



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

TEST REPORT

No. ARSO00118/a

performed in accordance with

FCC Rules: Code of Federal Regulations (CFR) no. 47
Part 15 Subpart C Section 15.207 and 15.209

PRODUCT	WIRELESS CHARGING TRANSMITTER
MODEL(s) TESTED	Qi1001
FCC ID	2AD9NQI1001
TRADE MARK(s)	QINSIDE

APPLICANT	NITZ ENGINEERING S.r.l. – Via Alfred Ammon, 16 – 39042 Bressanone (BZ) - ITALY
-----------	---

Tested by	Roberto Radice	
Approved by	Roberto Colombo <i>[Laboratory manager]</i>	

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2014-09-09	First edition Digital signed - ARSO00118a_TR_FCC sub part 15.207 and 15.209_NITZ_Wireless charger Qi1001
Rev. 1	2014-11-21	Modified par.7 "Test result" Digital signed - ARSO00118a_rev.1_TR_FCC sub part 15.207 and 15.209_NITZ_Wireless charger Qi1001
Rev. 2	2015-02-17	Insert new Grantee Code (pag. 1 and 4) Digital signed - ARSO00118a_rev.2_TR_FCC sub part 15.207 and 15.209_NITZ_Wireless charger Qi1001

The results of tests and checks reported in this Test Report refer exclusively to the samples tested and described in the Report itself.
This Report shall not be reproduced partially without the written approval of IMQ S.p.A. con socio unico



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

1. GENERAL DATA

SAMPLE		
Samples received on	2014-06-13	(item sent and sampling by applicant)
IMQ reference samples	BEM	73463
Samples tested No.	1	
Object under analysis recognition	Not carried out	Except where stated, characteristics of products were taken from client description and were not verified by the laboratory
TEST LOCATION		
Testing dates	2014-07-29 ÷ 2014-08-01	
Testing laboratory.	IMQ S.p.A. con socio unico - Via Quintiliano, 43 – I-20138 Milano	
Testing site	Via Quintiliano, 43 – I-20138 Milano	
ENVIRONMENTAL CONDITIONING		
Parameter	Measured	
Ambient Temperature	25 ÷ 35 °C	
Relative Humidity	50 ÷ 60 %	
Atmospheric Pressure	900 ÷ 1000 mbar	



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

2. REFERENCE DOCUMENT

DOCUMENT		DATE	TITLE
<input checked="" type="checkbox"/>	47 CFR Part 15	2008	Radio Frequency Device
<input checked="" type="checkbox"/>	ANSI C63.4	2009	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
<input checked="" type="checkbox"/>	ANSI C63.10	2009	American National Standard for Testing Unlicensed Wireless Devices



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

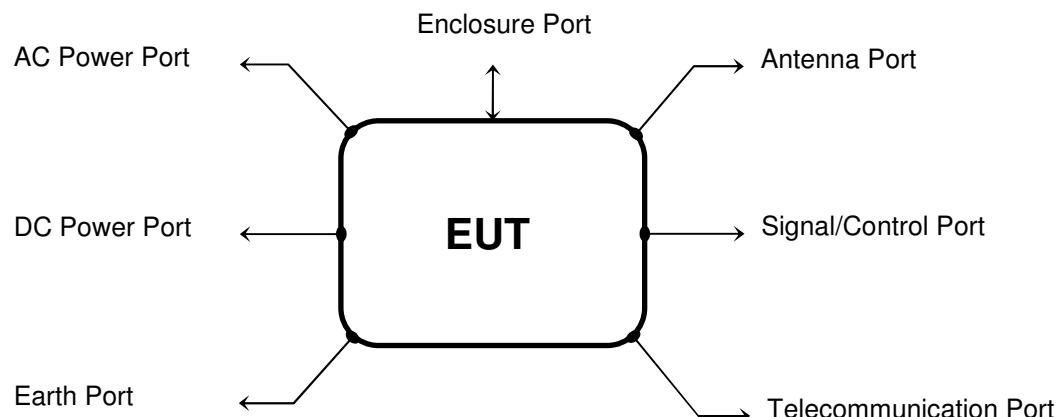
3. UNIT UNDER TEST (EUT) DETAILS

GENERAL DATA

MODEL (basic)	Description
Qi1001	WIRELESS CHARGING TRANSMITTER
VARIANTS (derived)	Description
None	
FCC ID	2AD9NQI1001
Manufacturer	Ellipse-Sourcing (HK) Limited - Room 623, 6/F. Shangfu Building 21 Dangliang Road Nanshan Shenzhen City 518054 Guangdong Province China
Type of equipment	Wireless inductive charger
Operating frequency	175kHz when no RX is associated.
Maximum RF radiated power	63,792 dB μ V/m (at 175 kHz)
Modulation	CW (Continuous Wave)
Channel Spacing	Wideband
Antenna	Integral; antenna size: 0,0020 m ²
RX sensitivity	/
Main SW identification	/
Main HW Board identification	/
Peripherals included (for system application)	None
Interfaces	None
Integrated interfaces	None
AC adapter:	KTEC mod.KSAS0121900063VE Input 100-240Vac 50/60 Hz 0.4Ampere Output 19V dc 0.63Ampere

4. TEST CONFIGURATION OF UNIT UNDER TEST

EUT PORTS



Port	Description	Max length
Enclosure	Not conductive surface (ABS)	-
AC power	Dedicated external AC/DC power supply	-
DC power	Input from AC/DC external power supply: 19 V dc $\pm 1\text{V}$	<3m.
Earth	Port not present	-
Telecommunication	Port not present	-
Signal/ Control	Port not present	-
Antenna	Integrated on PCB	-



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

STATE OF THE EUT DURING TESTS

Ref.	Mode	Description
#1	Operating	Equipment in continuous search of electronic support receiver



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

SUPPORT EQUIPMENT

Defined as equipment needed for correct operation or loading of the EUT, but not considered as tested:

Equipment	Manufacturer	Model
None		

ELECTROMAGNETICALLY RELEVANT COMPONENTS

Component	No.	Manufacturer	Model
Single-chip WPC compliant wireless power transmitter (U1)	1	IDT	IDPT9030
TX Coil (L2)	1	/	24µH
Series resonant capacitors (C8, C11 & C20)	3	/	3x33nF= 100nF

RFI SUPPRESSION DEVICES

Component	No.	Manufacturer	Model
/	/	/	/

EMI PROTECTION DEVICES

Component	No.	Manufacturer	Model
/	/	/	/

EUT TECHNICAL DOCUMENTATION

Document	Reference
Wiring diagram	No reference. Date:2012/12/10
Qi1001 Wireless Charger – Safety and warning instructions	Document Number Mi1001 V1.0



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

5. METHODS OF MEASUREMENT

All compliance measurements have been carried out using the procedures described in the standard ANSI C63.4-2009, ANSI C63.10-2009 and Section 15.31 of CFR47 Part 15 – Subpart A (General).

Additional test requirements have been adopted according to the reference Section indicated in the § 6 of this test report.

FREQUENCY RANGE INVESTIGATED

Conducted emission tests : from 150 kHz to 30 MHz.

Radiated emission tests: from 9 kHz to 1GHz



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

6. SUMMARY OF TEST RESULTS

POSSIBLE TEST CASE VERDICTS:	
Test object does meet the requirement	PASS
Test object does not meet the requirement	FAIL
Test case does not apply to the test object	N.A.
Test not performed	N.P.

CFR47 Part 15	TITLE	RESULT
§ 15.207	Conducted emission	PASS
§ 15.209	Radiated disturbances	PASS



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

7. TEST RESULTS

7.1 CONDUCTED EMISSION

TEST REQUIREMENT

Test setup	ANSI C63.4
Frequency range	150 kHz ÷ 30 MHz
IF bandwidth	9 kHz
EMC class	B
EUT operating condition	#1
Remark	None

TEST RESULT

The EUT meets the requirements of sections 15.207.

TEST PROCEDURE

- 1) The EUT was placed on a wooden table of size, 80 cm by 80 cm, raised 80 cm in which is located 40 cm away from the vertical wall the shielded room.
- 2) Each EUT power cord input cord was individually connected through a 50Ω/50µH LISN to the input power source.
- 3) Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
- 4) The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
- 5) The measurements were made with the detector set to PEAK and AVERAGE amplitude within a bandwidth of 10 kHz during the measurements.
- 6) The measurements with Quasi-Peak detector are performed only for frequencies for which the Peak values are \geq (Q.P. limit - 6 dB).



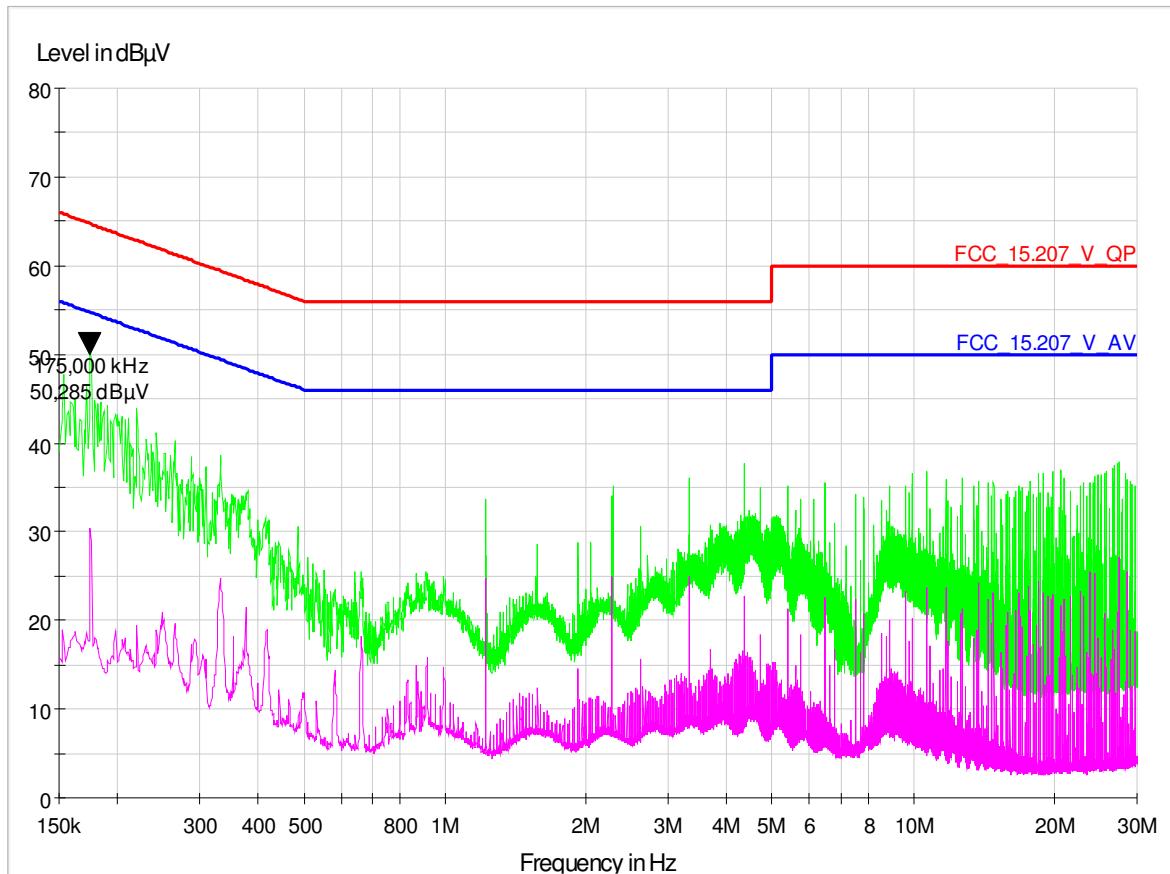
IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

MEASUREMENTS RESULTS

Port: AC MAINS POWER PORT OF AC/DC ADAPTER

Line: PHASE

Operating condition #1



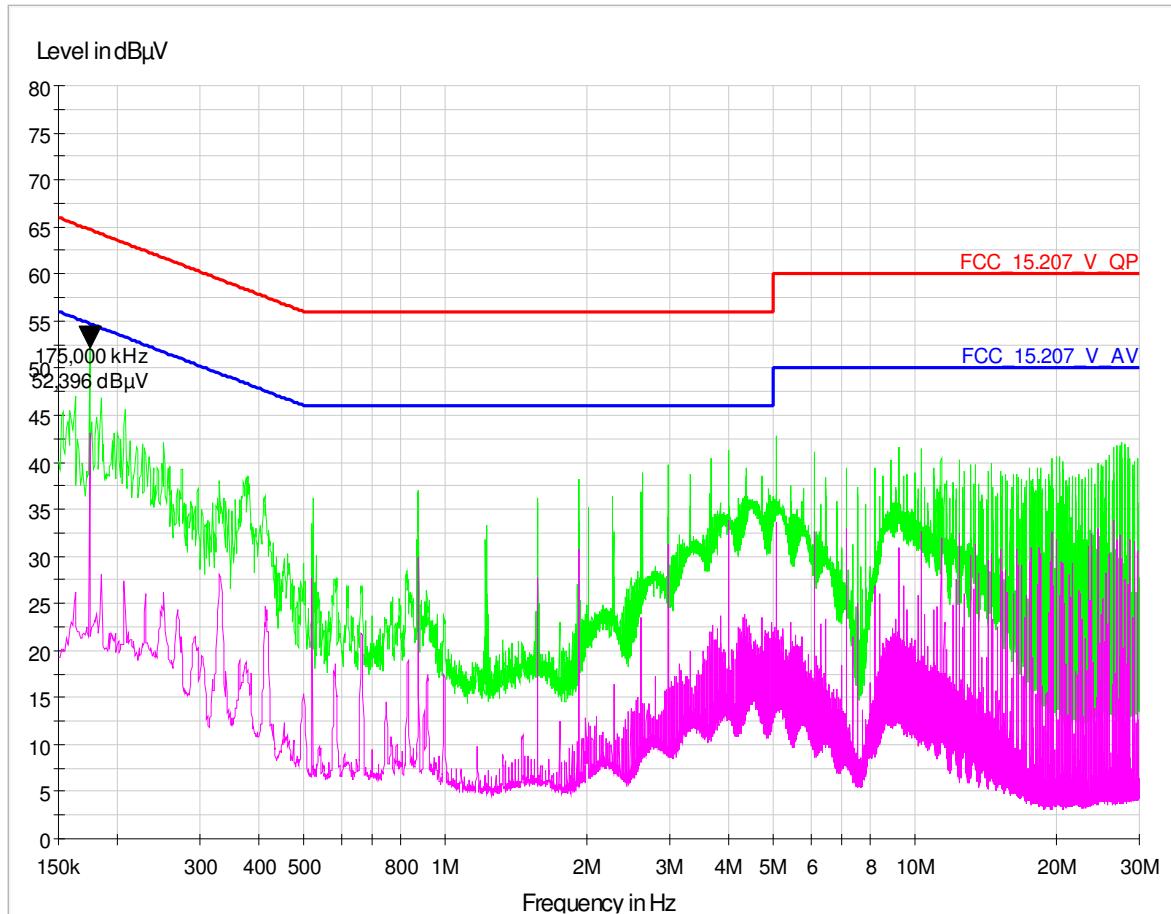


IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

Port: AC MAINS POWER PORT OF AC/DC ADAPTER

Line: NEUTRAL

Operating condition #1





IMQ S.p.A. - Società con Socio Unico
 Via Quintiliano, 43 I-20138 MILANO
 tel 0250731 - info@imq.it - www.imq.it

7.2 RADIATED DISTURBANCES

TEST REQUIREMENT	
Test setup	ANSI C63.4
Test facility	Semi-anechoic chamber
Test distance	3 meters
Frequency range	9 kHz to 1GHz
IF bandwidth (below 30 MHz)	9 kHz
IF bandwidth (below 1,000 MHz)	120 kHz
IF bandwidth (above 1,000 MHz)	1 MHz
Deviation to test procedure	None
Limits	sections 15.209 (a)
EUT operating condition	#1
Remark	(*) In accordance with part 15.31 (f) (2), where the measurement distance was specified to be 30 or 300 meters, a correction factor was applied in order to permit measurement to be performed at a separation distance. The applied formula for limits at 3 meter is: Extrapolation (dB) = 40log (300meter / 3meter) = +80db Extrapolation (dB) = 40log (30meter / 3meter) = +40db

TEST RESULT

The EUT meets the requirements of sections 15.209.

LIMITS FOR SPURIOUS		Limit μ V/m	Limit dB μ V/m
Band of operations			
30÷88 MHz		100	40
88÷216 MHz		150	43,5
216÷960 MHz		200	46
Above 960MHz		500	54



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

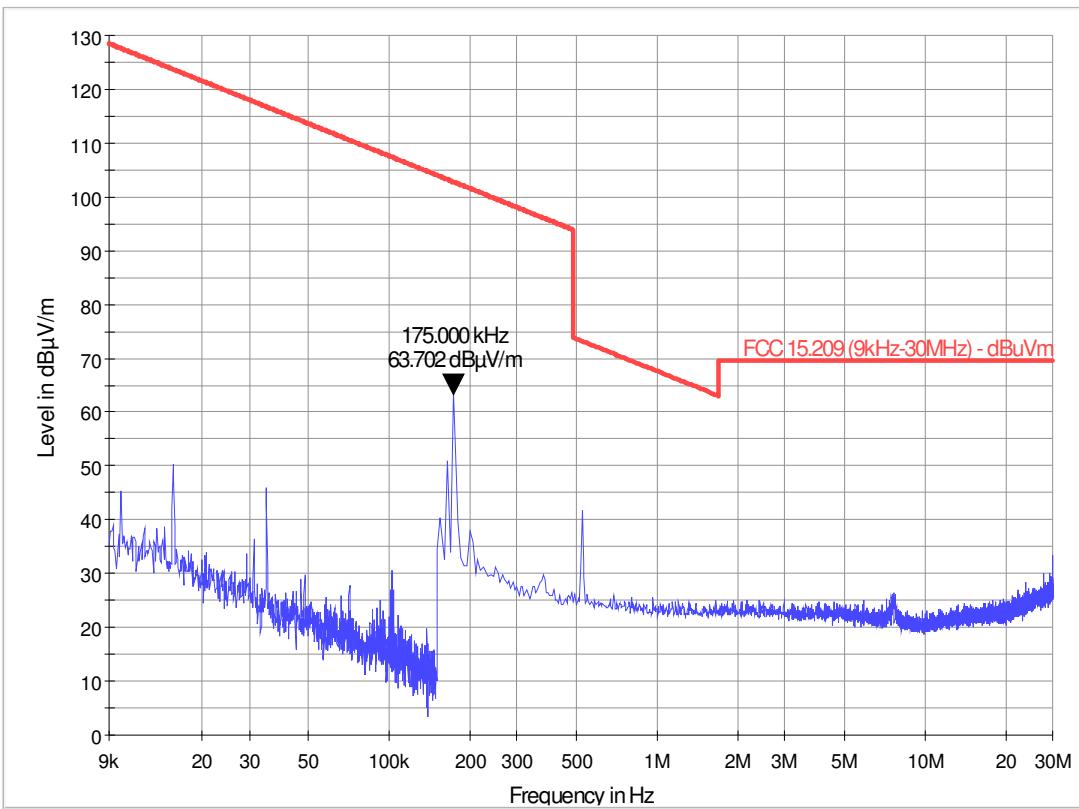
TEST PROCEDURE

- 1) The EUT was placed on turntable which is 0.8 m above the ground plane
- 2) The turntable shall rotate from 0° to 360° degrees to determine the position of maximum emission level.
- 3) The EUT is positioned 3 m away from the receiving antenna which varied from 1 to 4 m to find the highest emission.
- 4) The measurements were made with the detector set to PEAK and AVERAGE amplitude within a bandwidth of 100 kHz below 1000 MHz and 1 MHz above 1000 MHz.
- 5) The receiving antenna was positioned in both horizontal and vertical polarization.
- 6) The measurements with Quasi-Peak detector, below 1000 MHz are performed only for frequencies for which the Peak values are \geq (Q.P. limit - 6 dB).

MEASUREMENTS RESULTS

Range: 9kHz ÷ 30 MHz

Operating condition #1



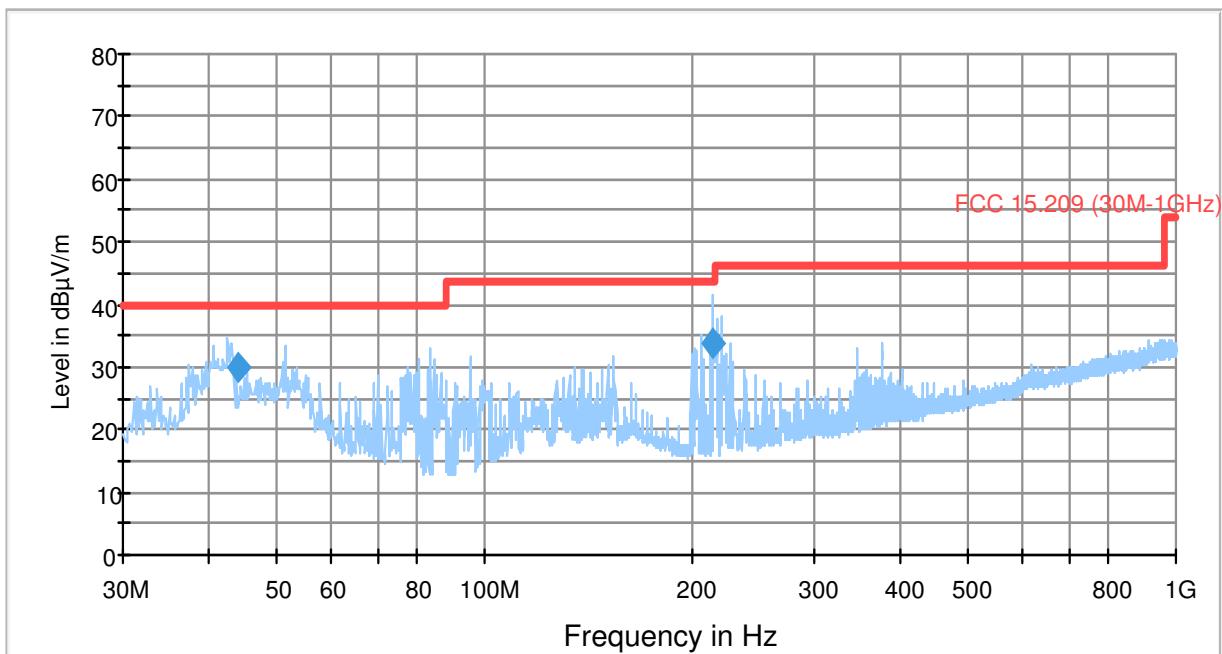


IMQ S.p.A. - Società con Socio Unico
 Via Quintiliano, 43 I-20138 MILANO
 tel 0250731 - info@imq.it - www.imq.it

Range: 30 ÷ 1000 MHz

Operating condition #1

EMI 30-1000MHz ARA ESCI7



Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
43.928750	30.1	1000.0	120.000	99.9	V	106.0	13.9	9.90	40.00
214.138750	34.0	1000.0	120.000	99.9	H	83.0	12.1	9.50	43.50



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

8. MEASUREMENTS AND TESTS UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the IMQ procedure No. IO-DT-U01 and requirement of NIST Technical Note 1297 and NIS 81: 1994 "The Treatment of Uncertainty in EMC Measurements"

Methods	Expanded Uncertainty	Unit	confidence level	Coverage factor	Degree of freedom
Radiated emission (30 ÷ 1000 MHz)	4.77	dB	95 %	2	9
Radiated emission (above 1000 MHz)	3.53	dB	95 %	2	9



IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

9. LIST OF MEASURING EQUIPMENT AND CALIBRATION INFORMATION

IMQ Serial Number	Instrument	Manufacturer	Type	Last Cal.	Cal. Period.	Calibration Company
P01709	Shielded semi-anechoic chamber	SIDT	/	03-13	24	IMQ
P02486	Turntable controller unit	FRANKONIA	FCTAM01	/	/	/
P02488	Mast antenna	FRANKONIA	FAM4	/	/	/
S03631	LISN 1 phase	Rohde & Schwarz	ENV216	02-14	12	INRIM
S05562	EMI Receiver	Rohde & Schwarz	ESU 8	05-14	12	Rohde & Schwarz
S05563	EMI Receiver	Rohde & Schwarz	ESCI 7	08-13	12	INRIM
S02508	Loop antenna	Rohde & Schwarz	HFH2-Z2	01-12	36	TESEO S.p.A.
S06463	Bi-Log antenna	SCHWARZBECK	VULB9160	03-13	36	SEIBERSDORF
W-00199/E	Software	Rohde & Schwarz	Emc32 Ver. 6.30	/	/	/
H-00165	PC		/	/	/	/



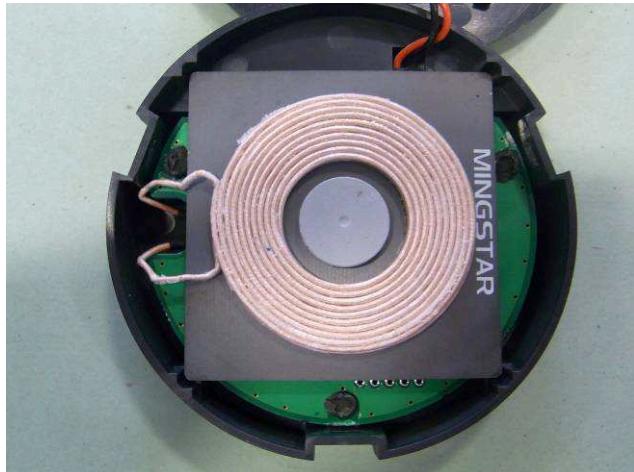
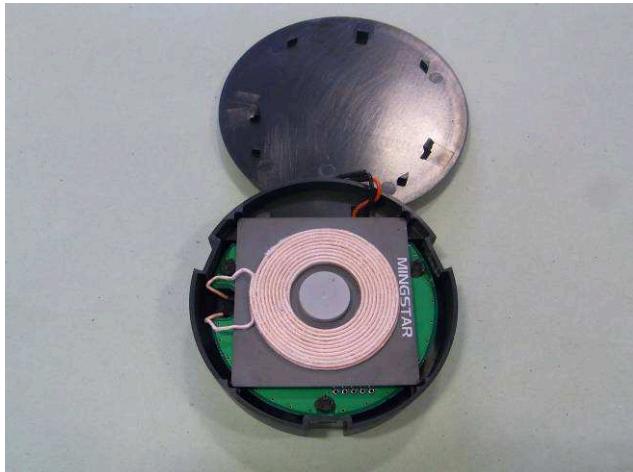
IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

10. PHOTOGRAPHIC DOCUMENTATION

EUT IDENTIFICATION



EUT IDENTIFICATION – INTERNAL VIEW





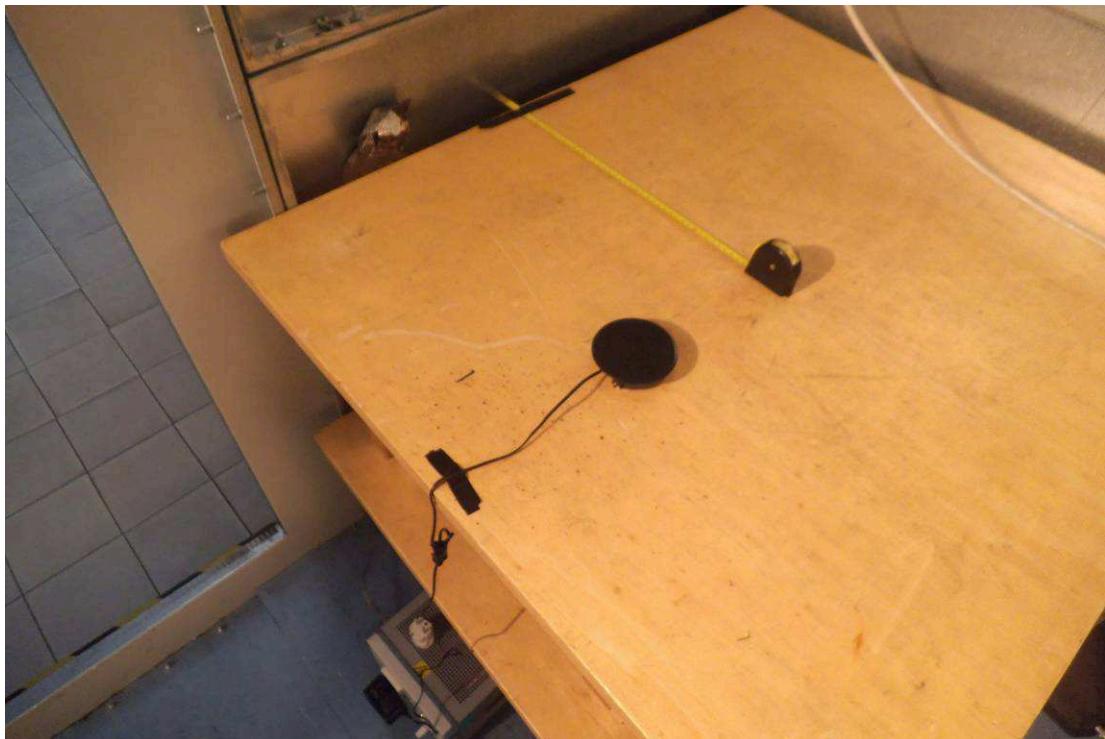
IMQ S.p.A. - Società con Socio Unico
Via Quintiliano, 43 I-20138 MILANO
tel 0250731 - info@imq.it - www.imq.it

AC/DC ADAPTER



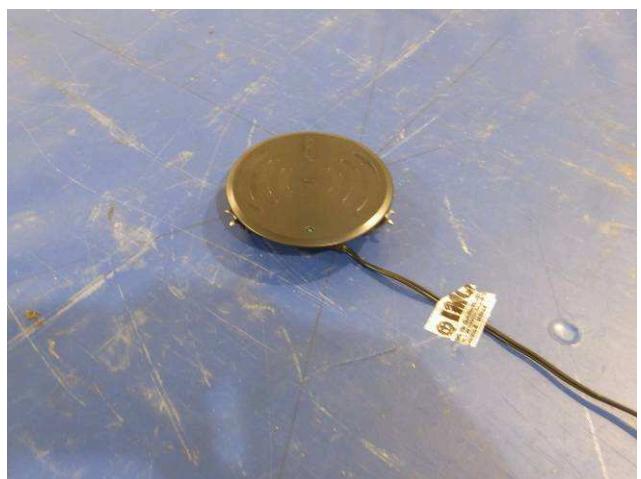
SET-UP

Test set-up conducted emission test – No RX associated



SET-UP

Test set-up radiated emission test - RX not associated



END OF TEST REPORT