



## **A631 thermal printer with Bluetooth module**

### **TEST REPORT**

**According to CFR 47 Part 15**

**N°194002DK**

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Technical control: O.ROY

A handwritten signature in black ink, appearing to read "O. Roy".

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**FCC CERTIFICATION TEST REPORT****FCC registration # 90469****EQUIPMENT FCC ID : RKAA631BT**

Written by : D. RAUD

October 28, 2003

**Test report # 194002DK**

This report concerns :      Original grant       Class II change

Equipment tested : **BLUETOOTH THERMAL PRINTER**

Equipment FCC ID : **RKAA631BT**

Designed by : **AXIOHM  
1, rue d'Arcueil, BP 820  
92542 MONTROUGE CEDEX, FRANCE**

Manufactured by : **AXIOHM  
1, rue d'Arcueil, BP 820  
92542 MONTROUGE CEDEX, FRANCE**

Deferred grant requested per 47 CFR 0.457 (d)(1)(ii)      YES     NO

if yes, defer until :

Company Named agrees to notify the Commission by :

of the intended date of announcement of the product so that the grant can be issued on the date

Transition rules requested per 15.37?      YES     NO

If no, assumed Part 15, Subpart B for intentional or  
unintentional radiator  
The new 47 CFR [10-1-96 edition] provision



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## EMC TEST REPORT

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FCC registration

# 90469

Written by : D.RAUD

October 28, 2003

Identification : 194002DK

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## 1 GENERAL INFORMATION

### 1.1 APPLICANT:

AXIOHM  
1, rue d'Arcueil, BP 820  
92542 MONTROUGE CEDEX, FRANCE

### 1.2 MANUFACTURER:

AXIOHM  
1, rue d'Arcueil, BP 820  
92542 MONTROUGE CEDEX, FRANCE

### 1.3 APPLICANT REPRESENTATIVE:

Mr Jean Paul OULION

### 1.4 TEST DATE:

### 1.5 TEST SITE:

GYL Technologies  
Parc d'activités de Lanserre  
49610 Juigné sur Loire – France  
FCC registration Number : 90469



## 2 INTRODUCTION

The following test report for a Thermal printer is written in accordance with Part 15 of the Federal Communications Commissions. The Equipment Under Test (EUT) was the A631 with Bluetooth option. The test results reported in this document relate only to the item that was tested

All measurements contained in this Application were conducted in accordance with ANSI C63.4 Methods of Measurement of Radio Noise Emissions of 2001. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Some accessories are used to increase sensitivity and prevent overloading of the measuring instrument. These are explained in this report. Calibration checks are performed regularly on the instruments, and all accessories including the high pass filter, preamplifier and cables.

All radiated and conducted emissions measurements were performed manually at GYL TECHNOLOGIES. The radiated emissions measurements required by the rules were performed on the three to ten meters, open field, test site maintained by GYL Technologies Parc d'activités de Lanserre, 49610 Juigné sur Loire , France. Complete description and site attenuation measurement data have been placed on file with the Federal Communications Commission.

The power line conducted emission measurements were performed in a shielded enclosure also located at the Parc d'activités de Lanserre, 49610 Juigné sur Loire, France facility

## 3 MEASUREMENT EQUIPMENT LIST

PART TYPE	MANUFACTURER	MODEL	SERIAL NUMBER	CALIBRATION DATE
<b>RECEIVERS</b>				
Receiver	Rohde & Schwarz	ESI 7	M02020	Mar-03
Spectrum analyzer	Rohde & Schwarz	FSEM 30	M02021	Dec-02
<b>ARTIFICIAL MAINS NETWORKS</b>				
LISN (50µH / 5/50Ω)	Rohde & Schwarz	ESH2-Z5	M02034	Oct-02
<b>ANTENNAS</b>				
Bilog (30-2000MHz)	CHASE	CBL-6112	M02031	Nov-02
Horn (1 to 18GHz)	EMCO	3161-01	M01138	



## 4 TESTED SYSTEM DETAILS

The equipment tested is a **Thermal printer** considered as an Information Technology Equipment. The equipment, used in residential, commercial or light industry area provides general purpose printing facilities

## 5 EQUIPMENT DESCRIPTION

### 5.1 PRODUCT TYPE: A631 thermal printer with Bluetooth module

### 5.2 Serial number: none

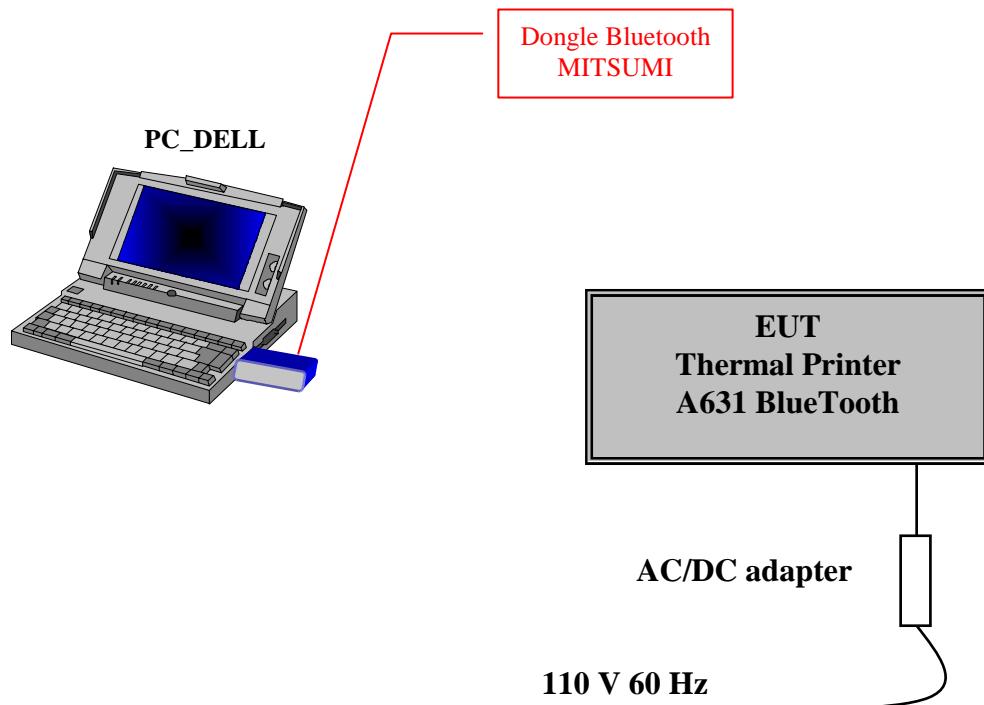
Power supply: Axiohm model: SA25-0925U; input 100-240V 50/60Hz 550mA; output 9Vdc 2500mA tested at 120 V 60 Hz..

### 5.3 Ancillary Equipment

For the purposes of this test report, ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide additional operational and control features to the EUT. It is necessary to configure the system in a typical fashion, as a customer would normally use it.:

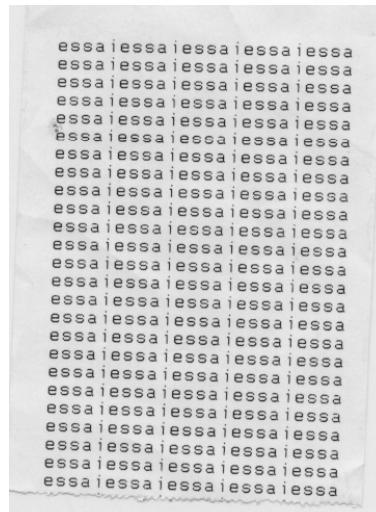
- PC DELL; s/n PP01S; FCC ID LNQUSA-34266-M5-
- Dongle Bluetooth MITSUMI; s/n: A001801T FCCID P00WML-C06

## 5.4 CONFIGURATION OF TESTED SYSTEM



## 6 EXERCISING TEST CONDITIONS

The A631 versatile Clamshell thermal printers were set up to execute permanent printing using the Bluetooth communication port (Mitsumi Bluetooth dongle) by means of the Personal computers described here above





## 7 CONFORMANCE STATEMENT

### 7.1 STANDARDS REFERENCED FOR THIS REPORT

Prepared in accordance with the requirements of FCC Rules and Regulations as listed in 47CFR Part 15 (08-15-2002 Edition)

<b>PART 2: 1999</b>	Frequency allocations and Radio Treaty Matters General Rules and Regulations
<b>Part 2, Subpart J</b>	Equipment Authorization Procedures, Certification Sections
<b>PART 15: 2002</b>	Radio frequency devices
<b>PART 15: Subpart C</b>	Intentional Radiators
<b>ANSI C63.4-2001</b>	Standard format measurements/technical report personal computer and peripherals

Note:

The tests were selected and performed with reference to the FCC Public Notice DA 00-705, released March 30, 2000

### 7.2 JUSTIFICATION

As mentioned in paragraph 5 of this report, the equipment is an information technology equipment providing ticket or boarding pass and as it may not be installed in residential commercial or light industry areas the following sub clause of the standard mentioned above are

- Part 15.207 and 15.209 (subpart C) for respectively conducted and radiated emission.
- 15.201 Equipment authorization requirement
- 15.203 Antenna requirements
- 15.247 Operation within the bands 902-928 MHz, 2400-2483,5 MHZ and 5725-5850 MHz

## 8 Summary Test Results:

**The equipment under test fulfilled the requirements of the applied FCC rules.:**



## 9 TEST ACCORDING TO CFR 47 Part 15 Class B

Tests performed by Daniel RAUD at GYL Technologies laboratories on October 3, 2003.

### 9.1 REFERENCE DOCUMENTATION:

FCC part 15 (Subpart C) §15.207 and 15.209 of 2002

### 9.2 CONDUCTED EMISSIONS MEASUREMENTS

The power line conducted emission measurements were performed in a semi anechoic chamber manufactured by SIDT. The EUT was assembled on a non conductive 10 centimeters high wooden pallet. Power was fed to the EUT through a 50 ohm / 50 micro-Henry Line Impedance Stabilization Network (EUT LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Rohde and Schwartz 150 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 150 kHz. Conducted emission levels were measured on each current-carrying line with the receiver operating in the CISPR quasi-peak mode (or average mode if applicable)

### 9.3 RESULTS: (§ 15.207 class B)

The following table lists worst-case conducted emission data. Specifically: Emission Frequency, Test Detector, Analyzer Reading, Site Correction Factor, corrected Emission Level, Quasi Peak Limit and Margin, and the Average Limit and Margin.

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emissions exceed the limit with the instrument set to the quasi-peak mode, then measurements are made in the average mode.

The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and LIVE SIDE, herein referred to as Neutral, and Live respectively.

ESI 7 EMI TEST RECEIVER IN RECEIVER MODE	
Peak measurement time	5 ms
step size	4KHz
Preamplifier	OFF
Preselector	ON
Resolution, Band With	9 kHz
Final Quasi Peak measurement time	1 s minimum
Final average measurement time	1 sec minimum

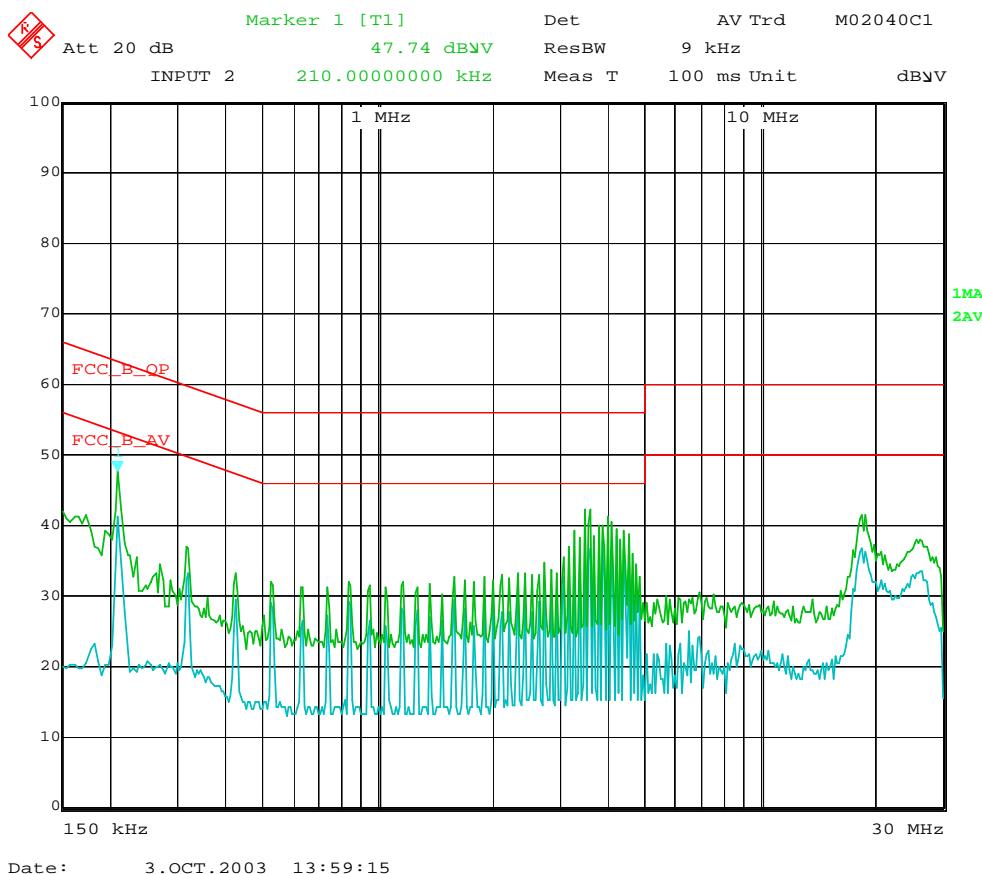
All readings are quasi-peak unless stated otherwise.



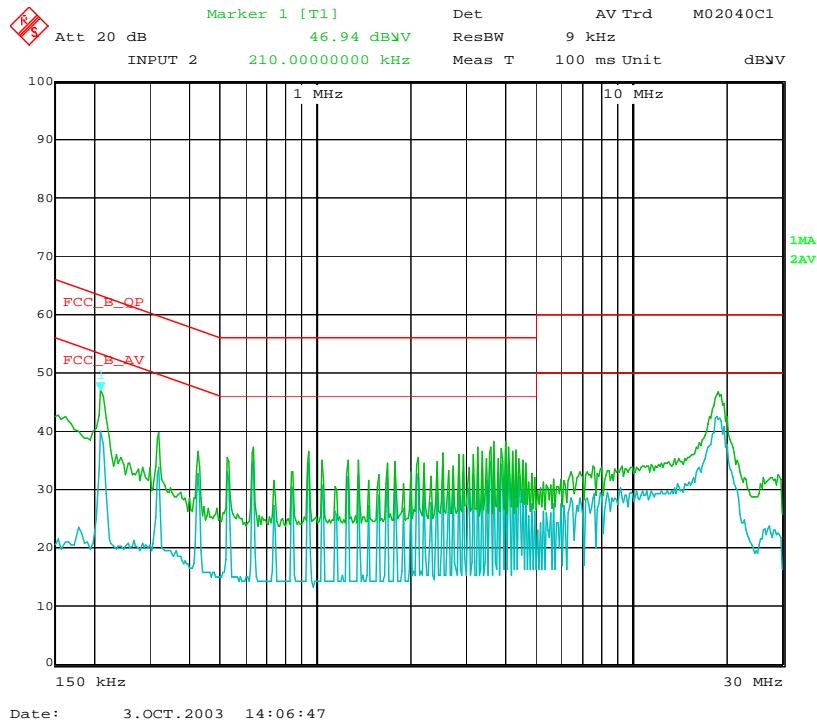
Since no peak emissions were detected above average or quasi-peak limits data collection measurement were not performed on the EUT.

### 9.3.1 Neutral in standby mode and battery charging

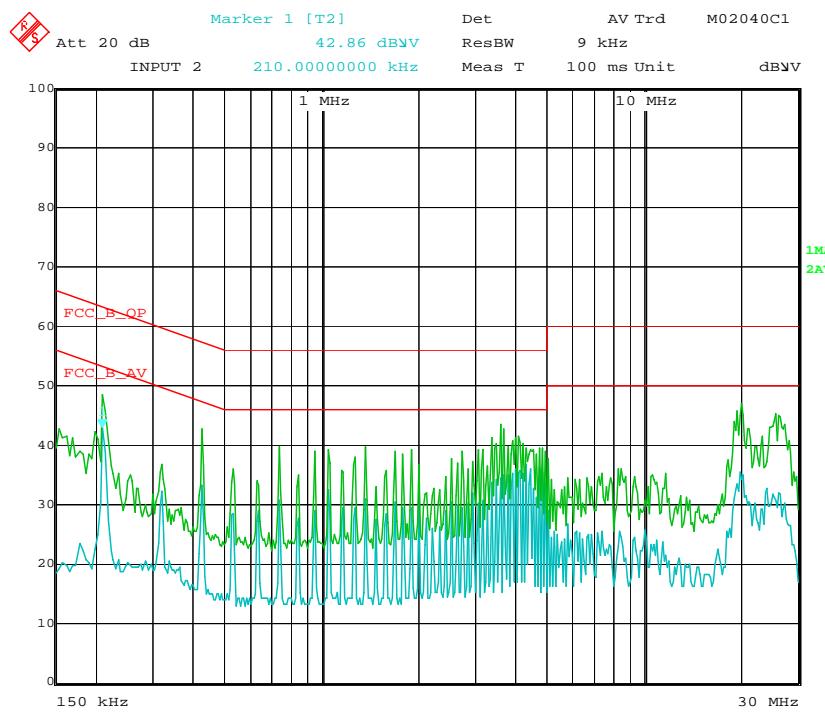
Legend: Blue curve represents average values  
Green curve represents the peak values



### 9.3.2 LIVE in standby mode and battery charging

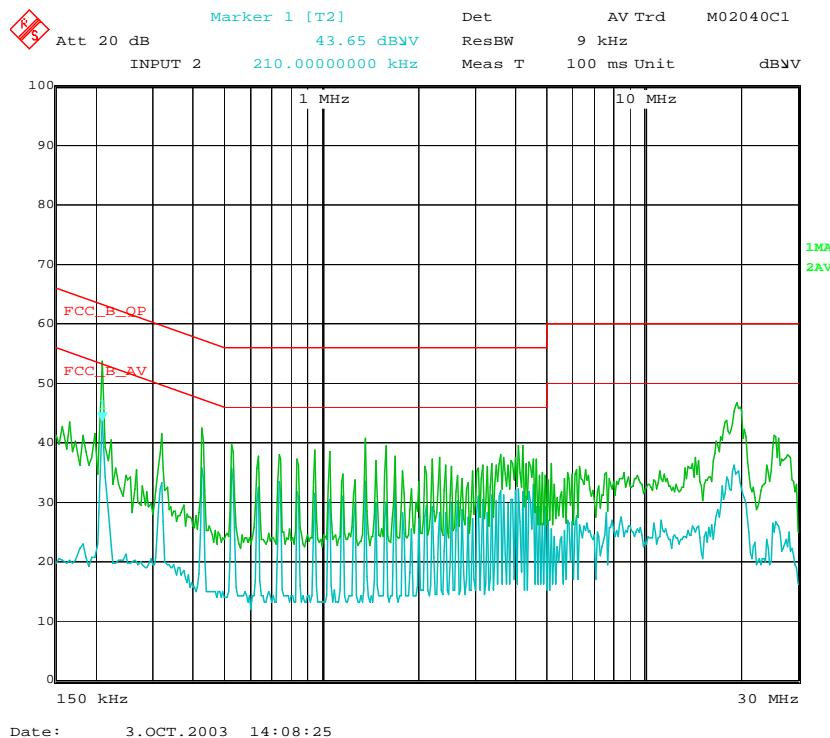


### 9.3.3 Neutral in continuous printing mode





### 9.3.4 Live in continuous printing mode



### 9.4 INTERPRETATION AND REMARKS:

The equipment complies with the §15.207 requirements



## 9.5 RADIATED EMISSIONS MEASUREMENTS

Before final measurements of radiated emissions were made on the open-field three/ten meter range; the EUT was pre-scanned in the semi anechoic at one meter distance. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to insure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meter above the ground plane. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations. The spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. No video filter less than 10 times the resolution bandwidth was used. The range of the frequency spectrum to be investigated is specified in FCC Part 15. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

### Summary of settings

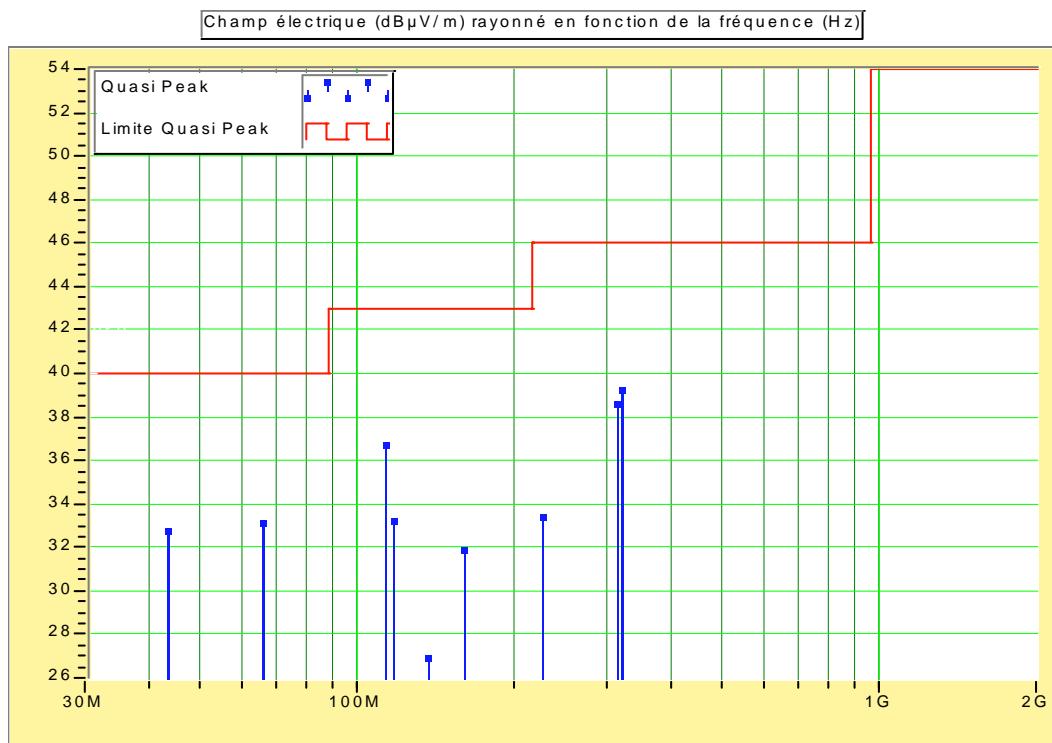
ESI 7 EMI TEST RECEIVER IN RECEIVER MODE	
Peak measurement time	5 ms
step size	40 KHz
Preamplifier	ON
Preselector	ON
Resolution, Band With	120 kHz
Final Quasi Peak measurement time	1 s minimum
Final average measurement time	N/A

All readings are quasi-peak unless stated otherwise.

## 9.6 RESULTS (§ 15.209 class B):

The following data table lists the most significant emission frequencies, measured level, correction factor (includes cable and antenna corrections), corrected reading and the limit. The highest peaks are measured in quasi-peak detection mode at 3 meters distance.

Frequency (MHz)	Peak (dB $\mu$ V/m)	Quasi peak (dB $\mu$ V/m)	Margin (dB)	Polar.	Height (cm)	Angle (°)	Facteur Corr. (dB)	Comments
43,341	34,03	32,73	-7,27	V	123	264	12,44	
65,581	29,99	33,13	-6,87	V	123	264	7,94	
113,089	30,42	36,73	-3,27	V	113	254	12,92	
117,375	30,73	33,22	-6,78	V	113	254	13,15	
135,568	31,45	26,97	-13,03	V	113	210	13,17	
160,031	34,49	31,90	-8,10	V	113	47	13,48	
225,585	29,53	33,43	-6,57	V	113	230	13,71	
314,607	34,27	38,62	-7,38	V	112	231	15,96	
320,038	40,02	39,27	-6,73	V	106	303	16,17	



## 9.7 INTERPRETATION AND REMARKS:

The equipment complies with the §15.209 requirements

**10 INTENTIONAL RADIATOR VERSUS PART 15 SUBPART C §15.225, 15.209, 15.247****10.1 Measurement of frequency stability §15.225 (c)**

As the intentional emitter was already FCC approved (WML-C010 FCC ID P00WML-C10XX), testing according to this clause was not conducted. (See test report 4\_MITSU\_0102\_BTT\_FCCa)

**10.2 FCC Part 15, Subpart C, §15.247 (c)**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. (see test report 4\_MITSU\_0102\_BTT\_FCCa)

**10.3 Spurious Radiated Emissions****Standard FCC Part 15, Subpart C, 08/20/2002**

Measurements were performed on fundamental frequency h1 until the 10<sup>th</sup> harmonic. Preliminary spectrum signature was conducted at 1 meter from EUT, final measurement being conducted at 3 meters distance from EUT according to ANSIC63.4 measurement method described in §8.

The following modifications apply to the measurement procedure for the frequency range above 1 GHz: The measurement distance was reduced to 1m. The results were extrapolated by the extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements, inverse linear-distance squared for the power reference level measurements). Due to the fact that in this frequency range a double ridged wave guided horn antenna (up to 18 GHz) and a horn antenna (18-25 GHz) are used with one height of the receiving antenna only.

Detector: Peak, Average

RBW = VBW = 1 MHz, above 7 GHz 100 kHz



EMC TEST REPORT  
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14/14  
FCC registration  
# 90469

Written by : D.RAUD

October 28, 2003

Identification : 194002DK

Lower channel

Harmonic number	Frequency (MHz)	Corrected value at D= 1m dB $\mu$ V/m	Average Limit (D=3m) dB $\mu$ V/m (**)	Margin	Results
<b>Fundamental</b>	2.402	71			
<b>h2</b>	4.804	23.7	54	30.3	<b>Pass</b>
<b>h3</b>	7.206	NOISE FLOOR	54	—	<b>Pass</b>

Middle channel

Harmonic number	Frequency (MHz)	Corrected value at D= 1m dB $\mu$ V/m	Average Limit (D=3m) dB $\mu$ V/m (**)	Margin	Results
<b>Fundamental</b>	2.441	71			
<b>h2</b>	4.882	30.8	54	-23.2	<b>Pass</b>
<b>h3</b>	7.323	49	54	-6	<b>Pass</b>

Upper channel

Harmonic number	Frequency (MHz)	Corrected value at D= 1m dB $\mu$ V/m	Average Limit (D=3m) dB $\mu$ V/m (**)	Margin	Results
<b>Fundamental</b>	2.480	68.8			
<b>h2</b>	4.960	25.1	54	-28.9	<b>Pass</b>
<b>h3</b>	7.440	NOISE FLOOR	54	—	<b>Pass</b>

Remark: No further spurious emission below the limit found above 7.5 GHz.