FCC Radio Test Plan for GSM850/PCS1900 NG Outdoor 18000 BTS (FCCID AB6BTS18OUT)

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Author : Alain CAILLE

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1. INTRODUCTION

1.1. OBJECT

This document presents the radio qualification plan of dual band GSM 850/PCS1900 New Generation (NG) Outdoor 18000 BTS.

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

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 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 and ETR Fan tray version for internal airflow circulation)

This BTS uses the current logical board and Radio modules with the same hardware architecture inside BTS and some evolutions on power system (NgUCPS)

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).

This Qualification will be performed with current Radio Module (HPRM850 & RM1900).

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

Following FCC radio Performances will be measured for Standard and ETR BTS version:

- **Frequency stability in extreme temperature.**

2. RELATED DOCUMENTS

2.1. APPLICABLE DOCUMENTS

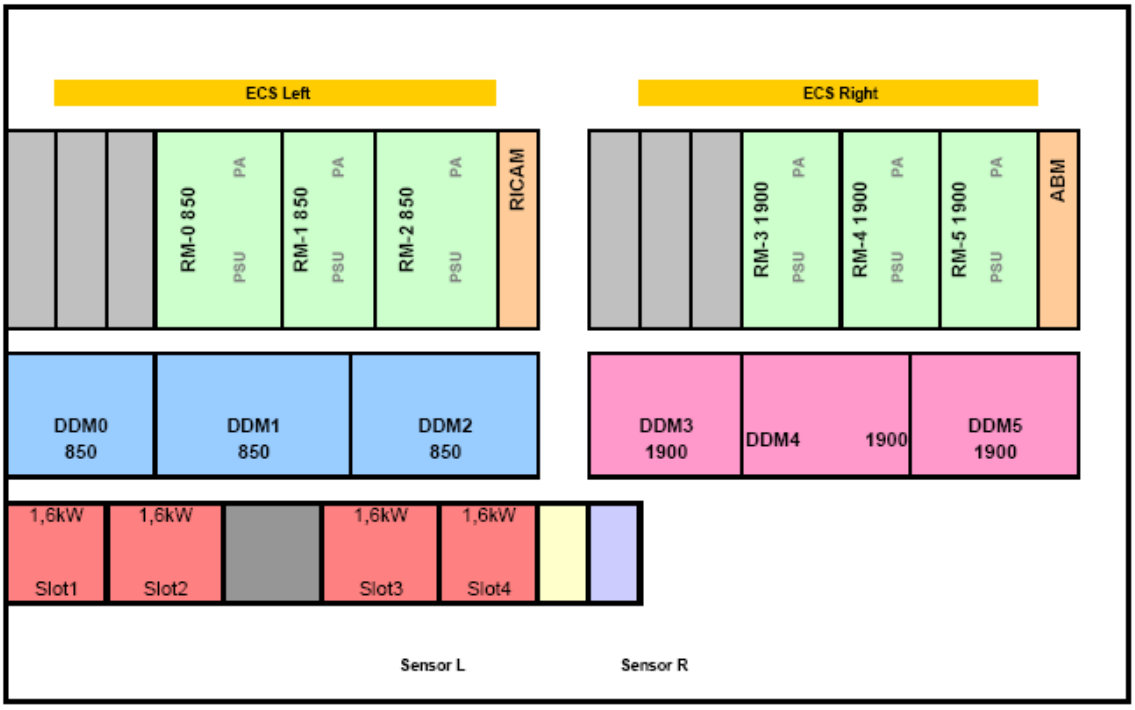
[A1]	3GPP TS 05.05 – V8.7.1	Release 1999 Digital Cellular Telecommunication System Phase 2+ Radio Transmission and Reception
[A2]	3GPP TS 11.21 – V8.9.0	Release 1999 Base Station System (BSS) Equipment Specification – Radio Aspects
[A3]	47CFR Part 24	PERSONAL COMMUNICATIONS SERVICES January 2003
[A4]	47CFR Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS October 2003
[A5]	47 CFR - Part 22	PUBLIC MOBILE SERVICES

2.2. REFERENCE DOCUMENTS

[A5]	PE/BTS/DJD/021883	GSM 18000 Outdoor BTS Radio Test Report according to FCC Part 24 & FCC Part 22 (FCC ID AB6BTS18OUT)

3. BTS 18000 RF QUALIFICATION TESTS FOR FCC REGULATORY

NG Outdoor GSM18000 BTS configuration under test=



Maximum radio configuration:
3 x 60W on each RM GSM850 module
3 x 30W on each RM GSM1900 module

FCC Part 22 (GSM850) / Part24 (PCS1900)

Frequency stability tests will be done during thermal test =

FCC Certification : Part 22				
FCC Specification	Title	GMSK	8PSK	Comment
2.1046 24.232	RF Power Output	X	X	Note1= No test Compliance by previous BTS 18000 analogy.
2.1049	Occupied Bandwidth	X	X	Note1= No test Compliance by previous BTS 18000 analogy.
2.1051 24.238	Spurious Emissions at Antenna Terminals	X	X	Note1= No test Compliance by previous BTS 18000 analogy.
2.1055 24.235	Frequency Stability	X		Note 2 :

Note1 =

As BTS Power and BTS functionality don't change, as the same radio modules and logical boards operate in the BTS, 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

Note2 =

FCC radio Performances will be measured for Standard and ETR BTS version in extreme conditions:

- **Frequency stability in extreme temperature.**

Note 4: Frequency stability

FCC Certification : Part 22 /24				
FCC Specification	Title	GMSK	8PSK	Comment
2.1055 24.235	Frequency Stability	X		

NG Outdoor GSM18000 BTS Standard =

NG Outdoor GSM18000 BTS - Standard version -	Dual Band GSM850 / PCS1900
GSM850	Tx0: C128 - Tx1: C190 - Tx2: C251
Mean RF power Modulation accuracy - phase & freq	Vmin (187V) / Vmax (264V) From -10°C to +50 °C by 10°C step
GSM1900	Tx0: C512 - Tx1: C661 - Tx2: 810
Mean RF power Modulation accuracy - phase & freq	Vmin (187V) / Vmax (264V) From -10°C to +50 °C by 10°C step

NG Outdoor GSM18000 BTS ETR Version =

NG Outdoor GSM18000 BTS - ETR version	Dual Band GSM850 / PCS1900
GSM850	Tx0: C128 - Tx1: C190 - Tx2: C251
Mean RF power Modulation accuracy - phase & freq	Vmin (187V) / Vmax (264V) From -40°C to +20 °C by 10°C step T=50°C (Vmin (187V) / Vmax (264V))
GSM1900	Tx0: C512 - Tx1: C661 - Tx2: 810
Mean RF power Modulation accuracy - phase & freq	Vmin (187V) / Vmax (264V) From -40°C to +20 °C by 10°C step T=50°C (Vmin (187V) / Vmax (264V))

For ETR version the Test for temperature T= +30°C; +40°C will be not done again because the ETR BTS thermal behaviour is the same as Standard version in the range [+10°C-+50°C]. Only, the measurement at High temperature T= +50°C will be done.

Note 4 : Frequency stability

Frequency stability test is performed under following extreme conditions:

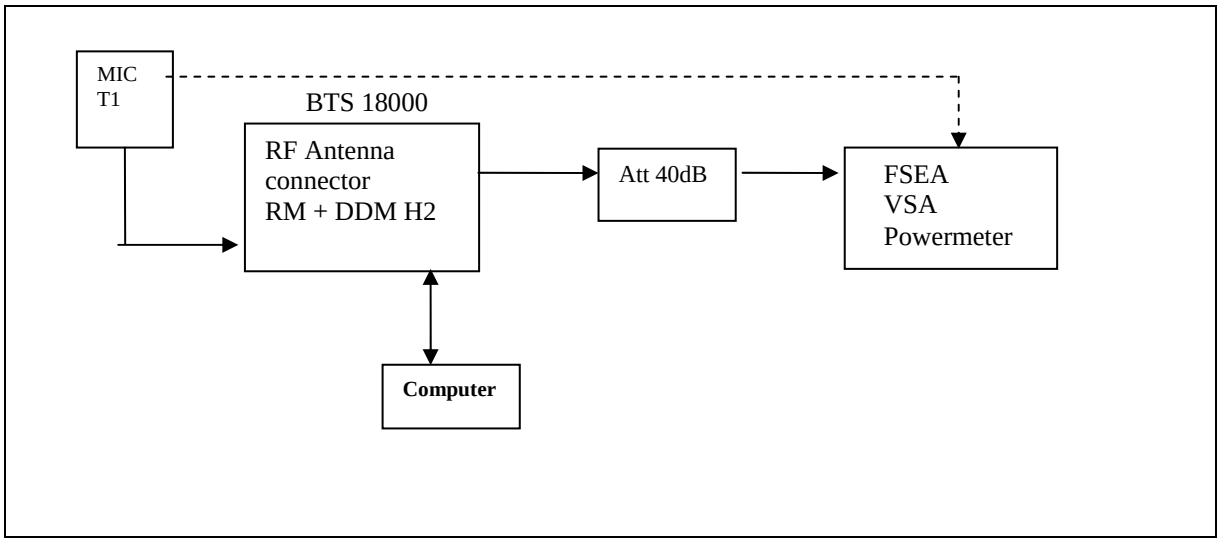
- From Minimum to maximum operational temperature by step temperature.
- With AC power supply variations: 187 VAC, 264 VAC.

All Modules run with nominal power regulation at maximum power in GMSK modulation.

4. TEST BENCH RADIO CONFIGURATION

4.1. TX TEST BENCH

Bench for Tx measurement:



5. ABBREVIATIONS AND DEFINITIONS

5.1. ABBREVIATIONS

ARFCN	Absolute Radio Frequency Channel Number
BCCH	Broadcast Control Channel
BER	Bit Error Rate
BIST	Built In Self Test
BTS	Base Transceiver System
C/I	Carrier to Interferer ratio
dBm	Ratio in decibel with respect to 1 milliwatt
dBc	Ratio in decibel with respect to the carrier level
FER	Frame Erasure Rate
FP	Frame Processor
FH bus	Transmission bus between FP and TX
IF	Intermediate Frequency
IP3	3rd order interception point
LNA	Low Noise Amplifier
NER	Nominal Error Rate
NFH	NO Frequency Hopping
OL	Local Oscillator
PA	TX Power Amplifier
PCM	Pulse Coded Modulation
RF	Radio Frequency Channel
RX	Receiver
SFH	Slow Frequency Hopping
TCH	Traffic Residual Bit Error Rate
TDMA	Time Division Multiple Access
TS	Time Slot
TX	Transmitter
TRX	Transmitter - Receiver

END OF DOCUMENT