FCC SDoC Test Report

For

Applicant Name:	Faurecia clarion electronics Europe
Address:	Batiment Lumière – 40 Avenue des Terroirs de France, 75012 Paris – France
EUT Name:	IN Vehicle Infotainment
Brand Name:	Faurecia
Model Number:	Crony 2
Series Model Number:	Refer to section 2

Issued By

Company Name:	**BTF Testing Lab (Shenzhen) Co., Ltd.**
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Report Number:	BTF240125R00505
Test Standards:	47 CFR Part 15, Subpart B
Test Conclusion:	Pass
Test Date:	2024-01-14 to 2024-01-25
Date of Issue:	2024-01-25
Prepared By:	Chris Liu / Project Engineer
Date:	2024-01-25
Approved By:	Ryan.CJ / EMC Manager
Date:	2024-01-25

Note: All the test results in this report only related to the testing samples. Which can be duplicated completely for the legal use with approval of applicant; it shall not be reproduced except in full without the written approval of BTF Testing Lab (Shenzhen) Co., Ltd., All the objections should be raised within thirty days from the date of issue. To validate the report, you can contact us.

Revision History		
Version	Issue Date	Revisions Content
R_V0	2024-01-25	Original
Note: Once the revision has been made, then previous versions reports are invalid.		

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1 Introduction

1.1 Identification of Testing Laboratory

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

1.2 Identification of the Responsible Testing Location

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130
FCC Registration Number:	518915
Designation Number:	CN1330

1.3 Announcement

(1) The test report reference to the report template version v0.
(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
(3) The test report is invalid if there is any evidence and/or falsification.
(4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
(6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 Product Information

2.1 Application Information

Company Name:	Faurecia clarion electronics Europe
Address:	Batiment Lumière – 40 Avenue des Terroirs de France, 75012 Paris – France

2.2 Manufacturer Information

Company Name:	Clarion Hungary electronics KFT.
Address:	Jászberényi út 116, 2760 Nagykáta - Hungary

2.3 Factory Information

Company Name:	Clarion Hungary electronics KFT.
Address:	Jászberényi út 116, 2760 Nagykáta - Hungary

2.4 General Description of Equipment under Test (EUT)

EUT Name:	IN Vehicle Infotainment
Test Model Number:	Crony 2
Series Model Number:	/
Description of Model name differentiation:	/
Hardware Version:	HW05
Software Version:	3.13.0
Operation frequency band:	802.11ac(HT20) : U-NII Band 3: 5745MHz to 5825MHz; 802.11ac(HT40) : U-NII Band 3: 5755MHz to 5795MHz; BT EDR:2402-2480MHz BT BLE:2402-2480MHz

2.5 Technical Information

Power Supply:	DC 12V from Battery

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3 Summary of Test Results

3.1 Test Standards

The tests were performed according to following standards: **47 CFR Part 15, Subpart B:** Unintentional Radiators

3.2 Uncertainty of Test

Item	Measurement Uncertainty
Conducted Emission (150 kHz-30 MHz)	±2.56dB
All emissions, radiated(<1GHz)	4.12 dB
All emissions, radiated(>1GHz)	4.89dB
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3.3 Summary of Test Result

Item	Standard	Requirement	Result
Conducted emissions on AC mains	47 CFR Part 15, Subpart B	15.107, Class B	N/A
Radiated emissions (Below 1GHz)	47 CFR Part 15, Subpart B	15.109, Class B	Pass
Radiated emissions (Above 1GHz)	47 CFR Part 15, Subpart B	15.109, Class B	Pass

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4 Test Configuration

4.1 Test Equipment List

Conducted emissions on AC mains					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Pulse Limiter	SCHWARZBECK	VTSD 9561-F	00953	2023-11-24	2024-11-23
Coaxial Switcher	SCHWARZBECK	CX210	CX210	2023-11-24	2024-11-23
V-LISN	SCHWARZBECK	NSLK 8127	01073	2023-11-24	2024-11-23
LISN	AFJ	LS16/110VAC	16010020076	2023-02-23	2024-02-22
EMI Receiver	ROHDE&SCHWARZ	ESCI3	101422	2023-11-24	2024-11-23

Radiated emissions (Below 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Coaxial cable Multiflex 141	Schwarzbeck	N/SMA 0.5m	517386	2023-03-24	2024-03-23
Preamplifier	SCHWARZBECK	BBV9744	00246	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF1-SMASMAM-10m	21101566	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF2-NMNM-10m	21101570	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF1-SMASMAM-1m	21101568	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF2-NMNM-1m	21101576	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF2-NMNM-2.5m	21101573	2023-11-24	2024-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Horn Antenna	SCHWARZBECK	BBHA9170	01157	2023-11-28	2024-11-27
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI7	101032	2023-11-24	2024-11-23
SIGNAL ANALYZER	ROHDE&SCHWARZ	FSQ40	100010	2023-11-24	2024-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Broadband Preamplilifier	SCHWARZBECK	BBV9718D	00008	2023-03-24	2024-03-23
Horn Antenna	SCHWARZBECK	BBHA9120D	2597	2022-05-22	2024-05-21
EZ_EMC	Frad	FA-03A2 RE+	/	/	/
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Log periodic antenna	SCHWARZBECK	VULB 9168	01328	2023-11-28	2024-11-27

Radiated emissions (Above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Coaxial cable Multiflex 141	Schwarzbeck	N/SMA 0.5m	517386	2023-03-24	2024-03-23
Preamplifier	SCHWARZBECK	BBV9744	00246	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF1-SMASMAM-10m	21101566	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF2-NMNM-10m	21101570	2023-11-24	2024-11-23
RE Cable	REBES Talent	UF2-NMNM-1m	21101576	2023-11-24	2024-11-23

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RE Cable	REBES Talent	UF2-NMNM-2.5m	21101573	2023-11-24	2024-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Horn Antenna	SCHWARZBECK	BBHA9170	01157	2023-11-28	2025-11-27
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI7	101032	2023-11-24	2024-11-23
SIGNAL ANALYZER	ROHDE&SCHWARZ	FSQ40	100010	2023-11-24	2024-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Broadband Preamplilifier	SCHWARZBECK	BBV9718D	00008	2023-03-24	2024-03-23
Horn Antenna	SCHWARZBECK	BBHA9120D	2597	2022-05-22	2024-05-21
EZ_EMC	Frad	FA-03A2 RE+	/	/	/
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Log periodic antenna	SCHWARZBECK	VULB 9168	01328	2023-11-28	2025-11-27

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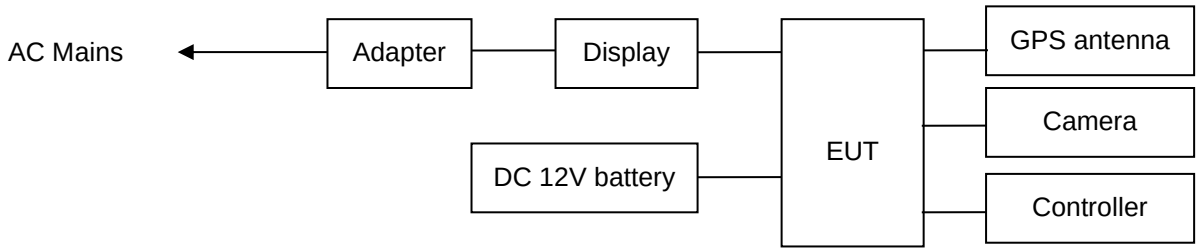
4.2 Test Auxiliary Equipment

Item	Equipment	Manufacturer	Model/Type No.	Series No.	Note
1	Adapter	Clarion Hungary	CH01	/	
2	GPS antenna	Clarion Hungary	CH02	/	
3	Camera	Clarion Hungary	CH03	/	
4	Display	Clarion Hungary	CH04	/	
5	Controller	Clarion Hungary	CH05	/	

4.3 Test Modes

No.	Test Modes	Description
TM1	working	Input 12V and keep the EUT normal working.
TM2	GPS Mode	keep the EUT in GPS mode.
TM3	BT Playing	keep the EUT in BT playing mode.
TM4	WIFI Pode	keep the EUT in WIFI mode.

4.4 Block Diagram of Test Set-up



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5 Emission Test Results (EMI)

5.1 Radiated emissions (Below 1GHz)

Test Requirement:	15.109, Class B
Test Method:	ANSI C63.4
Test Limit:	Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field strength @3m		Field strength @10m	
	(uV/m)	(dBuV/m)	(uV/m)	(dBuV/m)
30 – 88	100	40	30	29.5
88 – 216	150	43.5	45	33.1
216 – 960	200	46	60	35.6
Above 960	500	54	150	43.5

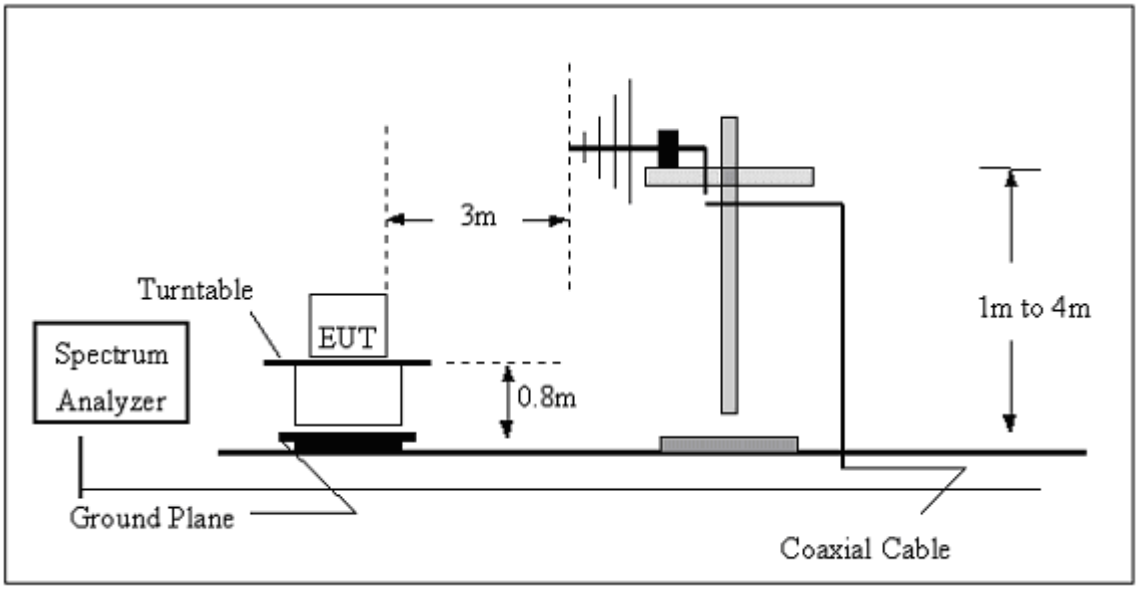
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

5.1.1 E.U.T. Operation:

Operating Environment:	
Temperature:	24.1 °C
Humidity:	48.7 %
Atmospheric Pressure:	1010 mbar

5.1.2 Test Setup Diagram:

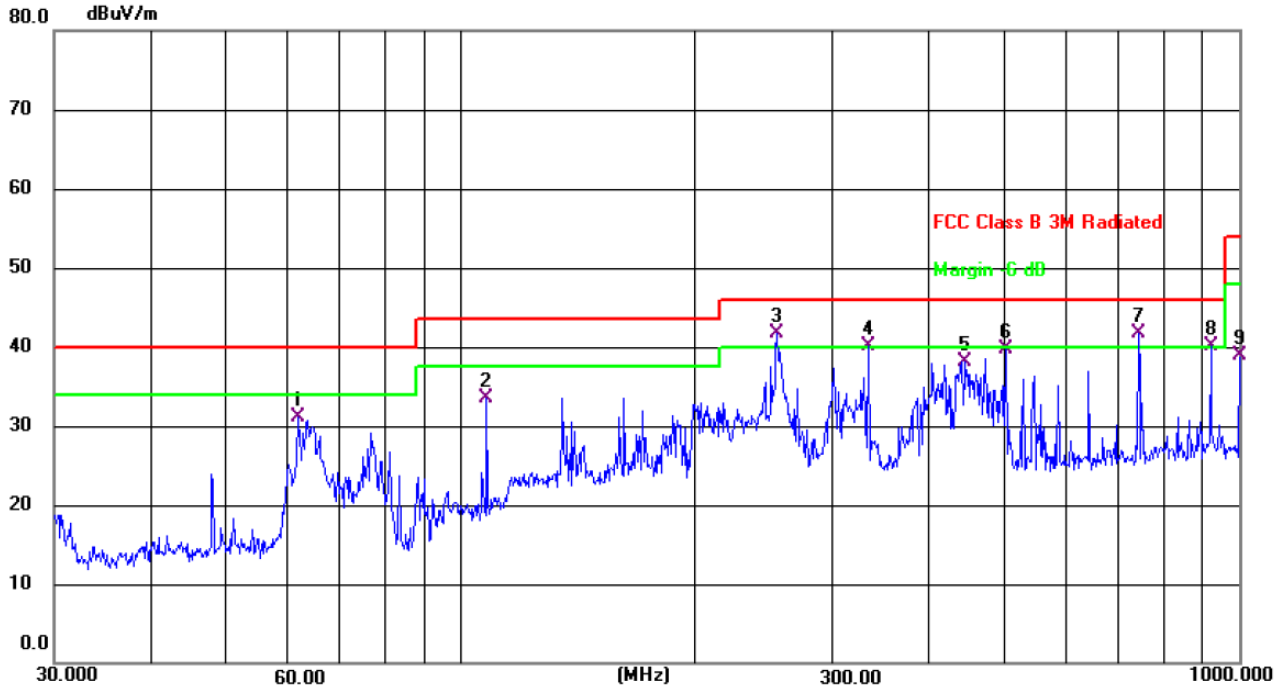
（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz

5.1.3 Test Data:

TM1 / Polarization: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		61.7779	44.19	-13.18	31.01	40.00	-8.99	QP
2		107.8876	50.07	-16.53	33.54	43.50	-9.96	QP
3	*	254.7281	54.34	-12.61	41.73	46.00	-4.27	QP
4	!	333.6865	51.01	-10.87	40.14	46.00	-5.86	QP
5		444.8514	46.80	-8.77	38.03	46.00	-7.97	QP
6		501.1788	47.17	-7.52	39.65	46.00	-6.35	QP
7	!	742.2586	44.87	-3.20	41.67	46.00	-4.33	QP
8	!	919.2865	40.32	-0.23	40.09	46.00	-5.91	QP
9		1000.000	37.95	0.93	38.88	54.00	-15.12	QP

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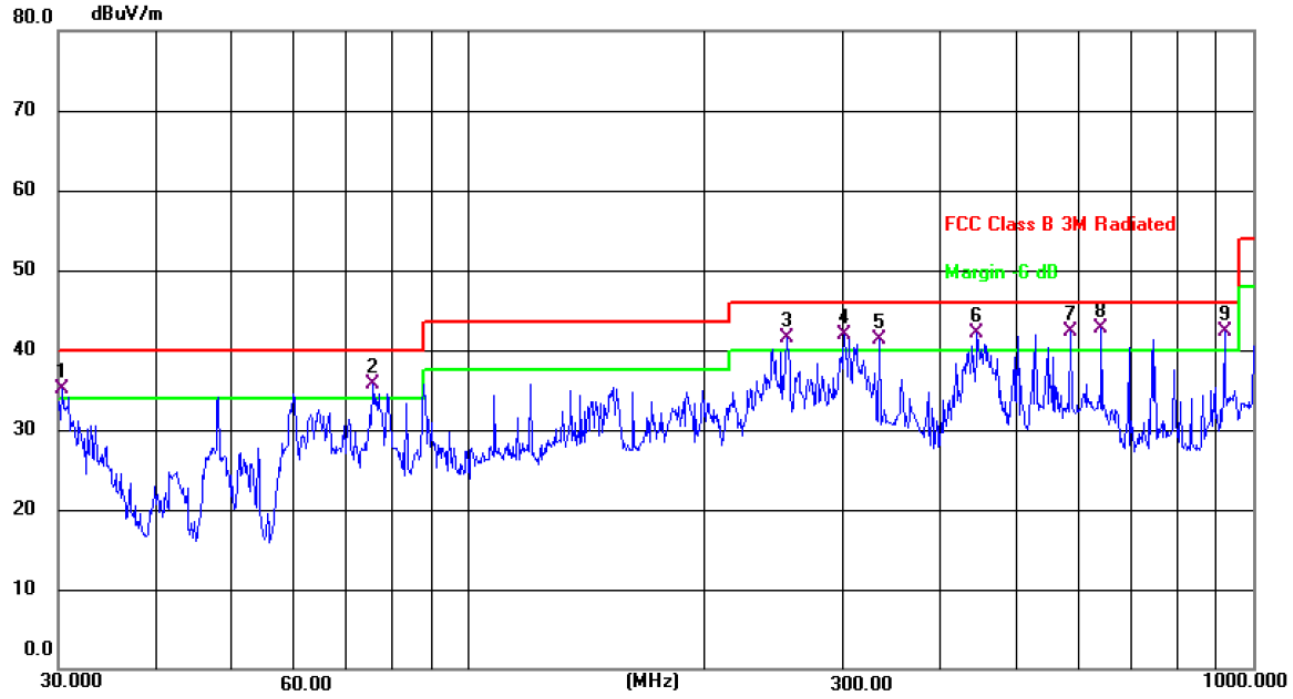
TM1 / Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	!	30.3170	50.99	-15.98	35.01	40.00	-4.99	QP
2	!	75.4462	52.36	-16.57	35.79	40.00	-4.21	QP
3	!	254.7281	54.03	-12.61	41.42	46.00	-4.58	QP
4	!	301.4223	53.40	-11.40	42.00	46.00	-4.00	QP
5	!	333.6865	52.21	-10.87	41.34	46.00	-4.66	QP
6	!	444.8514	50.96	-8.77	42.19	46.00	-3.81	QP
7	!	584.7894	48.60	-6.33	42.27	46.00	-3.73	QP
8	*	640.6109	47.85	-5.20	42.65	46.00	-3.35	QP
9	!	919.2865	42.44	-0.23	42.21	46.00	-3.79	QP

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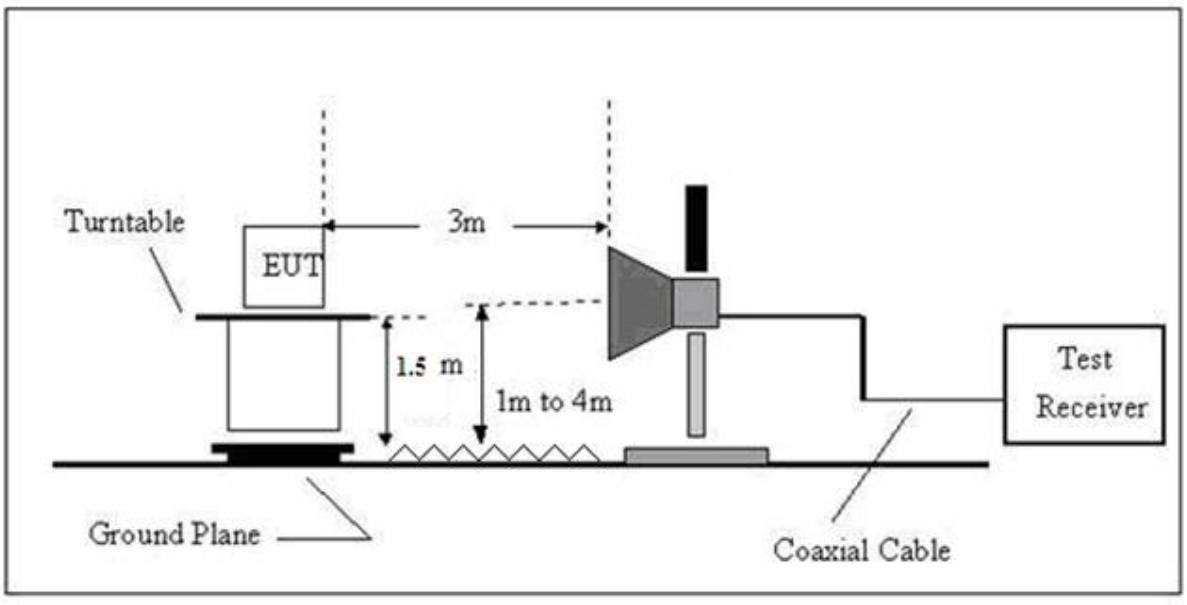
5.2 Radiated emissions (Above 1GHz)

Test Requirement:	15.109, Class B
Test Method:	ANSI C63.4
Test Limit:	**Frequency of emission (MHz)** / **Field strength @3m**: **Average (uV/m)** 500; **Average (dBuV/m)** 54; **Peak (dBuV/m)** 74 (Above 1GHz)
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. For below 1GHz test, Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. For above 1GHz test, Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities. Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

5.2.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.2 °C
Humidity:	54.7 %
Atmospheric Pressure:	1010 mbar

5.2.2 Test Setup Diagram:



5.2.3 Test Data:

TM1 / Polarization: Horizontal

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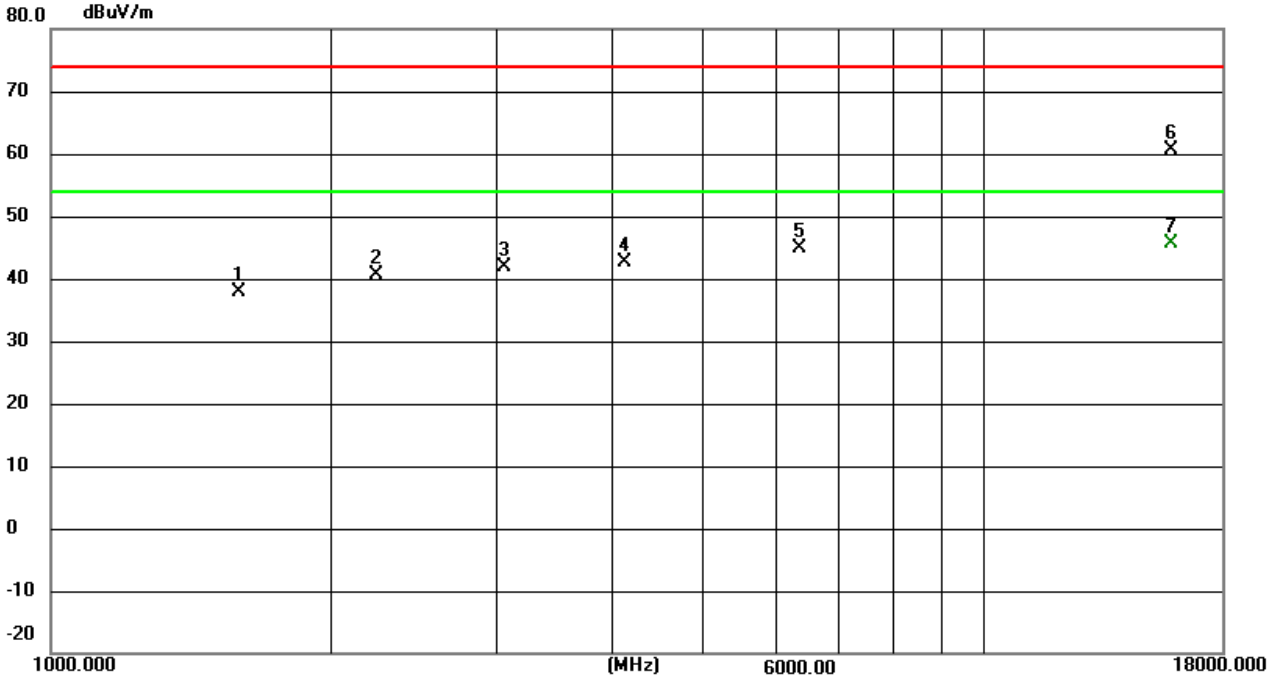

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		1592.000	58.11	-20.19	37.92	74.00	-36.08	peak
2		2238.000	57.69	-17.07	40.62	74.00	-33.38	peak
3		3061.000	55.37	-13.55	41.82	74.00	-32.18	peak
4		4128.000	53.58	-10.97	42.61	74.00	-31.39	peak
5		6358.000	47.89	-2.98	44.91	74.00	-29.09	peak
6		15935.00	47.09	13.42	60.51	74.00	-13.49	peak
7	*	15935.00	32.31	13.42	45.73	54.00	-8.27	AVG

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TM1 / Polarization: Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		20769.00	28.46	29.48	57.94	74.00	-16.06	peak
2	*	20769.00	13.13	29.48	42.61	54.00	-11.39	AVG

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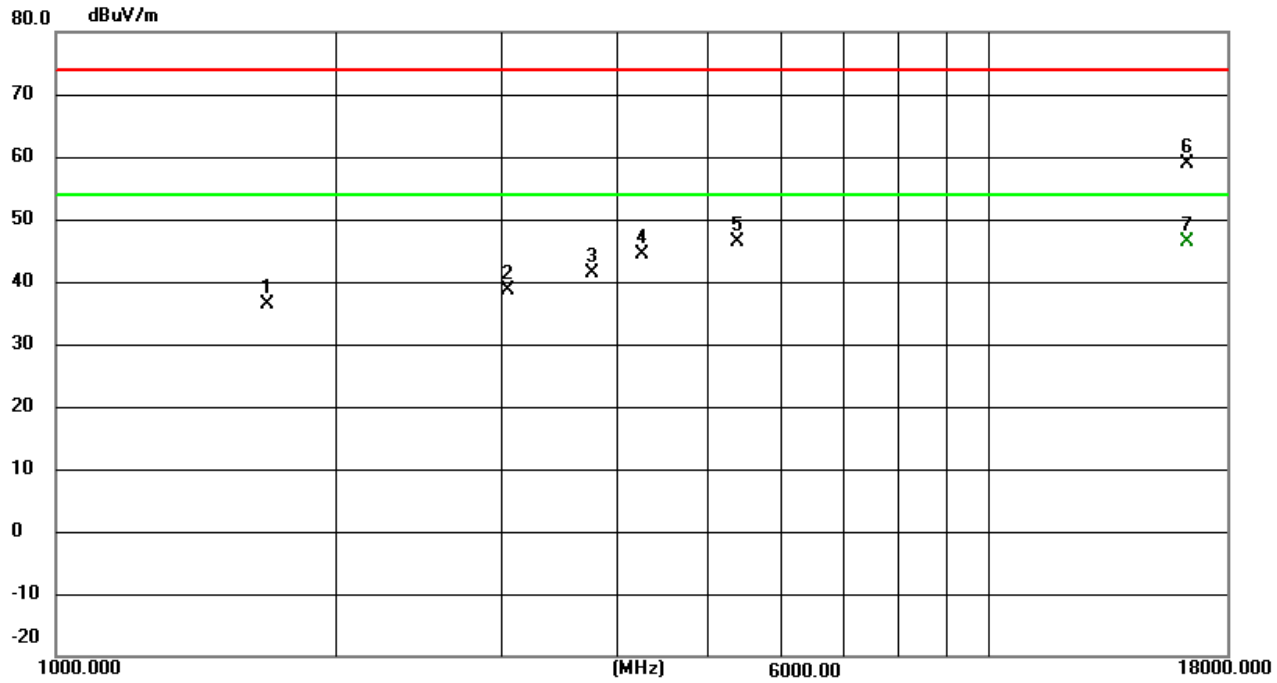
TM1 / Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		1684.000	56.23	-19.81	36.42	74.00	-37.58	peak
2		3057.000	52.12	-13.55	38.57	74.00	-35.43	peak
3		3761.000	53.53	-12.14	41.39	74.00	-32.61	peak
4		4261.000	54.74	-10.40	44.34	74.00	-29.66	peak
5		5384.000	51.66	-5.38	46.28	74.00	-27.72	peak
6		16328.00	44.66	14.10	58.76	74.00	-15.24	peak
7	*	16328.00	32.29	14.10	46.39	54.00	-7.61	AVG

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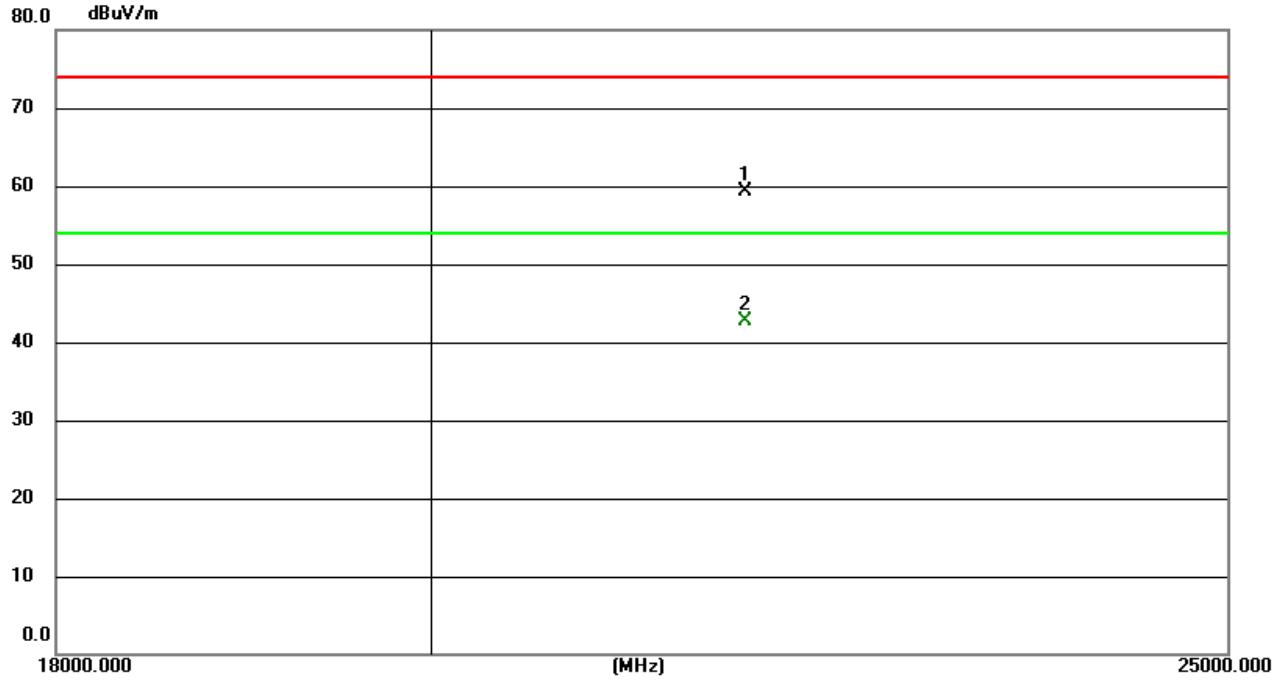
TM1 / Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		21836.00	28.73	30.54	59.27	74.00	-14.73	peak
2	*	21836.00	12.22	30.54	42.76	54.00	-11.24	AVG

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6 Test Setup Photos

Please see annex.

7 EUT Constructional Details (EUT Photos)

Please see annex.

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