EMC Technologies
Global Product Certification
EMC-EMF Safety Approvals

EMC Technologies Pty. Ltd.
ABN 82 057 105 549
Melbourne
176 Harrick Road
Keilor Park, Vic 3042
Tel: +61 3 9365 1000

Sydney
Unit 3/87 Station Road
Seven Hills, NSW 2147
Tel: +61 2 9624 2777

Email: emc-general@emctech.com.au
Web: www.emctech.com.au

RADIO REPORT FOR CERTIFICATION
to
47 CFR Part 15 Subpart C (Section 15.247)

Test Report Number: S220305-5

FCC ID: PN2-PRO1

Tested For: Adherium (NZ) Ltd
Device under Test: Hailie Sensor
Model Number: NF0110

Issue Date: 16 November 2022

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RADIO REPORT
FOR CERTIFICATION

47 CFR Part 15 Subpart C (Section 15.247)

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REVISION TABLE

Version	Change Made	Date
1	Initial issue of document	16 November 2022

RADIO REPORT

Device under Test:	Hailie Sensor
Model Number:	NF0110
Serial Number:	773DEMC2
FCC ID:	PN2-PRO1
Manufacturer:	Adherium (NZ) Ltd
Tested for:	Adherium (NZ) Ltd
Address:	Level 2, 63 Albert Street, Auckland New Zealand 1010
Phone:	+61 430 348 565
Contact:	Igbal Syre
Email:	igbals@adherium.com
Standards:	**47 CFR Part 15 –** Radio Frequency Devices **Subpart C –** Intentional Radiators **Section 15.247 –** Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz
Result:	The Hailie Sensor complied with the applicable requirements of the above standards. Refer to Report S220305-5 for full details.
Test Date(s):	26 April 2022 to 11 May 2022
Issue Date:	16 November 2022
Attestation:	I hereby certify that the Hailie Sensor described herein was tested as described in this report and that the data included is that which was obtained during such testing.
Test Engineer:	**Dong Feng**
Authorised Signatory:	**Wilson Xiao** **Lead Engineer- Radio** **EMC Technologies Pty Ltd**

Issued by: EMC Technologies Pty. Ltd.,
Unit 3, 87 Station Road, Seven Hills, NSW, 2147, Australia.
Phone: +61 2 9624 2777
E-mail: emc-general@emctech.com.au **Web:** www.emctech.com.au

RADIO REPORT FOR CERTIFICATION
to
47 CFR Part 15 Subpart C (section 15.247)

1.0 Introduction

Radio tests were performed on Hailie Sensor with Model Number: NF0110, in accordance with the applicable requirements of 47 CFR, Part 15 Subpart C – Section 15.247 operating within the band: 2400 MHz to 2483.5 MHz.

1.1 Test Procedure

Radio measurements were performed in accordance with the appropriate procedures of ANSI C63.10: 2013 and KDB 558074 v05r02 - Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.

The measurement instrumentation conformed to the requirements of ANSI C63.2: 2016.

1.2 Summary of 47 CFR Part 15 Subpart C Results

Section	FCC Part 15 Subpart C	Test Performed	Results
3.1	**15.203**	Antenna requirement	**Complied**
3.2	**15.205**	Restricted bands of operation	**Complied**
3.3	**15.209**	Radiated emissions limits; general requirements	**Complied**
3.4	**15.247 (a)**	Channel Bandwidth	**Complied**
3.5	**15.247 (b)**	Peak Output Power	**Complied**
3.6	**15.247 (d)**	Out of Band Emissions	**Complied**
3.7	**15.247 (e)**	Peak Power Spectral Density	**Complied**
3.8	**2.1049**	Occupied Bandwidth	**913.46 kHz**

1.3 Modifications

No modifications were performed on EUT to comply with the standard.

2.0 GENERAL INFORMATION

(Information supplied by the Client)

2.1 EUT (Transmitter) Details

Frequency Band:	2.400-2.4835GHz ISM band (Bluetooth Low Energy)
Modulation:	GFSK (1Mb/s)
Operating Frequency:	2.4 GHz
Nominal Power:	1.0 mW
Antenna type and gain:	Internal Omnidirectional 1dBi

2.2 EUT (Host) Details

Manufacturer: Adherium (NZ) Limited
Device Under Test: Hailie Sensor
Model Number: NF0110
Highest Internal Frequency: 2.48GHz

2.3 EUT Description

The EUT is a medication usage monitor and reminder for use with Metered Dose Inhaler.

2.4 Test Sample Operation Mode

Mode No.	Description
1	Continuous transmitting on low channel (2402 MHz)
2	Continuous transmitting on mid channel (2440 MHz)
3	Continuous transmitting on high channel (2480 MHz)

2.5 Facility

2.5.1 General

EMC Technologies Pty Ltd has been accredited as a Conformity Assessment Body (CAB) by Australian Communications and Media Authority (ACMA) under the APECTEL MRA and is designated to perform compliance testing on equipment subject to Declaration of Conformity (DoC) and Certification under Parts 15 and 18 of the FCC Commission's rules – **Designation number AU0002.**

Measurements in this report were performed at EMC Technologies' laboratory located at Unit 3, 87 Station Road, Seven Hills, New South Wales, Australia.

2.5.2 NATA Accreditation

NATA is the Australian National laboratory accreditation body and has accredited EMC Technologies to operate to the IEC/ISO17025 requirements. A major requirement for accreditation is the assessment of the company and its personnel as being technically competent in testing to the standards. This requires fully documented test procedures, continued calibration of all equipment to the National Standard at the National Measurements Institute (NMI) and an internal quality system to ISO 9002. NATA has mutual recognition agreements with the National Voluntary Laboratory Accreditation Program (NVLAP) and the American Association for Laboratory Accreditation (A^2LA).

EMC Technologies is accredited in Australia by the National Association of Testing Authorities (NATA). All testing in this report has been conducted in accordance with EMC Technologies' scope of NATA accreditation.

The current full scope of accreditation can be found on the NATA website: www.nata.asn.au

2.6 Test Equipment Calibration

Measurement instrumentation and transducers were calibrated in accordance with the applicable standards by an independent NATA registered laboratory All equipment calibration is traceable to Australian national standards at the National Measurements Institute.

Radiated Emission						
Manufacturer	**Model**	**Serial No.**	**Asset No.**	**Description**	**Cal. Date**	**Cal. Due**
RFI Industries	S800	876	S-032	EMC Room 3 3m SAC	10/02/2022	10/02/2024
Rohde & Schwarz	ESU40	100183	R-038	EMC Receiver	27/04/2022	27/04/2023
HP	8449B	3008A1113	A-138	Pre-amplifier	20/01/2022	20/01/2023
EMCO	4107	2067	A-225	Antenna Horn	04/02/2021	04/02/2024
Sunar	JB1	A021318	A-430	Antenna Biconilog	14/04/2021	14/04/2024
EMCT	RG214	---	SC-028	RF Cable 13m	10/01/2022	10/01/2023
Huber Suhner	SF104A	SN 503147/4A	SC-042	RF Cable	10/01/2022	10/01/2023
Huber Suhner	Sucoflex 104A	SN 503146/4A	SC-043	RF Cable	10/01/2022	10/01/2023
D.A.R.E!! Development	RPR3006W	SN: 17I00015SNO82	P-198	USB Power Meter	27/07/2020	27/07/2022

3.0 TEST RESULTS

3.1 §15.203 Antenna Requirement

Parameters	
Antenna Gain	1 dBi
Antenna Type	Internal Omnidirectional

The above internal antennas is not able to be replaced.

3.2 §15.205 Restricted Bands of Operation

The limits of §15.209 were applied across the applicable spectrum and therefore complied with the restricted band requirements.

3.3 §15.209 Radiated emission limits; general requirements

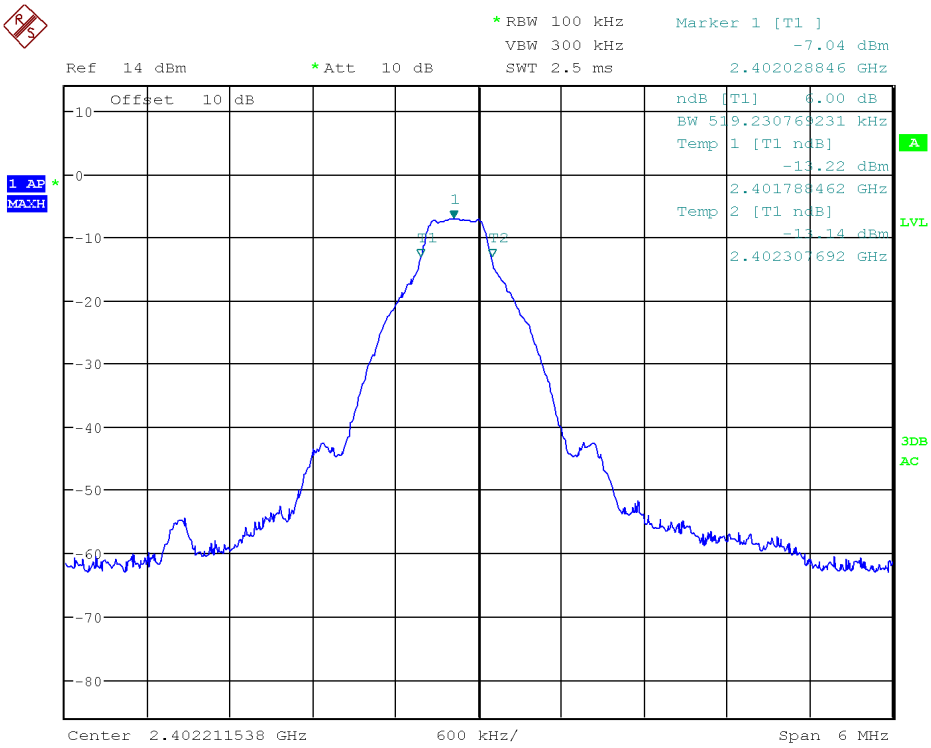
The limits given in §15.205, §15.209 and §15.247 were applied.

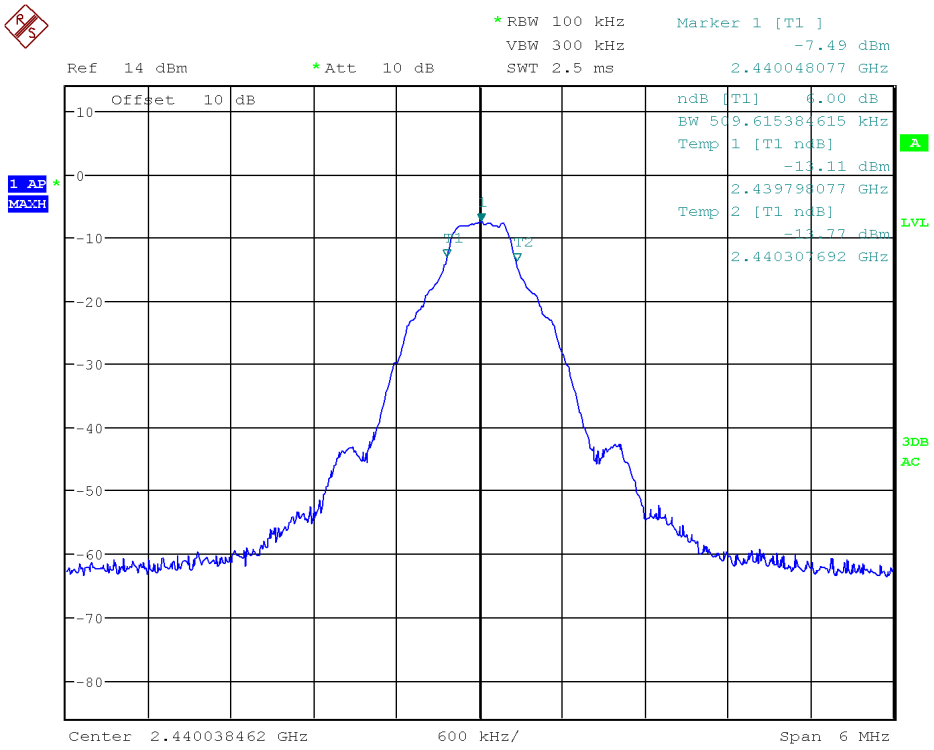
3.4 §15.247(a) DTS Bandwidth

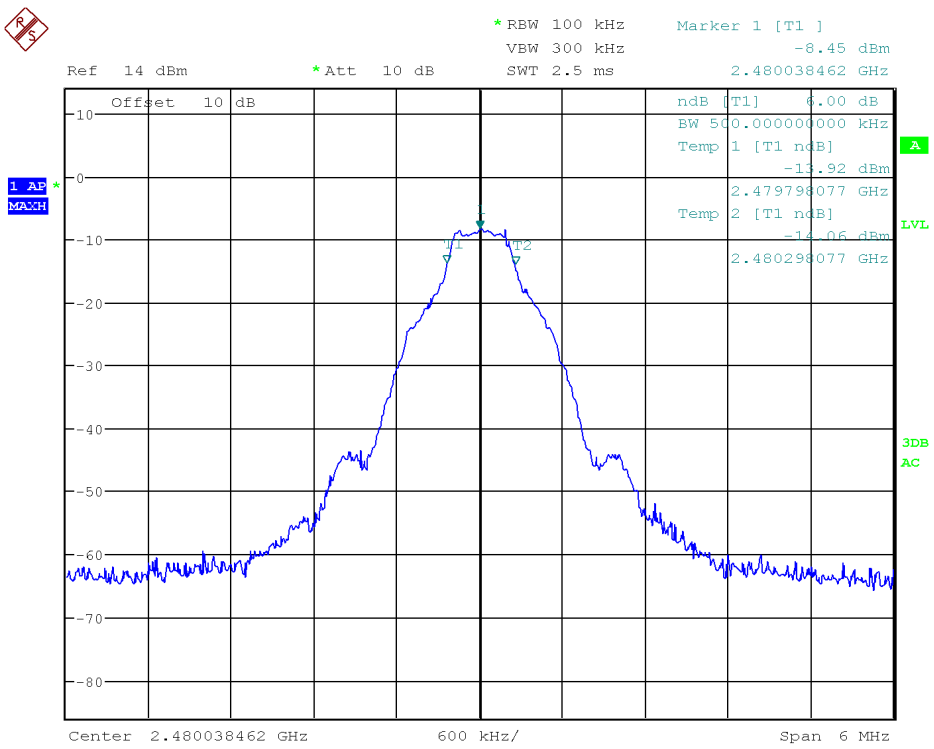
In the band 2400 to 2483.5 MHz, the minimum 6 dB bandwidth is to be at least 500 kHz. The 6 dB bandwidth was measured while the device was transmitting with typical modulation applied.

The tests were performed in accordance with ANSI C63.10: 2013 Clause 11.8 DTS bandwidth. Testing was performed via conducted method; the resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were utilised when measuring the bandwidth.

Centre Frequency [MHz]	Measured 6 dB Bandwidth [kHz]	Limit [kHz]	Result
2402	519.23	≥500	Complied
2440	509.62	≥500	Complied
2480	500.00	≥500	Complied







Date: 11.MAY.2022 16:03:56

3.5 §15.247(b) Peak Output power

The tests were performed in accordance with ANSI C63.10: 2013 Clause 11.9.1.3.
The peak output power was performed using a power meter via conducted method. The limit for digital transmission systems operating in the 2400 to 2483.5MHz is 1 Watt (30 dBm)

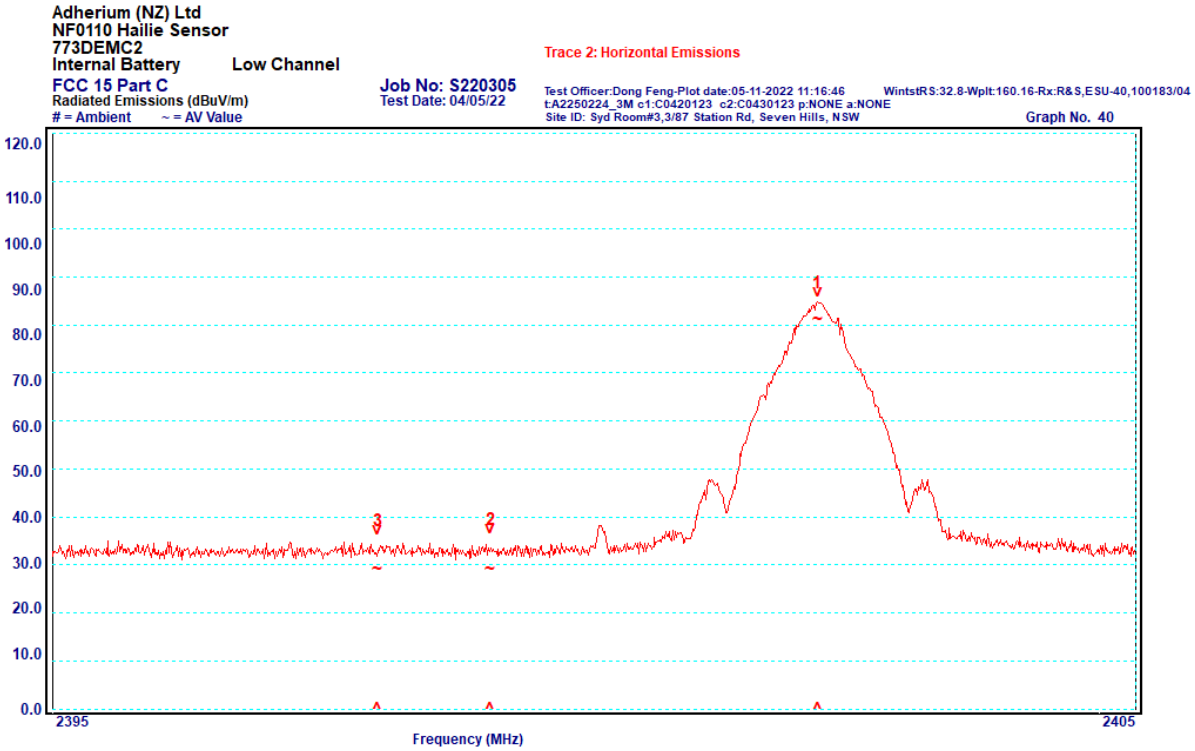
Centre Frequency [MHz]	Measured Conducted Peak Output Power [dBm]	Limit	Result
2402	-5.8	30 dBm	Complied
2440	-6.4	30 dBm	Complied
2480	-7.0	30 dBm	Complied

3.6 §15.247(d) Out of Band Emissions

3.6.1 Band-Edge Emission Measurements

Band-edge measurements were done using radiated in accordance to ANSI C63.10 clause 6.10. All emissions measured near the lower and higher band edge complied with the requirements of §15.247.

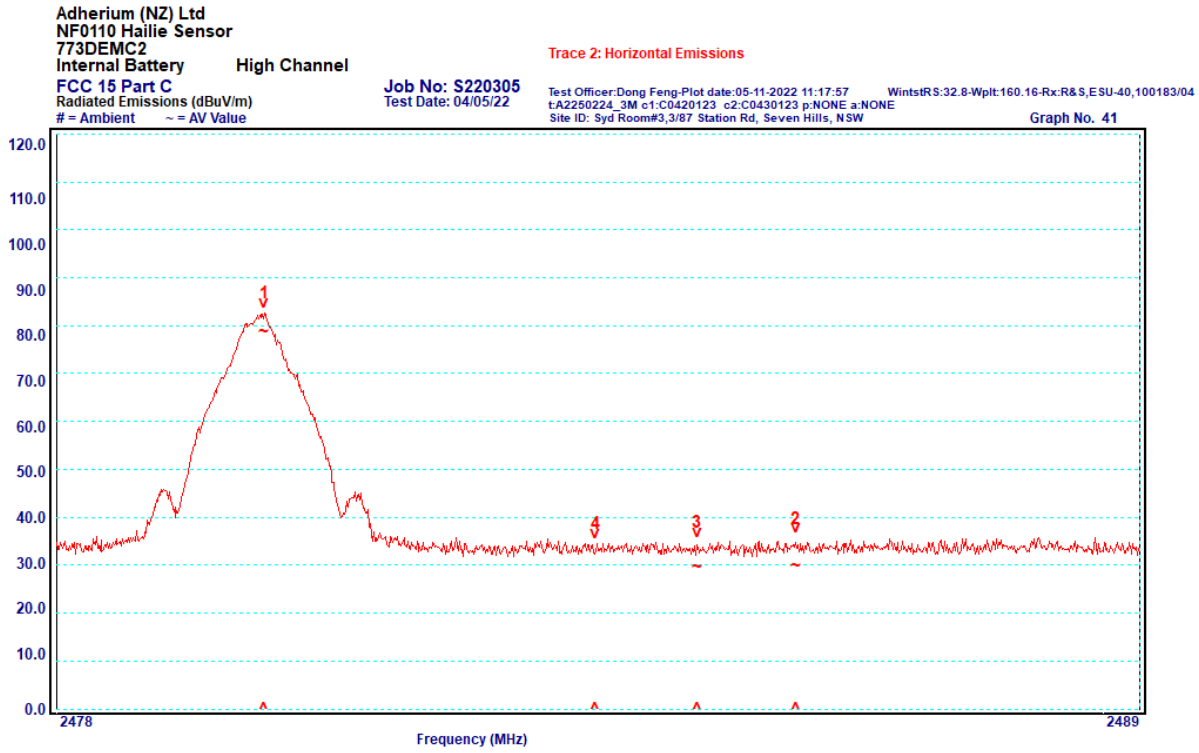
3.6.1.1 Channel 2402 MHz



Result

Frequency (MHz)	Peak Measurement (dBµV/m)	Limit (dBµV/m)	Result
2399.04	35.5	74	Complied
2398.00	35.2	74	

3.6.1.2 Channel 2480 MHz



Result

Frequency (MHz)	Peak Measurement (dBµV/m)	Limit (dBµV/m)	Result
2485.50	35.8	54	Complied
2484.50	34.8	54	
2483.47	34.6	54	

3.6.2 Radiated Spurious Measurements

Radiated EMI tests were performed in a semi-anechoic chamber compliant with ANSI C63.4 2014.

The test frequency range was sub-divided into smaller bands with sufficient frequency resolution to permit reliable display and identification of possible EMI peaks. Measurements between 9 kHz and 30 MHz were made at 3 metres using a 0.6 metre loop antenna and calibrated Biconilog antenna for measurements between 30 MHz and 1000 MHz. Calibrated Sunar RF Motion JB1 Biconilog antenna and EMCO 3115, ETS standard gain horn antennas were used for measurements between 1 to 40 GHz as applicable.

The test frequency range was sub-divided into smaller bands with the defined resolution bandwidths to permit reliable display and identification of emissions.

Frequency range (MHz)	Measurement Bandwidth (kHz)	Measurement Distance (m)	Antenna
0.009 to 0.150	0.2	3	0.6 metre loop antenna
0.150 to 30	9	3	
30 to 1000	120	3	Biconilog hybrid
1000 to 18 000	1000	3	Standard gain or broadband horn
18 000 to 40 000	1000	1	

The EUT was slowly rotated with the spectrum analyser was set to Max-Hold. This was performed for two antenna heights. When an emission was located, it was positively identified and its maximum level found by rotating the automated turntable and by varying the antenna height. The procedure was repeated with the device orientated in three orthogonal axis to further maximise the emission.

Each significant peak was investigated with the Peak/Average Detectors. The measurement data for each frequency range was corrected for cable losses, antenna factors and preamplifier gain. This process was performed for both horizontal and vertical antenna polarisations.

Calculation of field strength

The field strength was calculated automatically by the software using all the pre-stored calibration data. The method of calculation is shown below:

E = V + AF - G + L

Where:

E = Radiated Field Strength in dBµV/m.
V = EMI Receiver Voltage in dBµV. (measured value)
AF = Antenna Factor in dB. (stored as a data array)
G = Preamplifier Gain in dB. (stored as a data array)
L = Cable loss in dB. (stored as a data array of Insertion Loss versus frequency)

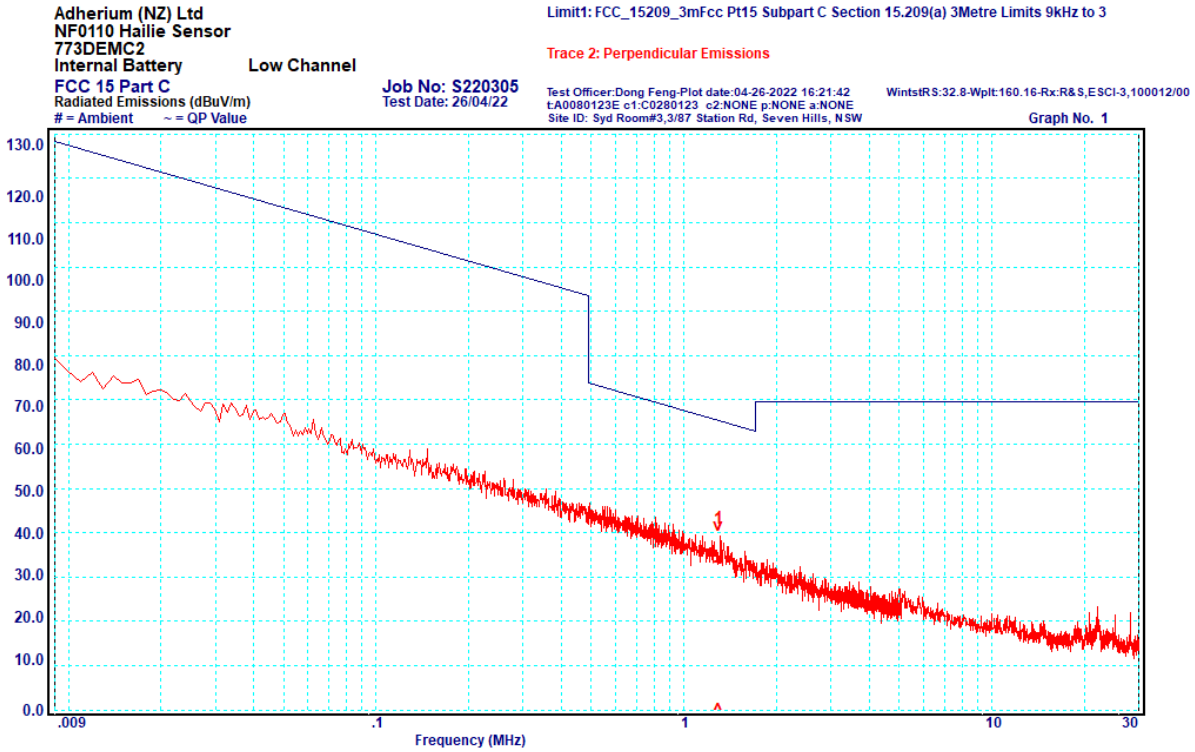
3.6.2.1 Results

The limit applied is in accordance with the out-of-band/spurious emissions limit defined in §15.247(d).

All emissions measured complied with the §15.209(a), §15.205&§15.247(d) requirements of spurious emission of the standard.

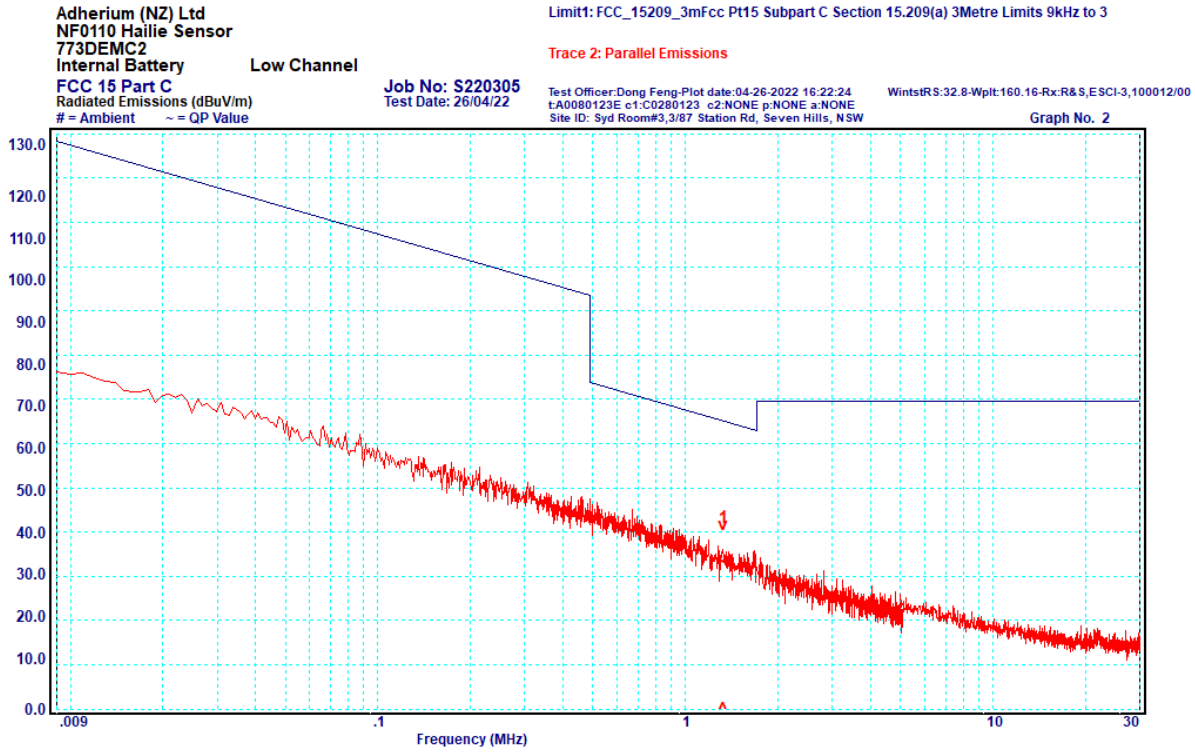
3.6.2.1.1 Frequency Band: 9kHz – 30MHz

Perpendicular Emissions Low Channel 9kHz to 30MHz



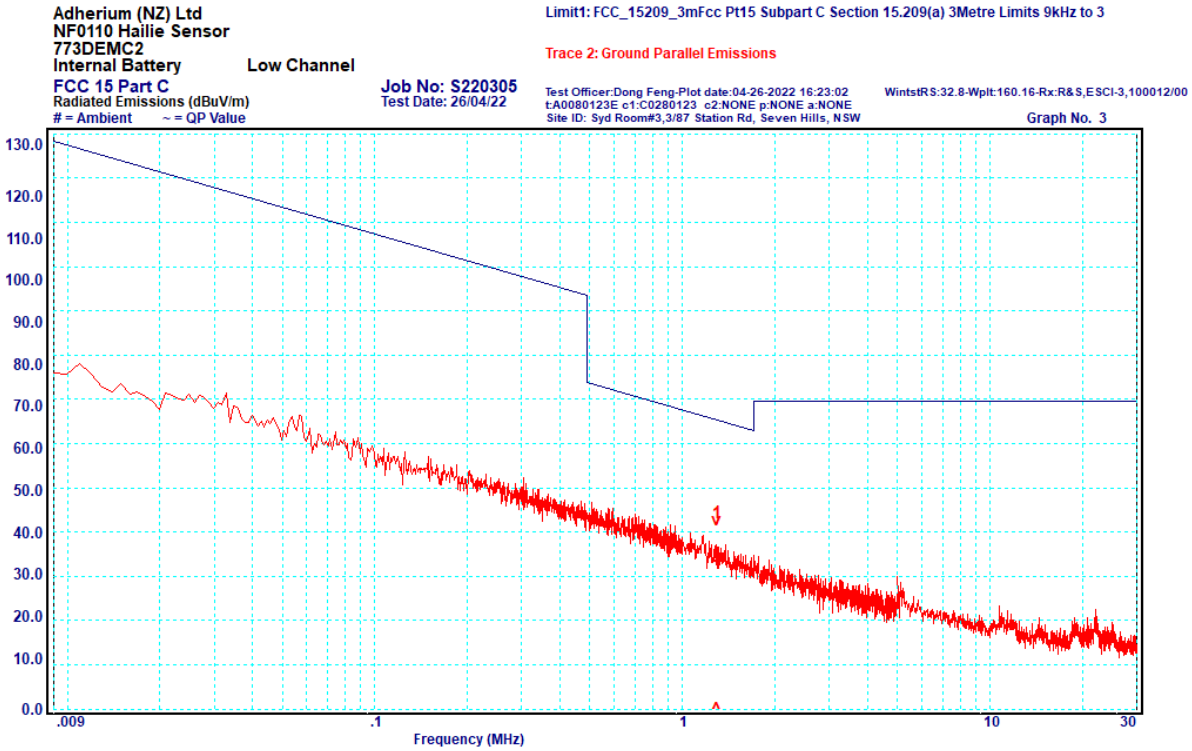
Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.298	Perpendicular	33.0	65.4	-32.4

Parallel Emissions Low Channel 9kHz to 30MHz



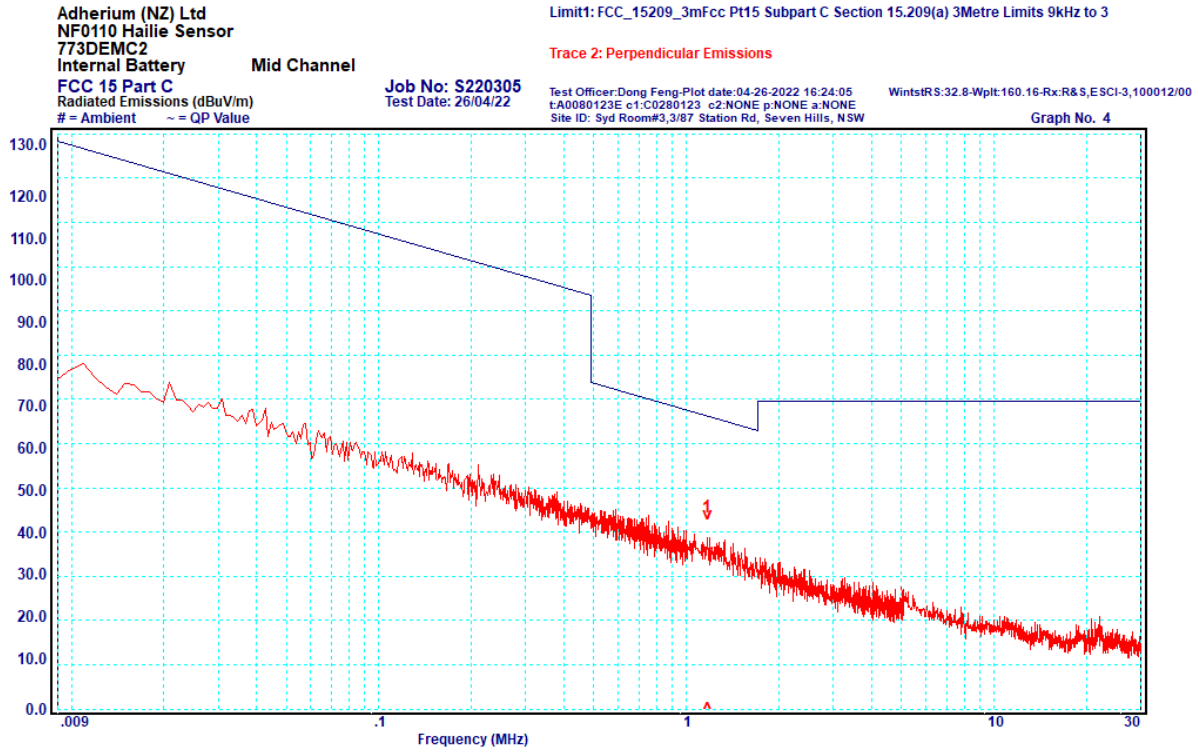
Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.330	Parallel	33.1	65.2	-32.1

Ground Parallel Emissions Low Channel 9kHz to 30MHz



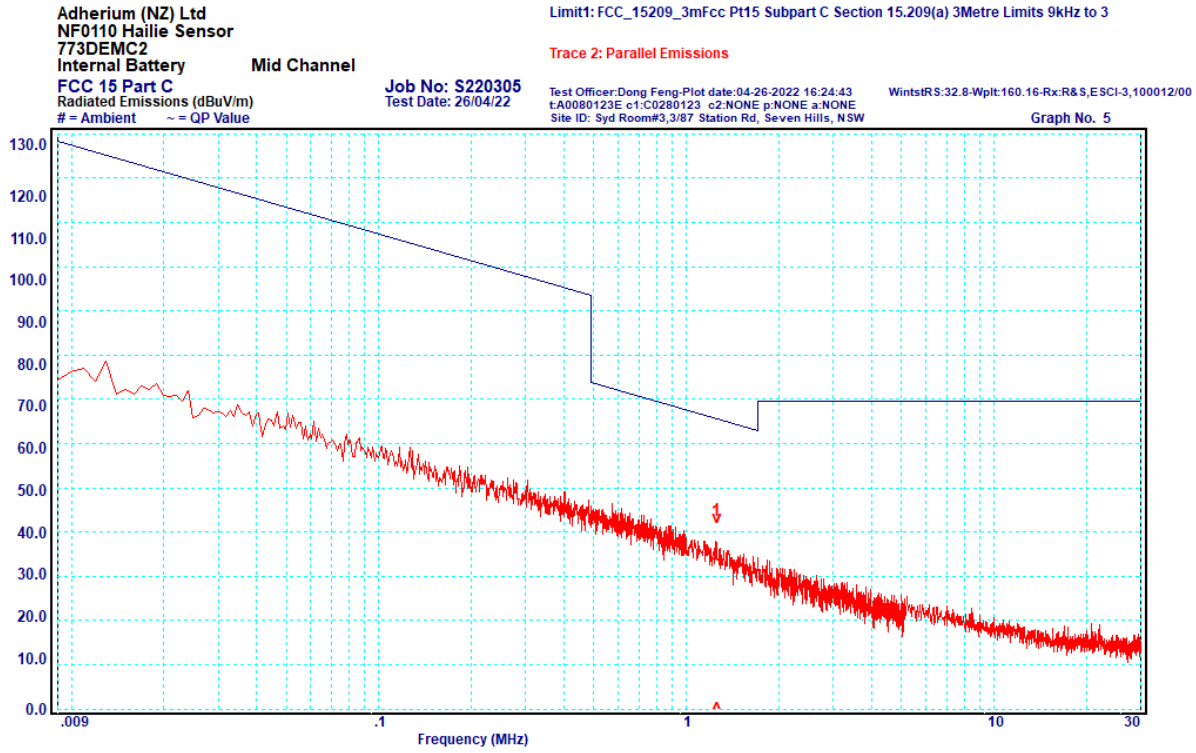
Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.298	Ground Parallel	33.2	65.4	-32.2

Perpendicular Emissions Mid Channel 9kHz to 30MHz



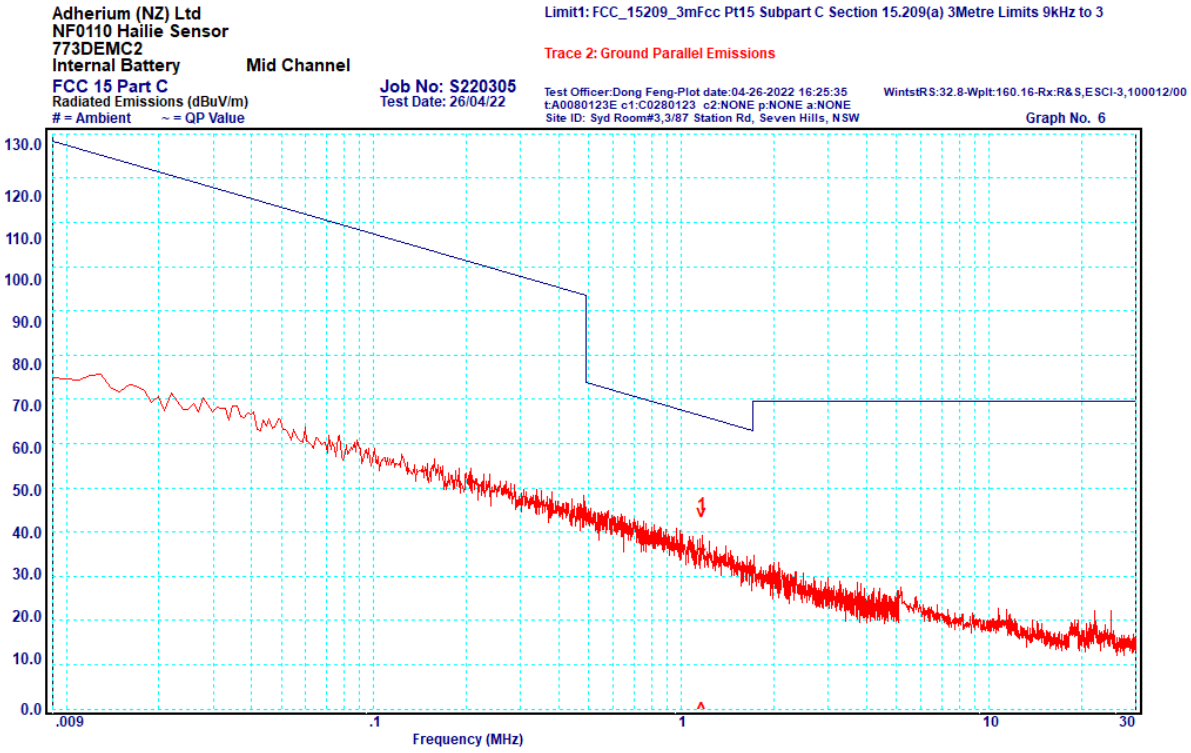
Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.169	Perpendicular	36.2	66.3	-30.1

Parallel Emissions Mid Channel 9kHz to 30MHz



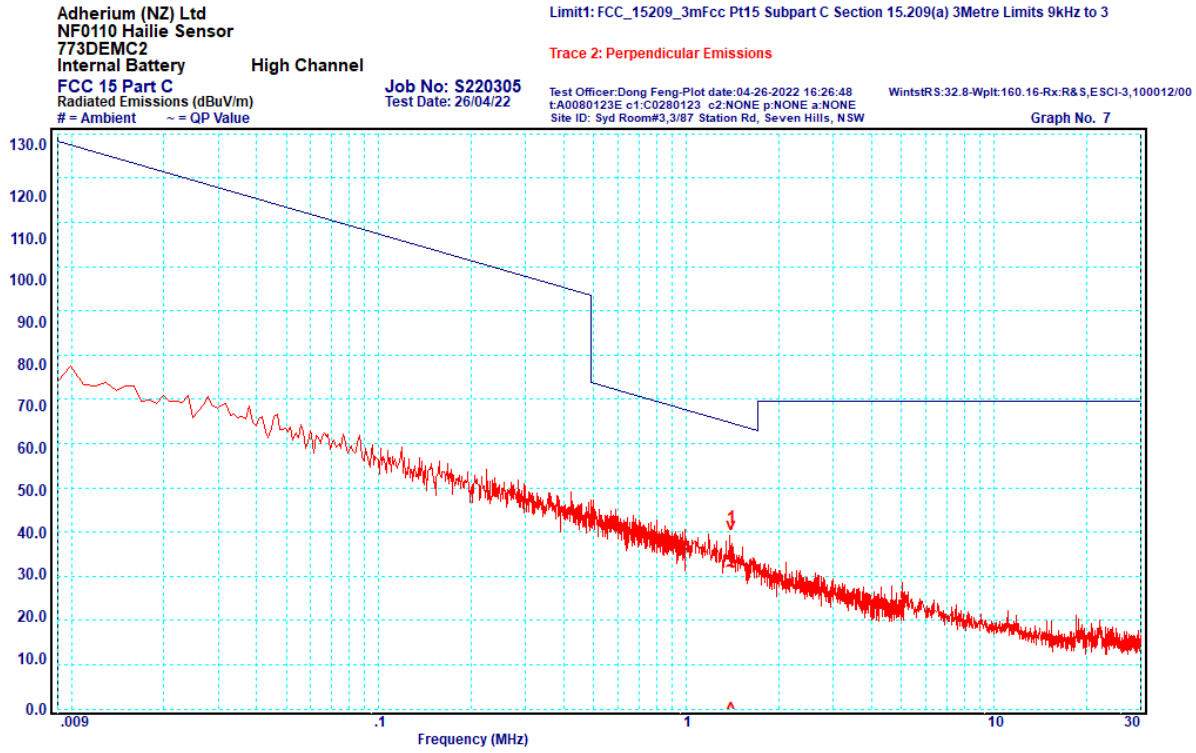
Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.258	Parallel	33.6	65.7	-32.1

Ground Parallel Emissions Mid Channel 9kHz to 30MHz



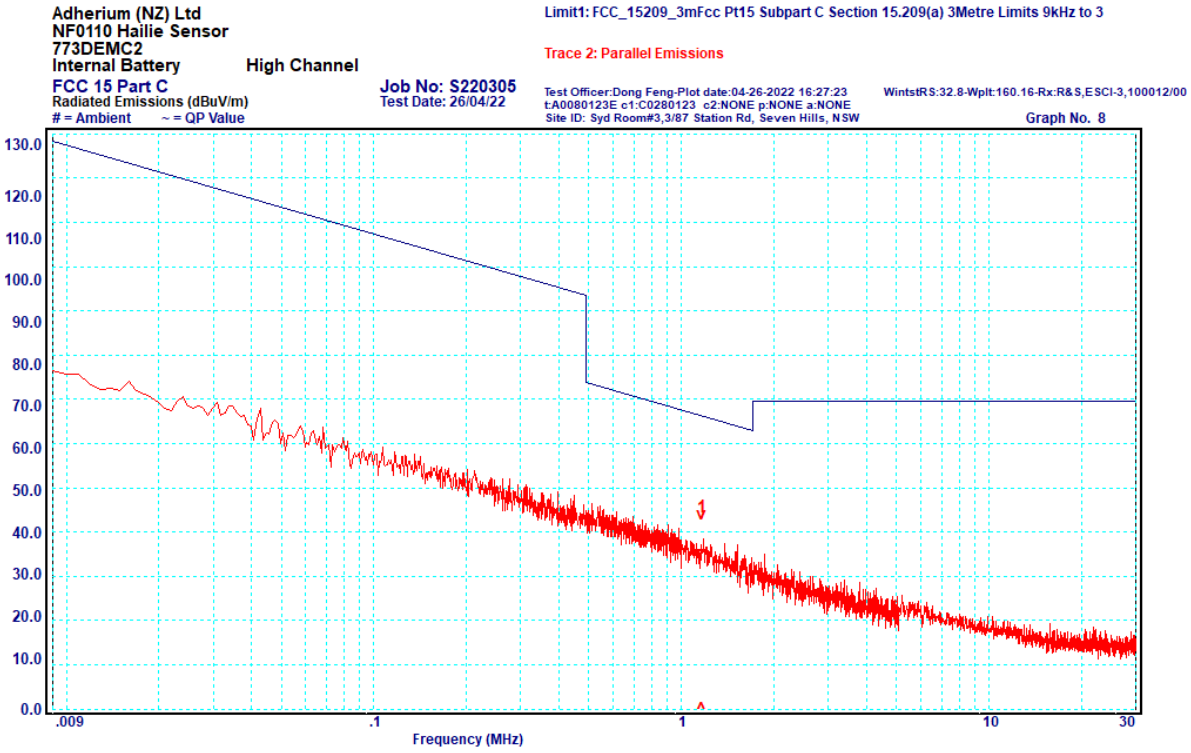
Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.168	Ground Parallel	35.8	66.3	-30.5

Perpendicular Emissions High Channel 9kHz to 30MHz



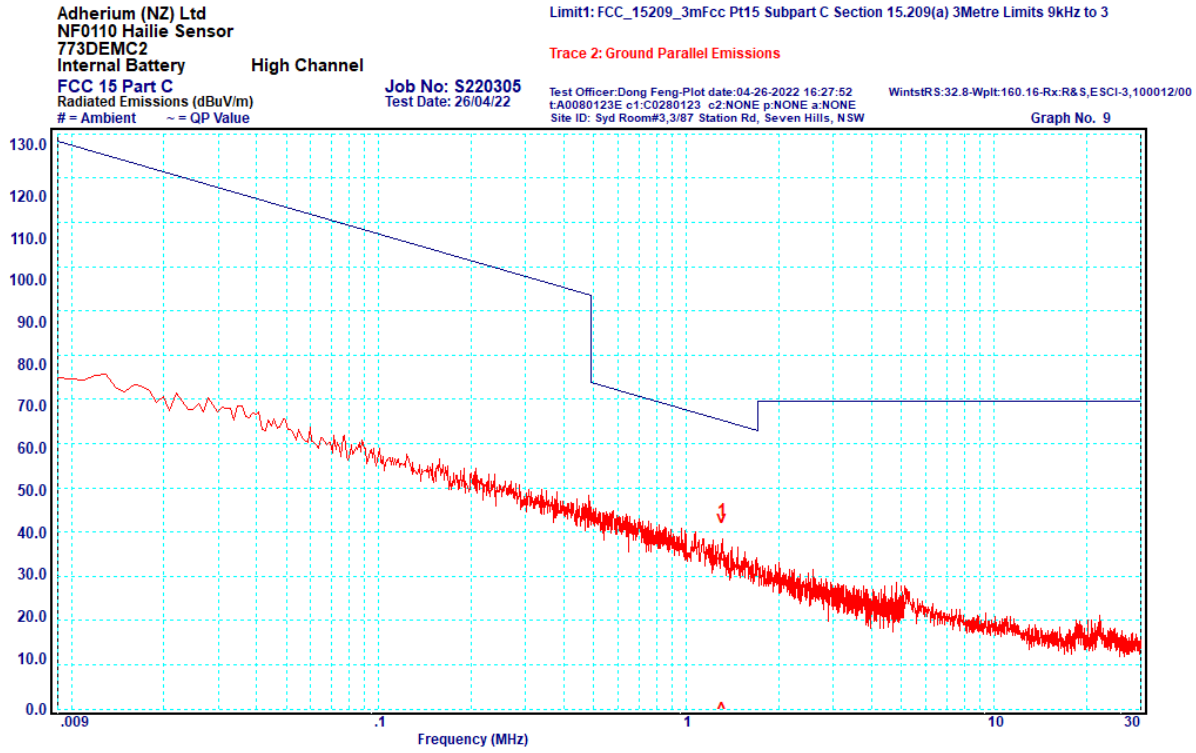
Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.405	Perpendicular	32.0	64.7	-32.7

Parallel Emissions High Channel 9kHz to 30MHz



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.167	Parallel	35.5	66.3	-30.8

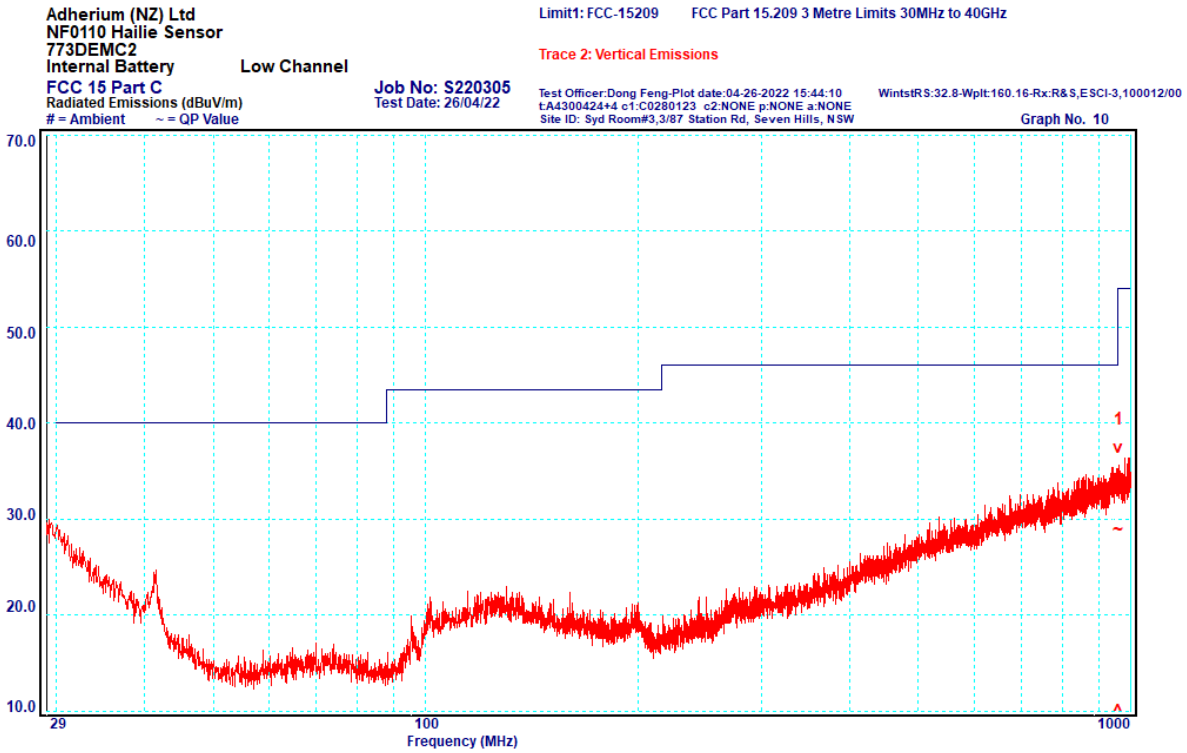
Ground Parallel Emissions High Channel 9kHz to 30MHz



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1.305	Ground Parallel	33.5	65.3	-31.8

3.6.2.1.2 Frequency Band: 30 – 1000 MHz

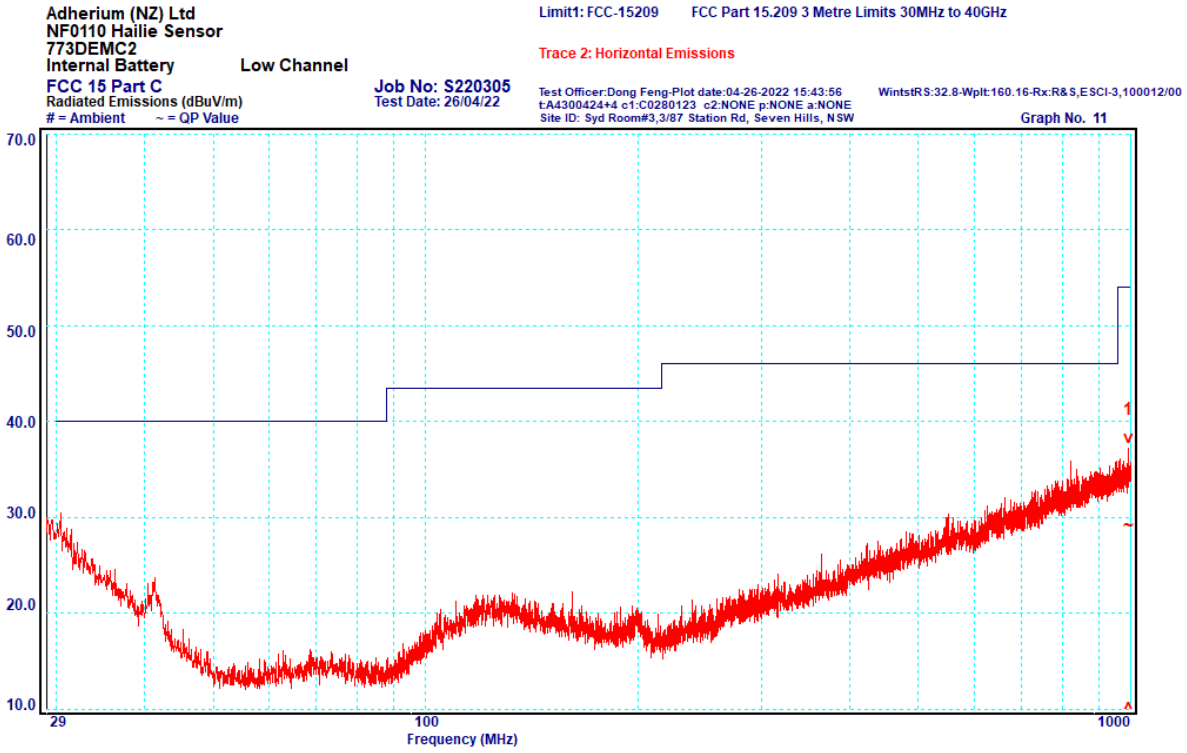
Vertical Emissions Low Channel 30MHz to 1000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	960.200	Vertical	28.8	54.0	-25.2

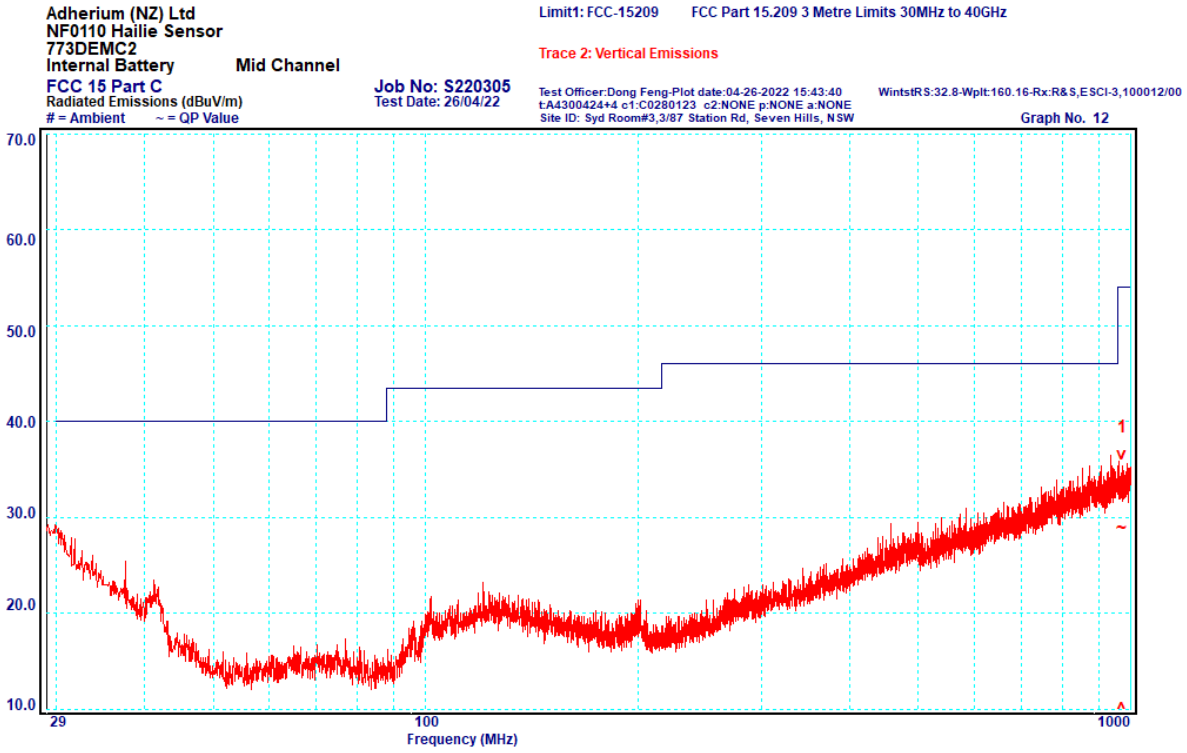
.

Horizontal Emissions Low Channel 30MHz to 1000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	992.760	Horizontal	29.1	54.0	-24.9

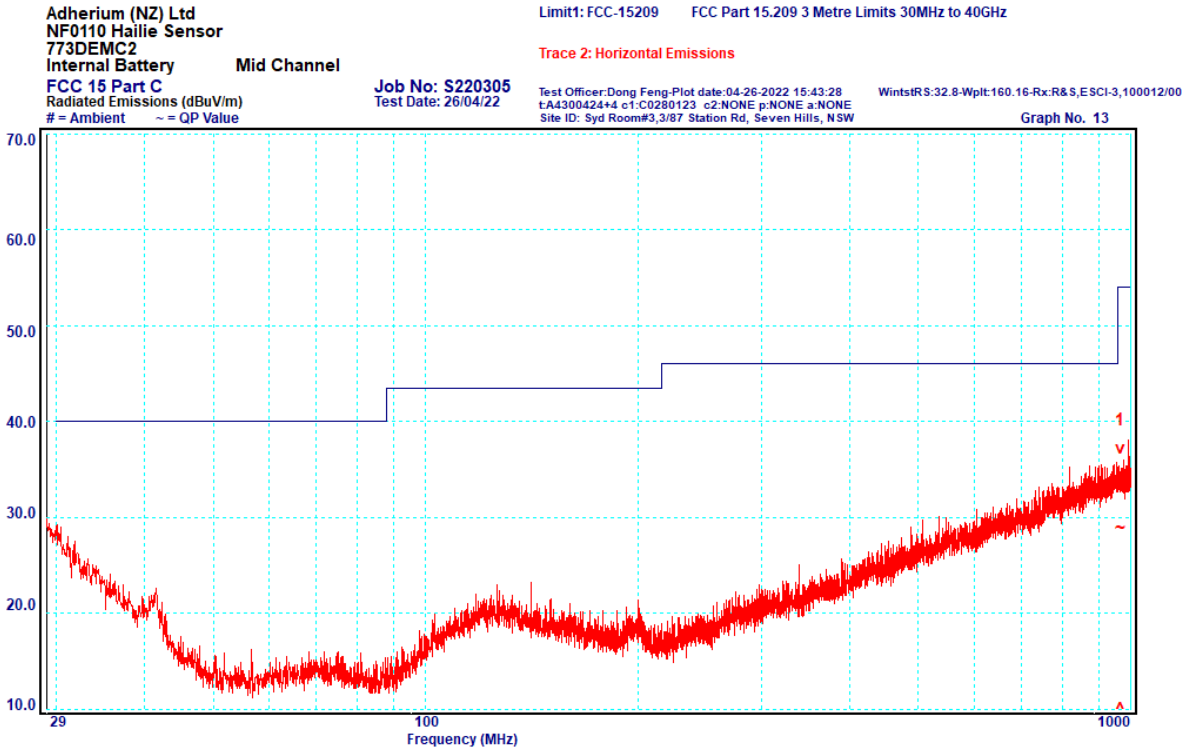
Vertical Emissions Mid Channel 30MHz to 1000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	972.400	Vertical	28.8	54.0	-25.2

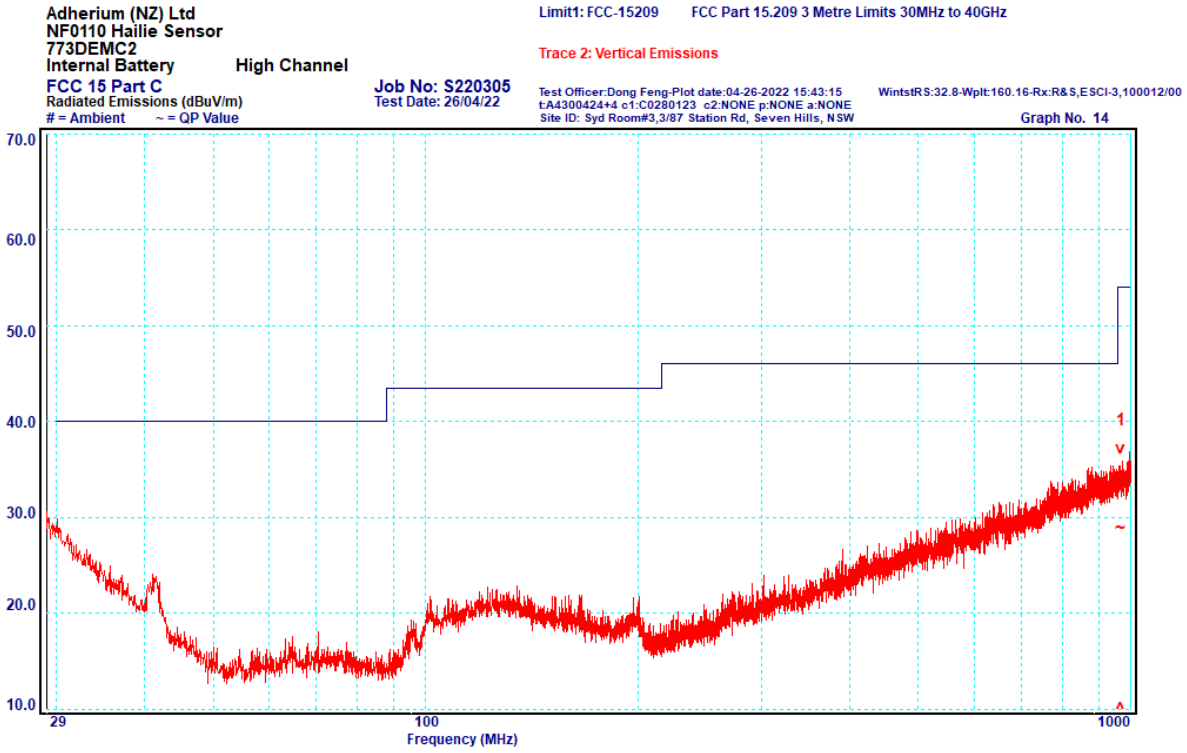
.

Horizontal Emissions Mid Channel 30MHz to 1000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	967.290	Horizontal	28.8	54.0	-25.2

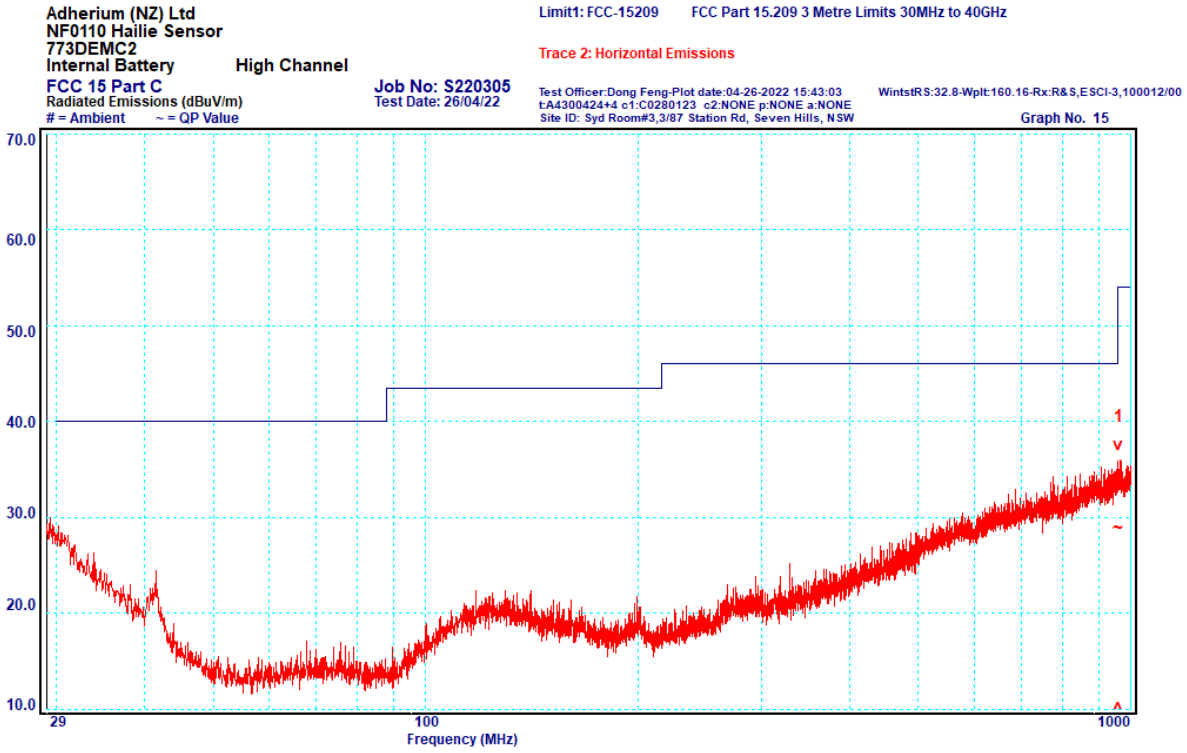
Vertical Emissions **High Channel** **30MHz to 1000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	968.040	Vertical	28.8	54.0	-25.2

.

Horizontal Emissions High Channel 30MHz to 1000MHz

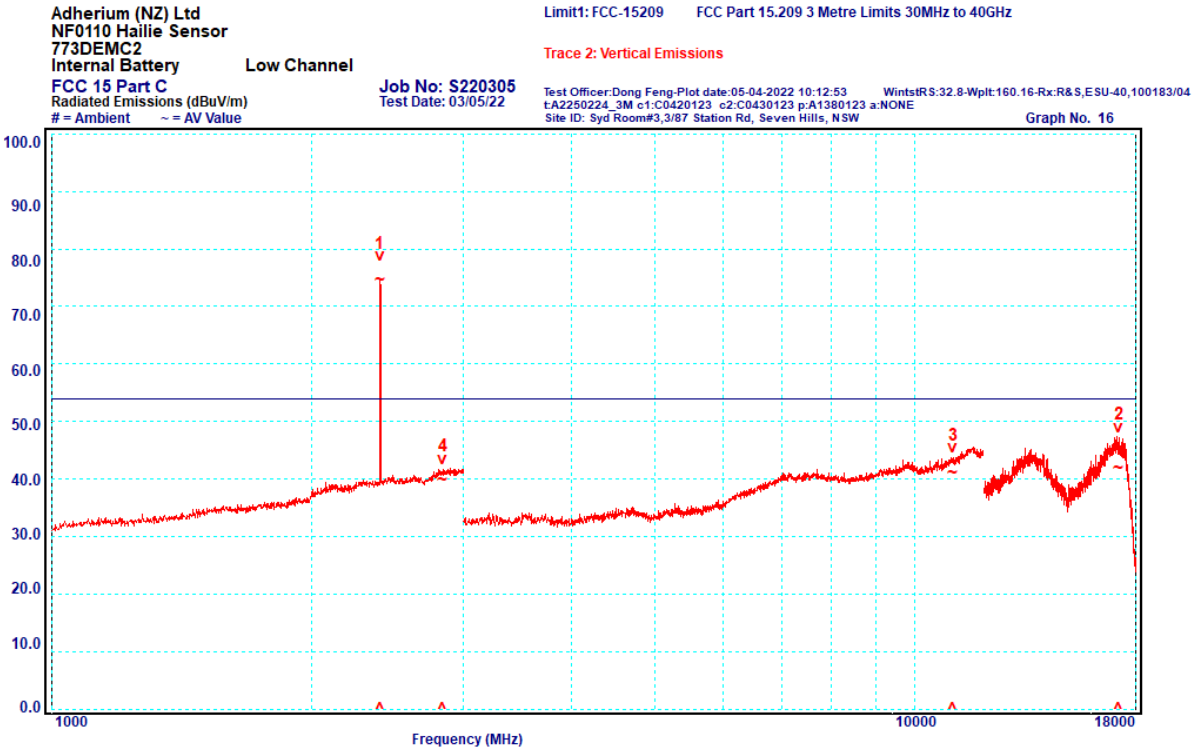


Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	962.010	Horizontal	28.8	54.0	-25.2

3.6.2.1.3 Frequency Band: 1000 – 18000 MHz

3.6.2.1.3.1 Average Measurements

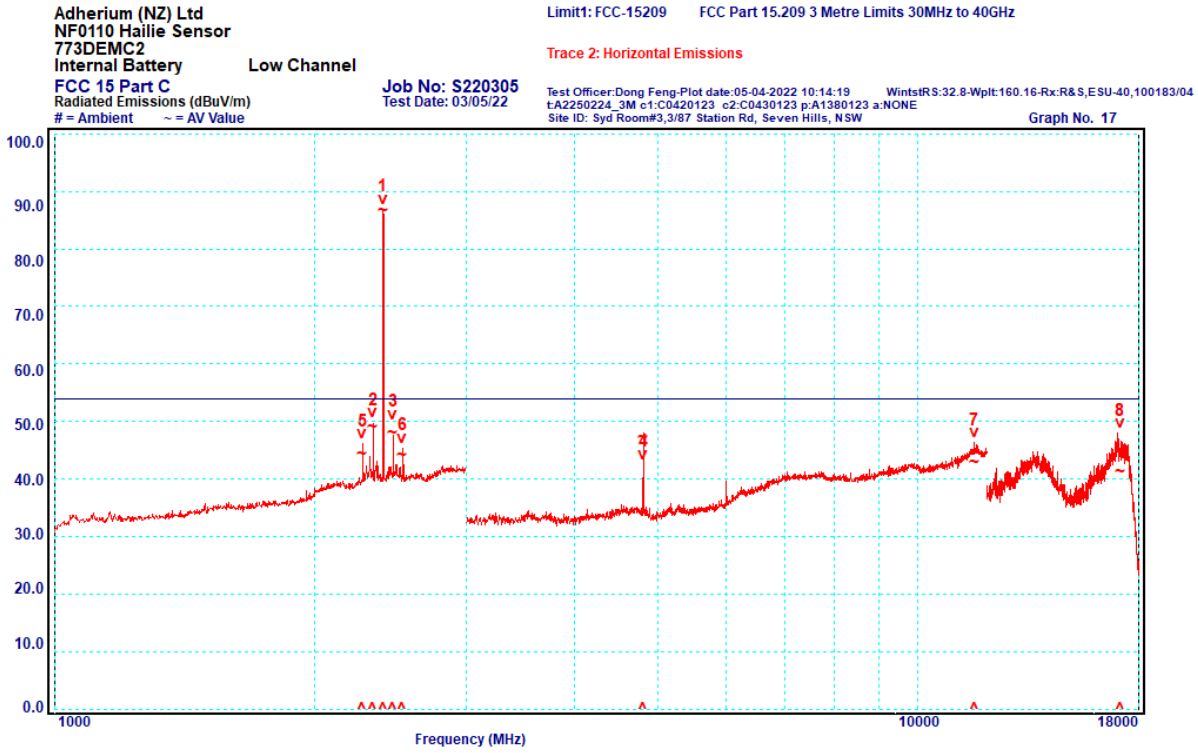
Vertical Emissions Low Channel 1000MHz to 18000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	2402.030	Vertical	N/A	N/A	N/A*
2	17197.940	Vertical	41.9	54.0	-12.1
3	11070.910	Vertical	41.1	54.0	-12.9
4	2838.680	Vertical	39.9	54.0	-14.1

**The peak above the limit is the fundamental transmission and not subject to the spurious emissions limit of the standard*

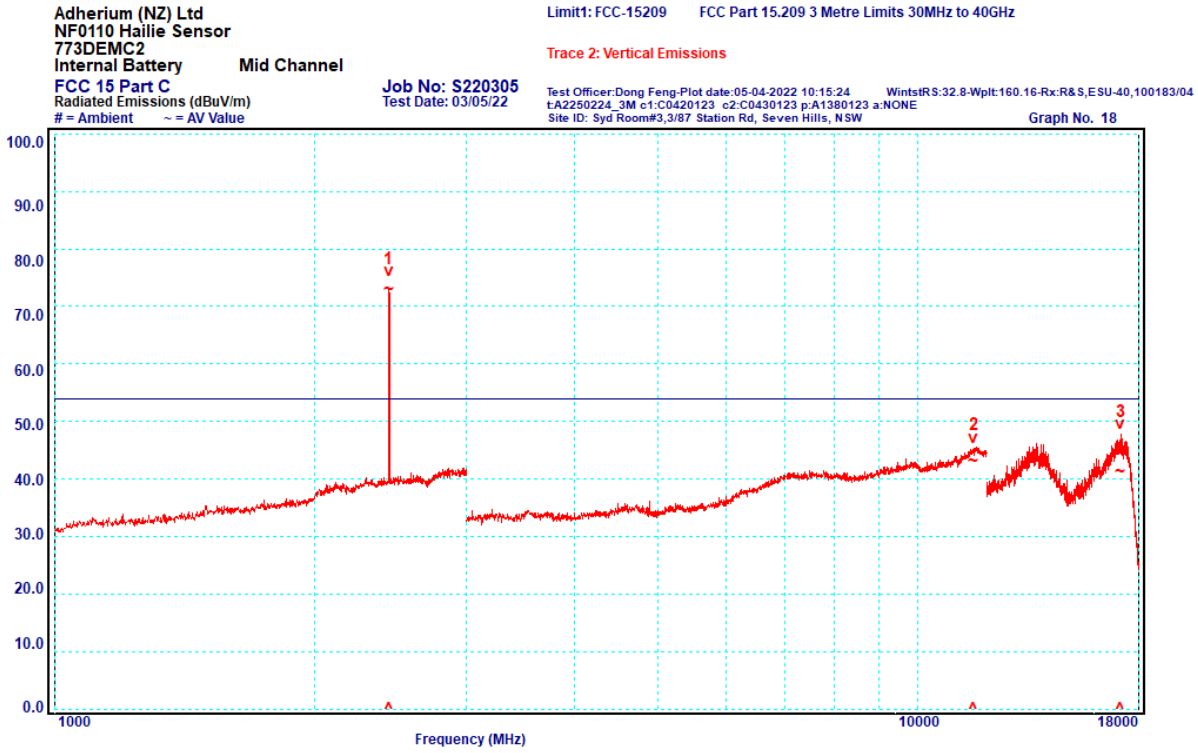
Horizontal Emissions Low Channel 1000MHz to 18000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	2402.020	Horizontal	N/A	N/A	N/A*
2	2337.950	Horizontal	49.1	54.0	-4.9
3	2466.060	Horizontal	48.0	54.0	-6.0
4	4804.200	Horizontal	47.1	54.0	-6.9
5	2274.090	Horizontal	44.2	54.0	-9.8
6	2530.040	Horizontal	44.2	54.0	-9.8
7	11606.810	Horizontal	42.8	54.0	-11.2
8	17126.210	Horizontal	41.3	54.0	-12.7

**The peak above the limit is the fundamental transmission and not subject to the spurious emissions limit of the standard*

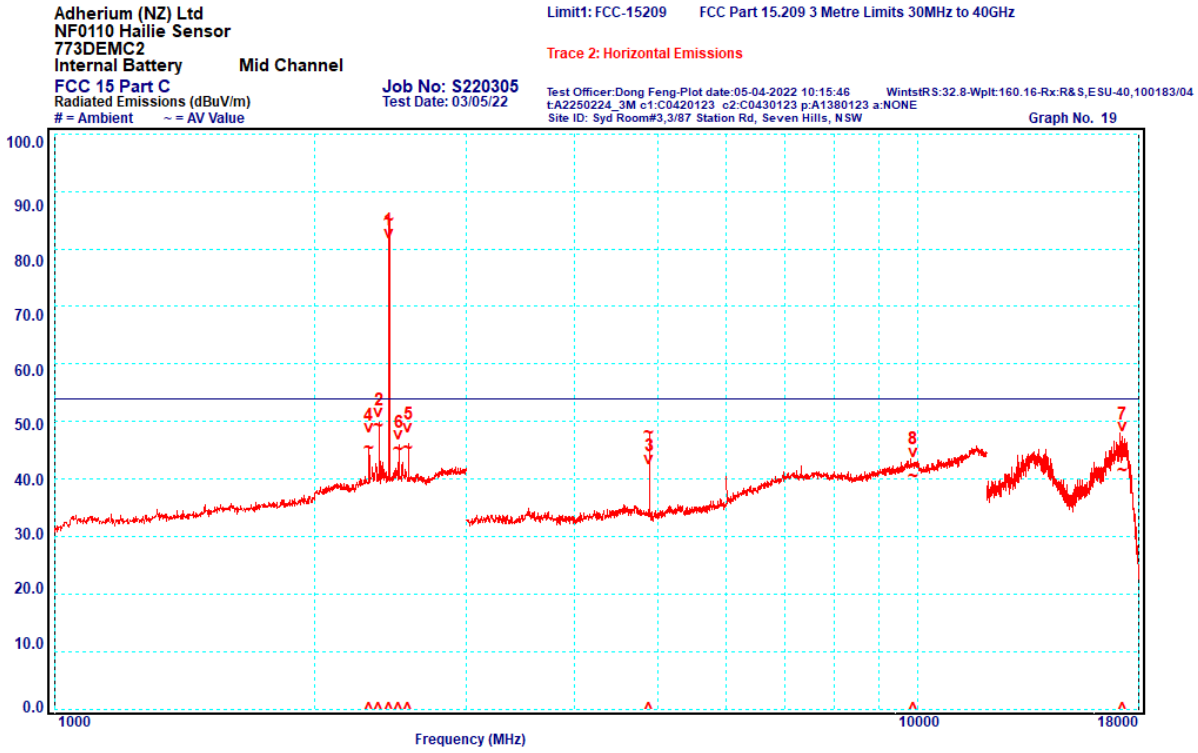
Vertical Emissions **Mid Channel** **1000MHz to 18000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	2440.010	Vertical	N/A	N/A	N/A*
2	11597.090	Vertical	43.1	54.0	-10.9
3	17144.860	Vertical	41.3	54.0	-12.7

**The peak above the limit is the fundamental transmission and not subject to the spurious emissions limit of the standard*

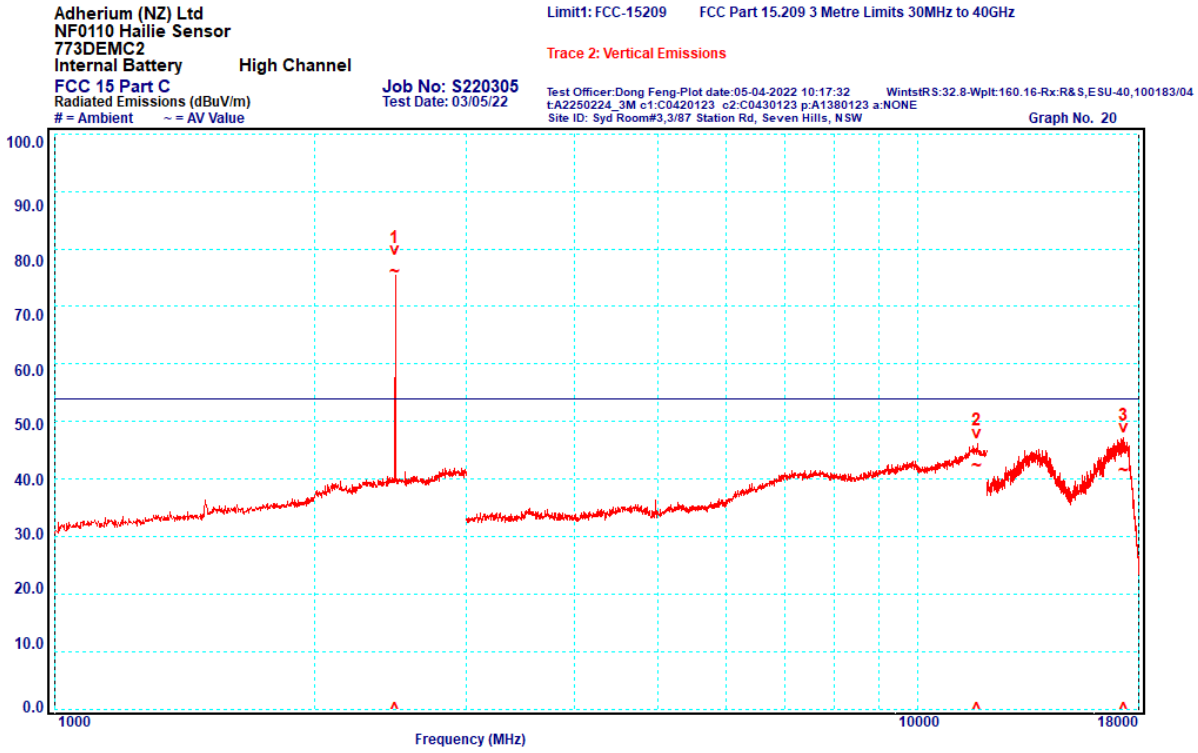
Horizontal Emissions Mid Channel 1000MHz to 18000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	2440.150	Horizontal	N/A	N/A	N/A*
2	2376.120	Horizontal	49.3	54.0	-4.7
3	4880.100	Horizontal	47.9	54.0	-6.1
4	2311.990	Horizontal	45.4	54.0	-8.6
5	2567.990	Horizontal	45.2	54.0	-8.8
6	2504.100	Horizontal	45.1	54.0	-8.9
7	17233.190	Horizontal	41.5	54.0	-12.5
8	9873.110	Horizontal	40.3	54.0	-13.7

**The peak above the limit is the fundamental transmission and not subject to the spurious emissions limit of the standard*

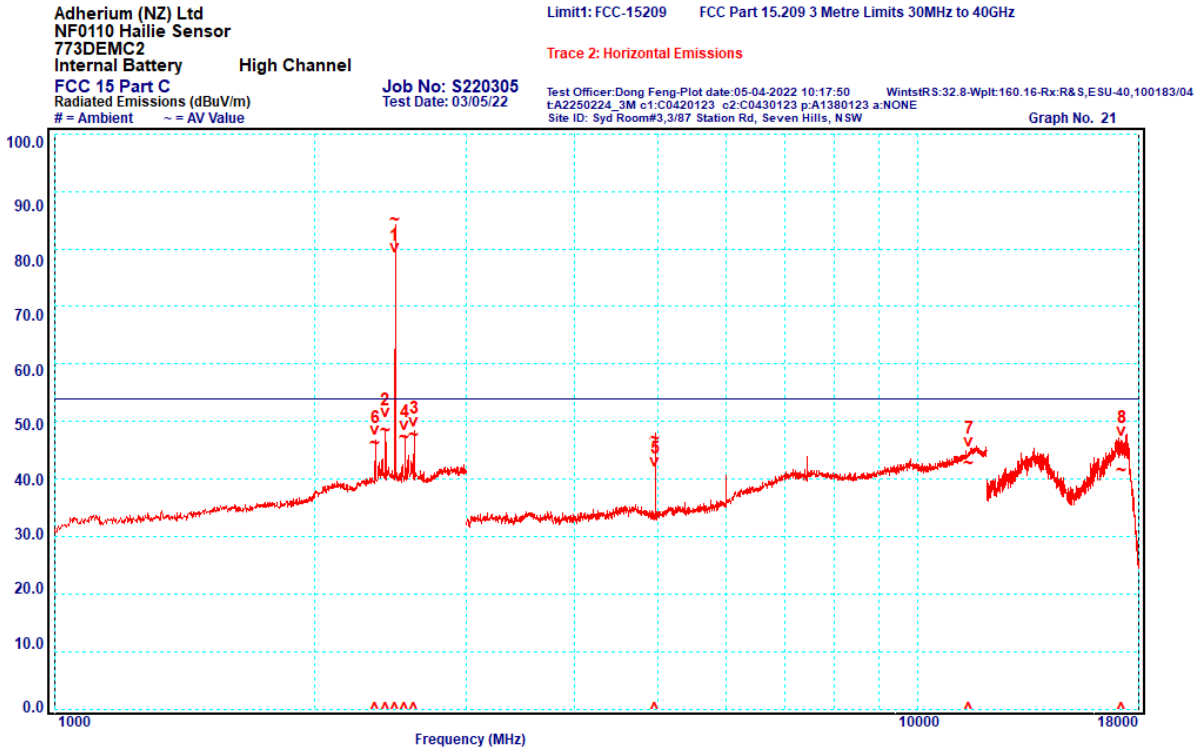
Vertical Emissions **High Channel** **1000MHz to 18000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	2480.110	Vertical	N/A	N/A	N/A*
2	11693.560	Vertical	42.2	54.0	-11.8
3	17281.300	Vertical	41.5	54.0	-12.5

**The peak above the limit is the fundamental transmission and not subject to the spurious emissions limit of the standard*

Horizontal Emissions High Channel 1000MHz to 18000MHz

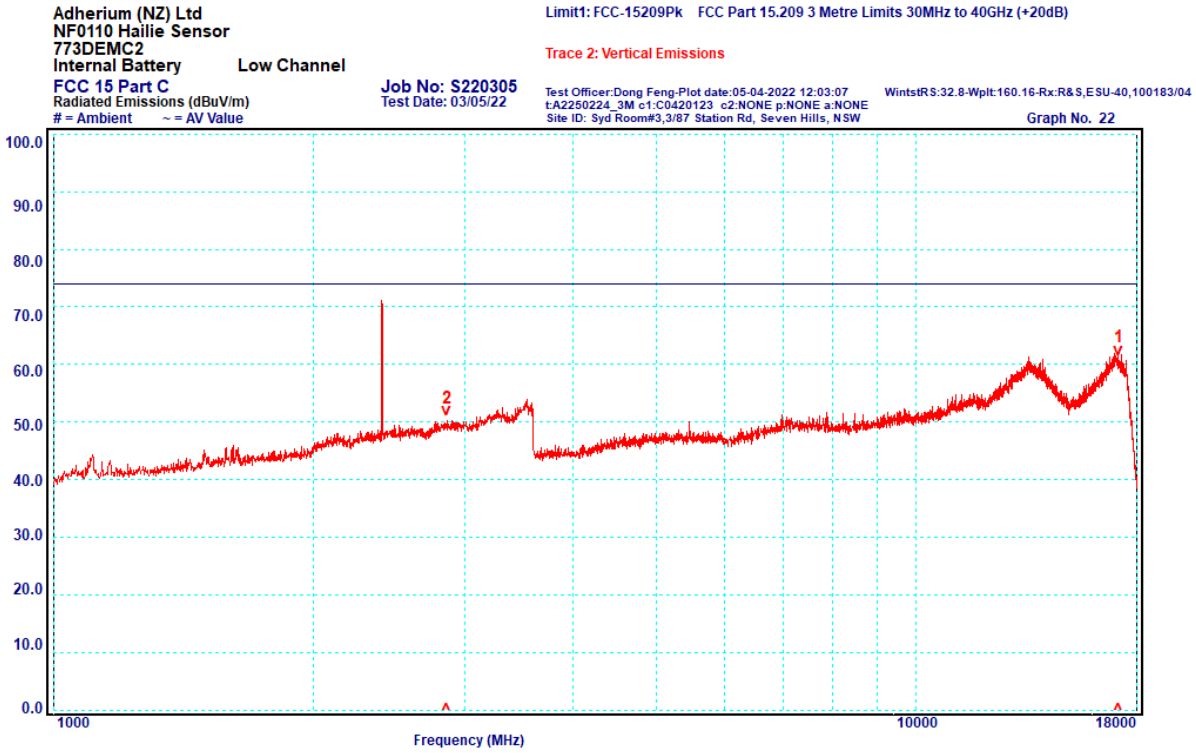


Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	2480.110	Horizontal	N/A	N/A	N/A*
2	2416.050	Horizontal	48.4	54.0	-5.6
3	2608.080	Horizontal	47.6	54.0	-6.4
4	2544.130	Horizontal	47.1	54.0	-6.9
5	4959.910	Horizontal	47.0	54.0	-7.0
6	2352.040	Horizontal	46.2	54.0	-7.8
7	11448.750	Horizontal	42.7	54.0	-11.3
8	17220.500	Horizontal	41.4	54.0	-12.6

**The peak above the limit is the fundamental transmission and not subject to the spurious emissions limit of the standard*

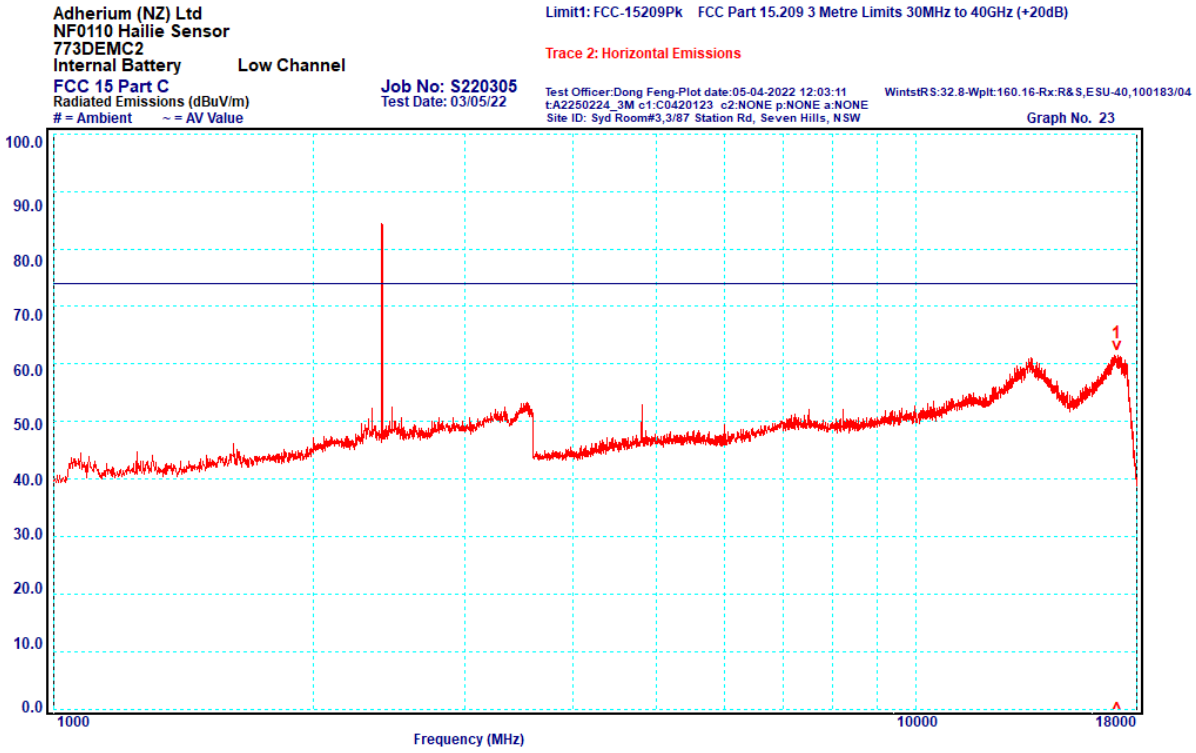
3.6.2.1.3.2 Peak Measurements

Vertical Emissions **Low Channel** **1000MHz to 18000MHz**



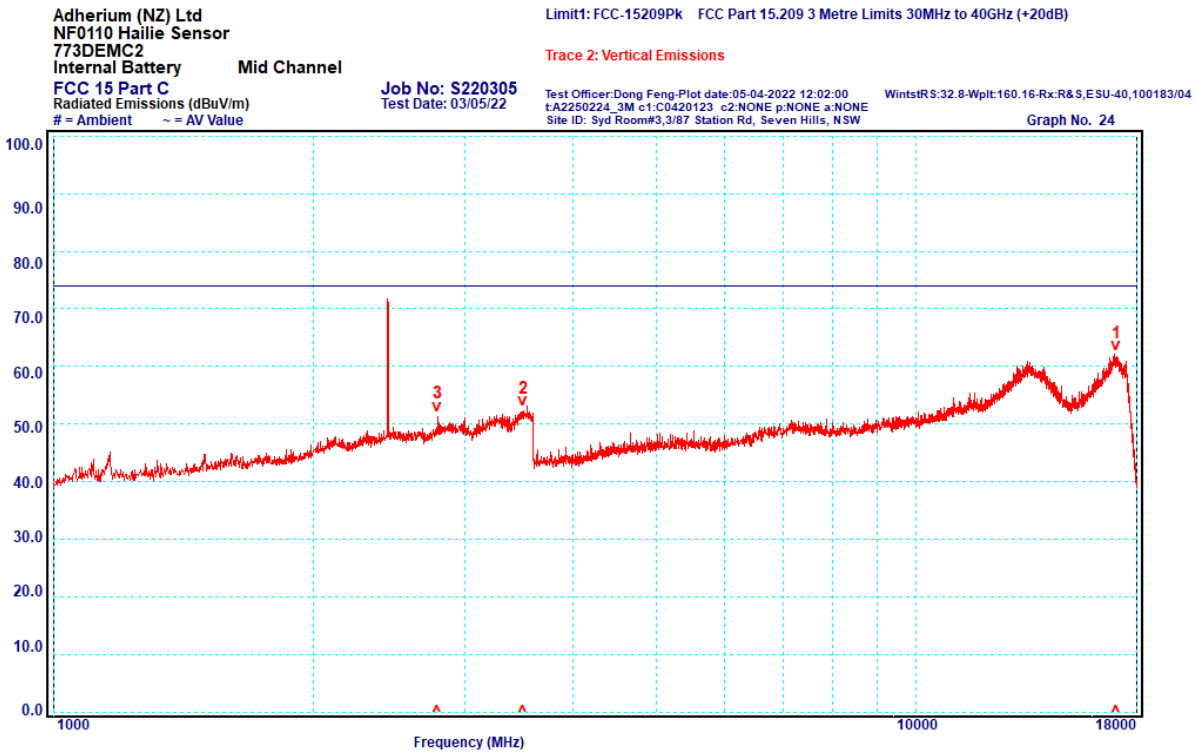
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	17154.960	Vertical	60.7	74.0	-13.3
2	2858.180	Vertical	50.2	74.0	-23.8

Horizontal Emissions Low Channel 1000MHz to 18000MHz



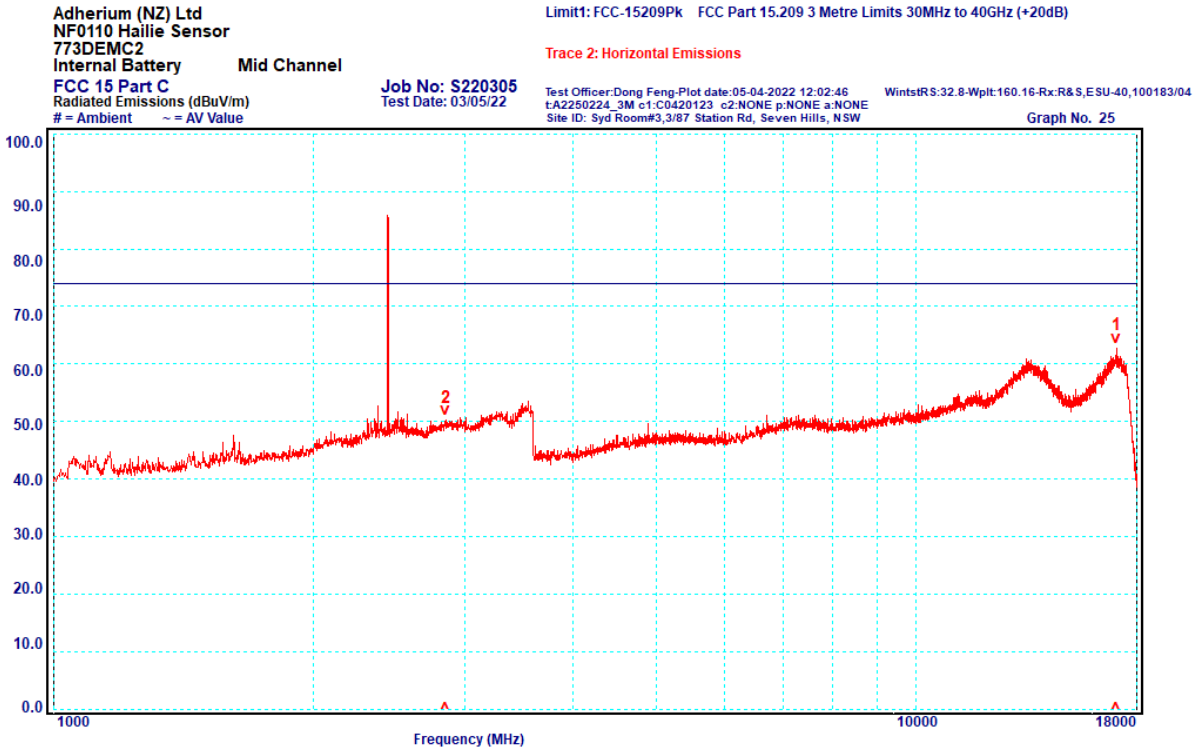
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	17083.030	Horizontal	61.4	74.0	-12.6

Vertical Emissions **Mid Channel** **1000MHz to 18000MHz**



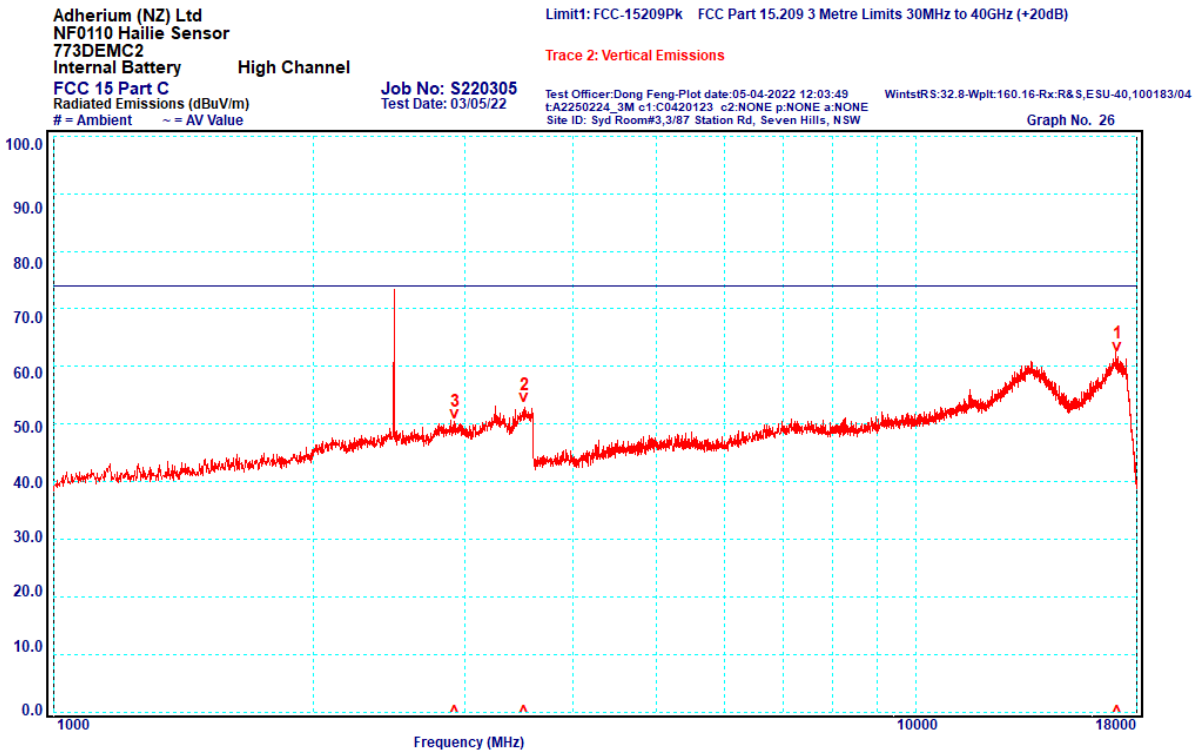
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	17053.060	Vertical	61.9	74.0	-12.1
2	3503.510	Vertical	52.2	74.0	-21.8
3	2786.250	Vertical	51.3	74.0	-22.7

Horizontal Emissions Mid Channel 1000MHz to 18000MHz



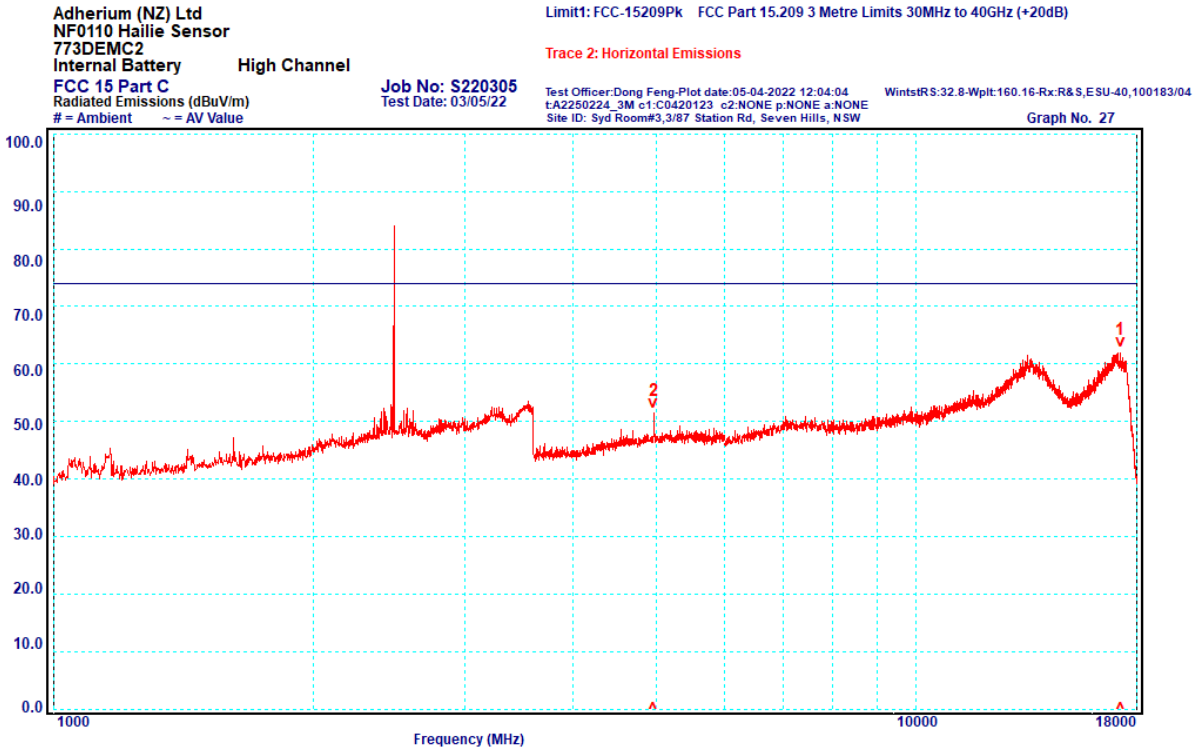
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	17041.070	Horizontal	62.8	74.0	-11.2
2	2850.190	Horizontal	50.2	74.0	-23.8

Vertical Emissions **High Channel** **1000MHz to 18000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	17095.020	Vertical	61.8	74.0	-12.2
2	3512.500	Vertical	52.9	74.0	-21.1
3	2920.120	Vertical	50.0	74.0	-24.0

Horizontal Emissions High Channel 1000MHz to 18000MHz

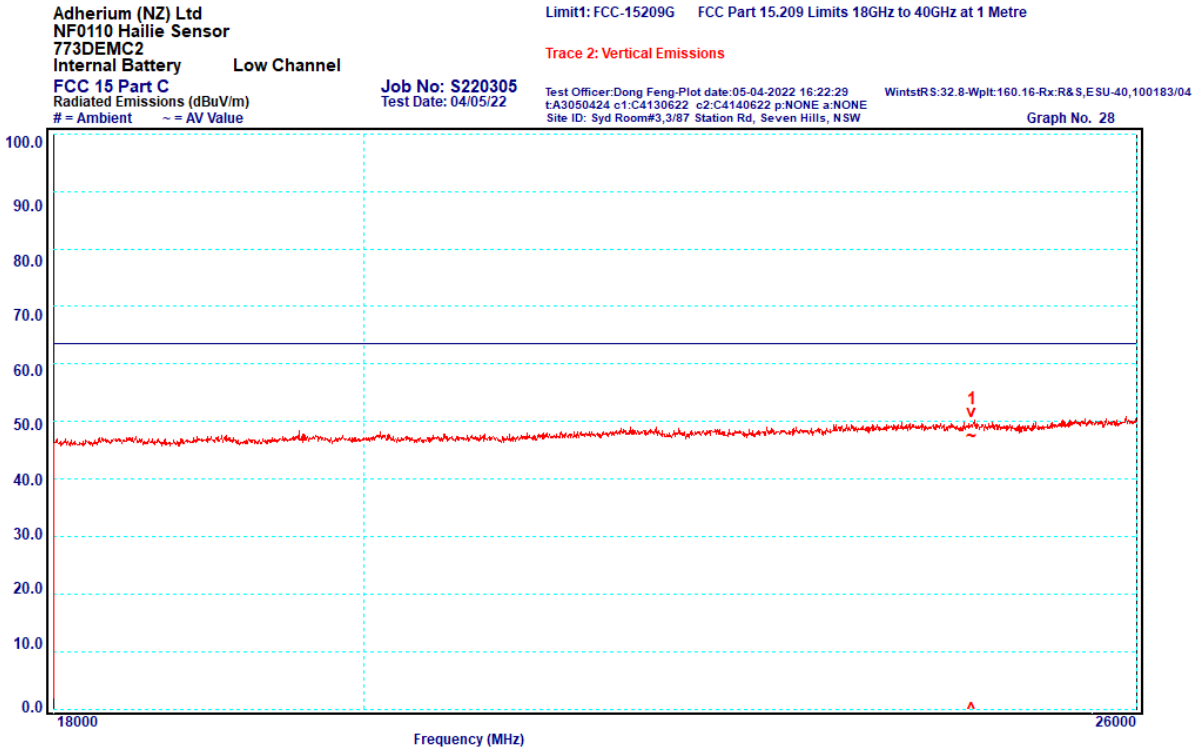


Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	17232.880	Horizontal	62.1	74.0	-11.9
2	4960.080	Horizontal	51.4	74.0	-22.6

3.6.2.1.4 Frequency Band: 18000 - 26000 MHz

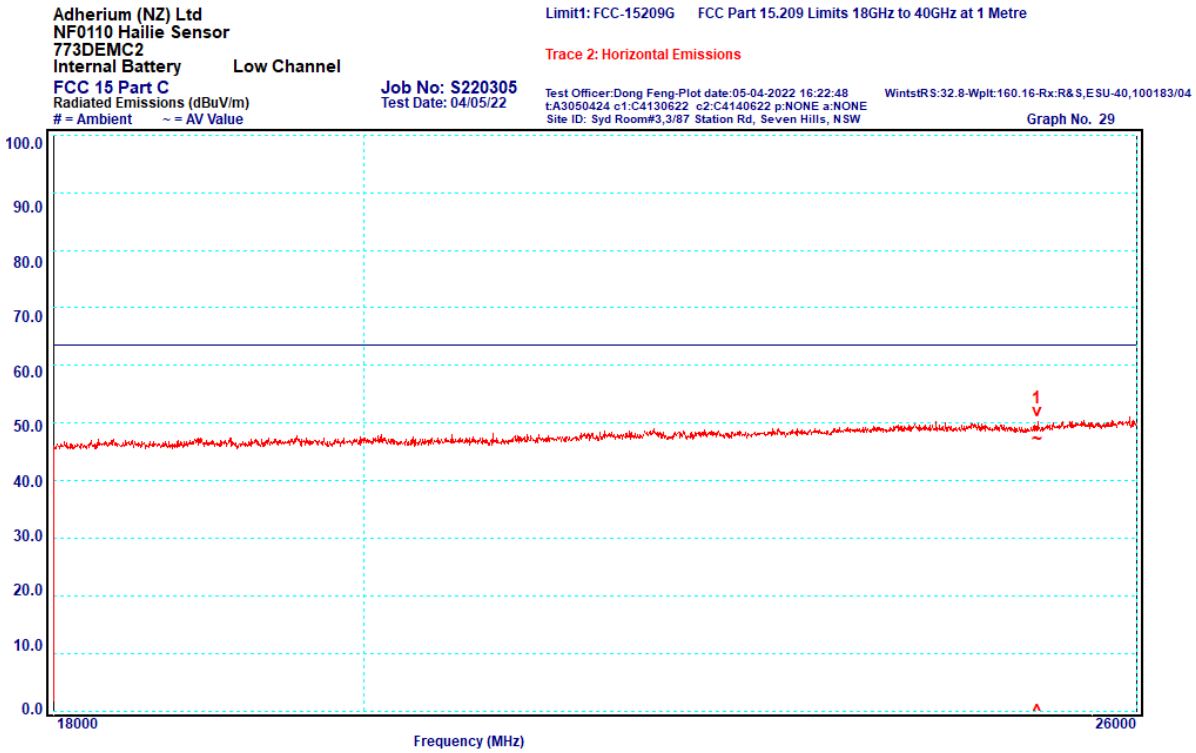
3.6.2.1.4.1 Average Measurements

Vertical Emissions **Low Channel** **18000 to 26000MHz**



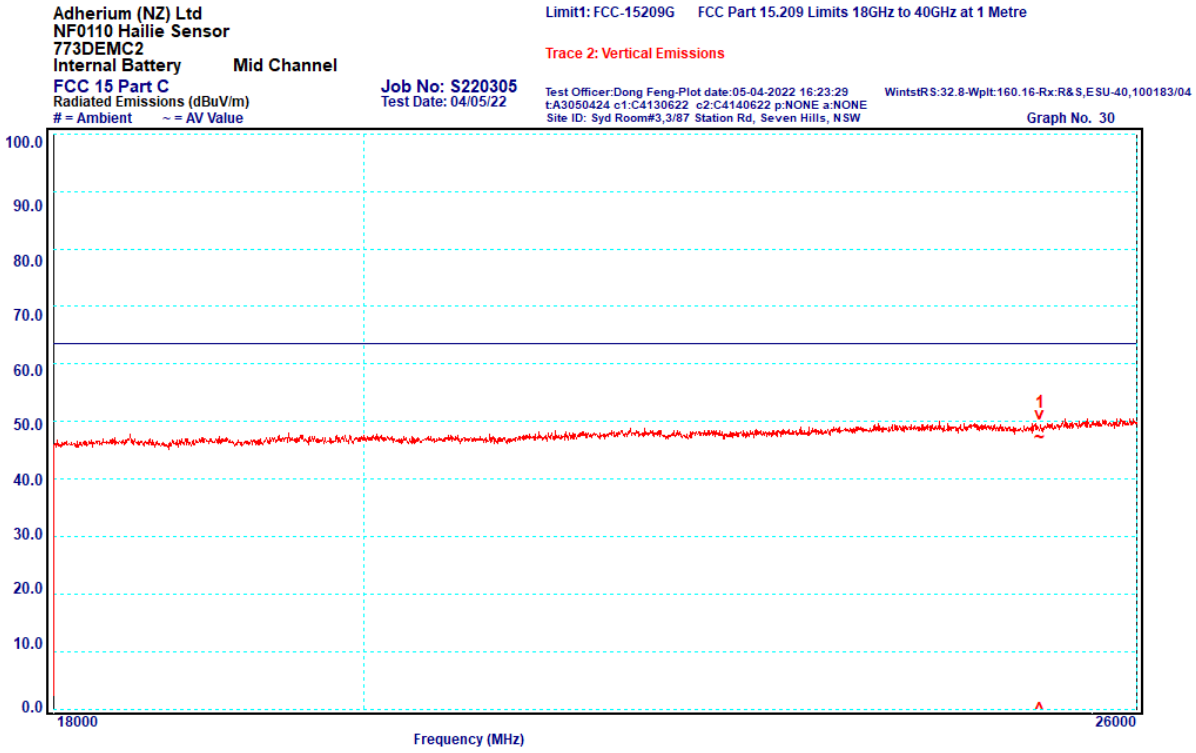
Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24585.700	Vertical	49.8	63.5	-13.7

Horizontal Emissions **Low Channel** **18000 to 26000MHz**



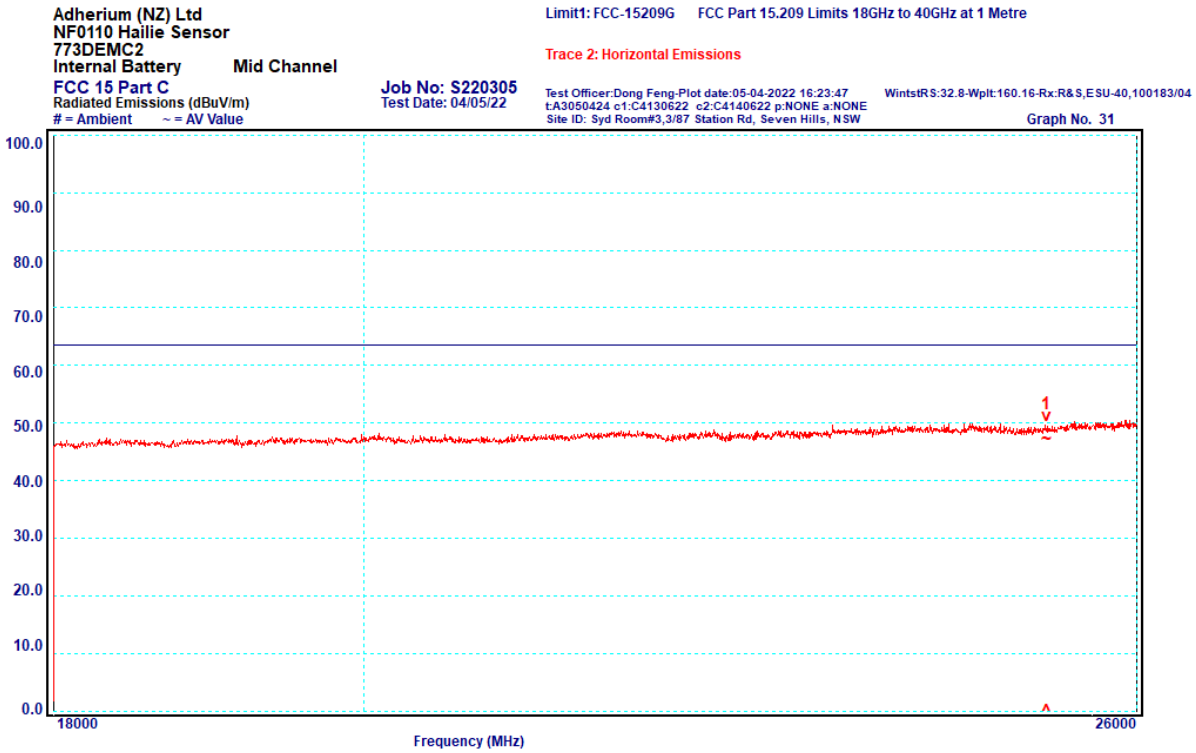
Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	25135.420	Horizontal	50.3	63.5	-13.2

Vertical Emissions **Mid Channel** **18000 to 26000MHz**



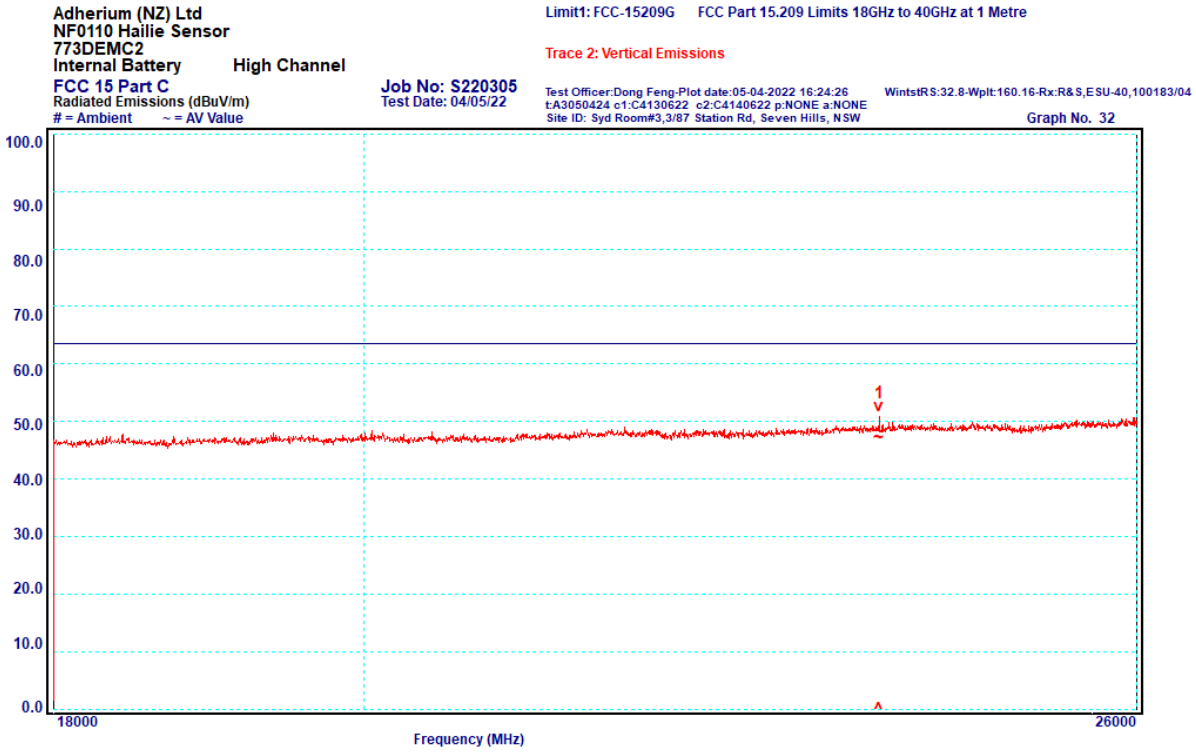
Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	25160.160	Vertical	49.4	63.5	-14.1

Horizontal Emissions **Mid Channel** **18000 to 26000MHz**



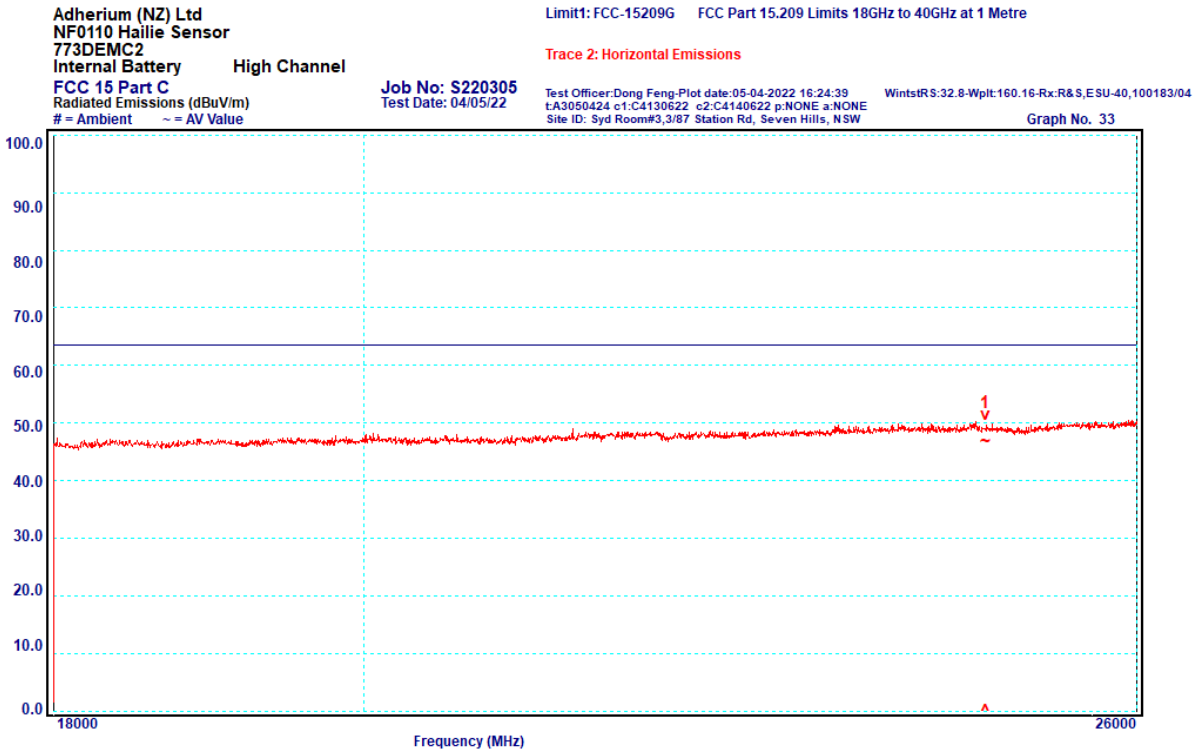
Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	25213.800	Horizontal	49.4	63.5	-14.1

Vertical Emissions **High Channel** **18000 to 26000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	23822.040	Vertical	50.9	63.5	-12.6

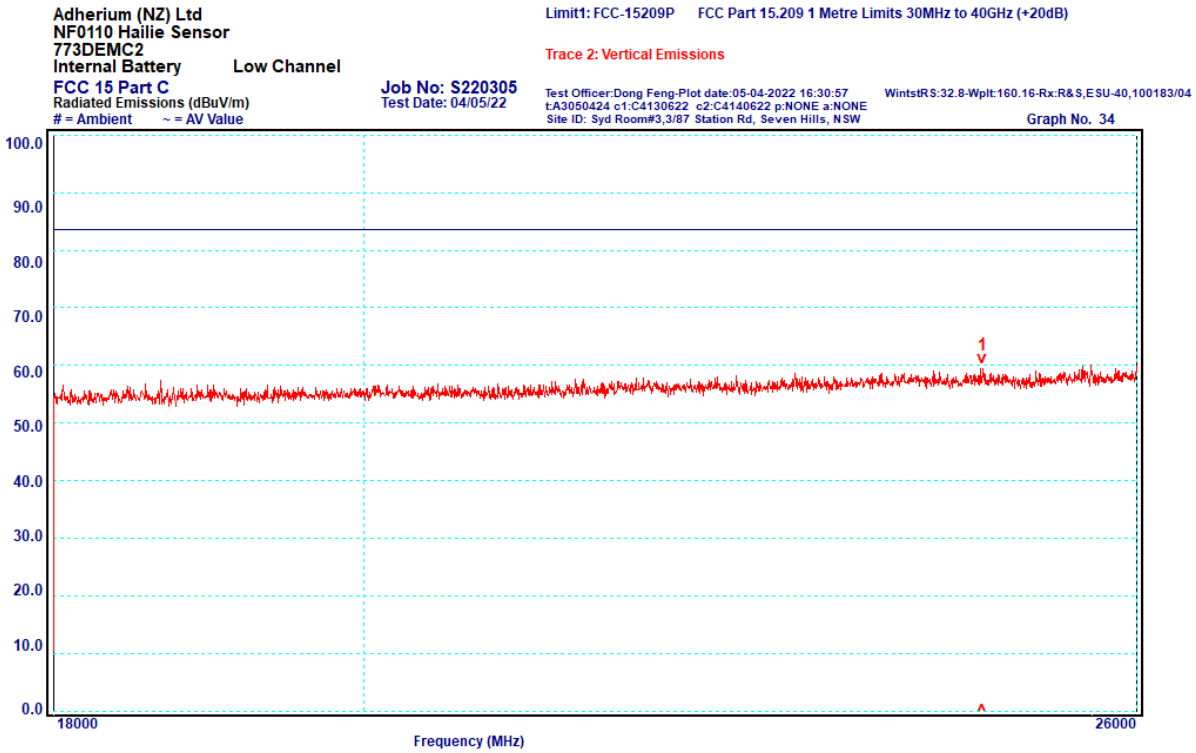
Horizontal Emissions **High Channel** **18000 to 26000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24699.180	Horizontal	49.6	63.5	-13.9

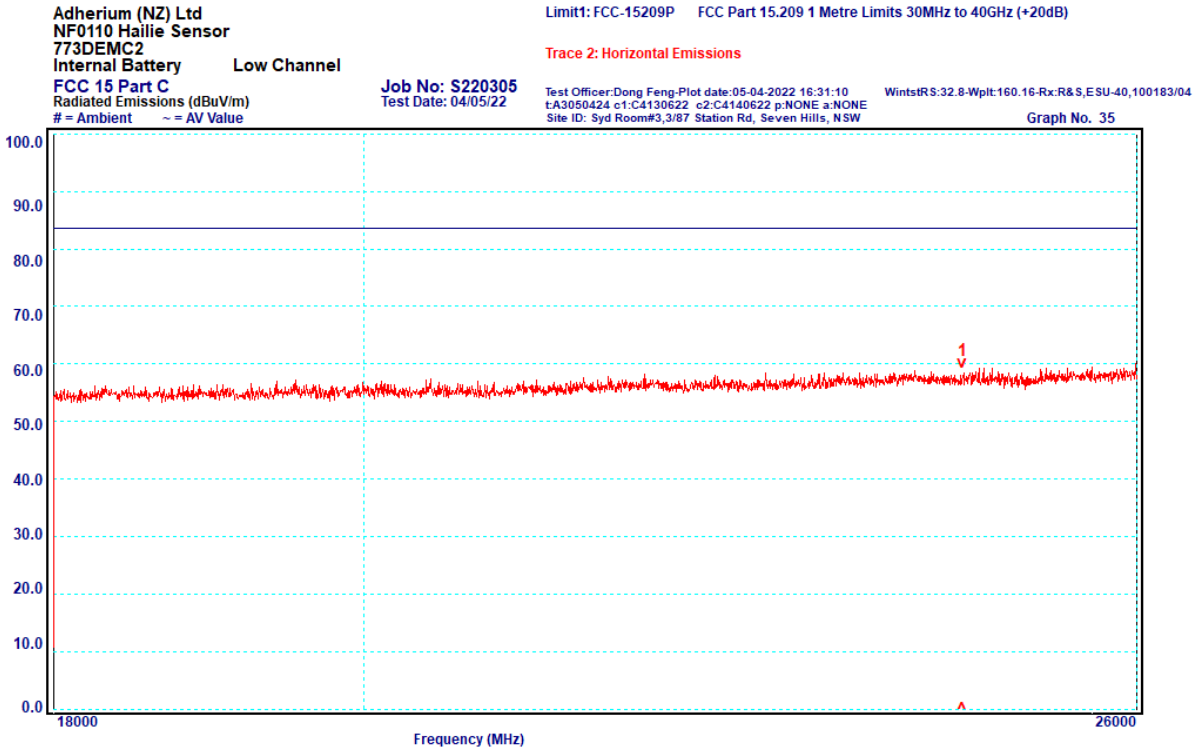
3.6.2.1.4.2 Peak Measurements

Vertical Emissions **Low Channel** **18000 to 26000MHz**



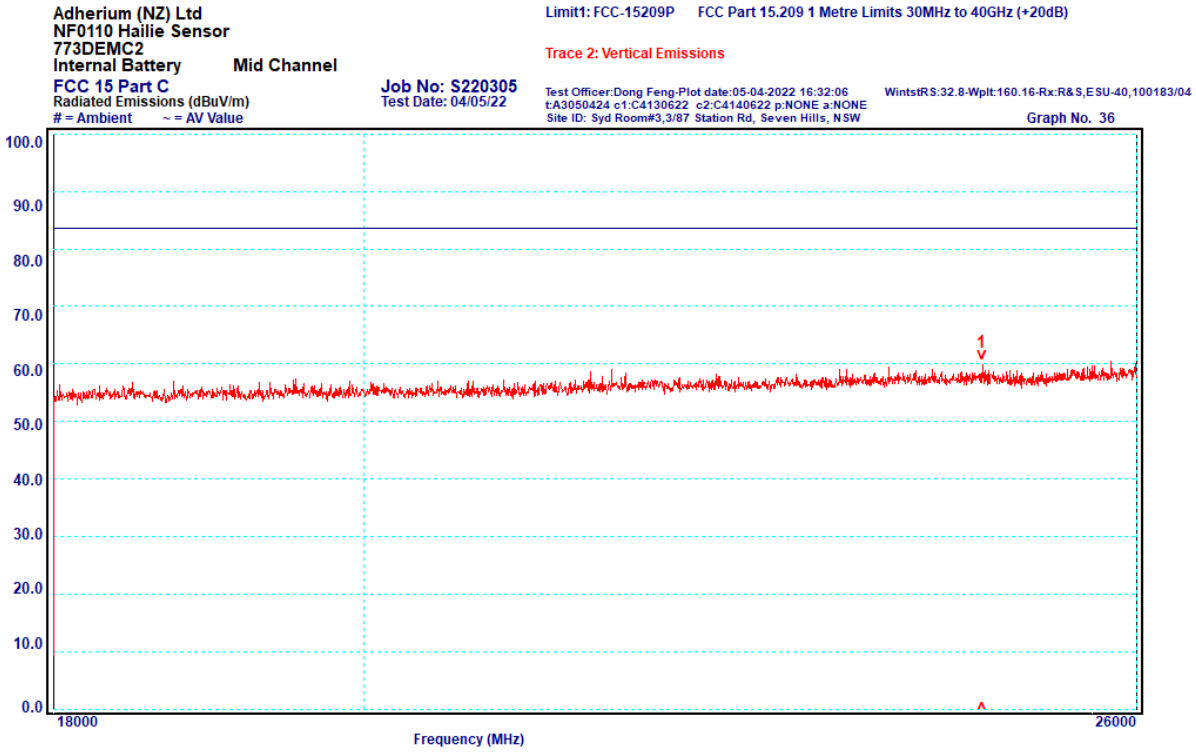
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24673.390	Vertical	59.5	83.5	-24.0

Horizontal Emissions **Low Channel** **18000 to 26000MHz**



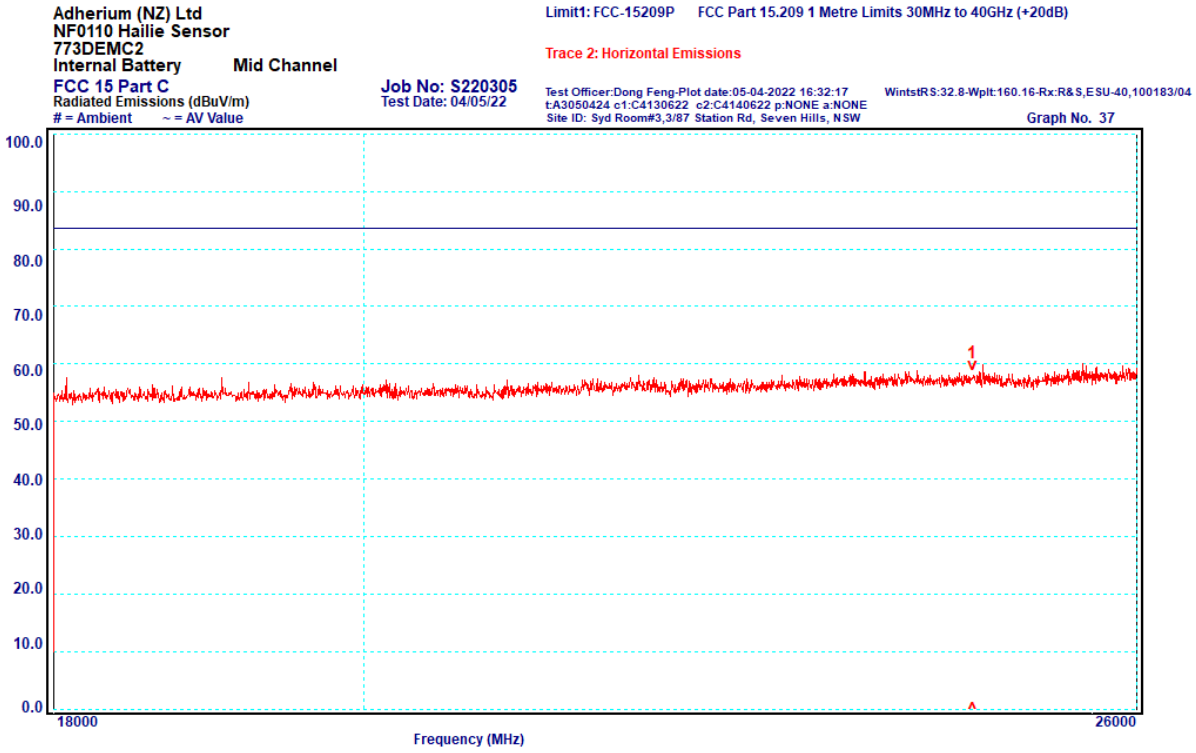
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24509.550	Horizontal	58.4	83.5	-25.1

Vertical Emissions **Mid Channel** **18000 to 26000MHz**



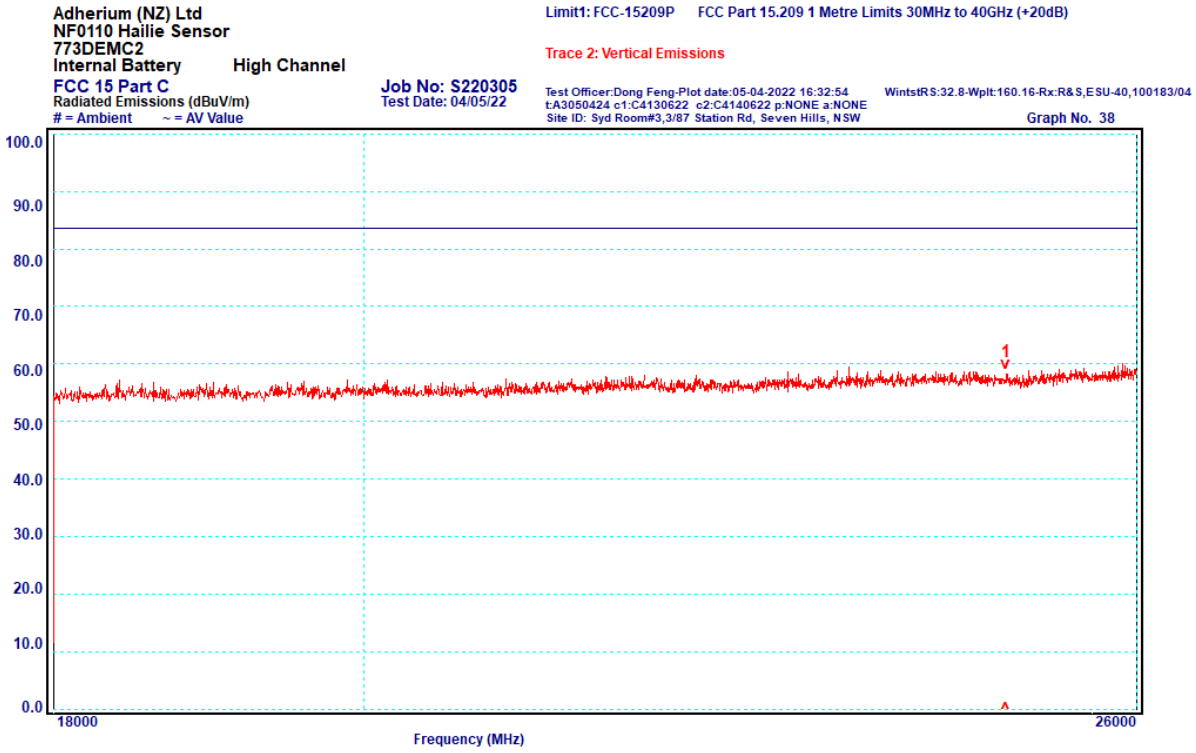
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24669.390	Vertical	59.8	83.5	-23.7

Horizontal Emissions **Mid Channel** **18000 to 26000MHz**



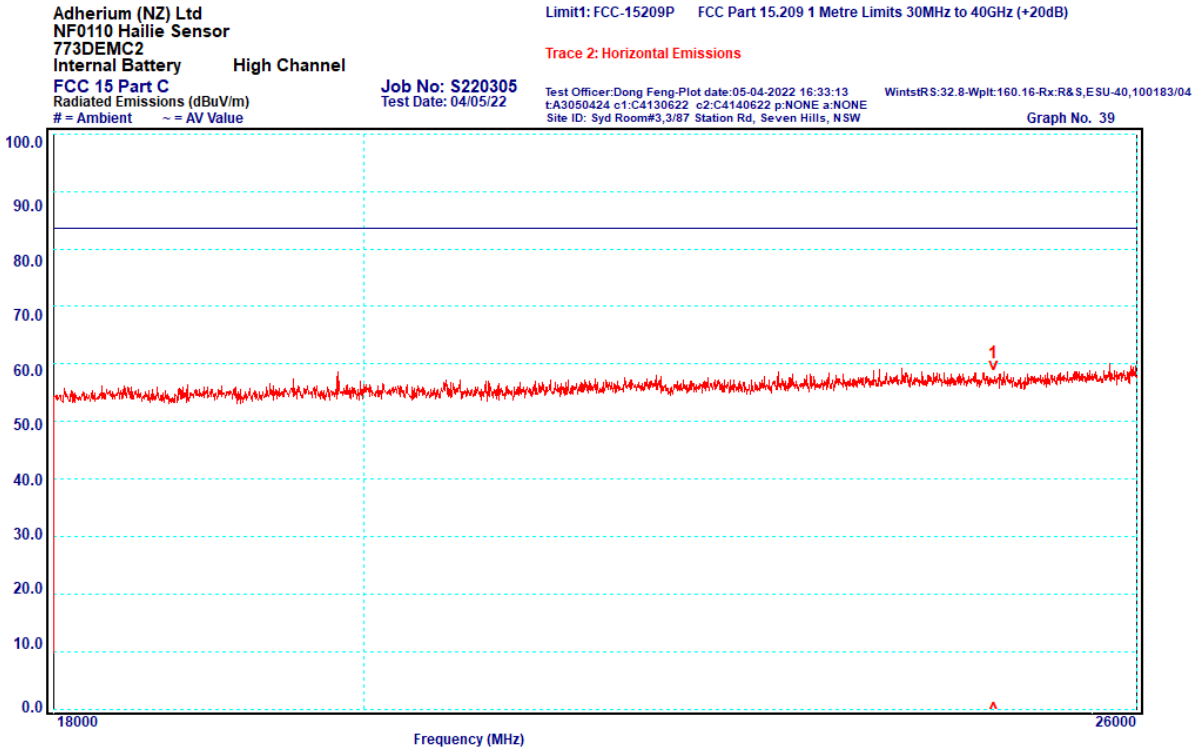
Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24589.470	Horizontal	58.0	83.5	-25.5

Vertical Emissions **High Channel** **18000 to 26000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24869.200	Vertical	58.2	83.5	-25.3

Horizontal Emissions **High Channel** **18000 to 26000MHz**

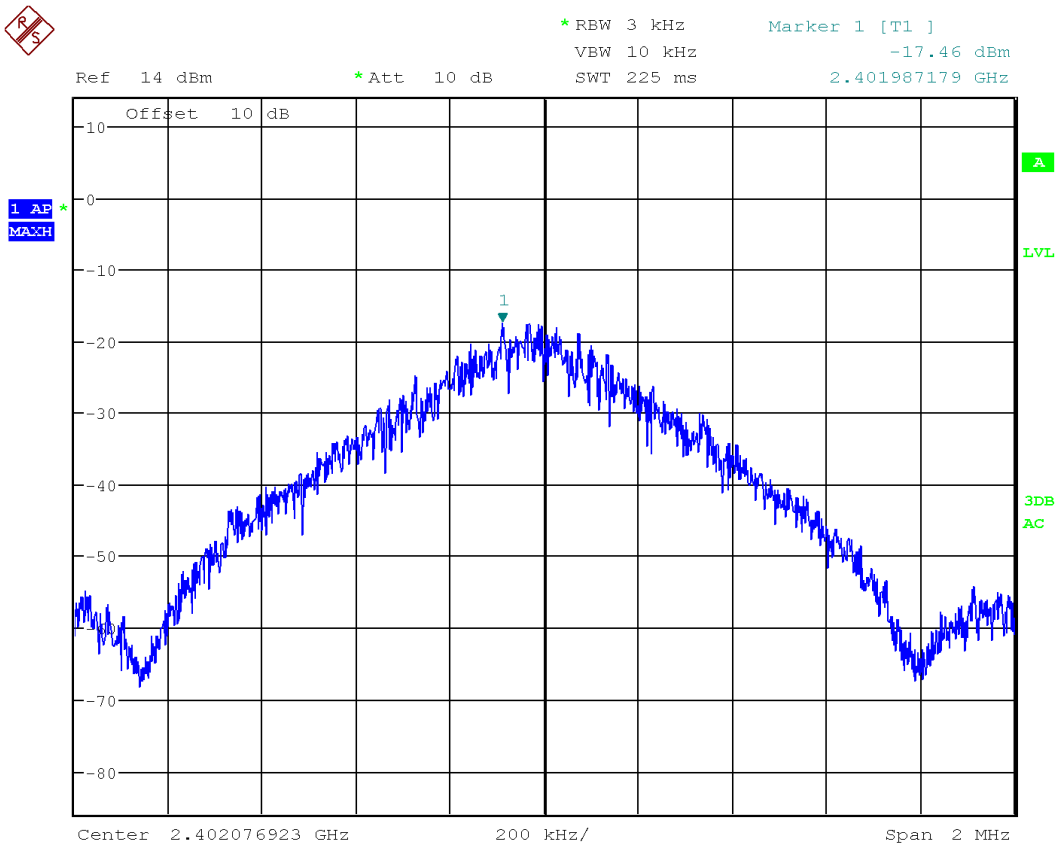


Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	24769.290	Horizontal	57.9	83.5	-25.6

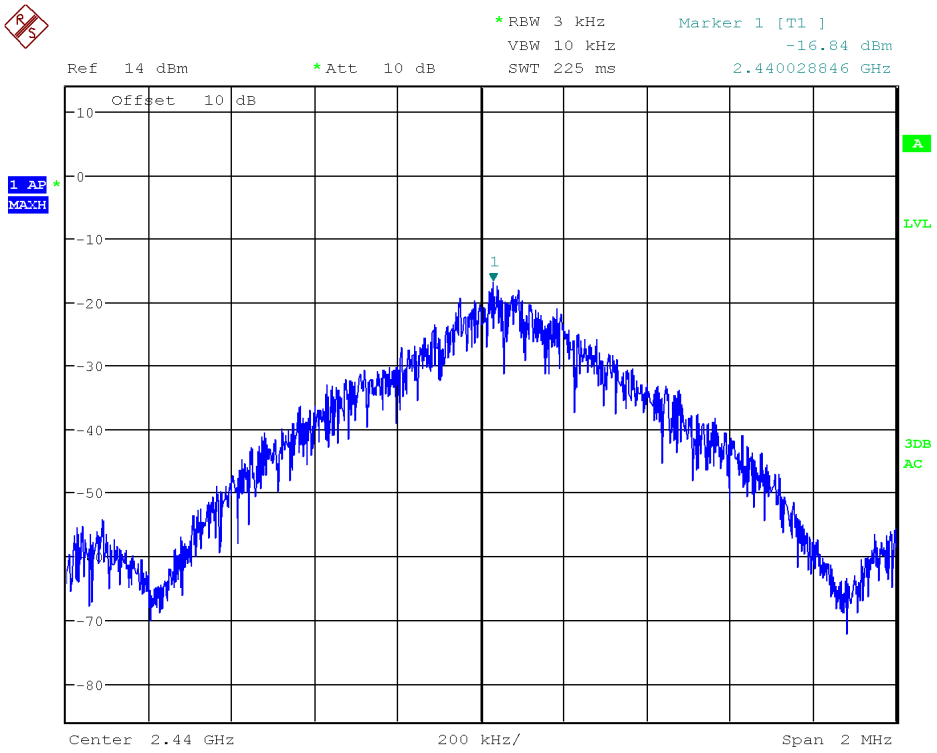
3.7 §15.247(e) Power Spectral Density

The tests were performed in accordance with ANSI C63.10: 2013 Clause 11.10 Maximum power spectral density level in the fundamental emissions.
Power Spectral Density measurements were made at conducted method. The measurement resolution bandwidth was 3 kHz.

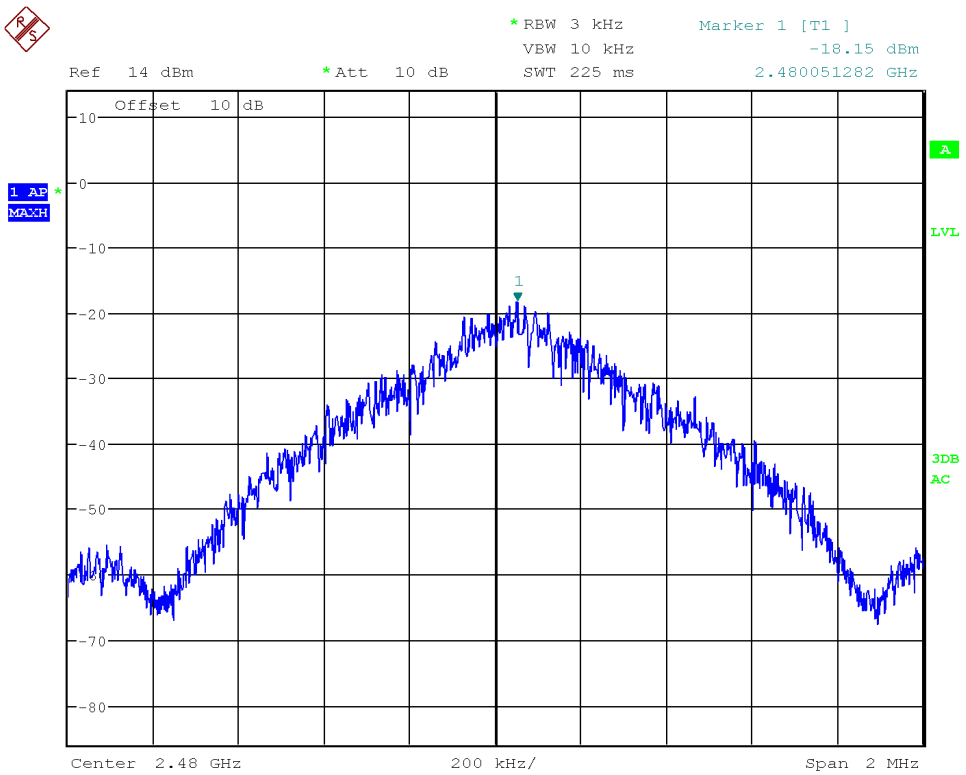
Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)	Result
2401.99	-17.46	8.0	-25.46	Complied
2440.03	-16.84	8.0	-24.84	Complied
2480.05	-18.15	8.0	-26.15	Complied



Date: 11.MAY.2022 16:11:35



Date: 11.MAY.2022 16:21:10

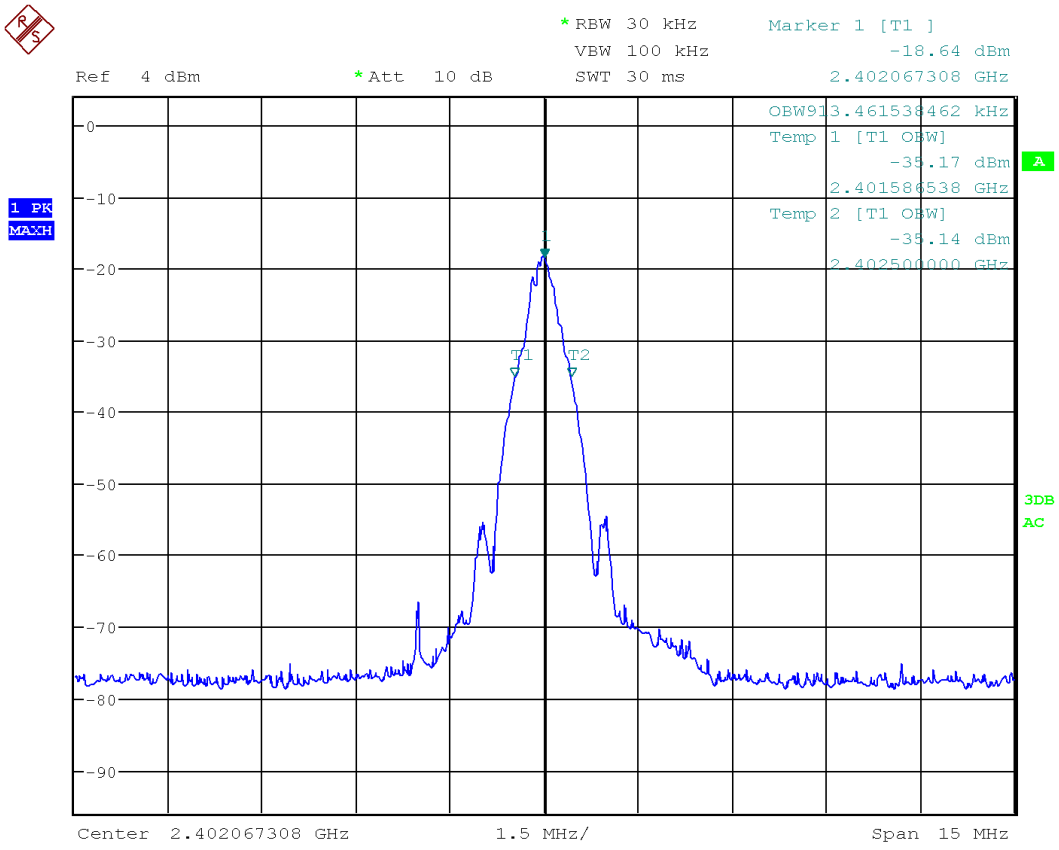


Date: 11.MAY.2022 16:13:48

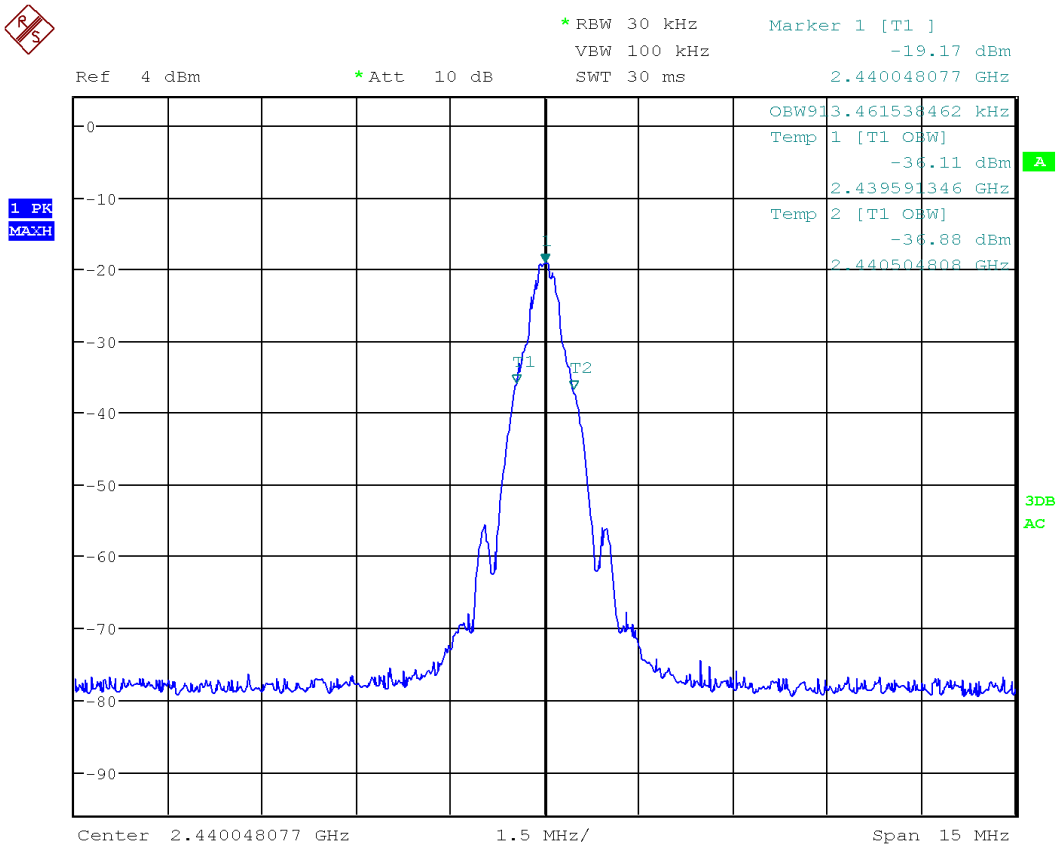
3.8 §2.1049 Occupied bandwidth – 99% power

The bandwidth containing 99% power of the transmitted signal was measured using the procedure from ANSI C63.10 section 6.9.

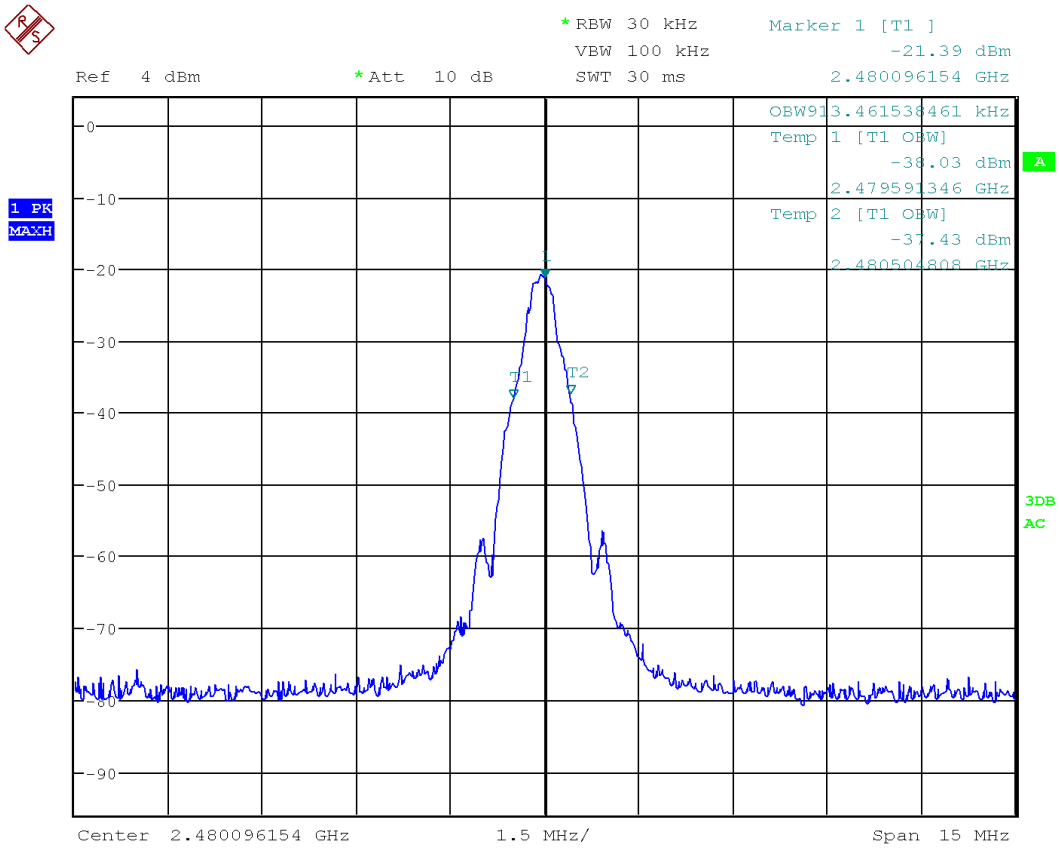
Channel [kHz]	99% Bandwidth [kHz]	Low Frequency [GHz]	High Frequency [GHz]
2402	913.46	2.4016	2.4025
2440	913.46	2.4396	2.4405
2480	913.46	2.4796	2.4805



Date: 11.MAY.2022 14:52:01



Date: 11.MAY.2022 15:00:05



Date: 11.MAY.2022 15:00:28

4.0 COMPLIANCE STATEMENT

The Hailie Sensor with Model Number: NF0110 on behalf of Adherium (NZ) Ltd complied with all the applicable requirements of 47 CFR, Part 15 Subpart C - Rules for Radio Frequency Devices (intentional radiators) operating within the band: 2400 MHz to 2483.5 MHz.

5.0 MEASUREMENT UNCERTAINTY

EMC Technologies has evaluated the equipment and the methods used to perform the emissions testing. The estimated measurement uncertainties for emissions tests shown within this report are as follows:

Radiated Emissions:	9 kHz to 30 MHz	±4.1 dB
	30 MHz to 300 MHz	±5.1 dB
	300 MHz to 1000 MHz	±4.7 dB
	1 GHz to 18 GHz	±4.6 dB
Peak Output Power:		±1.5 dB
Peak Power Spectral Density:		±1.5 dB

The above expanded uncertainties are based on standard uncertainties multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.