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RADIO REPORT FOR CERTIFICATION
to
47 CFR Part 15 Subpart C (Section 15.247) and RSS-247 Issue 2, February 2017

Test Report Number: S200928-1 v2

FCC ID: S7R-LORIKEETD2
IC ID: 25706-LORIKEETD2

Tested For: Taggle Systems Pty Ltd
Device under Test: Lorikeet Encoder
Model Number: Lorikeet Encoder
Serial Number: 7FF700

Issue Date: 18th January 2021

RADIO REPORT
FOR CERTIFICATION

47 CFR Part 15 Subpart C (Section 15.247) and
RSS-247 Issue 2, February 2017

CONTENTS

REVISION TABLE

Version	Sec/Para Changed	Change Made	Date
1		Initial issue of document	26/10/2020
2	Page 4	Address corrected	18/01/2021
	Section 3.10 and 3.11	Addition of KDB 447498 D01 General RF Exposure requirements	

RADIO REPORT FOR CERTIFICATION

Device under Test:	Lorikeet Encoder
Model Number:	Lorikeet Encoder
Serial Number:	7FF700
Manufacturer:	Taggle Systems Pty Ltd
FCC ID:	S7R-LORIKEETD2
IC ID:	25706-LORIKEETD2
Tested for:	Taggle Systems Pty Ltd
Address:	Level 1, 101 Sussex St, Sydney, Austraila, 2000
Phone:	+61 2 8999 1919
Contact:	Richard Keaney
Email:	rkeaney@taggle.com.au
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 **RSS-247 Issue 2, February 2017** - *Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices* **RSS-Gen Issue 5, March 2019** - *General Requirements for Compliance of Radio Apparatus* **RSS-102 Issue 5, March 2015** - *Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)*
Test Dates:	12 October 2020 to 14 October 2020 and 15th January 2021
Issue Date:	18th January 2021
Attestation:	I hereby certify that the Test Sample described herein was tested as described in this report and that the data included is that which was obtained during such testing.
Test Engineers:	**Dong Feng**
Authorised Signatory:	**Quinn Wu** **Lead EMC Engineer** **EMC Technologies Pty Ltd**

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RADIO REPORT FOR CERTIFICATION
to
47 CFR Part 15 Subpart C (section 15.247) and
RSS-247 Issue 2, February 2017

1.0 INTRODUCTION

Radio tests were performed on Lorikeet Encoder with Model Number: Lorikeet Encoder in accordance with the applicable requirements of 47 CFR, Part 15 Subpart C – Section 15.247 and RSS-247 Issue 2 for a Digital Transmission System (DTS) operating within the band: 902 MHz to 928 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

FCC Part 15 Subpart C	Test Performed	Results
15.203	Antenna requirement	**Not applicable**
15.205	Restricted bands of operation	**Complied**
15.207	Conducted limits	**Complied**
15.209	Radiated emissions limits; general requirements	**Complied**
15.247 (a)	Channel Bandwidth	**Complied**
15.247 (b)	Peak Output Power	**Complied**
15.247 (c)	Antenna Gain > 6 dBi	**Not Applicable.** Antenna gain < 6 dBi
15.247 (d)	Out of Band Emissions	**Complied**
15.247 (e)	Peak Power Spectral Density	**Complied**
15.247 (f)	*Hybrid Systems	**Not Applicable.** Did not employ a hybrid system
15.247 (g)	Frequency Hopping System with Transmitter and Receiver	**Not Applicable.** Did not employ frequency hopping
15.247 (h)	Simultaneous occupancy of individual hopping frequencies	**Not Applicable.** Did not employ frequency hopping
15.247 (i)	Radio Frequency Hazard	**Complied**
2.1049	Occupied Bandwidth	**7.95 MHz**

* Hybrid systems are those that employ a combination of both frequency hopping and digital modulations technique.

1.3 Summary of RSS-247 Results

RSS	Test Performed	Results
RSS-Gen (6.8)	Antenna requirement	Internal antenna
RSS-Gen (8.8)	Conducted emissions limits	Complied
RSS-Gen (8.9)	Radiated Emission Limits (General requirements)	Complied
RSS-Gen (8.10)	Operation in restricted Band	Complied
RSS-247 (5.2(a))	DTS Bandwidth	Complied
RSS-247 (5.2(b))	Power Spectral Density	Complied
RSS-247 (5.4(d))	Peak Output Power	Complied
RSS-247 (5.5)	Out of Band Emissions	Complied
RSS-Gen (3.2) RSS-102	Radio Frequency Hazard	Complied
RSS-Gen (6.6)	Occupied Bandwidth	**7.95 MHz**

1.4 Modifications by EMC Technologies

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

2.0 GENERAL INFORMATION

(Information supplied by the Client)

2.1 EUT (Transmitter) Details

FCC ID:	S7R-LORIKEETD2
IC ID:	25706-LORIKEETD2
Device under Test / PMN:	Lorikeet
Model Number / HVIN:	Lorikeet Encoder
Manufacturer:	Taggle Systems Pty Ltd
Microprocessor:	EFM32TG11B140F64GM32-BR
Highest Internal Frequency:	1844MHz
Crystal Oscillator:	28.125MHz, +/- 20ppm over temperature and lifetime; CF 922.00MHz
Frequency Band:	917-928MHz
Modulation:	BPSK
Number of Channels:	1
Nominal Output Power:	27dBm
Antenna type and gain:	Internal, 0dBi
Rated Supply Voltage:	3.6V

2.2 EUT Description

Lorikeet is a Low Power Wide Area Network (LPWAN) radio transmitter device designed to connect water meters to the Taggle network. The device operates in the 917MHz to 928MHz LIPD band in Australia and the 917MHz - 928MHz ISM band in North America.

2.3 Test Configuration

The device is transmit only. In normal mode of operation the device transmits 1 message per hour. Messages are ~0.45s in duration. The device will be shipped in test mode, which sets the device to transmit modulated output continuously. The device is a direct sequence spread spectrum (DSSS) transmitter with a data rate of 1172 bit/s, spread with a 4095 bit spreading code to yield a baud rate of 4.8Mbit/s. The modulation is BPSK, and the occupied bandwidth is 9.6MHz. The centre frequency is fixed at 922.0MHz

The device is battery powered and fully self contained with a single 60cm sensor cable for connection to the water meter. The device is enabled/disabled by swiping an internal reed switch with a magnet.

2.4 Test Facility

2.4.1 General

EMC Technologies Pty Ltd is listed by the FCC as a test laboratory able to perform compliance testing for the public. EMC Technologies is listed as an FCC part 47CFR2.948 test lab and may perform the testing required under Parts 15 and 18 – **FCC Registration Number 90560**

EMC Technologies Pty Ltd has also 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.**

EMC Technologies indoor open are test site (iOATS) located at Unit 3, 87 Station Road, Seven Hills, NSW, Australia, 2147 has been accepted by Industry Canada for the performance of radiated measurements in accordance with RSS-Gen, Issue 8 - **Industry Canada iOATS number - IC 4207A.**

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

2.4.2 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.

Equipment Type	Asset No:	Make/Model/Serial Number	Due Date dd/mm/yy
EMI Receiver	R038	Rohde & Schwarz EMI Receiver Model: ESU40 S/N: 100183 20Hz – 40GHz	01/04/21
	R029	Rohde & Schwarz EMI Test Receiver Model: ESCI S/N: 100012 9kHz – 3GHz	27/04/21
Antennas	A324	Double Ridged Horn Antenna 1-18GHz Model: EMCO 3115 S/N: 3823	29/01/21
	A430	Sunar RF Motion Model: JB1 S/N: A021318	08/03/21
Cables	SC028	13m RG214 N-Type, 0.1- 6000MHz	17/01/21
	SC041	Sucoflex 4m 10MHz - 18GHz Cable Model: SF104A/2x11N-47/4m	17/01/21

3.0 TEST RESULTS

3.1 §15.203/ RSS-Gen 8.3/ RSS-Gen 6.8 Antenna Requirement,

This test was not applicable as the antenna was considered support equipment according to customer's requirements. The antenna used was a Monopole Whip Antenna connected using an external connector with a gain of 0dBi.

No external RF power amplifiers were connected with the EUT radio apparatus during the test.

3.2 §15.205/RSS-Gen 8.10 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/RSS-Gen 8.9 Radiated emission limits; general requirements

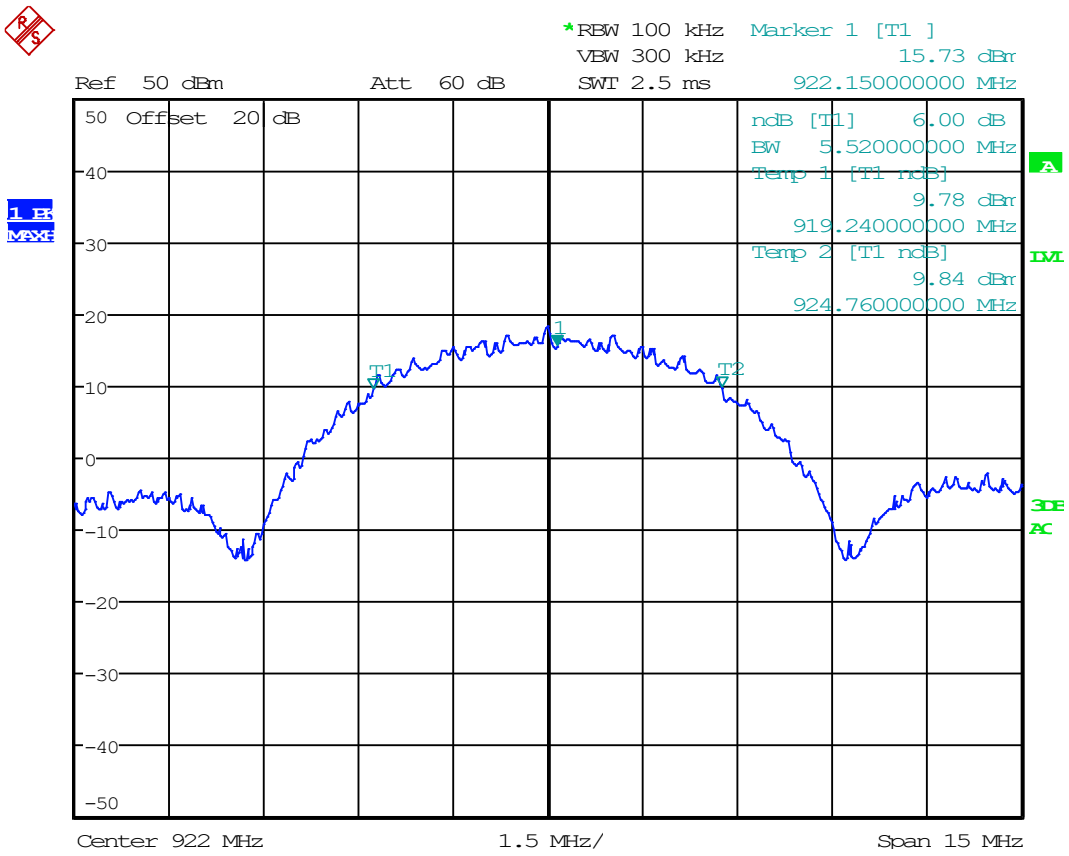
The limits given in §15.205, §15.209 and §15.247 were applied.

3.4 §15.247(a)/RSS-247 5.2(a) DTS Bandwidth

In the band 902 - 928 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 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
922	5520	> 500	Complied



Date: 12.OCT.2020 13:21:50

3.5 §15.247(b)/RSS-247 5.4(d) Peak Output power

Testing was performed using a power meter. The limit for digital transmission systems operating in the 902-928MHz is 1 Watt.

1W=30dBm

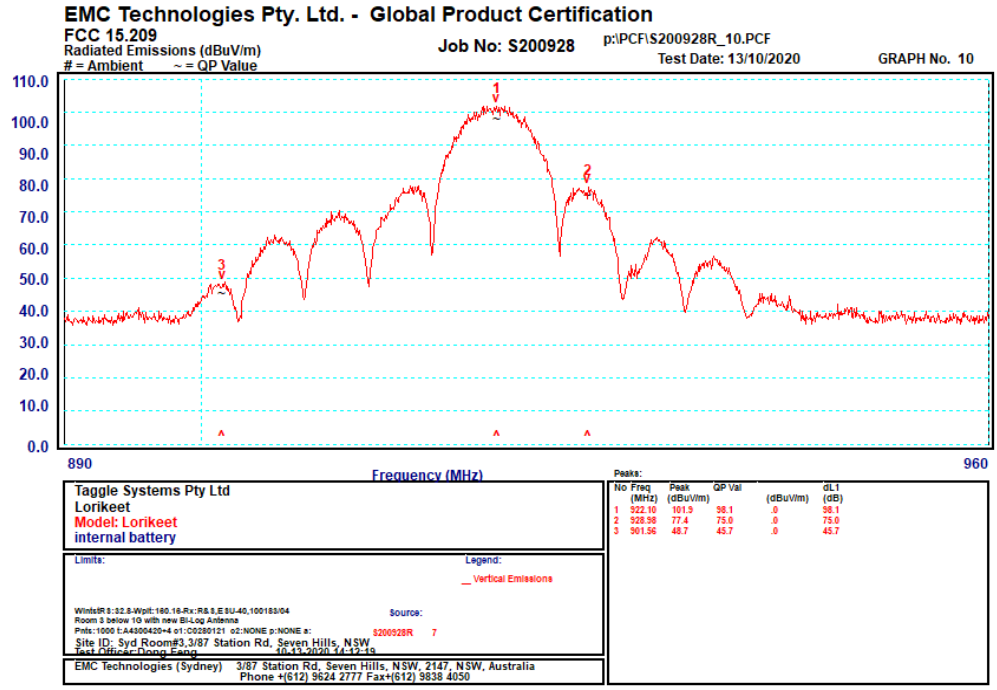
Centre Frequency [MHz]	Measured Peak Output Power [dBm]	Antenna Gain (dBi)	Result (dBm)	Limit	Result
922	24.6	0	24.6	30dBm	Complied

3.6 §15.247(d)/RSS-247 5.5 Out of Band Emissions

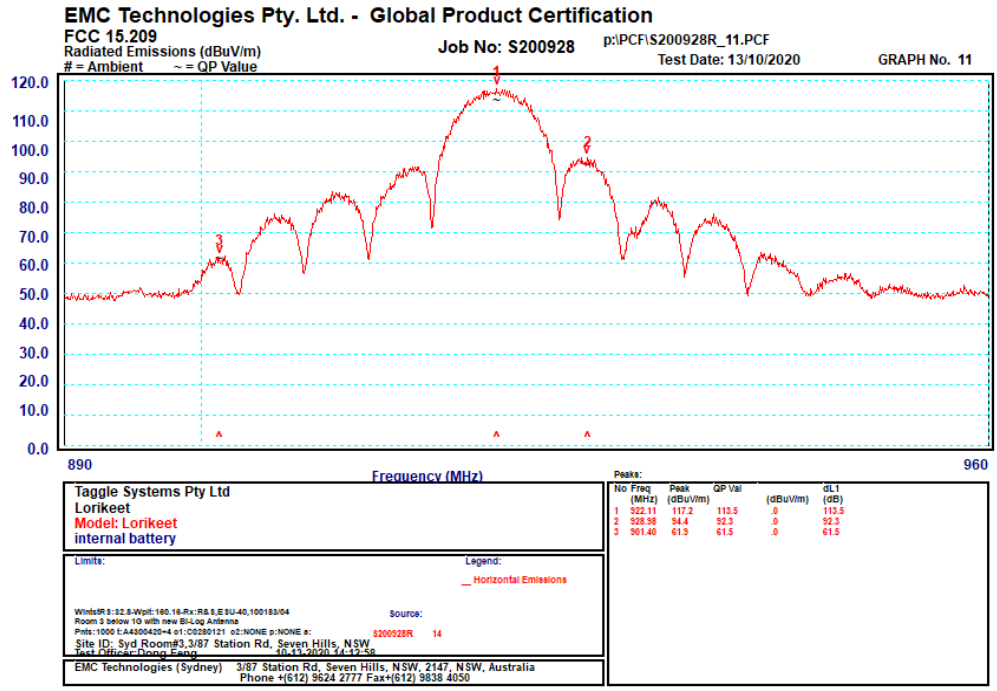
Band-Edge Emission Measurements

Emissions within 2 MHz of an authorised band edge were measured using the radiated method. All emissions above and below the edge of the authorised band were more than 20 dB below the in band intentional emission.

Graph 10 Vertical Polarisation 890 to 960MHz



Graph 11 Horizontal Polarisation 890 to 960MHz



3.7 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 10 metres using a 0.6 metre loop antenna and calibrated Biconilog antenna for measurements between 30 MHz and 1000 MHz. Calibrated EMCO 3115, EMCO 3116 and ETS standard gain horn antennas were used for measurements between 1 to 25 GHz as applicable.

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

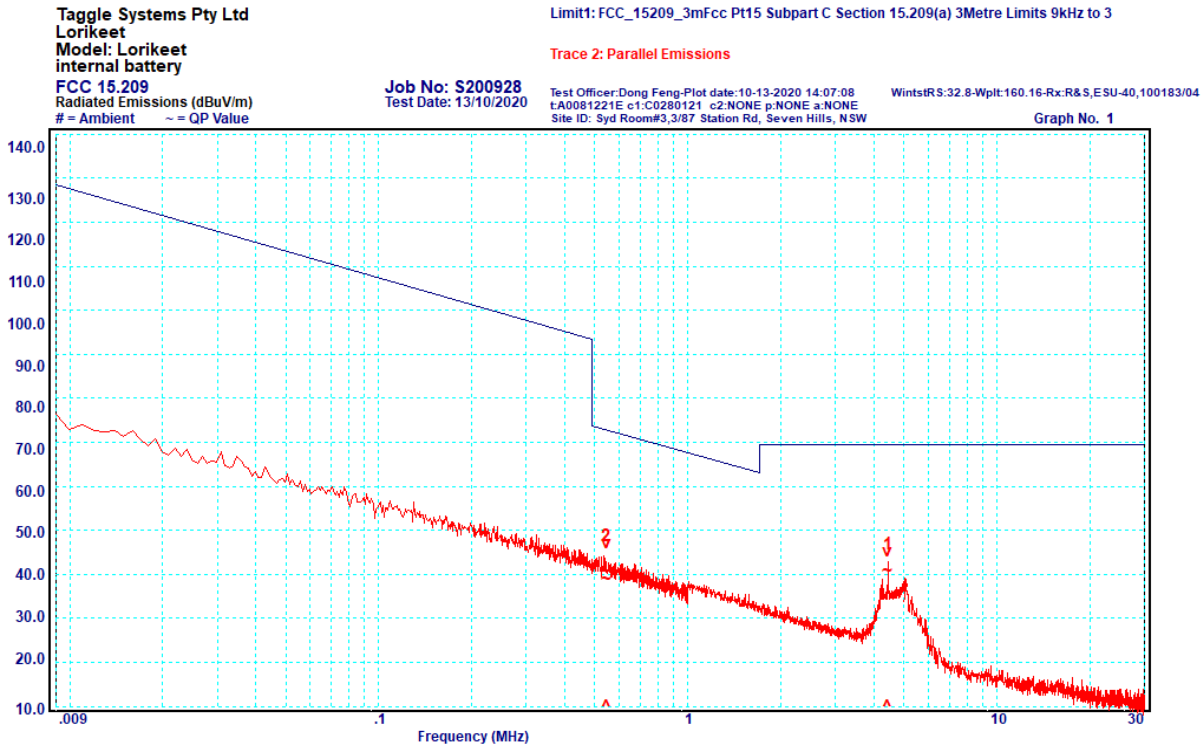
Where:

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)

Frequency Band: 9 kHz - 30 MHz

Measurements were made at a distance of 3 metres. The measurement of emissions between 9 kHz – 150 kHz were made with a resolution bandwidth (RBW) of 200 Hz and the video bandwidth (VBW) of 3 kHz, 150 kHz – 30 MHz were measured with the resolution bandwidth (RBW) of 9 kHz and the video bandwidth (VBW) of 30 kHz.

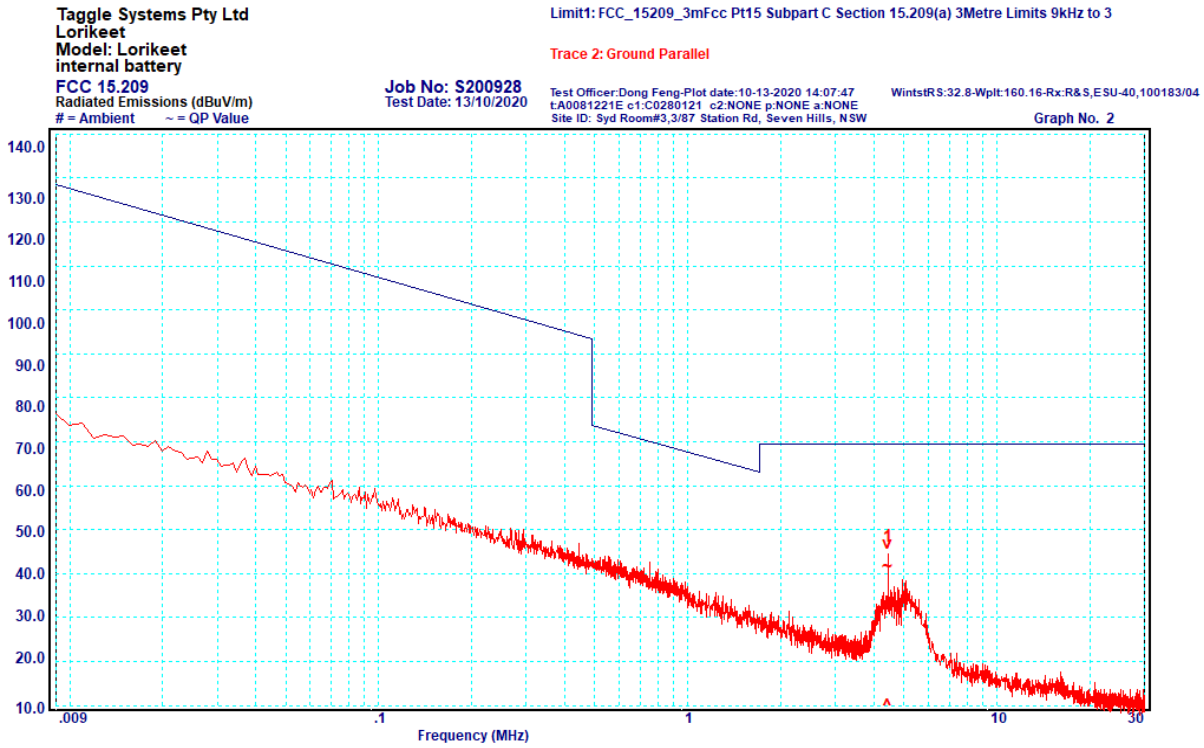
Graph 1 Parallel Emissions 9kHz to 30MHz



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	4.434	Parallel	40.8	69.5	-28.7
2	0.546	Parallel	38.8	72.9	-34.1

Complied with the limit by a margin greater than 10dB.

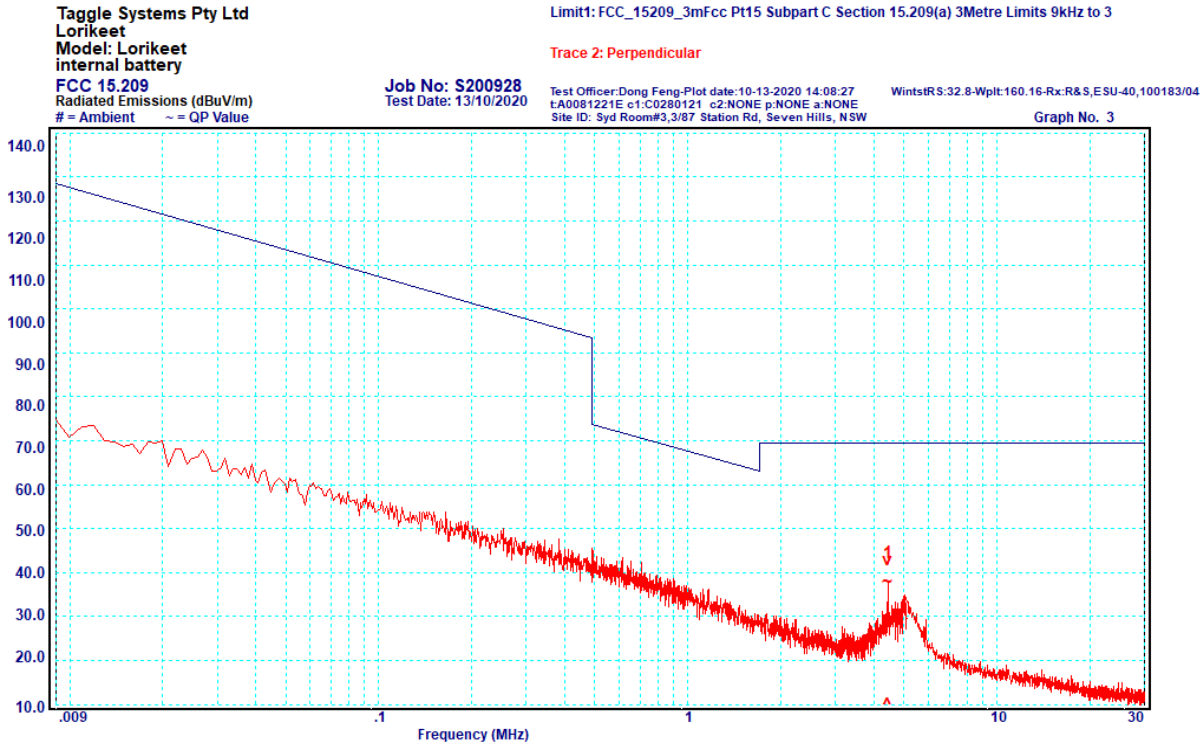
Graph 2 Gound Parallel Emissions 9kHz to 30MHz



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	4.433	Grd Prl	41.7	69.5	-27.8

Complied with the limit by a margin greater than 10dB.

Graph 3 **Perpendicular Emissions** **9kHz to 30MHz**



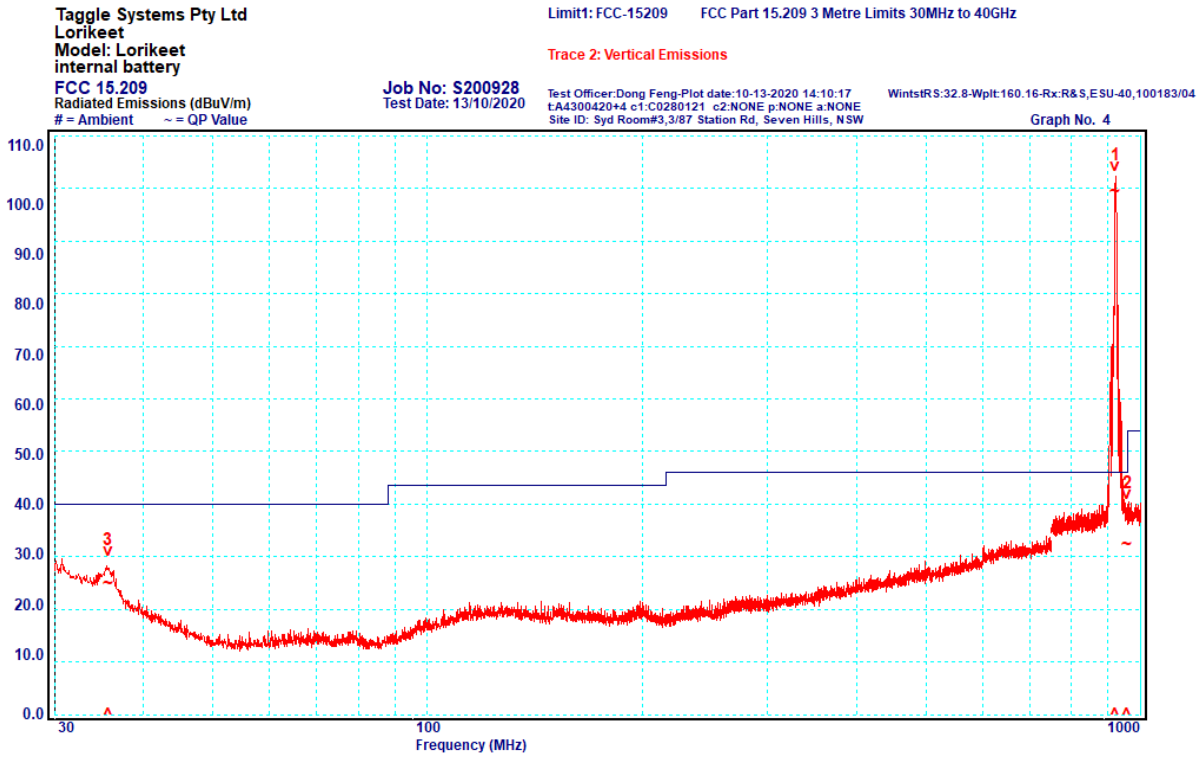
Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	4.434	Perpendicular	37.8	69.5	-31.7

Complied with the limit by a margin greater than 10dB.

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 100 kHz and the video bandwidth (VBW) of 300 kHz.

Graph 4 **Vertical Emissions** **30MHz to 1000MHz**

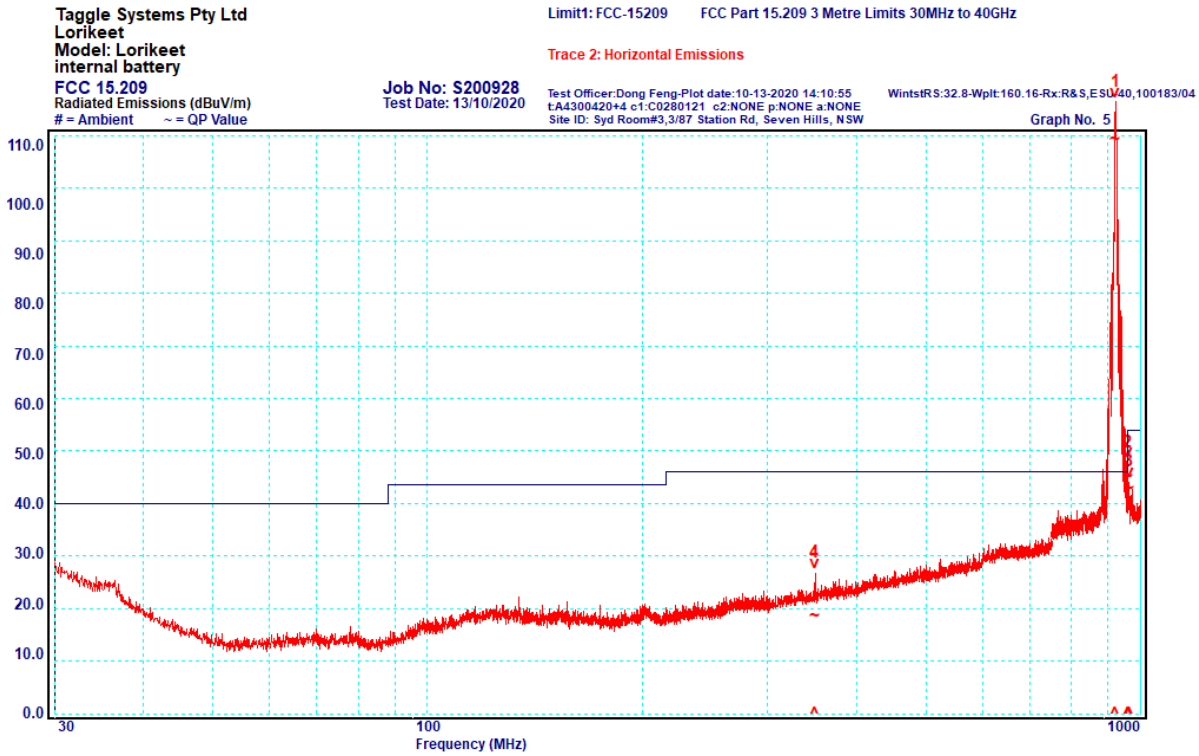


Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	921.83	Vertical	99.4	46.0	+53.4*
2	958.16	Vertical	32.3	46.0	-13.7
3	35.71	Vertical	24.8	40.0	-15.2

**This reading is caused by the intentional radiator.*

Complied with the limit by a margin of greater than 10dB.

Graph 5 Horizontal Emissions 30MHz to 1000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Quasi Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	922.29	Horizontal	109.4	46.0	+63.4*
2	958.80	Horizontal	45.1	46.0	-0.9**
3	962.56	Horizontal	43.0	54.0	-11.0
4	348.94	Horizontal	18.6	46.0	-27.4

**This reading is caused by the intentional radiator.*
***This reading is not within the restricted band in §15.205(a), according to §15.247(d), this reading complied with the requirement of at least 20dB lower than the highest level of desired power.*

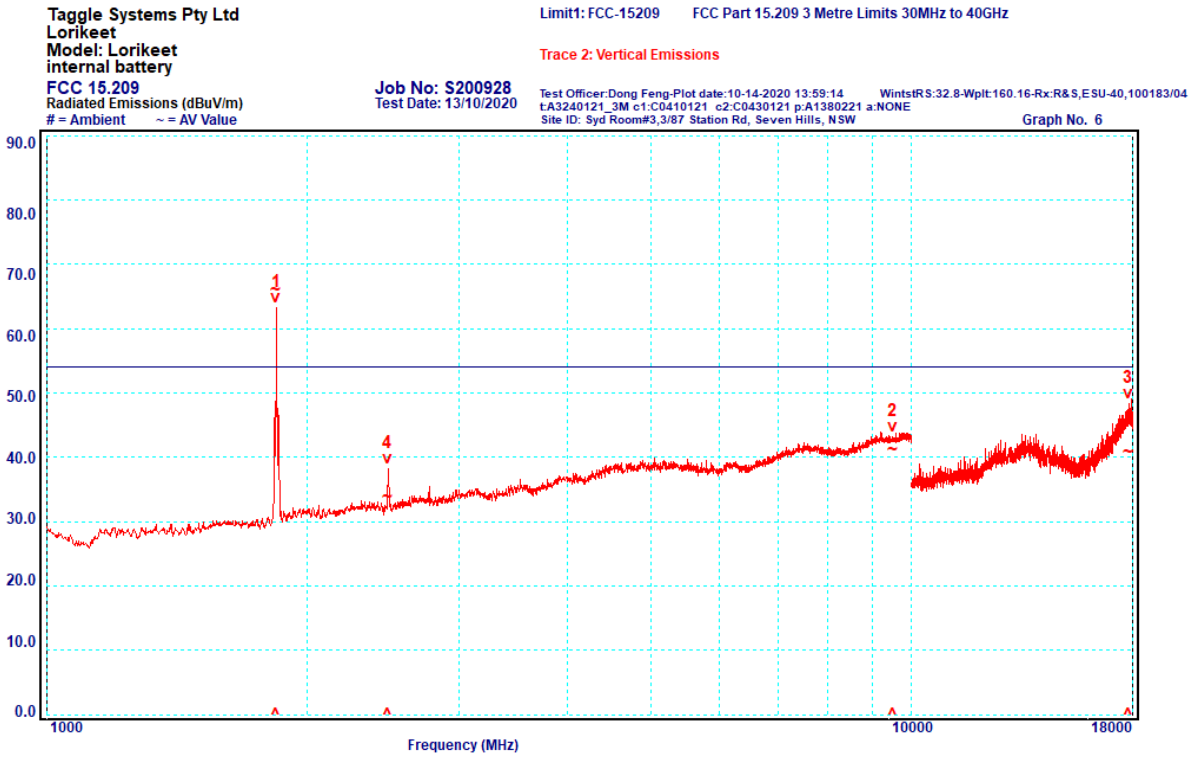
Complied with the limit by a margin of greater than 10dB.

Frequency Band: 1000 – 18000 MHz

Measurements were made at a distance of 3 metres. The measurement of emissions between 1000 - 18000 MHz were made with a resolution bandwidth (RBW) of 1000 kHz and the video bandwidth (VBW) of 3000 kHz for peak and a video bandwidth (VBW) of 10 Hz for average.

Average Detector Emissions

Graph 6 Vertical Emissions 1000MHz to 18000MHz

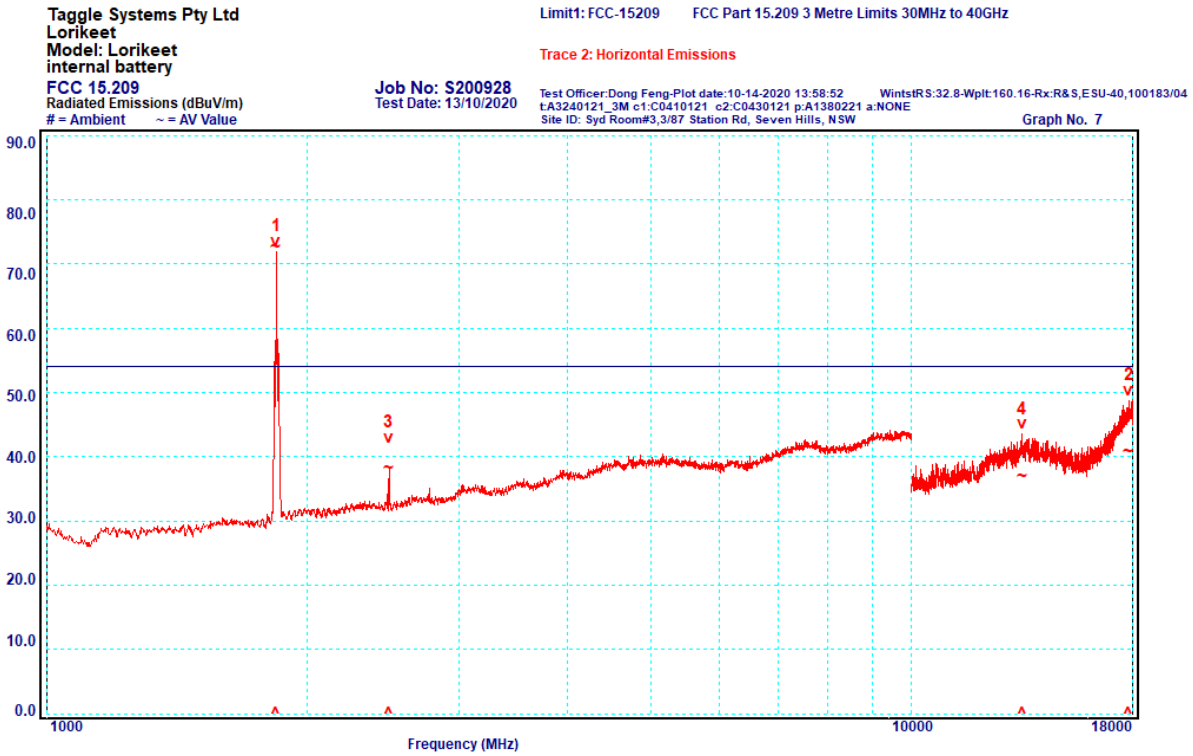


Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1844.00	Vertical	66.0	54.0	+12.0*
2	9501.63	Vertical	41.1	54.0	-12.9
3	17795.13	Vertical	40.8	54.0	-13.2
4	2480.13	Vertical	33.7	54.0	-20.3

**This reading is not within the restricted band in §15.205(a), according to §15.247(d), this reading complied with the requirement of at least 20dB lower than the highest level of desired power.*

Complied with the limit by a margin of greater than 10dB.

Graph 7 Horizontal Emissions 1000MHz to 18000MHz



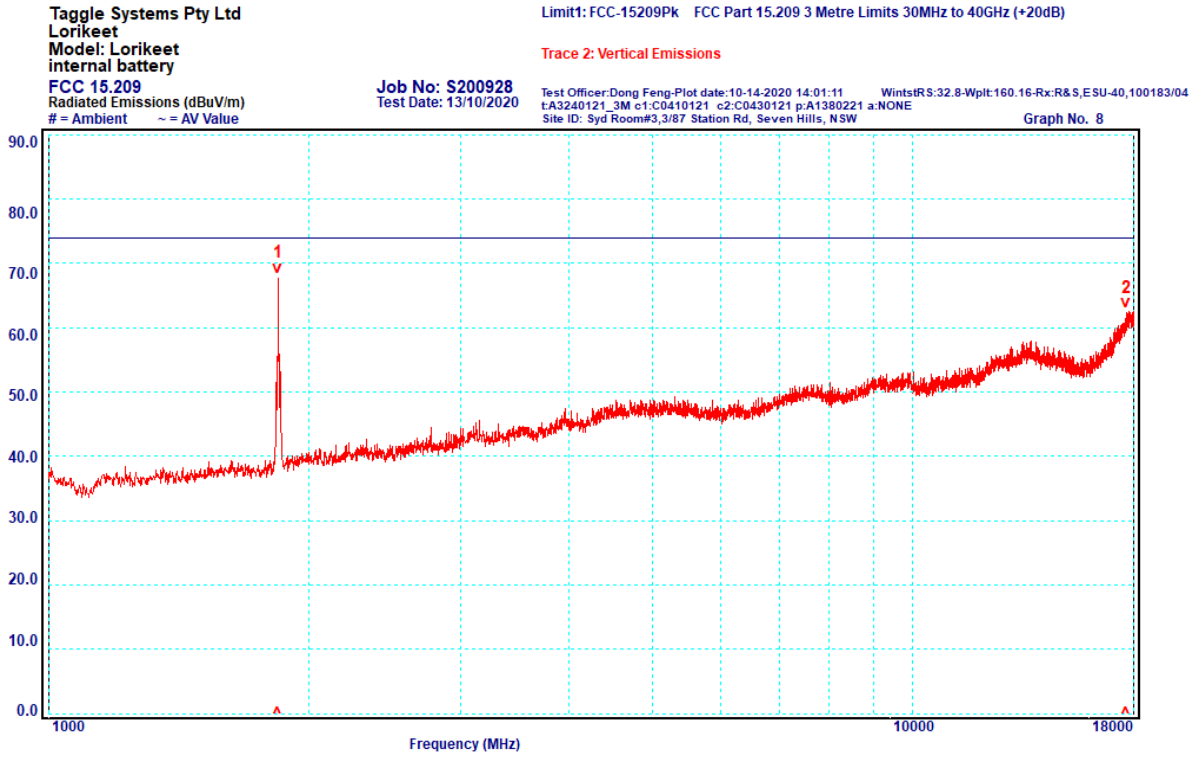
Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1844.01	Horizontal	72.6	54.0	+18.6*
2	17817.96	Horizontal	40.9	54.0	-13.1
3	2485.76	Horizontal	38.1	54.0	-15.9
4	13407.13	Horizontal	37.0	54.0	-17.0

**This reading is not within the restricted band in §15.205(a), according to §15.247(d), this reading complied with the requirement of at least 20dB lower than the highest level of desired power.*

Complied with the limit by a margin of greater than 10dB.

Peak Detector Emissions

Graph 8 Vertical Emissions 1000MHz to 18000MHz

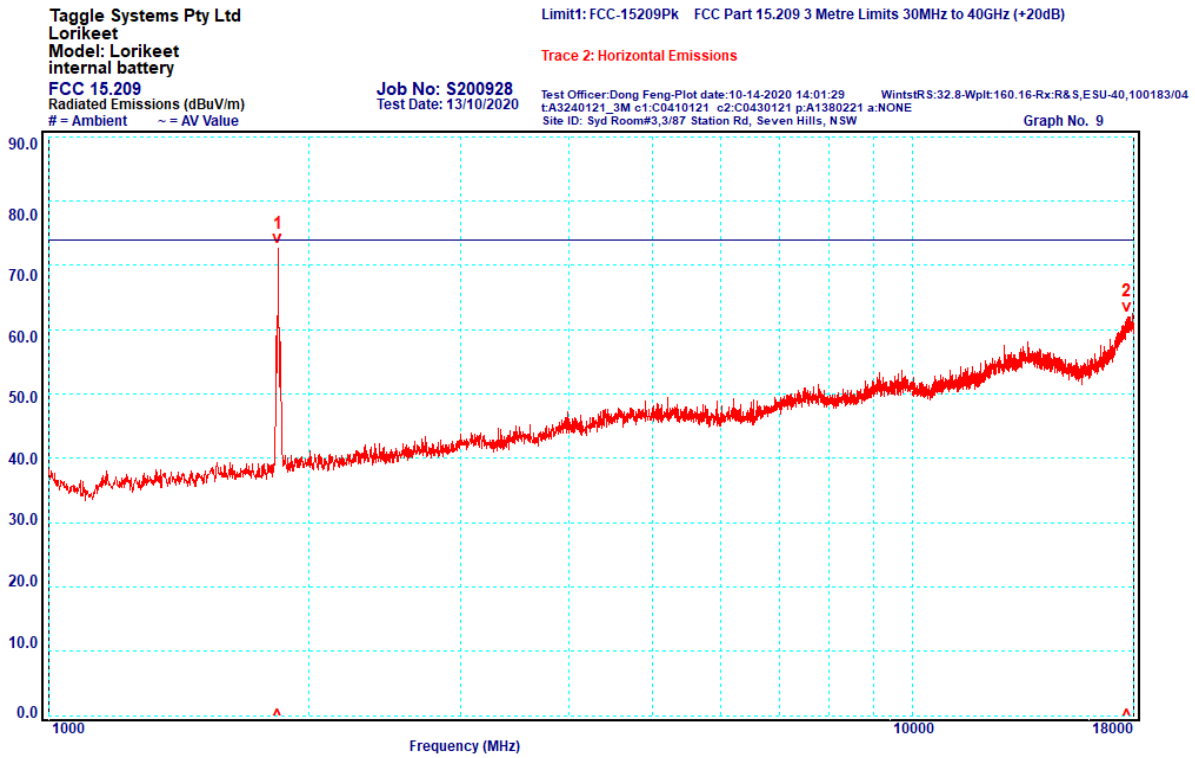


Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1843.18	Vertical	67.7	74.0	-6.3*
2	17644.44	Vertical	62.3	74.0	-11.7

**This reading is not within the restricted band in §15.205(a), according to §15.247(d), this reading complied with the requirement of at least 20dB lower than the highest level of desired power.*

Complied with the limit by a margin of greater than 10dB.

Graph 9 Horizontal Emissions 1000MHz to 18000MHz



Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	1843.18	Horizontal	72.6	74.0	-1.4*
2	17680.4	Horizontal	62.0	74.0	-12.0

**This reading is not within the restricted band in §15.205(a), according to §15.247(d), this reading complied with the requirement of at least 20dB lower than the highest level of desired power.*

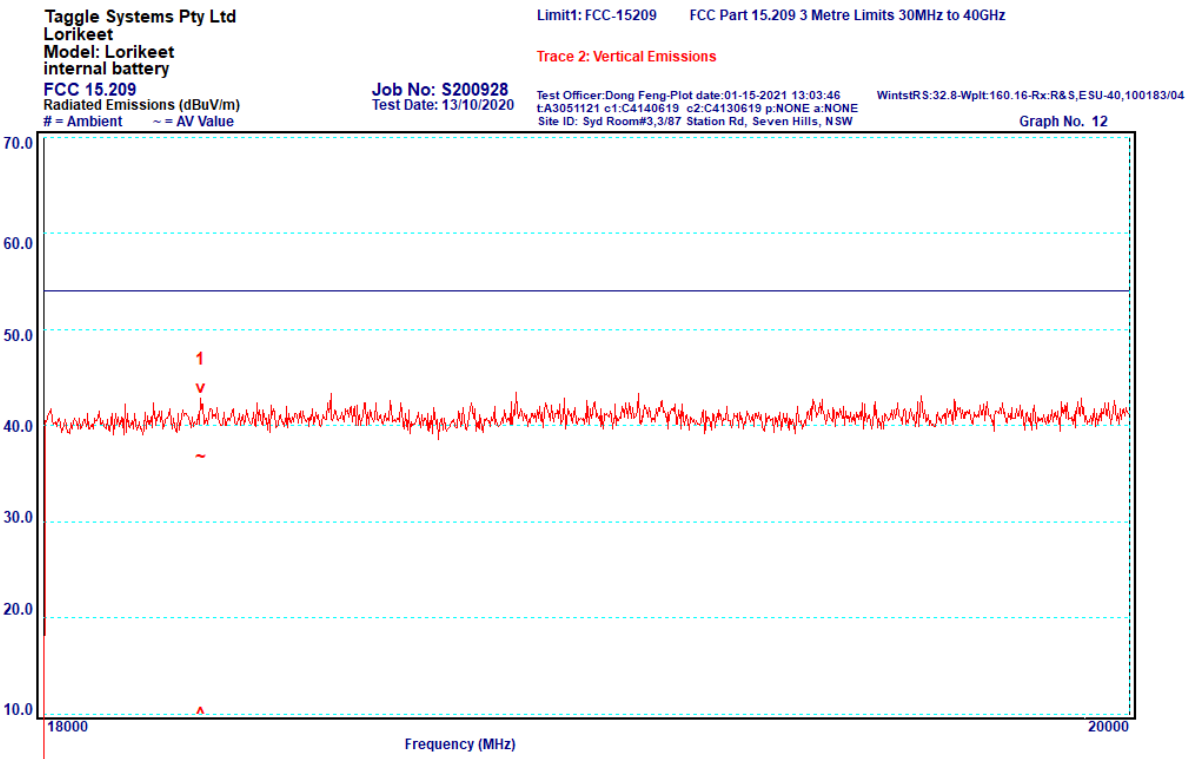
Complied with the limit by a margin of greater than 10dB.

Frequency Band: 18000 - 20000 MHz

Measurements from 18 to 20GHz were made at a distance of 1 metres. The average measurements were made with a resolution bandwidth (RBW) of 1000 kHz and the video bandwidth (VBW) of 10kHz.
The §15.209(a) limits applied.

Average Measurements

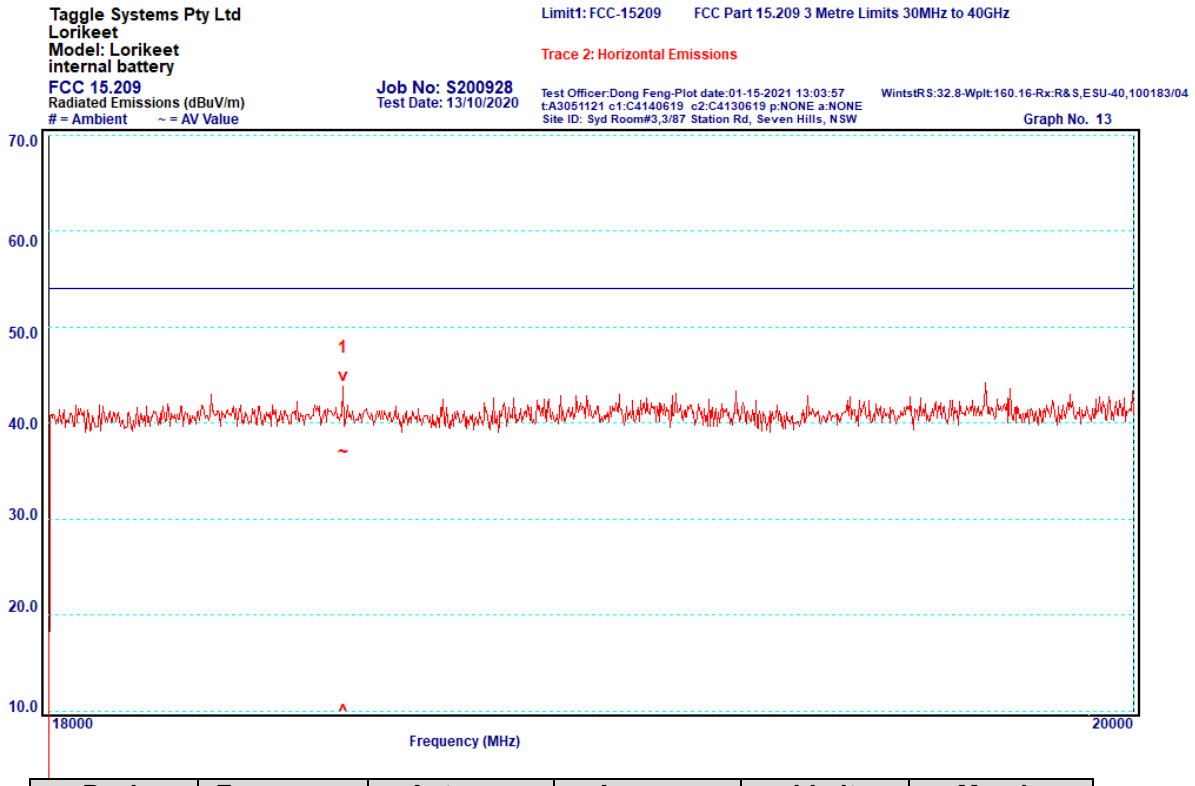
Graph 12 **Vertical Polarisation** **18000 to 20000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	18276.90	Vertical	36.7	54.0	-17.0

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

Graph 13 Horizontal Polarisation 18000 to 20000MHz

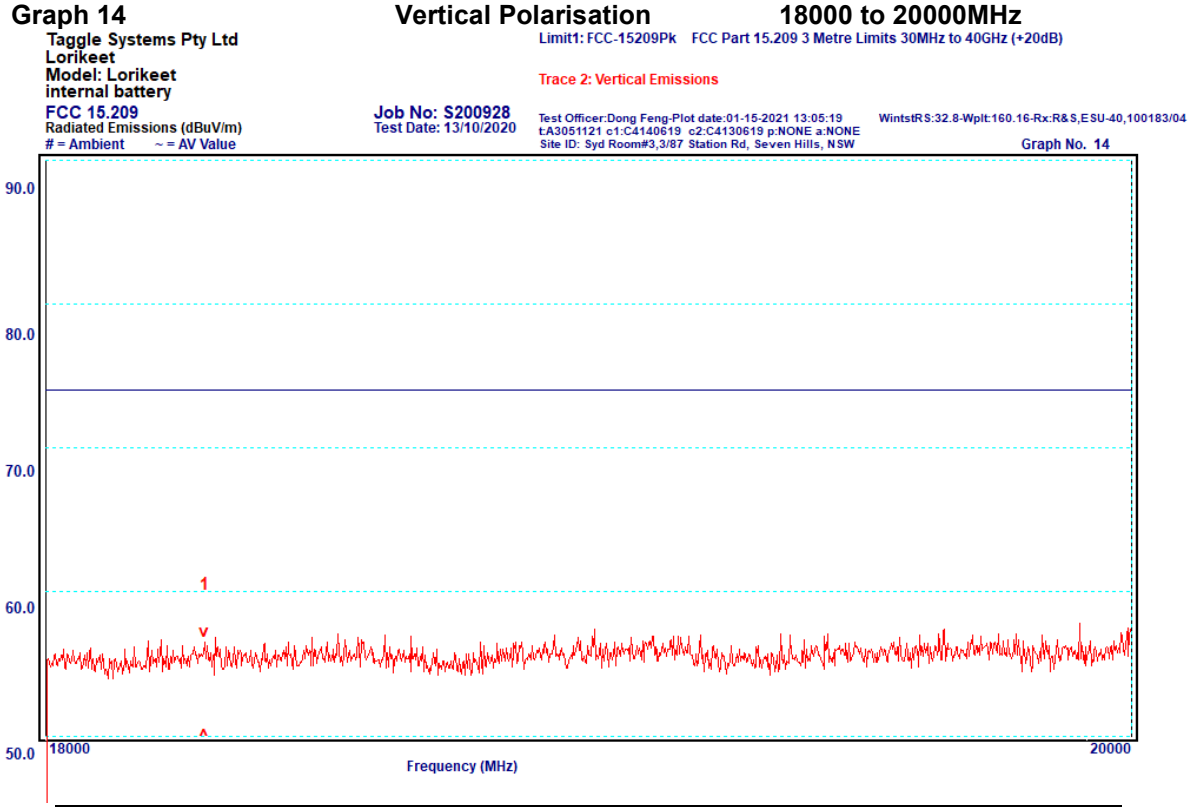


Peak	Frequency (MHz)	Antenna Polarisation	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	18522.69	Horizontal	37.0	54.0	-17.3

All measured frequencies complied with average limit by a margin of greater than 10dB.

Peak Measurements

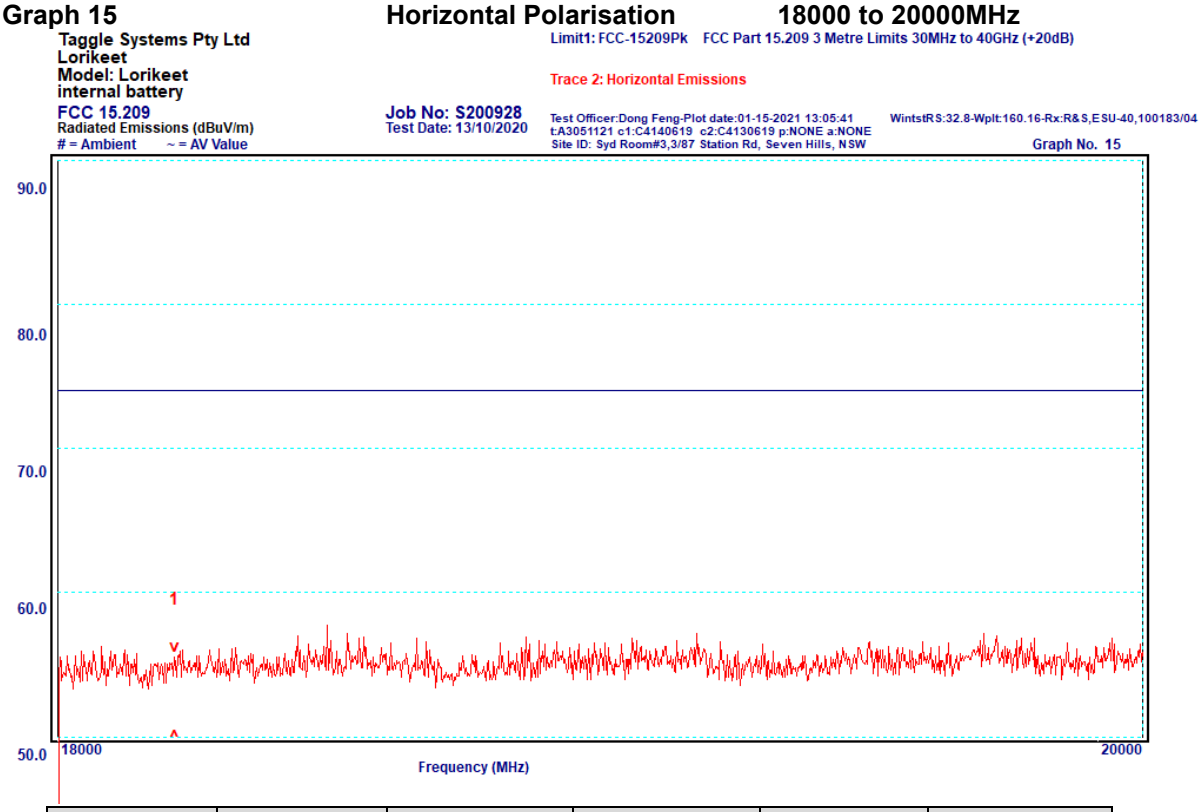
Graph 14 **Vertical Polarisation** **18000 to 20000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	18279.72	Vertical	56.5	74.0	-17.5

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

Graph 15 **Horizontal Polarisation** **18000 to 20000MHz**



Peak	Frequency (MHz)	Antenna Polarisation	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	18205.8	Horizontal	55.5	74.0	-18.5

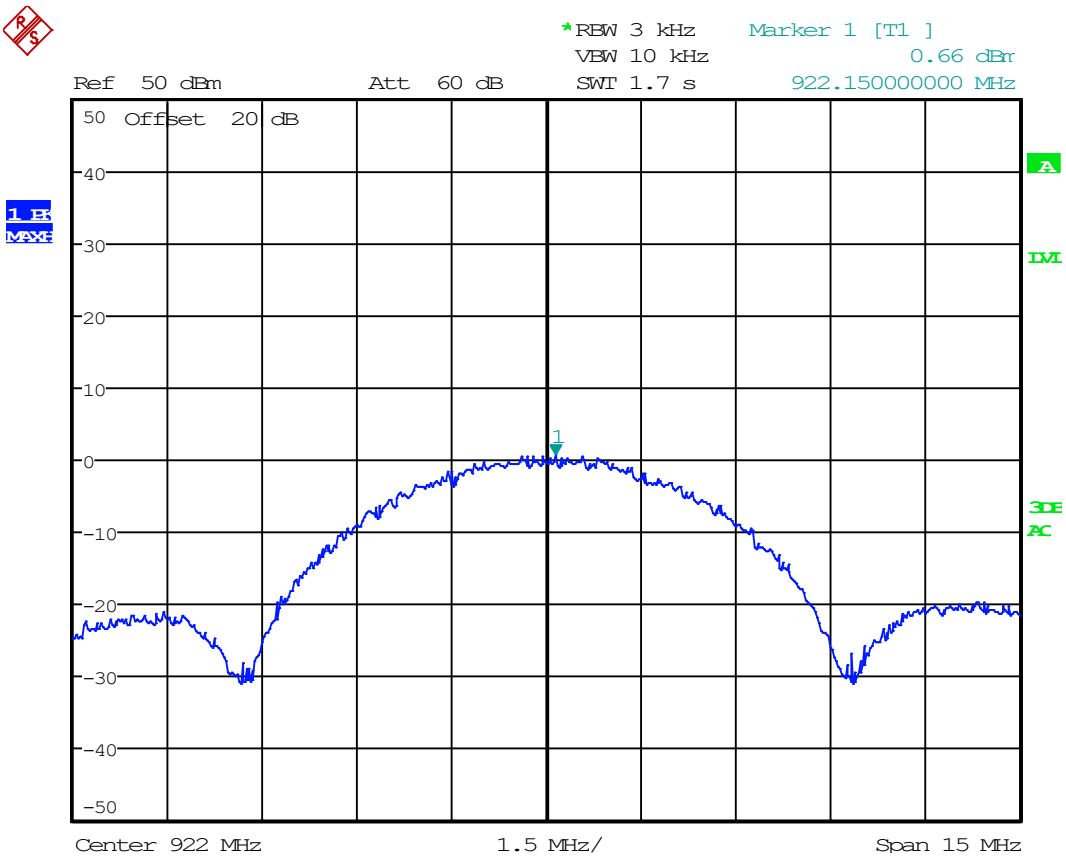
All measured frequencies complied with the peak limit by a margin of greater than 10dB.

Conclusion

The spurious emissions complied with the general limits of FCC §15.209/ RSS-Gen 8.9 by a margin of greater than 10dB.

3.8 §15.247(e)/RSS-247 5.2(b) Power Spectral Density

Testing was performed via conducted method and the EUT was set to transmit in continuous transmission mode. Power spectral density is shown below, where the resolution bandwidth was 3 kHz.

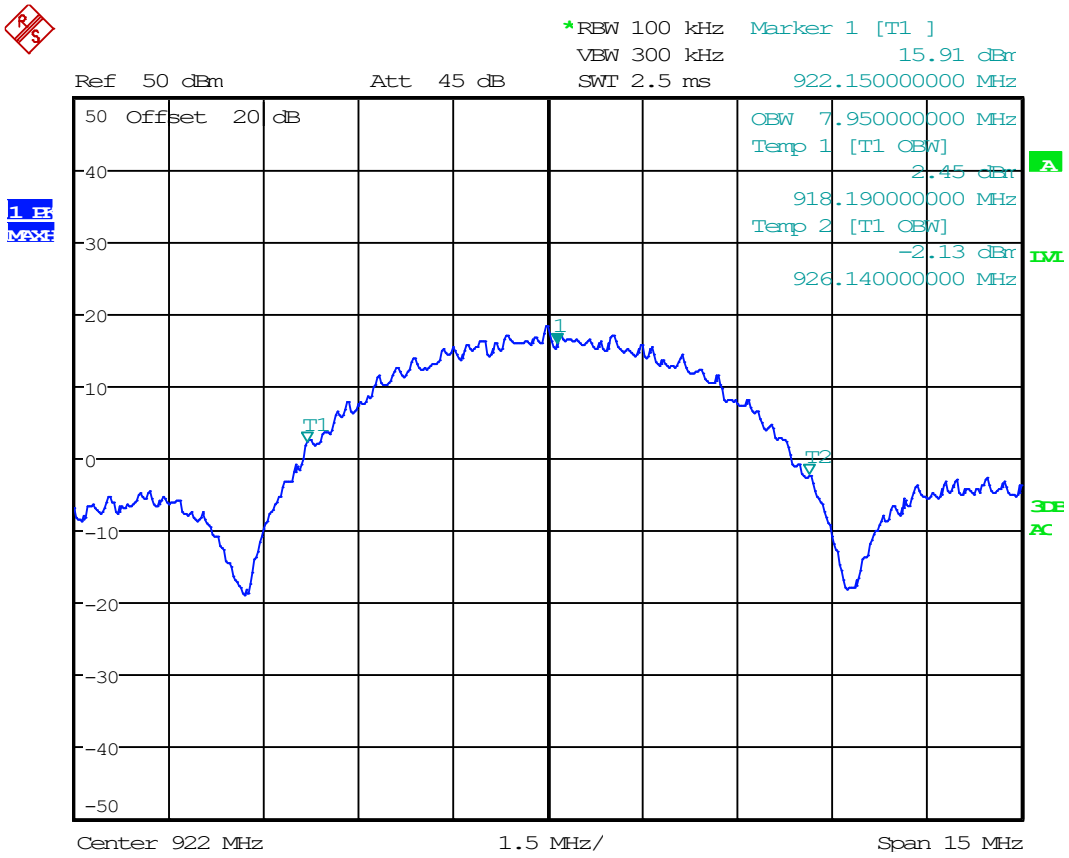


Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)	Result
922.15	0.66	8.0	-7.34	Complied

3.9 §2.1049/RSS-Gen 6.6 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.

The 99% power bandwidth was **7.95MHz**.



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3.10 §15.247(i) Maximum Permissible Exposure

Table 1—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f2	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f2	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

The Maximum Permissible Exposure (MPE) limit defined in Table 1 for a transmitter operating at 922 MHz is:

MPE limit = $[f_{(MHz)}] \div 1500$ mW/cm^2
= $922 \div 1500$ mW/cm^2
= **0.61467 mW/cm^2 = 48.14 V/m** (V/m) = $\sqrt{(1200 \times \pi \times mW/cm^2)}$

Field strength = [$\sqrt{(30\times$ transmitter EIRP, W)] ÷ [minimum separation distance, metres] **V/m**
= [$\sqrt{(30\times0.2884)}$] ÷ 0.2m **V/m**
= **14.7 V/m = 0.0573 mW/cm^2** (mW/cm^2) = (V/m)$^2 \div (1200\times\pi)$

As the calculated field strength generated by the transmitter is less than the limit, Lorikeet Encoder is deemed to comply with the radio frequency exposure requirements.

3.11 RSS-Gen 3.2/RSS-102 Maximum Permissible Exposure

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
0.003-10[Footnote21]	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ $f^{0.5}$	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	58.07/ $f^{0.25}$	0.1540/ $f^{0.25}$	8.944/ $f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 x 10^{-4} $f^{0.5}$	6.67 x 10^{-5} f	616000/$f^{1.2}$

The Maximum Permissible Exposure (MPE) limit defined in Table 4 for a transmitter operating at 922 MHz is:

MPE limit = 3.142 $f^{0.3417}$ V/m=32.38 V/m
= 0.008335 $f^{0.3417}$ A/m=0.086 A/m
= 0.02619 $f^{0.6834}$ W/m^2= 2.78W/m^2

Field strength = [√(30× transmitter EIRP, W)] ÷ [minimum separation distance, metres] V/m
= [√(30×0.2884)] ÷ 0.2 V/m
= 14.7 V/m =0.0391 mW/cm^2= 0.572 W/m^2

As the calculated field strength generated by the transmitter is less than the limit Lorikeet Encoder is deemed to comply with the radio frequency exposure requirements.

According to RSS-102- section 2.5.2 **Exemption Limits for Routine Evaluation – RF Exposure Evaluation**: RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1.31 x 10^{-2} $f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz.

Exemption Limit =1.31 x 10-2 f0.6834 W
=1.39 W

EIRP of EUT =0.2884W

As the EIRP generated by the transmitter is less than the limit the Lorikeet Encoder is deemed to comply with the Exemption Limits for Routine Evaluation. So Routine RF exposure Evaluation for the Lorikeet Encoder is exempt.

4.0 COMPLIANCE STATEMENT

The Lorikeet Encoder with Model Number: Lorikeet Encoder tested on behalf of Taggle Systems Pty Ltd complied with all the applicable requirements of 47 CFR, Part 15 Subpart C - Rules for Radio Frequency Devices (intentional radiators) and RSS-247 Issue 2 for a Digital Transmission System (DTS) operating within the band: 902 MHz to 928 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:

Conducted Emissions:	9 kHz to 30 MHz	±3.2 dB
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%.