

## EXHIBIT 2B

### S12000 EMC Report

Applicant: Northern Telecom Ltd.

For Certification on:

AB6INDS12000



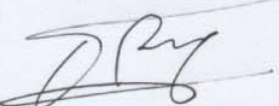
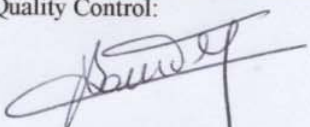
## TEST REPORT

**CFR 47 Part 15  
CFR 47 Part 22  
and CFR 47 24**

**S12000 indoor (Base + Extension cabinets)**

**N°149016DK**

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|                                                                                                                         |                                                                                                                              |                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Technical control: <i>O. ROY</i><br> | <b>GYL technologies</b><br>ANGERS TECHNOPOLE<br>1, rue Fleming 49066 ANGERS<br>Tel. : 02.41.36.22.33<br>Fax : 02.41.36.22.23 | Quality Control:<br> |
|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|



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19 July 2002

Identification : 149016DK

## Summary

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**Applicant:**

SANMINA SCI  
(Yoann BRUNETIERE)  
19 rue du Centre - CT506  
Guyancourt  
78928  
FRANCE

**Product description**

**Product: S12000 indoor (Base + Extension cabinets)**

Manufacturer :

NORTEL NETWORKS  
38, rue Paul Cézanne  
Guyancourt  
78928 Yvelines

Responsible of the equipment: (Yoann BRUNETIERE)

Product type: BTS S12000 INDOOR 850/1900 MHz in S222\_222 configuration

Ref.:NTU420AA P2 Serial: SNMN75007YBF (base cabinet)

Ref.:NTU420AA P2 Serial: SNMN75007Y?? (extension cabinet)

Manual: none

Power supply: 0/-48Vdc , tested at : 0/-48Vdc

**PRODUCT PICTURE:**



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Extension cabinet



Base cabinet

**PRODUCT COMPOSITION:**

Composition: appendixes C10 to C13

Interconnection and cables type: appendix C9



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**UTILISATION:**

Base Transceiver Station

**General test conditions****AUXILIARY EQUIPMENT:**

AC/DC power supply; mark SORENSON; model DHP60-220M1  
S/N: 0214A9018

**WORKING MODE DURING TEST**

Measurements are done in transmitter mode (all transmitters at maximum power , in BCCH mode without frequency hopping), and in receiver mode

Channels configuration for the test:

| DRX# | Base cabinet |                 | Extension cabinet |                 |
|------|--------------|-----------------|-------------------|-----------------|
|      | CHANNEL #    | FREQUENCY (MHz) | CHANNEL #         | FREQUENCY (MHz) |
| 0    | 172          | 878.0           | 512               | 1930.2          |
| 1    | 194          | 882.4           | 566               | 1941.0          |
| 2    | 128          | 869.2           | 620               | 1951.8          |
| 3    | 150          | 873.6           | 674               | 1962.6          |
| 4    | 216          | 886.8           | 728               | 1973.4          |
| 5    | 238          | 891.2           | 782               | 1984.2          |
| 6    | 539          | 1935.6          | 139               | 871.4           |
| 7    | 593          | 1946.4          | 161               | 875.8           |
| 8    | 647          | 1957.2          | 183               | 880.2           |
| 9    | 701          | 1968.0          | 205               | 884.6           |
| 10   | 755          | 1978.8          | 227               | 889.0           |
| 11   | 810          | 1989.8          | 251               | 893.8           |



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## Reference standards choice

The product is information technology equipment . The product standard CFR47 Part 15 has to be used for emission (class B because of residential, commercial and light industry use).

The product is a personal communication service equipment

So, applicable standards are:

CFR47 Part 15 class B (2001)

CFR47 part 22, (2000)

CFR47 part 24, (2000)

## Interpretation and remarks:

This equipment complies with limits standards for EMC measurements.

### IMPORTANT REMARK :

Substitution method was not performed as there was nor spurious emission neither emission within the limits detected in prescan as shown by appendixes 1-1 and 1-2

The EUT Plot on pages 14 and 17 shows measured noise floor levels detected while testing the BTS 12000



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## **Test according to CFR 47 Part 15 Class B**

Tests performed by Daniel RAUD at GYL Technologies laboratories in July, 17 and 18 of 2002 .

### **REFERENCE DOCUMENTATION:**

FCC CFR 47 part 0 to 15, (2001)  
ANSI C63.4 (1992).

### **CONDUCTED DISTURBANCE AT INPUT POWER ACCESS :**

**Not applicable: powered by -48Vdc**

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**RADIATED DISTURBANCE :**

**Limit :**

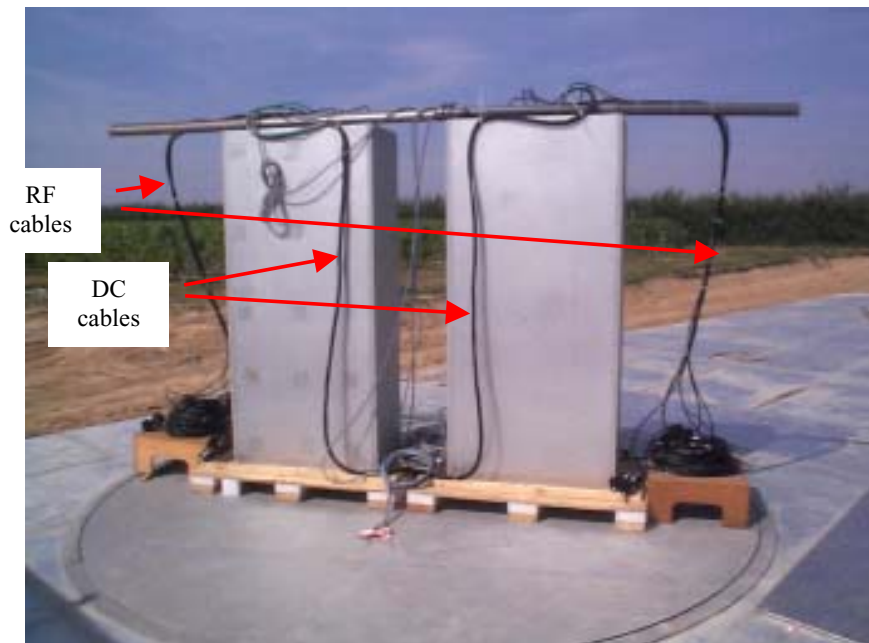
Class B of USA standard regulation CFR 47 part 15 subpart B for radiated emission limit (§15.109 class B device) for unintentional radiator and (§15.209 class B device) for intentional radiator

**General measurement conditions.**

Conforms to ANSI C63.4.

Diagram in 0° position, angles are positives in the reverse clock wise.

Equipment under test.



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**Method of measurement.**

Method of measurement and test installation according to Section 8 of the ANSI C63.4 measurement standard.

Measurement are done at 10m in a free area.

We try to obtain a maximum at all frequencies by moving the product orientation and antenna polarisation. The height of the antenna can vary from 1 m to 4 m.

**Test equipment used :**

| APPARATUS                      | MANUFACTURER    | REFERENCE   | SERIAL NUMBER | Date of verification |
|--------------------------------|-----------------|-------------|---------------|----------------------|
| Free field open area test site |                 |             |               | Jul-02               |
| Receiver                       | Rohde & Schwarz | ESI 7       | 834638/007    | Dec-01               |
| *RECEIVERS 30 MHz to 1000 MHz  |                 |             |               |                      |
| Receptive chain :              | Hewlett Packard | HP 8574 A   | -             | -                    |
| Q-P Adaptator                  | Hewlett Packard | HP 85650A   | 2811A01134    | Jan-02               |
| Spectrum analyser              | Hewlett Packard | HP 8568 B   | 2816A116603   | Jan-02               |
| Preselector                    | Hewlett Packard | HP 685685A  | 287A00784     | Jan-02               |
| REMS Software                  | Hewlett Packard | HP 85879A   | -             | -                    |
| for fieldstrength              |                 | rev A.02.01 |               |                      |
| *ANTENNAS                      |                 |             |               |                      |
| Bilog                          | CHASE           | CBL-6112    | 2434          | Nov-01               |

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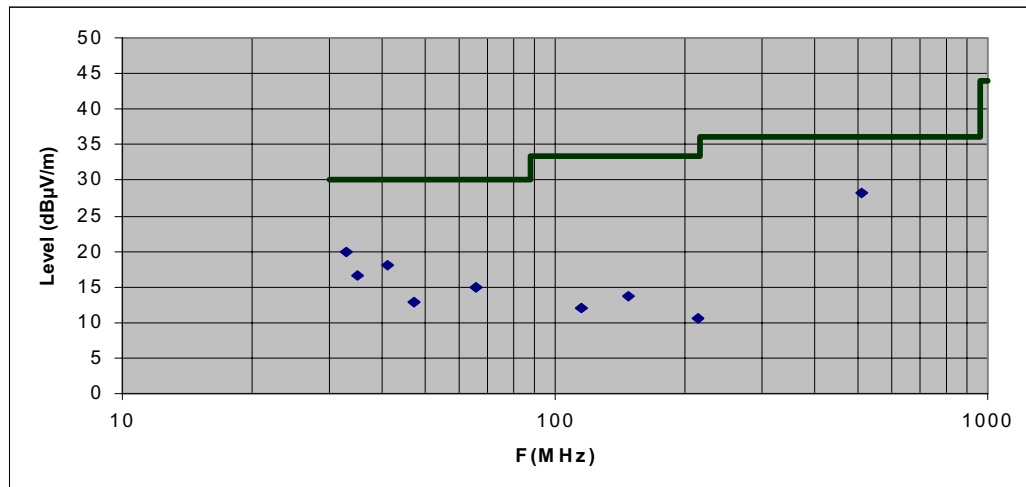
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## Results :

Highest lines table (spurious signals):

| Frequency (MHz) | Quasi-peak (dBμV/m) | Std limit (dBμV/m) | Margin dB | Angle (Deg.) | Site (cm) | Polarisation | Comment |
|-----------------|---------------------|--------------------|-----------|--------------|-----------|--------------|---------|
| 32.762          | 20.0                | 30                 | -10       | 175          | 300       | V            |         |
| 34.834          | 16.6                | 30                 | -13.4     | 270          | 180       | V            |         |
| 40.960          | 18.0                | 30                 | -12       | 95           | 290       | V            |         |
| 47.090          | 12.8                | 30                 | -17.2     | 25           | 160       | V            |         |
| 65.520          | 15.0                | 30                 | -15       | 280          | 160       | V            |         |
| 114.688         | 12.0                | 33.5               | -21.5     | 285          | 100       | V            |         |
| 147.455         | 13.8                | 33.5               | -19.73    | 220          | 270       | H            |         |
| 212.991         | 10.6                | 33.5               | -22.9     | 360          | 140       | V            |         |
| 512.000         | 28.3                | 36                 | -7.7      | 325          | 320       | H            |         |

No spurious signal found over 512,000 MHz



Pre-Scan measurement to identify spurious emissions from EUT at D=3m on appendixes 1-1 and 1-

## INTERPRETATION AND REMARKS:

Conform

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Measurement at transmitters frequencies (D=10m) for indicative level  
transmitters output connected to resistive 50 ohms loads .

| F<br>(MHz) | Peak Level<br>(dB $\mu$ V/m) | Antenn<br>a<br>polarit<br>y | F<br>(MHz) | Peak<br>Level<br>(dB $\mu$ V/m<br>) | Antenna<br>polarity |
|------------|------------------------------|-----------------------------|------------|-------------------------------------|---------------------|
| 878.0      | 66.8                         | H                           | 871.4      | 72.8                                | H                   |
| 882.4      | 63                           | H                           | 875.8      | 69.9                                | H                   |
| 869.2      | 48.7                         | H                           | 880.2      | 53.1                                | H                   |
| 873.6      | 86.2                         | H                           | 884.6      | 51.7                                | H                   |
| 886.8      | 63.5                         | H                           | 889.0      | 66                                  | H                   |
| 891.2      | 64                           | H                           | 893.8      | 68.2                                | H                   |

## Test according to CFR 47 Part 22

Subpart E: § 24.238

Tests performed by Daniel RAUD at GYL Technologies laboratories in July, 18 of 2002 .

### REFERENCE DOCUMENTATION:

CFR 47 part 20 to 39, (2000)

ANSI C63.4 (1992).

### RADIATED DISTURBANCE :

#### General measurement conditions.

Conforms to Section 8 of the ANSI C63.4 measurement standard.



#### Method of measurement.

Method of measurement and test installation according ANSI C63.4.

Measurement are done at 1m in a free area.

We try to obtain a maximum at all frequencies by moving the product orientation and antenna polarisation. The height of the antenna can vary from 1 m to 4 m.

Measurements done in transmitter mode ( all transmitters at maximum power 30 W, in BCCH mode without frequency hopping ) and in receiver mode.

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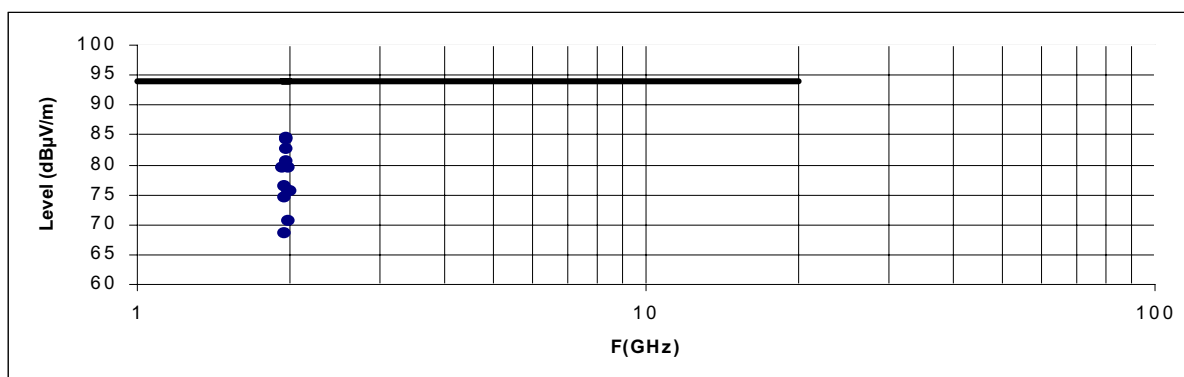
## Test equipment used :

| APPARATUS                       | MANUFACTURER    | REFERENCE   | SERIAL NUMBER | Date of verification |
|---------------------------------|-----------------|-------------|---------------|----------------------|
| Free field open area test site  |                 |             |               | Jul-02               |
| Horn antenna                    | EMCO            | 9504 - 4496 | 3115          | Apr-00               |
| Spectrum analyzer(20Hz-26.5GHz) | Rohde & Schwarz | FSEM30      | 107 985 00.30 | Apr-01               |

## Results :

### 1 - Measurement at transmitters frequencies for indicative level transmitters output connected to resistive 50 ohms loads.

| FREQUENCY<br>( GHz ) | Measure<br>( dBμV ) | AF<br>(A) | Loss cable<br>(B) | Correc.Factor<br>(A)+(B) | Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|----------------------|---------------------|-----------|-------------------|--------------------------|-------------------|-------------------|----------------|
| 1                    |                     |           |                   |                          |                   | 93.9              |                |
| 1.9356               | 46.60               | 27.9      | 2                 | 29.9                     | 76.50             | 93.9              | -17.4          |
| 1.9464               | 38.69               | 27.9      | 2                 | 29.9                     | 68.59             | 93.9              | -25.3          |
| 1.9572               | 54.59               | 27.9      | 2                 | 29.9                     | 84.49             | 93.9              | -9.4           |
| 1.9680               | 50.68               | 27.9      | 2                 | 29.9                     | 80.58             | 93.9              | -13.3          |
| 1.9788               | 45.85               | 27.9      | 2                 | 29.9                     | 75.75             | 93.9              | -18.2          |
| 1.9898               | 45.85               | 27.9      | 2                 | 29.9                     | 75.75             | 93.9              | -18.2          |
| 1.9302               | 49.75               | 27.9      | 2                 | 29.9                     | 79.65             | 93.9              | -14.3          |
| 1.9410               | 44.78               | 27.9      | 2                 | 29.9                     | 74.68             | 93.9              | -19.2          |
| 1.9518               | 52.94               | 27.9      | 2                 | 29.9                     | 82.84             | 93.9              | -11.1          |
| 1.9626               | 54.41               | 27.9      | 2                 | 29.9                     | 84.31             | 93.9              | -9.6           |
| 1.9734               | 49.58               | 27.9      | 2                 | 29.9                     | 79.48             | 93.9              | -14.4          |
| 1.9842               | 40.79               | 27.9      | 2                 | 29.9                     | 70.69             | 93.9              | -23.2          |
| 20                   |                     |           |                   |                          |                   | 93.9              |                |





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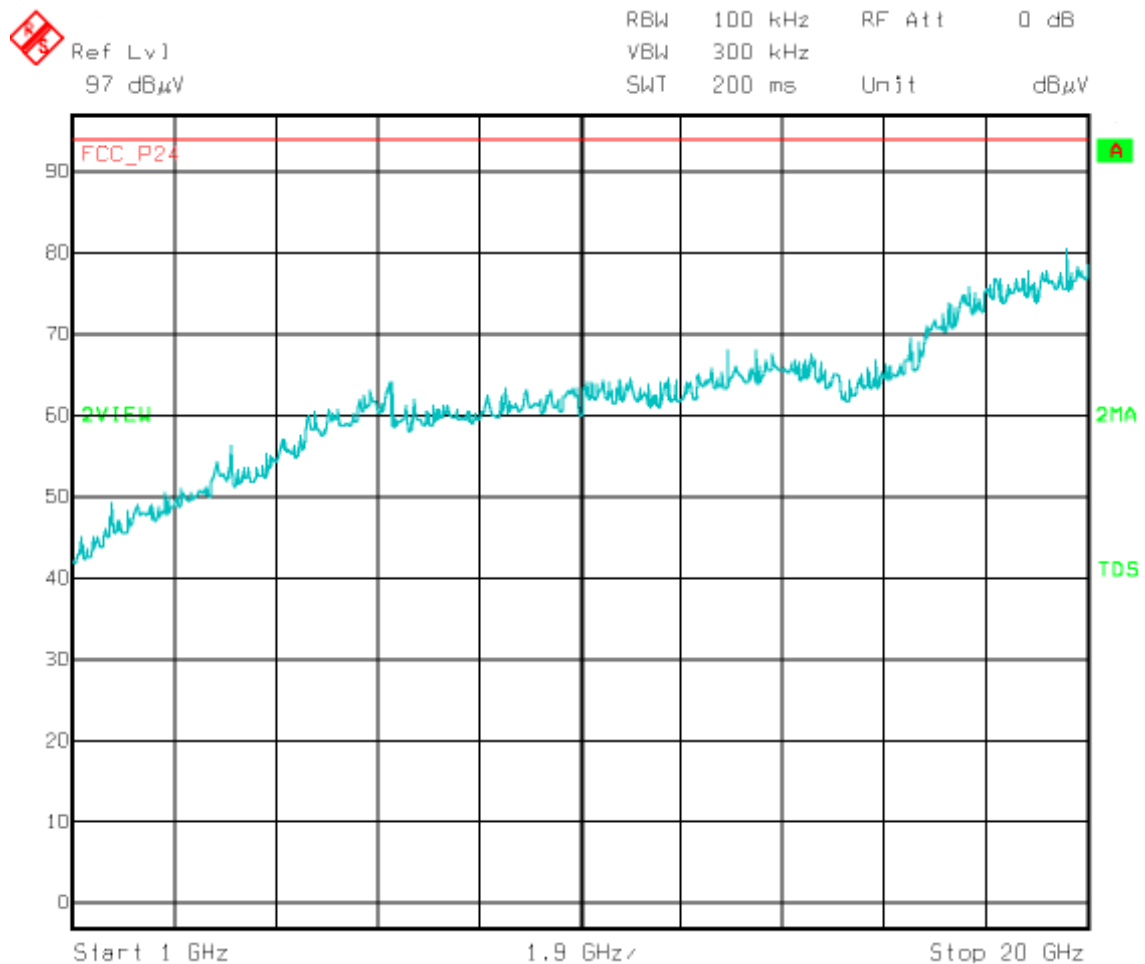
**2 - Spurious emissions measurement.**

No spurious emission found which level upper to noise level in 100KHz bandwidth (harmonics transmitters frequencies under noise level).

**INTERPRETATION AND REMARKS:**

Conform

Spectrum of noise level from 1GHz to 20GHz including loss cable and antenna factors.



## Test according to CFR 47 Part 24

Subpart E: § 24.238

Tests performed by Daniel RAUD at GYL Technologies laboratories in July, 18 of 2002 .

### REFERENCE DOCUMENTATION:

CFR 47 part 20 to 39, (2000)

ANSI C63.4 (1992).

### RADIATED DISTURBANCE :

#### General measurement conditions.

Conforms to Section 8 of the ANSI C63.4 measurement standard.



#### Method of measurement.

Method of measurement and test installation according ANSI C63.4.

Measurement are done at 1m in a free area.

We try to obtain a maximum at all frequencies by moving the product orientation and antenna polarisation. The height of the antenna can vary from 1 m to 4 m.

Measurements done in transmitter mode ( all transmitters at maximum power 30 W, in BCCH mode without frequency hopping ) and in receiver mode.

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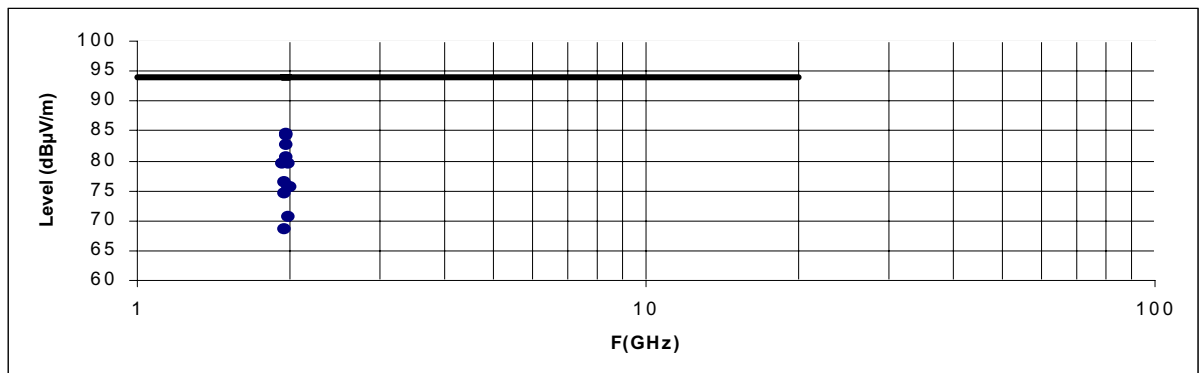
## Test equipment used :

| APPARATUS                       | MANUFACTURER    | REFERENCE   | SERIAL NUMBER | Date of verification |
|---------------------------------|-----------------|-------------|---------------|----------------------|
| Free field open area test site  |                 |             |               | Jul-02               |
| Horn antenna                    | EMCO            | 9504 - 4496 | 3115          | Apr-00               |
| Spectrum analyzer(20Hz-26.5GHz) | Rohde & Schwarz | FSEM30      | 107 985 00.30 | Apr-01               |

## Results :

### 1 - Measurement at transmitters frequencies for indicative level transmitters output connected to resistive 50 ohms loads.

| FREQUENCY<br>( GHz ) | Measure<br>( dBμV ) | AF<br>(A) | Loss cable<br>(B) | Correc.Factor<br>(A)+(B) | Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|----------------------|---------------------|-----------|-------------------|--------------------------|-------------------|-------------------|----------------|
| 1                    |                     |           |                   |                          |                   | 93.9              |                |
| 1.9356               | 46.60               | 27.9      | 2                 | 29.9                     | 76.50             | 93.9              | -17.4          |
| 1.9464               | 38.69               | 27.9      | 2                 | 29.9                     | 68.59             | 93.9              | -25.3          |
| 1.9572               | 54.59               | 27.9      | 2                 | 29.9                     | 84.49             | 93.9              | -9.4           |
| 1.9680               | 50.68               | 27.9      | 2                 | 29.9                     | 80.58             | 93.9              | -13.3          |
| 1.9788               | 45.85               | 27.9      | 2                 | 29.9                     | 75.75             | 93.9              | -18.2          |
| 1.9898               | 45.85               | 27.9      | 2                 | 29.9                     | 75.75             | 93.9              | -18.2          |
| 1.9302               | 49.75               | 27.9      | 2                 | 29.9                     | 79.65             | 93.9              | -14.3          |
| 1.9410               | 44.78               | 27.9      | 2                 | 29.9                     | 74.68             | 93.9              | -19.2          |
| 1.9518               | 52.94               | 27.9      | 2                 | 29.9                     | 82.84             | 93.9              | -11.1          |
| 1.9626               | 54.41               | 27.9      | 2                 | 29.9                     | 84.31             | 93.9              | -9.6           |
| 1.9734               | 49.58               | 27.9      | 2                 | 29.9                     | 79.48             | 93.9              | -14.4          |
| 1.9842               | 40.79               | 27.9      | 2                 | 29.9                     | 70.69             | 93.9              | -23.2          |
| 20                   |                     |           |                   |                          |                   | 93.9              |                |



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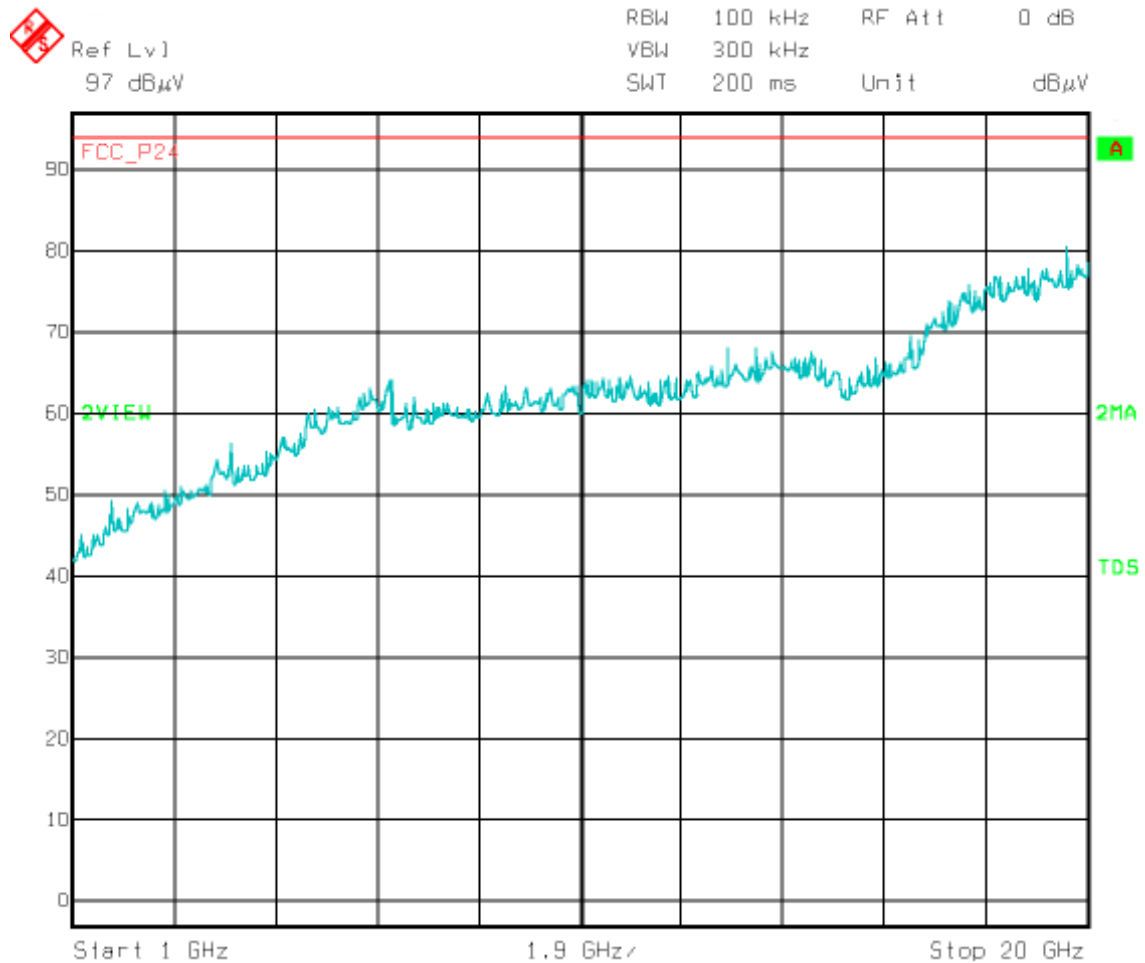
## 2 - Spurious emissions measurement.

No spurious emission found which level upper to noise level in 100KHz bandwidth (harmonics transmitters frequencies under noise level).

### INTERPRETATION AND REMARKS:

Conform

Spectrum of noise level from 1GHz to 20GHz including loss cable and antenna factors.





**SANMINA - SCI**

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## **S12000 Indoor 850 / 1900 MHz : EMC test Plan**

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**Reference:** Nortel-STP-00346  
**Version:** 01-en  
**Status:** Approved  
**Date:** 08/07/2002

---

**Product Name:** S12000 BTS  
**Frequency:** 850 / 1900 MHz  
**Discipline:** EMC

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**Author:** Y. BRUNETIERE

**Verified by:** T. LUCHINI

**Approved by:** C. CHANSARD

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## PUBLICATION HISTORY

| VERSION | DATE       | AUTHOR        | MODIFICATION             |
|---------|------------|---------------|--------------------------|
| 01-en   | 08/07/2002 | Y. BRUNETIERE | Creation of the document |

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## 1. INTRODUCTION

This objective of this document is to present the test plan for EMC testing on the S12000 BTS Indoor configured in 850 / 1900 MHz.

This strategy is the following :

- Realize the qualification in the Indoor 850/1900 MHz in S222\_222 configuration (Base & Extension cabinet).

The qualification on the S12000 Indoor BTS will be done according to the FCC Part 15, 22 & 24 as defined by Nortel Networks.

This document presents then the requirements Sanmina needed to ensure the results of the qualification during the qualification phase, and also the tests that will be realized during the two steps described above.

This document applied to :

- Product : S12000 Indoor
- Manufacturer : Nortel Networks
- Frequencies : 850 / 1900 MHz
- Configuration : S222\_222 (Base & Extension cabinet)
- Ancillary : TBD
- Options : TBD

## 2. APPLICABLES DOCUMENTS

|      |                |                                                                                                                                         |
|------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| [A1] | CFR 47 Part 2  | Code of Federal Regulations - Part 2 - Frequency Allocations and Radio Treaty Matters. General Rules and Regulations. Date : June 1996. |
| [A2] | CFR 47 Part 15 | Code of Federal Regulations - Part 15 - Radio Frequency Devices.                                                                        |
| [A3] | CFR 47 Part 22 | Code of Federal Regulations - Part 22 - Public Mobile Services.                                                                         |
| [A4] | CFR 47 Part 24 | Code of Federal Regulations - Part 24 - Personal Communications Services. Date : June 1996.                                             |

## 3. TEST PLAN SUMMARY

The following table presents the test plan summary for the qualification of the S12000 Indoor in 850/1900 MHz configuration.

| Test               | Required | Test Specification | Reference Method | Configuration of the EUT  |
|--------------------|----------|--------------------|------------------|---------------------------|
| Radiated Emissions | Yes      | FCC Part 15        | Section 15.109   | S12000 Indoor in S222_222 |
| Radiated Emissions | Yes      | FCC Part 22        | Section 22.917   |                           |
| Radiated Emissions | Yes      | FCC Part 24        | Section 24.238   |                           |

## 4. RADIATED EMISSION TESTS

**Standard Coverage :** FCC Part 15.109, FCC Part 22.917 & FCC Part 24.238

**Intend :**

- (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonics and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of 2.989, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open filed measurements (e.g., a broadcast transmitter installed in a building) measurements will be acceptable of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from half-wave dipole antennas.
- (b) The measurements specified in paragraph (a) of this section shall be made for the following equipment :
  - (1) Those in which the spurious emission are required to be 60 dB or more below the mean power of the transmitter.
  - (2) All equipment operating on frequencies higher than 25 MHz.
  - (3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.
  - (4) Other types of equipment as required, when deemed necessary by the Commission.

**Test Procedure :**

Radiated emission measurement procedures shall be performed as outlined in Section 8 of the ANSI C63.4 measurement standard. The BTS will be tested to the applicable limits of the FCC rules. For radiated emission measurements the measurement distance between the center of the measurement antenna and the equipment under test shall be 3 meters (or less for frequencies above 1 GHz). In order to maximize all emission levels from the equipment, the emissions will be searched with the receive antenna at varied height levels. The equipment shall also be rotated a full 360 degrees on the turntable with the receive antenna at varying height levels (1 to 4 meters). Tests shall be made with the antenna positioned in both the horizontal and vertical planes of polarization. The BTS shall be placed on the turntable as per ANSI C63.4 measurement procedures. Please see the Part 15 test plan as Part 22 & 24 radiated requirements will be tested in conjunction with the Part 15 testing. The spectrum shall be searched to identify emissions. A complete scan of the applicable spectrum shall be completed (up to 10<sup>th</sup> harmonic of fundamental). The transmitter shall then be turned off, with the rest of the equipment powered on. A complete scan of the spectrum shall be done and referred to as "ambient" without the transmitter keyed on. Emissions emanating from the transmitter shall be identified from comparing these two scans. The identified emissions (from the transmitter) shall be measured and the levels recorded with the transmitter keyed on at full rated power output.

**Important remark :**

Substitution measurements must be made on all detected emissions given that the limits for the FCC are given in power measurements. If no emissions are detected, measurements should be made at the noise floor levels for each of the transmitter harmonic frequencies and a statement should be placed in the test report indicating that no emissions were detected.

The equipment was configured as shown in the next figure.

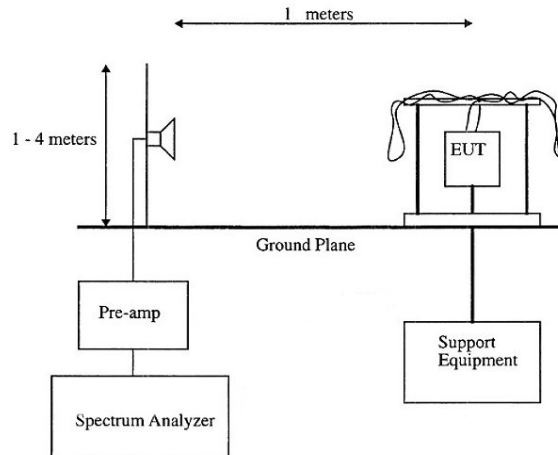


Figure 7 : Test configuration for Radiated Spurious emissions

The BTS was configured to transmit at maximum power (static level 0).  
Measurements were made according to the procedures outline in ANSI C63.4  
The emissions were investigated up to the tenth harmonic of the fundamental emission (20 GHz).  
The measured level of the emissions was recorded and compared to the limit.  
The reference level for spurious radiation was taken with reference to an ideal dipole antenna excited by the rated output power according to the following relationship :

$$E(V/m) = \frac{1}{R(m)} * \sqrt{30 * P_t * G}$$

Where,

E = Field Strength in Volts/meter,  
R = Measurement distance in meters,  
P<sub>t</sub> = Transmitter Rated Power in Watts (30 Watts),  
G = Gain of ideal Dipole (linear)

Therefore :

$$E(V/m) = \sqrt{30 * 30 * 1.64}$$

E = 38.42 V/m = 151.69 dBμV/m

The spurious emissions must be attenuated by at least 43 + 10\*Log(30) = 57.7 dB.

Therefore the field strength limit at 1 meters is :

E = 151.69 dBμV/m – 57.7 dB = 93.9 dBμV/m

Spectrum Analyzer setting during measurements shall be as following :

| Receiver Setting   | Pre-Scan (to identify spurious emissions from EUT) | Final Measurements                           |
|--------------------|----------------------------------------------------|----------------------------------------------|
| Detector Type      | Peak                                               | Quasi-Peak (CISPR)                           |
| Mode               | Max Hold                                           | Not Applicable                               |
| Bandwidth          | 100 kHz or 1 MHz (for > 1GHz)                      | 120 kHz*                                     |
| Amplitude Range    | 60 dB                                              | 20 dB                                        |
| Measurement Time   | Not Applicable                                     | > 1s                                         |
| Observation Time   | Not Applicable                                     | > 15s                                        |
| Step size          | Continuous sweep                                   | Not Applicable                               |
| Sweep Time         | Coupled                                            | Not Applicable                               |
| Measuring Distance | 3m for 30 MHz - 1GHz<br>1m for 1GHz - 20GHz        | 10m for 30 MHz - 1GHz<br>1m for 1GHz - 20GHz |

**Pass / Fail criteria :**

- For 30 MHz to 1 GHz :  
Measurement distance : **10 m**  
Limit : [30 MHz-88 MHz] **30 dB $\mu$ V/m**  
[88 MHz-216 MHz] **33.5 dB $\mu$ V/m**  
[216 MHz-960 MHz] **36 dB $\mu$ V/m**  
Above 960 MHz **43.5 dB $\mu$ V/m**
- For 1 GHz to 20 GHz :  
Measurement distance : 1 m  
Limit : **93.9 dB $\mu$ V/m**

**S/W Configuration – Traffic data flow :**

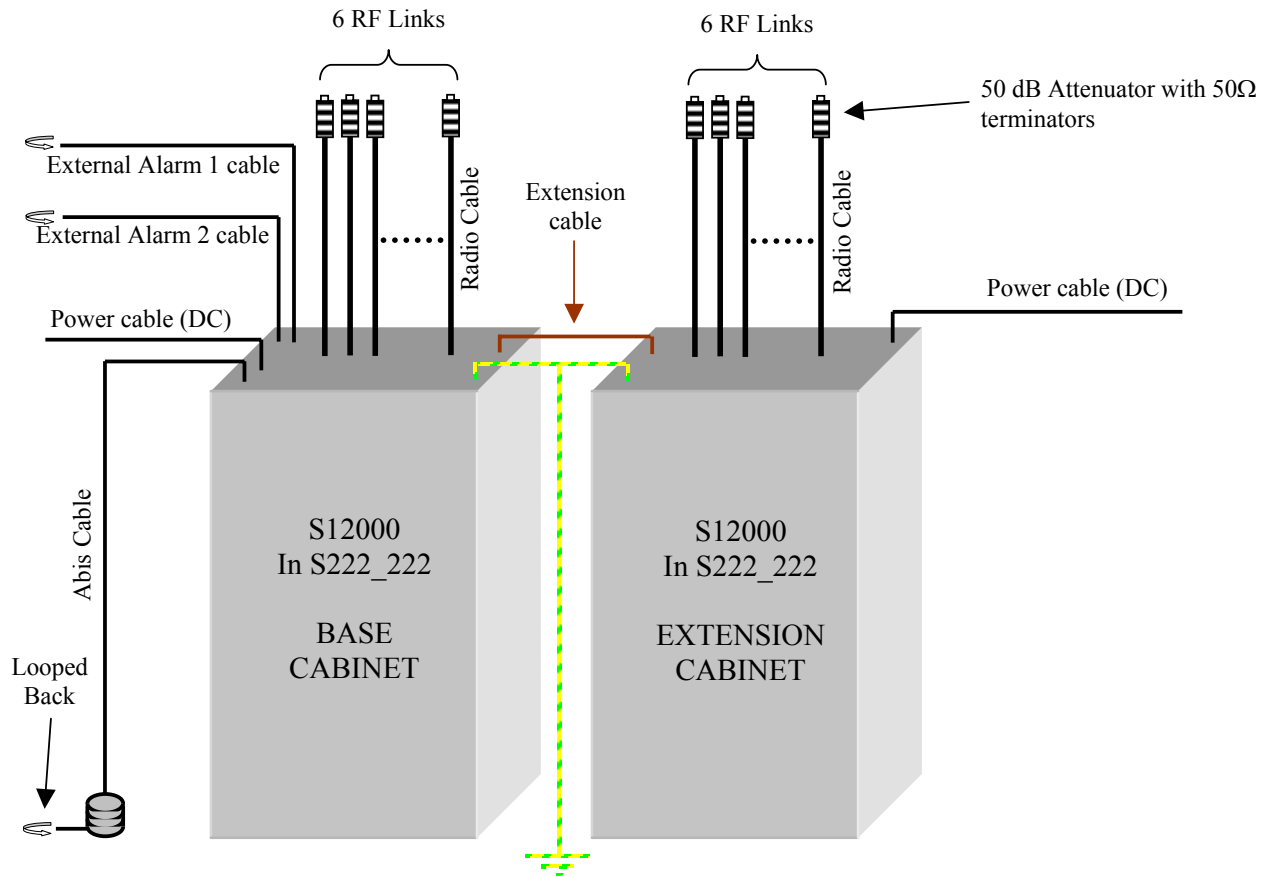
All transmitters in the EUT should be transmitting at full power.

The transmitters' operating frequencies should be selected by setting the Absolute Radio Frequency Channel Numbers (ARFCN) equally distributed over the BSS operating band, subject to any restrictions of the configuration of the EUT.

Transmit Power : All TX at 30 W

## 5. INSTALLATION DIAGRAM

The drawing gives a representation of functional test bench.



The following table presents the list of cable :

| S12000 Indoor Base Cabinet configured in S222_222 |               |        |              |          |
|---------------------------------------------------|---------------|--------|--------------|----------|
| Cables                                            | Description   | Length |              | Quantity |
| Radio cables                                      | RG214         | 10 m   | Shielded     | 6        |
| Abis cable                                        | NTQA1717      | 5.5 m  | Shielded     | 1        |
| Power cable DC (0v/-48v)                          | Type H07 RN-F | /      | Not Shielded | 1        |
| Ground cable DC                                   | Type H07 VK   | /      | /            | 1        |
| External Alarm cables                             | /             | 5 m    | Shielded     | 2        |
| Equipotentiality braid                            | /             | 1.5 m  | /            | 1        |
| Extension cable                                   | NTQA6533      | /      | Shielded     | 1        |

| S12000 Indoor Extension Cabinet configured in S222_222 |               |        |              |          |
|--------------------------------------------------------|---------------|--------|--------------|----------|
| Cables                                                 | Description   | Length |              | Quantity |
| Radio cables                                           | RG214         | 10 m   | Shielded     | 6        |
| Power cable DC (0v/-48v)                               | Type H07 RN-F | /      | Not Shielded | 1        |
| Ground cable DC                                        | Type H07 VK   | /      | /            | 1        |
| Equipotentiality braid                                 | /             | 0.5 m  | /            | 1        |

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## 6. TECHNICAL STATUS

### 6.1. BASE CABINET

|                               |    |              |             |                 |
|-------------------------------|----|--------------|-------------|-----------------|
| DRX ND PCS                    |    |              |             |                 |
| NTQA01DA                      | 14 | NNTM7503CXSK | 47.162.62.5 |                 |
| NTQA01DA                      | 14 | NNTM7503CXSG | 47.162.62.5 |                 |
| NTQA01DA                      | 14 | NNTM7503CXSI | 47.162.62.5 |                 |
| E - DRX GSM1900               |    |              |             |                 |
| NTQA88PA                      | 02 | NNTM7503E513 | 47.162.62.5 |                 |
| NTQA88PA                      | 02 | NNTM7503E4Q4 | 47.162.62.5 |                 |
| NTQA88PA                      | 02 | NNTM7503E4PH | 47.162.62.5 |                 |
| E - DRX GSM850                |    |              |             |                 |
| NTQA88HA                      | D2 | CDN200208004 | 47.162.62.5 |                 |
| NTQA88HA                      | D2 | CDN200208011 | 47.162.62.5 |                 |
| NTQA88HA                      | D2 | CDN200211007 | 47.162.62.5 |                 |
| NTQA88HA                      | D2 | CDN200211011 | 47.162.62.5 |                 |
| NTQA88HA                      | D2 | CDN200211009 | 47.162.62.5 |                 |
| NTQA88HA                      | D2 | CDN200211010 | 47.162.62.5 |                 |
| SPL PCS                       |    |              |             |                 |
| NTQA10AA                      | 04 | NNTMES001QR6 | NTQA10AA    | 04 NNTMES001QR0 |
| NTQA10AA                      | 04 | NNTMES001QQY |             |                 |
| RX SPLITTER GSM850            |    |              |             |                 |
| NTQA88XA                      | P1 | NNTMES00CQZU | NTQA88XA    | P1 NNTMES00CQZK |
| NTQA88XA                      | P1 | NNTMES00CQZH |             |                 |
| COMBINER W/0 VSWR ASSY 850MHZ |    |              |             |                 |
| NTQA38BA                      | D1 | FORM01285415 | NTQA38BA    | D1 FORM01285417 |
| NTQA38BA                      | D1 | FORM01269369 |             |                 |
| HDPL PCS HYBRID+DIPL          |    |              |             |                 |
| NTQA51AA                      | 07 | MTEC0223B126 | NTQA51AA    | 07 MTEC0223B109 |
| NTQA51AA                      | 03 | FORM01295152 |             |                 |
| DUPLEXER W/0 VSWR ASSY 850MHZ |    |              |             |                 |
| NTQA38CA                      | D1 | FORM01285409 | NTQA38CA    | D1 FORM01285407 |
| NTQA38CA                      | D1 | FORM01285402 |             |                 |
| PCS 1900 COMBINER DIPLEXER    |    |              |             |                 |
| NTQA51DA                      | 01 | FORM01303761 | NTQA51DA    | 07 MTEC0212A802 |
| NTQA51DA                      | 07 | MTEC0213A388 |             |                 |

## S12000 Indoor 850 / 1900 MHz : EMC test Plan

PA PCS 1900 MODULE PHASE 2  
NTQA50DB 01 PWWT03D47CRP NTQA50DB 01 PWWT03D485YP  
NTQA50DB 01 PWWT03D47NOP

PA EDGE 1900  
NTQA50GA 01 PWWT03D3D5JP NTQA50GA 01 PWWT03D334NP  
NTQA50GA 01 PWWT03D4D5LP

ESCPA 850MHZ S8000  
NTQA37AA D1 PWWT01D3KCFC NTQA37AA 01 PWWT01D3KC9C  
NTQA37AA D1 PWWT01D3KCPC NTQA37AA 01 PWWT01D35T8C  
NTQA37AA D1 PWWT01D3KCKC NTQA37AA 01 PWWT01D3KCLC

TYPE F PSU  
NTQA57AA 03 ADPL09002DR7 NTQA57AA 03 ADPL09002DRZ

CPCMI T1 PCBA  
NTQA66AA 05 NNTMER00CB2B NTQA66AA 05 NNTMER00CB2C  
NTQA66AA 05 NNTMER00CB5L

CMCF PCBA PHASE 2  
NTQA66CB 05 NNTMES00FRPC 47.162.62.  
NTQA66CB 05 NNTMES00FRPM 47.162.62.

RECAL PCBA  
NTQA66DA 02 NNTMES00FOKH

CBCF SHELF  
NTQA66GA 01 SNMN75007V8V

CAB: S12000 IND ASSY  
NTU420AA P2 SNMN75007YBF

MOD: ICS S12000 IND  
NTU424AA P3 XBA 109 02/1 P3A n° 133

MOD: DRXICO  
NTU460AA P2 SNMN27000JBJ

MOD: COMICO  
NTU465AA P1 SNMN2700045P

S12000 IN BARE CABINET  
SA000113 P2 SNMN75007YBE

S12000 IN DC MAIN  
SA000114 P1 SNMN75007TZF

S12000 PAICO  
SA000115 P1 SNMN75007SY8

## 6.2. EXTENSION CABINET

|                               |    |              |             |    |              |
|-------------------------------|----|--------------|-------------|----|--------------|
| DRX ND PCS                    |    |              |             |    |              |
| NTQA01DA                      | 14 | NNTM7503CXLG | 47.162.62.5 |    |              |
| NTQA01DA                      | 14 | NNTM7503CXM3 | 47.162.62.5 |    |              |
| NTQA01DA                      | 14 | NNTM7500906P | 47.162.62.5 |    |              |
| E - DRX GSM1900               |    |              |             |    |              |
| NTQA88PA                      | 02 | NNTM7503DB5W | 47.162.62.5 |    |              |
| NTQA88PA                      | 02 | NNTM7503DBUA | 47.162.62.5 |    |              |
| NTQA88PA                      | 02 | NNTM7503DBU5 | 47.162.62.5 |    |              |
| E - DRX GSM850                |    |              |             |    |              |
| NTQA88HA                      | D2 | CDN200208006 | 47.162.62.5 |    |              |
| NTQA88HA                      | D2 | CDN200211002 | 47.162.62.5 |    |              |
| NTQA88HA                      | D2 | CDN200208007 | 47.162.62.5 |    |              |
| NTQA88HA                      | D2 | CDN200211012 | 47.162.62.5 |    |              |
| NTQA88HA                      | P1 | CDN200203006 | 47.162.62.5 |    |              |
| NTQA88HA                      | P1 | CDN200206003 | 47.162.62.5 |    |              |
| SPL PCS                       |    |              |             |    |              |
| NTQA10AA                      | 03 | NNTMES001LZL | NTQA10AA    | 03 | NNTMES001QQ3 |
| NTQA10AA                      | 03 | NNTMES001QNB |             |    |              |
| RX SPLITTER GSM850            |    |              |             |    |              |
| NTQA88XA                      | P1 | NNTMES00CQZR | NTQA88XA    | P1 | NNTMES00ONSL |
| NTQA88XA                      | P1 | NNTMES00CQZI |             |    |              |
| COMBINER W/0 VSWR ASSY 850MHZ |    |              |             |    |              |
| NTQA38BA                      | D1 | FORM01269375 | NTQA38BA    | P2 | FORM01323513 |
| NTQA38BA                      | D1 | FORM01269370 |             |    |              |
| HDPL PCS HYBRID+DIPL          |    |              |             |    |              |
| NTQA51AA                      | 07 | MTEC0223B116 | NTQA51AA    | 03 | FORM01295142 |
| NTQA51AA                      | 03 | FORM01295144 |             |    |              |
| DUPLEXER W/0 VSWR ASSY 850MHZ |    |              |             |    |              |
| NTQA38CA                      | D1 | FORM01285408 | NTQA38CA    | D1 | FORM01285411 |
| NTQA38CA                      | D1 | FORM01285399 |             |    |              |
| PCS 1900 COMBINER DIPLEXER    |    |              |             |    |              |
| NTQA51DA                      | 03 | FORM01303759 | NTQA51DA    | 03 | FORM01303762 |
| NTQA51DA                      | 07 | MTEC0213A370 |             |    |              |

## S12000 Indoor 850 / 1900 MHz : EMC test Plan

PA PCS 1900 MODULE PHASE 2  
NTQA50DB 01 PWWT03D485XP NTQA50DB 01 PWWT03D486RP  
NTQA50DB 01 PWWT03D47WEP NTQA50DB 01 PWWT03D4853P  
NTQA50DB 01 PWWT03D47VCP NTQA50DB 01 PWWT03D47F5P

ESCPA 850MHZ S8000  
NTQA37AA D1 PWWT01D355TC NTQA37AA 01 PWWT01D35TCC  
NTQA37AA D1 PWWT01D35R0C NTQA37AA 01 PWWT01D35RYC  
NTQA37AA D1 PWWT01D35R1C NTQA37AA 01 PWWT01D3KCEC

TYPE F PSU  
NTQA57AA 03 ADPL09002D?? NTQA57AA 03 ADPL09002D??

CPCMI T1 PCBA  
NTQA66AA 05 NNTMER00CB3T NTQA66AA 05 NNTMER00CB3B  
NTQA66AA 05 NNTMER00CB6L

CMCF PCBA PHASE 2  
NTQA66CB 05 NNTMES00FR52 47.162.62.  
NTQA66CB 05 NNTMES00FRR0 47.162.62.

RECAL PCBA  
NTQA66DA 02 NNTMES00FOHQ

CBCF SHELF  
NTQA66GA 01 SNMN75007V??

CAB: S12000 IND ASSY  
NTU420AA P2 SNMN75007Y??

MOD: ICS S12000 IND  
NTU424AA P3 XBA 109 02/1 P3A n° 134

MOD: DRXICO  
NTU460AA P2 SNMN27000JBI

MOD: COMICO  
NTU465AA P1 SNMN2700045P

S12000 IN BARE CABINET  
SA000113 P2 SNMN75007Y??

S12000 IN DC MAIN  
SA000114 P1 SNMN75007VGY

S12000 PAICO  
SA000115 P1 SNMN75007W4Q

## 7. ABBREVIATIONS AND DEFINITIONS

### 7.1. ABBREVIATIONS

|        |                               |
|--------|-------------------------------|
| BTS    | Base Transceiver Station      |
| DC     | Direct Current                |
| DCS    | Digital Cellular System       |
| DRX    | Driver Receiver unit          |
| EMC    | ElectroMagnetic Compatibility |
| EN     | European Norm                 |
| ETS    | ETSI Standard                 |
| EUT    | Equipment Under Test          |
| GSM    | Global System Mobile          |
| IT     | Information Technology        |
| N/A    | Not Applicable                |
| RF     | Radio Frequency               |
| RXQUAL | Receive Quality               |
| TRX    | Transmitter / Receiver        |

### 7.2. DEFINITIONS

**FCC Part 2** – This part contains the table of frequency allocations and special requirements in international regulations, recommendations, agreements, and treaties. This part also contains standards and procedures concerning the marking and importation of radio frequency devices, and for obtaining equipment authorization.

**FCC Part 15** – This part contains rules setting out the regulations under which an international, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 Devices.

**FCC Part 22** – The purpose of these rule is to establish the requirements and conditions under which domestic common carrier radio stations may be licensed and used in the Public Mobile Services.

**FCC Part 24** – This part states the conditions under which portions of the radio spectrum are made available and licensed for PCS.

**Effective Radiated Power (ERP)** – The product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction.

**Equivalent Isotropically Radiated Power (e.i.r.p.)** – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

**Mean power (of a radio transmitter)** – The average power supplied to the antenna transmission line by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions.

❧END OF DOCUMENT❧

REPORT : 149016DK APPENDIX 1-1  
 PRODUCT NAME : S12000 INDOOR (BASE+EXTENSION)  
 STANDARD : FCC CFR47 PART 15 CLASS B (Limit for D=3m)  
 MEASUREMENT : ELECTRIC FIELD 30MHz-1GHz (PRESCAN) D=3m  
 HIGHER LEVEL SIGNALS FOUND DURING PRESCAN MEASUREMENT  
 CONDITIONS : 0Vdc/-48Vdc  
 DATE : July, 17 of 2002  
 MEASUREMENT DONE BY : D.RAUD  
 ALL SUSPECTS

| No | FREQ    | BND | PEAK      | ANT  | AZ  | COMMENTS |
|----|---------|-----|-----------|------|-----|----------|
|    | MHz     |     | LIM ABS P | cm   | deg |          |
| 1  | 32.760  | 1   | -5 25.0   | V100 | 0   |          |
| 2  | 34.839  | 1   | -2 28.5   | V100 | 180 |          |
| 3  | 40.960  | 2   | -6 23.8   | V100 | 180 |          |
| 4  | 47.090  | 2   | -11 18.5  | V100 | 0   |          |
| 5  | 65.520  | 5   | -7 22.6   | H100 | 180 |          |
| 6  | 111.997 | 11  | -11 22.7  | V100 | 180 |          |
| 7  | 114.680 | 11  | -13 20.7  | H100 | 0   |          |
| 8  | 122.876 | 12  | -13 20.9  | H100 | 0   |          |
| 9  | 131.066 | 12  | -11 22.1  | H100 | 180 |          |
| 10 | 135.169 | 13  | -16 17.7  | V100 | 180 |          |
| 11 | 137.297 | 14  | -14 19.0  | V100 | 180 |          |
| 12 | 139.263 | 14  | -14 19.8  | H100 | 180 |          |
| 13 | 147.469 | 15  | -6 27.1   | H100 | 180 |          |
| 14 | 155.292 | 16  | -15 18.7  | V100 | 0   |          |
| 15 | 163.820 | 17  | -9 24.3   | H100 | 0   |          |
| 16 | 185.345 | 18  | -17 16.1  | V100 | 0   |          |
| 17 | 187.420 | 18  | -18 15.3  | H100 | 0   |          |
| 18 | 212.986 | 19  | -9 24.3   | V100 | 0   |          |
| 19 | 214.036 | 19  | -16 17.1  | V100 | 0   |          |
| 20 | 221.180 | 20  | -15 20.9  | H100 | 180 |          |
| 21 | 225.270 | 20  | -17 18.9  | H100 | 0   |          |
| 22 | 229.356 | 20  | -18 18.4  | H100 | 0   |          |
| 23 | 426.128 | 23  | -2 34.3   | V100 | 0   |          |
| 24 | 468.048 | 25  | -5 31.1   | V100 | 180 |          |
| 25 | 512.00  | 26  | -1 34.9   | H100 | 0   |          |
| 26 | 869.190 | 29  | 47 82.6   | V100 | 180 |          |
| 27 | 871.410 | 29  | 36 71.9   | H100 | 180 |          |
| 28 | 873.660 | 29  | 50 86.0   | V100 | 180 |          |
| 29 | 875.870 | 29  | 38 73.9   | H100 | 180 |          |
| 30 | 878.040 | 29  | 42 77.8   | H100 | 0   |          |
| 31 | 880.250 | 29  | 30 65.6   | H100 | 0   |          |
| 32 | 882.460 | 29  | 41 77.2   | H100 | 0   |          |
| 33 | 884.633 | 29  | 30 65.6   | H100 | 0   |          |
| 34 | 886.890 | 29  | 33 69.2   | H100 | 0   |          |
| 35 | 889.035 | 29  | 31 67.5   | V100 | 180 |          |
| 36 | 891.258 | 29  | 34 70.4   | H100 | 0   |          |
| 37 | 893.858 | 29  | 34 70.0   | V100 | 180 |          |

12 Transmitters

\* denotes a Final List signal

REPORT : 149016DK  
 APPENDIX 1-2  
 PRODUCT NAME : S12000 INDOOR (BASE+EXTENSION)  
 STANDARD : FCC CFR47 PART 15 CLASS B (Limit for D=3m)  
 MEASUREMENT : ELECTRIC FIELD 30MHz-1GHz (PRESCAN) D=3m  
 HIGHER LEVEL SIGNALS FOUND DURING PRESCAN MEASUREMENT  
 CONDITIONS : 0Vdc/-48Vdc  
 DATE : July, 17 of 2002  
 MEASUREMENT DONE BY : D.RAUD

