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

**FCC ID:** PN2-SHD1

**Report Number:** S180227R-6

**Tested For:** Adherium(NZ) Ltd

**Device under Test :** SmartHandy

**Model Number :** NF0101

**Serial Number:** 901581

**Issue Date:** 30<sup>th</sup> October 2018

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**REVISION TABLE**

<b>Version</b>	<b>Sec/Para Changed</b>	<b>Change Made</b>	<b>Date</b>
1		Initial issue of document	04/10/2018
2	3.3	Amended to include Conducted Emission Measurements	30/10/2018

# **RADIO REPORT FOR CERTIFICATION**

## **47 CFR Part 15 Subpart C (Section 15.247)**

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- 5.0 MEASUREMENT UNCERTAINTY



## RADIO REPORT FOR CERTIFICATION

**Product :** SmartHandy

**Model Number:** NF0101  
**Serial Number:** 901581

**Manufacturer:** Adherium (NZ) Ltd.

**Tested for:** Adherium (NZ) Ltd.  
**Address:** Level 2, 204 Quay Street,  
Auckland 1010, New Zealand.

**Phone:** +64 9 307 2771

**Contact:** Hemant Pundpal  
**Email:** HemantP@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

**Test Dates:** 27<sup>th</sup> March 2018 to 11<sup>th</sup> April 2018, 27<sup>th</sup> July 2018

**Issue Date:** 30 October 2018

**Attestation:** I hereby certify that the device(s) described herein were tested as described in this report and that the data included is that which was obtained during such testing.

**Test Engineer:**

Handwritten signature of James Guo in black ink.

**James Guo**

**Authorised Signatory:**

Handwritten signature of Robert Middleton in black ink.

**Robert Middleton**  
**Sydney Manager**  
**EMC Technologies Pty Ltd.**

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

## 1.0 INTRODUCTION

Radio tests were performed on SmartHandy for use with medication inhalers with Model: NF0101 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 D01 v04 - 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

FCC Part 15 Subpart C	Test Performed	Results
15.203	Antenna requirement	<b>Complied</b>
15.204	Antenna information	<b>Complied</b>
15.205	Restricted bands of operation	<b>Complied</b>
15.207	Disturbance voltage on AC Mains	<b>Complied</b>
15.247(c)	Spurious radiated emission 15.209 limit applied	<b>Complied</b>
15.247 (a2)	6 dB Bandwidth	<b>Complied: 744 kHz</b>
15.247 (e)	3 kHz Peak Power Density	<b>Complied: -12.17 dBm/3kHz</b>
15.247 (b)	Peak Output Power	<b>Complied: -0.57 dBm</b>
15.247 (c)	Antenna Gain > 6 dBi	<b>Not Applicable</b> Antenna gain < 6 dBi
15.247 (d)	Out of Band Emissions	<b>Complied</b>
15.247 (f)	Hybrid Systems	<b>Not Applicable</b> Did not employ a hybrid system
15.247 (i)	Radio Frequency Hazard	<b>Complied</b>
	99% Occupied bandwidth	<b>Complied</b>

## 1.3 Modifications by EMC Technologies

No modifications were performed.

## 2.0 GENERAL INFORMATION

The EUT is a medication reminder and actuation monitor for use with medication inhalers.

### 2.1 EUT (Transmitter) Details

<b>Product :</b>	SmartHandy
<b>Model Number:</b>	NF0101
<b>Serial Number:</b>	901581
<b>Radio:</b>	BlueTooth Low Energy
<b>Frequency Band:</b>	2400 to 2483.5 MHz
<b>Frequency Range:</b>	2402 to 2480 MHz
<b>Modulation:</b>	GFSK (1Mbps)
<b>Emission Designator:</b>	F1D
<b>Number of Channels:</b>	40
<b>Antenna type and gain:</b>	Integral omnidirectional Antenna, 1dBi
<b>Power Supply Voltage:</b>	Lithium Coin Battery

### 2.2 Test Configuration

EUT was configured to operate on top, middle, bottom channels and transmit a modulated signal continuously. Channel and operation modes can be changed by pressing the button on EUT itself. An external USB connection was required to maintain the continuous transmission.

### 2.3 Test Facility

#### 2.3.1 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 – **Registration Number 411702 & Designation number AU0002.**

Measurements in this report were performed at EMC Technologies' laboratory in Seven Hills, New South Wales Australia.

#### 2.3.2 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<sup>2</sup>LA).

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](http://www.nata.asn.au)

## 2.4 Test Equipment Calibration

Measurement instrumentation and transducers were calibrated in accordance with the applicable standards by an independent NATA registered laboratory such as Agilent Technologies (Australia) Pty Ltd or the National Measurement Institute (NMI) or in-house. All equipment calibration is traceable to Australian national standards at the National Measurements Institute.

Equipment Type	Make/Model Serial Number	Last Cal. DD/MM/YY	Due Date DD/MM/YY	
EMI Receivers	ESCI EMI Test Receiver (Asset No: R029) SN: 100012 9kHz – 3GHz	04/05/17	04/05/18	*1
	Model: ESU40 (Asset No: R038) S/N: 100183 20Hz – 40GHz	06/04/18	06/04/19	*1
Antennas	EMCO 3146 Log Periodic (Asset No: A003-1) S/N: 2066 300-1000MHz	17/02/17	17/05/18	*2
	Active Loop Antenna (Asset No: A008) Model: 6502 S/N: 9108-2660	26/11/15	26/11/18	*3
	ETS Lindgren Standard Gain Horn Antenna (Asset No: A262) 12.4 to 18GHz Model: 3160-08 S/N: 28245	29/01/16	29/01/19	*2
	EMCO 3110B Biconical (Asset No: A111) S/N: 9612-2790 20-300 MHz	18/02/16	18/05/18	*2
	Double Ridged Horn Antenna (Asset No: A324) Model: EMCO 3115 S/N: 3823 1-18GHz	29/01/18	29/01/21	*2
	Standard Gain Horn Antenna (Asset No: A305) Model: 3160-09, S/N: 00066033 18 GHz-26.5GHz	31/05/16	31/05/19	*2
LISN	Rohde & Schwarz ESH3-Z5 (Asset No: L036) S/N 832479/014	29/01/18	29/01/20	*3
Limiter Transient	11947A (Asset No: L010) S/N: 3107A01261	10/08/17	10/08/18	*3
Power Meter	P145 HP437B	18/01/18	18/01/19	*4
Cables	3m Sucoflex Blue Cable (Asset No: SC024)	10/08/17	10/08/18	*2
	13m RG214 MIL-C-17 N-Type Cable (Asset No: C028)	10/08/17	10/08/18	*2
	Sucoflex 104 4m Cable (Asset No: C041)	10/08/17	10/08/18	*2
Preamplifier	HP 8449B (Asset No: A138) S/N: 3008A01113	14/08/17	14/08/18	*2

Note \*1: NATA Calibration by Rohde & Schwarz.

Note \*2 : In-house calibration. Traceable to Australian National Standards

Note \*3: NATA Calibration by NPL.

Note \*4: NATA Calibration by Keysight.

**TEST SITES**

Equipment Type	Make/Model Serial Number	Last Cal. DD/MM/YY	Due Date DD/MM/YY
Shielded Room/ Test Laboratory	7.23m x 4.83m x 2.45m	N/A	N/A
Indoor Open Area Test Site (iOATS)	RFI Industries S800 Serial Number: 876, 3 metre site iOATS situated at Seven Hills, NSW	20/04/17	20/04/19

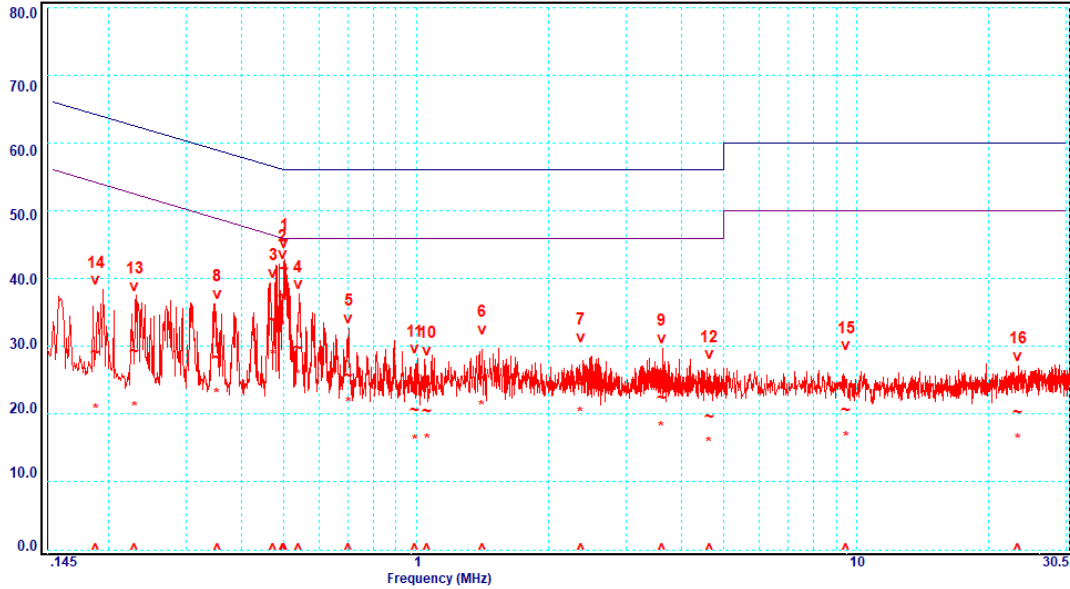
Adherium (NZ) Pty Ltd  
SmartHandy  
Model No. NF0101, Serial No. 901581  
120Vac, 60Hz. Charging Mode  
FCC Part 15 B  
Conducted Emissions (dBuV)  
~ = QP Value \* = CISPR Av

Job No: S180227  
Test Date: 27/07/2018

Limit1: FCCN\_BQP FCC CLASS B QP CONDUCTED LIMITS (CISPR)  
Limit2: FCCN\_BAV FCC CLASS B AV CONDUCTED LIMITS (CISPR)  
Trace 2: Active Line

Test Officer: Rheyjane Zano-Plot date: 10-30-2018 15:37:22 WintSR: 32.8-Wpit: 160.16-Rx: R&S, ESCI-3, 100012/00  
t: L0360220 c1: C0010818 c2: NONE p: NONE a: L0100818  
Site ID: Syd Room#2, 3/87 Station Rd, Seven Hills, NSW

Graph No. 1





### 3.0 TEST RESULTS

#### 3.1 §15.203 Antenna Requirement

**Requirement:**

No antenna other than that furnished by the responsible party shall be used with the device.

**Results:**

The antenna was integral to the device ensuring that it could not be replaced.  
EUT was fully enclosed.

**Conclusion:** Complied

#### 3.2 §15.204 Antenna Information

**Requirement:**

Provide information for every antenna proposed for the use with the EUT.

**Results:**

- |  |                          |
|--|--------------------------|
| a) Antenna type:                                 | Integral omnidirectional |
| b) Manufacture and model No.:                    | NA                       |
| c) Gain with reference to an isotropic radiator: | 1 dBi                    |

**Conclusion:** Complied

### 3.3 §15.207 Disturbance Voltage on AC Mains

#### 3.3.1 Test Climatic Conditions

Shielded Room Temperature:	20°C
Relative Humidity:	48%

#### 3.3.2 Test Results

Freq (MHz)	Line	Quasi Peak (dBμV)	Quasi Peak Limit (dBμV)	Δ Quasi Peak Limit (dB)	Average (dBμV)	Average Limit (dBμV)	ΔAverage Limit (dB)
0.506	Neutral	38.6	56.0	-17.4	38.6	46.0	-7.4
0.501	Active	41.3	56.0	-14.7	36.4	46.0	-9.6

All measured frequencies complied with the Class B, quasi peak and average limits by margins of greater than 10dB and at least 7.4dB.

**Graph 1**

**Active Line**

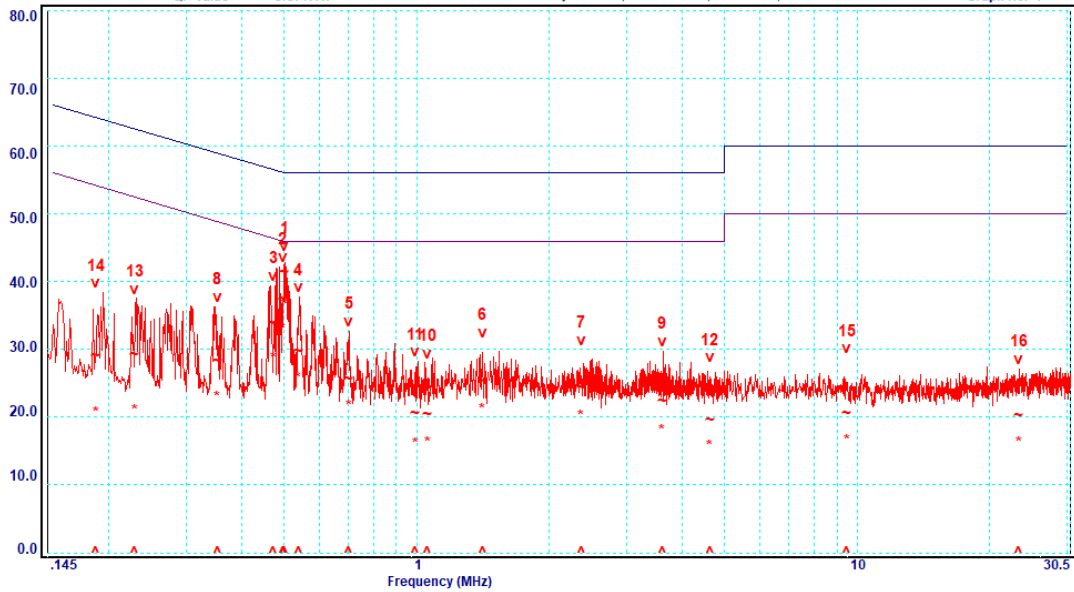
**0.145 to 30.5MHz**

Adherium (NZ) Pty Ltd  
SmartHandy  
Model No. NF0101, Serial No. 901581  
120Vac, 60Hz, Charging Mode  
FCC Part 15 B  
Conducted Emissions (dBuV)  
-- = QP Value \* = CISPR Av

Limit1: FCCN\_BQP FCC CLASS B QP CONDUCTED LIMITS (CISPR)  
Limit2: FCCN\_BAV FCC CLASS B AV CONDUCTED LIMITS (CISPR)  
Trace 2: Active Line

Job No: S180227  
Test Date: 27/07/2018

Test Officer: Rheyjane Zano-Plot date: 10-30-2018 15:37:22 WinstRS: 32.8-Wpl: 160.16-Rx: R&S, ESCI-3, 100012/00  
t: L0360220 c1: C0010818 c2: NONE p: NONE a: L0100818  
Site ID: Syd Room#2, 3/87 Station Rd, Seven Hills, NSW



**Graph 2**

**Neutral Line**

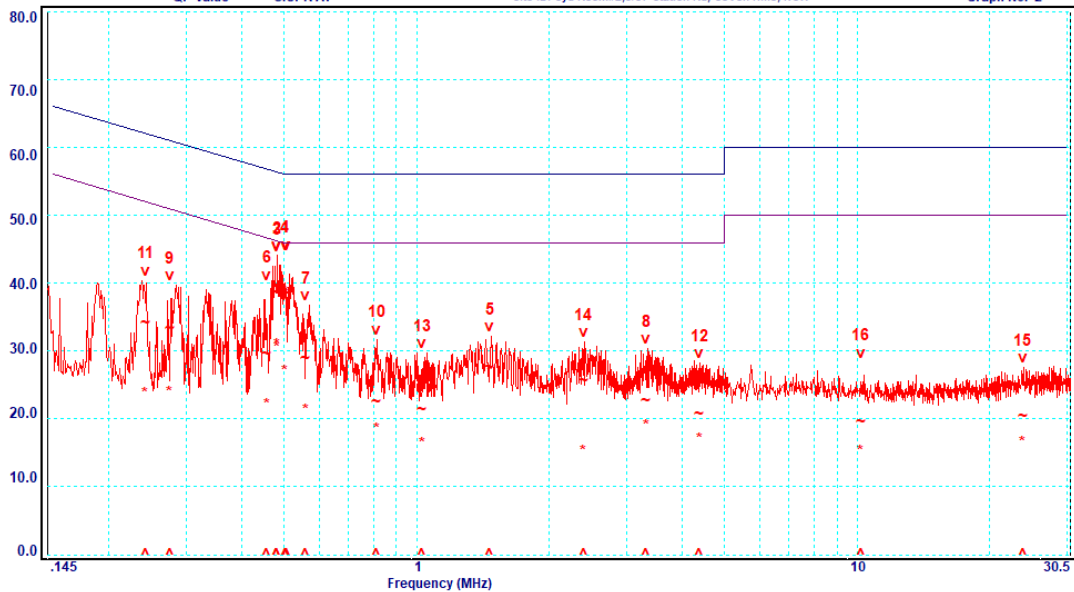
**0.145 to 30.5MHz**

Adherium (NZ) Pty Ltd  
SmartHandy  
Model No. NF0101, Serial No. 901581  
120Vac, 60Hz, Charging Mode  
FCC Part 15 B  
Conducted Emissions (dBuV)  
-- = QP Value \* = CISPR Av

Limit1: FCCN\_BQP FCC CLASS B QP CONDUCTED LIMITS (CISPR)  
Limit2: FCCN\_BAV FCC CLASS B AV CONDUCTED LIMITS (CISPR)  
Trace 2: Neutral Line

Job No: S180227  
Test Date: 27/07/2018

Test Officer: Rheyjane Zano-Plot date: 10-30-2018 15:38:34 WinstRS: 32.8-Wpl: 160.16-Rx: R&S, ESCI-3, 100012/00  
t: L0360220 c1: C0010818 c2: NONE p: NONE a: L0100818  
Site ID: Syd Room#2, 3/87 Station Rd, Seven Hills, NSW



### 3.4 §15.247(a2) Carrier Frequency Separation

**Requirement:**

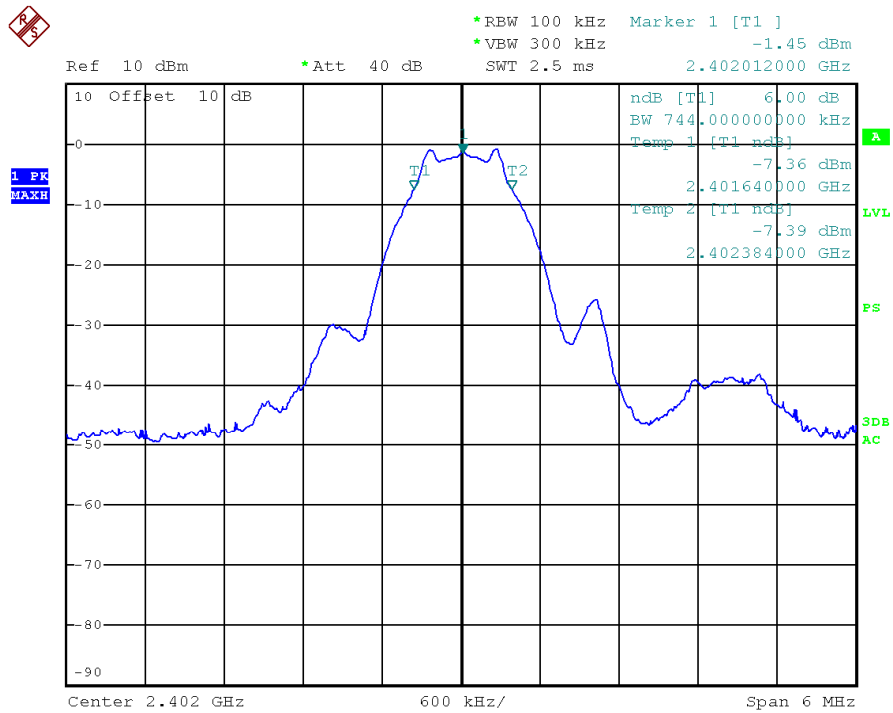
Systems using digital modulation techniques may operate in the 902-928MHz, 2400- 2483.5MHz, and 5725-5850MHz bands. The minimum 6dB bandwidth shall be at least 500kHz.

**Results:**

6 dB Emission Bandwidth:

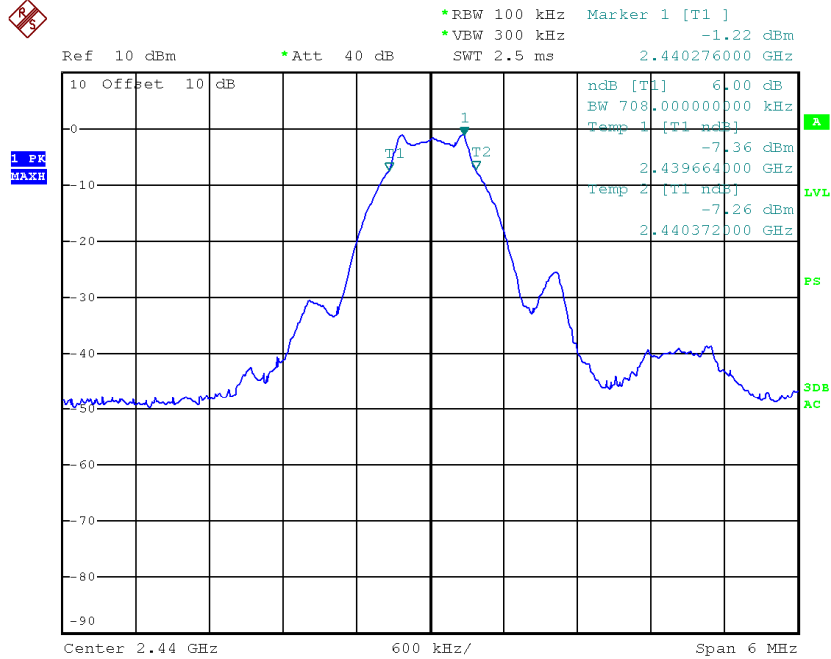
Centre Frequency [MHz]	6 dB Bandwidth [kHz]
2402	744
2440	708
2480	720

Channel 2402 MHz



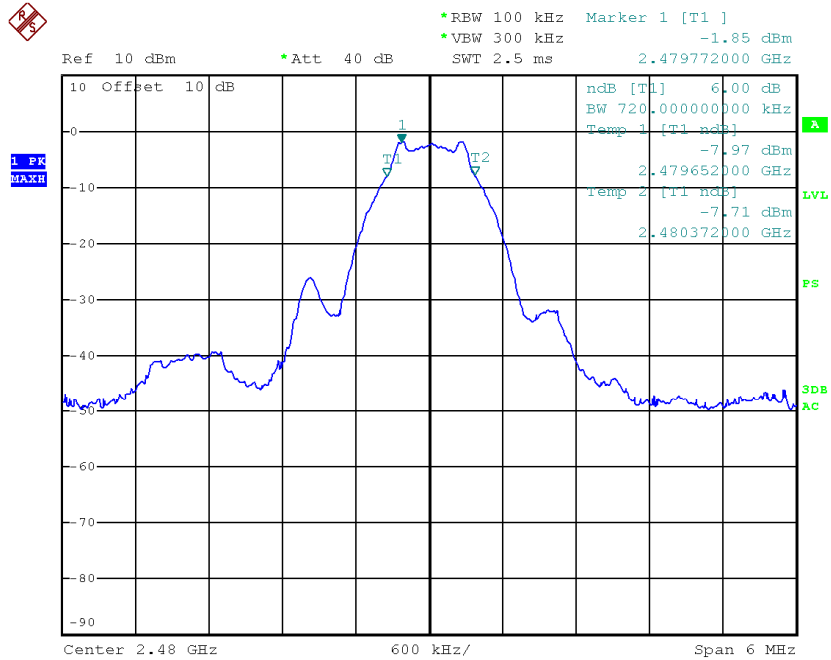
Date: 4.APR.2018 13:35:38

Channel 2440 MHz



Date: 4.APR.2018 13:39:00

Channel 2480 MHz



Date: 4.APR.2018 13:40:23

**Conclusion:** Complied

### 3.5 §15.247(e) 3 kHz Peak Power Density

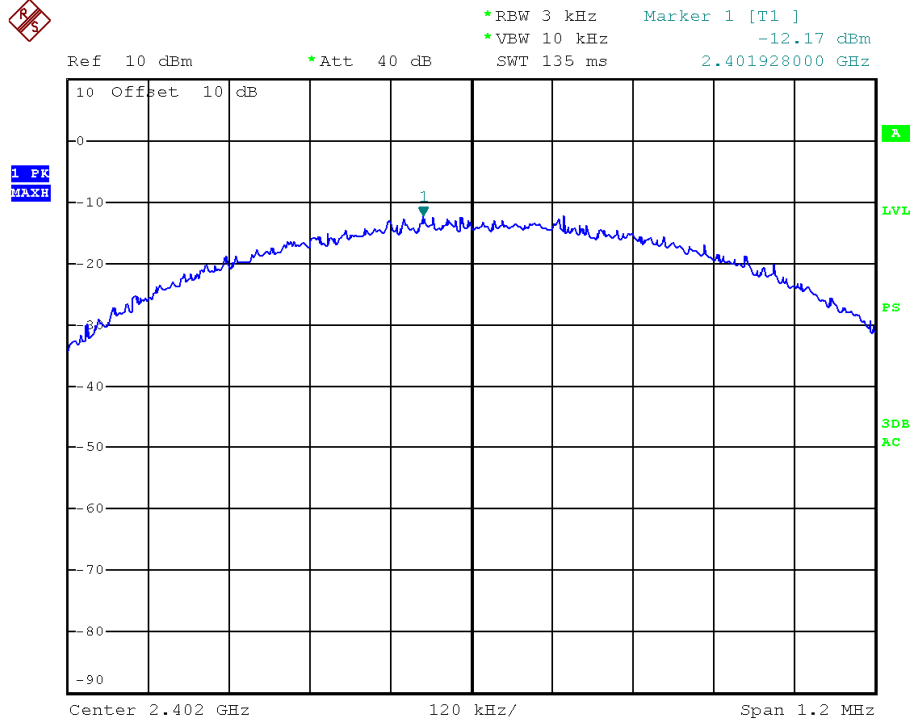
**Requirement:**

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**Results:**

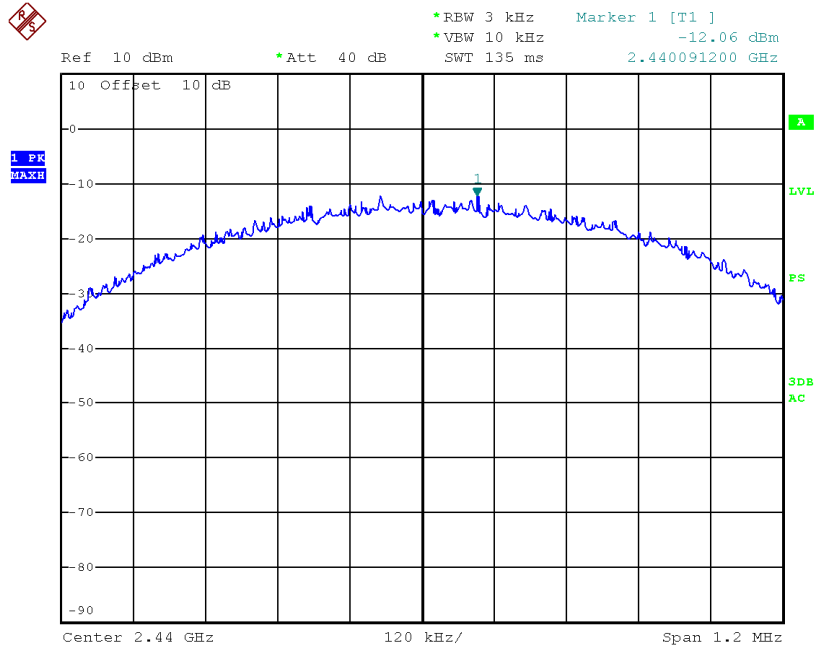
Centre Frequency [MHz]	3 kHz Peak Power density [dBm]
2402	-12.17
2440	-12.06
2480	-13.24

Channel 2402 MHz



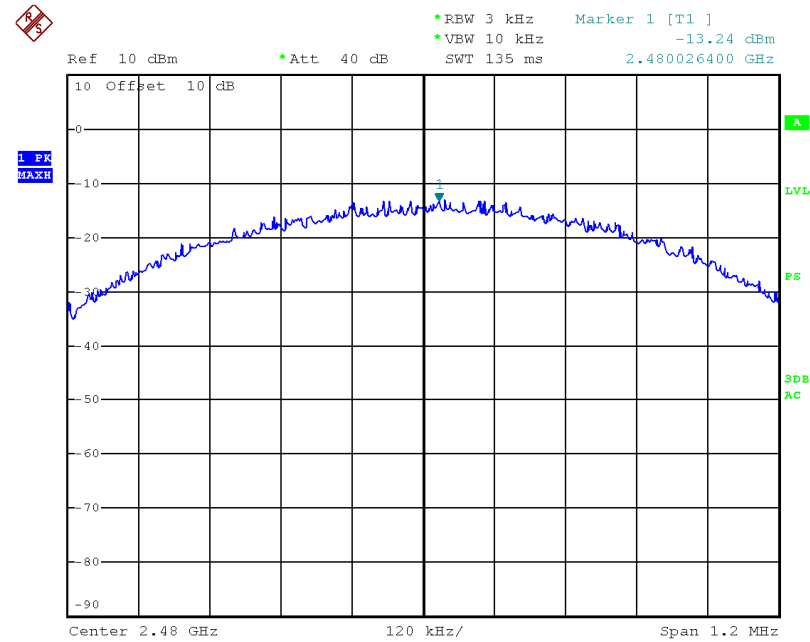
Date: 4.APR.2018 13:53:16

### Channel 2440 MHz



Date: 4.APR.2018 13:55:08

### Channel 2480 MHz



Date: 4.APR.2018 13:56:49

**Conclusion:** Complied.

### 3.6 §15.247(b) Peak Output power

**Requirement:**

For system using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz Bands: 1 Watt.

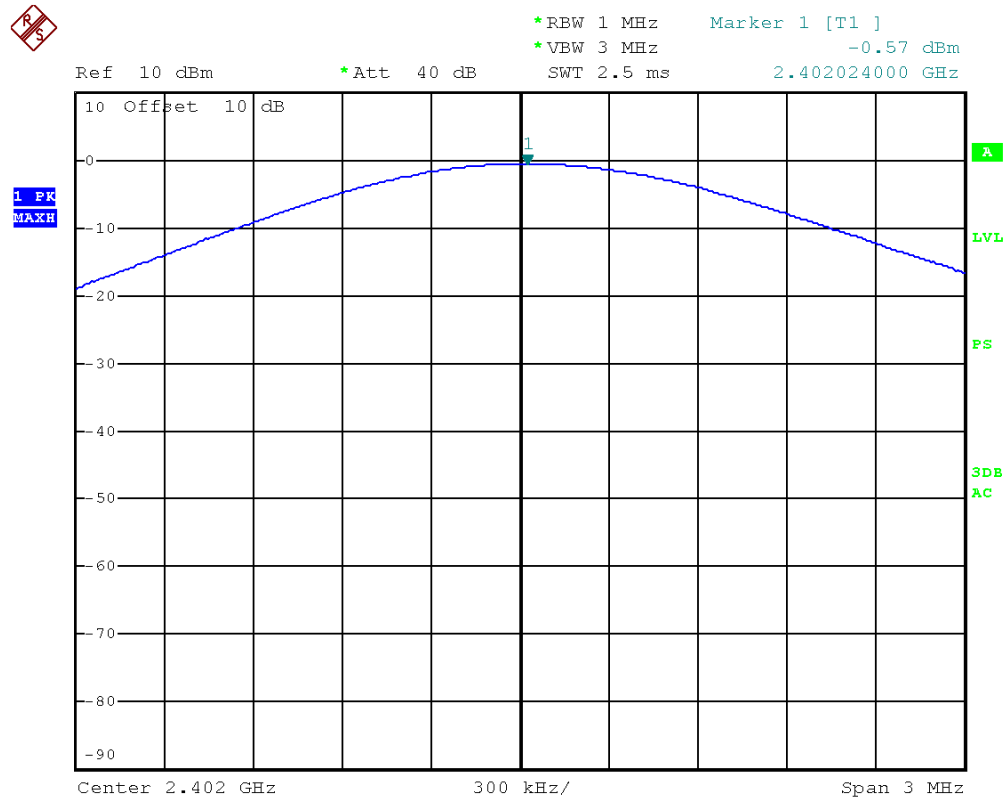
1W=30dBm.

The antenna gain of integral antenna is 1 dBi.

**Results:**

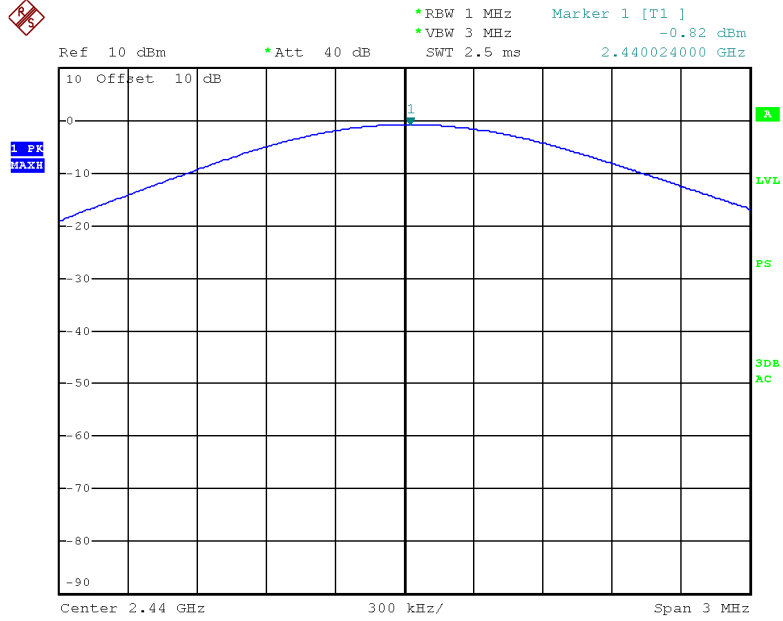
Frequency (MHz)	Conducted Power Measured (dBm)
2402	-0.57
2440	-0.82
2480	-1.31

Channel 2402 MHz



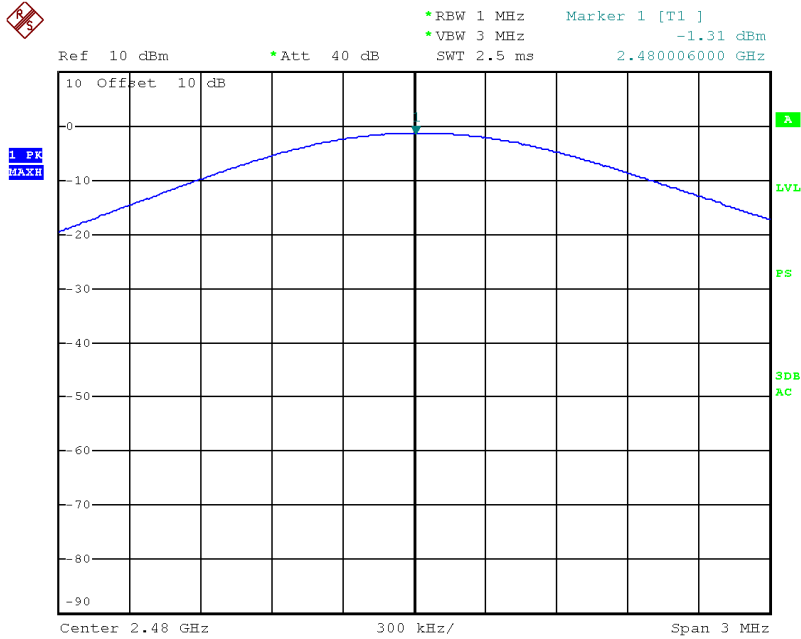
Date: 4.APR.2018 14:03:09

### Channel 2440 MHz



Date: 4.APR.2018 14:05:20

### Channel 2480 MHz



Date: 4.APR.2018 14:08:05

**Conclusion:** Complied



### 3.7 §15.205 Restricted Bands of Operation

**Requirement:**

Radiated emissions which fall in the restricted bands, as defined in 15.205(a),  
Must also comply with the radiated emission limits specified in 15.209(a).

**Results:**

The 15.209 limit was applied across the applicable spectrum and therefore complied with the restricted band requirements. Refer to result plots in 3.8 of this report. Two restricted bands are located either side of operating band: 2310-2390MHz, 2483.5-2500MHz. 2390MHz was checked as band edge of bottom channel and 2483.5MHz was checked as band edge of top channel. Refer to result plots in 3.9 of this report.

**Conclusion:** Complied

### 3.8 §15.247(c) Spurious Radiated Emission

#### Requirement:

In any 100KHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a)

#### Results

Radiated spurious emission measurements 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 emissions.

Frequency range [MHz]	Measurement Bandwidth [kHz]	Measurement Distance [m]	Antenna
0.009 to 30	9	3	Active loop antenna
30 to 1000	120	3	Biconcal and log periodic antennas
1000 to 18 000	1000	3	Broad band horn
18 000 to 25 000	1000	1	Broad band horn

The sample was slowly rotated with the spectrum analyser set to Max-Hold. This was performed for at least 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. Devices design for a fixed position were tested in that position, portable devices were prescanned in three orthogonal orientations to decide maximum emission direction.

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 software using pre-stored calibration data. The method of calculation is shown below:

$$E = V + AF - G + L$$

Where:

- E** = Radiated Field Strength in dB $\mu$ V/m.
- V** = EMI Receiver Voltage in dB $\mu$ V. (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)

### 3.8.1 Frequency Band: 0.009 - 30 MHz

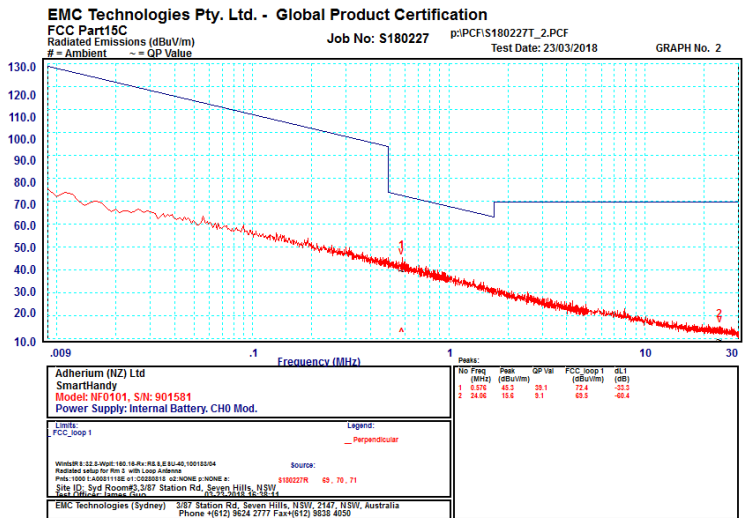
Measurements were made at a distance of 3 metres. The measurement of emissions between 0.009 - 30 MHz were made with a resolution bandwidth (RBW) of 9 kHz and the video bandwidth (VBW) of 30 kHz.

The §15.209 limit applied

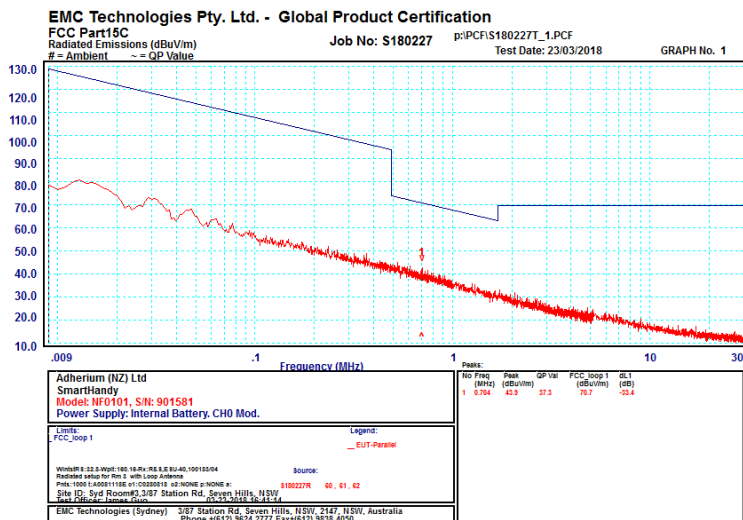
Test Result:

All measured frequencies complied with the Limit by a margin of greater than 10dB.

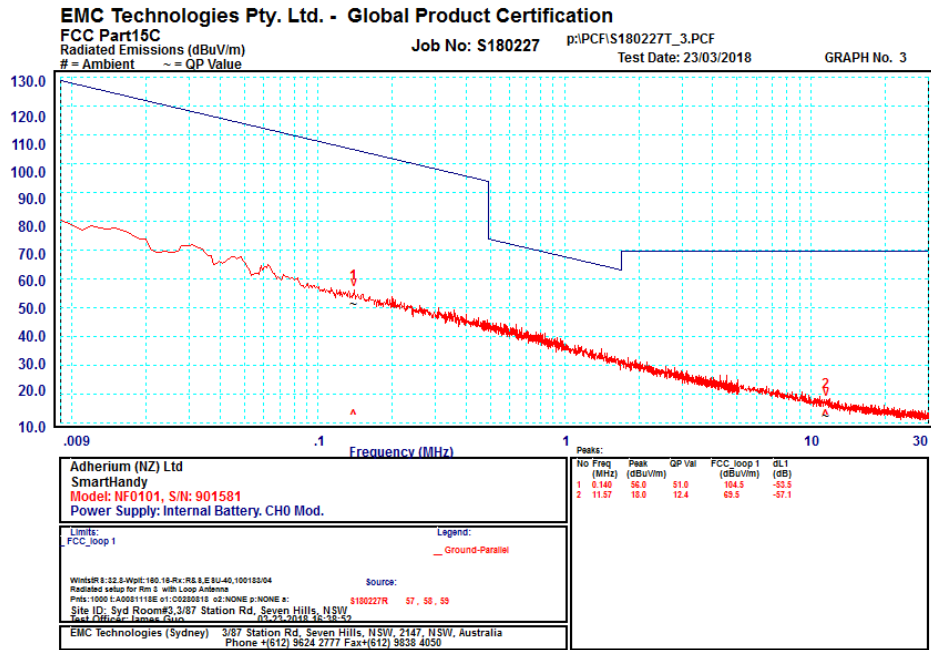
#### Channel 2402, Perpendicular Polarisation



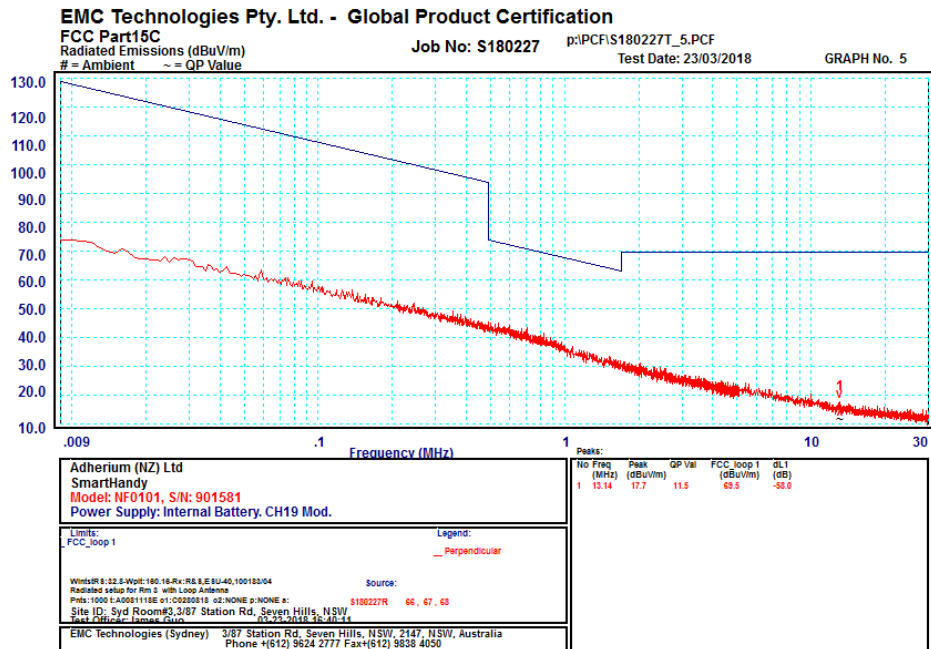
#### Channel 2402, Parallel Polarisation



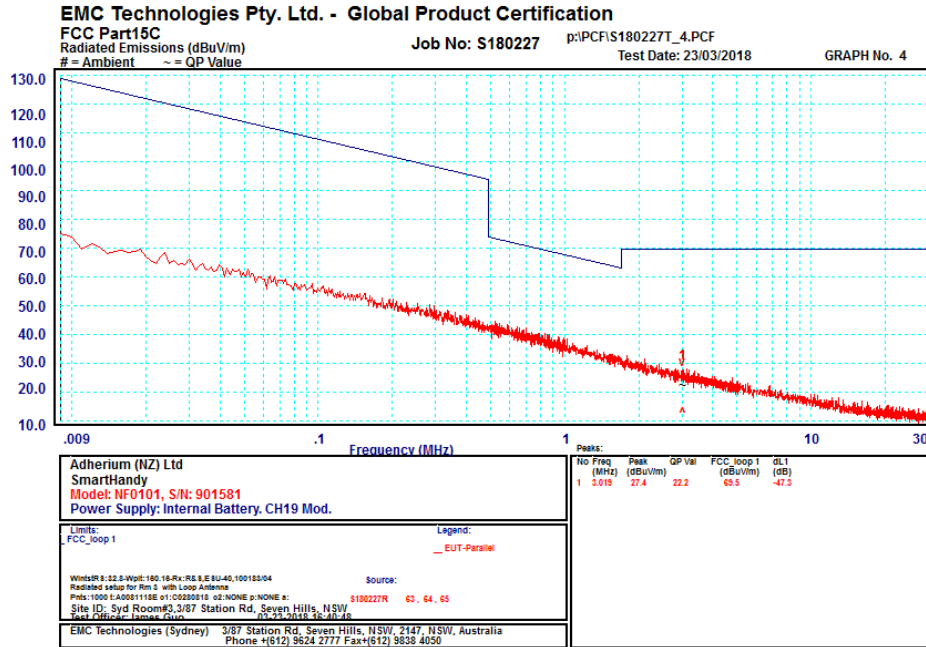
### Channel 2402, Ground-Parallel Polarisation



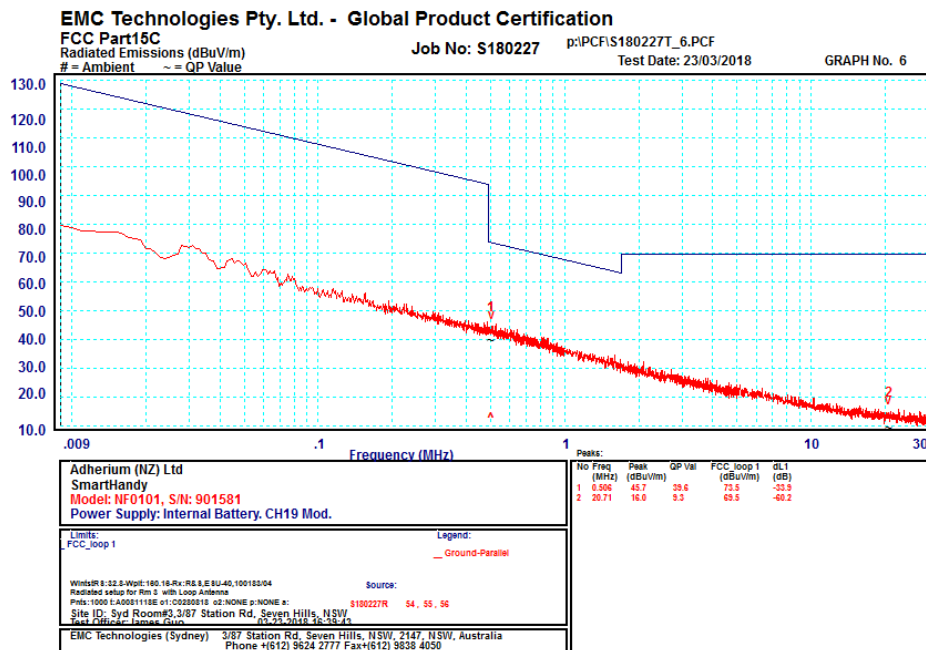
### Channel 2440, Perpendicular Polarisation



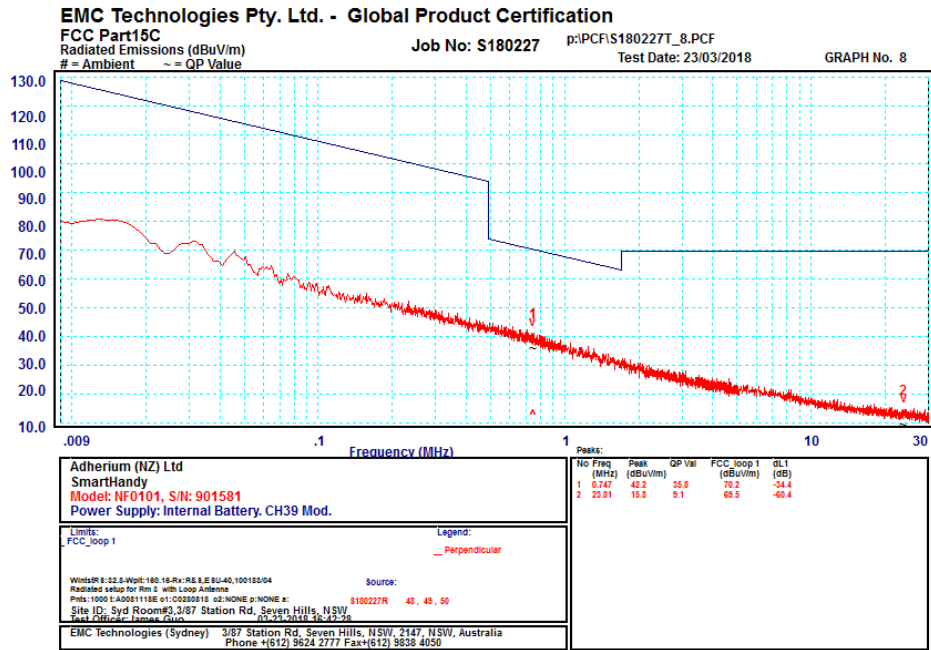
### Channel 2440, Parallel Polarisation



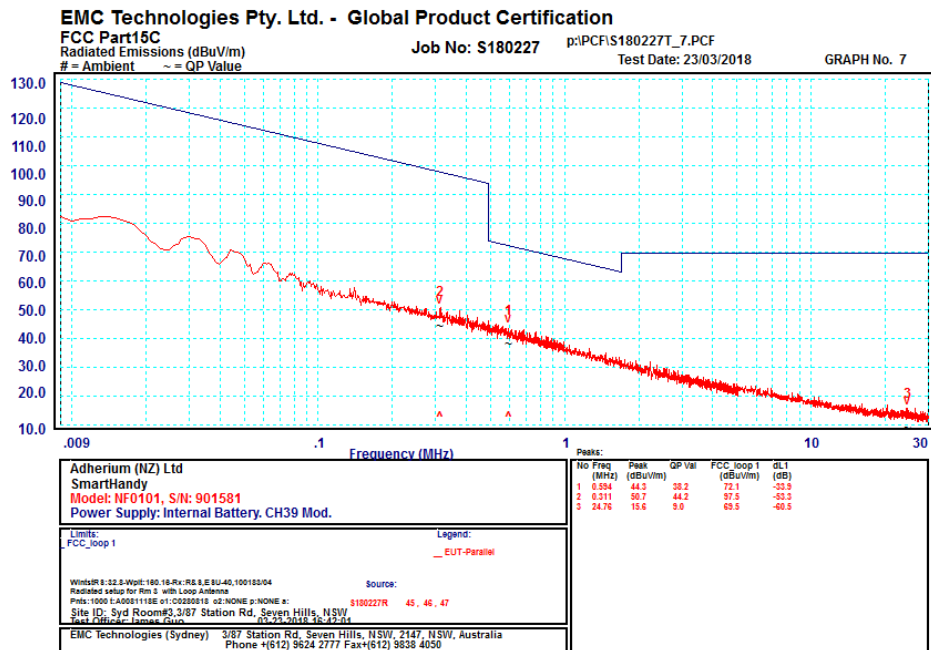
### Channel 2440, Ground-Parallel Polarisation



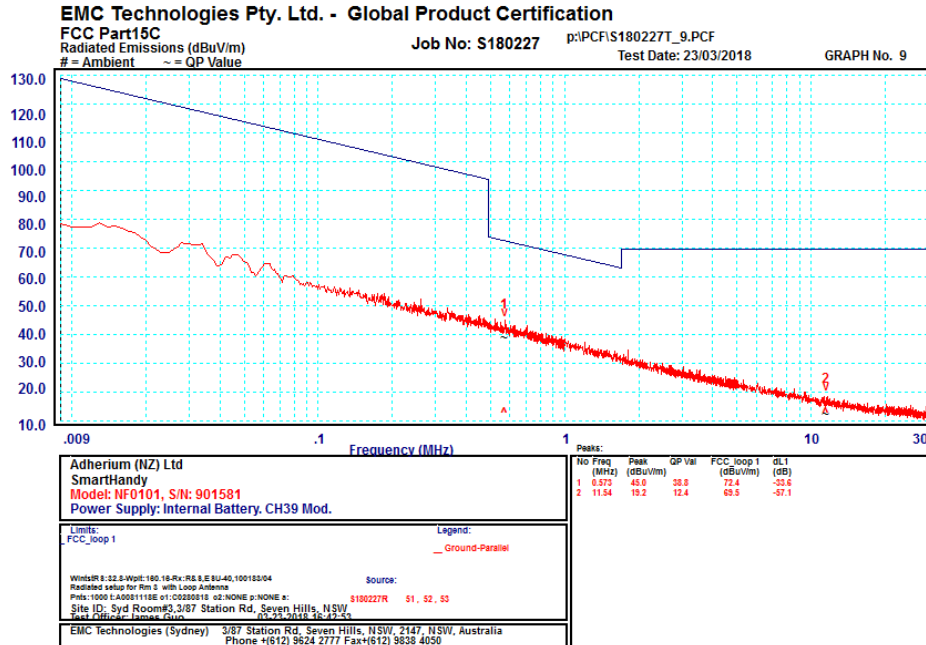
### Channel 2480, Perpendicular Polarisation



### Channel 2480, Parallel Polarisation



### Channel 2480, Ground-Parallel Polarisation



### 3.8.2 Frequency Band: 30 - 1000 MHz

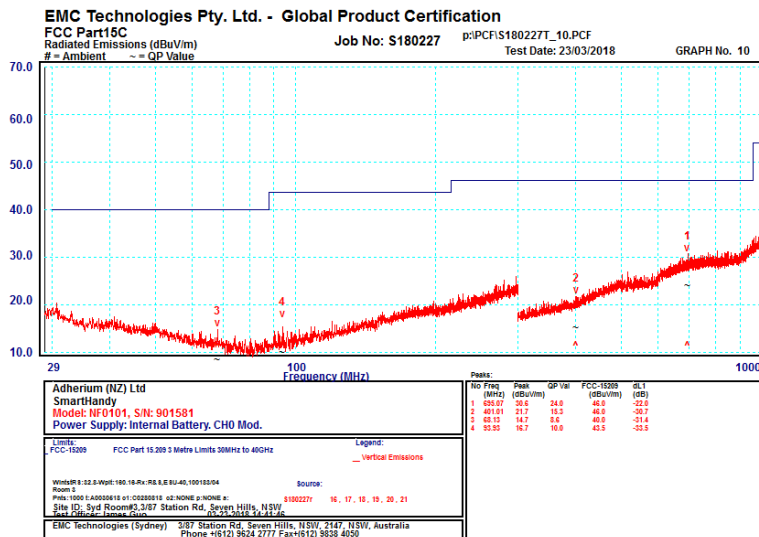
Measurements were made at a distance of 3 metres. The measurement of emissions between 30 - 1000 MHz were made with a resolution bandwidth (RBW) of 120 kHz and the video bandwidth (VBW) of 300 kHz.

The §15.209 limit applied

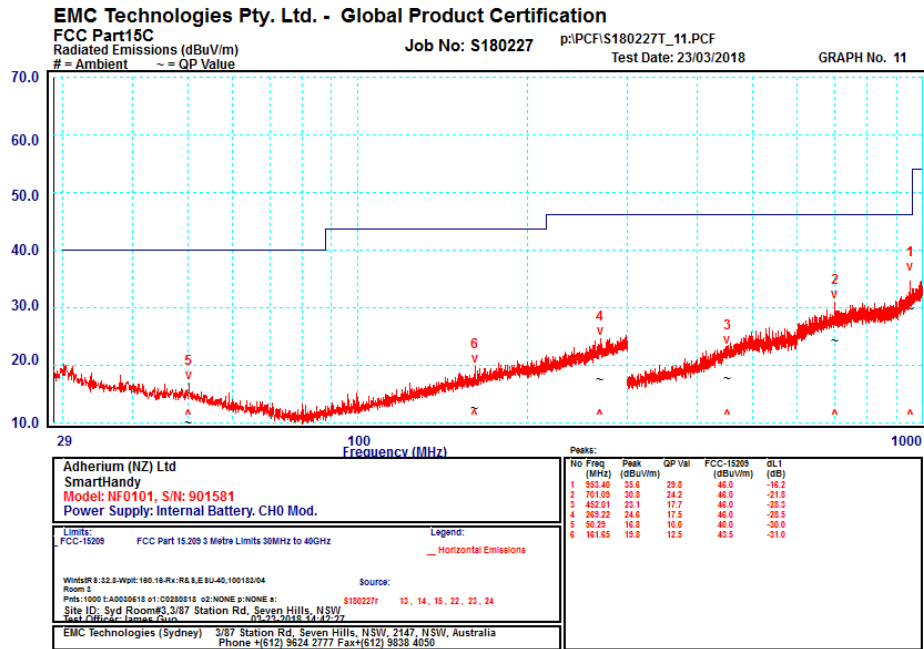
Test Result:

All measured frequencies complied with the Limit by a margin of greater than 10dB.

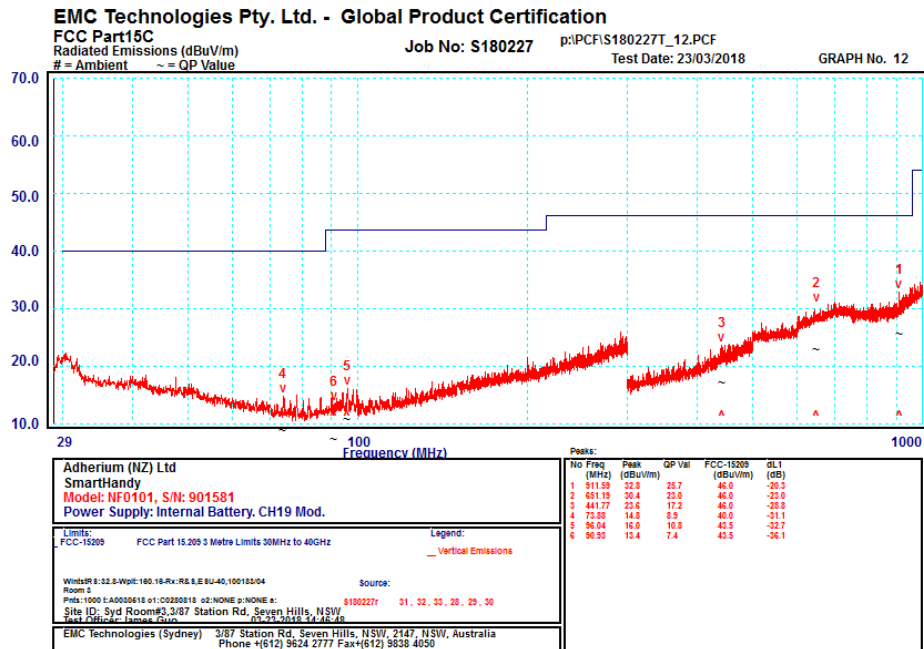
### Channel 2402, Vertical Polarisation



### Channel 2402, Horizontal Polarisation

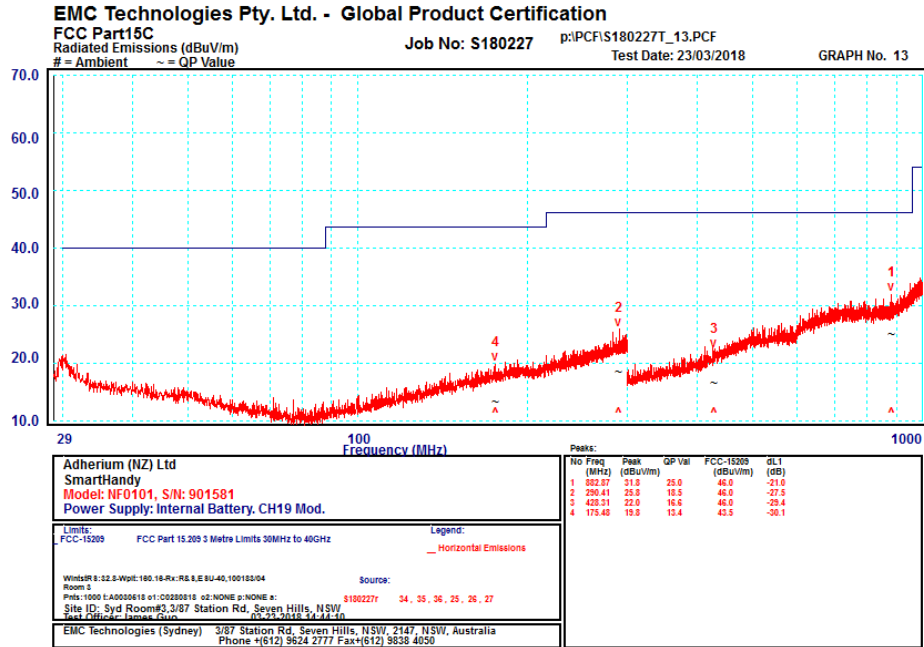


### Channel 2440, Vertical Polarisation

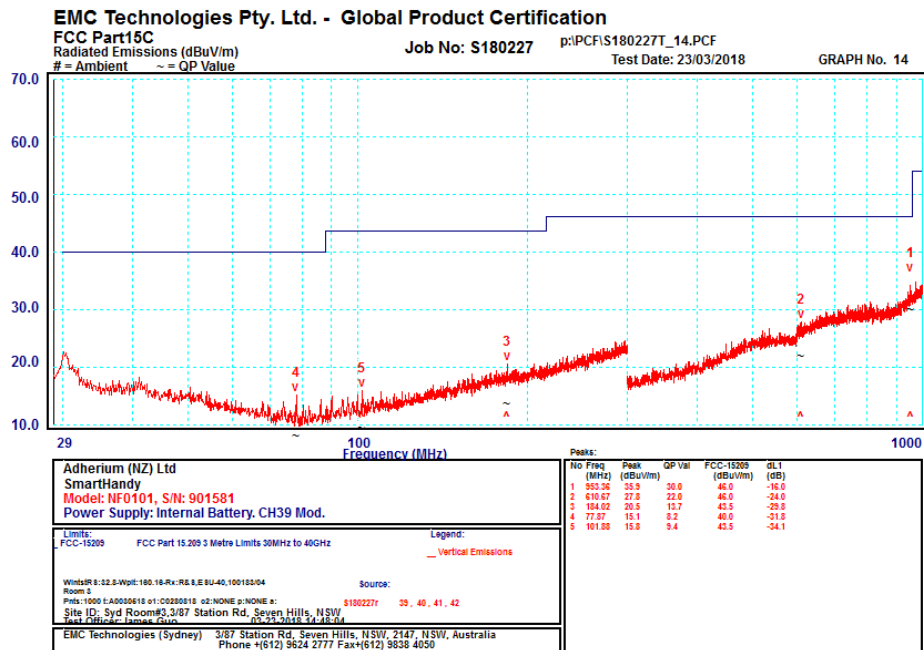




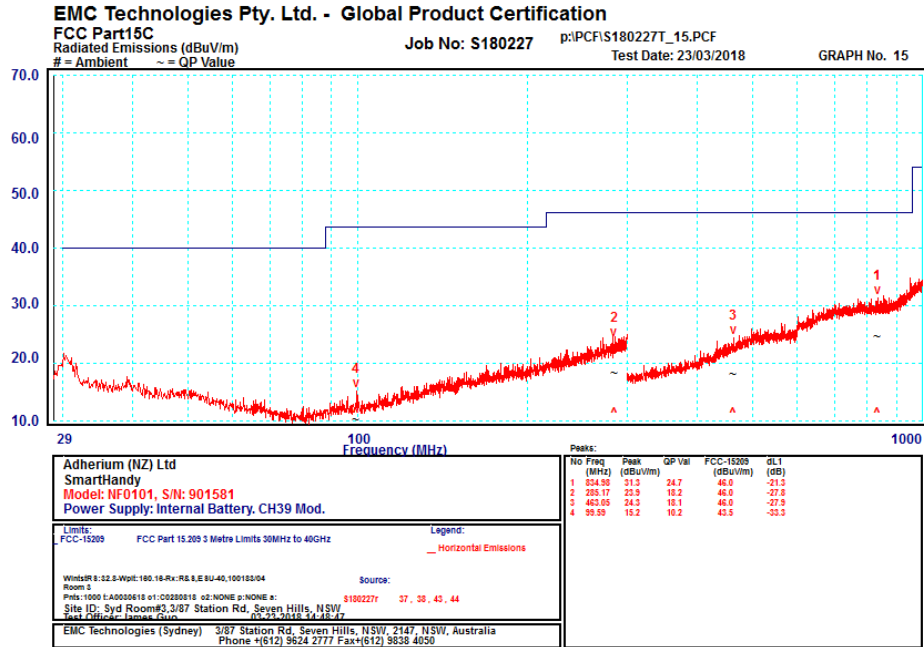
### Channel 2440, Horizontal Polarisation



### Channel 2480, Vertical Polarisation



**Channel 2480, Horizontal Polarisation**



**3.8.3 Frequency Band: 1 000 – 25 000 MHz**

Measurements to 18 GHz were made at a distance of 3 metres and 18 to 25 GHz at 1 metre. The peak measurements were made with a resolution bandwidth (RBW) of 1000 kHz and the video bandwidth (VBW) of 1000 kHz, The average measurement were made with a resolution bandwidth(RBW) of 1000kHz and the video bandwidth(VBW) of 10kHz. 2.4G Band stop notch filter was used from above 3GHz.

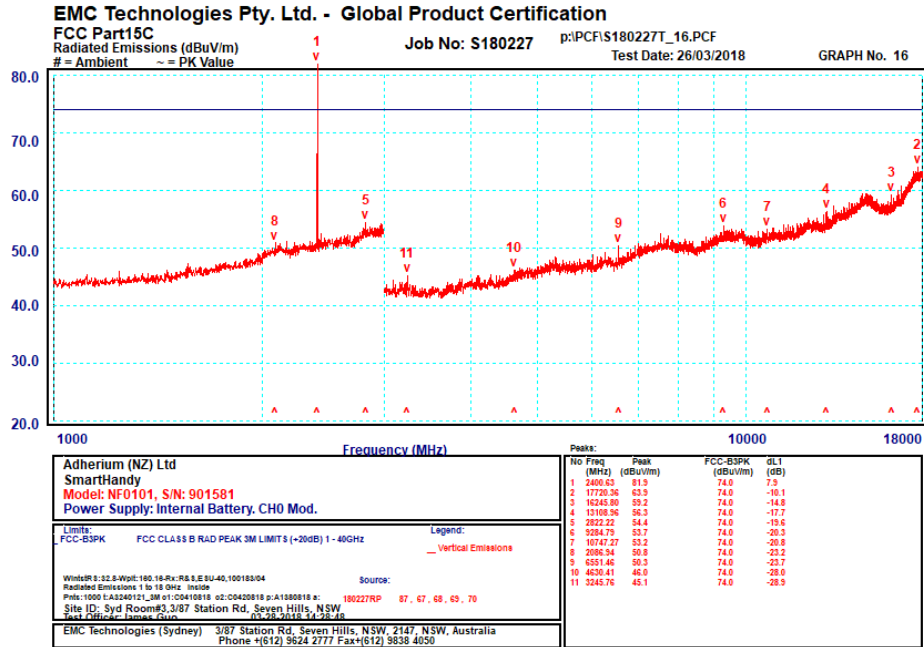
The §15.209 limits applied.

Test Result:

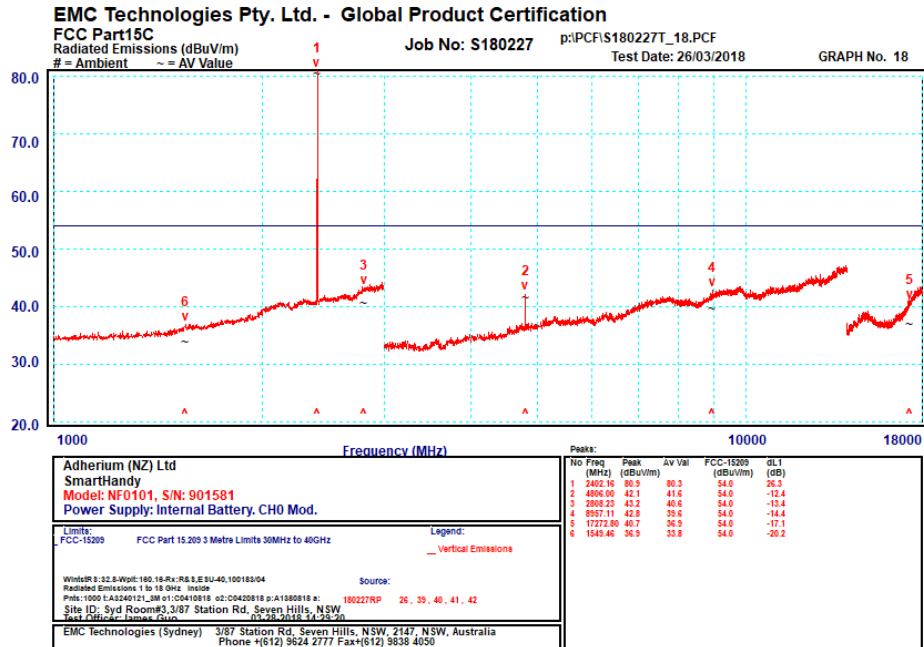
All measured frequencies complied with the Limit by a margin of greater than 10dB.

### Channel 2402 MHz – Vertical, 1 to 18 GHz

#### Peak Measurement

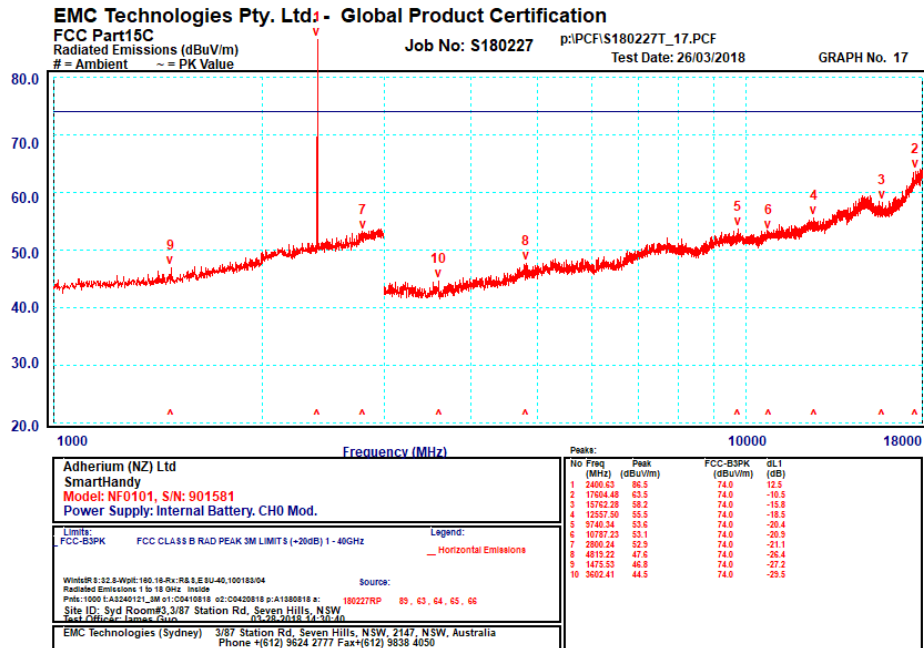


#### Average Measurement

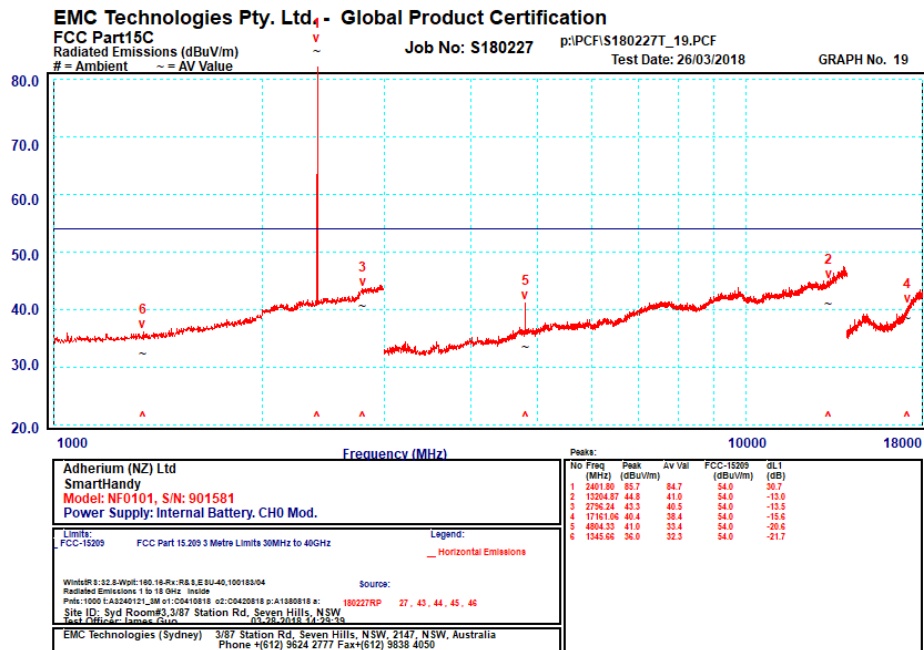


### Channel 2402 MHz – Horizontal, 1 to 18 GHz

#### Peak Measurement

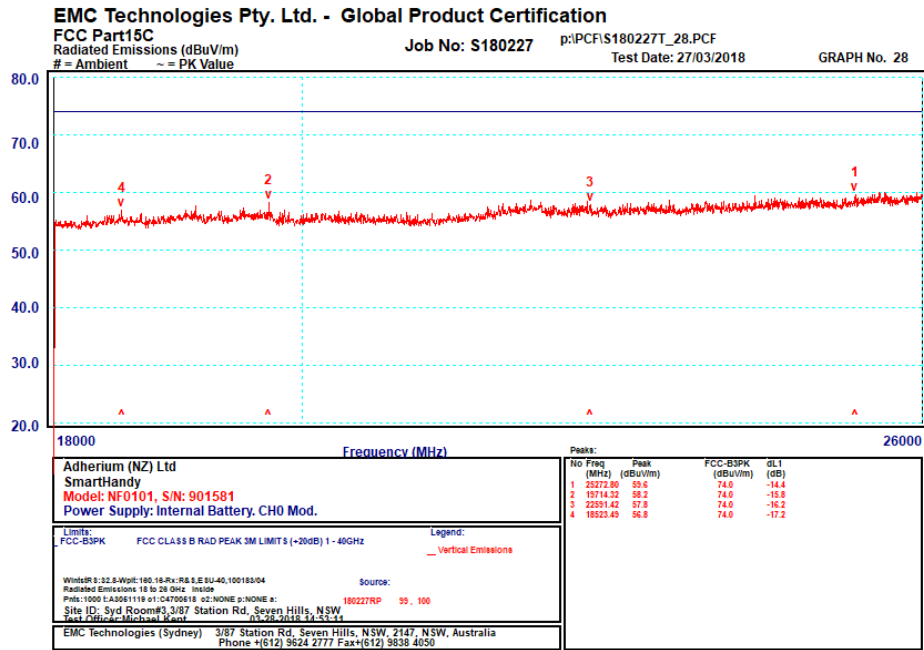


#### Average Measurement

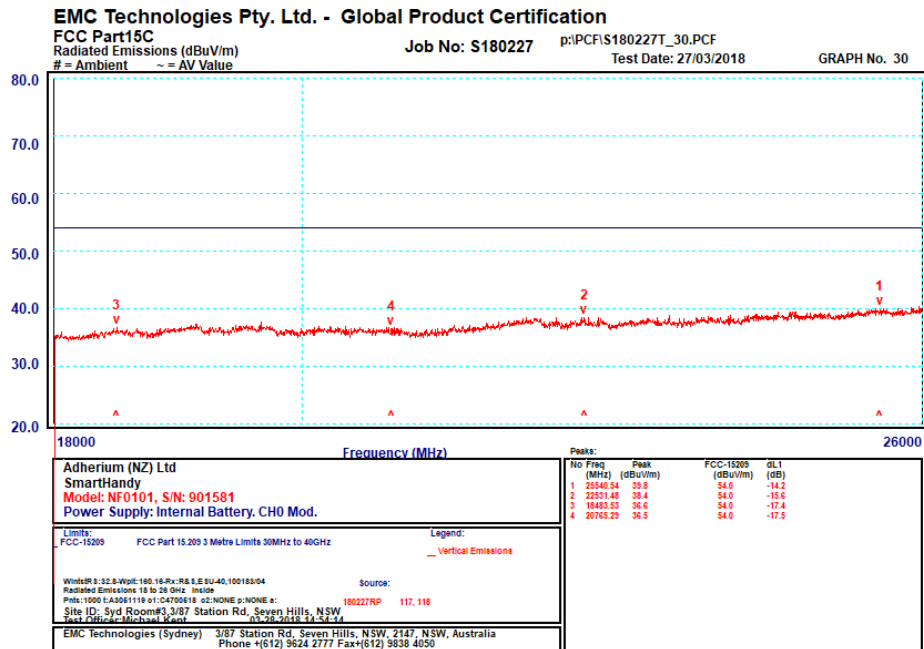


### Channel 2402 MHz – Vertical 18 to 25 GHz

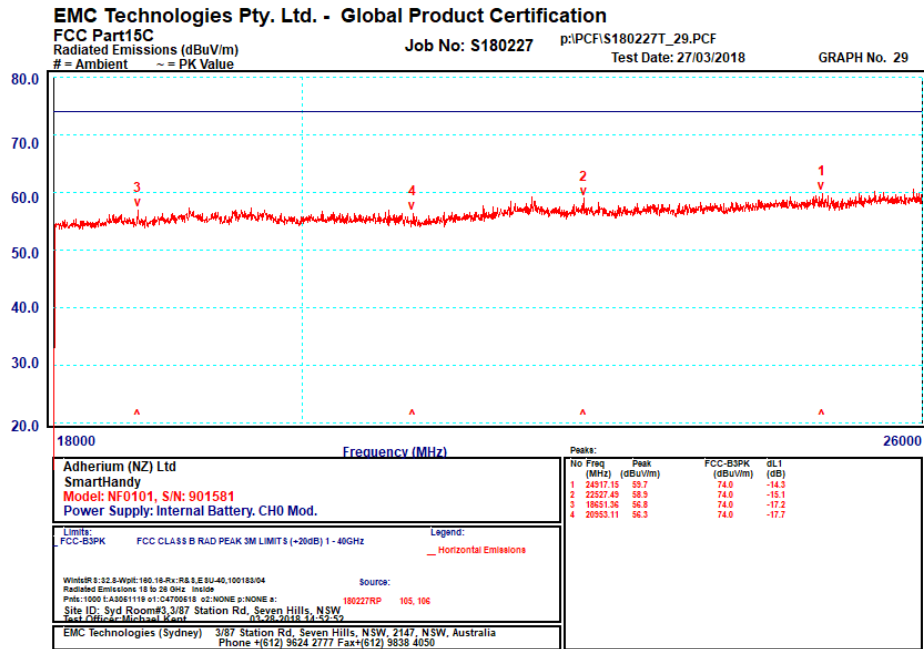
#### Peak Measurement



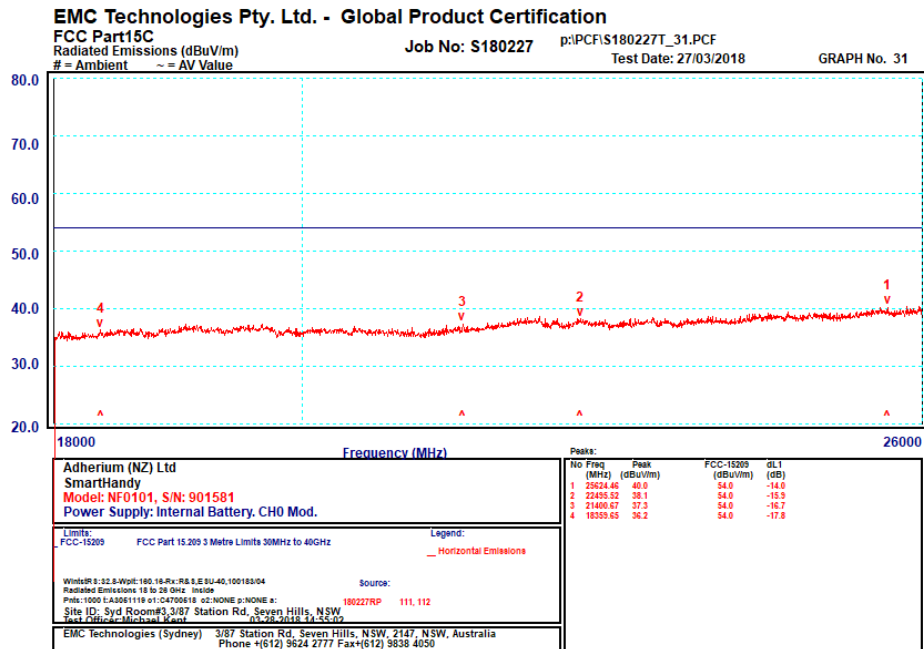
#### Average Measurement



### Channel 2402 MHz – Horizontal 18 to 25 GHz Peak Measurement

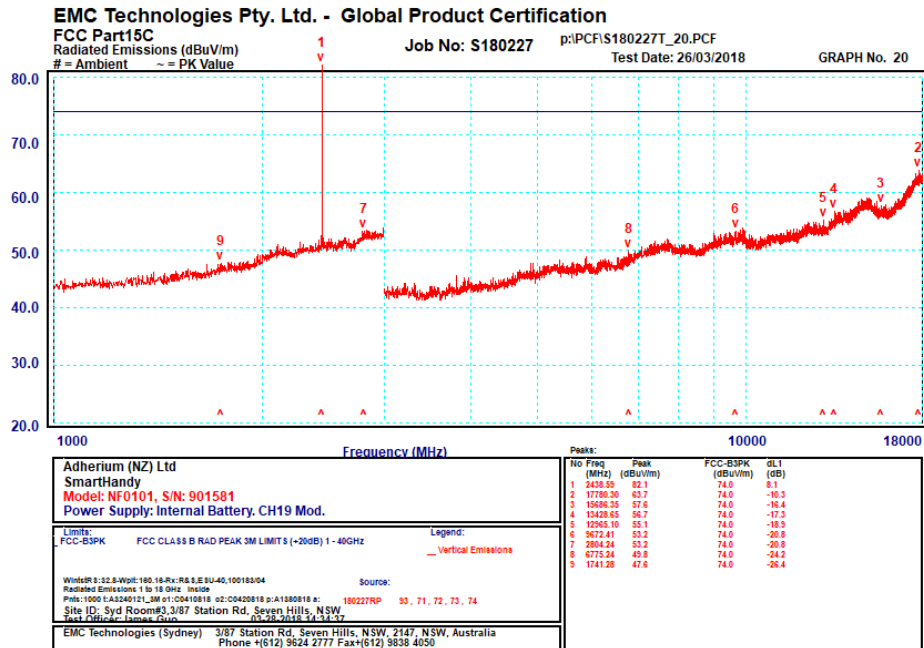


### Average Measurement

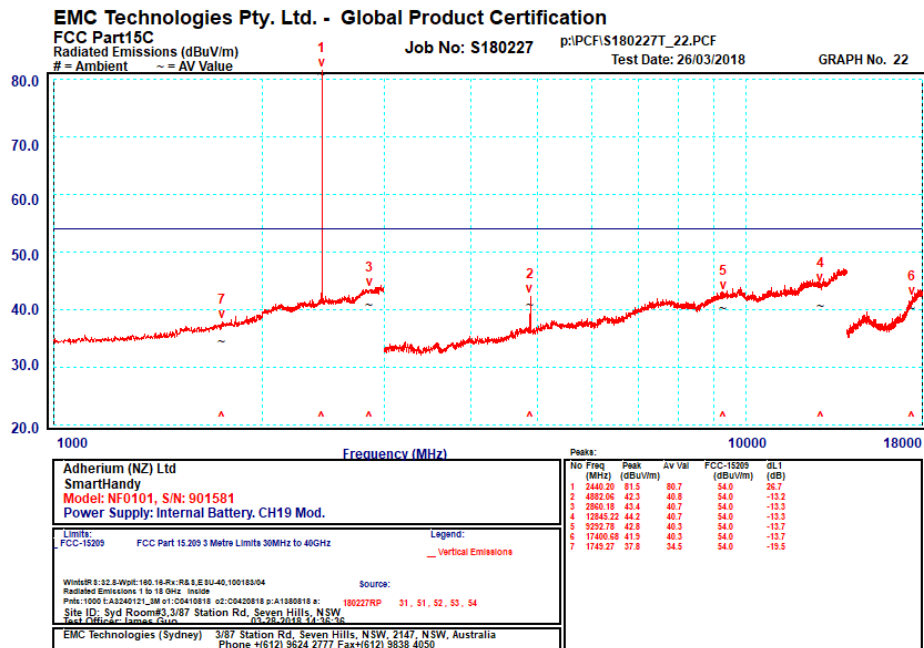


### Channel 2440 MHz – Vertical, 1 to 18 GHz

#### Peak Measurement

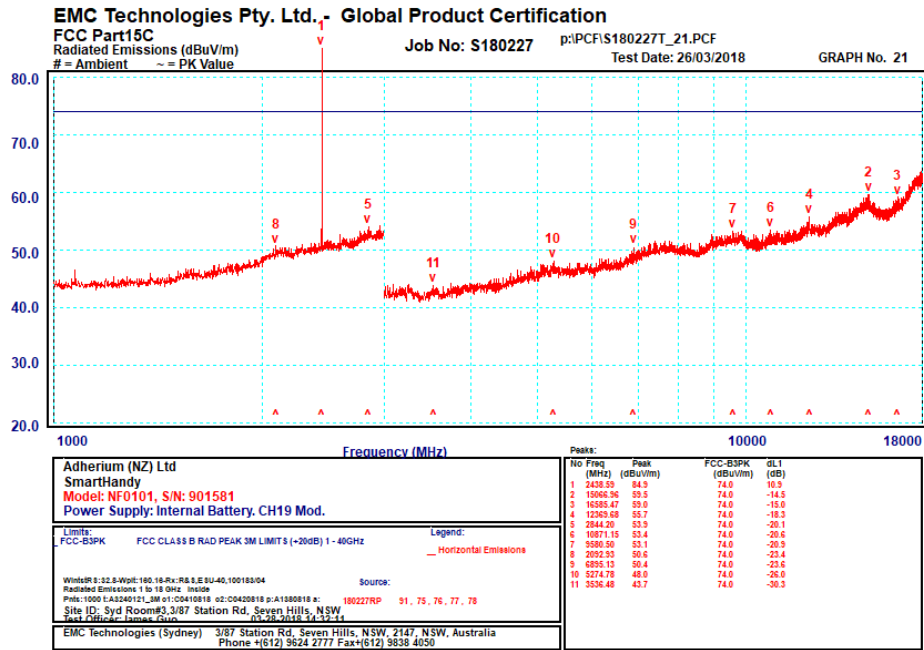


#### Average Measurement

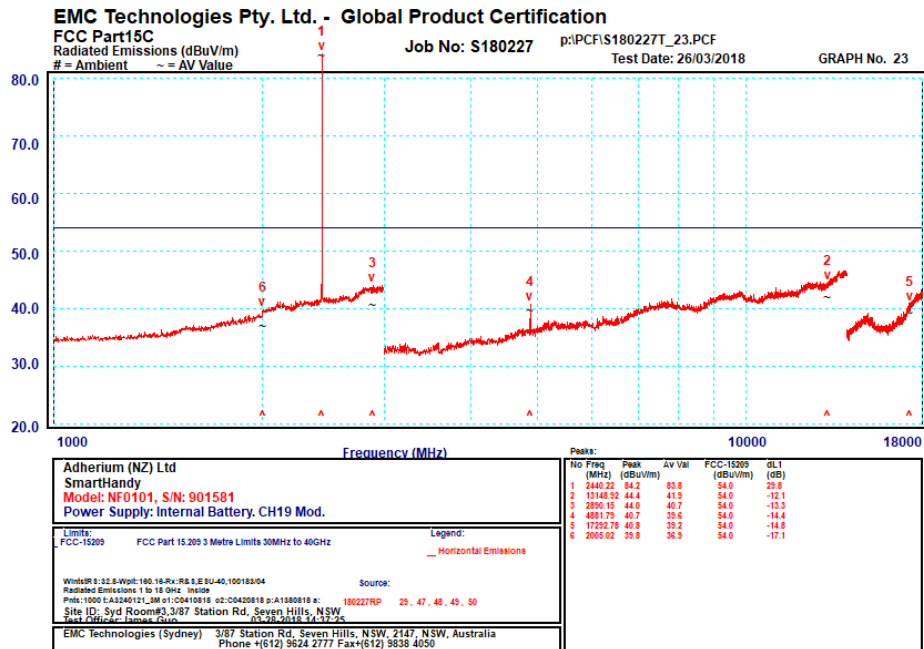


### Channel 2440 MHz – Horizontal, 1 to 18 GHz

#### Peak Measurement



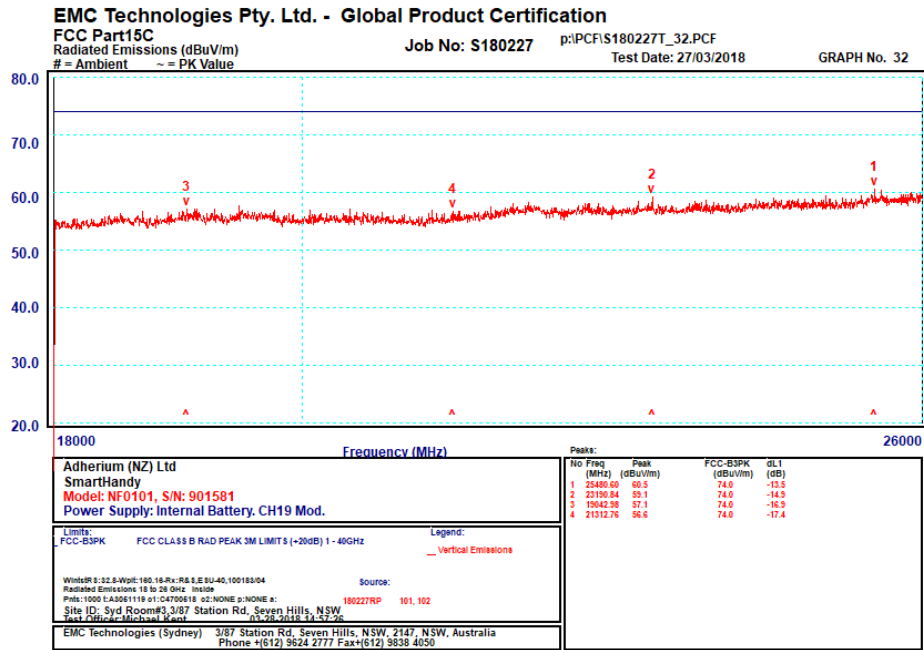
#### Average Measurement



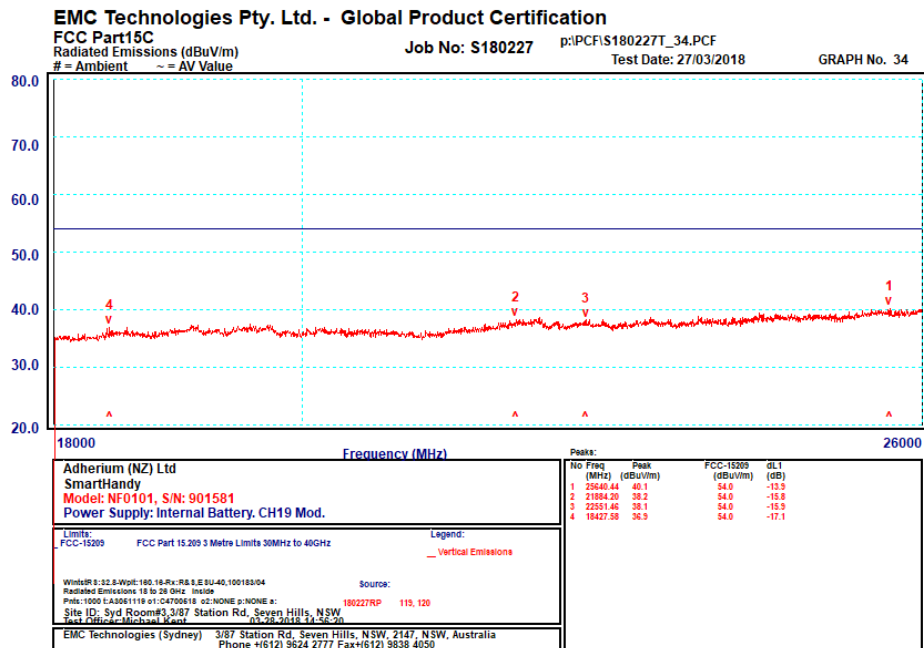


### Channel 2440 MHz – Vertical 18 to 25 GHz

#### Peak Measurement

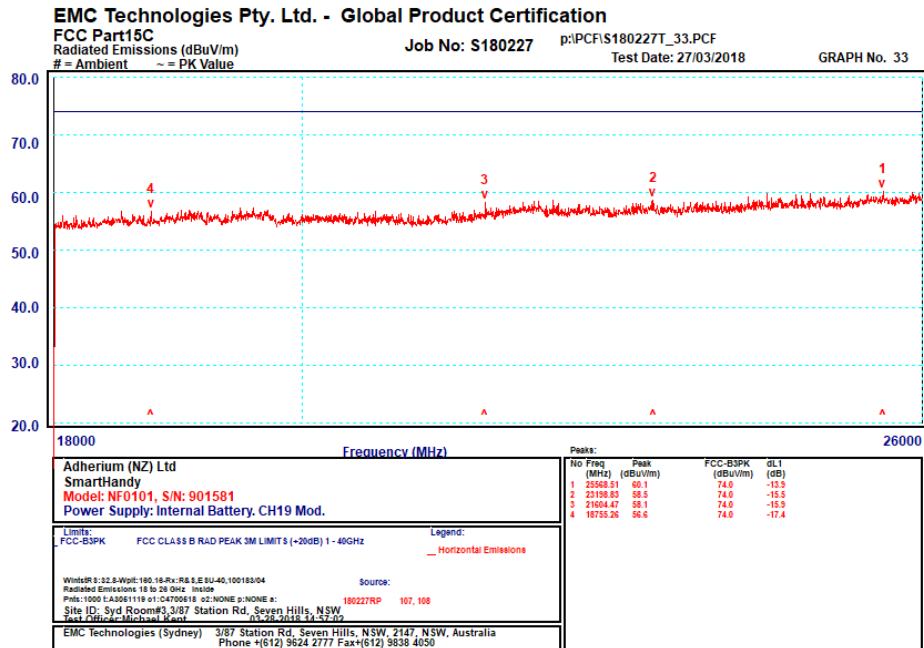


#### Average Measurement

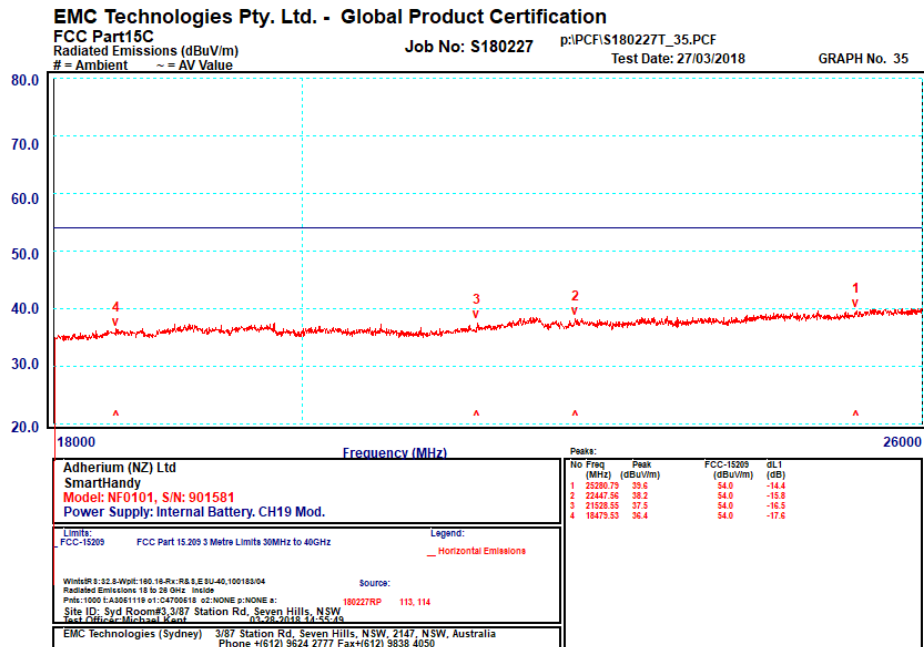


### Channel 2440 MHz – Horizontal 18 to 25 GHz

#### Peak Measurement

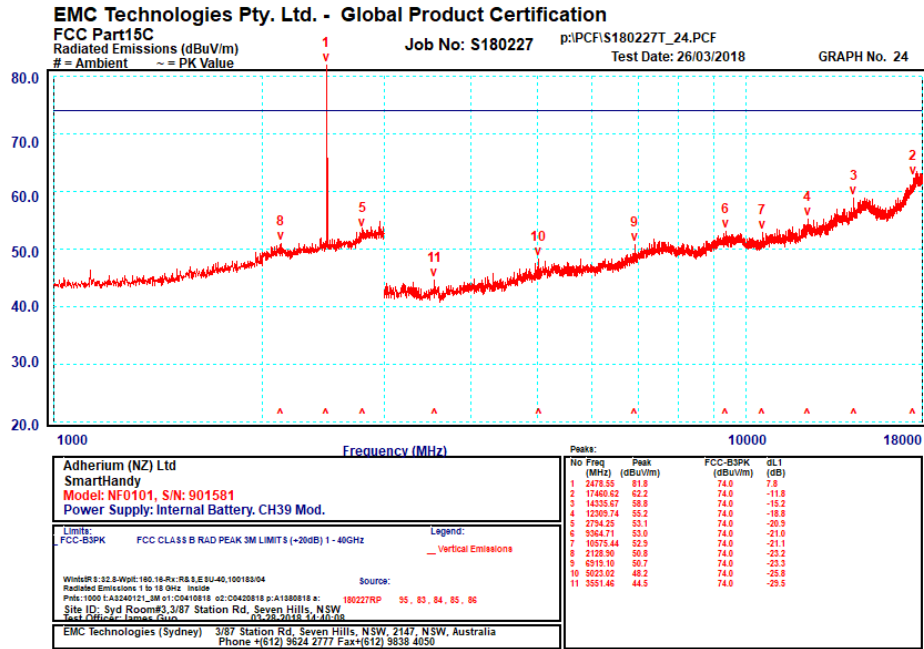


#### Average Measurement

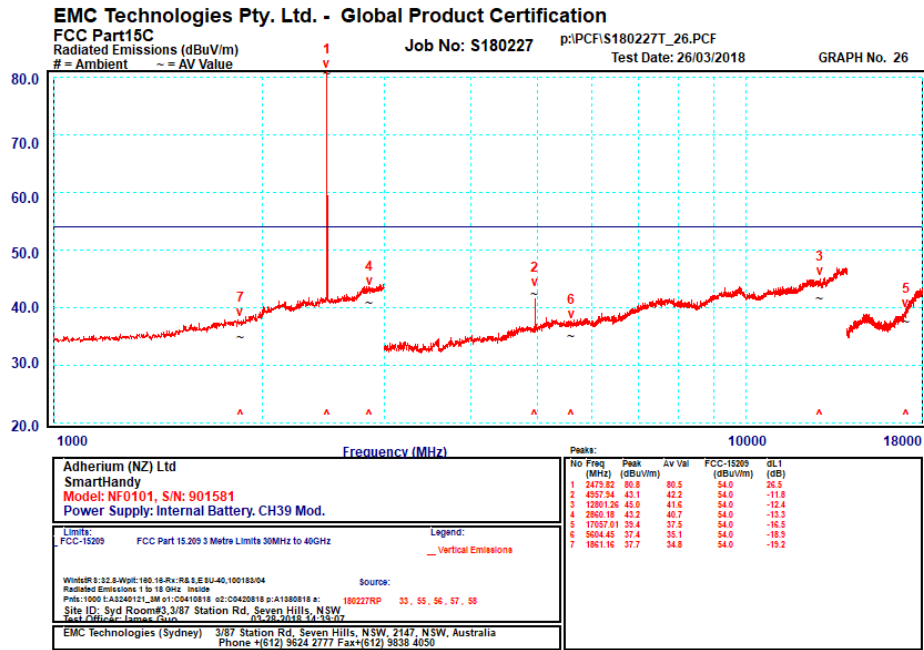


### Channel 2480 MHz – Vertical, 1 to 18 GHz

#### Peak Measurement

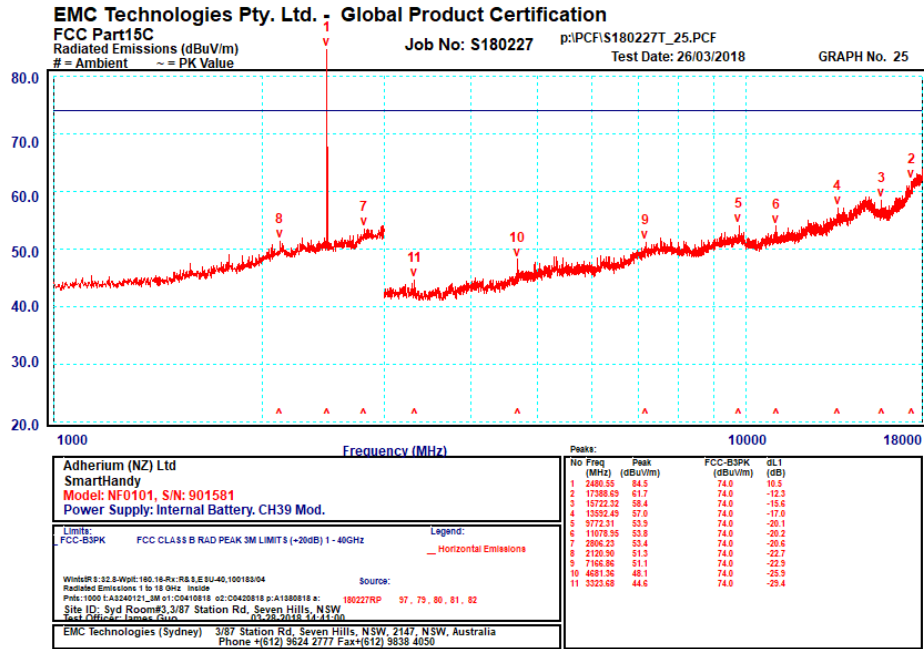


#### Average Measurement

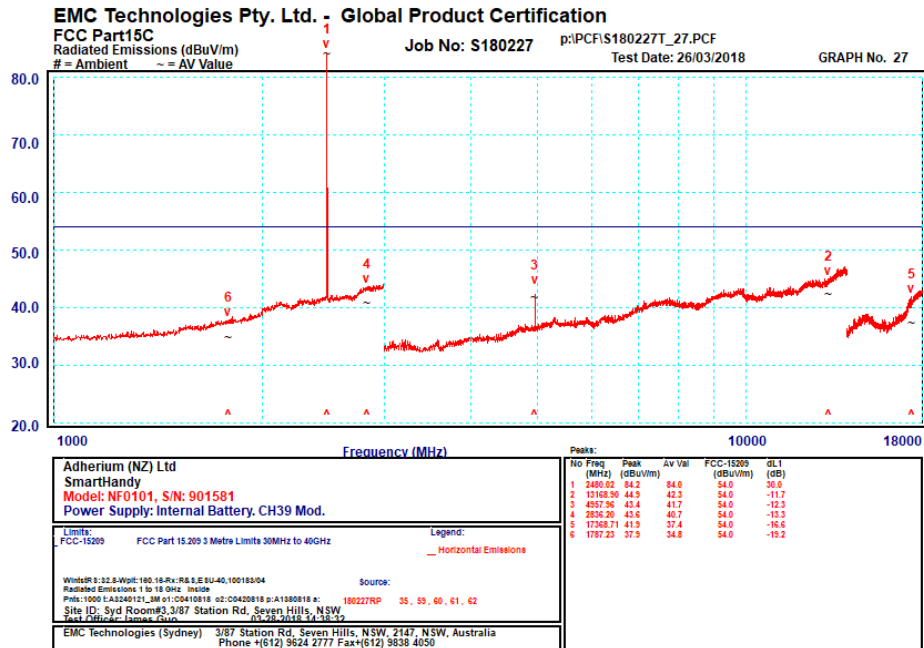


### Channel 2480 MHz – Horizontal, 1 to 18 GHz

#### Peak Measurement

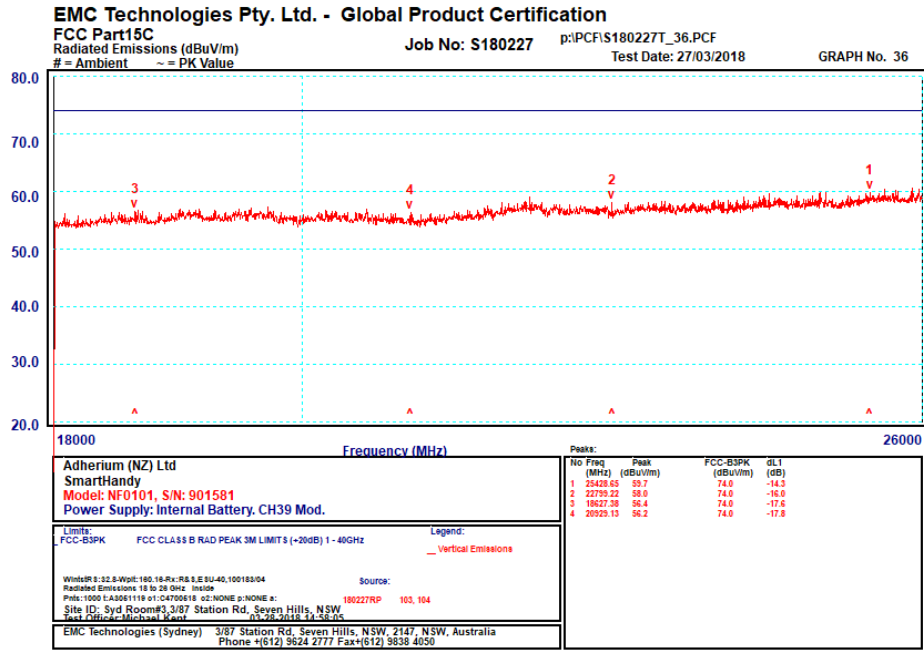


#### Average Measurement

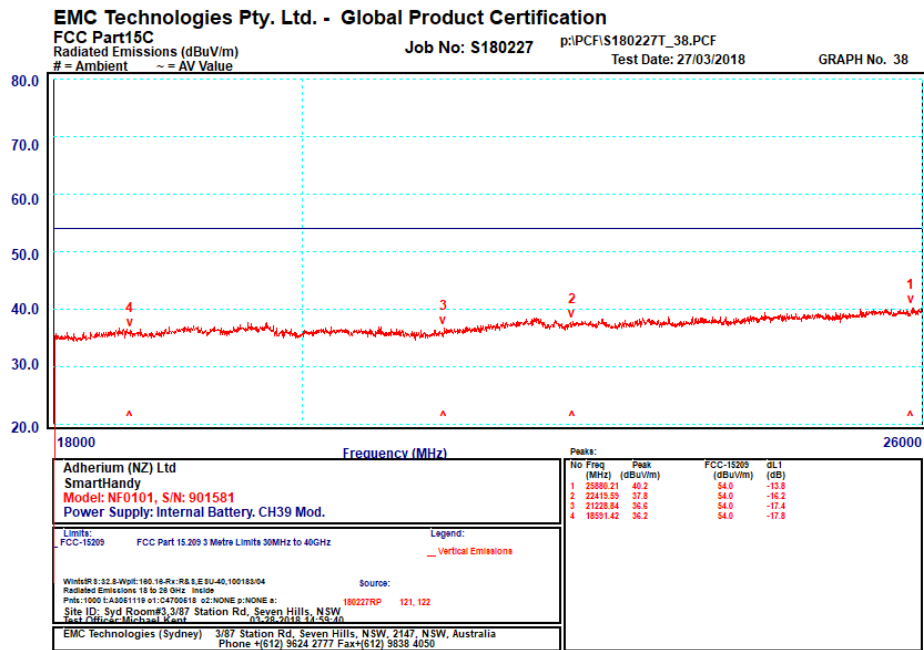


### Channel 2480 MHz – Vertical 18 to 25 GHz

#### Peak Measurement



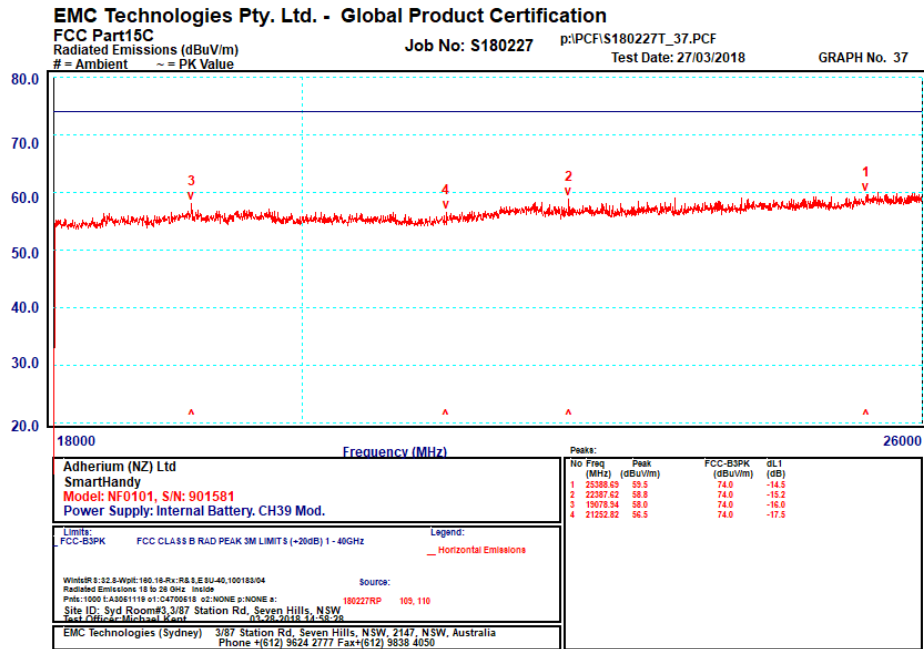
#### Average Measurement



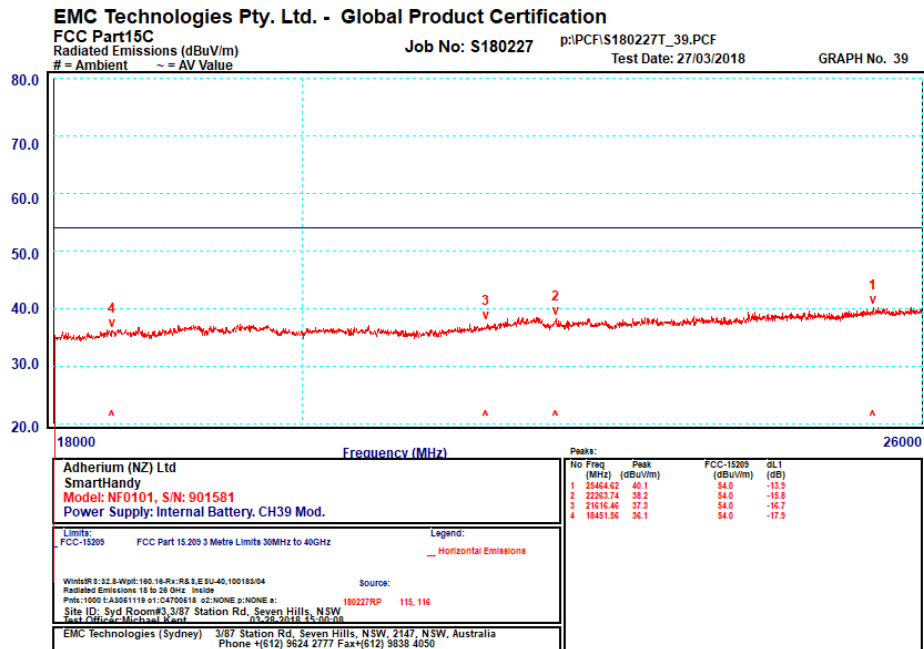


Channel 2480 MHz – Horizontal 18 to 25 GHz

Peak Measurement



Average Measurement



Conclusion:

The EUT complied with the limits of FCC Rule Part 15 Subpart C, 15.209.

### 3.9 15.247(d) Out of Band Emissions

**Requirement:**

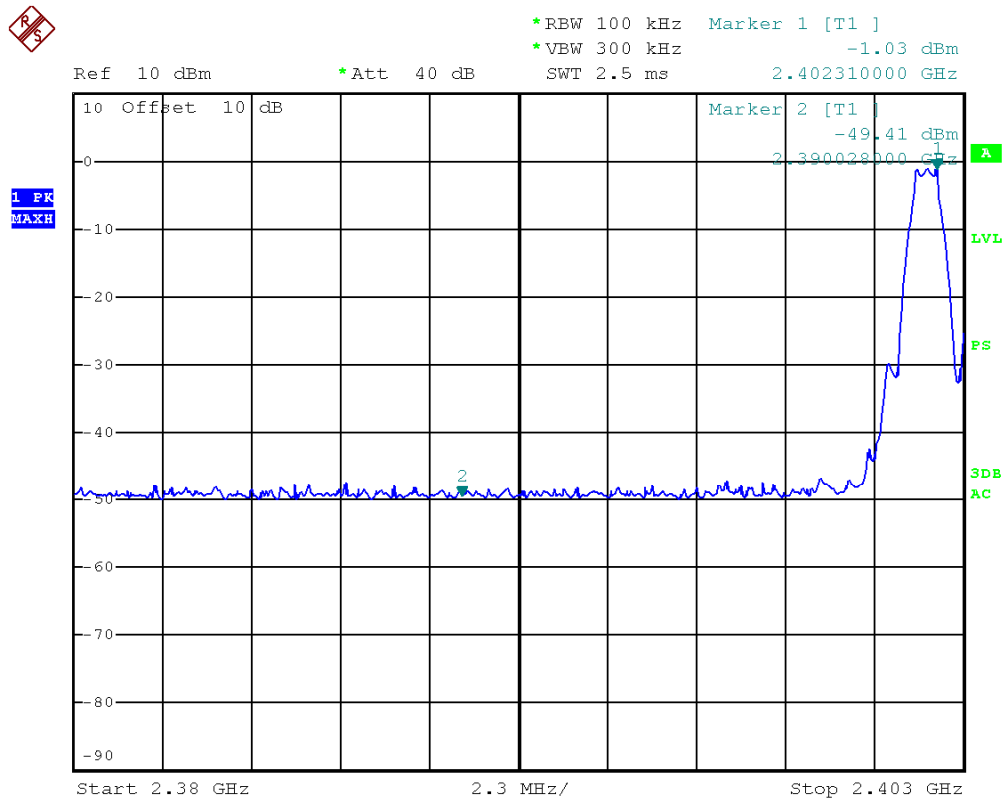
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

#### 3.9.1 Authorized-band band-edge

Test was done by conducted measurement according to C63.10 Clause 6.10.4

**Results:**

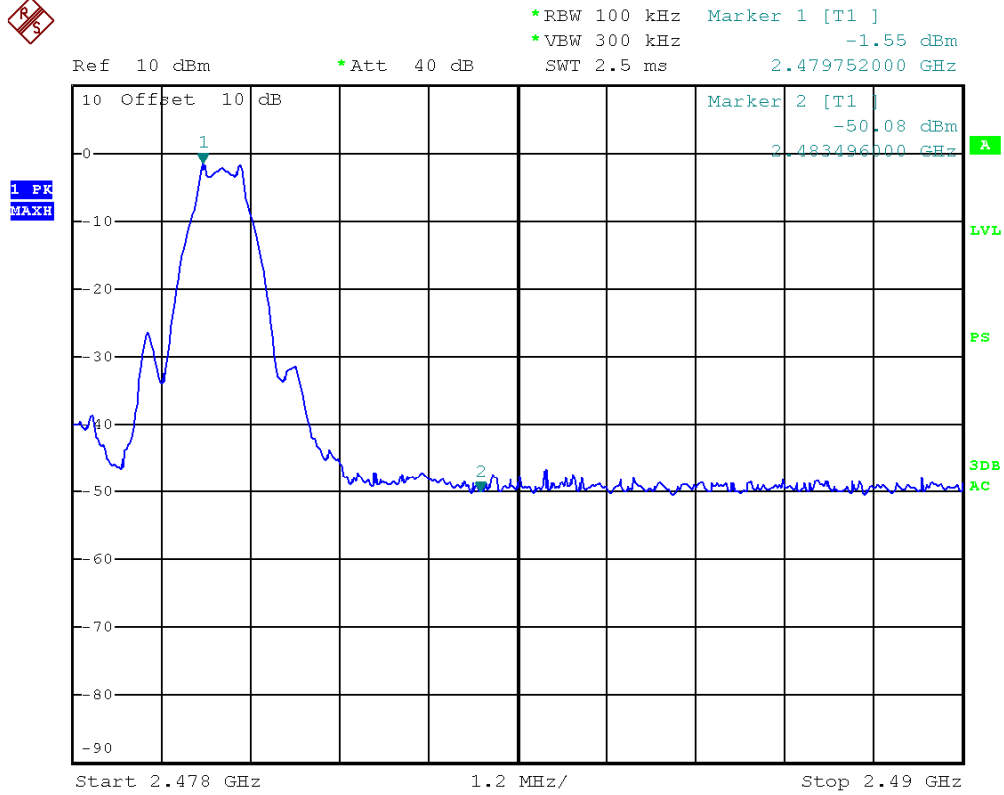
Channel 2402 MHz, Bottom Band Edge:  
Hopping off, Marker 2 was 48.38dB down at 2390 MHz.



Date: 4.APR.2018 14:33:42

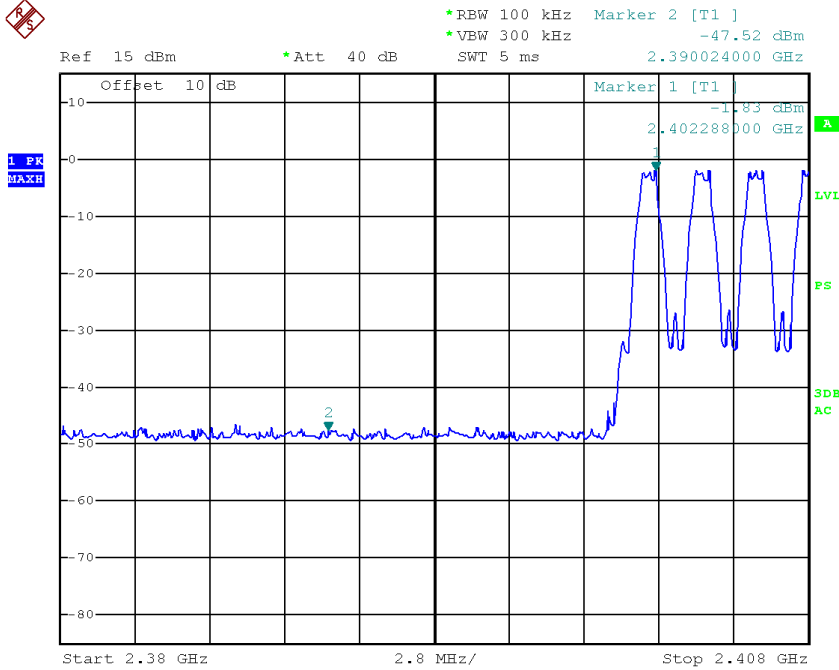


Channel 2480 MHz, Top Band Edge:  
Hopping off, Marker 2 was 48.53dB down at 2483.496 MHz.



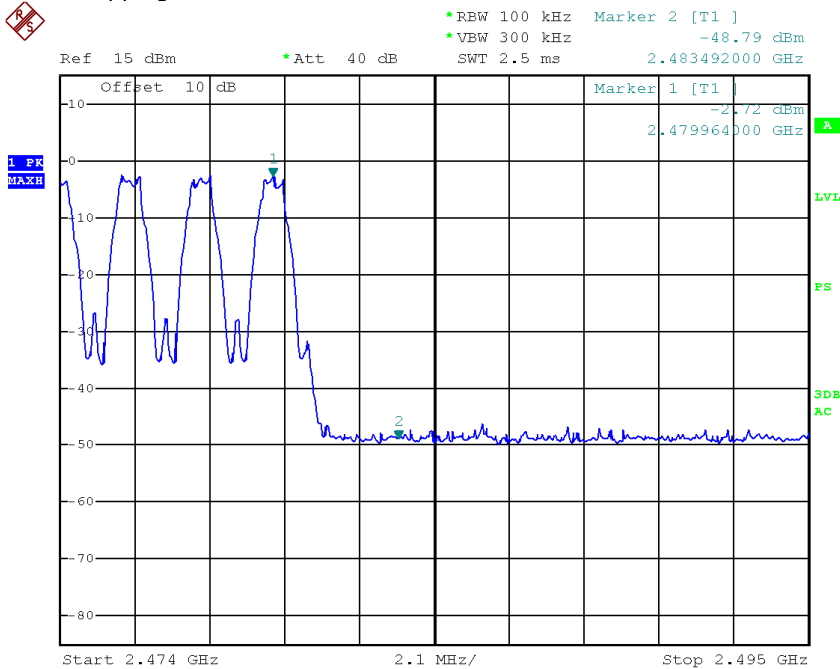
Date: 4.APR.2018 14:37:37

Bottom Band Edge:  
Hopping on, Marker 2 was 45.69dB down at 2390 MHz.



Date: 4.APR.2018 14:59:45

Top Band Edge:  
Hopping on, Marker 2 was 46.07 dB down at 2483.5 MHz.



Date: 4.APR.2018 15:01:57

**Conclusion:** Complied.

### 3.9.2 Restricted-band band-edge

This was done by radiated measurement according to C63.10 Clause 6.10.5

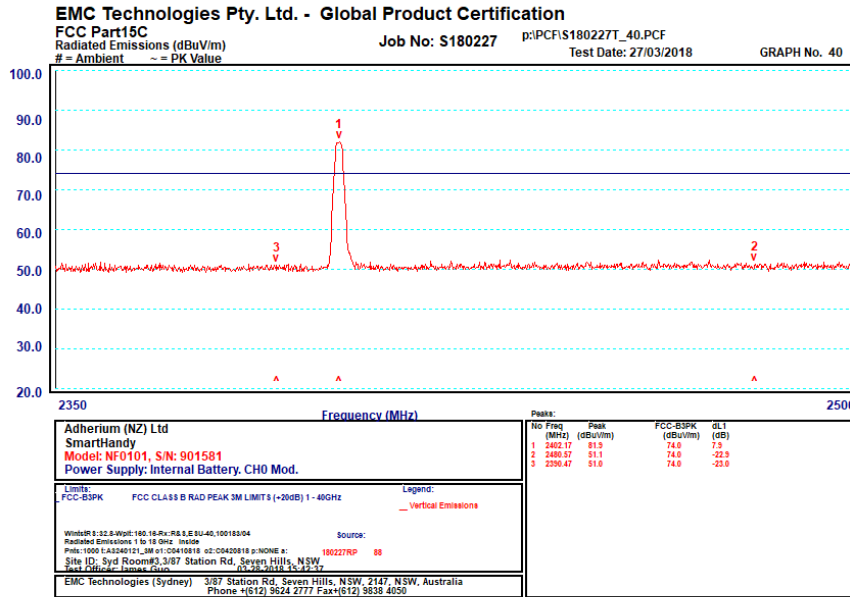
The peak measurements were made with a resolution bandwidth (RBW) of 1000 kHz and the video bandwidth (VBW) of 1000 kHz, The average measurement were made with a resolution bandwidth(RBW) of 1000kHz and the video bandwidth(VBW) of 10kHz.

#### Results:

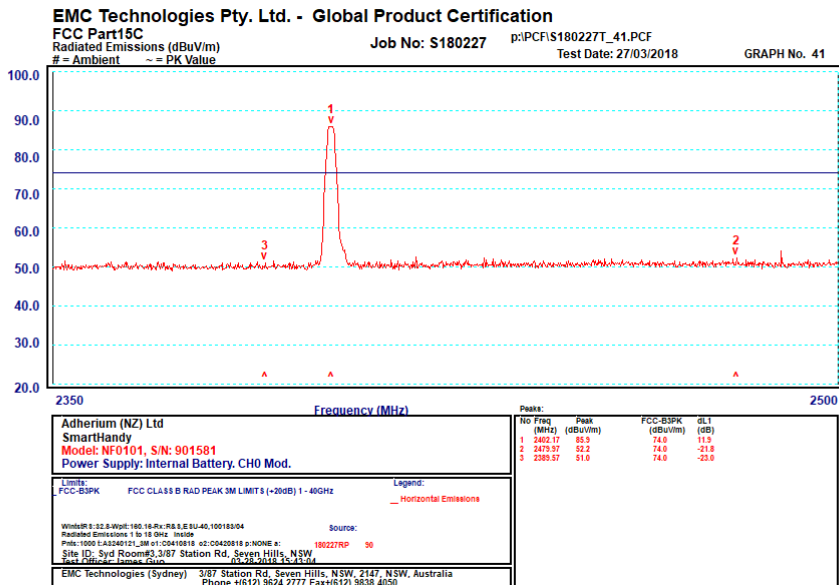
Channel 2402 MHz, Bottom Band Edge:

Hopping off, Mark1 and Mark2 being set to around 2390MHz and 2483.5MHz

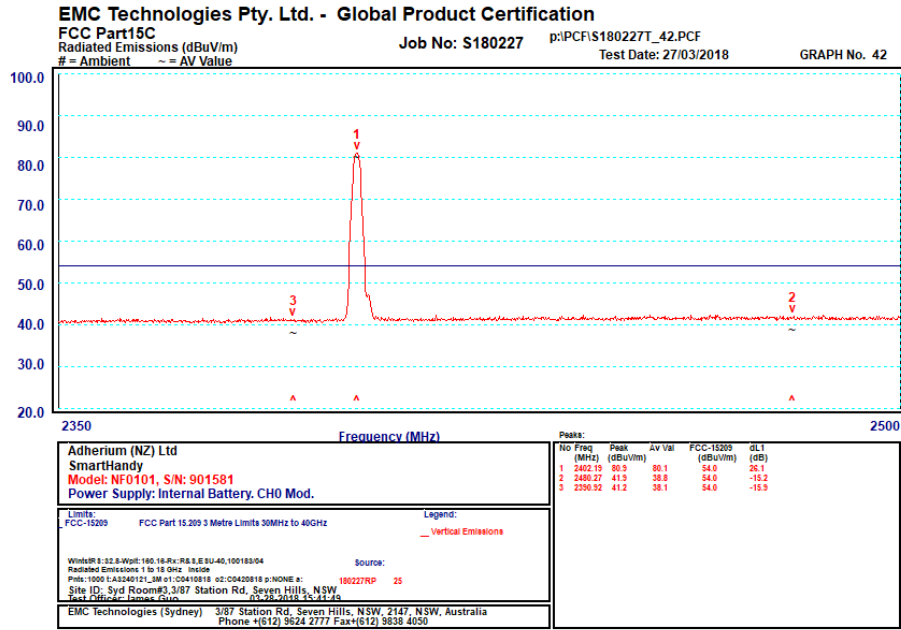
#### Peak measurement – Vertical



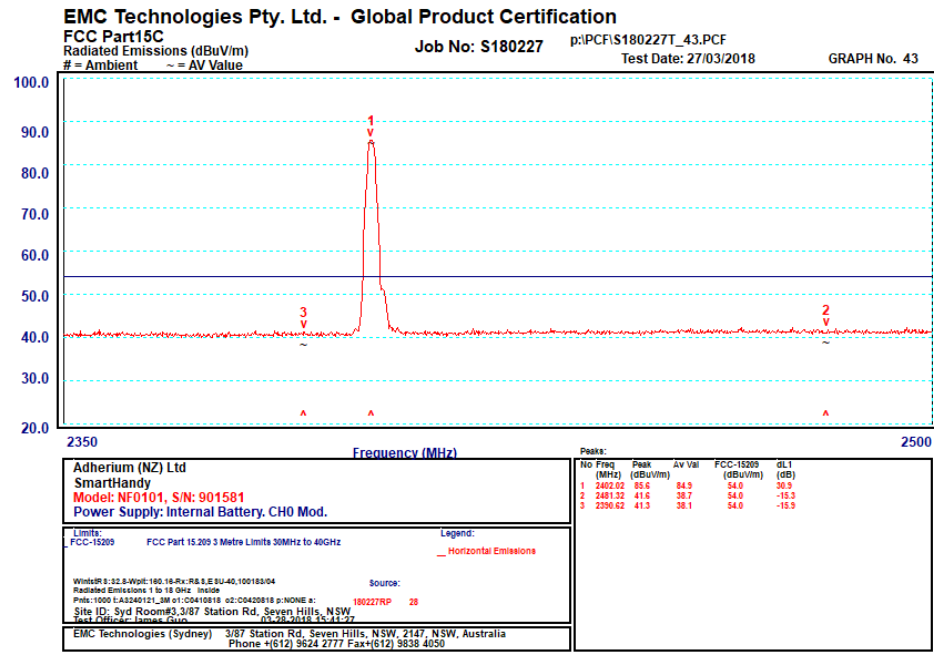
#### Peak measurement – Horizontal



**Average measurement – Vertical**

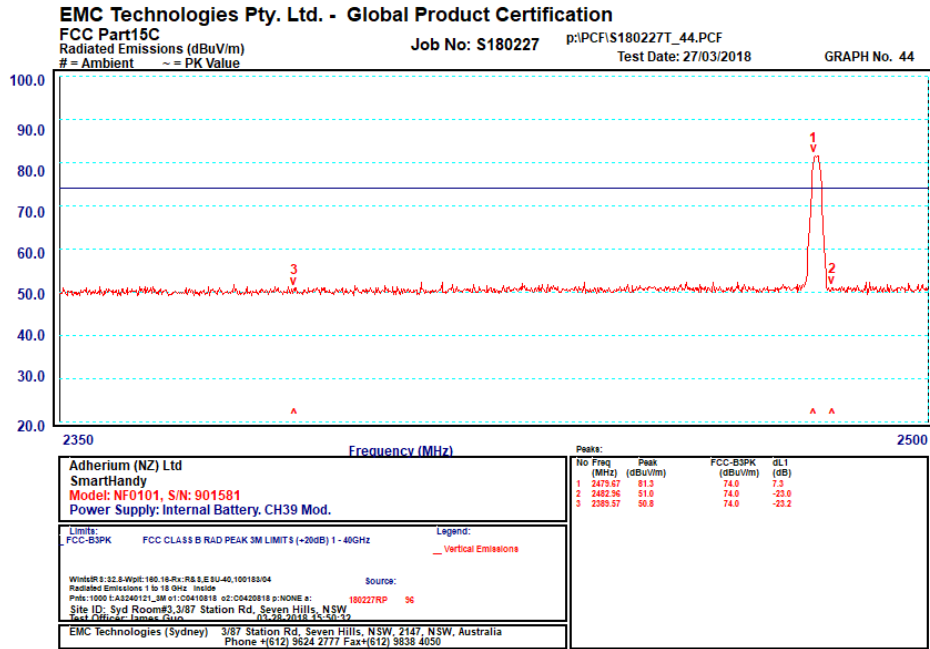


**Average measurement – Horizontal**

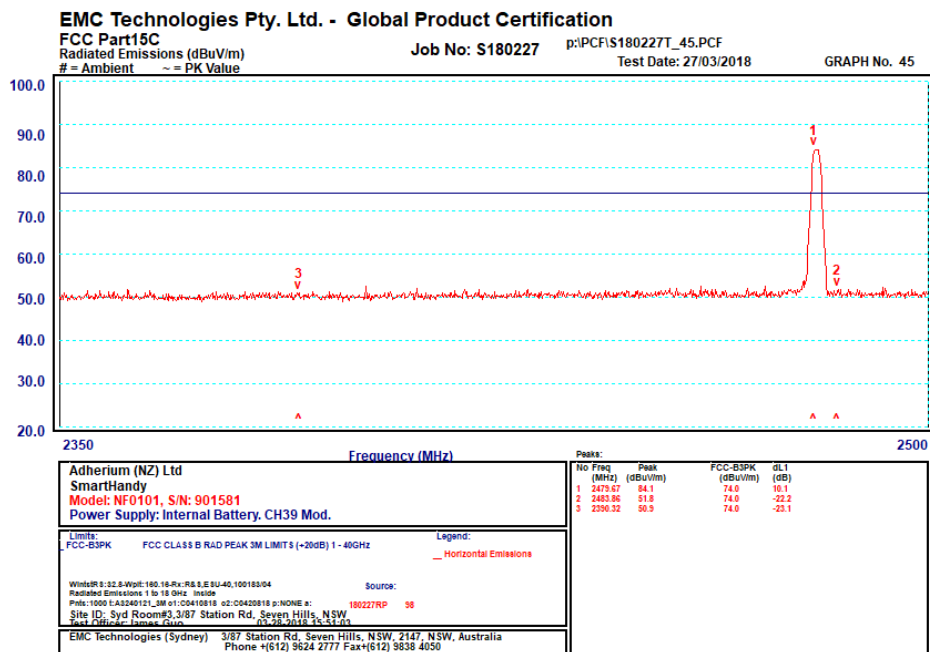


Channel 2480 MHz, Top Band Edge:  
Hopping off, Mark1 and Mark2 being set to around 2390MHz and 2483.5MHz

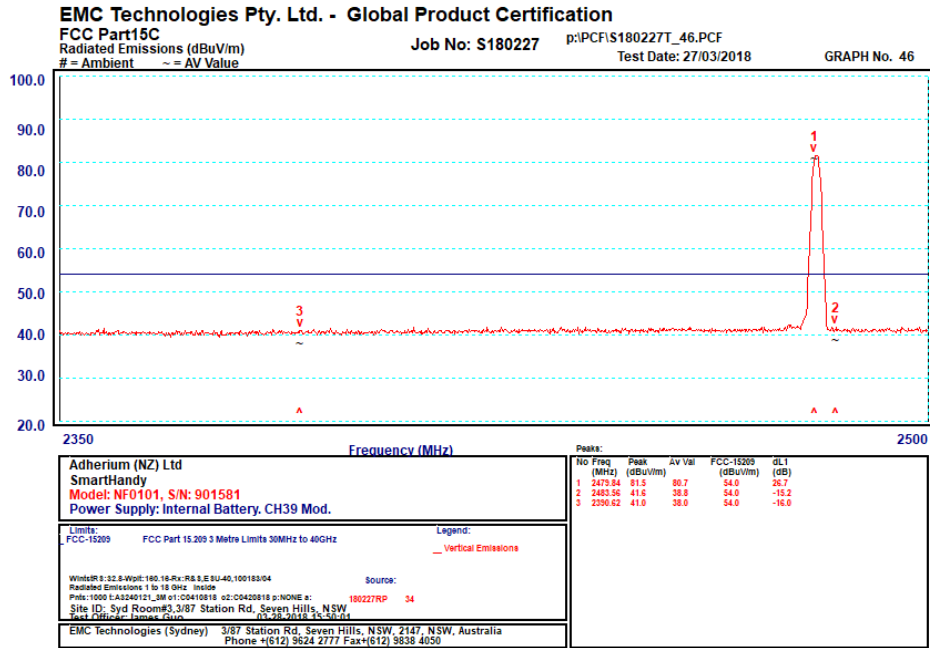
**Peak measurement – Vertical**



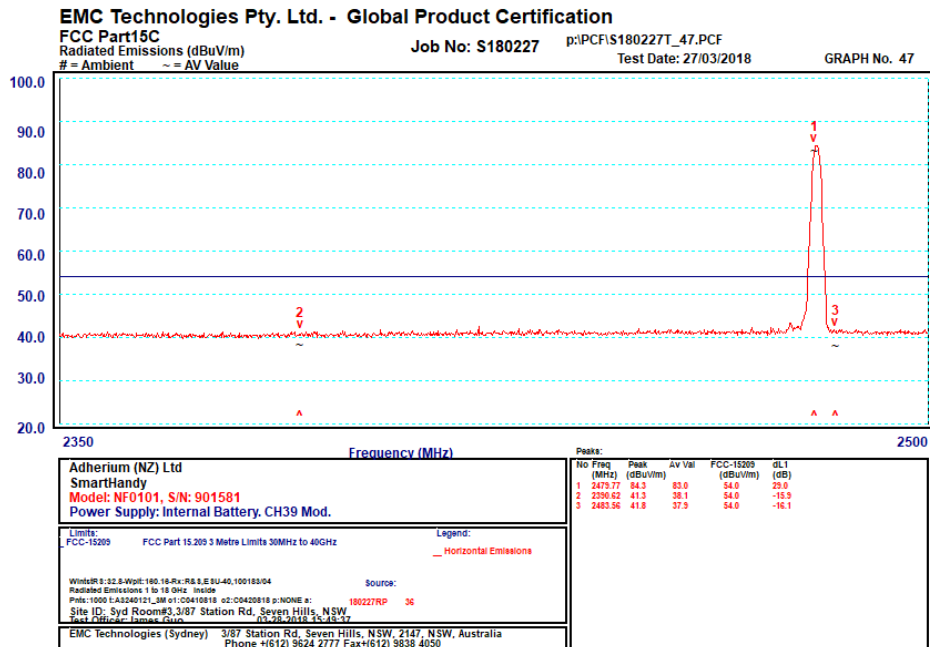
**Peak measurement – Horizontal**



**Average measurement – Vertical**

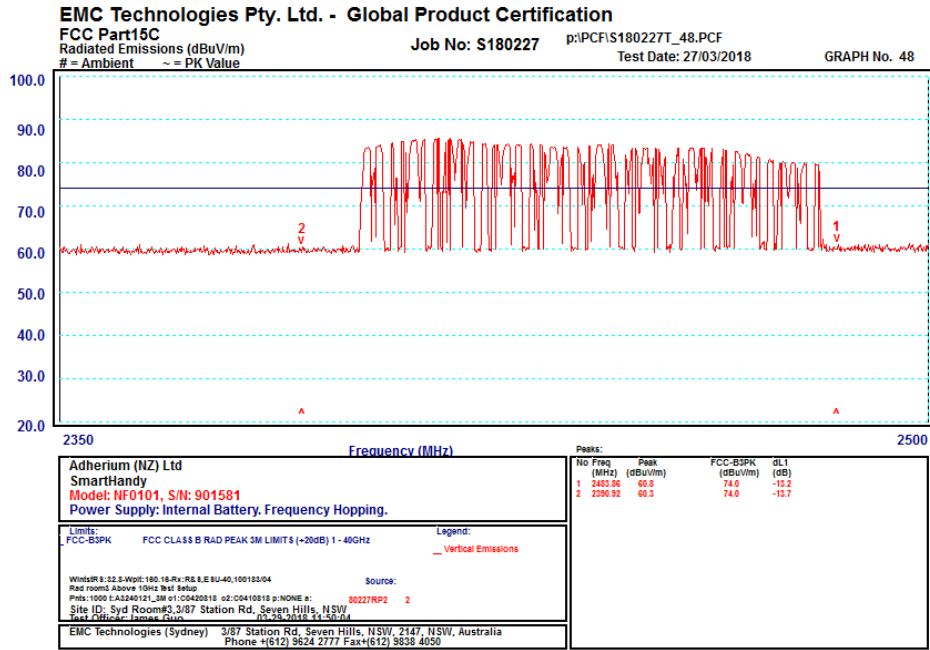


**Average measurement – Horizontal**

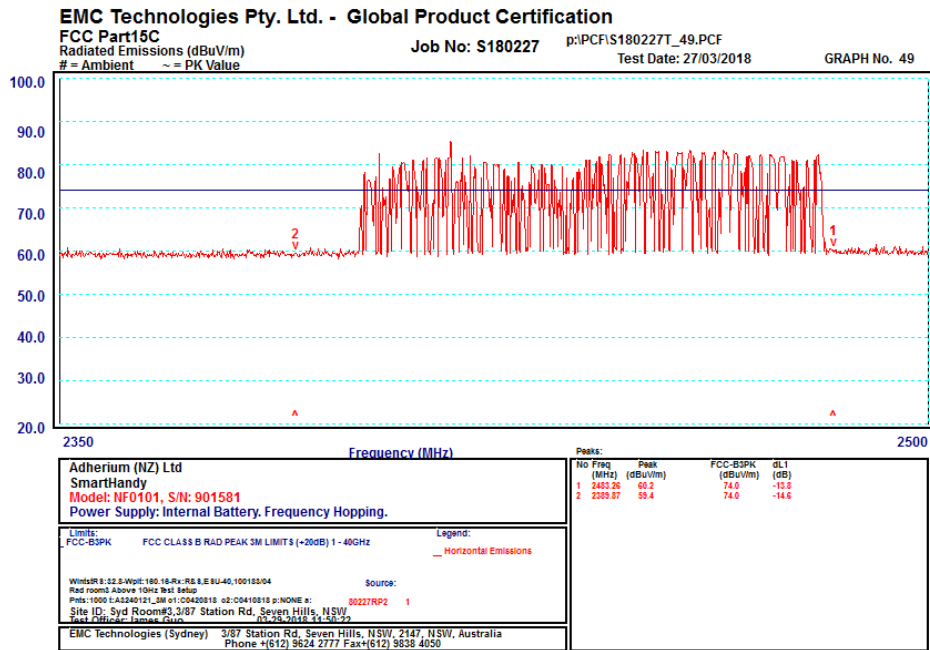


Hopping on, Mark1 and Mark2 being set to around 2390MHz and 2483.5MHz

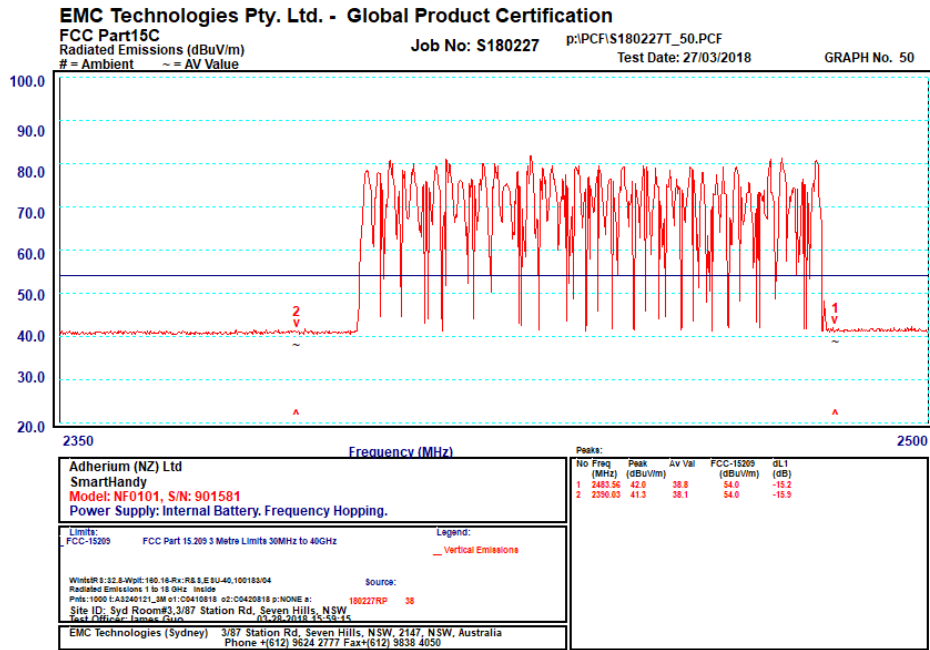
**Peak measurement – Vertical**



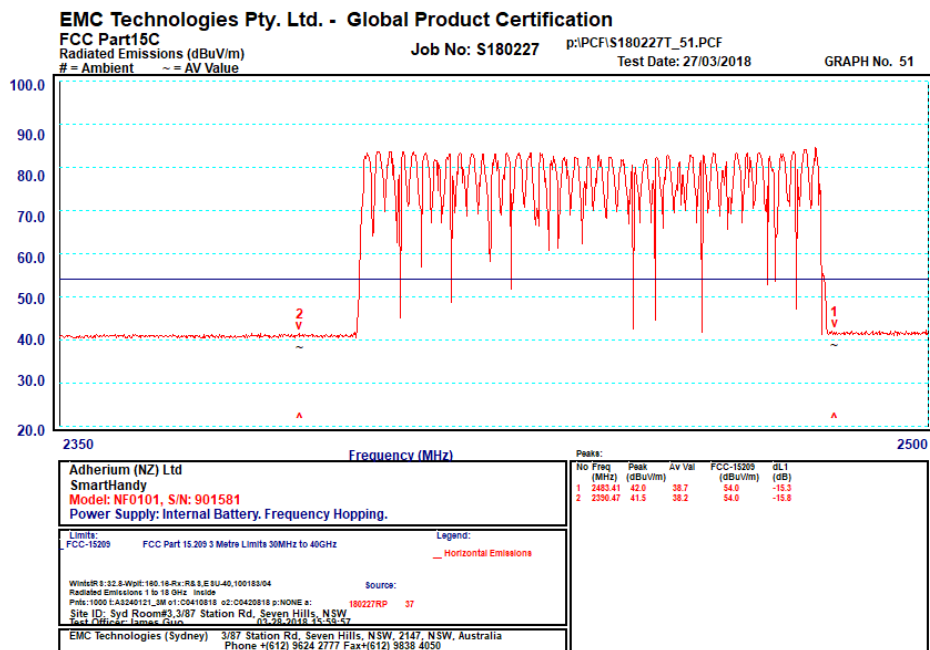
**Peak measurement – Horizontal**



Average measurement – Vertical



Average measurement – Horizontal





### 3.10 §15.247(i) Maximum Permissible Exposure

**Requirement:**

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the commission's guidelines. See §1.1307(b)(1) of this chapter.

Due to the nature of EUT, Calculations were performed according to devices used within 20 cm of person (FCC2.1093) - < 50mm test separation.

KDB 447498 D01 V06 was used to calculate the minimum separation distance allowed before SAR measurements were required.

1-g Head or Body SAR:

$$\left( \frac{\text{max.channel power,mW}}{\text{min.separation distance,mm}} \right) \times \sqrt{f(\text{GHz})} \leq 3.0$$

10-g Extremity SAR:

$$\left( \frac{\text{max.channel power,mW}}{\text{min.separation distance,mm}} \right) \times \sqrt{f(\text{GHz})} \leq 7.5$$

**Result:**

Maximum measured power, E.I.R.P. = -0.57dBm + 1dBi = 0.43dBm = 1.10mW

Minimum separation distance = 5mm

Highest frequency = 2.48 GHz

$$(1.10\text{mW} / 5 \text{ mm}) \times \sqrt{2.48 \text{ GHz}} = 0.35 < 3.0 \text{ and } 7.5$$

**Conclusion:** Complied.

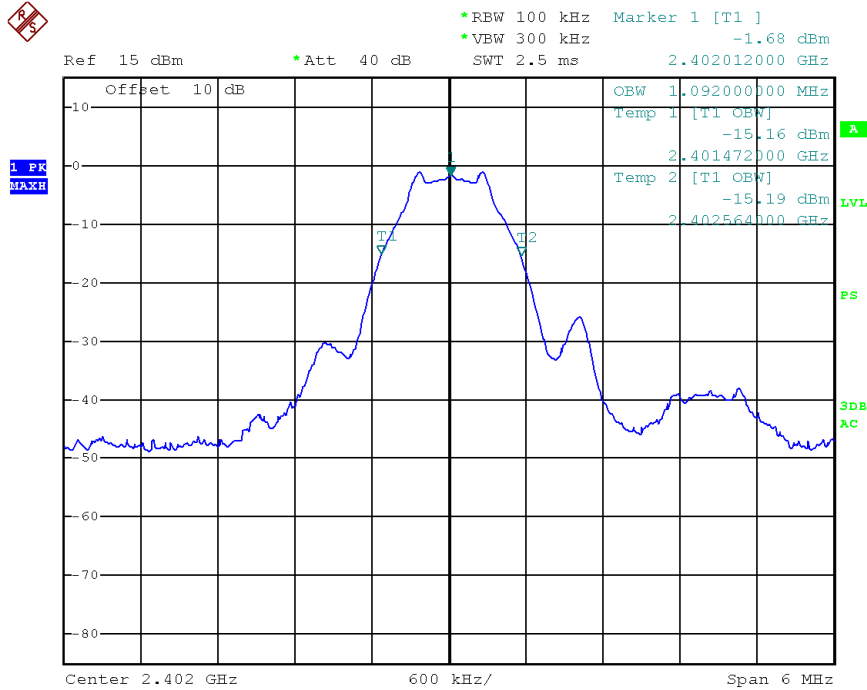
### 3.11 §2.1049 Occupied bandwidth – 99% power

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 [MHz]	Low Frequency [GHz]	High Frequency [GHz]
2402	1.092	2.401472	2.402564
2440	1.092	2.439472	2.440564
2480	1.092	2.479460	2.480552

#### 99% Occupied Bandwidth

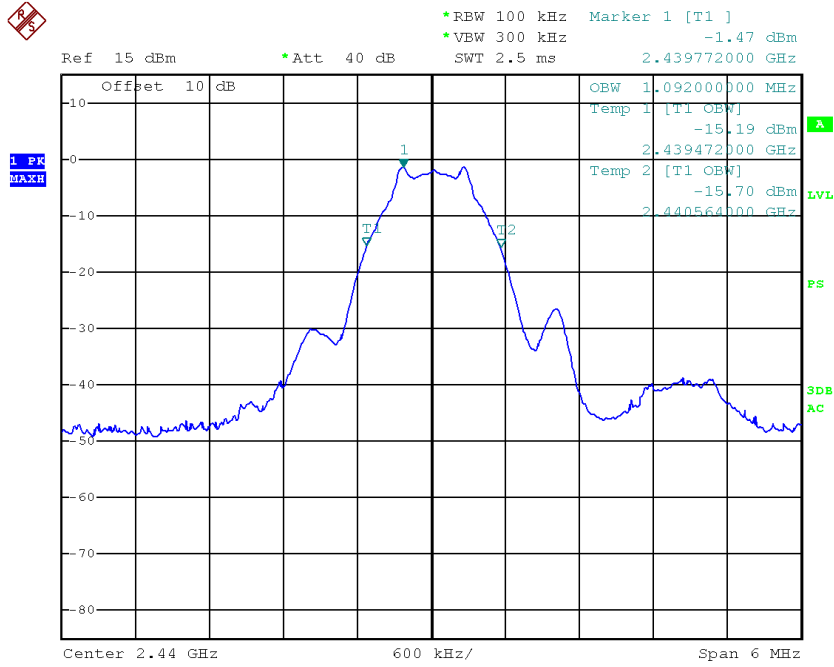
##### Channel 2402



Date: 4.APR.2018 15:10:32

### 99% Occupied Bandwidth

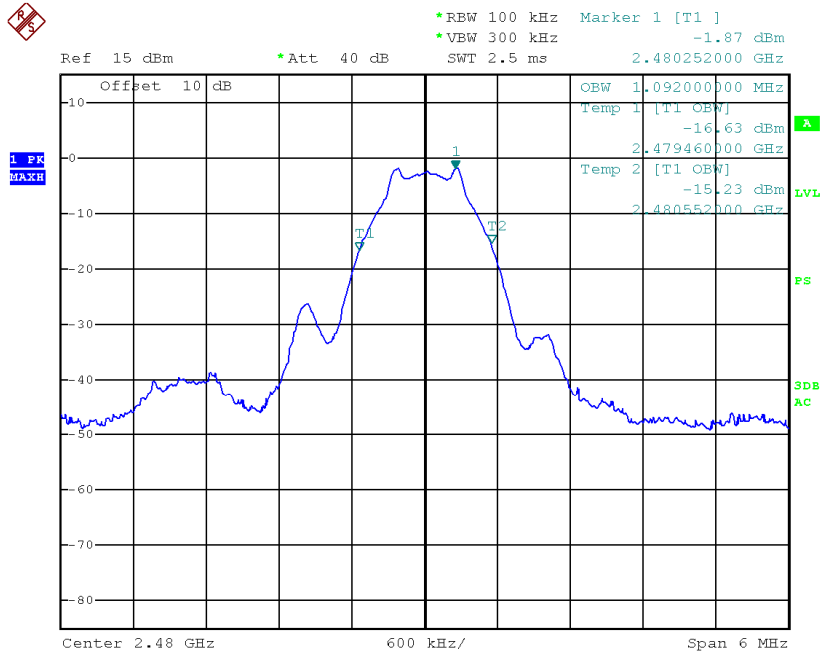
#### Channel 2440



Date: 4.APR.2018 15:13:41

### 99% Occupied Bandwidth

#### Channel 2480



Date: 4.APR.2018 15:16:01

## 4.0 COMPLIANCE STATEMENT

The Medication reminder and actuation monitor for use with medication inhalers, with Model: SmartTouch™ tested on behalf of Adherium(NZ) Ltd. complied with the 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:

<b>Radiated Emissions:</b>	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

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%.