

FCC LISTED,  
REGISTRATION  
NUMBER: 905266

IC LISTED,  
REGISTRATION  
NUMBER: IC 4621



**CENTRO DE  
TECNOLOGÍA DE LAS  
COMUNICACIONES, S.A.**

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## TEST REPORT

**Report No.: 24749RET**

**TEST NAME:** FCC PART 22 & PART 24

**Product** : GSM/GPRS ALARM TRANSMITTER  
**Trade Mark** : TELDAT SECURITY  
ALWON  
**Model/type Ref.** : mGPRSx, MSMSx, mGSMx, G40, S40, V40  
**Manufacturer** : ALWAYS ON ELECTRONICA APLICADA, S.L.  
**Requested by** : ALWAYS ON ELECTRONICA APLICADA, S.L.  
**Other identification of the product** : FCC ID: U5SP40  
IC: 6929A-P40  
ALWON P40  
**Standard(s)** : FCC Part 22 & 24

This test report includes 3 annexes and therefore the total number of pages is 37

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Date: 2007-03-20	Test operator A. Llamas 	Revised by: Date: 2007.03.20 J.C. Soler Consultant Approved by: Date: 2007.03.20 J.A. Rodrigo Technical Director 	Page: 1 of 7
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## INDEX

1. COMPETENCE AND GUARANTEES .....	3
2. GENERAL CONDITIONS .....	3
3. CHARACTERISTICS OF THE TEST .....	3
3.1 TEST REQUESTED.....	3
3.2 REQUIREMENTS AND METHOD .....	3
4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT.....	4
4.1 APPLICANT.....	4
4.2 REPRESENTATIVE .....	5
4.3 TEST SAMPLES SUPPLIER.....	5
4.4 IDENTIFICATION OF ITEM/ITEMS TESTED .....	5
5. USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS .....	5
5.1 USAGE OF SAMPLES .....	5
5.2 PERIOD OF TESTING .....	6
5.3 ENVIROMENTAL CONDITIONS.....	6
6. TEST RESULTS .....	7
7. REMARKS AND COMMENTS.....	7
8. SUMMARY.....	7

## ANNEXES

ANNEX A. TEST RESULTS FOR FCC PART 22

ANNEX B. TEST RESULTS FOR FCC PART 24

ANNEX C. PHOTOGRAPHS

## 1. COMPETENCE AND GUARANTEES

Centro de Tecnología de las Comunicaciones (AT4 WIRELESS), S.A. is a laboratory with a measurement facility in compliance with the requirements of Section 2.948 of the FCC rules and has been added to the list of facilities whose measurements data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Registration Number: 905266.

Centro de Tecnología de las Comunicaciones (AT4 WIRELESS), S.A. is a laboratory with a measurement site in compliance with the requirements of RSS 212, Issue 1 (Provisional) and has been added to the list of filed sites of the Canadian Certification and Engineering Bureau. Reference File Number: IC 4621.

In order to assure the traceability to other national and international laboratories, AT4 WIRELESS has a calibration and maintenance programme for its measuring equipment.

AT4 WIRELESS guarantees the reliability of the data presented in this report, which is the result of measurements and tests performed to the item under test on the date and under the conditions stated on the report and is based on the knowledge and technical facilities available at AT4 WIRELESS at the time of execution of the test.

AT4 WIRELESS is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the item under test and the results of the test.

## 2. GENERAL CONDITIONS

1. This report only refers to the item that has undergone the test.
2. This report does not constitute or imply by its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without written approval of AT4 WIRELESS.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of AT4 WIRELESS and the Accreditation Bodies.

## 3. CHARACTERISTICS OF THE TEST

### 3.1 TEST REQUESTED

1. Measurements for PCS 850 and PCS 1900 devices according to FCC parts 22 and 24:
  - Radiated RF output power.
  - Radiated emissions.

### 3.2 REQUIREMENTS AND METHOD

The test has been carried out according to the following documents and standards:

1. FCC part 22.
2. FCC part 24.

Report No.: 24749RET		Page: 3 of 7
Date: 2007-03-20		

Radiated testing was performed in AT4 WIRELESS's semi-anechoic chamber. This site has been fully described in a report submitted to the FCC and was accepted in a letter dated July 25, 2002. Radiated measurements were made in accordance with the general procedures of ANSI C63.4: 2003 and substitution method according to TIA/EIA 603-C: 2004.

Uncertainty (factor  $k=2$ ) was calculated according to the following AT4 WIRELESS's internal documents:

1. PODT000: Procedimiento para el cálculo de incertidumbres de medida

The instrumentation used to perform the testing is listed below:

1. Semianechoic Absorber Lined Chamber IR 11. BS.
2. Control Chamber IR 12.BC.
3. Spectrum Analyzer Agilent E4440A.
4. Bilog antenna CHASE CBL6111.
5. Antenna tripod EMCO 11968C.
6. Antenna mast EM 1072 NMT.
7. Rotating table EM 1084-4. ON.
8. Double-ridge Guide Horn antenna 1-18 GHz HP 11966E.
9. Double-ridge Guide Horn antenna 18-40 GHz Agilent 119665J.
10. RF pre-amplifier Miteq AFS5-04001300-15-10P-6.
11. RF pre-amplifier Miteq JS4-12002600-30-5A.
12. EMI Test Receiver R&S ESIB26.
13. Universal Radio communication Tester R&S CMU200.
14. 10 dB attenuator HP 8491B.
15. Multi Device Controller EMCO 2090.

#### 4. IDENTIFICATION DATA SUPPLIED BY THE APPLICANT

Identification data in this section has been supplied by the client.

##### 4.1 APPLICANT

**Name or Company:** ALWAYS ON ELECTRONICA APLICADA, S.L.

**V.A.T.:** B83408583

**Address:** c/ Fénix, 19

**City:** Madrid

**Postal code:** 28023

**Country:** SPAIN

**Telephone:** +34 917400317

**Fax:** +34 917400360

Report No.:  
24749RET

Date: 2007-03-20

Page: 4 of 7

## 4.2 REPRESENTATIVE

**Name:** Javier Badiola Guerra

## 4.3 TEST SAMPLES SUPPLIER

**Name or Company:** TELDAT SECURITY, S.L.

**V.A.T.:** B83605006

**Address:** c/ Isaac Newton, 10, PTM

**City:** Tres Cantos (Madrid)

**Postal code:** 28760

**Country:** SPAIN

**Telephone:** +34 918076565

**Fax:** +34 918076566

Samples undergoing test have been selected by: **the client.**

## 4.4 IDENTIFICATION OF ITEM/ITEMS TESTED

**Product:** GSM/GPRS transmitter

**Trade mark:** TELDAT Security, ALWON      **Model:** mGPRSx, MSMSx, mGSMx, G40, S40, V40

**Other identification of the product:** ALWON P40      FCC ID: U5SP40      IC: 6929A-P40

**Manufacturer:** ALWAYS ON ELECTRONICA APLICADA, S.L.

**Country of manufacture:** SPAIN

**Description:** GSM/GPRS alarm transmitter.

# 5. USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS

## 5.1 USAGE OF SAMPLES

Sample M/01 is formed by the following elements:

<u>Control No.</u>	<u>Description</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date of reception</u>
24749/06	GSM/GPRS module	G864	357023000019596	16/11/06
24749/08	Communication unit	G40	---	29/11/06
24749/09	Antenna base	---	---	13/12/06
24749/11	Antenna	---	---	13/12/06

1. Sample M/01 has undergone the following test(s).  
Radiated measurements indicated in annex A and B.

## 5.2 PERIOD OF TESTING

The performed test started on 2007-01-09 and finished on the same day.

The tests as detailed in this report have been performed at AT4 WIRELESS.

## 5.3 ENVIROMENTAL CONDITIONS

In the control chamber the following limits were not exceeded during the test:

Temperature	Min. = 22 °C Max. = 22 °C
Relative humidity	Min. = 49 % Max. = 549 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

In the semianechoic chamber (21 meters x 11 meters x 8 meters) the following limits were not exceeded during the test.

Temperature	Min. = 23 °C Max. = 23 °C
Relative humidity	Min. = 51 % Max. = 51 %
Air pressure	Min. = 1020 mbar Max. = 1020 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω
Normal site attenuation (NSA)	< ±4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogeneity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).

## 6. TEST RESULTS

Abbreviations used in the VERDICT column of the following tables are:

- P** Pass
- F** Fail
- NA** not applicable
- NM** not measured

FCC PART 22 PARAGRAPH	VERDICT			
	NA	P	F	NM
Clause 22.913: RF output power		P		
Clause 22.917: Radiated emissions		P		

FCC PART 24 PARAGRAPH	VERDICT			
	NA	P	F	NM
Clause 24.232: RF output power		P		
Clause 24.238: Radiated emissions		P		

## 7. REMARKS AND COMMENTS

None.

## 8. SUMMARY

Based on the results of the performed test, stated in annex A the item under test is **IN COMPLIANCE** with the specifications listed in section 3.1 “TEST REQUESTED”.

NOTE: The results presented in this Test Report apply only to the particular item under test declared in section 4.4 “IDENTIFICATION OF ITEM/ITEMS TESTED” of this document, as presented for test on the date(s) declared in section 5, “USAGE OF SAMPLES, PERIOD OF TESTING AND ENVIRONMENTAL CONDITIONS”.

Report No.: 24749RET		Page: 7 of 7
Date: 2007-03-20		

**ANNEX A**

**TEST RESULTS FOR FCC PART 22**

**Report No: 24749RET**

Report No:  
24749RET

Date: 2007-03-20

Page: 1 of 12

Annex A



## INDEX

	Page
TEST CONDITIONS .....	3
RF Output Power (E.R.P.) .....	4
Radiated emissions .....	5

Report No:  
24749RET

Date: 2007-03-20

Page: 2 of 12

Annex A

## TEST CONDITIONS

Power supply (V):

$$V_{\text{nom}} = 12 \text{ Vdc or } 12 \text{ Vac}$$

Type of power supply = DC or AC Voltage from external power supply

Type of antenna = external connectable antenna with sma type connector

## TEST FREQUENCIES:

Lowest channel (128): 824.2 MHz

Middle channel (190): 836.6 MHz

Highest channel (251): 848.8 MHz

Report No: 24749RET		Page: 3 of 12
Date: 2007-03-20		Annex A

## RF Output Power (E.R.P.)

### SPECIFICATION

§2.1046 and 22.913

### METHOD

For radiated measurements the EUT was placed on a 1 m high non-conductive stand inside an anechoic chamber. The measuring antenna was placed at 3 m distance and the maximum field strength was measured for the three channels. The EUT was controlled via the Universal Radio Communication tester R&S CMU200 selecting maximum transmission power of the EUT and GMSK modulated signal.

The Effective Radiated Power (E.R.P.) is obtained by using the Substitution Method according to ANSI/TIA/EIA-603-C: 2004.

### RESULTS

MAXIMUM EFFECTIVE RADIATED POWER E.R.P. (RADIATED).

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	20.16	20.14	20.46
Maximum peak power (W)	0.10	0.10	0.11
Measurement uncertainty (dB)	$\pm 3.8$		

Verdict: PASS

Report No: 24749RET		Page: 4 of 12
Date: 2007-03-20		Annex A

## **Radiated emissions**

### SPECIFICATION

§ 22.917

### METHOD

The measurement was performed with the EUT inside an anechoic chamber. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The EUT was placed on a 1 meter high non-conductive stand at a 3 meter distance from the measuring antenna for measurements below 1 GHz and at 1 m distance for measurements above 1 GHz.

Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum meter reading was recorded. The radiated emissions were measured with peak detector and 1 MHz bandwidth.

Each detected emissions were substituted by the Substitution method, in accordance with the ANSI/TIA/EIA-603-C: 2004.

#### **Measurement Limit:**

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB, P in watts.

At  $P_o$  transmitting power, the specified minimum attenuation becomes  $43 + 10 \log (P_o)$ , and the level in dBm relative  $P_o$  becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = -13 \text{ dBm}$$

Report No: 24749RET		Page: 5 of 12
Date: 2007-03-20		Annex A

## RESULTS

1. CHANNEL: LOWEST (824.2MHz).

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in all the range.

**Frequency range 1 GHz-12.75 GHz.**

Carrier level (dBm) = 20.16

Spurious frequency (MHz)	Level (dBm)	Polarization	Attenuation below carrier (dBc)
1648.480	-32.72	Horizontal	52.88
2472.583	-38.16	Vertical	58.32

2. CHANNEL: MIDDLE (836.6 MHz).

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in all the range.

**Frequency range 1 GHz-12.75 GHz.**

Carrier level (dBm) = 20.14

Spurious frequency (MHz)	Level (dBm)	Polarization	Attenuation below carrier (dBc)
1673.473	-32.67	Horizontal	52.81
2510.092	-35.83	Vertical	55.97

3. CHANNEL: HIGHEST (848.8 MHz).

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in all the range.

**Frequency range 1 GHz-12.75 GHz.**

Carrier level (dBm) = 20.46

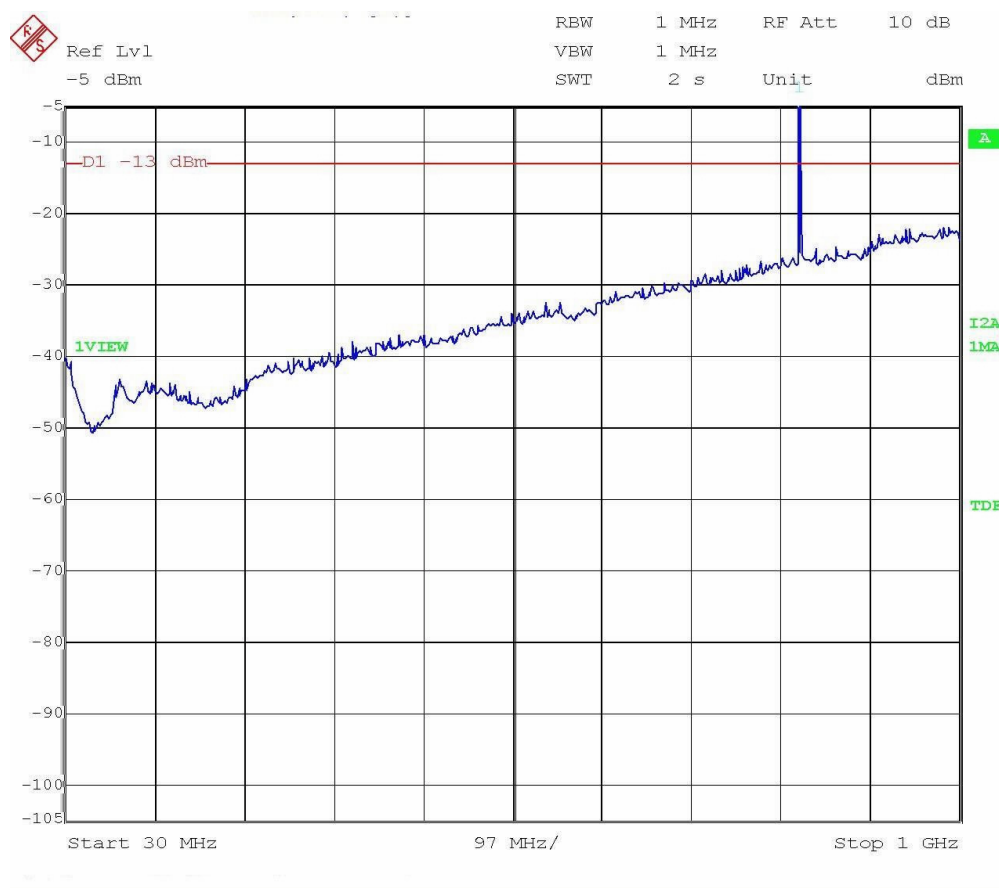
Spurious frequency (MHz)	Level (dBm)	Polarization	Attenuation below carrier (dBc)
1697.583	-31.26	Horizontal	51.72
2546.384	-34.33	Vertical	54.79

Verdict: PASS

Report No: 24749RET		Page: 6 of 12
Date: 2007-03-20		Annex A

FREQUENCY RANGE 30 MHz-1000 MHz.

CHANNEL: LOWEST (824.2 MHz)



Note: The peak above the limit is the carrier frequency.

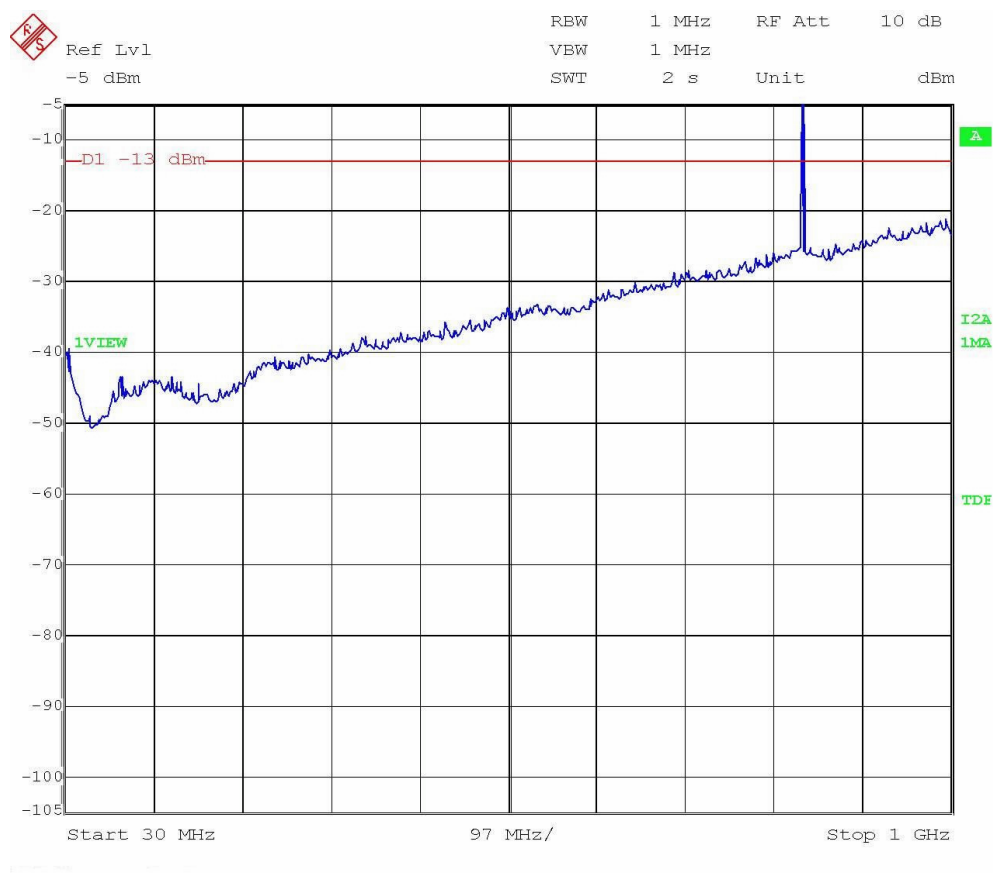
Report No:  
24749RET

Date: 2007-03-20

Page: 7 of 12

Annex A

CHANNEL: MIDDLE (836.6 MHz)



Note: The peak above the limit is the carrier frequency.

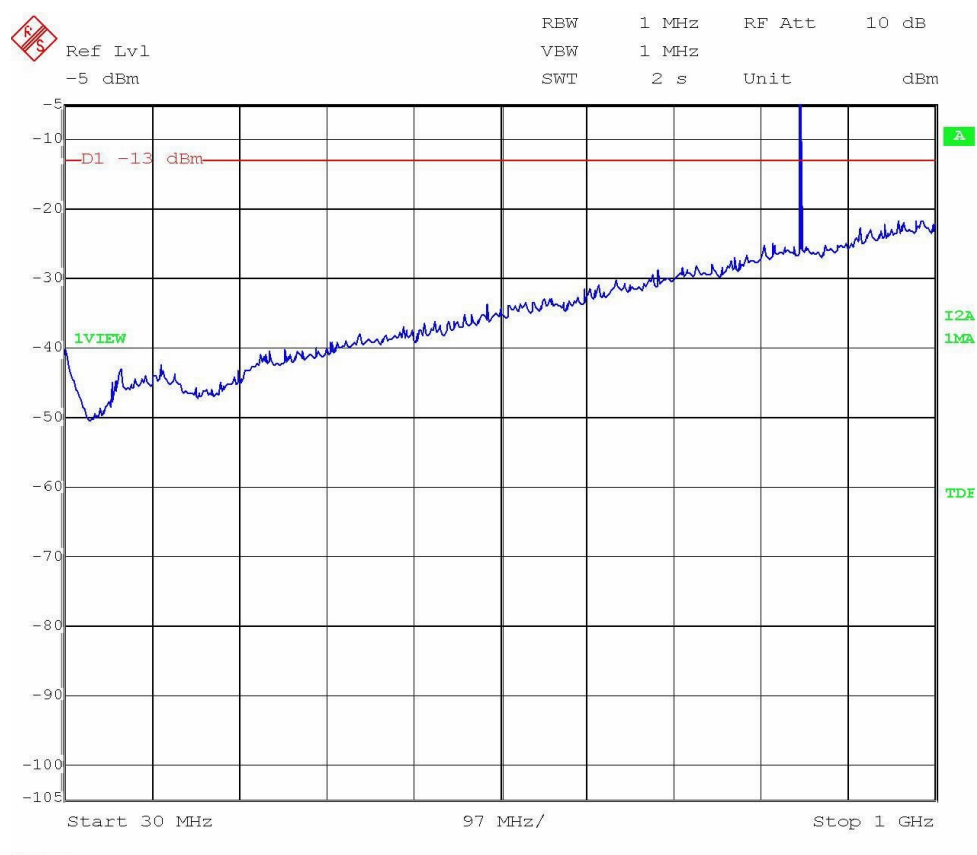
Report No:  
24749RET

Date: 2007-03-20

Page: 8 of 12

Annex A

CHANNEL: HIGHEST (848.8 MHz)



Note: The peak above the limit is the carrier frequency.

Report No:  
24749RET

Date: 2007-03-20

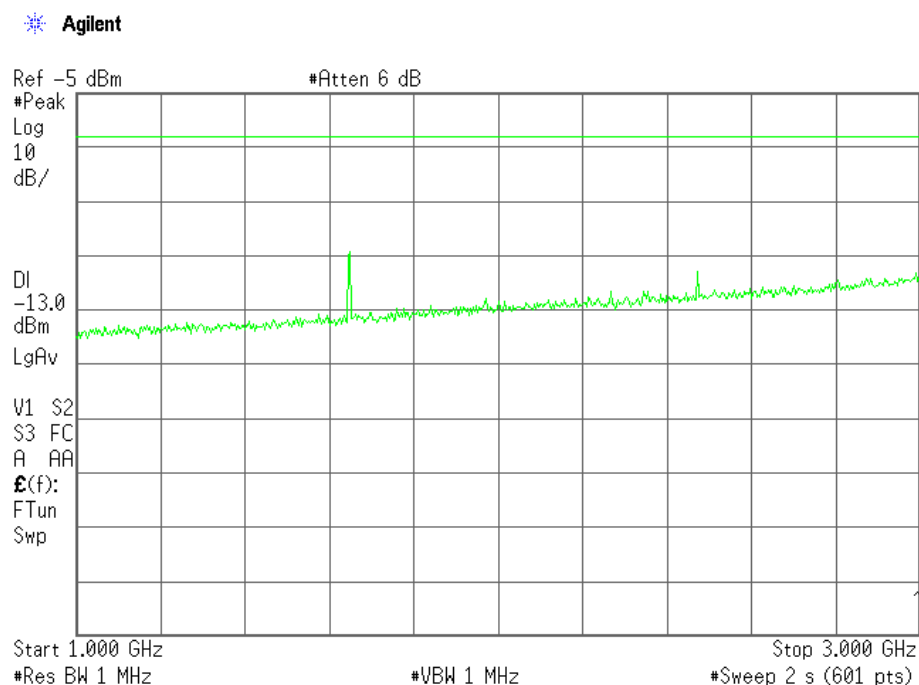
Page: 9 of 12

Annex A

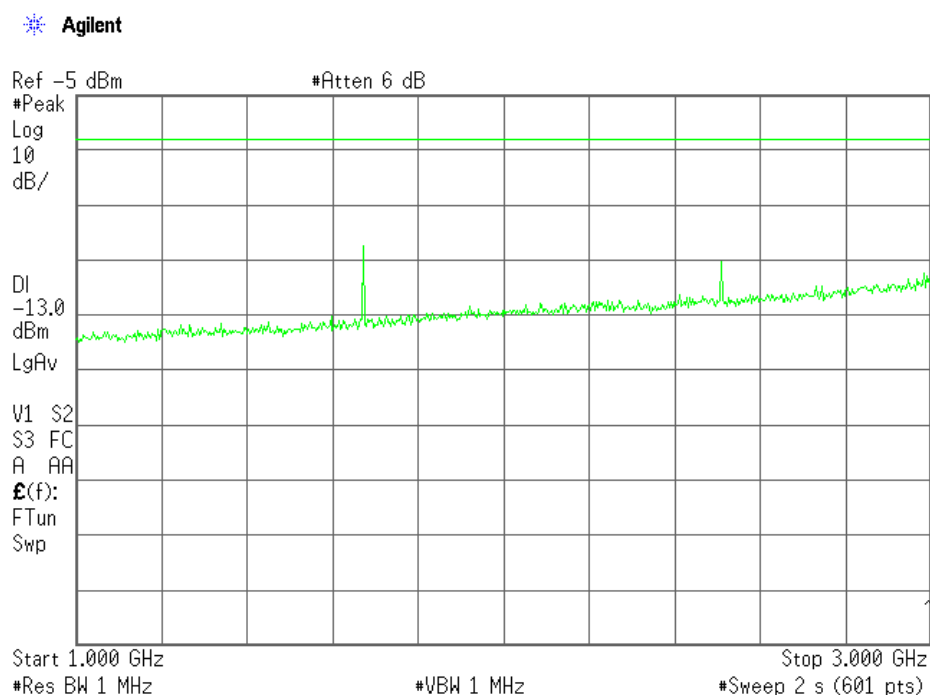


# FREQUENCY RANGE 1 GHz to 3 GHz.

CHANNEL: LOWEST (824.2 MHz)



CHANNEL: MIDDLE (836.6 MHz)



Report No:  
24749RET

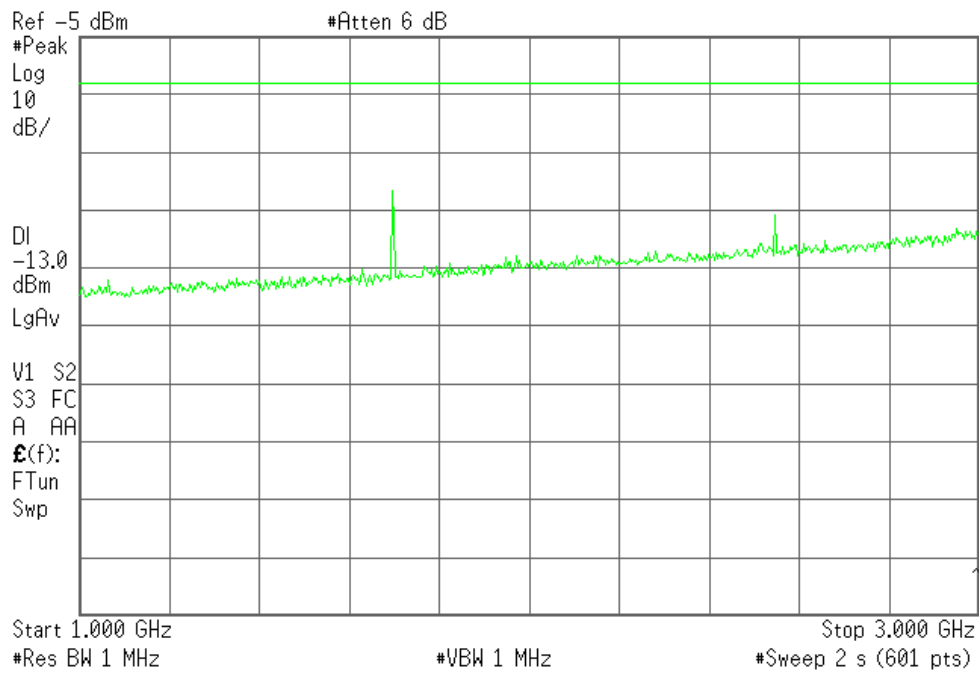
Date: 2007-03-20

Page: 10 of 12

Annex A

CHANNEL: HIGHEST (848.8 MHz)

 Agilent



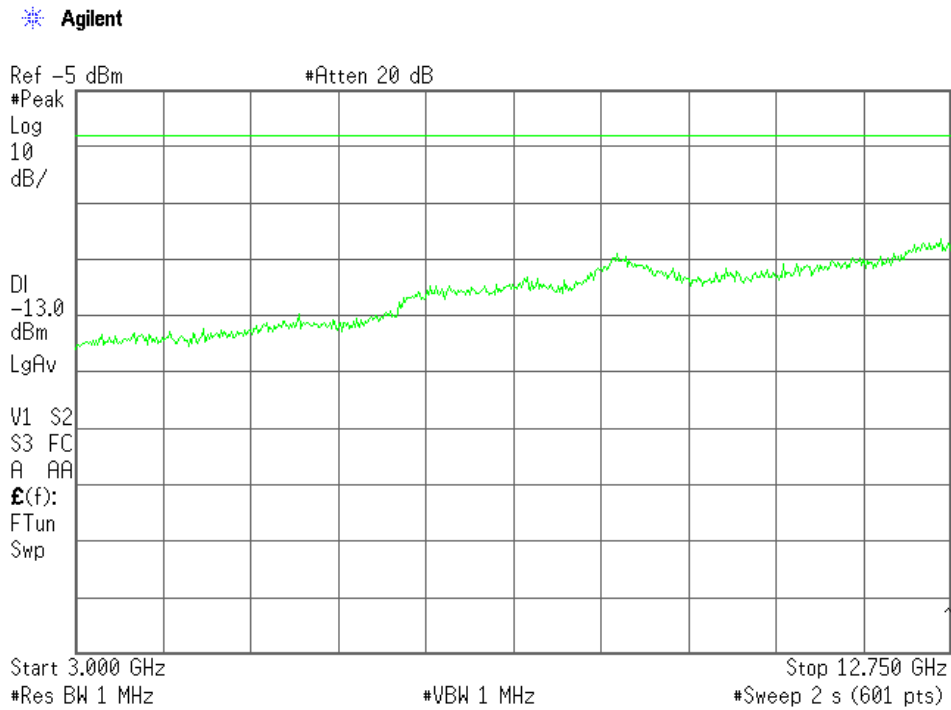
Report No:  
24749RET

Date: 2007-03-20

Page: 11 of 12

Annex A

# FREQUENCY RANGE 3 GHz to 12.75 GHz.



(This plot is valid for all three channels).

Report No:  
24749RET

Date: 2007-03-20

FET45\_00.DOC

Page: 12 of 12

Annex A

**ANNEX B**

**TEST RESULTS FOR FCC PART 24**

**Report No: 24749RET**

Report No:  
24749RET

Date: 2007-03-20

Page: 1 of 13

Annex B

# INDEX

	Page
TEST CONDITIONS .....	3
RF Output Power (E.I.R.P.).....	4
Radiated emissions .....	5

Report No: 24749RET		Page: 2 of 13
Date: 2007-03-20		Annex B

## TEST CONDITIONS

Power supply (V):

$$V_{\text{nom}} = 12 \text{ Vdc or } 12 \text{ Vac}$$

Type of power supply = DC or AC Voltage from external power supply

Type of antenna = external connectable antenna with sma type connector

## TEST FREQUENCIES:

Lowest channel (512): 1850.2 MHz

Middle channel (662): 1880.2 MHz

Highest channel (810): 1909.8 MHz

Report No: 24749RET		Page: 3 of 13
Date: 2007-03-20		Annex B

## RF Output Power (E.I.R.P.)

### SPECIFICATION

§2.1046 and 24.232

### METHOD

For radiated measurements the EUT was placed on a 1 m high non-conductive stand inside an anechoic chamber. The measuring antenna was placed at 1 m distance and the maximum field strength was measured for the three channels. The EUT was controlled via the Universal Radio Communication tester R&S CMU200 selecting maximum transmission power of the EUT and GMSK modulated signal.

The Effective Isotropic Radiated Power (E.I.R.P.) is obtained by using the Substitution Method according to ANSI/TIA/EIA-603-C: 2004.

### RESULTS

#### MAXIMUM EQUIVALENT ISOTROPIC RADIATED POWER E.I.R.P. (RADIATED).

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	23.79	23.98	23.82
Maximum peak power (W)	0.24	0.25	0.24
Measurement uncertainty (dB)	$\pm 4.0$		

Verdict: PASS

Report No: 24749RET		Page: 4 of 13
Date: 2007-03-20		Annex B

## **Radiated emissions**

### SPECIFICATION

§ 24.238

### METHOD

The measurement was performed with the EUT inside an anechoic chamber. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The EUT was placed on a 1 meter high non-conductive stand at a 3 meter distance from the measuring antenna for measurements below 1 GHz and at 1 m distance for measurements above 1 GHz.

Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum meter reading was recorded. The radiated emissions were measured with peak detector and 1 MHz bandwidth.

Each detected emissions were substituted by the Substitution method, in accordance with the ANSI/TIA/EIA-603-C: 2004.

#### **Measurement Limit:**

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB, P in watts.

At  $P_o$  transmitting power, the specified minimum attenuation becomes  $43 + 10 \log (P_o)$ , and the level in dBm relative  $P_o$  becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = - 13 \text{ dBm}$$

Report No: 24749RET		Page: 5 of 13
Date: 2007-03-20		Annex B



## RESULTS

1. CHANNEL: LOWEST (1850.2MHz).

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in all the range.

**Frequency range 1 GHz-20 GHz.**

Carrier level (dBm) = 23.79

Spurious frequency (MHz)	Level (dBm)	Polarization	Attenuation below carrier (dBc)
3700.530	-42.38	Vertical	66.17

2. CHANNEL: MIDDLE (1880.2 MHz).

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in all the range.

**Frequency range 1 GHz-20 GHz.**

Carrier level (dBm) = 23.98

Spurious frequency (MHz)	Level (dBm)	Polarization	Attenuation below carrier (dBc)
3760.400	-42.16	Vertical	66.14

3. CHANNEL: HIGHEST (1909.8 MHz).

**Frequency range 30 MHz-1000 MHz.**

No spurious signals were found in all the range.

**Frequency range 1 GHz-20 GHz.**

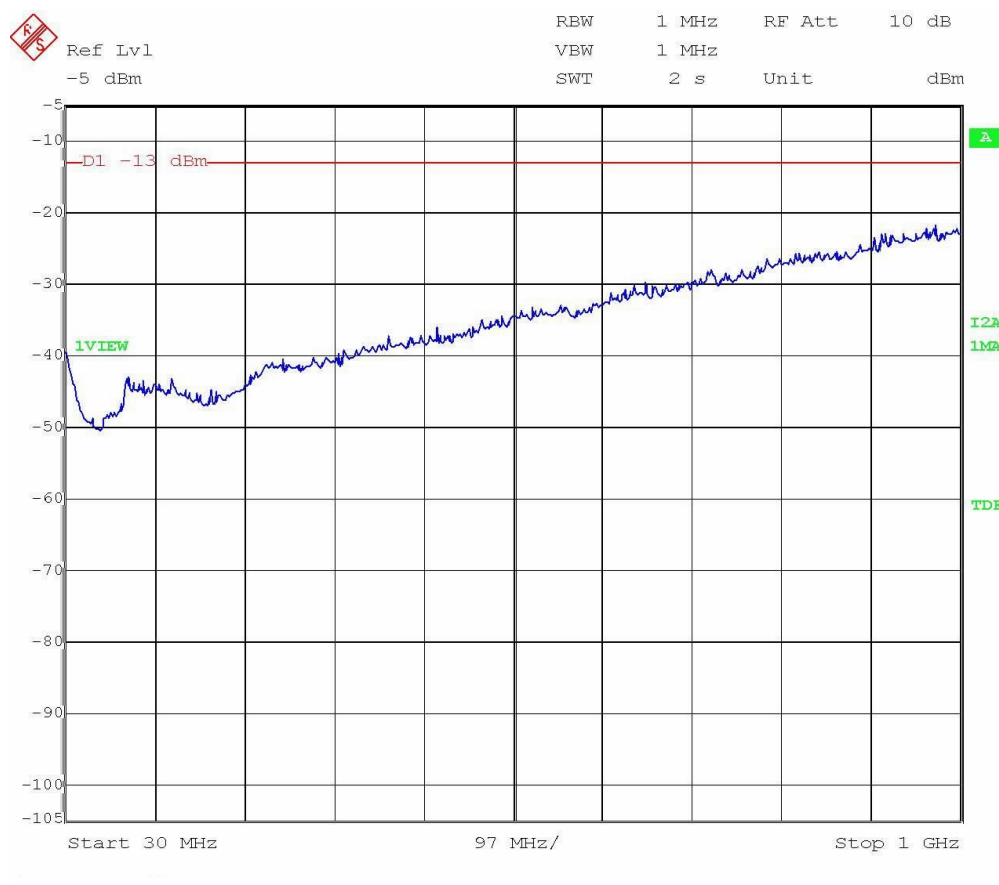
Carrier level (dBm) = 23.82

Spurious frequency (MHz)	Level (dBm)	Polarization	Attenuation below carrier (dBc)
3819.480	-44.14	Vertical	67.96

Verdict: PASS

Report No: 24749RET		Page: 6 of 13
Date: 2007-03-20		Annex B

# FREQUENCY RANGE 30 MHz-1000 MHz.



(This plot is valid for all three channels).

Report No:  
24749RET

Date: 2007-03-20

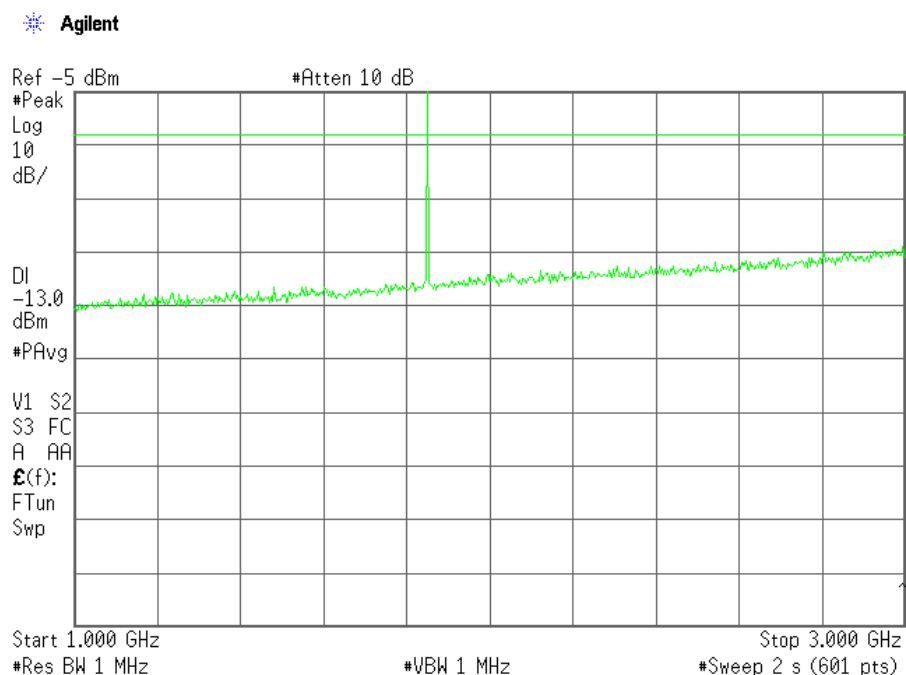
FET45\_00.DOC

Page: 7 of 13

Annex B

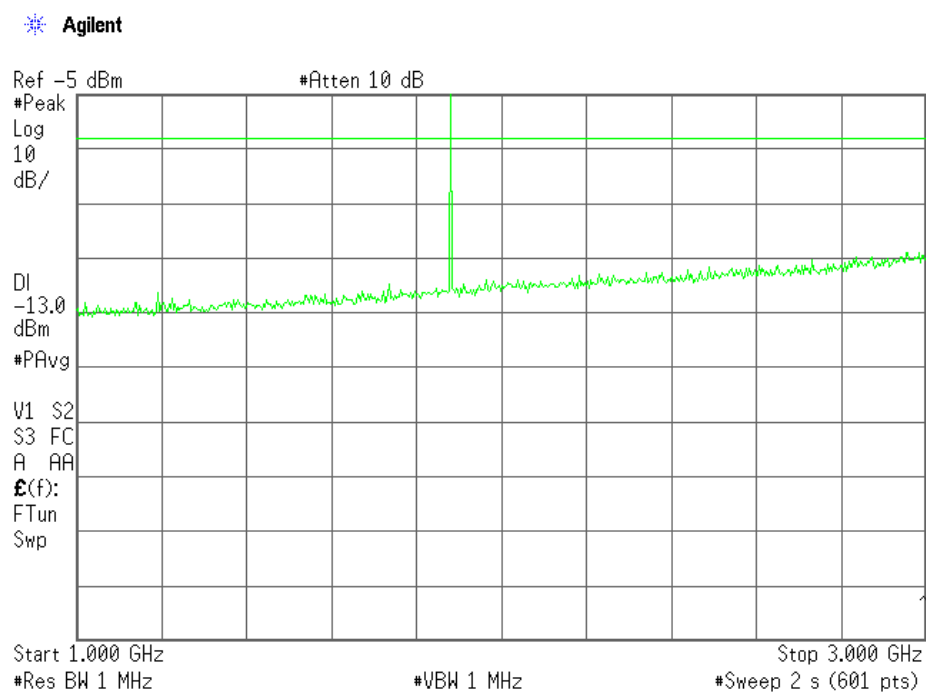
# FREQUENCY RANGE 1 GHz to 3 GHz.

CHANNEL: LOWEST (1850.2 MHz)



Note: The peak above the limit is the carrier frequency.

CHANNEL: MIDDLE (1880.2 MHz)



Note: The peak above the limit is the carrier frequency.

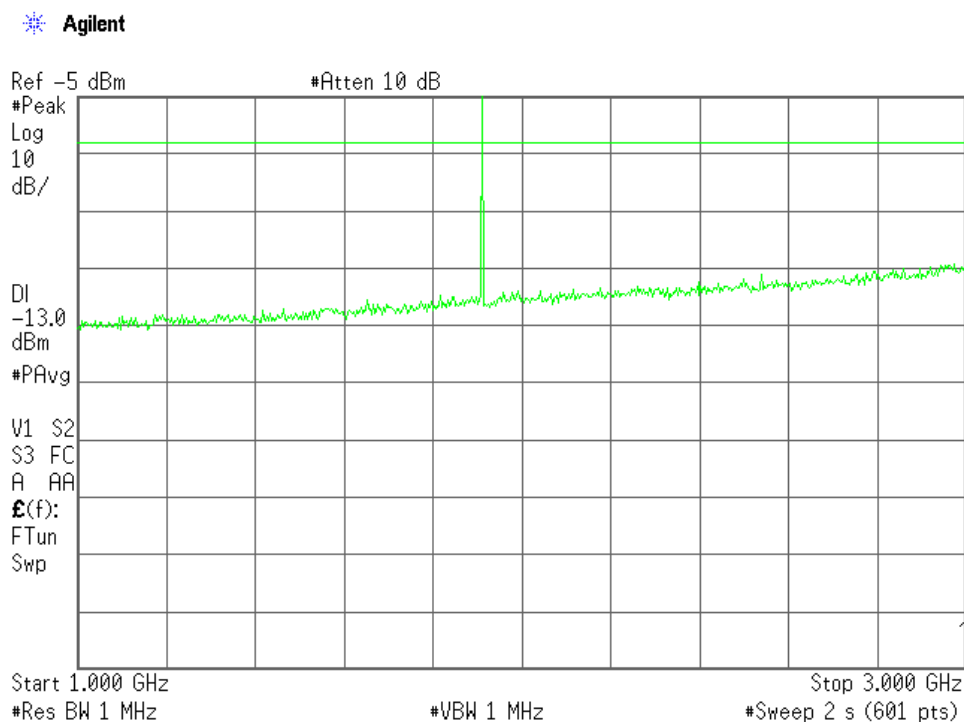
Report No:  
24749RET

Date: 2007-03-20

Page: 8 of 13

Annex B

CHANNEL: HIGHEST (1909.8 MHz)



Note: The peak above the limit is the carrier frequency.

Report No:  
24749RET

Date: 2007-03-20

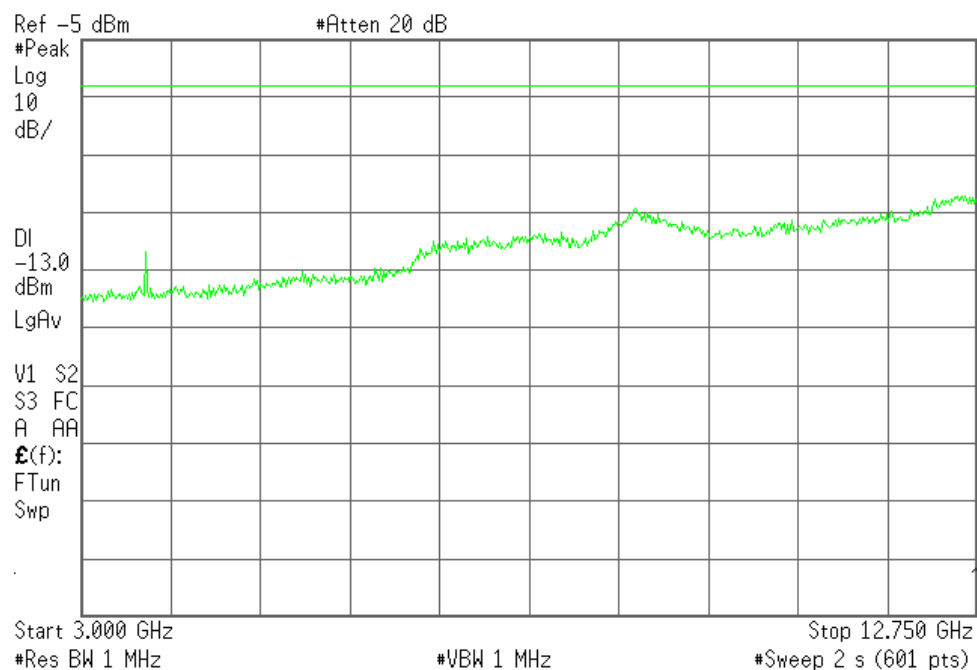
Page: 9 of 13

Annex B

FREQUENCY RANGE 3 GHz to 12.75 GHz.

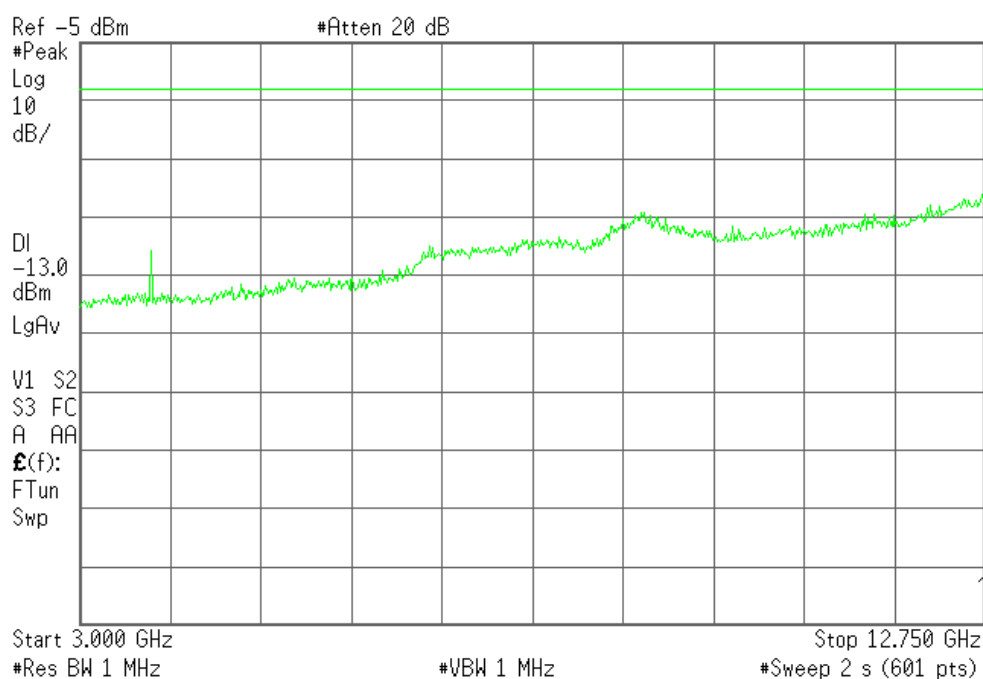
CHANNEL: LOWEST (1850.2 MHz)

 Agilent



CHANNEL: MIDDLE (1880.2 MHz)

 Agilent



Report No:  
24749RET

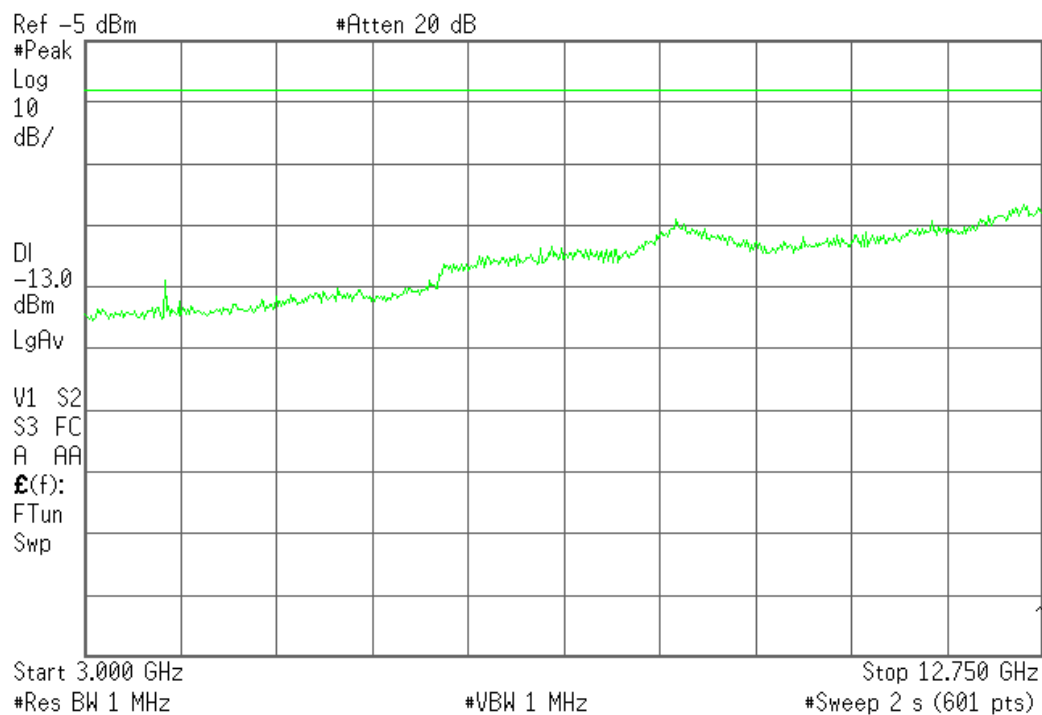
Date: 2007-03-20

Page: 10 of 13

Annex B

CHANNEL: HIGHEST (1909.8 MHz)

 Agilent



Report No:  
24749RET

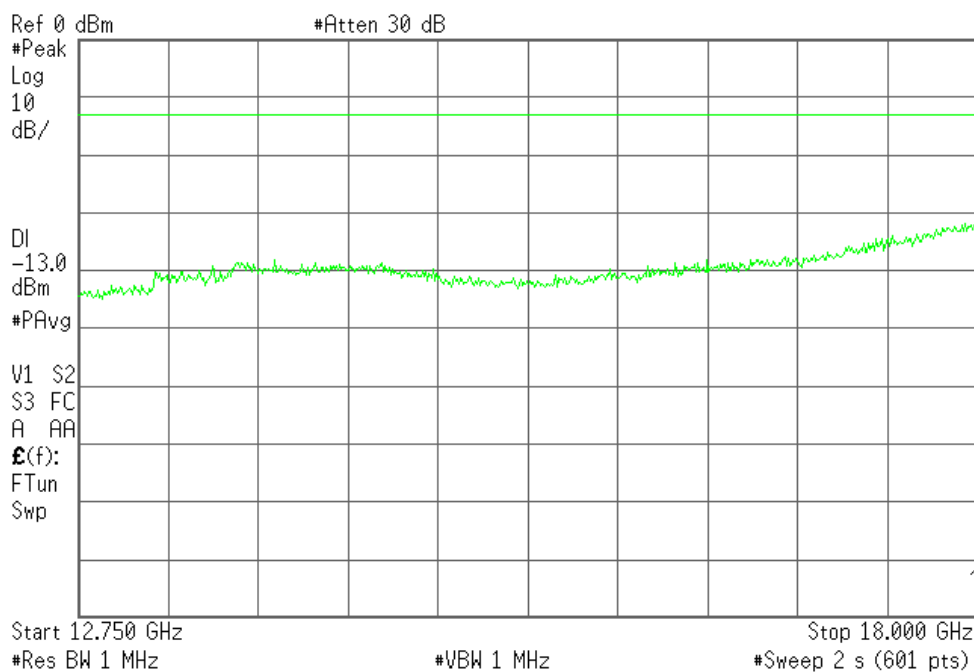
Date: 2007-03-20

Page: 11 of 13

Annex B

# FREQUENCY RANGE 12.75 GHz TO 18 GHz.

✱ **Agilent**



(This plot is valid for all three channels).

Report No:  
24749RET

Date: 2007-03-20

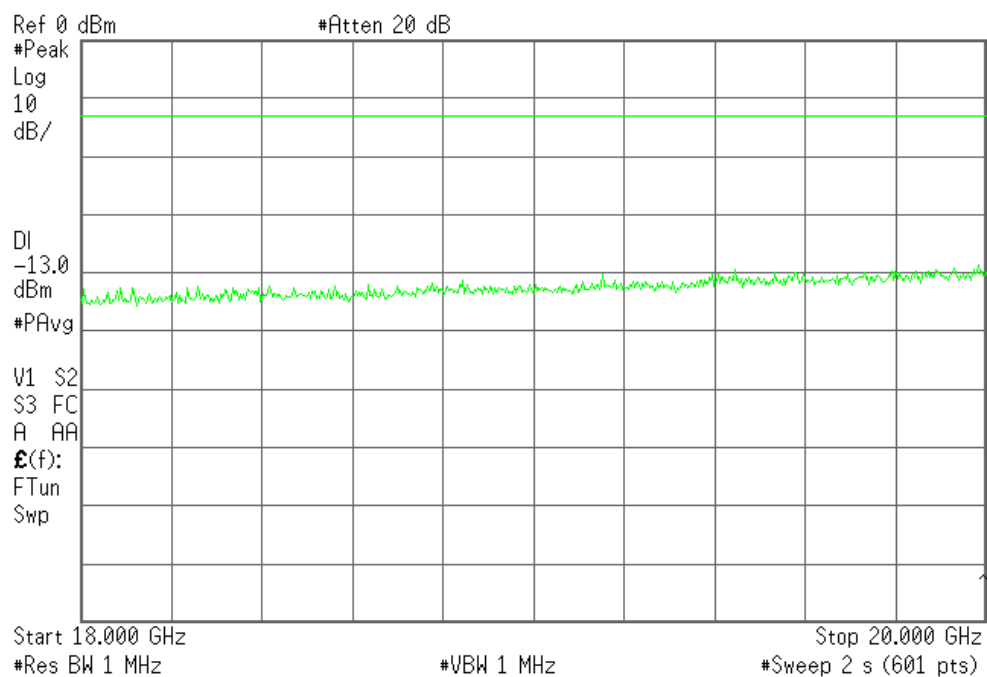
FET45\_00.DOC

Page: 12 of 13

Annex B

# FREQUENCY RANGE 18 GHz TO 20 GHz.

✧ Agilent



(This plot is valid for all three channels).

Report No:  
24749RET

Date: 2007-03-20

Page: 13 of 13

Annex B



## **ANNEX C**

### **PHOTOGRAPHS (Number of photographs: 4)**

**Report No.: 24749RET**

Report No.:  
24749RET

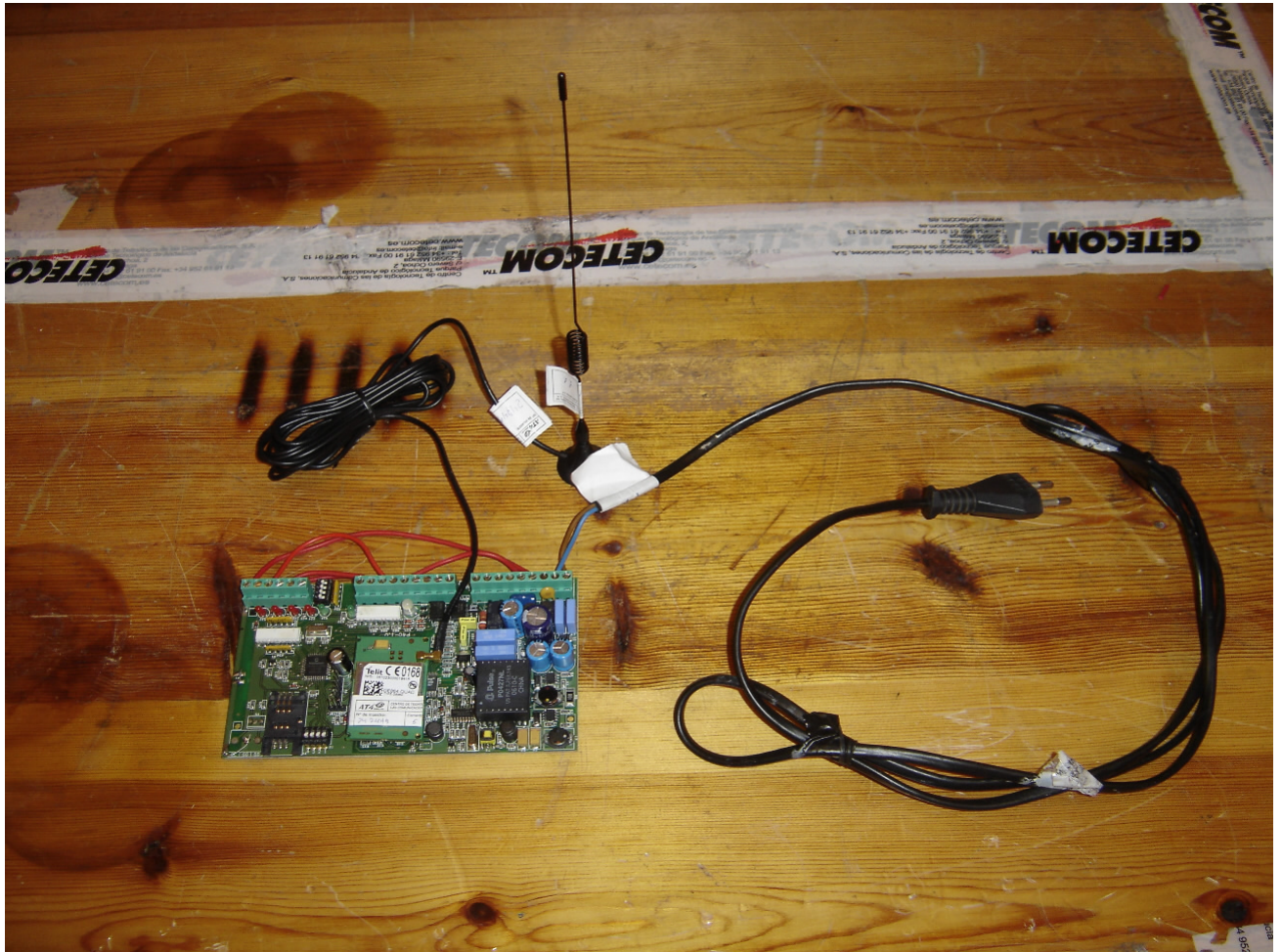
Date: 2007-03-20

FET18\_00.DOC

Page: 1 of 5

Annex C

1. Equipment (front view)



Report No.:  
24749RET

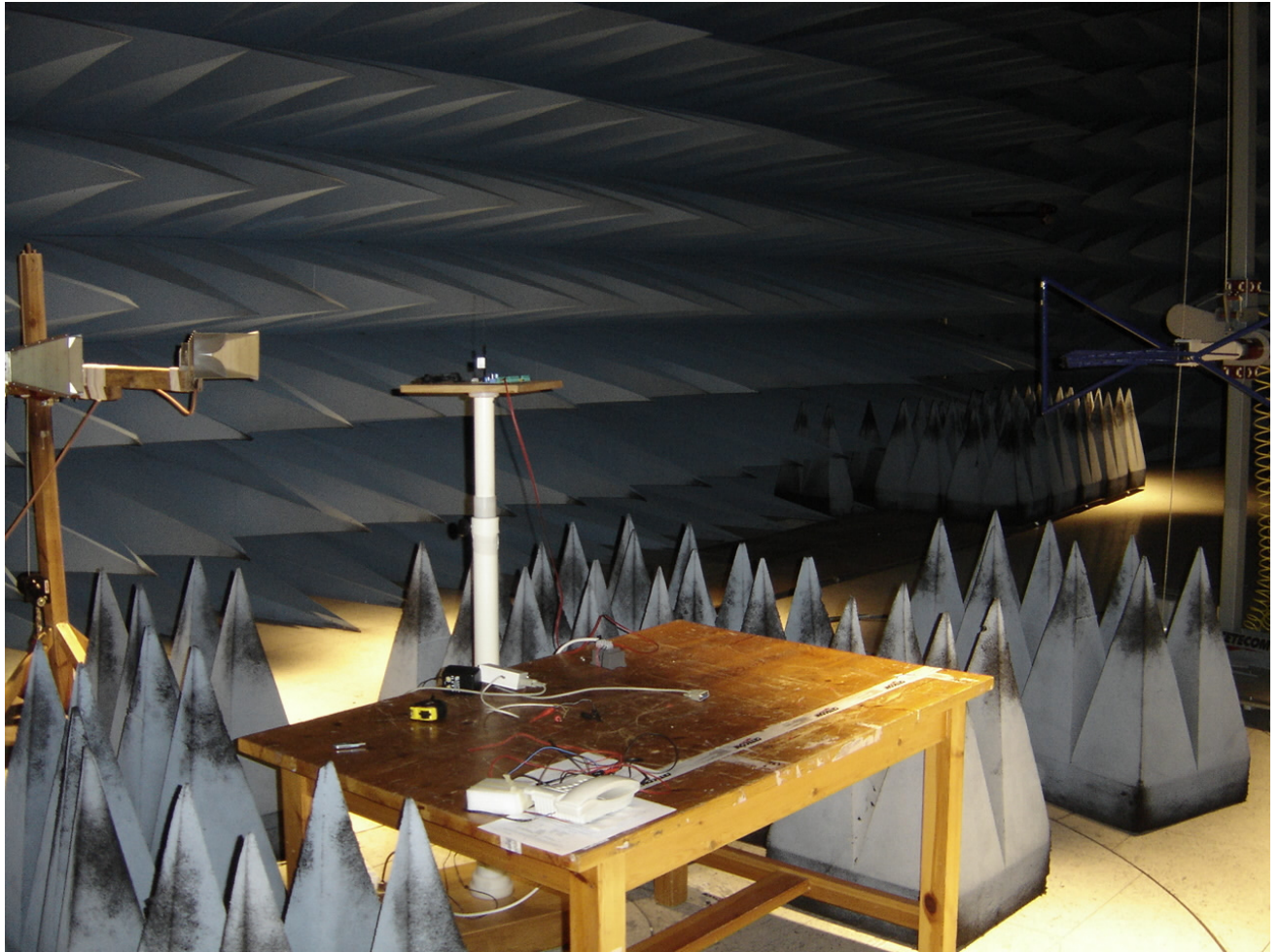
Date: 2007-03-20

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Page: 2 of 5

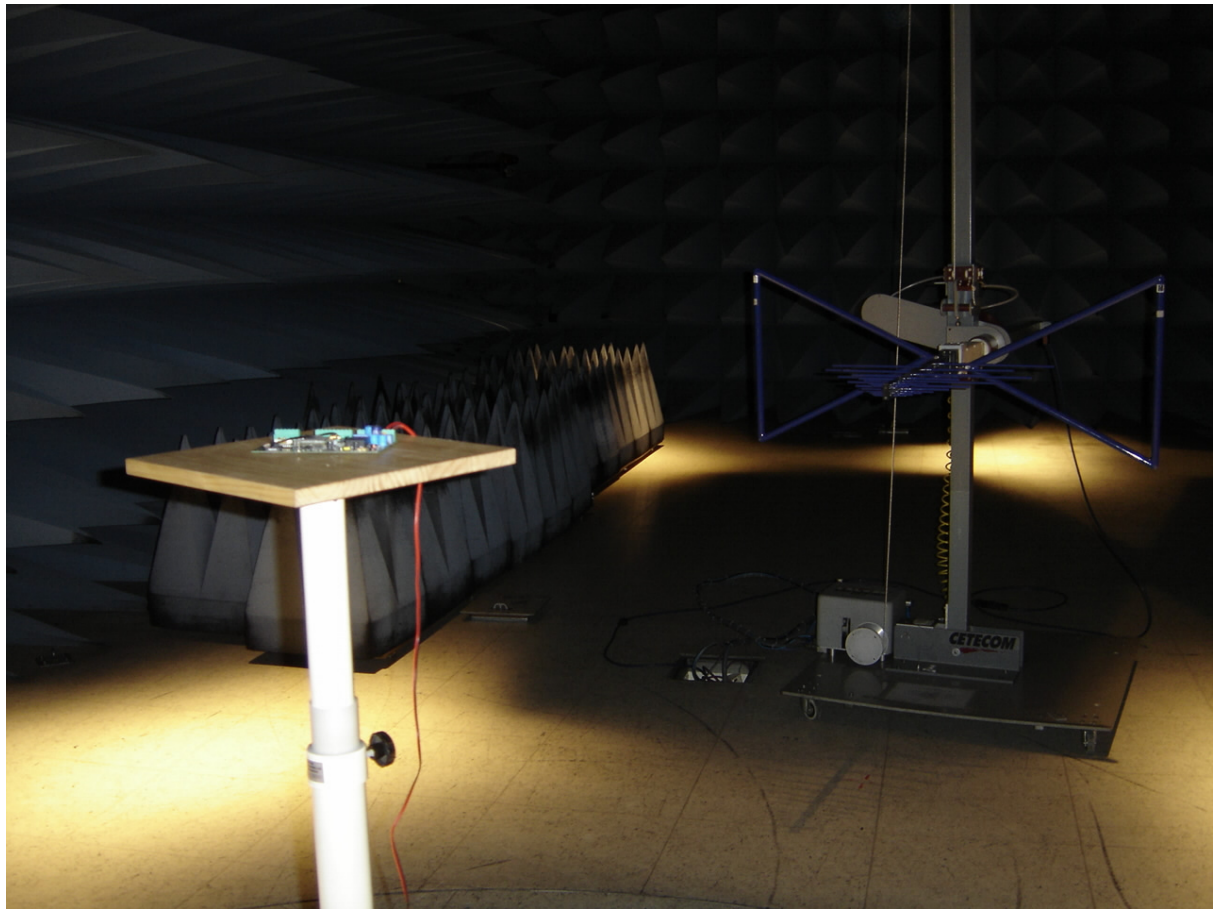
Annex C

## 2. Test set-up for radiated measurements.





### 3. Test set-up for radiated measurements below 1 GHz.



Report No.:  
24749RET

Date: 2007-03-20

FET18\_00.DOC

Page: 4 of 5

Annex C

#### 4. Test set-up for radiated measurements above 1 GHz.



Report No.:  
24749RET

Date: 2007-03-20

FET18\_00.DOC

Page: 5 of 5

Annex C