

Emilab Srl – FCC Reg.N. 933459 Test Firm Type: 2.948 Listed

TEST REPORT Secondo i seguenti Standard / According to following Standards	
Test specification	FCC Rules: Code of Federal Regulations (CFR) no. 47 Part 15 Subpart B Section 15.107: 2013 Part 15 Subpart B Section 15.109: 2013 ANSI C63.4: 2009-09 Par. 7 AC power-line conducted emission measurements Par. 8 Radiated emission measurements
Conducted Emissions, FCC section 15.107; Table (a) limit	Conforme/Compliant
Radiated Emissions, FCC section 15.109; Table (a) limit	Conforme/Compliant
Richiedente / Applicant's name :	Datalogic ADC Srl
Indirizzo / Address	V. San Vitalino 13 40012 Calderara di Reno (BO), Italia
Produttore / Manufacturer	Datalogic ADC Srl
Indirizzo / Address	V. San Vitalino 13 40012 Calderara di Reno (BO), Italia
Dispositivo sottoposto ai test/ Device Under Test :	JOYA SINGLE SLOT DOCK (EUT N° 15LA00102/01) + JOYA X2 PLUS 01 BT C with SE4500 reader (EUT N° 15LA00101/02)
Data di emissione/ Date of issue	30 th April 2015
Validità/ Validity	Vedi sezione 1.1 / See section 1.1
Test report redatto dal Author of Test report	Loris Fruch
Tecnici di prova Engineer/s	Loris Fruch Test manager: Giovanni Solari
Approvato da (+ firma) Approved by (+ signature)	Silvano Chialina Responsabile del laboratorio/ Head of the Laboratory
Laboratorio / Testing Laboratory . :	Emilab Srl
Indirizzo / Address	Via F.lli Solari 5/A – 33020 Amaro (UD) - Italy

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1. Informazioni Generali / General Information

1.0 Laboratorio / Testing Laboratory

Luogo di Prova e partecipanti/ <i>Testing location and participants:</i>	
Testing Laboratory:	
Testing location/ address.....:	Emilab Srl Via F.lli Solari 5/A – 33020 Amaro (UD) – Italy Tel +39 0433 468625 Fax +39 0433 494739 Email: info@emilab.it
Partecipanti / <i>Participants:</i>	Loris Fruch

1.1 Campionamento e Documentazione / *Sampling and Documentation*

I campioni sono stati consegnati dal Cliente. I risultati dei test contenuti in questo documento si riferiscono esclusivamente al modello e numero di serie provato. E' responsabilità del costruttore assicurare che la produzione dei modelli in serie rispetti i requisiti del presente documento. Questo documento non può essere riprodotto in parte senza il consenso scritto del responsabile del laboratorio EMILAB.

EMILAB non si assume nessuna responsabilità per danni derivanti da interpretazioni che esulano dal contesto e dall'applicazione del presente documento.

The samples was delivered by customer. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. This report shall not be reproduced, except in full, without the written approval of the Issuing testing Emilab laboratory.

EMILAB takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

1.2 Specifiche del test / *Test specifications*

Test performed according to:	
Test plan	/
Test specification	All compliance measurements have been carried out using the procedures described in the standards: - ANSI C63.4-2009, Section 15.31 of CFR47 Part 15 – Subpart A (General). -FCC Rules: Code of Federal Regulations (CFR) no. 47 Part 15 Subpart B Section 15.107: 2015 Radio Frequency Device -FCC Rules: Code of Federal Regulations (CFR) no. 47 Part 15 Subpart B Section 15.109: 2015 Radio Frequency Device
Basic Specifications	ANSI C63.4: 2009-09 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz

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1.3 Svolgimento dei test e condizioni generali / *Test scheduling and general condition*

Svolgimento dei test / <i>Scheduling</i>	
Data ricezione EUT	
<i>Date of receipt of EUT</i>	27/03/2015
Data esecuzione test	
<i>Date (s) of performance of tests</i>	22/04/2015 – 30/04/2015
Condizioni ambientali	Se non diversamente specificato / <i>If not otherwise specified:</i>
/ <i>Environment Conditions</i>	Temperature: 18-28°C
	Humidity: 20-90%
	Pressure: 87-108.56 kPa
Intervallo delle tarature/	Minimum 1 year
<i>Calibration Interval</i>	

1.4 Espressione dei risultati finali / *Test case of final verdicts*

I GIUDIZI NON SONO SOGGETTI AD ACCREDITAMENTO	
/ <i>VERDICTS ARE NOT SUBJECT TO ACCREDITATION</i>	
- test case does not apply to the test object.. :	N/A
- test object does meet the requirement	Compliant
- test object does not meet the requirement . :	Not Compliant

1.5 Incertezza / *Uncertainty*

L'incertezza estesa riportata è espressa come l'incertezza tipo moltiplicata per il fattore di copertura $k = 2$, che per una distribuzione normale corrisponde ad una probabilità di copertura di circa il 95 %.	
<i>The reported expanded uncertainty of measurements is stated as the standard uncertainty of measurement, multiplied by the coverage factor $k=2$, which for a normal distribution corresponding to a coverage probability of approximately 95%.</i>	

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1.6 Termini, Definizioni e Acronimi/ *Terms, definitions and abbreviations*

With reference to IEC 60050-161

ALSE	absorber-lined shielded enclosure
AM	amplitude modulation
AN	artificial network
AV	Average Detector
BAN	broadband artificial network
BCI	Bulk Current Injection
CBCI	Common Mode BCI
CDN	Coupling Decoupling Network
DBCI	Differential Mode BCI
DUT	Device Under Test
EMC	electromagnetic compatibility
EMI	electromagnetic interference
EUT	Equipment Under test
FSP	Functional Performance Status
HCP	Horizontal Coupling Plate
LISN	Line Impedance Simulation Network
OM	Operating Modes
PM	pulse modulation
PK	Peak Detector
RE	Radiated Emission
RI	Radiated Immunity
QP	Quasi-peak Detector
SWR	standing wave ratio
VSWR	voltage standing wave ratio
TEM cell	transverse electromagnetic cell

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2. Apparecchiatura sottoposta a test/ Device Under Test

Descrizione / Description	
Marchio commercial / Trade Mark	Datalogic ADC Srl
Produttore / Manufacturer	/
Modello / Model/Type reference	JOYA SINGLE SLOT DOCK (EUT N° 15LA00102/01) + JOYA X2 PLUS 01 BT C with SE4500 reader (EUT N° 15LA00101/02)
Voltage/Current.....	5V DC / 1.2A
Frequency	/
Power	/
Numero EUT / EUT Number	15LA00102/01 + 15LA00101/02
Numero EUT del produttore / Internal customer EUT Number	P/N: 91ACC0034 (EUT N° 15LA00102/01) + P/N: 911300126 (EUT N° 15LA00101/02)
Serial Number	Z14P00323 (EUT N° 15LA00102/01) + E14N07480 (EUT N° 15LA00101/02)
Numero di campioni testati / Number of samples tested	1 +1
Hardware stage/level	MVT
Software stage/level	1.82.024.02-SS0003
Operating Mode	Mode 1: WLAN activation using the “SRU_40NBT_3_3_10_CE” test routine, on 2437MHz in continuous transmit mode. Bluetooth activation using the “BT Cert.exe” test routine, on 2441MHz in continuous transmit mode. Barcode reading continuously (every 1s) using the “DcdTestNet” test routin. The JOYA X2 PLUS 01 BT C is connected via USB to the PC and a file is transferred between it and the PC by the test routine “PAL500E.bat”. JOYA X2 battery in recharge mode.
Wiring harness	1.8m Power supply cable, 1.9m USB cable
Monitoring	/
Info.....	Test routines were provided by the applicant. The WLAN and Bluetooth channels were exercised at the max power level, as declared by the applicant. The EUT N° 15LA00102/01 was powered by the Switching Power Supply Model BI20-050300-I Input: AC 100-240V, 50/60Hz, 0.5A; Output 5V DC, 3A. During the tests the above cited Switching Power Supply Model BI20-050300-I was powered at 120V/60Hz.

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3.0 Conducted emission - Condizioni di prova / Test Conditions

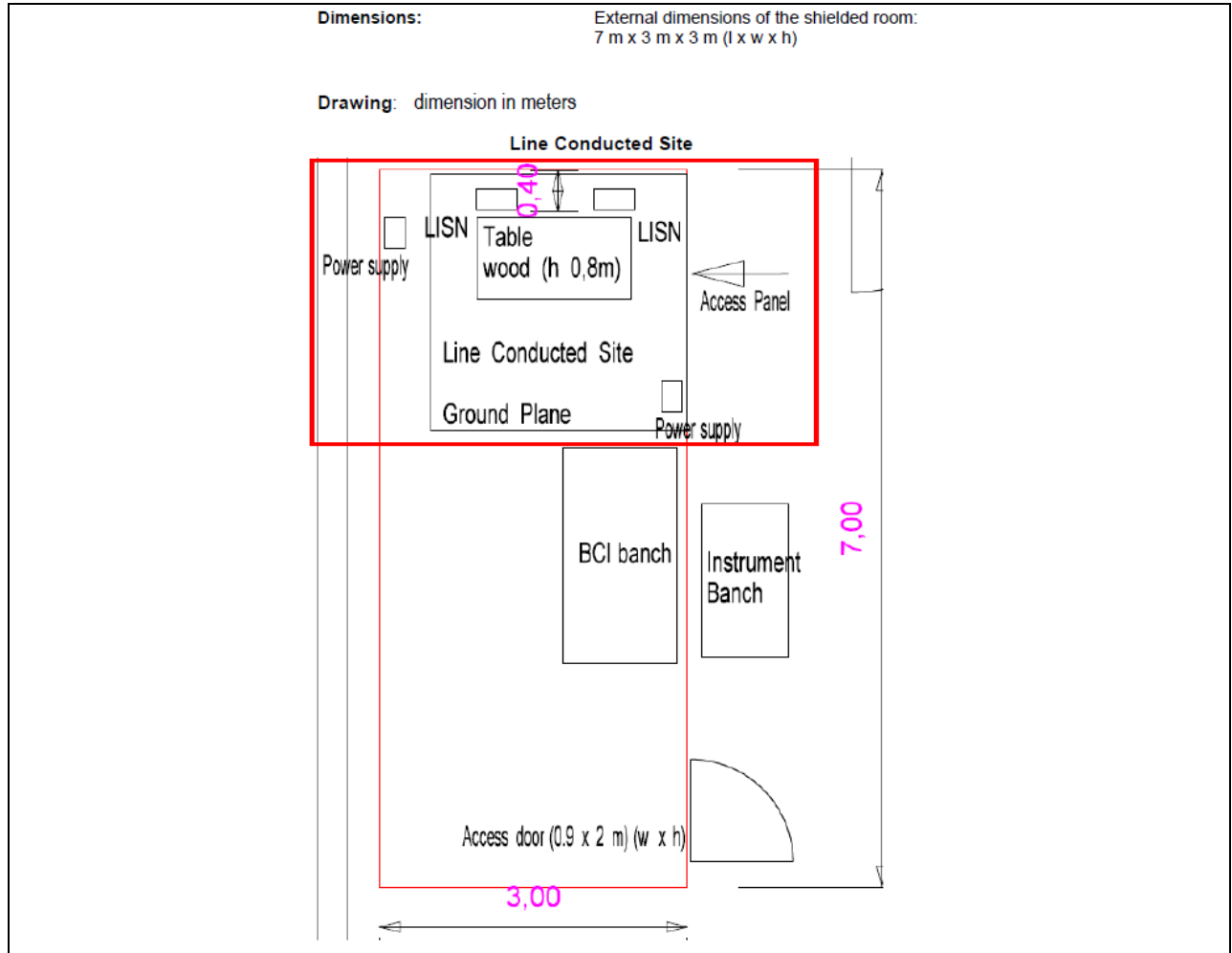
Technician / Tecnico: Loris Fruch		
Table No.	TEST: Conducted limits	\
Method	FCC Rules: 47 CFR Part 15 Subpart B: 2015, section 15.107 (a)	\
Parameters required prior to the test	Laboratory Ambient Temperature	18 to 28 °C
	Relative Humidity	20 to 90 %
Parameters recorded during the test	Laboratory Ambient Temperature	22 °C
	Relative Humidity	64 %
Fully configured sample scanned over the following frequency range	150kHz to 30MHz	
Supplementary information: - EUT operating mode 1 (see par. 2 of this document); - Test executed on 120V 60Hz power supply line; - The DUT was placed 80cm above the ground plane and at 40cm from the wall of the chamber. - Test Requirement: • Test setup: ANSI C63.4: 2009-09; • Test facility Shielded room; • Frequency range: 150KHz to 30MHz; • IF bandwidth: 9KHz; - Limits: Sections 15.107 Table (a) of 47 CFR Part 15; - Artificial hand not used because the EUT is not a handheld equipment;		

3.1 Apparecchiature utilizzate / Test Equipment Used – Conducted emission

<i>Apparecchiature usate/ Equipment Used</i>	<i>Modello/Model</i>	<i>Costruttore/ Manufacturer</i>	<i>Numero di serie/ Serial Number</i>
EMI Receiver MXE	N9038A	Agilent Technologies	MY51210230
LISN	NSLK 8128	Schwarzbeck	8128-336
Cable 10m	MIL C-17 OLWG7	CCI/SAXTON	M17/16.4-00001
Cable RF da 6m	PE142LL	Pasternak	EL038210
Shielded Chamber	RFD-100	ETS-Lindgren	2012
Shielded Chamber DC Filter	N5004	ETS-Lindgren (ETSL)	121226
AC Power Supply	KBT-100-C-109-451	BEHLMAN	5896

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3.2 Fotografie del setup / Photo of the test setup – Conducted emission



3.3 Risultati / Results - Conducted emission

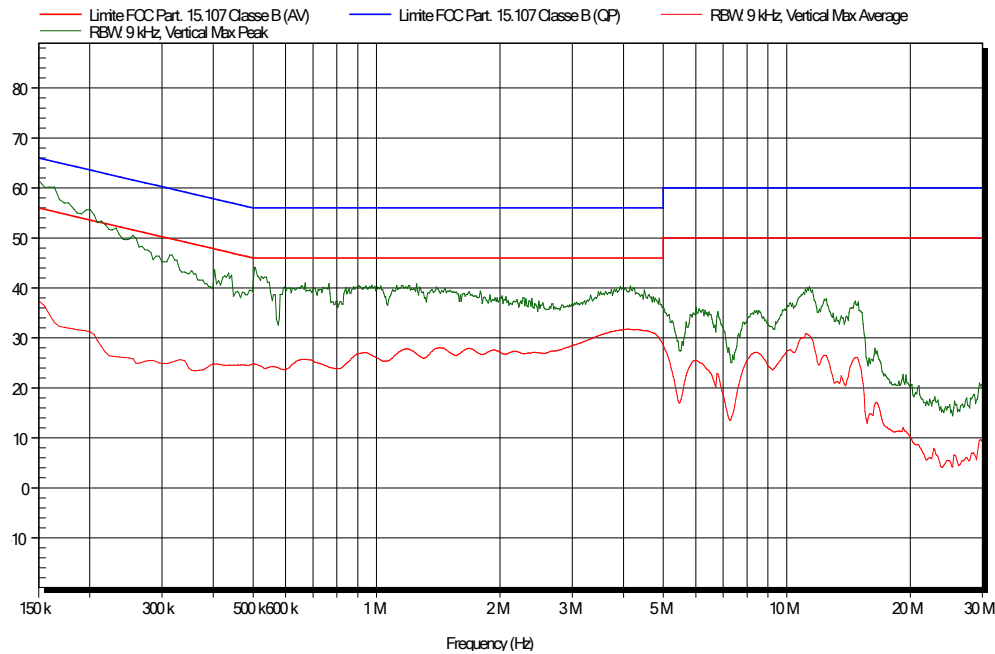
The result of the test is: **PASS**. See the details in the charts of the following paragraphs.

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3.3.1 Grafici dei risultati / Graphical representation data – Conducted emission

Conducted emission measured on 120V 60Hz Line1 (from 0.15MHz to 30MHz IF 9KHz): peak detector (green trace) and average detector (red trace) with quasi-peak limit (blue line) and average limit (red line)

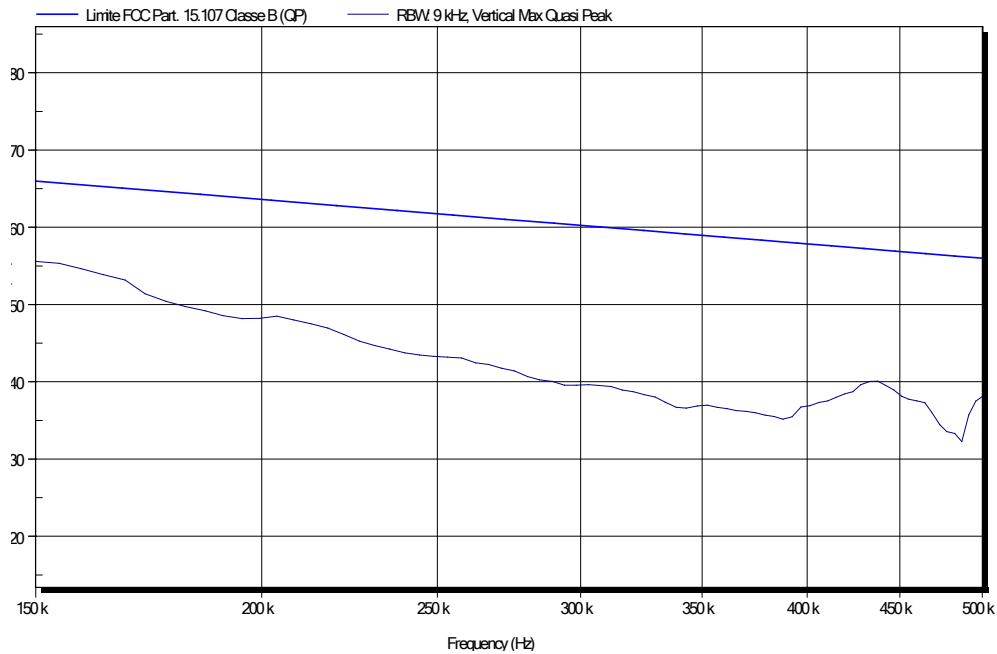
Emission measured in dB μ V



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Conducted emission measured on 120V 60Hz Line1 (from 0.15MHz to 0.5MHz IF 9KHz): quasi-peak detector (blue trace) with quasi-peak limit (blue line)

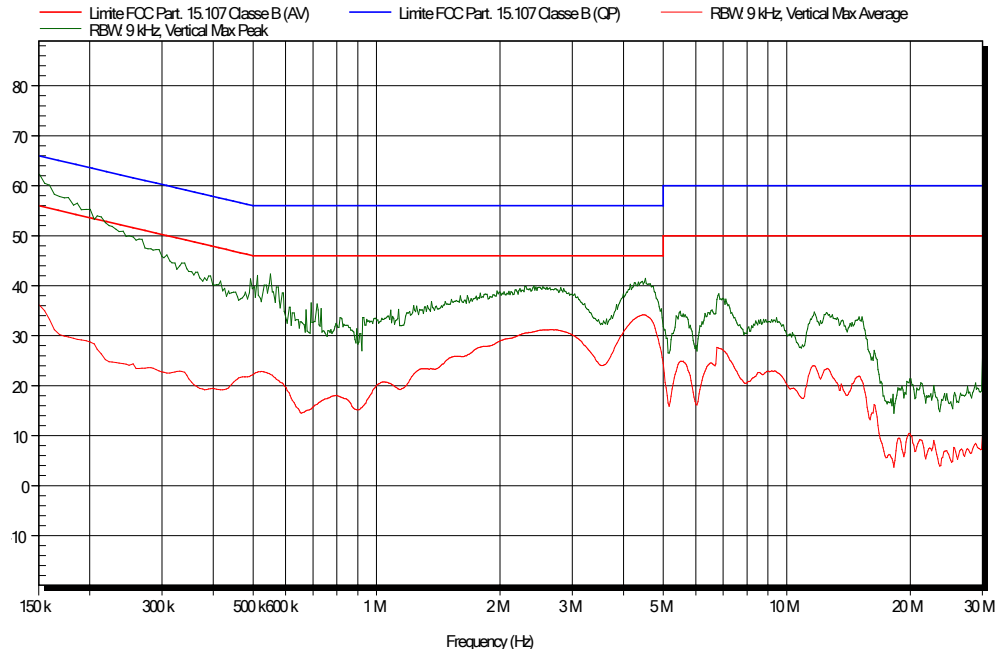
Emission measured in dB μ V



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Conducted emission measured on 120V 60Hz Line2 (from 0.15MHz to 30MHz IF 9KHz): peak detector (green trace) and average detector (red trace) with quasi-peak limit (blue line) and average limit (red line)

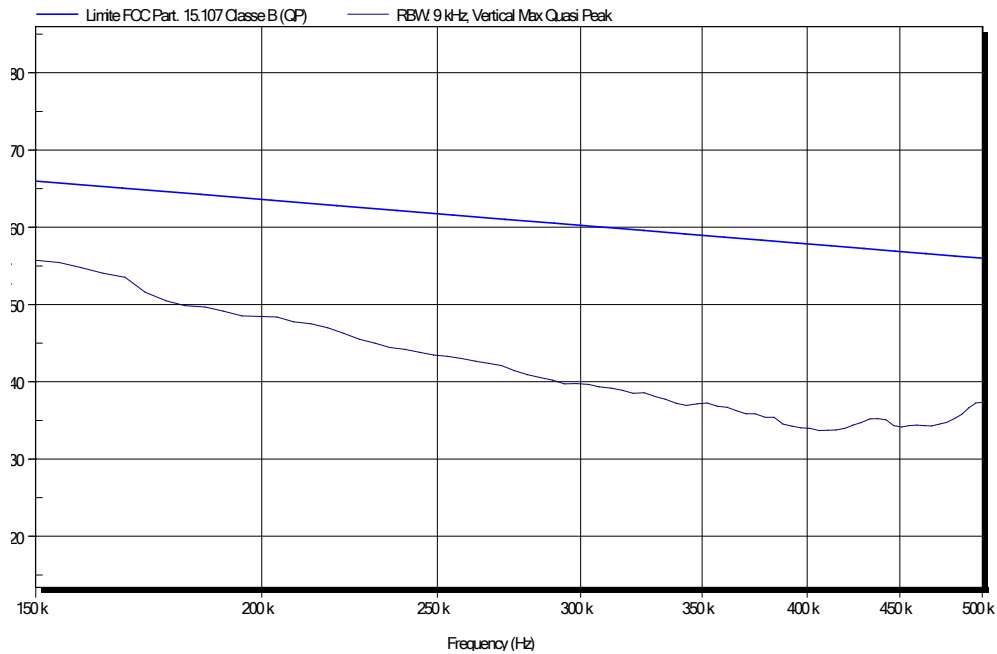
Emission measured in dB μ V



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Conducted emission measured on 120V 60Hz Line2 (from 0.15MHz to 0.5MHz IF 9KHz): quasi-peak detector (blue trace) with quasi-peak limit (blue line)

Emission measured in dB μ V



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4.0 Radiated Emissions - Condizioni di prova / Test Conditions

Technician / Tecnico: Loris Fruch		
Table No.	TEST: Radiated emission limits	\
Method	FCC Rules: 47 CFR Part 15 Subpart B: 2015, section 15.109 (a)	\
Parameters required prior to the test	Laboratory Ambient Temperature	18 to 28 °C
	Relative Humidity	20 to 90 %
Parameters recorded during the test	Laboratory Ambient Temperature	20 °C
	Relative Humidity	66 %
Supplementary information: - EUT operating mode 1 (see par. 2 of this document); - The DUT was placed on turn-platform on a dielectric table 0.8m above the ground plane. The turn table was rotated from 0° to 360° to determine the position of maximum emission level; - Test Requirement: • Test setup: ANSI C63.4: 2009-09; • Test facility: semi-anechoic chamber for f<1GHz and full anechoic chamber for f>1GHz; • Test distance: 3 meters; • The receiving antenna, from 30MHz to 1GHz varied from 1m to 4m high to find the highest emission and was positioned in both horizontal and vertical polarization. For the measures from 1GHz to 12.75GHz the antenna height is fixed to 1m (corresponding to the vertical centre of EUT); • Frequency range: in accordance with section 15.33 b (1) of FCC, as declared by the custom the highest frequency generated or used in the device is lower than 2.5GHz, thus the upper frequency of measurement range is 12.75GHz; • IF bandwidth: 120KHz from 30MHz to 1GHz and 1MHz from 1GHz to 12.75GHz; • The measure from 30MHz to 1GHz was made with the bi-log antenna, the measure from 1GHz to 12.75GHz was made with the wide band horn antenna; • Max-hold pre-scan detector: Peak for f<1GHz, Peak and Average for f>1GHz; • Limits: Sections 15.109 Table (a) of 47 CFR Part 15; • Remarks: as specified at Section 15.35 of 47 CFR Part 15, for frequencies above 1GHz the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test; - The measurements with Quasi-Peak detector were performed only for frequencies for which the Peak values was $\geq$ (limit – 4dB);		

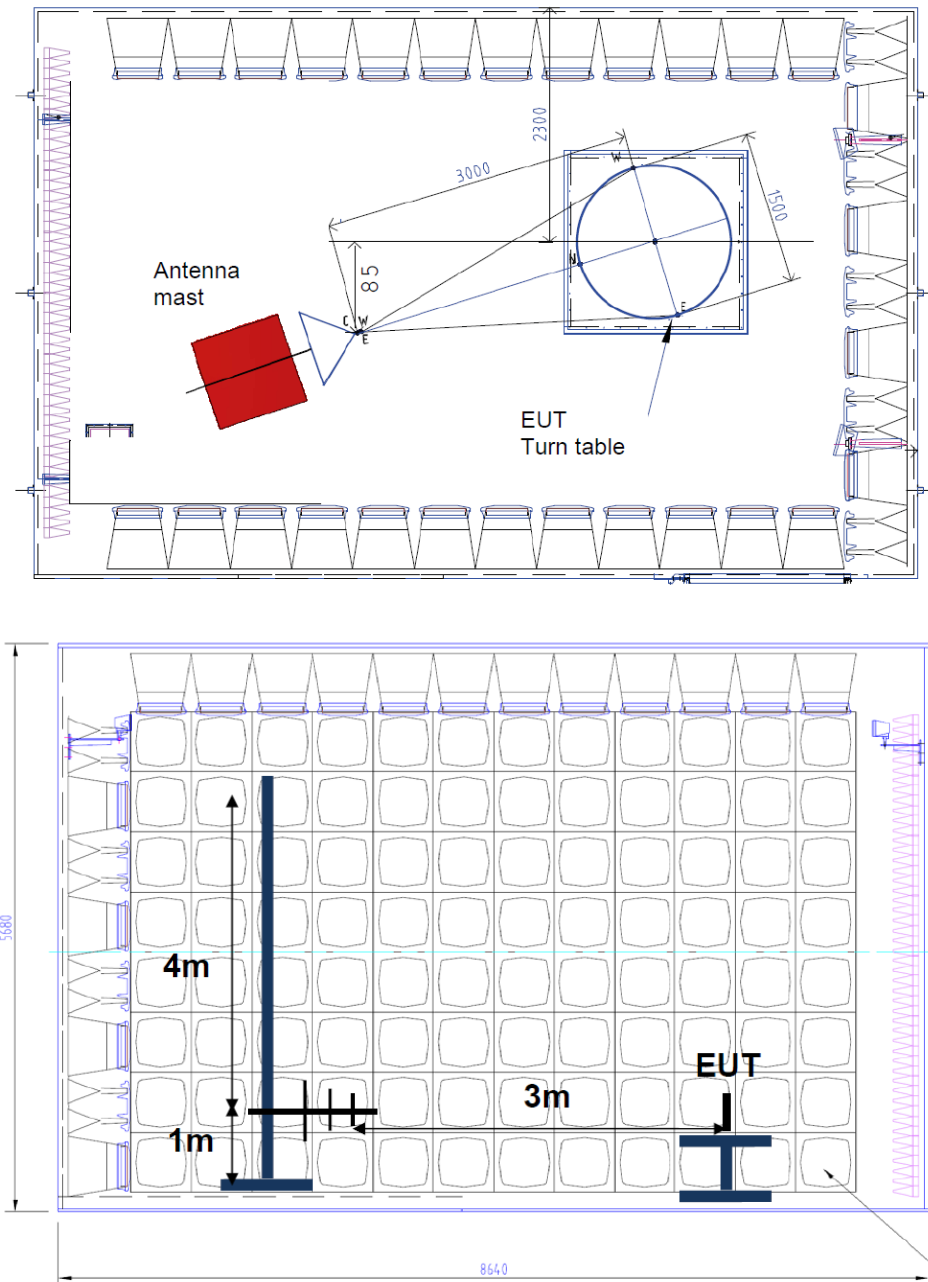
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4.1 Apparecchiature utilizzate / Test Equipment Used – Radiated Emissions

<i>Apparecchiature usate/ Equipment Used</i>	<i>Modello/Model</i>	<i>Costruttore/ Manufacturer</i>	<i>Numero di serie/ Serial Number</i>
EMI Receiver MXE	N9038A	Agilent Technologies	MY51210230
Antenna Bilog	Bilog CBL6111C	Chase	2415
Antenna Horn	VT10180DRHA10NK	Vector Telecom	140763010001
PreAmplificatore RF	HP8447F, OPT H64	Hewlett/Packard	3113A07568
Band Reject Filter	JXWBLB-T-BR-2400-2483	A-INFOMW	J1084090807001
RF Cable	S5LL-400	Spin electronics	01-053-12
RF Cable	S5LL-900	Spin electronics	02-053-12
RF Cable	41.275.000-L03	CPE Italia Spa	F4538
RF Cable	41.275.000-L04	CPE Italia Spa	F4539
Multi-Device Controller	2090	ETS LINDGREN	81311
Palo d'antenna elettrico	2175	ETS LINDGREN	136028
SAC3 – DC Filter	N6006	ETS-Lindgren (ETSL)	202031
Semi-Anechoic Chamber	-	ETS-Lindgren (ETSL)	5207
AC Power Supply	KBT-100-C-109-451	BEHLMAN	5896

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4.2 Fotografie del setup / Photo of the test setup – Radiated Emissions



Note: for frequencies from 30MHz to 1GHz the height of receiving antenna was changed from 1m to 4m, for frequencies from 1GHz to 12.75GHz the height of receiving antenna was fixed to 1m;

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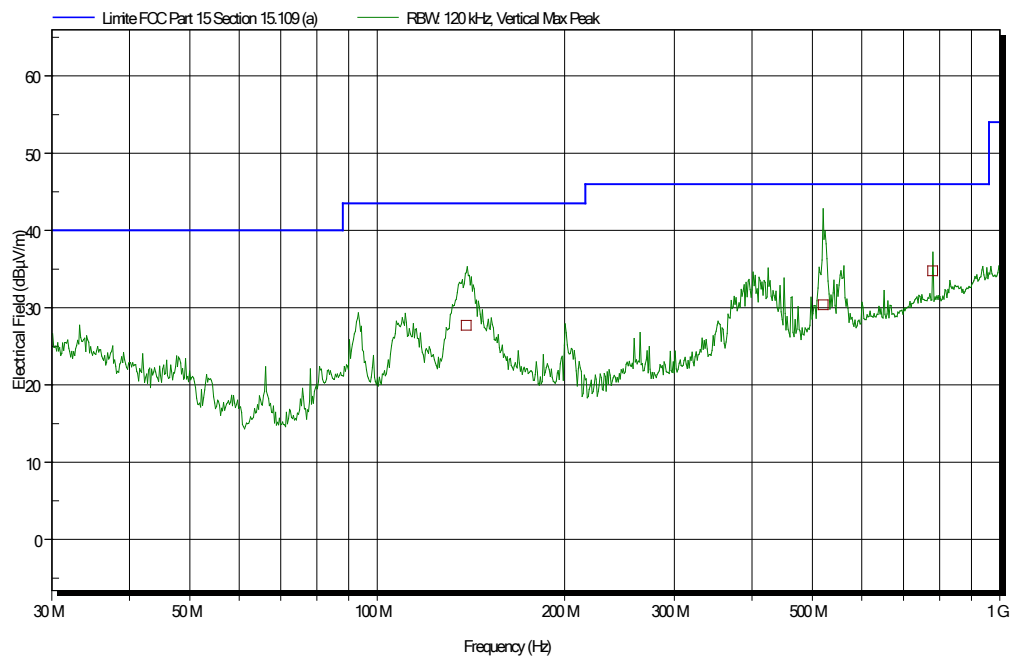
4.3 Risultati / Results - Radiated Emissions

The result of the test is: **PASS**. See the details in the charts/tables of the following paragraphs.

4.3.1 Tabelle e grafici dei risultati / Tables and graphical representation data – Spurious Radiated Emissions

Measures from 30MHz to 1GHz

Radiated emissions measured from 30MHz to 1GHz: peak detector (green trace) with Q-Peak limit (blue line). Vertical polarization.

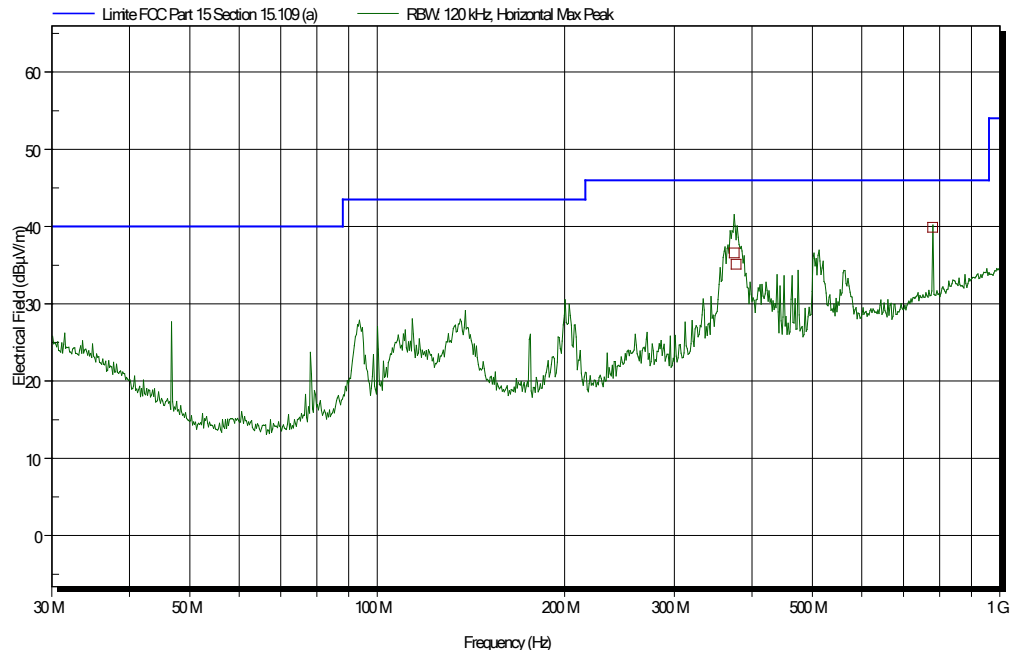


Signal list

Frequency [MHz]	Quasi-Peak [dBμV/m]	Quasi-Peak Limit [dBμV/m]	EUT Angle [°]	Antenna Height [mt]	Result
138.958	27.73	43.50	268	1.11	Pass
519.952	30.37	46.00	216	1.19	Pass
779.978	34.77	46.00	360	1.00	Pass

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Radiated emissions measured from 30MHz to 1GHz: peak detector (green trace) with Q-Peak limit (blue line). Horizontal polarization.



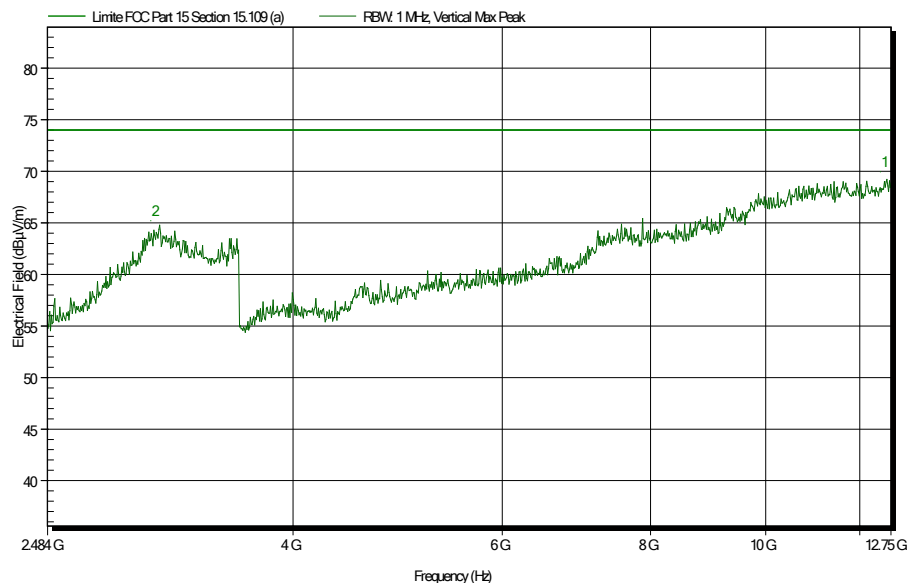
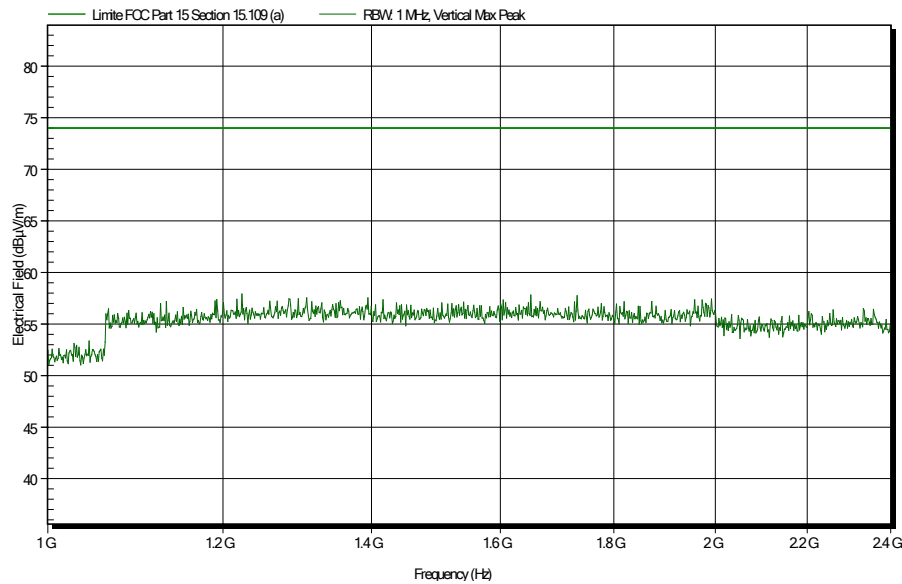
Signal list

Frequency [MHz]	Quasi-Peak [dBμV/m]	Quasi-Peak Limit [dBμV/m]	EUT Angle [°]	Antenna Height [mt]	Result
374.202	36.60	46.00	324	1.00	Pass
377.115	35.13	46.00	340	1.00	Pass
779.988	39.92	46.00	298	1.20	Pass

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Measures from 1GHz to 12.75GHz

Radiated emissions measured from 1GHz to 12.75GHz: Peak detector (green trace) with Peak limit (green line). Vertical polarization.
Occupied bandwidth 2.4GHz - 2.484GHz it is excluded from the measure.



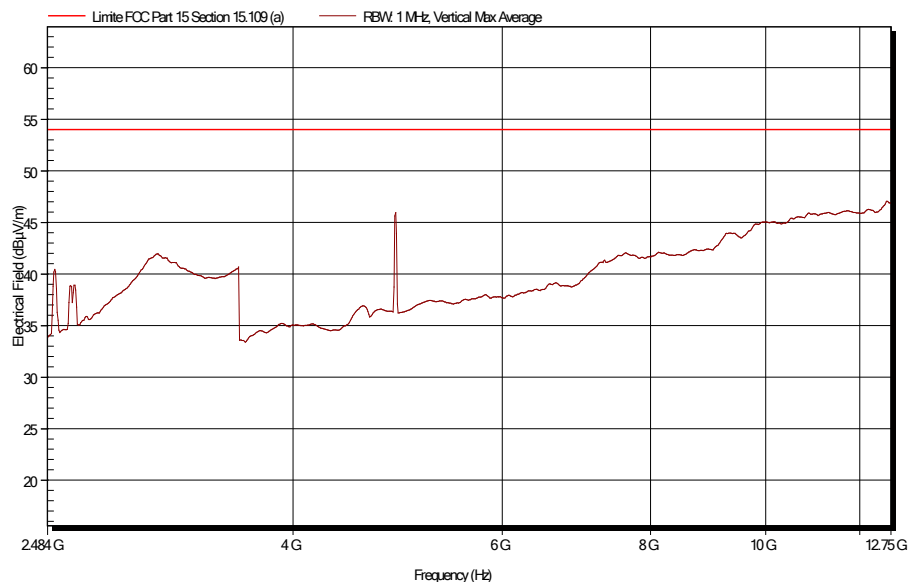
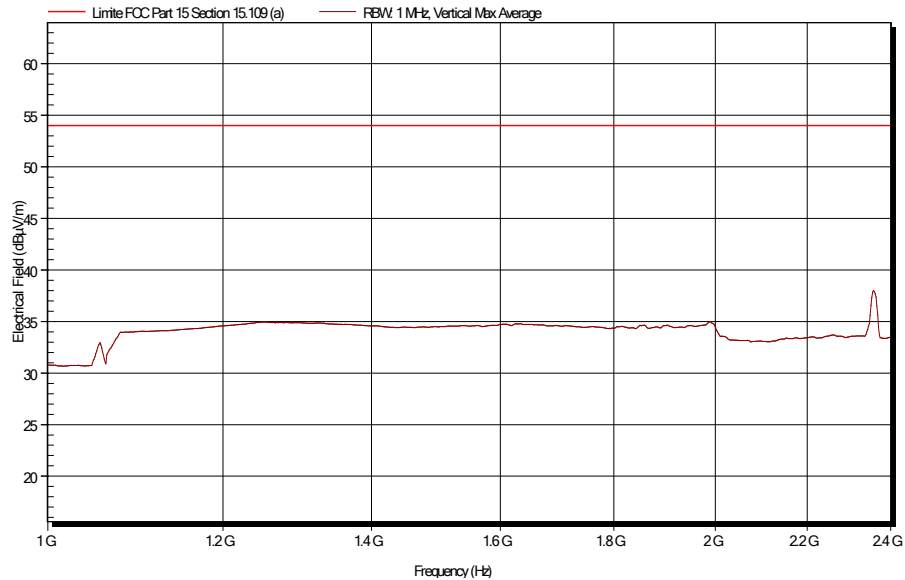
Signal list

Frequency [GHz]	Peak [dBμV/m]	Peak Limit [dBμV/m]	EUT Angle [°]	Antenna Height [mt]	Result
3.062	65.21	74.00	180	1.00	Pass
12.594	69.96	74.00	288	1.00	Pass

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Radiated emissions measured from 1GHz to 12.75GHz: Average detector (brown trace) with Average limit (red line). Vertical polarization.

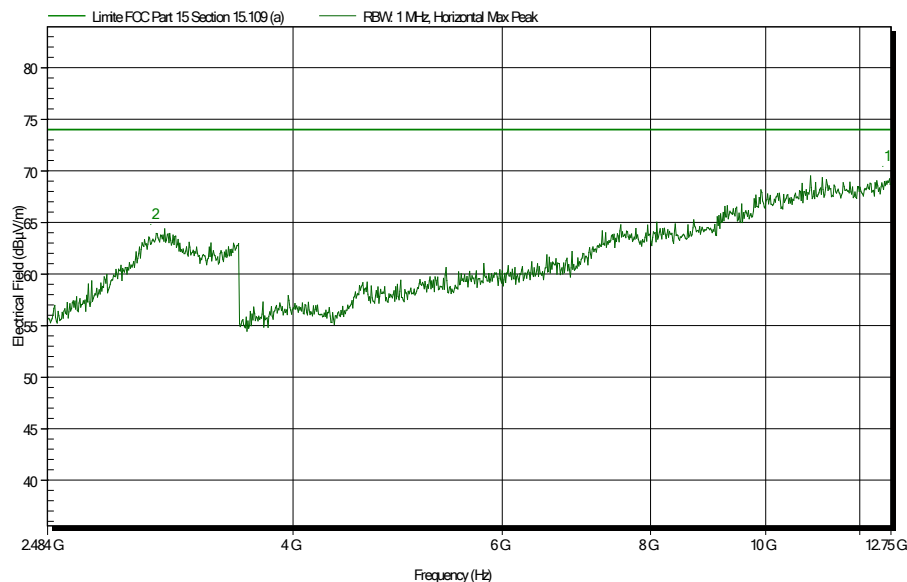
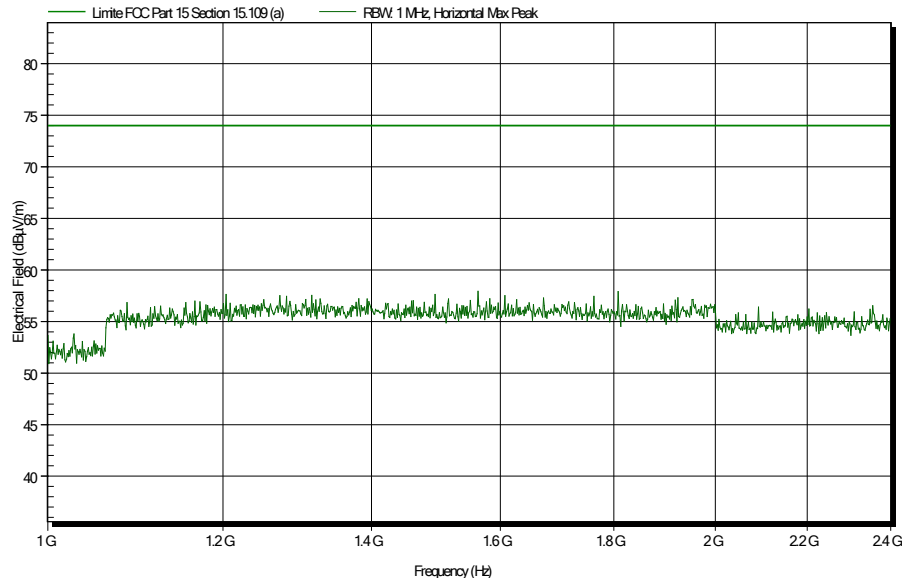
Occupied bandwidth 2.4GHz - 2.484GHz it is excluded from the measure.



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Radiated emissions measured from 1GHz to 12.75GHz: Peak detector (green trace) with Peak limit (green line). Horizontal polarization.

Occupied bandwidth 2.4GHz - 2.484GHz it is excluded from the measure.



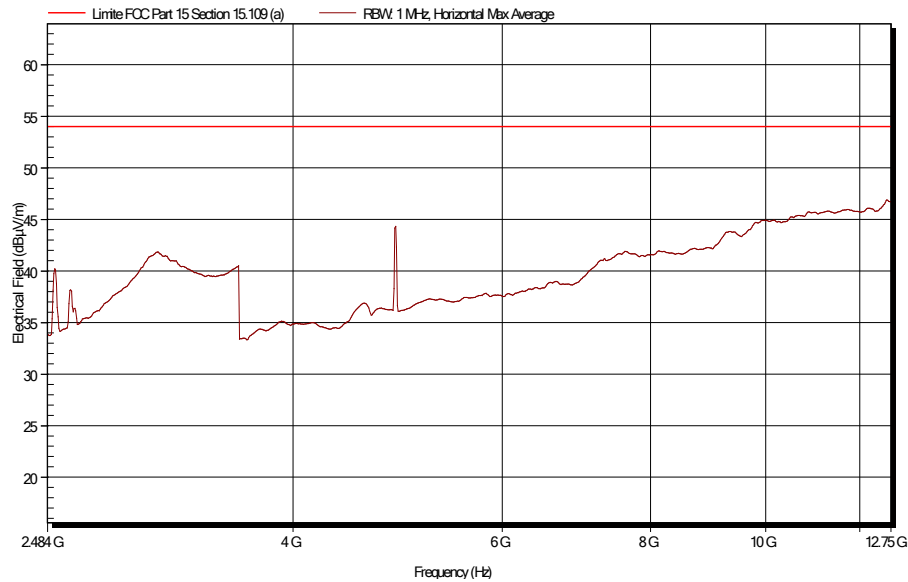
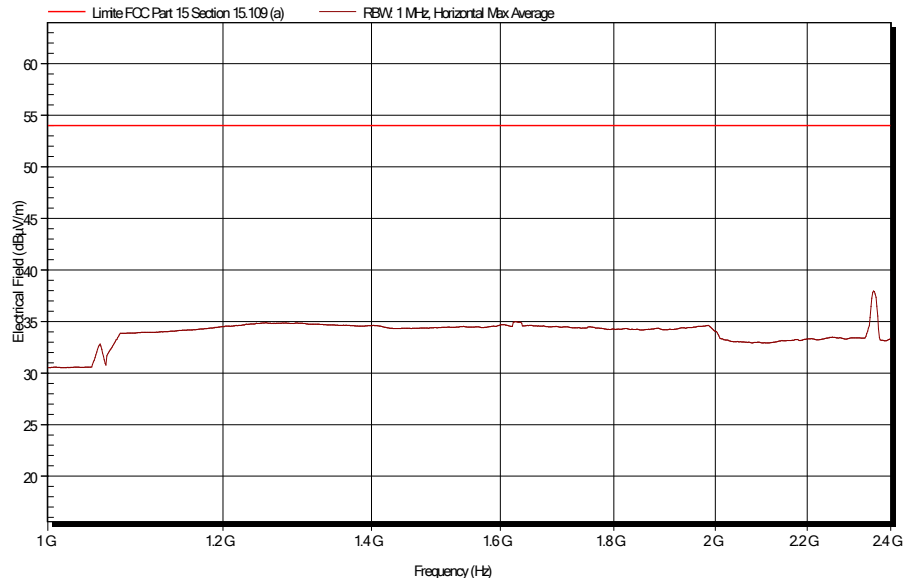
Signal list

Frequency [GHz]	Peak [dBμV/m]	Peak Limit [dBμV/m]	EUT Angle [°]	Antenna Height [mt]	Result
3.062	64.83	74.00	72	1.00	Pass
12.654	70.45	74.00	180	1.00	Pass

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Radiated emissions measured from 1GHz to 12.75GHz: Average detector (brown trace) with Average limit (red line). Horizontal polarization.

Occupied bandwidth 2.4GHz - 2.484GHz it is excluded from the measure.



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Allegato 1 / Annex 1: Incertezza / Uncertainty

A.1.1 Radiated Emissions CISPR 16

From 30MHz to 200MHz using Bi-log antenna

Field intensity : +/- 5.5 dB

From 200MHz to 1000MHz using Bi-log antenna

Field intensity : +/- 4.4 dB

Above 1GHz using Horn antenna

Field intensity : +/- 5.4 dB

A.1.2 Conducted Emissions CISPR 16

Voltage Method : +/- 2.6 dB