compatibility (EMC) Part 3-3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to 16A
[A14]	EN 61000-4-2	Electromagnetic Compatibility (EMC) Part 4-2: Testing and measurement techniques – Electrostatic Discharge immunity test (1995)
[A15]	EN 61000-4-3	Electromagnetic Compatibility (EMC) Part 4-3: Testing and measurement techniques – Radiated, radio-frequency electromagnetic field immunity test
[A16]	EN 61000-4-4	Electromagnetic Compatibility (EMC) Part 4-4: Testing and measurement techniques – Electrical fast transient / burst immunity test
[A17]	EN 61000-4-5	Electromagnetic Compatibility (EMC) Part 4-5: Testing and measurement techniques – Surge immunity test
[A18]	EN 61000-4-6	Electromagnetic Compatibility (EMC) Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances induced by radio frequency fields
[A19]	EN 61000-4-11	Electromagnetic Compatibility (EMC) Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity test

**FCC Permissive Change Class2 for the NG GSM 18000 Outdoor BTS introduction (FCC ID AB6BTS18OUT)**

---

**RADIO DOCUMENTS**

**GSM RADIO DOCUMENTS**

- |       |                |                                                                                                                                                                                  |
|-------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [A20] | EN 301 502     | Technical Specification Group Radio Access Networks; Base station conformance testing (FDD)                                                                                      |
| [A21] | 3GPP TS 11.21  | 3rd Generation Partnership Project; Technical Specification Group GSM/EDGE Radio Access Network; Base Station System (BSS) equipment specification; Radio aspects (Release 1999) |
| [A22] | 3GPP TS 05.05  | Technical Specification Group GSM/EDGE Radio Access Network; Radio transmission and reception (Release 1999)                                                                     |
| [A23] | 3GPP TS 05.10  | Technical Specification Group GSM/EDGE Radio Access Network; Digital cellular telecommunications system (Phase 2+); Radio subsystem synchronization (Release 1999)               |
| [A24] | 47 CFR Part 24 | PERSONAL COMMUNICATIONS SERVICES                                                                                                                                                 |
| [A25] | 47 CFR Part 22 | PUBLIC MOBILE SERVICES                                                                                                                                                           |
| [A26] | RSS 133        | Personal Communication Services in the 2GHz band                                                                                                                                 |

### 3. EVOLUTION DESCRIPTION

The evolution concerns the introduction of a new mechanical BTS frame “New Generation “ (NG) GSM18000 Outdoor BTS” .

This BTS18000 Outdoor is a "Feed Form Function" compatible BTS regarding the current BTS18K certified in FCC File. The BTS is compatible with current BTS 18000 on operational site.

The **NG Outdoor GSM18000 BTS** consist in a **new mechanical pre-cabled BTS Version**.

The new mechanical include a **new cooling system with two Options**:

- a **standard version** for operational temperature range [-10°C; +50°C]  
(without heater and standard Fan tray version )
- a **Extended Temperature Range (ETR)** version for operational temperature range [-40°C; +50°C]  
(with heater, ETR board and ETR Fan tray version for internal airflow circulation)

This new cabinet NG is equipped with **new Air Filter system**.

A **Power System evolution** is also introduced with this cabinet (new ADU and a new UCPS (ngUCPS)).

The NG GSM18000 Outdoor BTS uses the current logical board and Radio modules with the same hardware architecture as current GSM18000 Outdoor BTS.

The functions of this new NG GSM18000 Outdoor BTS are the same than the GSM18000 Outdoor BTS and this evolution doesn't affect the radio characteristics of FCC regulatory requirements of **NORTEL GSM 18000 Outdoor BTS** product, such as Radio frequency emission, Power Emission, Modulation signal and product architecture.



**FCC Permissive Change Class2 for the NG GSM 18000 Outdoor BTS introduction (FCC ID AB6BTS18OUT)**

---



*NG GSM 18000 Outdoor BTS external front view*

## **4. ANALYSIS**

The EMC and RF tests have been performed on Dual Band GSM850 / PCS1900 NG GSM 18000 Outdoor BTS.

This Qualification has been checked on the current Radio Module (HPRM850 & RM1900).

As BTS Power and BTS functionality don't change, as the same radio modules and logical boards operate in the BTS, this new NG Outdoor GSM18000 BTS Mechanical Version is introduced by Permissive Change Class2 on the current FCC ID BTS18000 Outdoor Files (FCCID AB6BTS18OUT).

➤ **EMC performances**

The results referenced in EMC test reports "79502-568197" & "79502-568197-C-TR-18NG-FCC" issued by LCIE have shown that the introduction of NG GSM18000 Outdoor BTS has no impact on FCC BTS performances (radiated and conducted emission).

➤ **Radio performances**

The FCC radio performance at ambient temperature will be not checked because BTS evolution has no impact on these performances

- RF Power Output
- Occupied Bandwidth
- Spurious Emissions at Antenna Terminals

The FCC radio frequency stability Performances has been measured for the Standard and ETR BTS version:

The results referenced in RF test reports "{75473-563553-R-TR-FCC}" & "{PE/BTS/DJD/023592}" issued by NORTEL and LCIE have shown that the **"NG" GSM18000 Outdoor BTS introduction has no impact on FCC RF frequency stability performances in extreme conditions.**

## **5. CONCLUSION**

In conclusion, we have established that the **NG GSM 18000 Outdoor BTS** introduction version is FCC compliant regarding “EMC” performances and don’t affect RF performances, Power Emission, Modulation signal and product architecture.

The initial Radio tests and Health analysis performed on **NORTEL GSM 18000 Outdoor BTS** product remain fully applicable to this product after its evolution.

## 6. ABBREVIATIONS AND DEFINITIONS

### 6.1. ABBREVIATIONS

3GPP	3 <sup>rd</sup> Generation Partnership Project
8PSK	Eight Phase Shift Keying
ABM	Alarm Bridge Module
AC	Alternative Current
BTS	Base Transceiver Station
DC	Direct Current
DCS	Digital Cellular System
E1	Standard European PCM link nickname
EMC	ElectroMagnetic Compatibility
ETSI	European Telecommunications Standards Institute
FDD	Frequency Division Duplex
GMSK	Gaussian Modulation Shift Keying
GSM	Global System for Mobile communications
HPRM	High Power Radio Module
ICM	Interface Control Module
IEC	International Electro-technical Commission
IFM	InterFace Module
ITU	International Telecommunication Union
PA	Power Amplifier
PCM	Pulse Code Modulation
PSU	Power Supply Unit
R&D	Research & Development
R&TTE	Radio and Telecommunication Terminal Equipment
RF	Radio Frequency
RM	Radio Module
RX	Receive
T1	Standard US PCM system (1.544 Mbit/s)
TDD	Time Division Duplex
TX	Transmit

❧ END OF DOCUMENT ❧