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TEST REPORT

ICT CME DFBT Wireless Lock Product

tested to

47 Code of Federal Regulations

Part 15 - Radio Frequency Devices Subpart C – Intentional Radiators

Section 15.209

Section 15.225

Operation within the band 13.110 -14.010 MHz

Section 15.249

Operation in the band 2400 – 2483.5 MHz

for

Integrated Control Technology

This Test Report is issued with the authority of:

Andrew Cutler- General Manager



All tests reported herein
have been performed in
accordance with the
laboratory's scope of
accreditation

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1. STATEMENT OF COMPLIANCE

The **ICT CME DFBT Wireless Lock Product** complies with FCC Part 15 Subpart C Sections 15.209, 15.225 and 15.249 as an Intentional Radiator when the methods as described in ANSI C63.10 - 2013 are applied.

2. RESULTS SUMMARY

The results from testing carried out on Wednesday May 3rd, 2023 are summarised in the following table:

Clause	Parameter	Result
15.201	Equipment authorisation requirement	Certification required.
15.203	Antenna requirement	Complies. Antennas internal to the device.
15.204	External PA and antenna modifications	Not applicable. No external devices.
15.205	Restricted bands of operation	Complies.
15.207	Conducted limit	Not applicable. Internal battery powered device.
15.209	Radiated emission limits - Emissions < 30 MHz	Complies.
15.209	Radiated emission limits – Emissions > 30 MHz	Complies.
15.225	Radiated emission limits - Fundamental	Complies.
15.225	Frequency stability	Complies.
15.249 (a)	Field strength of fundamental	Complies.
15.249 (a)	Field strength of harmonics	Complies.
15.249 (b)	Fixed, point to point operations	Not applicable.
15.249 (c)	3 metre measurement distance	Noted
15.249 (d)	Spurious emission levels except harmonics	Complies.
15.249 (e)	Detectors above 1000 MHz	Noted.
15.249 (f)	Reference to section 15.37(d)	Noted.

3. INTRODUCTION

This report describes the tests and measurements performed for the purpose of determining compliance with the specification with the following conditions:

The client selected the test sample.

The report relates only to the sample tested.

This report does not contain corrections or erasures.

Measurement uncertainties with statistical confidence intervals of 95% are shown below test results. Both Class A and Class B uncertainties have been accounted for, as well as influence uncertainties where appropriate.

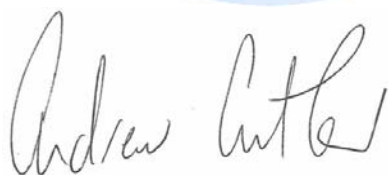
All compliance statements have been made with respect of the specification limit with no reference to the measurement uncertainty.

All testing was carried out as per the standard in the worst-case configuration with no deviations being applied.

In addition this equipment has been tested in accordance with the requirements contained in the appropriate Commission regulations.

To the best of my knowledge, these tests were performed using measurement procedures that are consistent with industry or Commission standards and demonstrate that the equipment complies with the appropriate standards.

I further certify that the necessary measurements were made by EMC Technologies NZ Ltd, 47 MacKelvie Street, Grey Lynn, Auckland, New Zealand.



Andrew Cutler
General Manager
EMC Technologies NZ Ltd

4. CLIENT INFORMATION

Company Name	Integrated Control Technology Limited
Address	4 John Glenn Ave Rosedale
City	Auckland 6032
Country	New Zealand
Contact	Gary Fleming

5. DESCRIPTION OF TEST SAMPLE

Brand Name	ICT
Model Number	CME DFBT
Product	Wireless Lock Product
Manufacturer	Integrated Control Technology Ltd. (ICT)
Country of Origin	New Zealand
Serial Number	Sample not serialised
FCC ID	UAUWIRELESSCML

Product Description:

The device that was tested is a Wireless Door Lock device which is triggered using an access card that operates on 13.560 MHz

The device also contains a Bluetooth device.

The product is powered using a 4.5 Vdc internal battery (3 x 1.5 Vdc dry cell batteries) this is replaced every two or three years.

6. SETUPS AND PROCEDURES

Standard

The sample was tested in accordance with 47 CFR Part 15 Subpart C.

Methods and Procedures

The measurement methods and procedures as described in ANSI C63.10 – 2013 were used.

Section 15.201: Equipment authorisation requirement

Certification as detailed in Subpart J of Part 2 is required for this device.

Section 15.203: Antenna requirement

This device has an internal antenna for the 13.560 MHz transmitter.

This device has internal antennas for the 2.4 GHz Bluetooth transmitter.

Result: Complies.

Section 15.204: External radio frequency power amplifiers and antenna modifications

It is not possible to attach an external power amplifier to this transmitter.

Result: Complies.

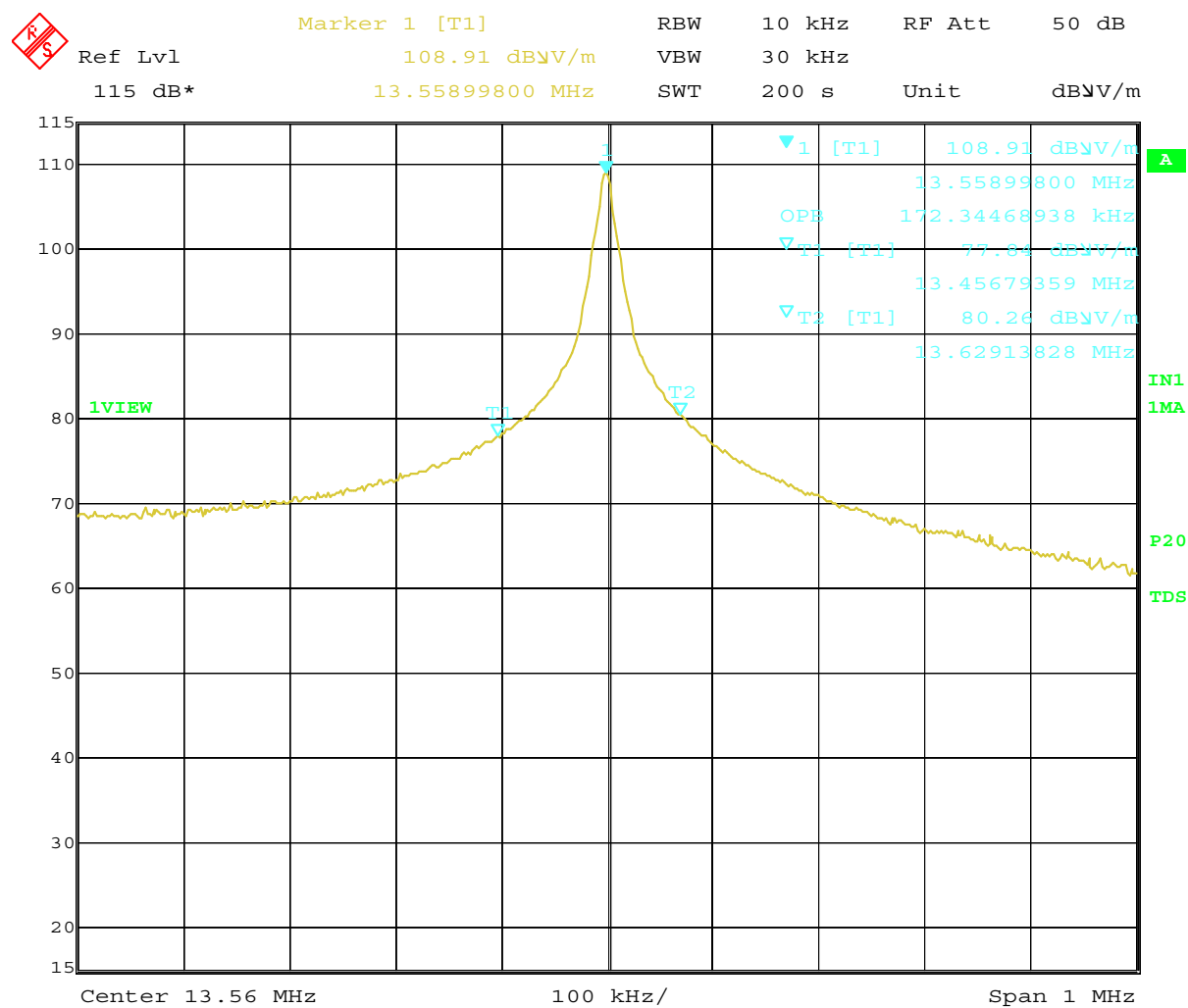
Section 15.205: Restricted bands of operation

The transmitter transmits on 13.560 MHz.

This device would therefore fall into the band of 13.110 – 14.010 MHz that is covered by Section 15.225.

Measurements were made at the test site using a spectrum analyser.

The plot below shows a 99% occupied bandwidth of 172.3447 kHz.

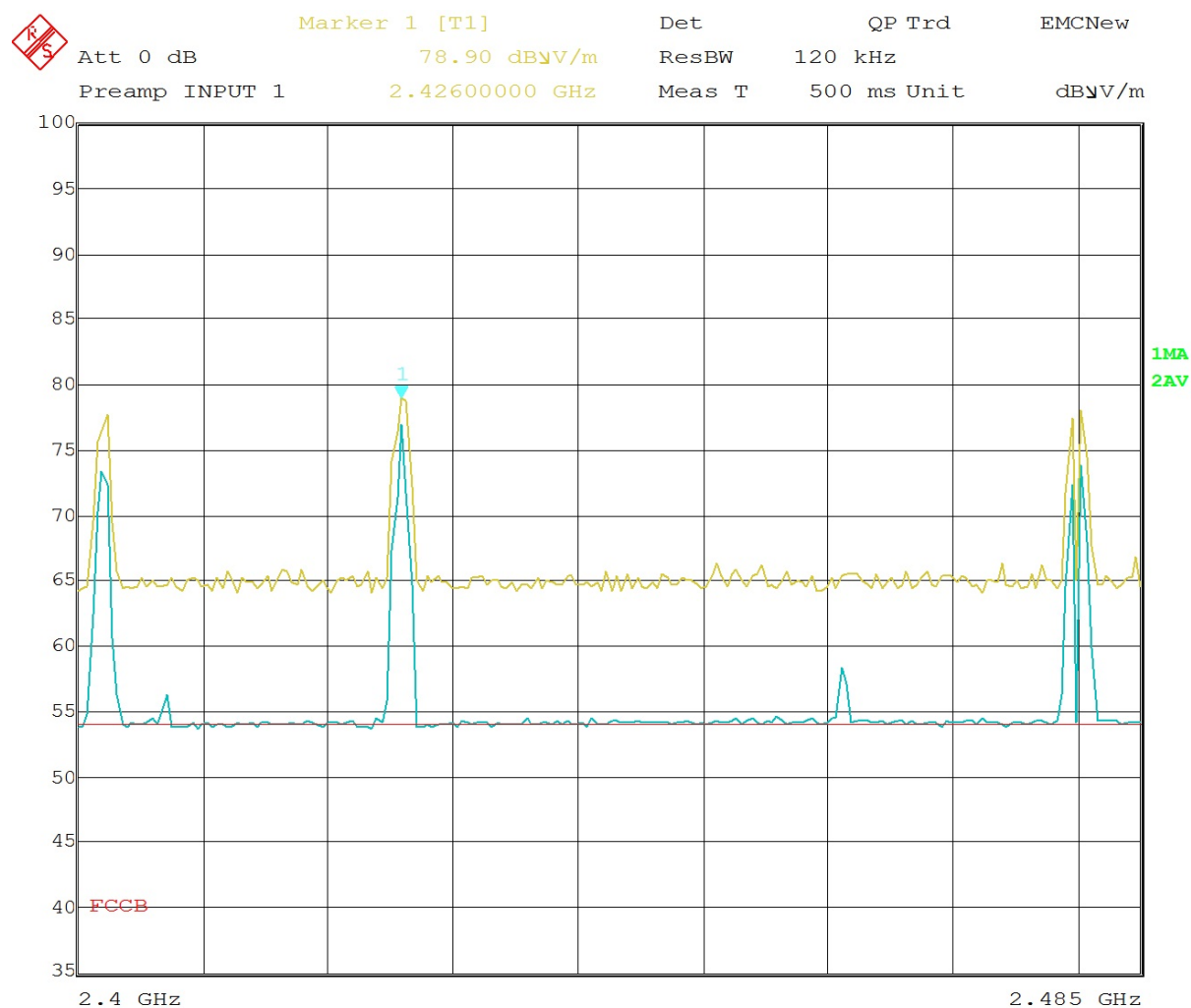


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The Bluetooth transmitter was observed transmitting on 2402, 2426 and 2480 MHz.

This device would therefore fall into the band of 2400.0 – 2483.5 MHz band that is covered by Section 15.249.

This is shown below



Result: Complies

Section 15.207: Conducted emissions testing

Testing not applicable as this device is powered using an internal battery supply at 4.5 Vdc (3 x 1.5 Vdc dry cell batteries) that is removed when voltage decreases.

No provisions have been made for the attachment of a charger.

Device cannot be directly or in-directly connected to the public AC mains supply.

Result: Not applicable



Section 15.209: Radiated Emission Limits, General Requirements

Radiated emissions testing was carried out over the frequency range of 100 kHz to 25,000 MHz as the device contains a Bluetooth Transmitter.

Testing was carried out at the laboratory's open area test site - located at Driving Creek, Orere Point, Auckland, New Zealand.

An enclosure containing absorber material, Panashield HYB-NF-12, has been placed between the turntable and the measurement antenna for when measurements are made above 1 GHz.

This material has no absorbing affect below 1 GHz with site verification measurements confirming this.

Testing carried out when the device was placed in the centre of the table standing upright.

Below 1000 MHz the top of the test table was 80 cm above the test site ground plane.

Above 1000 MHz the top of the test table was 150 cm above the test site ground plane

Device tested has a 13.560 MHz card reader that was operating continuously.

The device also supports Bluetooth functionality in the 2.4 GHz band which was active during the test.

Device was tested when powered using an internal 4.8 Vdc battery supply.

The lock was periodically activated using a supplied swipe card which caused the lock to open and close which confirmed continuing correct operations.

When an emission is located, it is positively identified and its maximum level is found by rotating the automated turntable, and by varying the antenna height, where appropriate, with an automated antenna tower.

Below 30 MHz a magnetic loop is used with the centre of the loop being 1 metre above the ground with a test distance of 10 metres being used.

Between 100 – 490 kHz a Peak and Average detector with a bandwidth of 9 kHz was used

Between 490 kHz – 30 MHz a Quasi Peak detector with a bandwidth of 9 kHz was used.

Above 30 MHz the emission is measured in both vertical and horizontal antenna polarisations, where appropriate at a test distance of 3 metres.

A quasi peak detector with a 120 kHz bandwidth was used between 30 – 1000 MHz

Above 1000 MHz an Average and a Peak detector were used which used a bandwidth of 1 MHz

Section 15.209: Radiated Emission Limits, General Requirements cont.

The emission level was determined in field strength by taking the following into consideration:

$$\text{Level (dB}\mu\text{V/m)} = \text{Receiver Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Coax Loss (dB)}$$

For example, if an emission of 30 dB μ V was observed at 30 MHz.

$$45.5 \text{ dB}\mu\text{V/m} = 30.0 \text{ dB}\mu\text{V} + 14 \text{ dB/m} + 1.5 \text{ dB}$$

Result: Complies

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (30 – 25000 MHz) $\pm 4.1 \text{ dB}$
- Free radiation tests (100 kHz – 30 MHz) $\pm 4.8 \text{ dB}$



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Section 15.209: 13.560 MHz Transmitter below 30 MHz Spurious Emissions Measurements

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
27.120	15.5	48.6	33.1

Testing was carried out when the device was transmitting continuously.

Magnetic loop measurements were attempted at a distance of 10 metres.

A receiver using a Quasi Peak detector with a 9 kHz bandwidth was used between 490 kHz – 30.0 MHz.

The 30 metre limit between 1.705 MHz – 30 MHz has been scaled by a factor of 40 dB per decade, as per section 15.31 (f) (2).

The limit at 27.120 MHz when measured at 30 metres is 30 μ V/m or 29.54 dB μ V/m.

Therefore when scaled the limit at 10 metres will be 48.6 dB μ V/m as detailed below.

$$\begin{aligned} &= 29.54 \text{ dB}\mu\text{V/m} + -40 \text{ dB/decade} * (\log(10) - \log(30)) \\ &= 29.54 \text{ dB}\mu\text{V/m} + -40 \text{ dB/decade} * (1.000 - 1.477) \\ &= 29.54 \text{ dB}\mu\text{V/m} + -40 \text{ dB/decade} * -0.477 \\ &= 29.54 \text{ dB}\mu\text{V/m} + 19.08 \\ &= 48.6 \text{ dB}\mu\text{V/m} \end{aligned}$$

The spurious emission observed does not exceed the level of the fundamental emission

Result: Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (100 kHz – 30 MHz) $\pm$ 4.8 dB

Section 15.209: Spurious Emissions (above 30 MHz)

Measurements between 30 – 25000 MHz have been made at a distance of 3 metres.

A receiver using a Quasi Peak detector with a 120 kHz bandwidth was used between 30 – 1000 MHz

Above 1000 MHz a Peak detector and an Average detector with a 1 MHz bandwidth was used.

The limits as described in Section 15.209 have been applied.

Frequency (MHz)	Vertical (dBµV/m)	Horizontal (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Antenna Pol	Detector	BW (kHz)
31.460	26.9	-	40.0	13.1	Vertical	QP	120

Above 1000 MHz the only emissions observed were from the Bluetooth transmitter that was observed advertising on 2402, 2426 and 2480 MHz.

All other emissions observed had a margin to the limit that exceeded 15 dB when measurements were made between 30 – 25000 MHz using both vertical and horizontal polarisations.

Result: Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (30 MHz – 25000 MHz) ± 4.1 dB

Section 15.225: Fundamental Emission:

Measurements were made using a magnetic loop antenna and a receiver using a Quasi Peak detector using a 9 kHz bandwidth

Measurements were made at a distance of 10 metres with the limit being determined by using the extrapolation factor of 40 dB per decade limit, as detailed in section 15.31 f (2).

The limit at 30 m at 13.560 MHz is 15,848 uV/m or 84.0 dBuV/m.

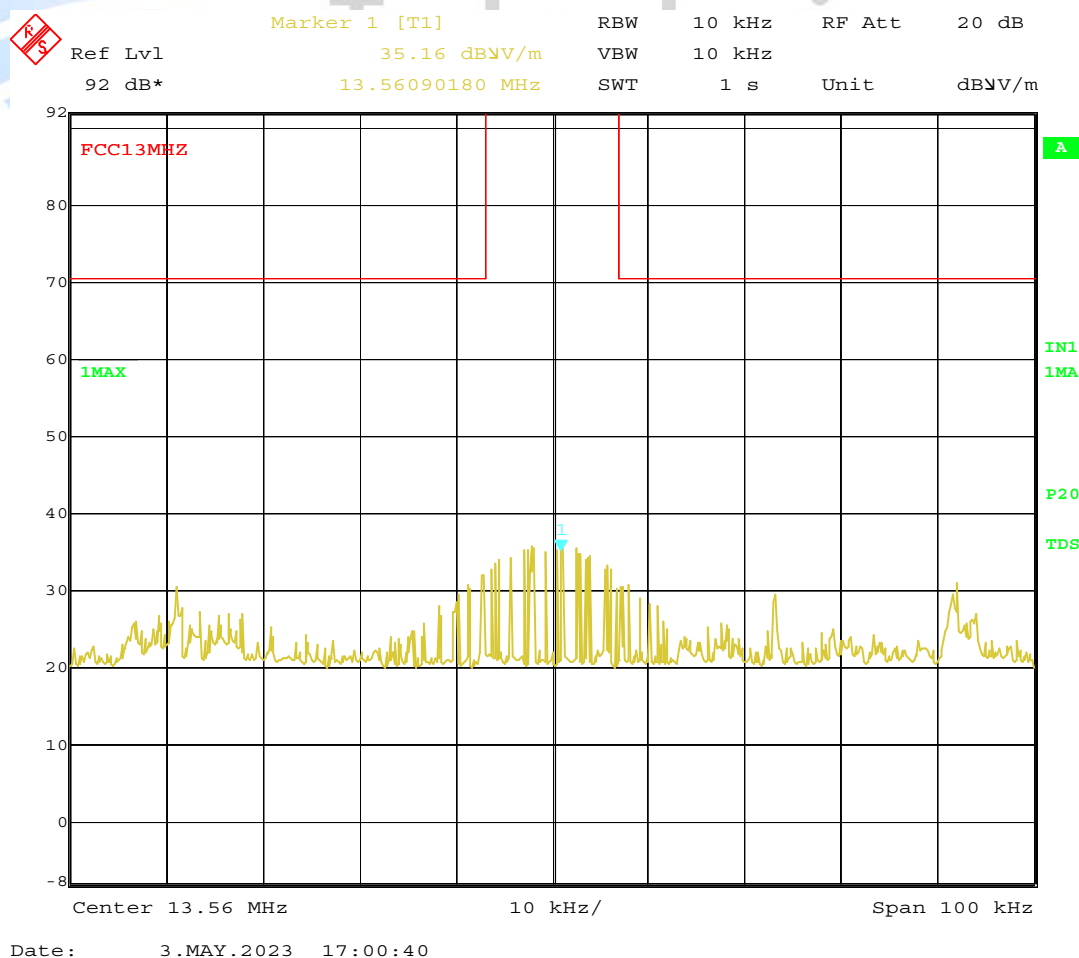
Applying the extrapolation factor of 40 dB/ per decade, the limit is 103.1 dBuV/m.

$$\begin{aligned} &= 84.0 \text{ dBuV/m} + -40 \text{ dB/decade} * (\log(10) - \log(30)) \\ &= 84.0 \text{ dBuV/m} + 19.08 \\ &= 103.1 \text{ dBuV/m} \end{aligned}$$

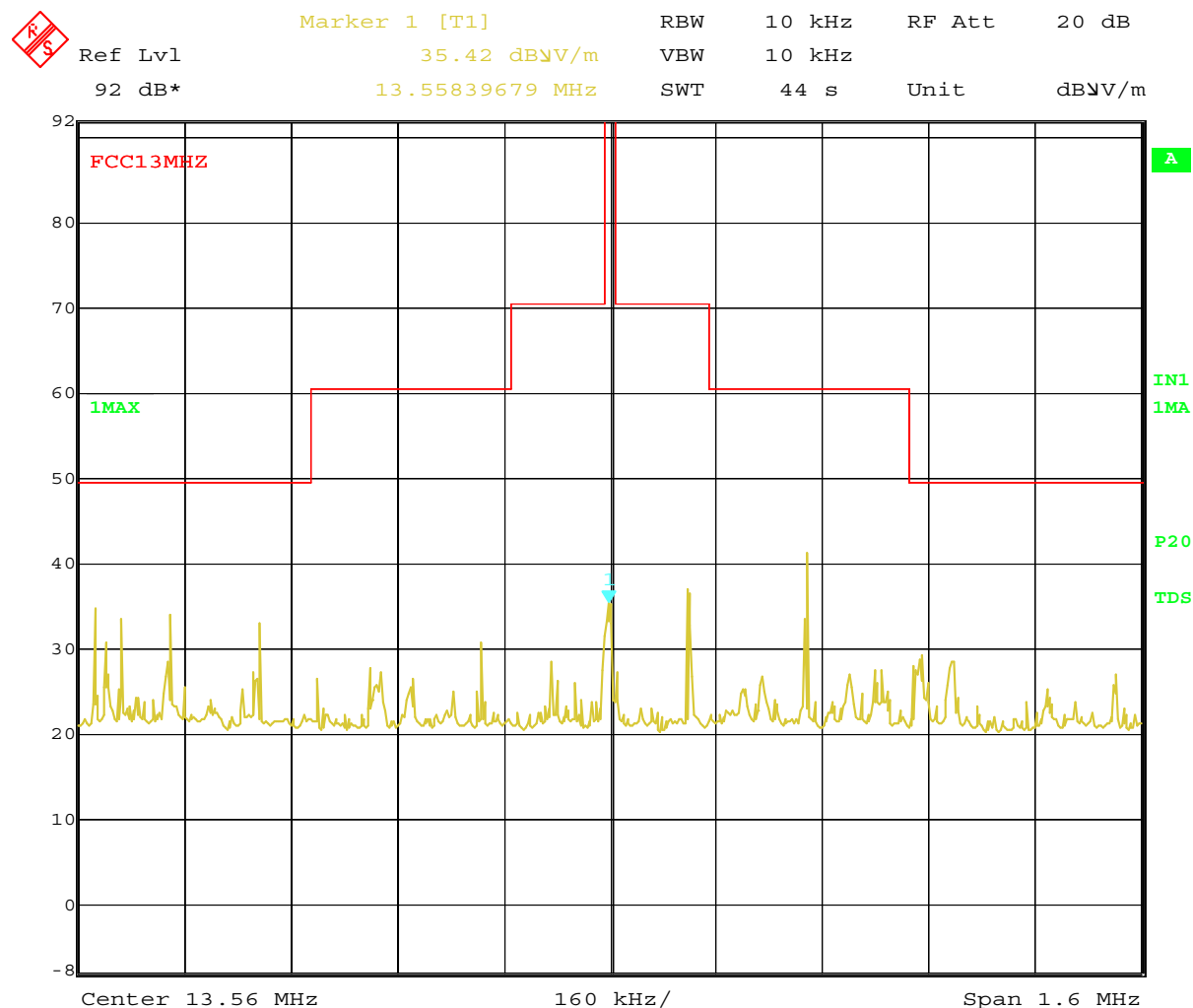
As a worst case testing was also carried out when the device was transmitting continuously when the 4.5 Vdc supply to the device was varied by +/- 15%.

Frequency (MHz)	Level (dBuV/m)	Distance (metres)	Limit (dBuV/m)	Voltage (Vdc)	Margin (dB)
13.560	35.7	10.0	103.1	3.8	62.0
13.560	35.7	10.0	103.1	4.5	62.0
13.560	35.7	10.0	103.1	5.2	62.0

A spectrum analyser plot showing the carrier and modulation peaks within +/- 50 kHz.



A spectrum analyser plot showing the carrier and modulation peaks within +/- 800 kHz.



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Measurement was made at the test site and due to the time of day a number of ambient emissions can be seen which are not from the device under test

Result: Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (100 kHz – 30 MHz) ± 4.8 dB

Section 15.225: Frequency Tolerance:

The frequency tolerance of the carrier is required to be +/- 0.01% of operating frequency when the temperature is varied between -20 degrees C and +50 degrees C.

The device operates nominally on 13.560 MHz which gives a frequency tolerance of +/- 1,356.0 Hz.

Temperature (°C)	Frequency (MHz)	Difference (Hz)
50.0	13.559 400	-600
40.0	13.560 100	+100
30.0	13.560 000	+000
20.0	13.560 300	+300
10.0	13.559 900	-100
0.0	13.560 000	+000
-10.0	13.560 100	+100
-20.0	13.560 200	+200

The 4.5 Vdc supply voltage was varied by +/- 15% at 20 degrees C (ambient).

Voltage (Vdc)	Frequency (MHz)	Difference (Hz)
3.8	13.560 000	+000
4.5	13.560 300	+300
5.2	13.559 700	-300

Result: Complies.

Measurement uncertainty with a confidence interval of 95% is:

Frequency tolerance $\pm$ 50 Hz

Section 15.249 (a) – Field Strength of the Fundamental and Harmonics

Radiated emission measurements were carried out with the limits as per section 15.249 (a) being applied to the Fundamental and Harmonics of each transmitter.

Testing was carried out at EMC Technologies (NZ) Ltd Open Area Test Site, which is located at Driving Creek, Orere Point, Auckland.

An enclosure containing absorber material, Panashield HYB-NF-12, has been placed between the turntable and the measurement antenna for when measurements are made above 1 GHz.

This material has no absorbing affect below 1 GHz with site verification measurements.

Below 1000 MHz the transmitter was placed on the test table top which was a total of 0.8 m above the test site ground plane.

Above 1000 MHz the transmitter was placed on the test table top which was a total of 1.5 m above the test site ground plane.

Measurements of the radiated field were made 3 metres from the transmitting antenna.

Measurements below 1000 MHz were made using a Quasi Peak Detector with a bandwidth of 120 kHz.

Measurements above 1000 MHz were made using an average detector with a bandwidth of 1.0 MHz and also a peak detector with a bandwidth of 1.0 MHz.

When an emission is located, it is positively identified and its maximum level is found by rotating the automated turntable, and by varying the antenna height with an automated antenna tower.

All emissions were measured in both vertical and horizontal antenna polarisations.

The emission is measured in both vertical and horizontal antenna polarisations with no measurements were made above the 10th harmonic.

Testing was carried out when the device was powered using a 12 Vdc battery.

Testing was carried out with the device being placed in the centre of the test table standing vertically upright.

The device was tested when transmitting continuously on 2402, 2426 and 2480 MHz

The emission level is determined in field strength by taking the following into consideration:

Level (dBμV/m) = Receiver Reading (dBμV) + Antenna Factor (dB/m) + Coax Loss (dB) – Amplifier Gain (dB)

Fundamental Emission

Testing was carried out as detailed below

Frequency (MHz)	Vertical (dB μ V/m)	Horizontal (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol.	Detector	BW
2402.000	84.8	82.4	114.0	29.2	Vertical	Peak	1 MHz
2402.000	53.8	53.8	94.0	40.2	Vertical	Average	1 MHz
-	-	-	-	-	-	-	-
2426.000	84.8	84.1	114.0	29.2	Vertical	Peak	1 MHz
2426.000	54.1	54.1	94.0	39.9	Vertical	Average	1 MHz
-	-	-	-	-	-	-	-
2480.000	85.4	87.1	114.0	26.9	Horizontal	Peak	1 MHz
2480.000	54.2	54.6	94.0	39.4	Horizontal	Average	1 MHz

Section 15.249 specifies a limit of 50 mV/m (94 dB μ V/m) when an average detector is used for devices operating in the band of 2400 – 2483.5 MHz.

A peak limit of 114 dB μ V/m has also been applied.

This limit has been converted to dB μ V/m using the formula $20 * (\log 0.050 / 0.000001)$

Result: Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (30 – 25,000 MHz) ± 4.1 dB

Spurious Emissions

Transmitting on 2402 MHz

Frequency (MHz)	Vertical (dBuV/m)	Horizontal (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna	BW
4804.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
4804.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
7206.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
7206.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
9608.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
9608.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
12010.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
12010.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
14413.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
14413.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
16814.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
16814.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
19216.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
19216.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
21618.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
21618.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
24020.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
24020.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz

Spurious Emissions

Transmitting on 2426 MHz

Frequency (MHz)	Vertical (dBuV/m)	Horizontal (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna	BW
4852.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
4852.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
7278.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
7278.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
9704.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
9704.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
12130.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
12130.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
14556.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
14556.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
16982.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
16982.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
19408.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
19408.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
21834.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
21834.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
24260.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
24260.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz

Spurious Emissions

Transmitting on 2480 MHz

Frequency (MHz)	Vertical (dBuV/m)	Horizontal (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna	BW
4960.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
4960.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
7440.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
7440.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
9920.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
9920.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
12400.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
12400.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
14880.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
14880.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
17360.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
17360.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
19840.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
19840.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
22320.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
22320.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz
-	-	-	-	-	-	-	-
24800.000	< 59	< 59	74.0	> 15	Peak	Vert/Horiz	1 MHz
24800.000	< 46	< 46	54.0	> 8	Average	Vert/Horiz	1 MHz

Measurements were performed at a distance of 3 metres using vertical and horizontal polarisations with a peak and an average detector with a 1 MHz bandwidth being used.

As per section 15.249 a limit of 500 uV/m applies to the harmonic emissions when an average detector is used.

This limit has been converted to dBuV/m using the formula $20 * (\log 500)$ with a factor of + 20 dB being added to determine the peak limit.

Result: Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (30 – 25,000 MHz) ± 4.1 dB

Section 15.215 (c) – Additional Provisions to the General Radiated Emissions Limitations

The device operates in the 2400 – 2483.5 MHz band.

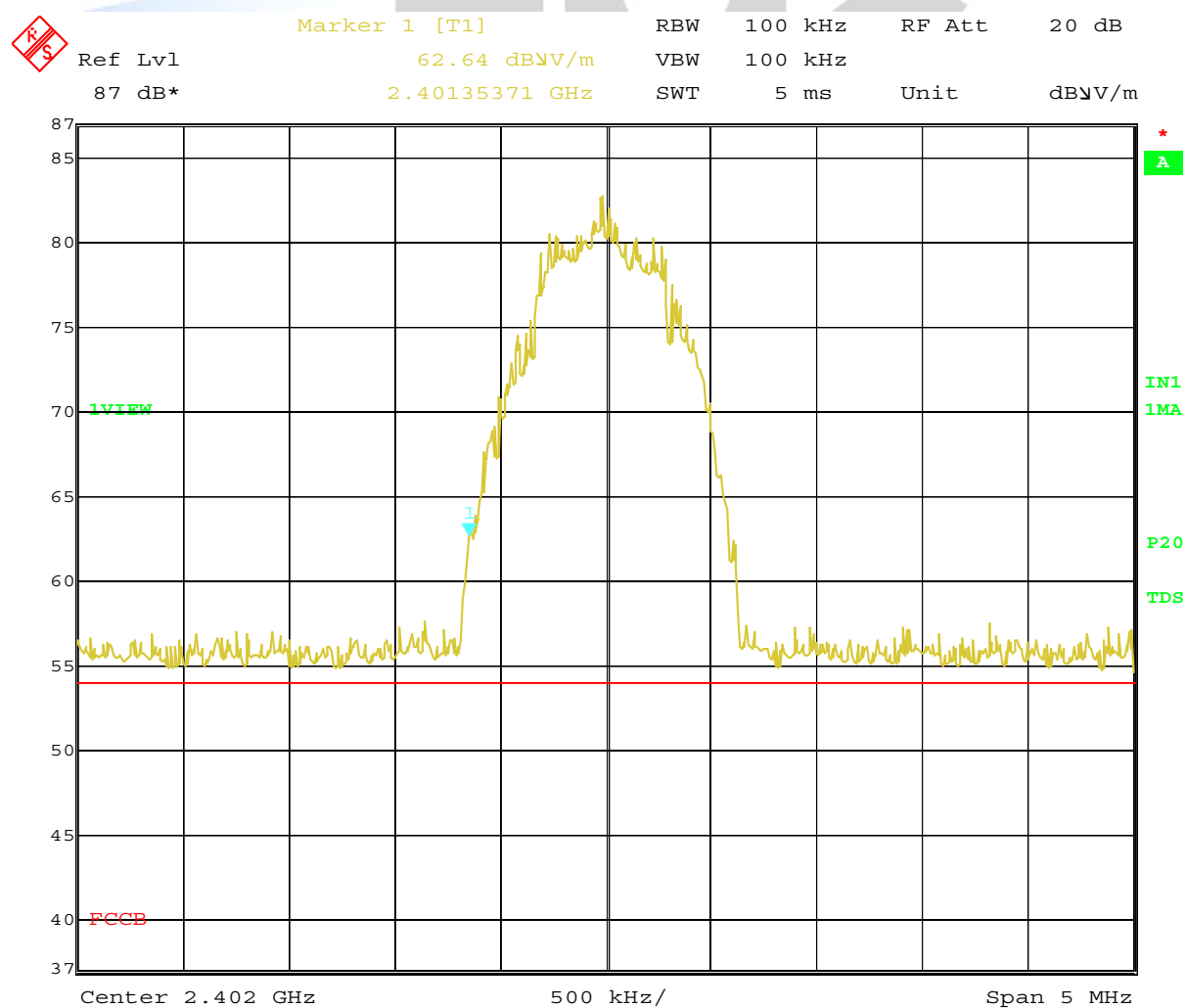
Relative spectrum mask measurements have been made when the device was operating on 2402 MHz, 2426 MHz and 2480 MHz

Measurements made at the -20 dB points.

Frequency (MHz)	F low (MHz)	F high (MHz)
2402.000	2401.3537	-
2480.000	-	2480.6162

The device can be seen to stay within the band of 2400 – 2483.5 MHz at the -20 dB points

Transmitting on 2402 MHz

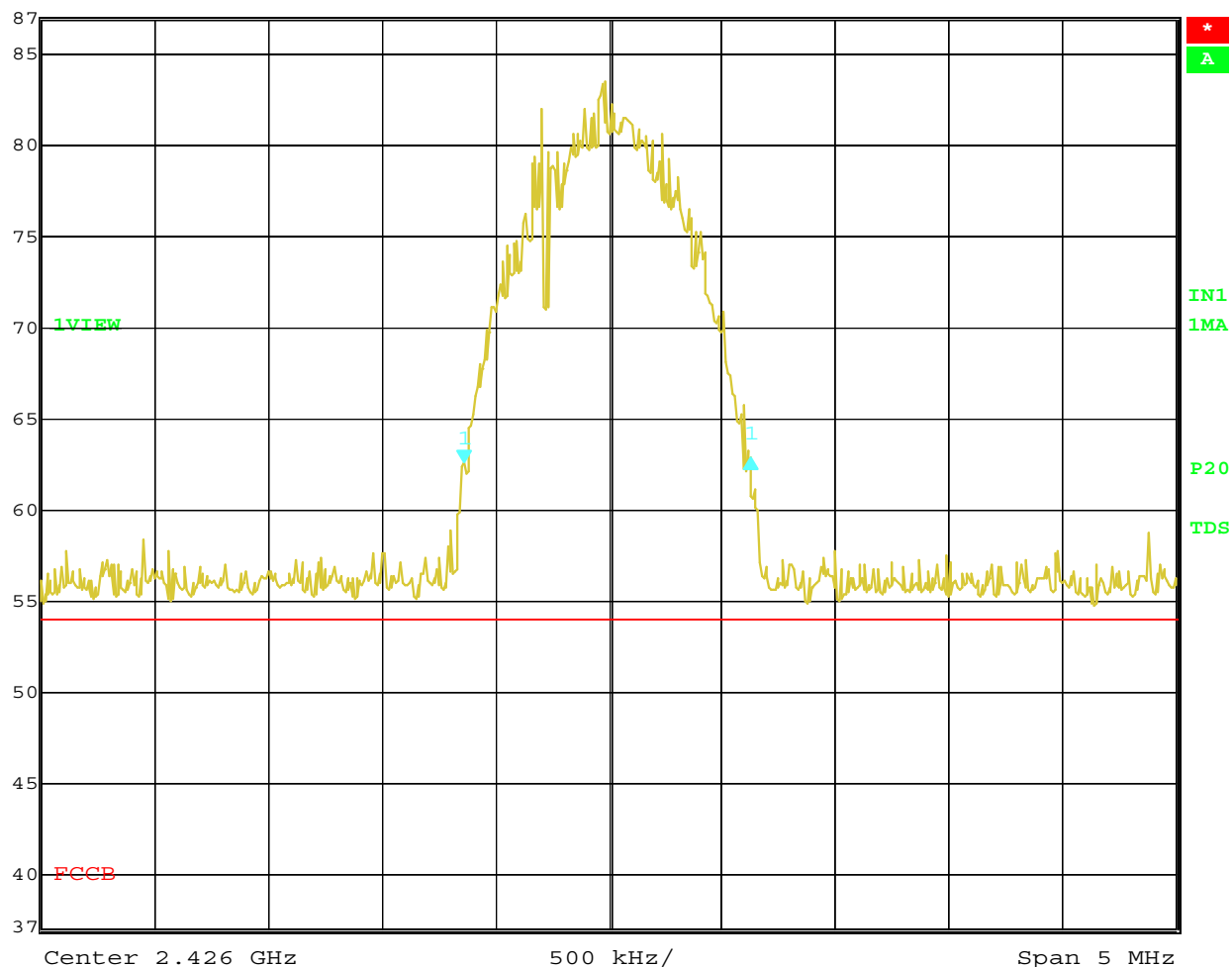


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Transmitting on 2426 MHz. 20 dB bandwidth = 1.26 MHz



Ref Lvl 87 dB* Delta 1 [T1] 0.27 dB RBW 100 kHz RF Att 20 dB
 1.26252505 MHz VBW 100 kHz Unit dBμV/m
 SWT 5 ms

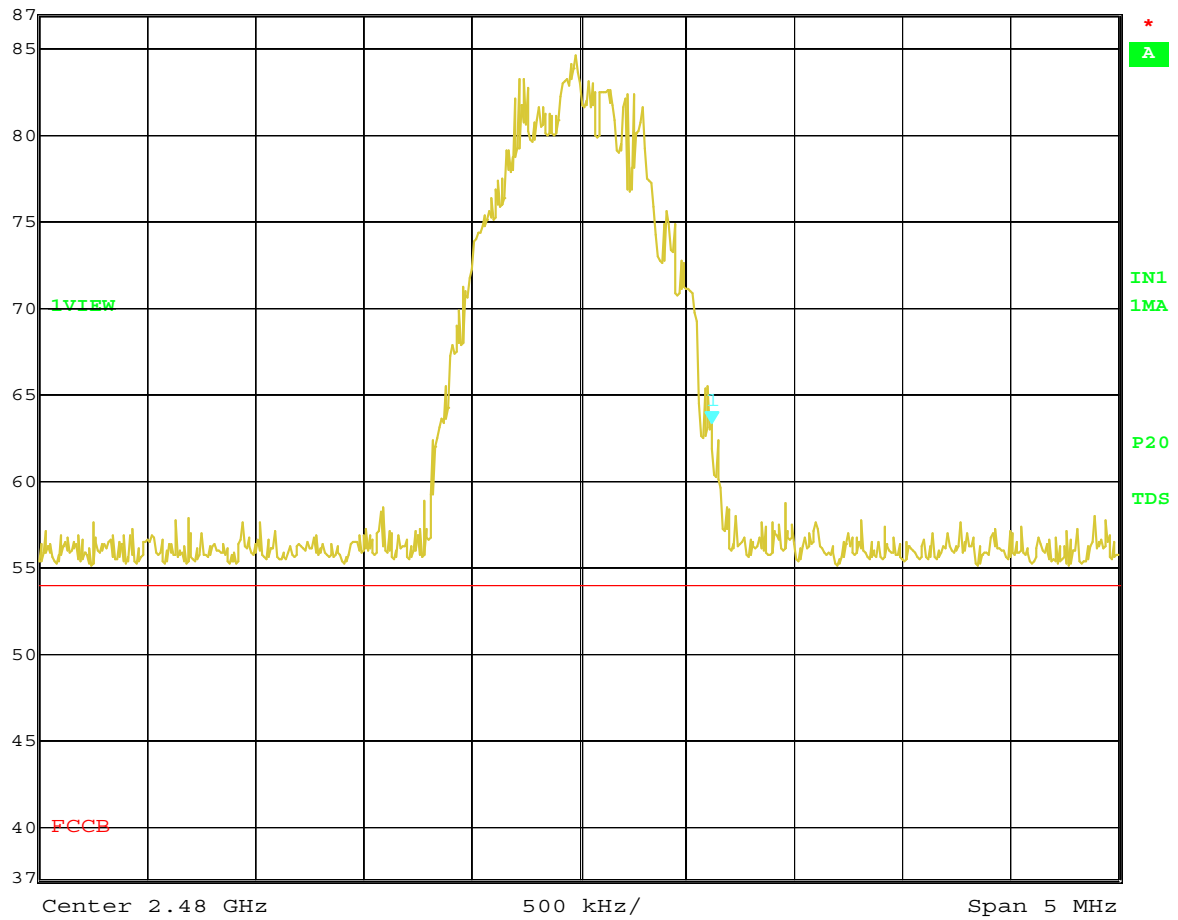


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Transmitting on 2480 MHz



Ref Lvl 87 dB* Marker 1 [T1] 63.30 dB μ V/m 2.48061623 GHz RBW 100 kHz RF Att 20 dB
VBW 100 kHz Unit dB μ V/m
SWT 5 ms



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Global Product Certification

7. TEST EQUIPMENT USED

Instrument	Manufacturer	Model	Serial No	Asset Ref	Cal Due	Period
Aerial Controller	EMCO	1090	9112-1062	RFS 3710	Not applic	N/a
Aerial Mast	EMCO	1070-1	9203-1661	RFS 3708	Not applic	N/a
Biconical Antenna	Schwarzbeck	BBA 9106	-	3802	23 Nov 2023	3 years
Horn Antenna	EMCO	3116	9511-4629	E1526	3 April 2025	3 years
Log Periodic	Schwarzbeck	VUSLP 9111B	9111-112	EMC4025	16 Nov 2023	3 years
Loop Antenna	EMCO	6502	9003-2485	3798	26 Aug 2023	3 years
Mains Network	R & S	ESH2-Z5	881362/032	3628	2 Jun 2024	2 years
Receiver	R & S	ESHS 10	828404/005	3728	23 Nov 2023	2 years
Receiver	R & S	ESIB 40	100295	INV0818	03 Jun 2023	2 years
Turntable	EMCO	1080-1-2.1	9109-1578	RFS 3709	Not applic	N/a
VHF Balun	Schwarzbeck	VHBB9124	9124-420	3801	23 Nov 2023	3 years
Heliac cable	Andrews	L6PNM-RPD	22869	Oats Cable	30 Dec 2023	1 year
Succoflex cable	Huber and Suhner	104 3m n-n	339901/4	13938	10 Nov 2023	1 year
Succoflex cable	Huber and Suhner	104 1m n-n	340521/4	13937	10 Nov 2023	1 year
Power Supply	APT	7008	4170003	-	Not applic	N/a
Thermal chamber	Contherm	M180F	86025	N/a	N/a	N/a
Thermometer	DSIR	RT200	35	EMC4029	21 April 2027	5 years
Voltage Variac	Powerteck	SRV-5	RFS3800	-	-	N/a

At the time of testing all equipment was within calibration.

8. ACCREDITATIONS

Testing was carried out in accordance with EMC Technologies NZ Ltd designation as a FCC Accredited Laboratory by International Accreditation New Zealand, designation number: NZ0002 under the APEC TEL MRA.

All testing was carried out in accordance with the terms of EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.

All measurement equipment has been calibrated in accordance with the terms of the EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.

International Accreditation New Zealand has International Laboratory Accreditation Council (ILAC) Mutual Recognition Arrangements for testing and calibration with various accreditation bodies in a number of economies.

This includes NATA (Australia), UKAS (UK), SANAS (South Africa), NVLAP (USA), A2LA (USA), SWEDAC (Sweden).

Further details can be supplied on request.

9. PHOTOGRAPHS





Radiated Emissions Test Setup

