Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

EQUIPMENT UNDER TEST :
APPARECCHIO IN PROVA :

KTC kit transmission of commands
Type TG02, Model 202D, Configuration K02

REFERENCE STANDARDS :
NORME DI RIFERIMENTO :

FCC 47 CFR Part 15

CUSTOMER:

RICHIEDENTE:

- **Dept. / Firm :** *Ente / Società':* *AUTEC S.r.l.*
- **Mr.:** *Sig.:* *BIANCHIN STEFANO*
- **Address:** *Indirizzo:* *VIA POMAROLI, 65 - 36030 CALDOGNO (VI) - ITALY*
- **Tel.** : *Telefono :* *++39 0444 901000*
- **Telefax** *Fax :* *++39 0444 901080*
- **E-mail:** *e-mail* *sbianchin@autec.it*

Site of test execution: Via Campagna, 92 - 22020 Gaggino Faloppio (CO) - Italy
Località esecuzione prove:

Date of test samples receipt: **26/05/04**
Data ricevimento campioni:

Date of start test: **26/05/04**
Data inizio prove:

Date of end test: **07/06/04**
Data fine prove:

Witness to the test:
Presenti alle prove:

Nobody / Nessuno
…….

Signature of the engineers:
Firma esecutore prove:

F. Barbierato

Signature of the Laboratory Director:
Firma Direttore Laboratori:

R. Furfari

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

0. CONTENTS

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

1. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 Identification

Brand name:	AUTEC
Equipment :	KTC kit transmission commands
Model name or No. :	Type TF02
	Model B07D
Serial number :	Prototype
FCC ID :	OQA-TG02202D
Country of manufacturer:	ITALY

1.2 Technical data

FCC class:	Intentional Radiators
TX module type :	E16STXUS1
Maximum internal frequency generated by EUT :	14 MHz
Supply voltage:	9-30 Vdc -ac
Typical usage :	Fixed radio remote control used to command Industrial machines
EUT single or system:	Single
EUT dimensions :	160 x 110 x 75 mm

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

1.3 Transmitter technical data

TRANSMITTER	
• Working Frequency :	902,150 – 927,725 MHz separated in 32 programmable radio channel
• Frequency Range of Operation :	902 – 928 MHz
• Antenna type :	External with 2,5 m long cable

1.4 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test :

- None

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

1.5 Ports identification

This section contains descriptions of all signal ports and AC/DC power input/output ports, the length and the type of the cable provided by manufacturer needed for the tests.

Moreover it is specified if the ports are ever or optionally connected.

Port		Description	Connection
1	Enclosure	Plastic surface	By screws
2	AC power input/output ports	9 – 30 Vac by external source (in alternative to DC power source)	Terminal
3	DC power input/output ports	9 – 30 Vdc by external source (in alternative to AC power source)	Terminal
4	Signals ports	Signal line and output contact relay	terminal
Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.			

1.6 Auxiliary equipment

- A generic AC/AC power supply (VARIAC)

- DC Linear power supply Delta Elektronika mod. SMX 7220-D

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

2. TEST CONDITIONS

2.1 Operating test modes and test conditions

The equipment has been tested according to the operative conditions described in the user/installation manual provided by the manufacturer and by following reference standards :

Reference Standard:

FCC Part 15, Subpart C, Section 15.231 and 15.249

In the following table there are the operating conditions adopted during tests identified by an indicator (#..) at which has been referred the item “Operating condition of the equipment under test” of all technical sheets of the tests (see Section 4)

Operating condition	*Description*
#1	*Continuous transmission*

2.2 Test overview

Sample tested is the main model of a complete set of 915 MHz RF transmitters.

The appliance is classified as “*intentional radiator”* in conformity to FCC Part 15 Sub. A §15.201, and it is subject to “*Certification*” procedure.

The application is mainly used as Industrial machines radio remote control; the RF signal when the apparatus is switch-on is continuously present.

It is possible to declare that the appliance it is subject to additional requirements stated in §15.249

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

3. REFERENCE STANDARD FOR PERFORMED TESTS

Reference standard :	*Title :*
FCC Part 15 part A	Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC)
FCC Part 15 part C	Code of Regulations Part 15 (Radio Frequency Devices), Subpart C (Intentional Radiators) of the Federal Communication Commission (FCC)
ANSI C63.4	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

4. SUMMARY OF TEST RESULTS

4.1 Tests

	Port	Phenomena	Operating condition[1]	Result
1	Enclosure	Radiated emission	#1	Within the limit
		Frequency stability	Not applicable	
2	AC mains Input ports	RF Disturbance voltage: • continuous	#1	Within the limit
3	DC Power supply and Battery	Bandwidth of emission	#1	Within the limit

[1] Ref. Tab. of Section 2

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

4.2 Emission limits

Acc. to §15.249 for intentional radiator operated within the frequency band 902-928 MHz

Frequency (MHz)	Field Strength of fundamental at a distance of 3m (μV/m)	Field Strength of spurious emission at a distance of 3m (μV/m)
902 – 928	**50**	**500**

According to §15.209 all the other emission of the appliance shall not exceed the following levels:

Frequency (MHz)	Field Strength at a distance of 3m (μV/m)
30 - 88	**100 ****
88 – 216	**150 ****
216 – 960	**200 ****
Above 960	**500**

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permItted under other sections of this part, e.g., §§ 15.231 and 15.241.

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

5. TEST RESULTS

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

TEST 1.

EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE

REFERENCE DOCUMENT FCC PART 15 subpart B

- **TEST LOCATION:** Semianechoic chamber
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESMI
  Artificial Network Rohde & Schwarz Mod. ESH3-Z5

- **TESTED PORT:** AC mains
- **FREQUENCY RANGE:** 0.15 - 30 MHz
- **EMISSION LIMITS:** Acc. to reference document 15.107
- **MEASUREMENT UNCERTAINTY:** Total uncertainty (k=2) ± 2.5 dB

TEST CONDITIONS:			**MEASURED**
Ambient temperature :	**15 - 35 °C**		**24 ± 3 °C**
Ambient humidity :	**25 - 75 %rH**		**40 ± 5 %rH**
Pressure :	**85 - 106 kPa**	**(860 mbar - 1060 mbar)**	**950 ± 50 mbar**
Voltage :	**110Vac**		**98 Vac ± 3%**

OPERATING CONDITION (Rif. Section. 2) : #1

RESULT: Within the limits

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

SCAN TABLE : Voltage Mains

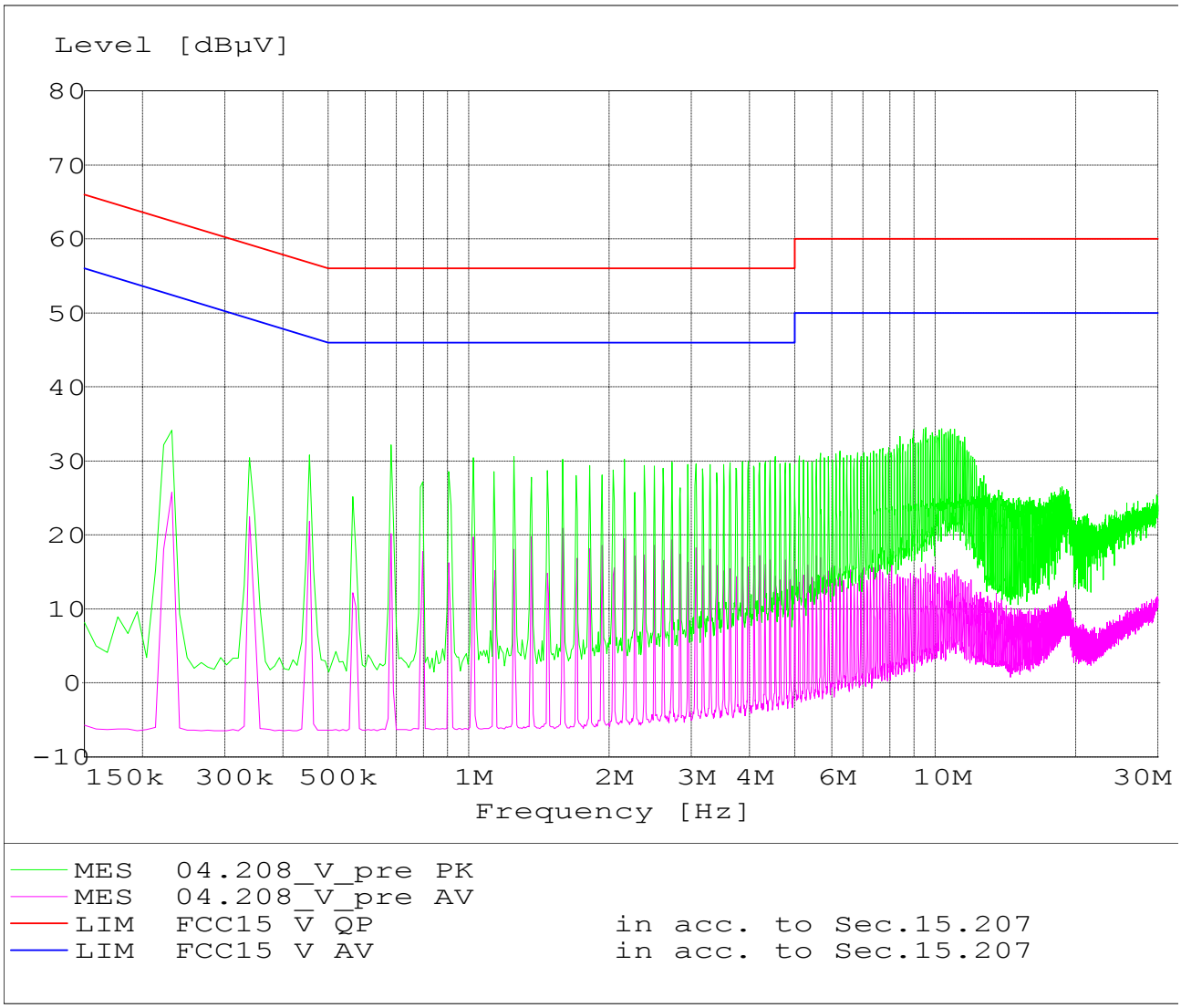
Unit :	dBµV	
	Detector :	Mode :
Curve 1:	MaxPeak	ClearWrite
Curve 2:	Average	ClearWrite

Start Frequency :	150.0 kHz		
Stop Frequency :	30.0 MHz	IF Bandwidth :	9 kHz
Measure Time :	10.0 ms	Step size :	6 kHz

Receiver :	*ESMI*	***Transducer :***	*ESH3-Z5_PRC*
Signal Path :	*Path 3*	***System Transducer :***	*Rfin1-CP2/X11*
Meas. Mode :	*Lin*	***Add. Transd. 1 :***	*W71.03*
Tracking Generator :	*Off*	***Add. Transd. 2 :***	*None*
Input :	*1AC*	***Add. Transd. 3 :***	*None*
Preamplifier :	*10 dB*	***Demodulation :***	*FM Broad*
RF Att. :	*Coupled*	***Volume :***	*0 %*
Ref. Level :	*-10 dBm*	***Squelch :***	*--*
Min. RF Att. :	*0 dB*	***Option :***	*None*
IF Att. :	*0 dB*		
Autorange :	*On*		
Curve 1 :	*On*	***Repetition :***	*Single*
Curve 2 :	*On*	***Stop Mark :***	*On*
		Stop Message :	*On*
		Stop Message :	*Connect EUT*

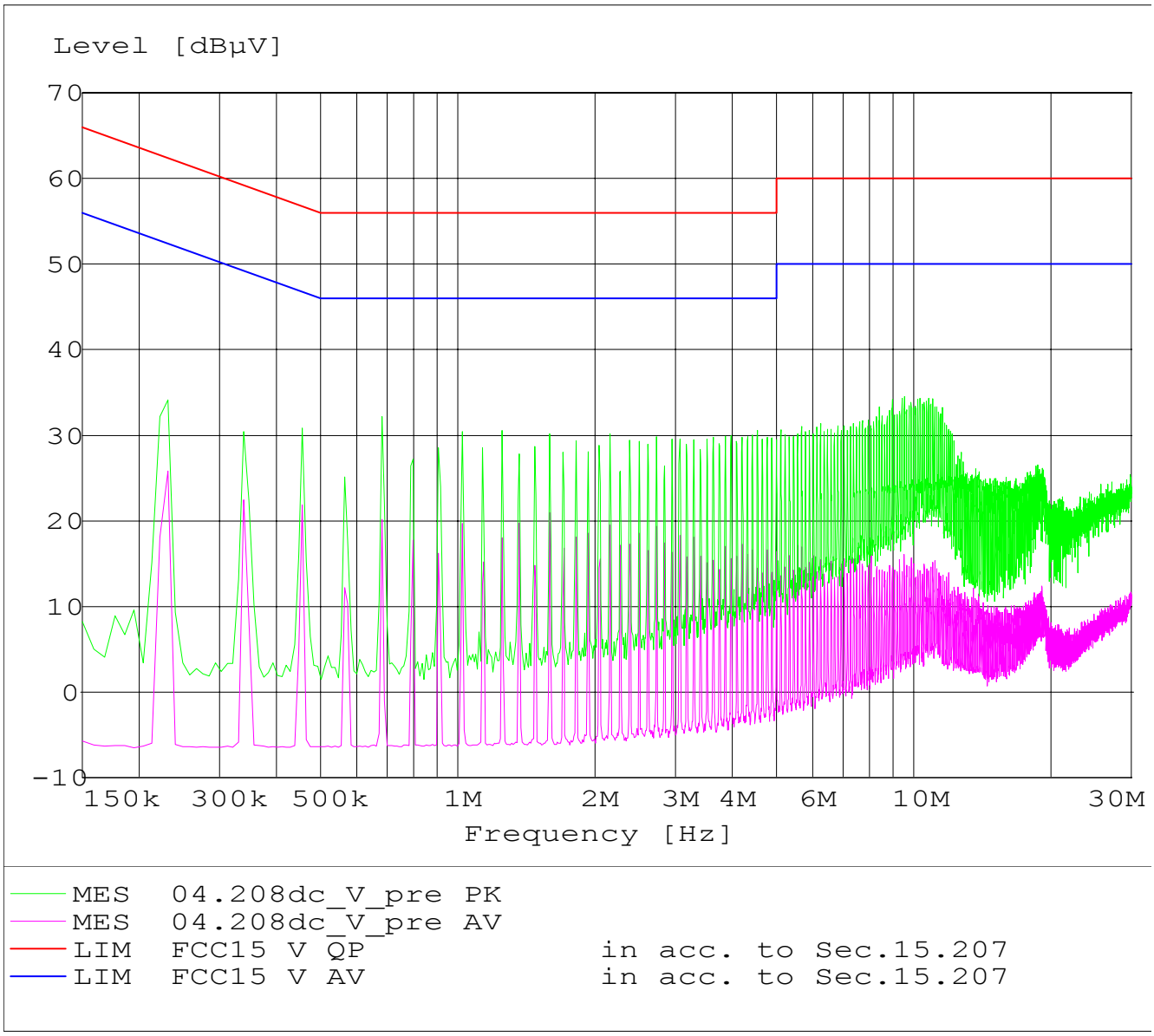
Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

With EUT powered by a generic adapter AC/AC (110 / 12Vac)



Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

With EUT powered by a generic adapter AC/DC 12Vdc



Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

TEST 2.

TX – RADIATED FIELD 30 - 1000 MHZ

REFERENCE DOCUMENT FCC PART 15 subpart C

- **TEST LOCATION:** Semi-anechoic chamber (3 meter)
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESMI
  Chase Antenna Mod. CBL 6111 A
- **TESTED PORT:** Enclosure
- **EMISSION LIMITS:** Acc. to Section 15.209 + 15.249
  of reference document
- **UNCERTAINTY OF MEASURE:** Combined uncertainty = ± 1.75 dB
  Total uncertainty = (k=2) ± 3.5 dB

TEST CONDITIONS:			**MEASURED**
Ambient temperature :	15 - 35 °C		24 ± 3 °C
Ambient humidity :	25 - 75 %rH		40 ± 5 %rH
Pressure :	85 - 106 kPa	(860 mbar - 1060 mbar)	950 ± 50 mbar
Voltage :			12 Vdc

OPERATING CONDITION (Rif. Section. 2) : #1

RESULT: WITHIN THE LIMIT

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

SCAN TABLE : "Radiated Emission"

Unit:	dBμV/m
	Detector : Mode:
Curve1:	Max Peak ClearWrite
Curve2:	Avg ClearWrite

Subrange:

Start Frequency:	30.0 MHz	Step Size:	80 kHz
Stop Frequency:	1000.0 MHz	IF Bandwidth:	120 kHz
Measure Time:	10 ms		

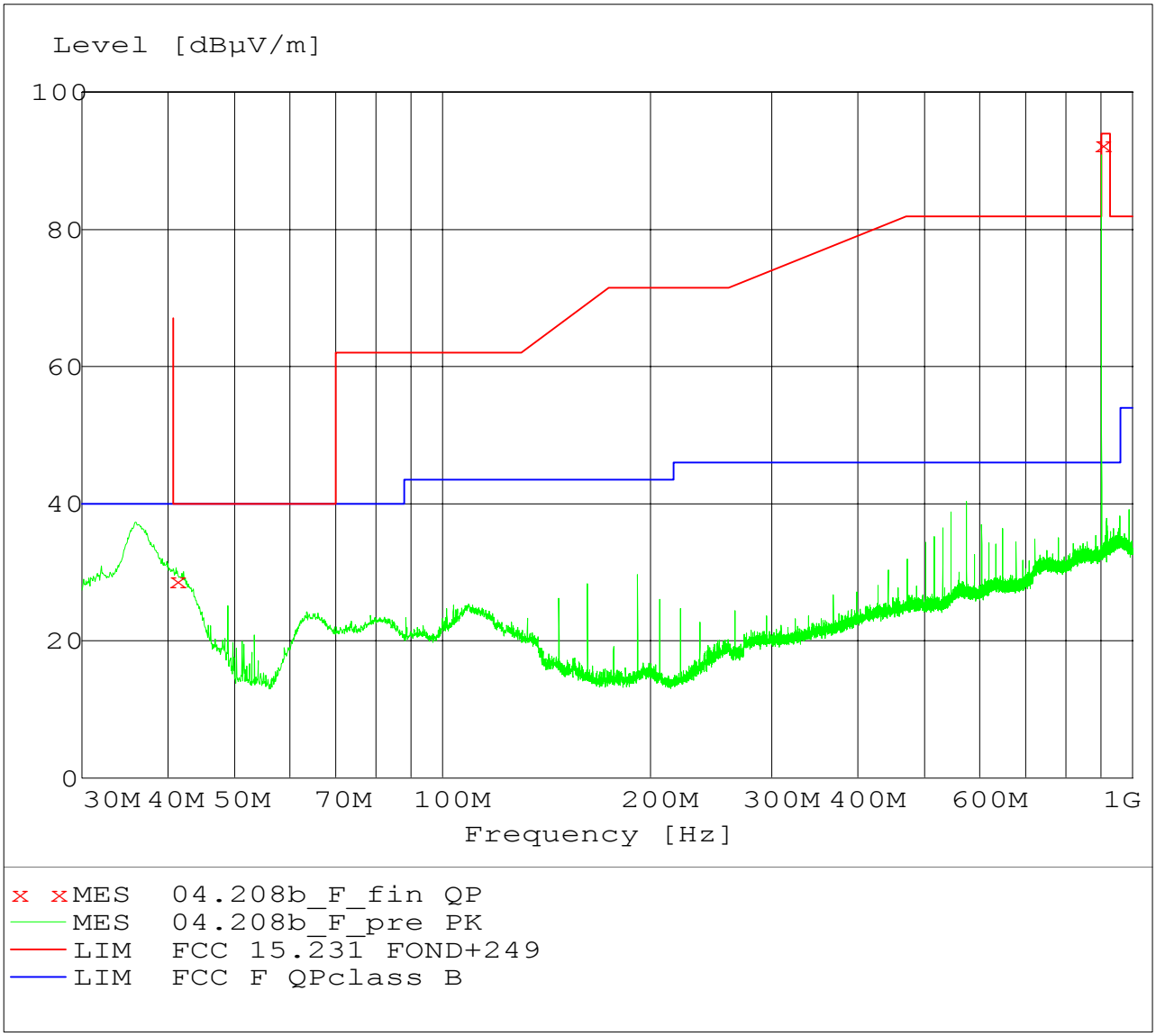
Receiver:	ESXI	Probe Transducer:	CHASE_6111_PRC
Signal Path:	Path 4	System Transducer:	RFin2-CP1/X11
Scan Mode:	Lin	Add. Transducer:	W71.01
Tracking Gen.:	Off		
Input:	2 DC		

Preamplifier:	10 dB	Demodulation:	FM Broad
RF att.:	Coupled	Volume:	0.0%
Ref. Level:	-50 dBm	Squelch:	--
Min. RF att.:	0 dBm	Option:	None
Autorange:	On		

Curve 1:	On	Repetition:	Single
Curve 2:	On	Stop Mark:	On
		Stop Message:	On
		Text:	Connect antenna

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

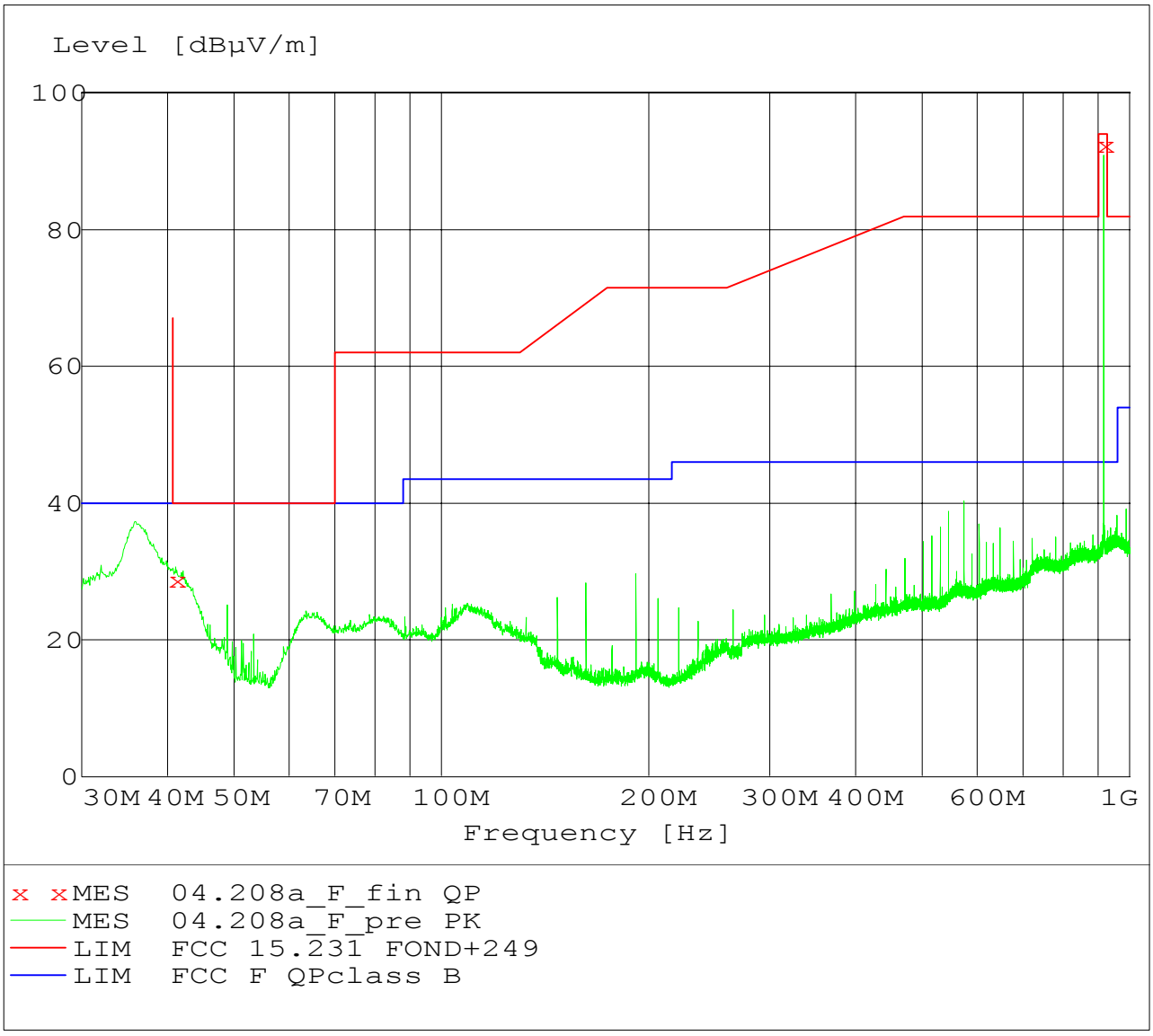
EUT powered in AC mode



Result of the bottom frequency

Frequency	*Remark*	Limits	Measured QP level	Measured level - Antenna Polarisation
MHz		dBµV/m	dBµV/m	
902.162	Fundamental	93.98	92.20	VERTICAL

EUT powered in AC mode

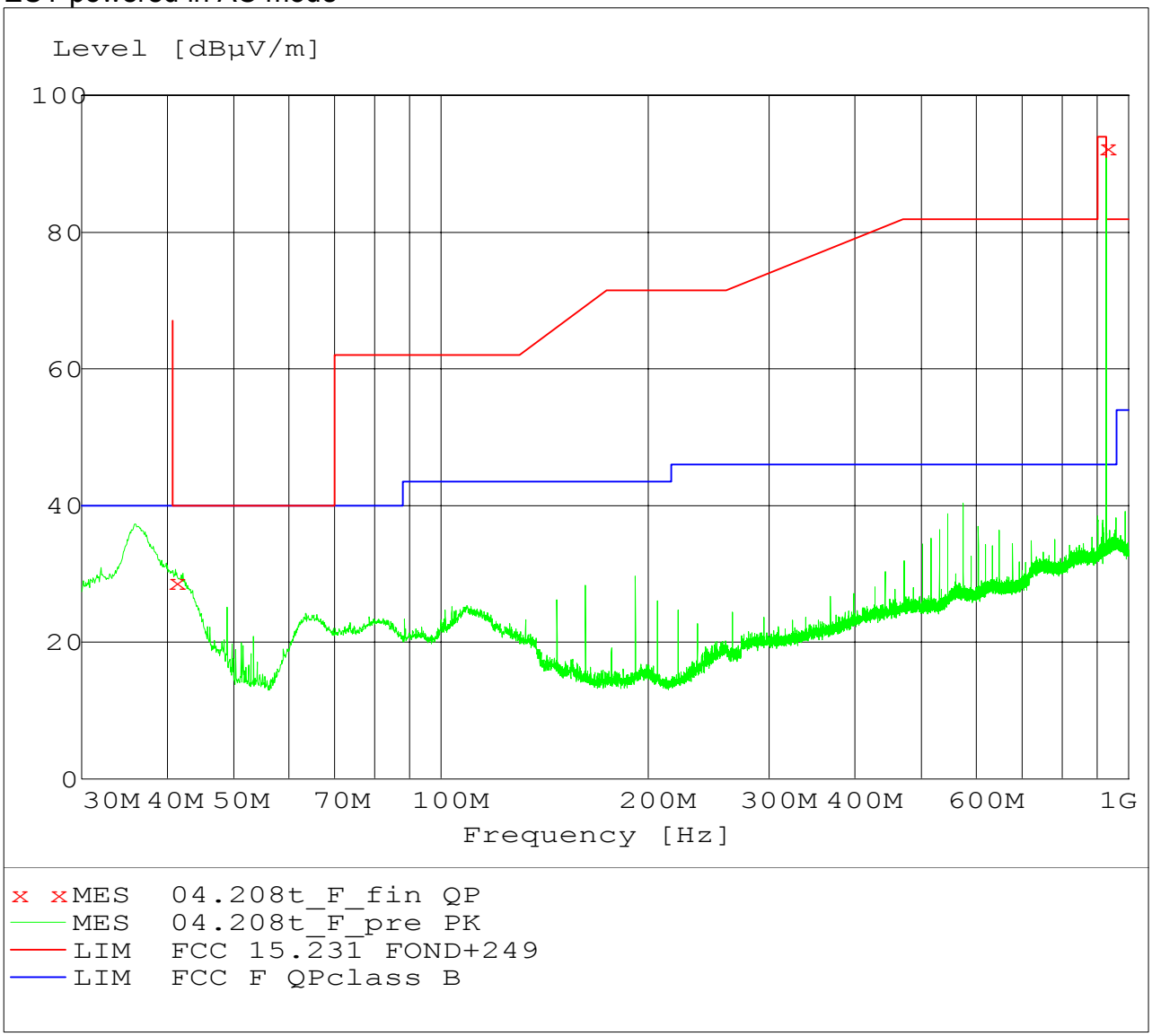


Result of the center frequency

Frequency	*Remark*	Limits	Measured QP level	Measured level - Antenna Polarisation
MHz		dBµV/m	dBµV/m	
915.100	Fundamental	93.98	92.40	HORIZONTAL

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

EUT powered in AC mode

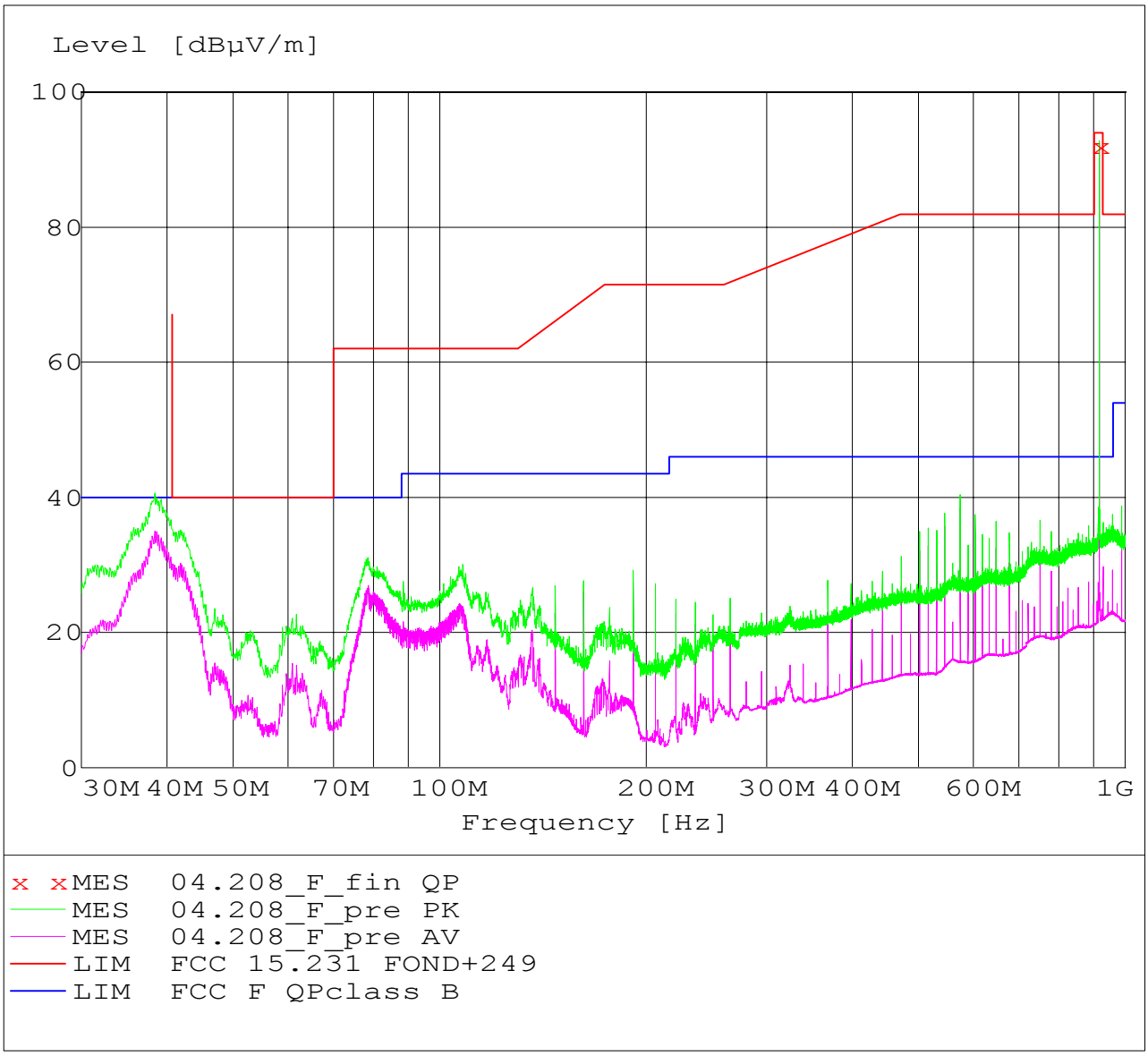


Result of the top frequency

Frequency	*Remark*	Limits	Measured QP level	Measured level - Antenna Polarisation
MHz		dBµV/m	dBµV/m	
927.1200	Fundamental	93.98	92.43	HORIZONTAL

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

EUT powered in DC mode 12Vdc



Result of the center frequency

Frequency	*Remark*	Limits	Measured QP level	Measured level - Antenna Polarisation
MHz		dBµV/m	dBµV/m	
915.120	Fundamental	93.98	92.42	HORIZONTAL

We not have repeat the radiated test also to bottom and top frequency because the test result of the center frequency is the same between the dual mode of power supply.
We presume that the test result of transmission channel will be identical.

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

TEST 3.

TX – SPURIOUS EMISSION 1 - 10 GHz

REFERENCE DOCUMENT FCC PART 15 subpart C

- **TEST LOCATION:** Semi-anechoic chamber (3 meter)
- **TEST EQUIPMENT USED FOR TEST:** Spectrum Analyzer Rohde & Schwarz Mod. FSP (9kHz-40GHz)
  Log-periodica Broadband Antenna mod. HL025
- **TESTED PORT:** Enclosure
- **EMISSION LIMITS:** Acc. to Section 15.209 of reference document
- **FREQUENCY BAND :** Fundamental Frequency to 10th harmonics acc. to §15.33 (a)
- **UNCERTAINTY OF MEASURE:** Combined uncertainty = ± 1.75 dB
  Total uncertainty = (k=2) ± 3.5 dB

TEST CONDITIONS:			**MEASURED**
Ambient temperature :	15 - 35 °C		24 ± 3 °C
Ambient humidity :	25 - 75 %rH		40 ± 5 %rH
Pressure :	85 - 106 kPa	(860 mbar - 1060 mbar)	950 ± 50 mbar
Voltage :			12 Vdc

OPERATING CONDITION (Rif. Section. 2) : #1

RESULT: WITHIN THE LIMIT

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

SCAN TABLE : "Radiated Emission"

Unit:	dBμV/m		
	Detector :	Mode:	
Curve1:	Max Peak	ClearWrite	
Curve2:	--	ClearWrite	

Subrange:

Start Frequency:	1000.0 MHz	Step Size:	600 kHz
Stop Frequency:	10000.0 MHz	Probe Transducer:	HL025
Measure Time:	100 ms		
IF Bandwidth:	1 MHz		
Receiver:	FSP		
Signal Path:	Path 4	System Transducer:	RFin2-CP1/X11
Scan Mode:	Lin	Add. Transducer:	W71.01
Tracking Gen.:	Off		
Input:	1		
Preamplifier:	0 dB	Demodulation:	FM Broad
RF att.:	Coupled	Volume:	0.0%
Ref. Level:	-50 dBm	Squelch:	--
Min. RF att.:	0 dBm	Option:	None
Autorange:	On		
Curve 1:	On	Repetition:	Single
Curve 2:	Off	Stop Mark:	On
		Stop Message:	On
		Text:	Connect antenna

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

Limit in acc. to provisions of $15.249 for frequencies between 902-928 MHz related to field strength of spurious emissions.
In addiction to the limits over mentioned, in according to Section 15.205 for restricted bands, the limit applied is 54 dBµV/m

Measurement results

Frequency [MHz]	*Remark*	*AV Level [dBµV/m]*	*+PK level [dBµV/m]*	*AV Limit [dBµV/m]*
1807,617	Spurious	50,11	52,13	54,00
2711,568	Spurious	37,80	39,61	54,00
3615,312	Spurious	35,98	38,12	54,00
4519,241	Spurious	46,73	48,67	54,00
5422,851	Spurious	more than 20dB below limit	more than 20dB below limit	54,00
6326,665	Spurious	more than 20dB below limit	more than 20dB below limit	61,94
7230,470	Spurious	more than 20dB below limit	more than 20dB below limit	61,94
7400< f < 10000	Spurious	more than 20dB below limit	more than 20dB below limit	54,00

With the EUT powered in AC mode we have recorded the same AV and +PK level

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

TEST 4.

TX – RANGE OF MODULATION BANDWIDTH

REFERENCE DOCUMENT FCC PART 15 subpart C

- **TEST LOCATION:** Semi-anechoic chamber (3 meters)
- **TEST EQUIPMENT USED FOR TEST:** Spectrum Analyzer Rohde & Schwarz Mod. FSP (9kHz-40GHz)
  Log-periodica Broadband Antenna mod. HL025
- **TESTED PORT:** AC Mains, DC Port and Battery
- **EMISSION LIMITS:** Acc. to Section 15.215 c) of reference document

TEST CONDITIONS:			**MEASURED**
Ambient temperature :	15 - 35 °C		24 ± 3 °C
Ambient humidity :	25 - 75 %rH		40 ± 5 %rH
Pressure :	85 - 106 kPa	(860 mbar - 1060 mbar)	950 ± 50 mbar
Voltage :			12 Vdc

OPERATING CONDITION (Rif. Section. 2) : #1

RESULT: WITHIN THE LIMIT

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

MEASUREMENT RESULTS

TEST CONDITIONS		Occupied frequency range (at 20 dB point)		
		f_L [MHz]	F_C [MHz]	f_H [MHz]
T_{amb} : + 24 °C	V_{nom} : 12 Vdc	902.1096	----	927.775
Incertezza di misura / Measurement Uncertainty : ± 0.1 kHz				
Legenda / Abbreviations : f_L : Lowest frequency at 20dB point F_C : Central frequency f_H : Highest frequency at 20dB point				

LIMITS
Permitted operating frequency range
902 – 928 MHz

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

Diagram for bottom frequency

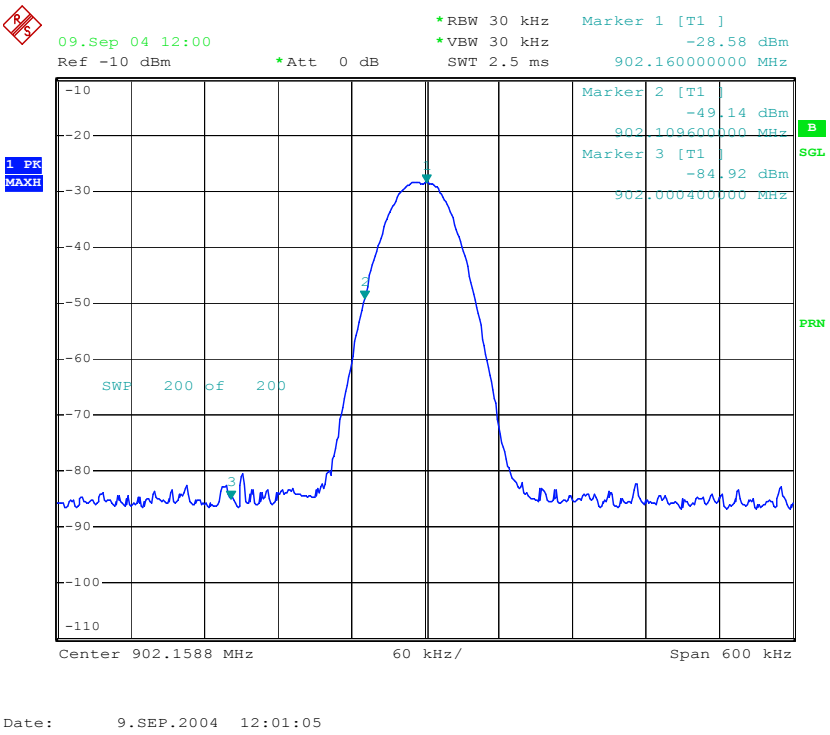
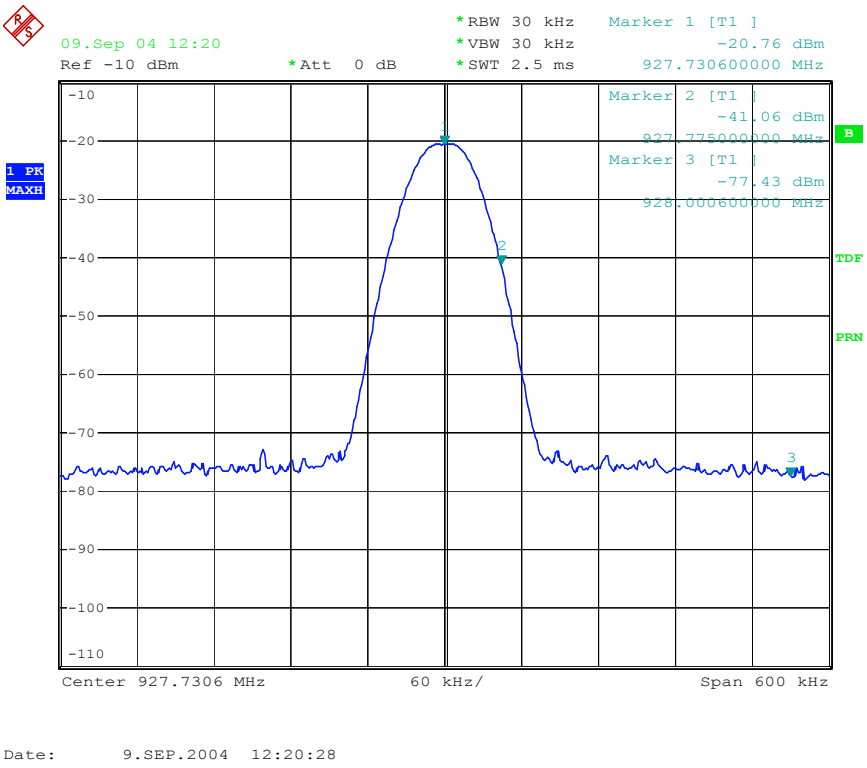


Diagram for top frequency



Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

6. EUT TECHNICAL DOCUMENTATION

6.1 Wiring diagrams

	Document reference (n., edition, date, ...)
WIRING DIAGRAM	Doc. No. SC000218.dsn File name : Board interface E16SQ01A-Z.0 Issue date: 2004-05-08 Rev. 0 Sheet no. 1 Doc. No. SC000217.dsn File name : mother board E16TQ01A-Z.0 Issue date: 2004-02-27 Rev. 1 Sheet no. 1 Doc. No. SC000259.dsn File name : E16STXUS1 E16S transmitter module Issue date: 2003-06-03 Rev. 0 Sheet no. 4 Doc. No. SC000222.dsn File name : Address key for E16/E16S Issue date: 2004-03-01 Rev. 1 Sheet no. 1
PART LIST	Ref. file : TG02 202D_bill.pdf Issue date of file: 2004-06-29 Sheet no. 1

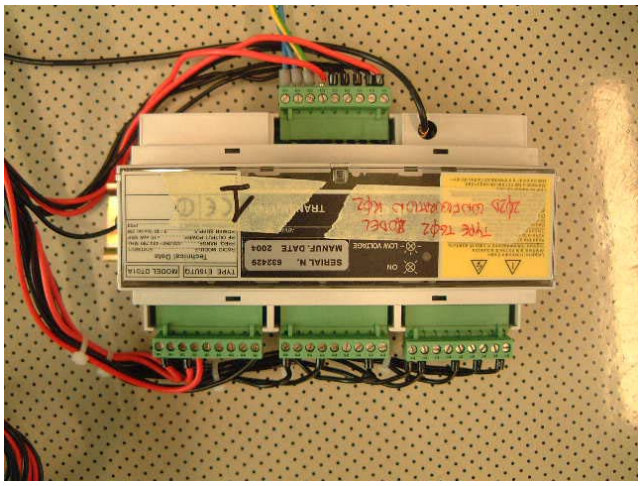
6.2 Technical manual

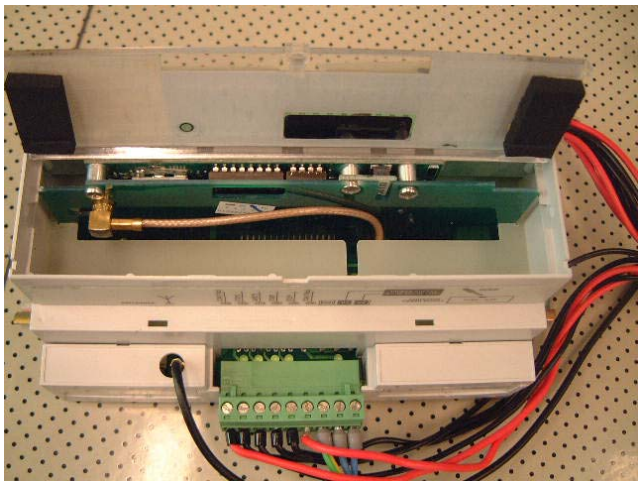
	Document reference (n., edition, date, ...)
Transmitter system User's Manual	LIKTCNA0.pdf sheet no. 32

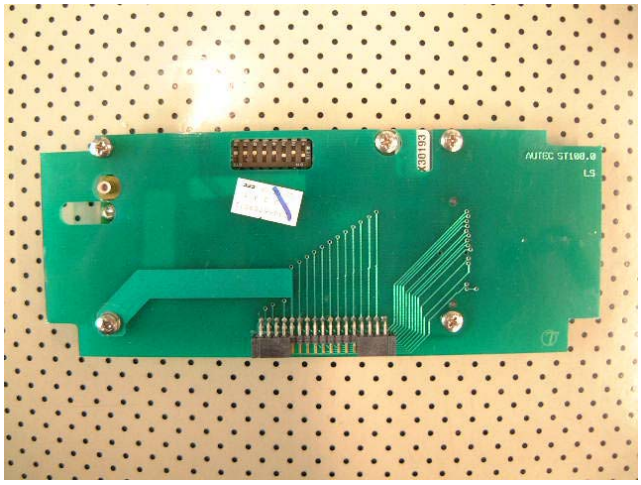
Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

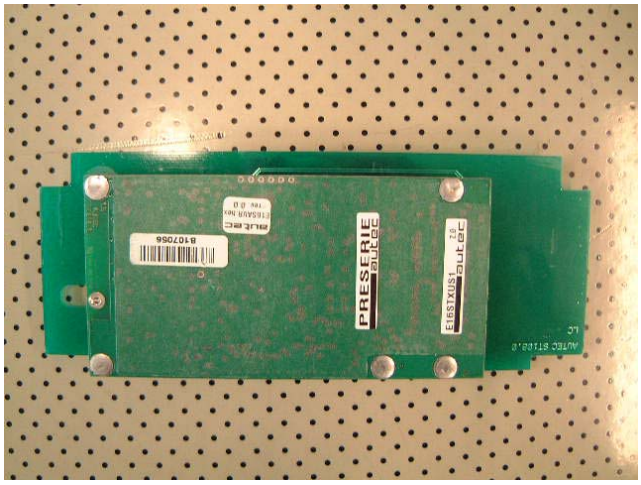
6.3 Photographic documentation

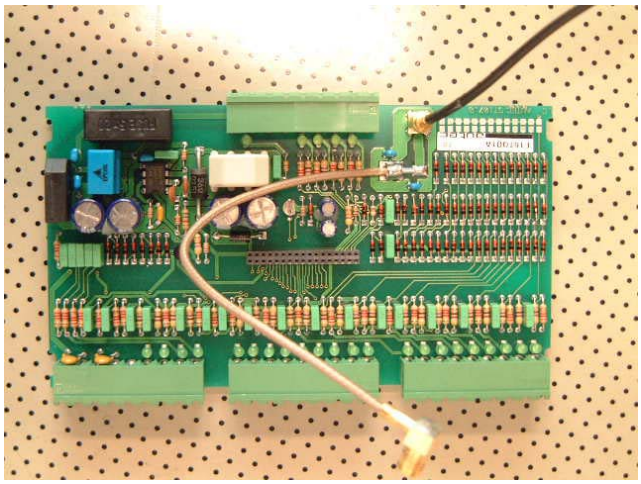
PHOTO N° 1 – EQUIPMENT UNDER TEST IDENTIFICATION

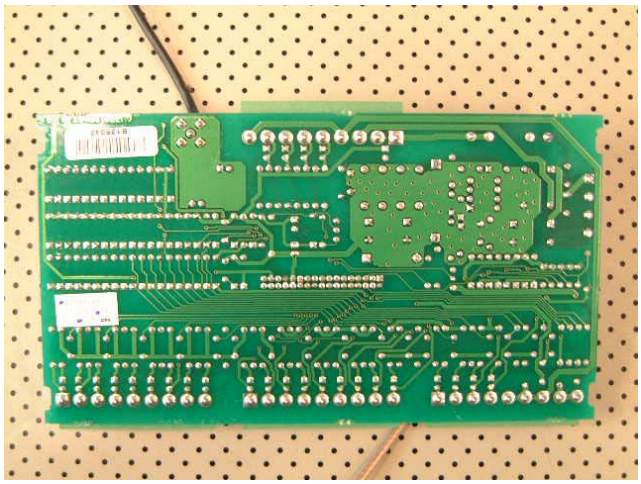


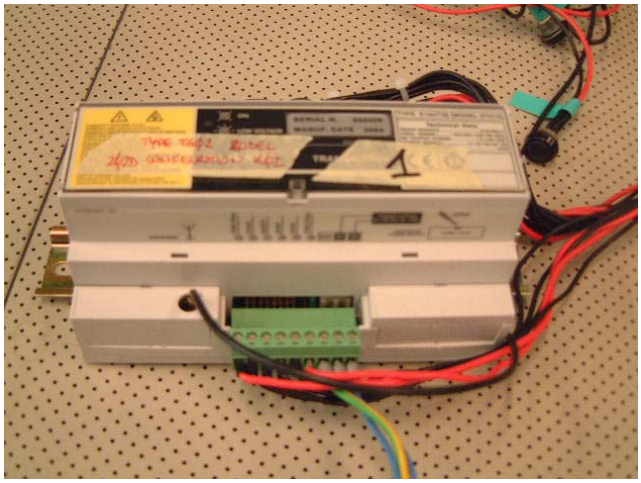


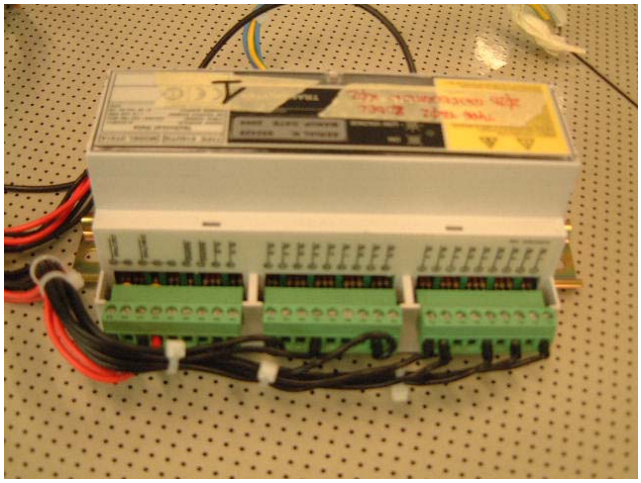




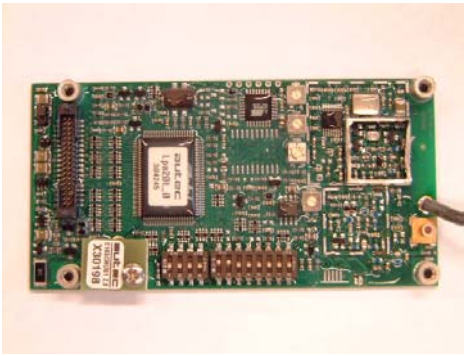








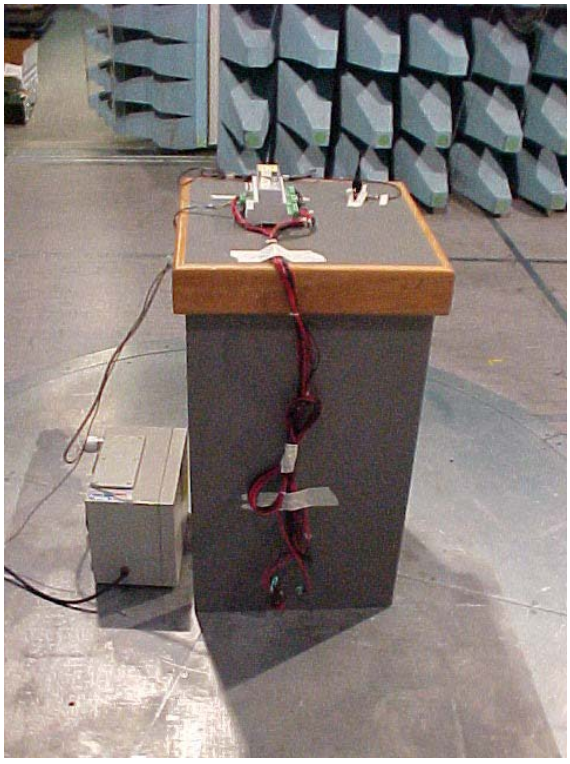
TOP VIEW OF TRANSMITTER BOARD CODE E16STXUS1

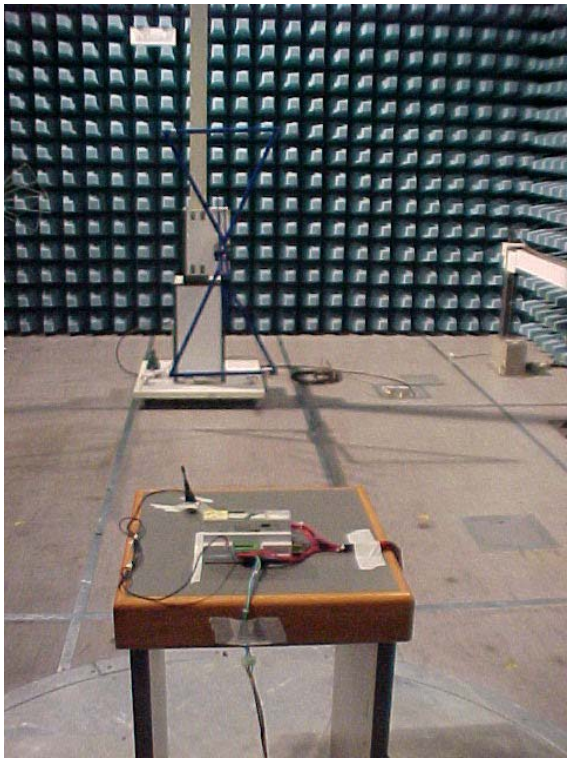


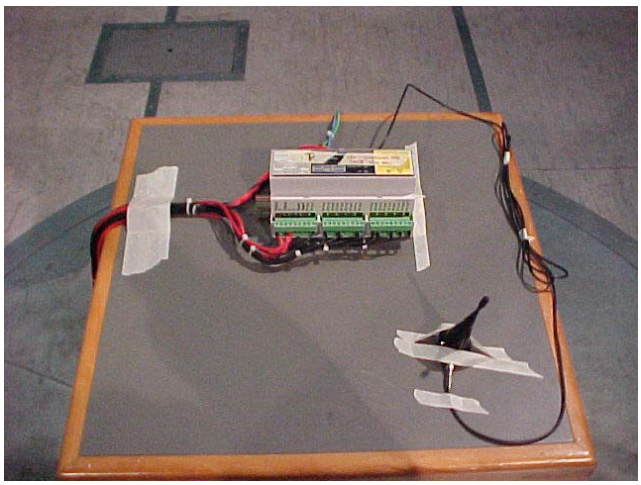
TOP VIEW OF TRANSMITTER BOARD CODE E16STXUS1 WITHOUT ALL SHIELD

Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

PHOTO N° 2 – SET-UP FOR EMISSION RADIATED TEST WITH AC POWER SOURCE







Prima Ricerca & Sviluppo Srl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

PHOTO N° 3 – SET-UP FOR EMISSION RADIATED TEST WITH DC POWER SOURCE