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Report On

FCC Testing of the
Covidence A/S Oculus
In accordance with FCC CFR 47 Part 15B

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FCC ID: SQ7-OTX-64, SQ7-OTX-32 and SQ7-OTX-16

Document 75922251 Report 01 Issue 1

July 2013



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COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC Testing of the
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PREPARED FOR

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Roende
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PREPARED BY

Natalie Bennett
Senior Administrator (Technical)

APPROVED BY

Mark Jenkins
Authorised Signatory

DATED

18 July 2013

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15B. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler



**CONTENTS**

Section		Page No
1	REPORT SUMMARY	3
1.1	Introduction	4
1.2	Brief Summary of Results	5
1.3	Application Form	6
1.4	Product Information	8
1.5	Test Conditions	8
1.6	Deviations from the Standard	8
1.7	Modification Record	8
2	TEST DETAILS	9
2.1	AC Line Conducted Emissions	10
2.2	Radiated Emissions	13
3	TEST EQUIPMENT USED	16
3.1	Test Equipment Used	17
3.2	Measurement Uncertainty	18
4	ACCREDITATION, DISCLAIMERS AND COPYRIGHT	19
4.1	Accreditation, Disclaimers and Copyright	20



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SECTION 1

REPORT SUMMARY

FCC Testing of the
Covidence A/S Oculus
In accordance with FCC CFR 47 Part 15B



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1.1 INTRODUCTION

The information contained in this report is intended to show verification of the FCC Testing of the Covidence A/S Oculus to the requirements of FCC CFR 47 Part 15B.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Covidence A/S
Model Number(s)	Oculus
Serial Number(s)	C1009814
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15B (2012)
Incoming Release Date	Application Form 16 April 2013
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	Paid in advance Not Applicable
Start of Test	26 June 2013
Finish of Test	3 July 2013
Name of Engineer(s)	G Lawler



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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15B is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
Receive				
2.1	15.107	AC Line Conducted Emissions	Pass	
2.2	15.109	Radiated Emissions	Pass	



1.3 APPLICATION FORM

APPLICANT'S DETAILS	
COMPANY NAME :	Covidence A/S.....
ADDRESS :	Strandvejen 2A.....
	8410 Roende.....
	Denmark.....
NAME FOR CONTACT PURPOSES :	Jimmi Hansen.....
TELEPHONE NO: +45 88809000.....	FAX NO:
	E-MAIL: jmh@covidence.com

EQUIPMENT INFORMATION	
Model name/number Oculus TX, 64GB.	
Identification/Part number 11002720	
There are following versions with the same BOM list:	
Oculus TX, 16GB. Part number 11002620	
Oculus TX, 32GB, Part number 11002320	
Hardware Version	XANDRA_V3C.....
Manufacturer	Covidence A/S....
FCC ID	
Software Version	1.17.....
Country of Origin	Denmark.....
Industry Canada ID	
Technical description (a brief description of the intended use and operation):	
Oculus is a digital audio and video recorder. The version with built-in audio transmitter is a special version of the standard Oculus.	
<u>Supply Voltage:</u>	
☐ AC mains	State AC voltage V and AC frequency Hz
☒ DC (external)	State DC voltage: 5-15V and DC current: Less than 0.5 A
☒ DC (internal)	State DC voltage: 3V and Battery type: 2x Energizer L92.
<u>Frequency characteristics:</u>	
Transmitter Frequency range 150 MHz to 174 MHz	
Channel spacing 12.5kHz and 15kHz (if channelized)	
Receiver Frequency range MHz to MHz	Channel spacing (if channelized)
(if different)	
Designated test frequencies:	
Bottom: MHz Middle: MHz	Top: MHz
Intermediate Frequencies : MHz	
Highest Internally Generated Frequency : 14.4 MHz	
<u>Power characteristics:</u>	
Maximum transmitter power 0.250 W	Minimum transmitter power 0.200 W (if variable)
☒ Continuous transmission	State duty cycle
☐ Intermittent transmission	
If intermittent, can transmitter be set to continuous transmit test mode? Y/N	
<u>Antenna characteristics:</u>	
☒ Antenna connector	State impedance: 50 ohm
☐ Temporary antenna connector	State impedance ohm
☐ Integral antenna Type	State gain dBi
☒ External Antenna Type	State gain: 0 dBi
<u>Modulation characteristics:</u>	
☐ Amplitude	[] Other
☒ Frequency	Details: (GMSK, QSPK etc)
☐ Phase	
Can the transmitter operate un-modulated? Yes	
ITU Class of emission: NBFM Voice – Designator: 12K5F3	



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<u>Power Supply</u>			
Model name/number	Power Supply, 100-240VAC -> 6.0VDC/800mA, US		
Identification/Part number	16100503		
Manufacturer	Friwo	Country of Origin:	Germany
<u>Power Supply</u>			
Model name/number	Power Supply, 100-240VAC -> 6.0VDC/800mA, EU		
Identification/Part number	16100501		
Manufacturer	Friwo	Country of Origin:	Germany
<u>Battery</u>			
Model name/number	AAA Lithium-batteries Energizer L92		
Identification/Part number	16110100.....		
Manufacturer	Energizer.....	Country of Origin	USA.....
<u>Ancillaries (if applicable)</u>			
Model name/number		Identification/Part number	
Manufacturer		Country of Origin	
<u>Extreme conditions:</u>			
Maximum temperature	55 °C	Minimum temperature	-15 °C
Maximum supply voltage:	External DC= 15 V Minimum supply voltage: Internal DC= 3V		

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature : Held on file at TUV
 Name : Jimmi Hansen
 Position held : CEO
 Date : 16 April 2013



Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Covidence A/S Oculus. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 120 V AC supply.

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory
667968 Bearley, Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.7 MODIFICATION RECORD

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Serial Number: C1009814			
0	As supplied by manufacturer.	N/A	N/A
1	Manufacturer mod to fix Emission Mask failure	Manufacturer	09/05/2013
2	Modification by manufacturer to improve radiated spurious emissions	Manufacturer	10/06/2013

The table above details modifications made to the EUT during the test programme. The modifications incorporated during each test are recorded on the appropriate test pages.



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SECTION 2

TEST DETAILS

FCC Testing of the
Covidence A/S Oculus
In accordance with FCC CFR 47 Part 15B



2.1 AC LINE CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC CFR 47 Part 15B, Clause 15.107

2.1.2 Equipment Under Test and Modification State

Oculus S/N: C1009814 - Modification State 2

2.1.3 Date of Test

26 June 2013

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

The EUT is set up on a test table 800mm above a horizontal ground plane. A vertical ground plane is also required and is placed 400mm from the EUT. Where a EUT is floor standing it will be stood on but insulated from the ground plane by up to 12mm.

The EUT is powered through a Line Impedance Stabilisation Network (LISN) which is bonded to the ground plane. The EUT is located so that the distance between the EUT and the LISN is no less than 800mm. Where possible the cable between the mains input of the EUT and the LISN is 1m. Where this is not possible the cable is non inductively bundled with the bundle not exceeding 400mm in length.

A preliminary profile of the Conducted Emissions is obtained over the frequency range 150kHz to 30MHz. Any points of interest are noted for formal measurements.

During formal measurements, the measuring receiver is tuned to the emission of interest where Quasi – Peak and Average measurements are performed in a 9kHz Video and Resolution Bandwidth.

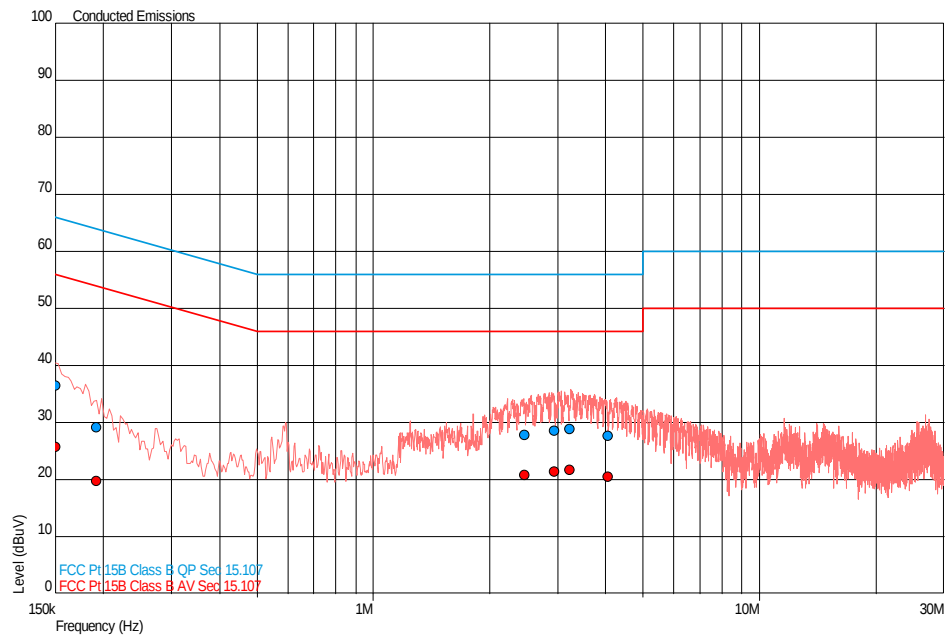
2.1.6 Environmental Conditions

Ambient Temperature	20.2°C
Relative Humidity	43.0%



2.1.7 Test Results

Live Line

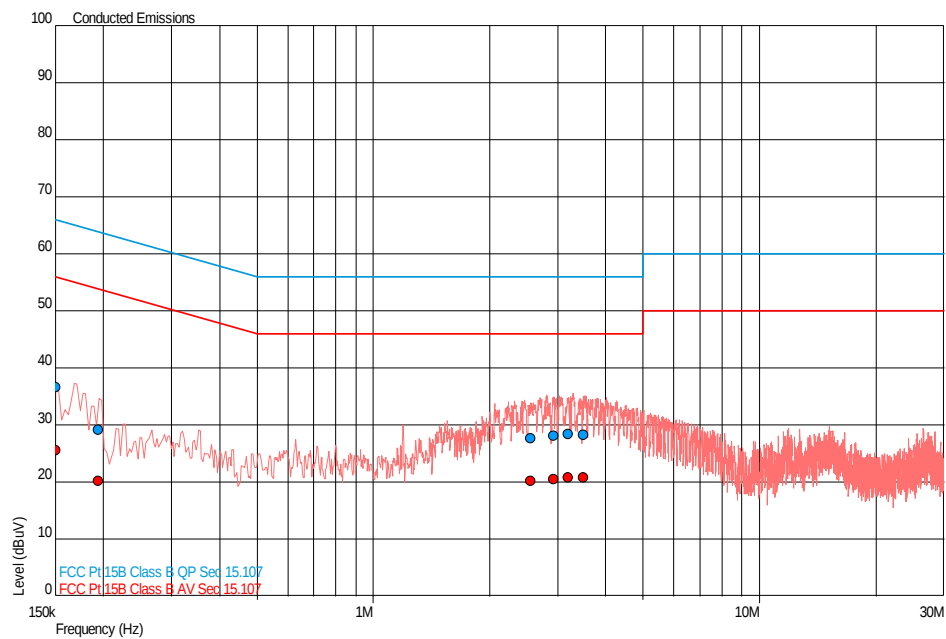


Frequency (MHz)	QP Level (dBμV)	QP Limit (dBμV)	QP Margin (dBμV)	AV Level (dBμV)	AV Limit (dBμV)	AV Margin (dBμV)
0.150	36.5	66.0	-29.5	25.8	56.0	-30.2
0.192	29.2	63.9	-34.8	19.8	53.9	-34.2
2.460	27.8	56.0	-28.2	20.8	46.0	-25.2
2.946	28.6	56.0	-27.4	21.3	46.0	-24.7
3.230	28.9	56.0	-27.1	21.7	46.0	-24.3
4.045	27.7	56.0	-28.3	20.5	46.0	-25.5



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Neutral Line



Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dBµV)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dBµV)
0.150	36.7	66.0	-29.3	25.6	56.0	-30.4
0.194	29.1	63.9	-34.7	20.2	53.9	-33.7
2.550	27.7	56.0	-28.3	20.3	46.0	-25.7
2.924	28.1	56.0	-27.9	20.6	46.0	-25.4
3.196	28.5	56.0	-27.5	20.8	46.0	-25.2
3.499	28.3	56.0	-27.7	20.8	46.0	-25.2



2.2 RADIATED EMISSIONS

2.2.1 Specification Reference

FCC CFR 47 Part 15B, Clause 15.109

2.2.2 Equipment Under Test and Modification State

Oculus S/N: C1009814 - Modification State 2

2.2.3 Date of Test

26 June 2013 & 3 July 2013

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

A preliminary profile of the Spurious Radiated Emissions is obtained up to the 5th harmonic of the EUT's highest internally generated fundamental frequency. For frequencies from 30MHz to 18GHz the EUT is placed on a test table 800mm above the ground plane. For frequencies above 18GHz, the EUT height is increased by 200mm to a height of 1000mm. This is to ensure the beam width of the measuring antenna gives sufficient vertical coverage of the EUT.

During characterisation the turntable azimuth is adjusted from 0 to 360 degrees with the measuring antenna in one polarity. It is then repeated for the other polarity. Any frequencies of interest are noted for formal measuring later. The distance from the measuring antenna to the boundary of the EUT is 3m. Above 18GHz this distance may be reduced to 1m.

During formal measurement the spectrum analyser is tuned to the frequency of the emission. The turntable azimuth is adjusted from 0 to 360 degrees to determine the point at which the maximum emission level occurs. Then the height of the measuring antenna is adjusted from a height of 1m to 4m to determine the height at which the maximum emission level occurs. Once the point of maximum emission has been determined the emission is measured. Emissions in the 30MHz to 1GHz range are measured using a CISPR Quasi – Peak detector function in a 120kHz bandwidth. Emissions in the range 1GHz to 40GHz require Peak and Average measurements. The Peak measurements are made using a peak detector with 1MHz Resolution and Video bandwidths. The average measurements employ a peak detector with a Resolution bandwidth of 1MHz and a Video bandwidth of 10Hz. If measurements are made at a 1m measuring distance, then 10dB is added to the specification limit.

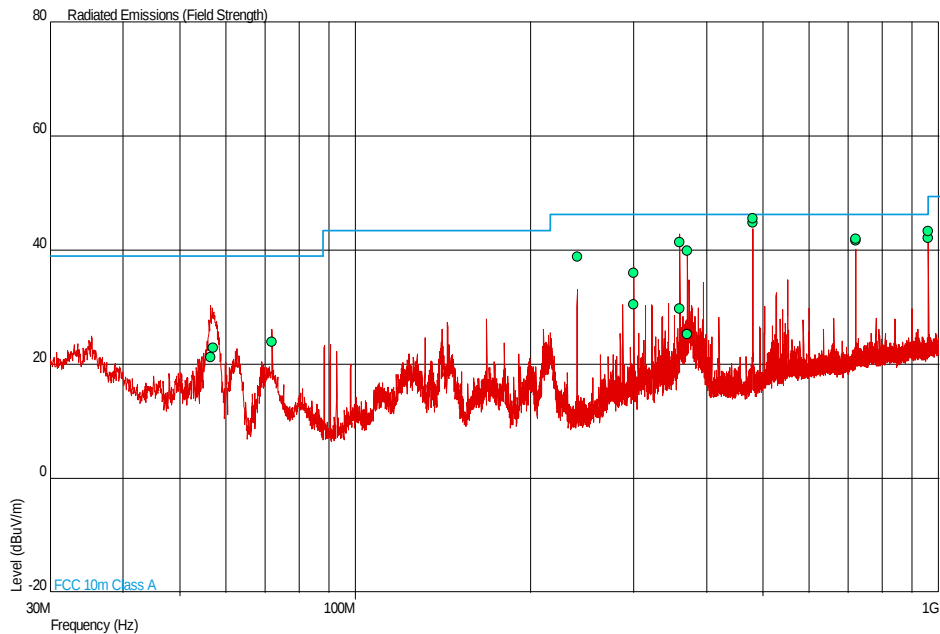
2.2.6 Environmental Conditions

Ambient Temperature	19.4 - 20.2°C
Relative Humidity	43.0 - 44.0%



2.2.7 Test Results

30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dBμV/m)	Angle(Deg)	Height(m)	Polarity
56.429	21.3	39.1	-17.8	141	1.00	Vertical
57.069	22.9	39.1	-16.2	109	1.00	Vertical
72.000	23.9	39.1	-15.2	301	1.65	Vertical
239.971	38.9	46.4	-7.5	77	3.69	Vertical
299.984	36.0	46.4	-10.4	184	1.00	Horizontal
299.989	30.5	46.4	-15.9	303	3.12	Vertical
359.987	29.8	46.4	-16.6	120	3.95	Vertical
359.999	41.4	46.4	-5.0	0	1.00	Horizontal
370.848	25.3	46.4	-21.1	75	3.99	Vertical
370.884	39.9	46.4	-6.5	360	1.00	Horizontal
479.998	44.8	46.4	-1.6	259	2.23	Horizontal
480.021	45.6	46.4	-0.8	41	3.87	Vertical
719.993	41.8	46.4	-4.6	315	1.17	Horizontal
719.993	41.9	46.4	-4.5	51	1.00	Vertical
960.001	42.2	49.5	-7.3	147	2.83	Horizontal
960.001	43.4	49.5	-6.1	44	1.06	Vertical

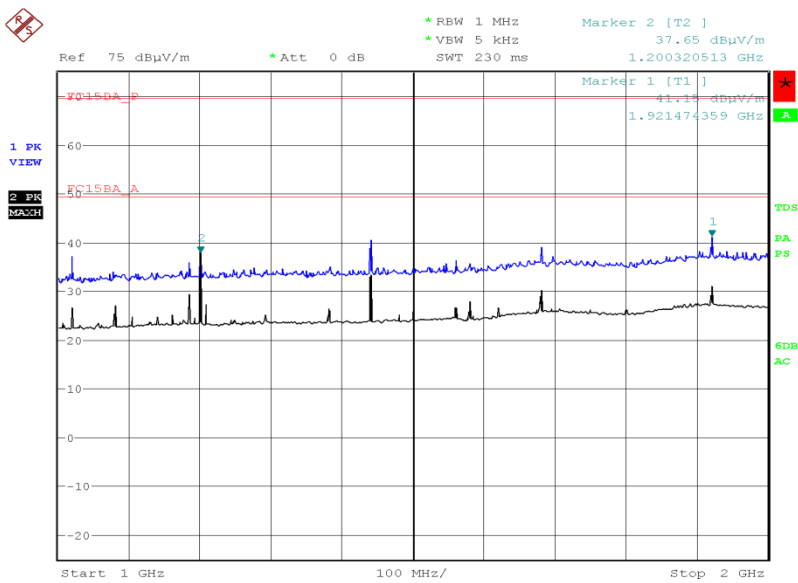


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1 GHz to 2 GHz

Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
1.200	Vertical	100	012	42.03	26.36

1 GHz to 2 GHz



Date: 3.JUL.2013 20:42:09



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SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 - AC Line Conducted Emissions					
LISN	Rohde & Schwarz	ESH2-Z5	323	12	15-Jan-2014
Transient Limiter	Hewlett Packard	11947A	2377	12	13-Feb-2014
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	11-Oct-2013
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
Section 2.2 - Radiated Emissions					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	3-Apr-2014
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	9-Nov-2013
Antenna (Bilog)	Schaffner	CBL6143	287	24	18-Jan-2014
Screened Room (5)	Rainford	Rainford	1545	36	25-Dec-2013
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
High Pass Filter	Mini-Circuits	NHP-300	1640	12	15-Aug-2013
Antenna (Biconnical)	Schaffner	VBA6106A	3106	12	30-Aug-2013
Antenna (Log Periodic)	Schaffner	UPA6108	3108	12	5-Apr-2014
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	3171	12	30-Aug-2013
Leakage Current Meter	Simpson	228	3196	12	21-Sep-2013
Leakage Current Meter	Simpson	228	3197	12	29-Nov-2013
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	11-Oct-2013
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU

TU – Traceability Unscheduled



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3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Radiated Emissions	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
AC Line Conducted Emissions	± 3.2 dB



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SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA
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