



TEST REPORT

Test Report No. : UL-EMC-RP13727985JD18B

Manufacturer : Apple Inc.
Type of Equipment : Information Technology Equipment (ITE)
Model No. / HVIN : A2540
PMN : Siri Remote
FCC ID : BCGA2540
ISED Canada Certification No. : 579C-A2540
Test Standard : 47CFR15.107, 47CFR15.109 and ICES-003 Issue 6 January 2016
Test Result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above standards.
4. The test results in this report are traceable to the national or international standards.

Date of issue: 07 April 2021

Checked by:

Adam Brown
Test Engineer

Company Signatory:

Matthew Owen
Operations Leader



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1. CUSTOMER DETAILS

Company Name:	Apple Inc.
Address:	1 Apple Park Way Cupertino CA 95014 USA
Contact Name:	Stuart Thomas

2. SUMMARY OF TESTING

2.1. Test Specification

	Reference:	47CFR15.107 and 47CFR15.109	
1.	Title:	Code of Federal Regulations - Title 47 (Telecommunication): Part 15 (Radio Frequency Devices) - Subpart B (Unintentional Radiators) – Sections 15.107 and 15.109 October 1, 2020 Edition (including all applicable amendments up to March 26 2021)	
2.	Reference:	ICES-003 Issue 6 January 2016	
	Title:	Information Technology Equipment (Including Digital Apparatus) – Limits and Methods of Measurement	
	Site Registration:	FCC: 621311 / UK2011 ISED Canada: 20903 / UK0001	

2.2. Summary of Test Results

FCC Reference	IC Reference	Measurement Type	Result
15.107	6.1	Conducted Emissions (AC Mains Input / Output Ports)	Complied
15.109	6.2	Radiated Emissions (Enclosure)	Complied

2.3. Location of Testing

All the measurements described in this report were performed at the premises of UL International (UK) Ltd, Unit 1 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire RG24 8AH.

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above, nor from the requirements defined in the basic standards called up within it.

3. EQUIPMENT UNDER TEST (EUT)

3.1. Description of EUT

The EUT is a Bluetooth Low Energy remote control for an Apple TV

3.2. Identification of Equipment under Test (EUT)

ID#	Description	Brand Name	Model No	Serial No
E1	Bluetooth Remote	Apple	A2540	C08FF28U15J6

3.3. Port Identification

Port	Description	Possible Length (m)	Type	Connector
P1.1	Enclosure	Not applicable	Enclosure	Not applicable
P1.2	Lightning Connector	< 3	Signal / DC Power	Lightning

3.4. Operating Modes

Mode Reference	Definition
Normal Operation	The EUT was charging from an AC to DC Power Adapter connected to the mains, paired with a support Apple TV through Bluetooth and left in idle.

3.5. Configuration and Peripherals

Description:	Please refer to <i>section 9. Test Configuration Drawing</i> for schematic drawing(s) of the test configuration(s) employed in the course of testing.
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3.6. Modifications

No modifications were made to the EUT during the course of testing.

3.7. Additional Information Related to Testing

Equipment Category:	Information Technology Equipment (ITE)
Intended Operating Environment:	Residential / Commercial
Intended Installation:	Table Top
Cycle Time:	Less than 1 second
Power Supply Requirement(s):	5.1 V DC from AC to DC Power Adapter powered from 120 VAC, 60 Hz. 3.8 VDC Internal Battery
Weight:	64 g
Dimensions:	(136 x 36 x 9) mm
Hardware Version Number:	REV1.0
Software Version Number:	0031
FCC ID Number:	BCGA2540
ISED Number	579C-A2540
Highest Internally Generated Operating Frequency:	2480 MHz

4. SUPPORT EQUIPMENT

4.1. Identification of Support Equipment

Description	Manufacturer	Model No	Serial No
AC to DC Power Adapter	Apple	A2280	C3D9513D2HHN87TA7

4.2. Interconnecting Cables

Cable Type	Shielded	Length (m)	Ferrite	Connection 1	Connection 2
Lightning	Yes	1.0	No	EUT	AC to DC Power Adapter
Direct Connection				AC to DC Power Adapter	AC Supply

5. MEASUREMENT UNCERTAINTY AND DECISION RULE

5.1. Overview

No measurement can ever be perfect and those imperfections give rise to error. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement regarding the uncertainty of approximation.

Note that compliance is determined solely upon the results of compliance measurements and does not take into account measurement uncertainties. The measurement uncertainty values quoted in this report are for information only as they do not influence the associated test results.

5.2. Method of calculation

The methods used to calculate the uncertainties included within this test report are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the United Kingdom Accreditation Service (UKAS) is followed.

5.3. Equipment Accuracy and Decision Rule

Measurement system instrumentation with an accuracy specification meeting the accuracy specification limits or that has an uncertainty within prescribed limits detailed in the specification or standard shall be used. When providing a statement of conformity to a technical specification or standard, unless inherent in the requested technical specification or standard, the decision rule applied shall be the Accuracy Method (as defined in IEC Guide 115) in determining compliance. The measurement result is considered in conformance with the requirement criteria if it is within the prescribed limit.

6. MEASUREMENTS, EXAMINATIONS AND DERIVED RESULTS

6.1. General Comments

6.1.1. This section contains the test result sheets for the measurements listed in Section **2.2**.

Summary of Test Results (above).

6.1.2. The measurement uncertainties stated in the test result sheets were calculated in accordance with documented best practice and represent a confidence level of 95%. Where only confidence level is given, it has been demonstrated that the relevant items of test equipment used meet the specified requirements in the standard with at least this level of confidence.

6.1.3. Please refer to Section **5. Measurement Uncertainty** on page 9 for details of our treatment of measurement uncertainty.

RADIATED EMISSIONS - TEST RESULTS

This test is covered by the scope of UL International (UK) Ltd's UKAS Accreditation under ISO/IEC 17025:2017.

GENERAL INFORMATION

JOB NUMBER:	13727985JD18	TEST SITE ID:	Site 51
EUT:	A2540	TEMPERATURE:	19 °C to 19 °C
TEST ENGINEER:	Ivan Alonso	RELATIVE HUMIDITY:	30 % to 30 %
DATE OF TEST:	07 Apr 2021	ATMOSPHERIC PRESSURE:	1024mb to 1024 mb
FIELD TYPE:	Electric Field	MEASUREMENT DISTANCE:	3 Metres
UNCERTAINTY:	< 1 GHz: ± 3.91 dB > 1 GHz: ± 3.45 dB	EQUIPMENT CLASS:	Class B
MEASUREMENT UNITS:	dB μ V/m	TEST ENVIRONMENT:	Test Site

TEST SPECIFICATION DETAILS

The EUT has been configured and tested in accordance with the methods and procedures detailed within the following basic standard:

REFERENCE:	ANSI C63.4:2014
TITLE:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

COMMENTS

○ Measurements were performed in a semi-anechoic chamber, at distances of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable.

Below 1 GHz, maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Above 1 GHz, the orientation of the EUT emanating the highest emission levels was determined using exploratory measurements with an antenna and spectrum analyser prior to the formal measurements. For the final test, emissions the EUT was rotated whilst positioned in the previously determined worst case orientation only.

○ The recorded disturbance level (field strength) was calculated from the level indicated by the measuring receiver, adjusted by a correction factor (CF in dB), calculated using the formula:

$$CF (dB) = CAtt (dB) + AF (dB/m) - PGain (dB)$$

Where:

CAtt (dB): Conducted Path Attenuation (Cables + Attenuators)

AF (dB/m): Antenna Factor

PGain (dB): External Preamplifier Gain

DEVIATIONS FROM TEST SPECIFICATION

There were no deviations from the test configuration and measurement arrangements defined in the test specification (identified above).

EUT RELATED

OPERATING MODE:	Normal Operation
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Polarisation	Detector	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Graph No.	Result
1	37.719	Vertical	Quasi-Peak	8.81	40.00	31.19	GPH\13727985JD18\001	Complied
2	46.270	Horizontal	Quasi-Peak	10.32	40.00	29.68	GPH\13727985JD18\001	Complied
3	68.213	Vertical	Quasi-Peak	8.36	40.00	31.64	GPH\13727985JD18\001	Complied
4	95.971	Vertical	Quasi-Peak	9.09	43.50	34.41	GPH\13727985JD18\001	Complied
5	110.718	Horizontal	Quasi-Peak	8.84	43.50	34.66	GPH\13727985JD18\001	Complied
6	171.727	Vertical	Quasi-Peak	7.84	43.50	35.66	GPH\13727985JD18\001	Complied
7	211.548	Vertical	Quasi-Peak	11.12	43.50	32.38	GPH\13727985JD18\001	Complied

MEASUREMENT RESULTS

No.	Frequency (MHz)	Polarisation	Detector	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Graph No.	Result
8	324.808	Horizontal	Quasi-Peak	13.52	46.00	32.48	GPH\13727985JD18\001	Complied
9	478.268	Vertical	Quasi-Peak	17.04	46.00	28.96	GPH\13727985JD18\001	Complied
10	678.138	Vertical	Quasi-Peak	20.51	46.00	25.49	GPH\13727985JD18\001	Complied
11	939.855	Vertical	Quasi-Peak	24.90	46.00	21.10	GPH\13727985JD18\001	Complied
8	1000 to 12750	Refer to Note 1				GPH\13727985JD18\002 to 005		Complied

NOTE(S)

1 No emissions were noted above the noise floor of the measurement system; therefore, no further measurements were made.

TEST EQUIPMENT USED

UL ID	INSTRUMENT DESCRIPTION	MODEL NUMBER	CALIBRATION DUE	INTERVAL
K0031	3m Semi-Anechoic Chamber 2	N/A	19 Feb 2021	12
M2048	Thermo-Hygrometer	608-H1	28 Sep 2021	12
N0611	Site 10 Test PC	0	Calibration not required	N/A
M2049	44 GHz EMI Test Receiver	ESW44	30 Oct 2021	12
C1768	1 metre N-male to N-male RF cable	SA90-195-1MTR	02 Jul 2021	12
A3149	10 MHz to 1.3 GHz Low Noise Pre-Amplifier	LNA - 1330	14 Aug 2021	12
A3157	3 dB Attenuator	1812 BW-N3 W5	13 Aug 2021	12
C1830	2 metre N-male to N-male RF cable	Sucoflex 104A	13 Aug 2021	12
C1823	15 metre N-male to N-male RF cable	Sucoflex 104A	14 Aug 2021	12
C1871	8 metre N-male to N-male RF cable	Sucoflex 104A	15 Apr 2021	12
A3047	6 dB attenuator - 5W	N/A	Calibrated as part of system	N/A
A2959	Trilog Broadband Antenna	VULB 9163	05 Feb 2022	12
C1832	1 metre N-male to N-male RF cable	Sucoflex 104A	13 Aug 2021	12
A3076	3 dB Attenuator	1812 BW-N3 W5+	09 Jul 2021	12
A2949	500 MHz to 18 GHz Pre-amplifier	PAM-118A	08 Mar 2022	12
C1801	2 metre N-male to N-male RF cable	SA90-195-2MTR	02 Jun 2021	12
C1807	2 metre N-male to N-male RF cable	SA90-195-2MTR	27 May 2021	12
C1676	1 metre N-male to N-male RF cable	SA90-195-1MTR	27 May 2021	12
A512	Double ridged Horn	3115	05 Nov 2021	12

CONDUCTED EMISSIONS - TEST RESULTS

This test is covered by the scope of UL International (UK) Ltd's UKAS Accreditation under ISO/IEC 17025:2017.

GENERAL INFORMATION

JOB NUMBER:	13727985JD18	TEST SITE ID:	Site 56
EUT:	A2540	TEMPERATURE:	20 °C to 2 °C
TEST ENGINEER:	Adam Brown	RELATIVE HUMIDITY:	22 % to 22 %
DATE OF TEST:	07 Apr 2021	ATMOSPHERIC PRESSURE:	1024 mb to 1024 mb
UNCERTAINTY:	± 1.96 dB	EQUIPMENT CLASS:	Class B
EUT CATEGORY:	Not Applicable	MEASUREMENT METHOD:	LISN (AC)
PORT UNDER TEST:	AC Power Input	EUT SUPPLY VOLTAGE:	120 VAC / 60 Hz

TEST SPECIFICATION DETAILS

The EUT has been configured and tested in accordance with the methods and procedures detailed within the following basic standard:

REFERENCE:	ANSI C63.4:2014
TITLE:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

COMMENTS

○ The recorded disturbance level (voltage) was calculated from the level indicated by the measuring receiver, adjusted by a correction factor (CF in dB), calculated using the formula:

$$CF (dB) = CAtt (dB) + PLAtt (dB) + VDF (dB)$$

Where:

CAtt (dB): Conducted Path Attenuation (Cables + Attenuators)

PLAtt (dB): Pulse Limiter Attenuation

VDF (dB): Voltage Division Factor of LISN

DEVIATIONS FROM TEST SPECIFICATION

There were no deviations from the test configuration and measurement arrangements defined in the test specification (identified above).

EUT RELATED

OPERATING MODE:	Normal Operation
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Graph No.	Result
1	0.152	Live	Quasi-Peak	17.88	65.88	48.00	GPH\13727985JD18\006	Complied
2	0.161	Live	Quasi-Peak	16.70	65.40	48.70	GPH\13727985JD18\006	Complied
3	0.427	Live	Quasi-Peak	13.67	57.32	43.65	GPH\13727985JD18\006	Complied
4	0.713	Live	Quasi-Peak	13.45	56.00	42.55	GPH\13727985JD18\006	Complied
5	4.517	Live	Quasi-Peak	15.62	56.00	40.38	GPH\13727985JD18\006	Complied
6	5.350	Live	Quasi-Peak	15.81	60.00	44.19	GPH\13727985JD18\006	Complied
7	24.394	Live	Quasi-Peak	17.27	60.00	42.73	GPH\13727985JD18\006	Complied
8	29.920	Live	Quasi-Peak	17.08	60.00	42.92	GPH\13727985JD18\006	Complied
9	0.150	Live	CISPR Average	17.07	56.00	38.93	GPH\13727985JD18\006	Complied
10	0.173	Live	CISPR Average	14.64	54.84	40.20	GPH\13727985JD18\006	Complied
11	0.377	Live	CISPR Average	12.96	48.34	35.38	GPH\13727985JD18\006	Complied
12	0.724	Live	CISPR Average	12.65	46.00	33.35	GPH\13727985JD18\006	Complied
13	4.994	Live	CISPR Average	15.01	46.00	30.99	GPH\13727985JD18\006	Complied

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Graph No.	Result
14	5.350	Live	CISPR Average	15.06	50.00	34.94	GPH\13727985JD18\006	Complied
15	24.392	Live	CISPR Average	16.01	50.00	33.99	GPH\13727985JD18\006	Complied
16	29.990	Live	CISPR Average	16.48	50.00	33.52	GPH\13727985JD18\006	Complied
17	0.152	Neutral	Quasi-Peak	17.83	65.88	48.05	GPH\13727985JD18\007	Complied
18	0.177	Neutral	Quasi-Peak	16.13	64.63	48.50	GPH\13727985JD18\007	Complied
19	0.425	Neutral	Quasi-Peak	13.68	57.36	43.68	GPH\13727985JD18\007	Complied
20	2.895	Neutral	Quasi-Peak	14.48	56.00	41.52	GPH\13727985JD18\007	Complied
21	4.886	Neutral	Quasi-Peak	15.56	56.00	40.44	GPH\13727985JD18\007	Complied
22	20.510	Neutral	Quasi-Peak	15.47	60.00	44.53	GPH\13727985JD18\007	Complied
23	23.993	Neutral	Quasi-Peak	17.25	60.00	42.75	GPH\13727985JD18\007	Complied
24	29.794	Neutral	Quasi-Peak	16.96	60.00	43.04	GPH\13727985JD18\007	Complied
25	0.150	Neutral	CISPR Average	17.01	56.00	38.99	GPH\13727985JD18\007	Complied
26	0.179	Neutral	CISPR Average	14.48	54.52	40.04	GPH\13727985JD18\007	Complied
27	0.380	Neutral	CISPR Average	12.91	48.29	35.38	GPH\13727985JD18\007	Complied
28	2.999	Neutral	CISPR Average	13.85	46.00	32.15	GPH\13727985JD18\007	Complied
29	4.866	Neutral	CISPR Average	14.91	46.00	31.09	GPH\13727985JD18\007	Complied
30	20.589	Neutral	CISPR Average	14.80	50.00	35.20	GPH\13727985JD18\007	Complied

TEST EQUIPMENT USED

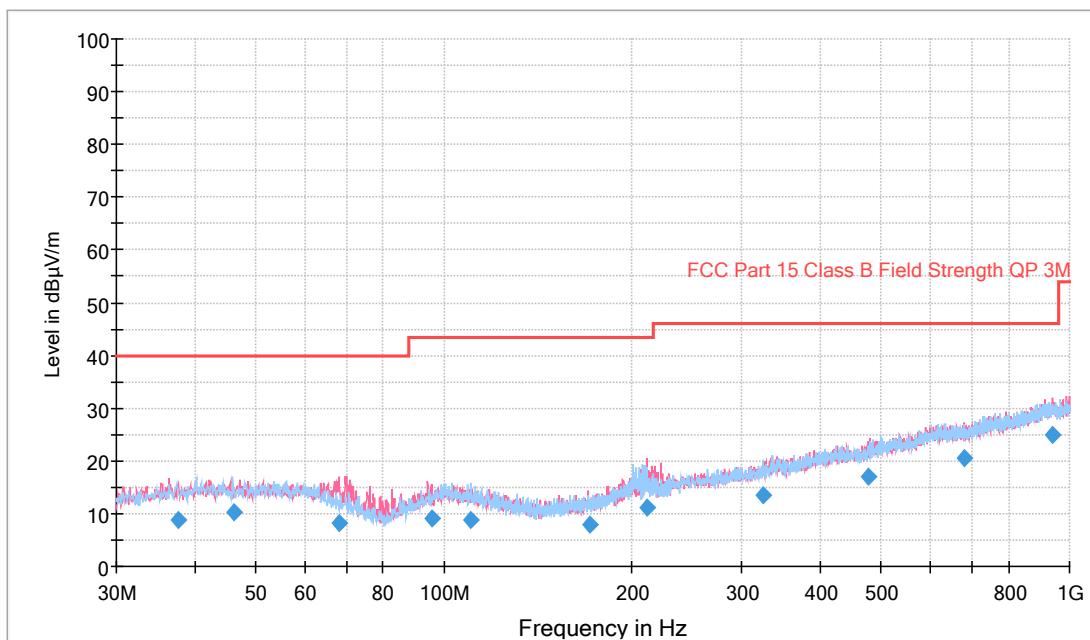
UL ID	INSTRUMENT DESCRIPTION	MODEL NUMBER	CALIBRATION DUE	INTERVAL
K0036	Conducted Emissions / Immunity Test Laboratory 2	N/A	Calibration not required	N/A
M2012	Thermo-Hygrometer	608-H1	06 Dec 2020	12
N0613	Site 56 Test PC	Motherboard Asus Z97-P	Calibration not required	N/A
M2051	3.6 GHz EMI Test Receiver	ESR3	14 Oct 2021	12
A1828	N-Type Pulse Limiter	ESH3-Z2	03 Nov 2021	12
C1619	Type N - Coaxial Cable	Sucoflex 104A	03 Nov 2021	12
A2086	2 Line LISN	ENV216 (3560.6550.13)	26 Feb 2022	12
M524	300V 4800VA 1ph Harmonics/Flicker Test system	6843A	Calibrated before use	N/A

7. GRAPHICAL TEST RESULTS

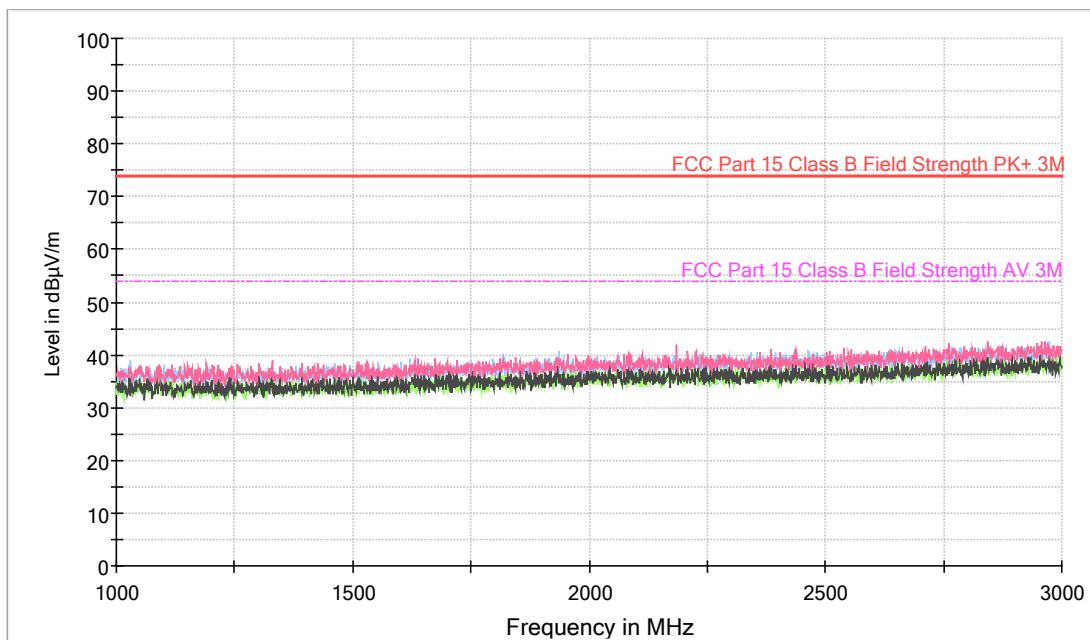
7.1. This section contains the graphical results for the measurements listed in Section **2.2. Summary of Test Results** (above).

Graph Reference Number	Title
GPH\13727985JD18\001	Radiated Emissions (30 MHz to 1 GHz)
GPH\13727985JD18\002	Radiated Emissions (1 GHz to 3 GHz)
GPH\13727985JD18\003	Radiated Emissions (3 GHz to 6 GHz)
GPH\13727985JD18\004	Radiated Emissions (6 GHz to 10 GHz)
GPH\13727985JD18\005	Radiated Emissions (10 GHz to 12.75 GHz)
GPH\13727985JD18\006	Conducted Emissions (150 kHz to 30 MHz) Live
GPH\13727985JD18\007	Conducted Emissions (150 kHz to 30 MHz) Neutral

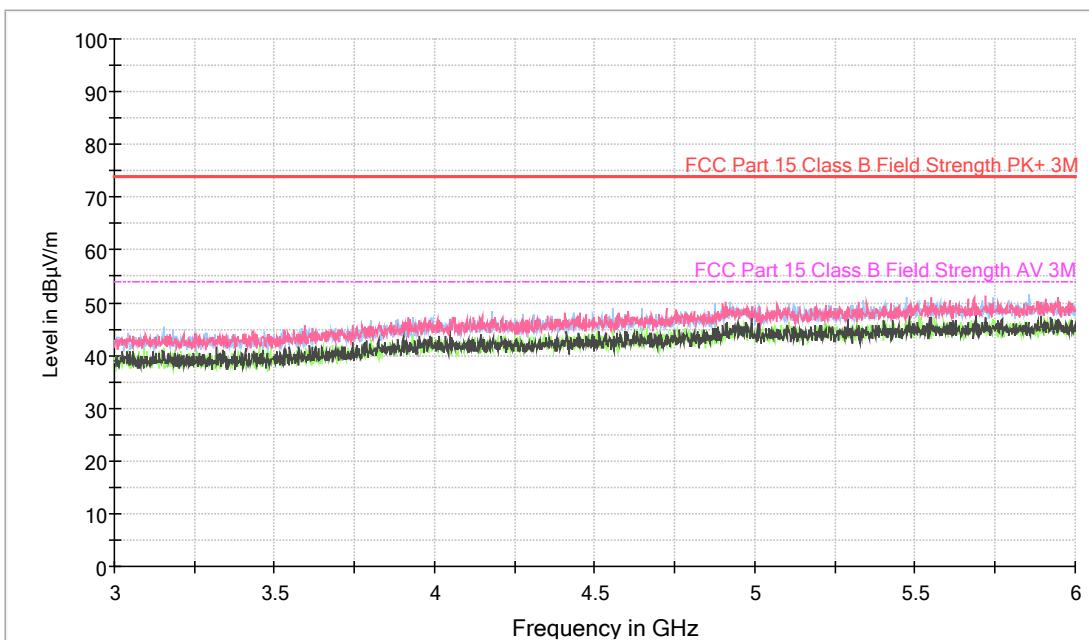
GPH\13727985JD18\001 - Radiated Emissions (30 MHz to 1 GHz)



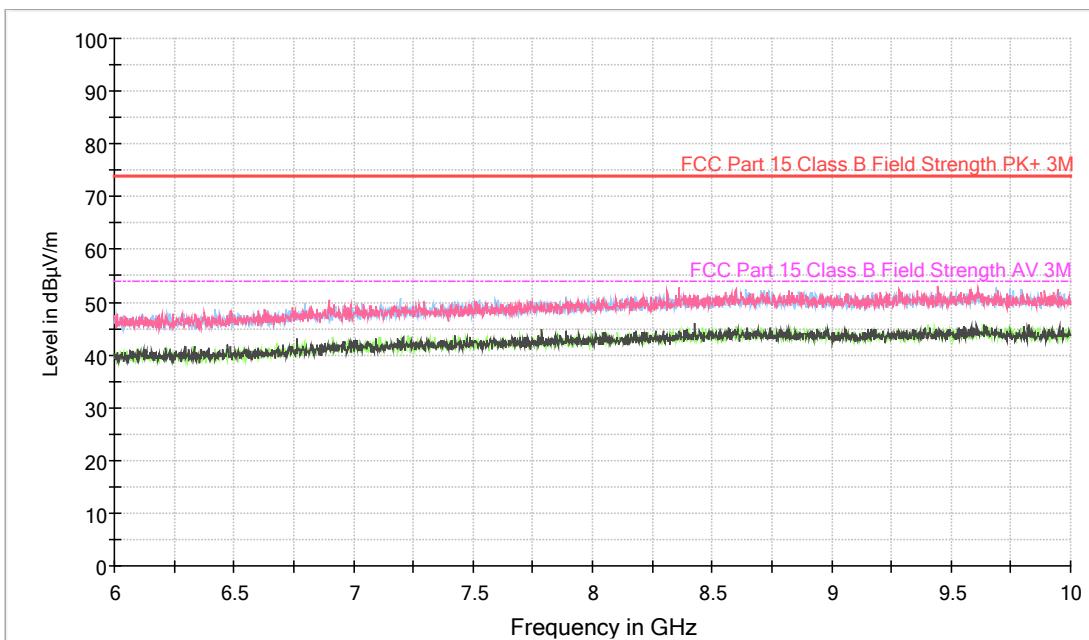
GPH\13727985JD18\002 - Radiated Emissions (1 GHz to 3 GHz)



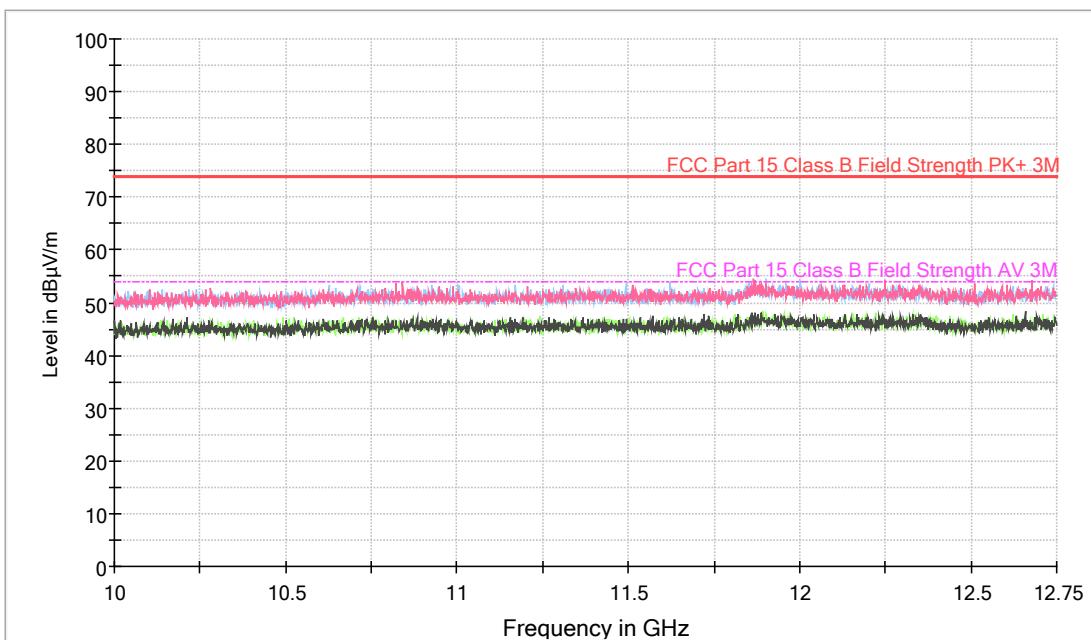
GPH\13727985JD18\003 - Radiated Emissions (3 GHz to 6 GHz)



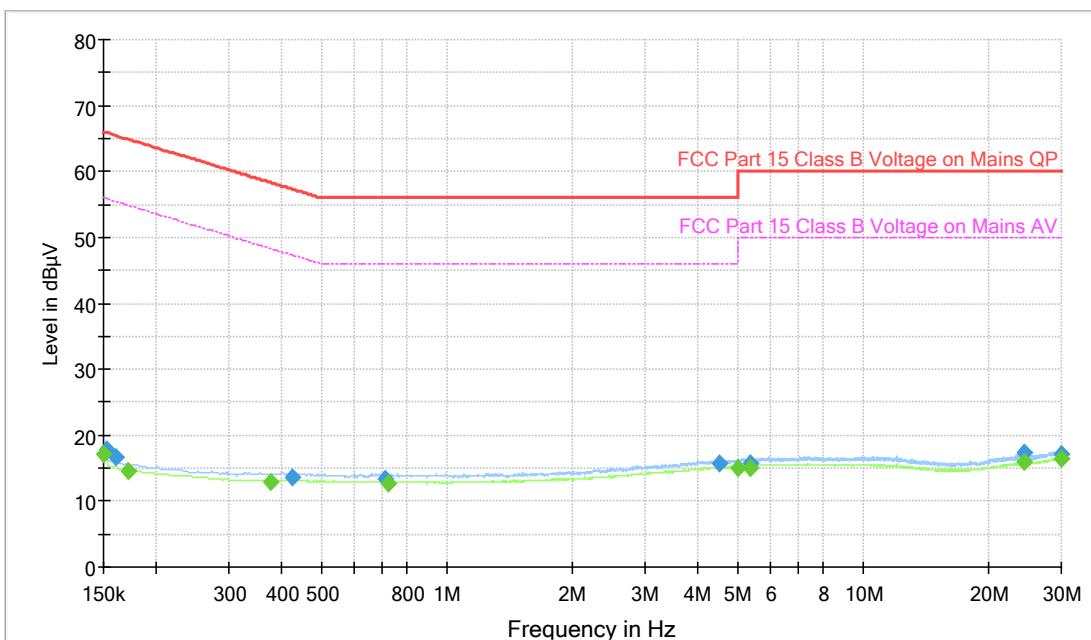
GPH\13727985JD18\004 - Radiated Emissions (6 GHz to 10 GHz)



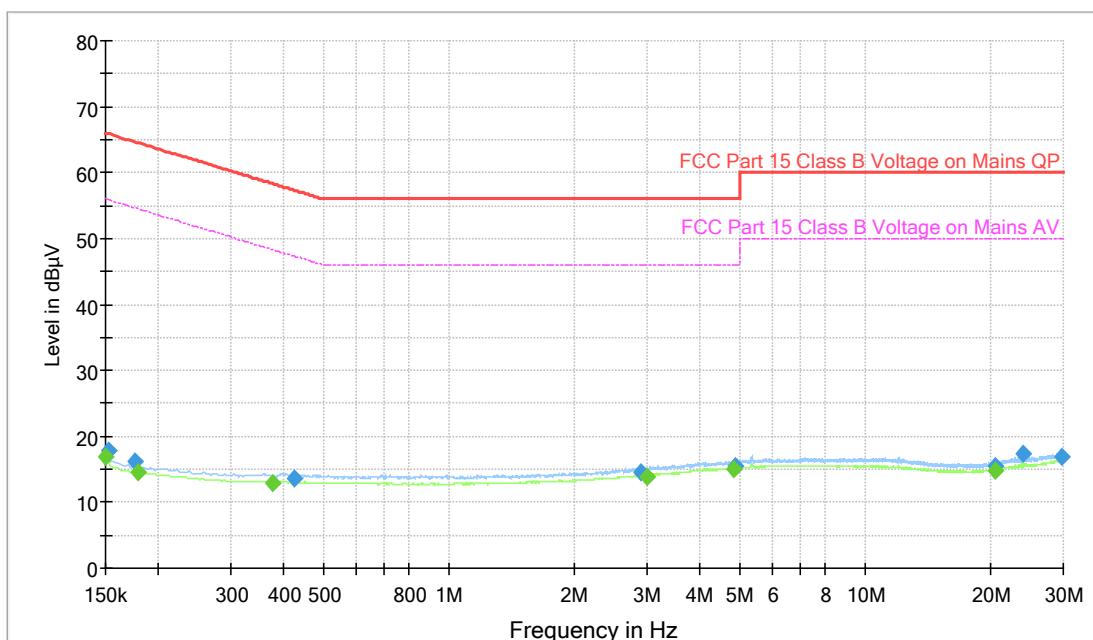
GPH\13727985JD18\005 - Radiated Emissions (10 GHz to 12.75 GHz)



GPH\13727985JD18\006 - Conducted Emissions (150 kHz to 30 MHz) Live



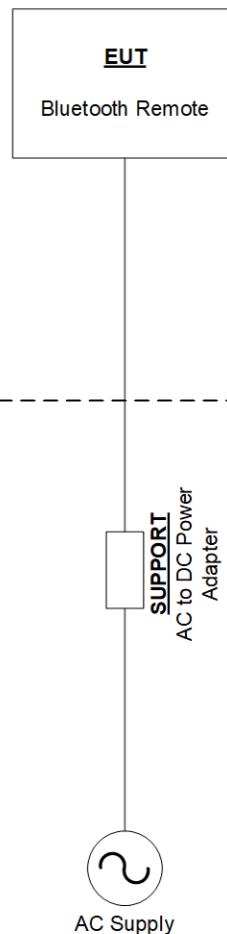
GPH\13727985JD18\007 - Conducted Emissions (150 kHz to 30 MHz) Neutral



8. TEST CONFIGURATION DRAWING

8.1. This section contains the Test Configuration Drawings for the measurements listed in Section 7: Measurements, Examinations and Derived Results.

Test Configuration Reference Number	Title
DRG\13727985JD18\001	Schematic Diagram of the EUT, Support Equipment and Interconnecting Cables Used During Testing

DRG\13727985JD18\001 - Schematic Diagram of the EUT, Support Equipment and Interconnecting Cables Used During Testing**Configuration of EUT and Local Support Equipment****Configuration of Remote Support Equipment**

9. REPORT REVISION HISTORY

9.1. This section contains the report revision history.

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version.