



Global Product Certification  
EMC-EMF Safety Approvals

Page 1 of 14

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## RADIO TEST REPORT

**REPORT NUMBER: M2010040-7**

**TEST STANDARD: FCC PART 15 SUBPART C SECTION 15.247  
CLAUSE §15.247(D) RADIATED SPURIOUS  
EMISSIONS**

**ISED RSS-247 SECTION 5.0  
CLAUSE 5.5 UNWANTED EMISSIONS**

**CLIENT: AUTOMATIC TECHNOLOGY AUSTRALIA  
PTY LTD**

**DEVICE: OVERHEAD GARAGE DOOR OPENER**

**MODEL: ATS-3AM**

**DATE OF ISSUE: 24 MAY 2021**

EMC Technologies Pty Ltd reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. EMC Technologies Pty Ltd shall have no liability for any deductions, inferences or generalisations drawn by the client or others from EMC Technologies Pty Ltd issued reports. This report shall not be used to claim, constitute or imply product endorsement by EMC Technologies Pty Ltd.



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**Equipment Under Test (EUT): Overhead Garage Door Opener**

### REVISION TABLE

Version	Sec/Para Changed	Change Made	Date
1		Initial issue of document	24/05/2021

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## RADIO TEST REPORT

### CERTIFICATE OF COMPLIANCE

Device: Overhead Garage Door Opener  
Model Number: ATS-3AM  
Manufacturer: Automatic Technology Australia Pty Ltd

Tested for: Automatic Technology Australia Pty Ltd  
Address: 6-8 Fiveways Boulevard, Keysborough, VIC 3173, Australia  
Phone Number: 03 9791 0275  
Contact: Nikolai Klepikov  
Email: nikolai.klepikov@ata-aust.com.au

Standard: FCC Part 15, Subpart C, Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz  
Clause §15.247(d) Radiated Spurious Emissions

ISED RSS-247, Issue 2, Section 5 Standard specifications for frequency hopping systems and digital transmission systems operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz; Clause 5.5 Unwanted Emissions

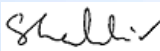
Result: The Overhead Garage Door Opener complied with the applicable requirements above the clauses of the standards.  
Refer to Report M2010040-7 for full details.

Test Date(s): 28 - 29 January 2021

Issue Date: 24 May 2021

Test Engineer(s):   
Wilson Xiao

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.*

Authorised Signatory:   
Shabbir Ahmed  
Lead Engineer - Radio

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## RADIO REPORT FOR CERTIFICATION

### 1 TEST SUMMARY

Sec.	Description	FCC	ISED	Result(s)
6.1	Spurious Emissions	§15.247(d)	§RSS-247 5.5	Complied

### 2 TEST FACILITY

#### 2.1 General

EMC Technologies Pty Ltd is accredited by the FCC as a test laboratory able to perform compliance testing for the public. EMC Technologies Pty Ltd has also been designated 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 494713 & Designation number AU0001.**

EMC Technologies Pty Ltd is also an ISED Canada recognized testing laboratory – **ISED company number: 3569B and CAB identifier number: AU0001.**

#### 2.2 Test Laboratory/Accreditations

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 similar 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).

All testing in this report has been conducted in accordance with EMC Technologies' scope of NATA accreditation to ISO 17025 for both testing and calibration and ISO 17020 for Inspection – **Accreditation Number 5292.**

The current full scope of accreditation can be found on the NATA website: [www.nata.com.au](http://www.nata.com.au)

### 3 TEST EQUIPMENT CALIBRATION

Measurement instrumentation and transducers were calibrated in accordance with the applicable standards by an independent NATA registered laboratory such as Keysight 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/yyyy	Due Date dd/mm/yyyy	Cal. Interval
Chamber	Frankonia SAC-3-2 (R-144)	10/08/2020	10/08/2023	3 Year <sup>*1</sup>
EMI Receiver	R&S ESW26 Sn: 101306 (R-143)	05/06/2020	05/06/2021	1 Year <sup>*2</sup>
Antennas	EMCO 6502 Active Loop Antenna Sn: 100019-243 (A-310)	31/08/2020	31/08/2022	2 Year <sup>*2</sup>
	SUNOL JB1 Sn: A061917 (A-425)	04/09/2019	04/09/2021	2 Year <sup>*2</sup>
	EMCO 3115 Horn Antenna Sn: 8908-3282 (A-004)	16/01/2019	16/01/2022	3 Year <sup>*1</sup>
	ETS-Lindgren Horn Antenna Sn:66032 (A-307)	12/06/2018	12/06/2021	3 Year <sup>*2</sup>
Cables <sup>*3</sup>	Huber & Suhner Sucoflex 104A Sn: 503055 (C-457)	05/01/2021	06/01/2022	1 Year <sup>*1</sup>
	Huber & Suhner Sucoflex 104A Sn: 800448 (C-520)	05/01/2021	06/01/2022	1 Year <sup>*1</sup>
	Huber & Suhner Sucoflex 102DC Sn: 27319/2 (C-273)	06/01/2021	06/01/2022	1 Year <sup>*1</sup>

Note \*1. Internal NATA calibration.

Note \*2. External NATA / A2LA calibration.

Note \*3. Cables are verified before measurements are taken.

### 4 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
	18 GHz to 40 GHz	±4.6 dB
<b>Peak Output Power:</b>		±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%.

#### Application of measurement uncertainty for this report:

The referenced uncertainty standard specifies that determination of compliance shall be based on measurements without taking into account measurement instrumentation uncertainty. However, the measurement uncertainty shall appear in the test report.

## 5 Device Details

(Information supplied by the Client)

The ATS-3 is an electro-mechanical device for opening and closing Overhead Garage Doors automatically. They can be controlled from inside the garage by a wall mounted wireless transmitter WTX-7V1AM or from a remote location using a wireless handheld transmitter PTX-6V1AM or TB-6V1AM or smart phone via a network.

### 5.1 EUT (Transceiver) Details

The EUT incorporates two radio modules.

<b>Radio:</b>	Hub Board PCBA
<b>Manufacturer:</b>	ACEMAX INDUSTRIAL CO., LTD
<b>Frequency band:</b>	2400 - 2483.5 MHz
<b>Number of Channels:</b>	11
<b>Operating Frequency:</b>	2412 MHz – 2462 MHz
<b>Modulation:</b>	802.11b CCK 802.11g/n(HT20) OFDM
<b>Antenna:</b>	FPCB Antenna
<b>Antenna Peak Gain:</b>	1 dBi
<b>FCC ID:</b>	FCC ID: X4K-WSS33-1
<b>IC ID:</b>	IC: 8880A-WSS33

<b>Radio:</b>	Transceiver
<b>Frequency band:</b>	902 – 928 MHz
<b>Number of Channels:</b>	25
<b>Operating Frequency:</b>	912.5 – 926.9 MHz
<b>Modulation:</b>	2GFSK
<b>Antenna:</b>	¼ Wave Monopole
<b>Antenna Peak Gain:</b>	0 dBi
<b>FCC ID:</b>	FCC ID: X4K-ATS3DCB11WS
<b>IC ID:</b>	IC: 8880A-ATS3DCB11WS

### 5.2 EUT (Host) Details

<b>Test Sample:</b>	Overhead Garage Door Opener
<b>Model Number:</b>	ATS-3AM
<b>Supply Rating:</b>	110 V AC, 0.8A, 50/60 Hz
<b>Manufacturer:</b>	Counter mast Technology (Dalian) Company Limited

### 5.3 Test Configuration

Testing was performed with the EUT's Transceivers set normal operation.

### 5.4 Modifications

No modifications were required to achieve compliance.

### 5.5 Deviations from the Standards

No deviations from the standards.

## 6 RESULTS

### 6.1 §15.247(d)/ RSS-247 5.5 Spurious Emissions

#### 6.1.1 Test procedure

Radiated out-of-band/spurious emissions 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 the defined resolution bandwidths to permit reliable display and identification of emissions.

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

EUT was set at a height of 0.8 m for measurements below 1000 MHz and set at a height of 1.5 m for measurements above 1000 MHz.

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. For below 1000 MHz the emissions were measured with a Quasi-Peak detector, and for above 1000 MHz the emissions were measured with Peak and Average detectors.

EUT was investigated on all three axes (x, y, and z) with the loop antenna. Measurements on the worst axis are presented below.

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 polarisations of the measurement antenna.

#### 6.1.2 Evaluation of field strength

Field strengths were calculated automatically by the 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/m.

$AF$  = 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).

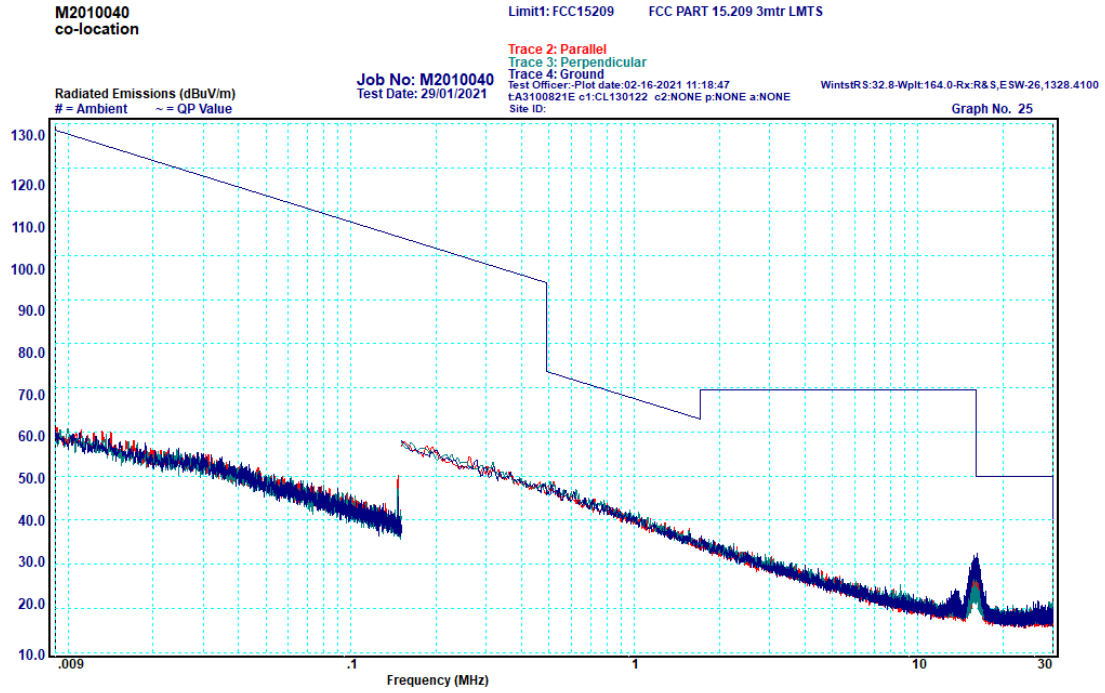
#### 6.1.3 Limits

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



### 6.1.4 Transmitter Spurious Emissions: 9 kHz to 30 MHz

All emissions measured in the frequency band 9kHz - 30MHz complied with the requirements of the standard.

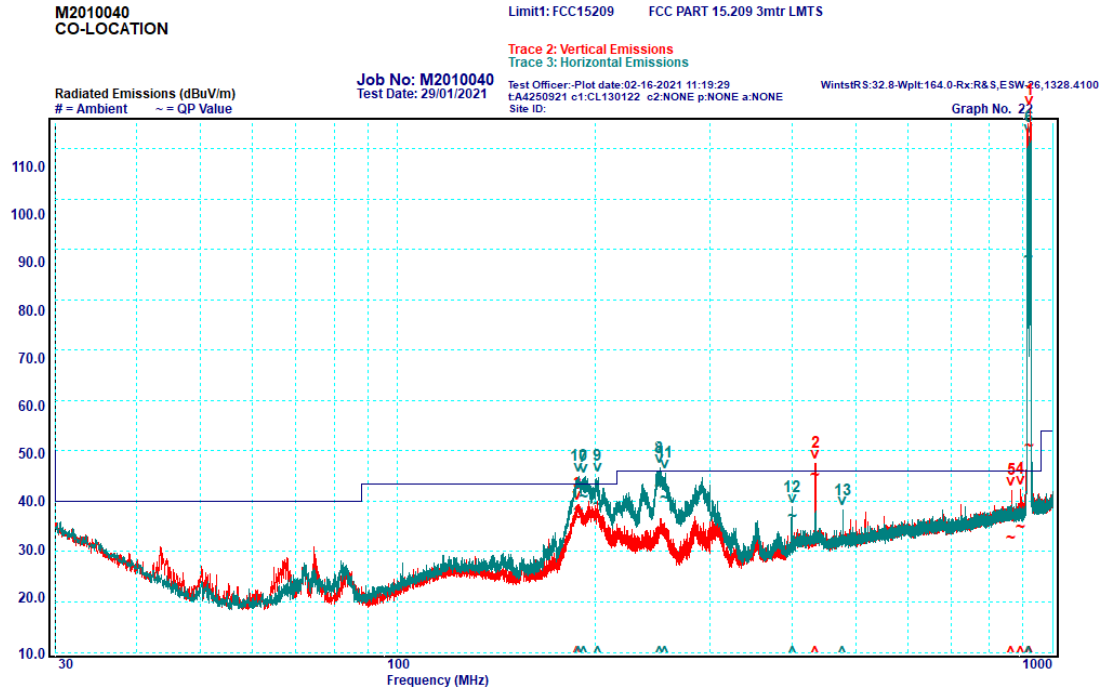


Graph 6-1: Transmitter Spurious Emissions, 9kHz – 30 MHz

No peaks were measured within 10 dB of the limit.

### 6.1.5 Transmitter Spurious Emissions: 30 - 1000 MHz

All emissions measured in the frequency band 30 – 1000 MHz complied with the requirements of the standard.



Graph 6-2: Transmitter Spurious Emissions, 30 – 1000 MHz

Table 6-1: Transmitter Spurious Emissions, 30 – 1000 MHz

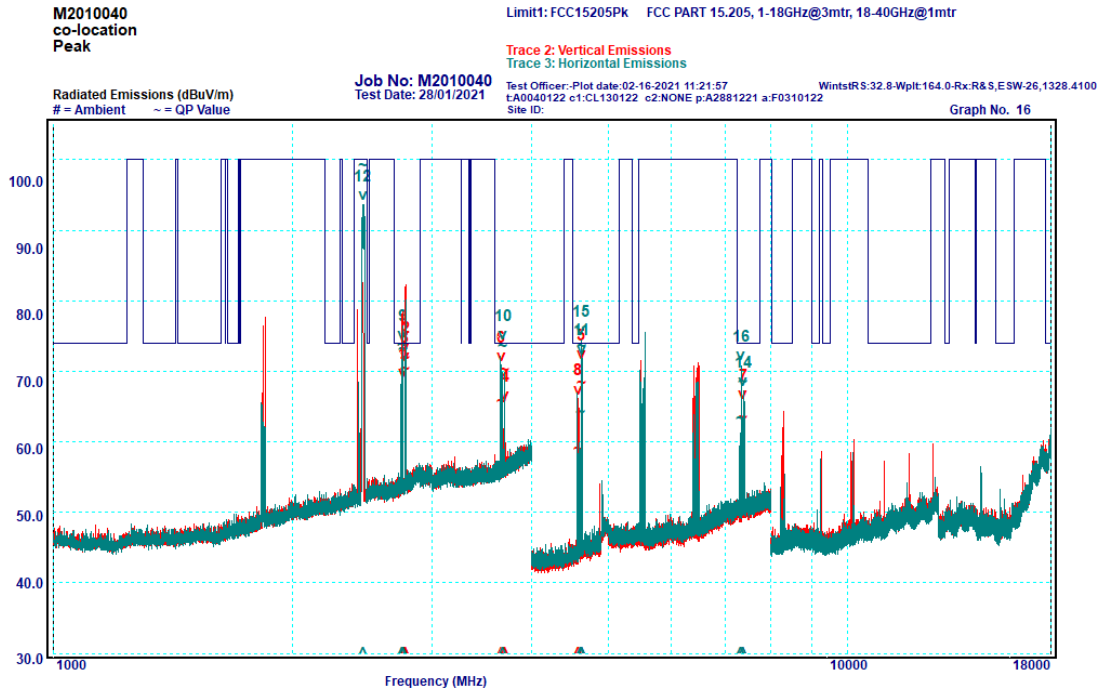
Peak	Frequency [MHz]	Polarisation	Quasi Peak		
			Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
1*	922.35	Vertical	N/A	N/A	N/A
2	434.41	Vertical	45.2	46	-0.8
3	188.42	Vertical	36.7	43.5	-6.8
4	892.19	Vertical	34.8	46	-11.2
5	864.45	Vertical	32.6	46	-13.4
6*	919.3	Horizontal	N/A	N/A	N/A
7	192.35	Horizontal	40.8	43.5	-2.7
8	250.97	Horizontal	42.9	46	-3.1
9	202	Horizontal	39.3	43.5	-4.2
10	188.84	Horizontal	38.2	43.5	-5.3
11	256.17	Horizontal	40.7	46	-5.3
12	400.01	Horizontal	36.9	46	-9.1
13	478.08	Horizontal	32.4	46	-13.6

\*Note: Peaks 1 and 6 are fundamental transmissions and are not subject to the spurious emissions limit of the standard.

### 6.1.6 Transmitter Spurious Emissions: 1 - 18 GHz

All emissions measured in the frequency band 1 – 18 GHz complied with the requirements of the standard.

#### Peak Measurement:



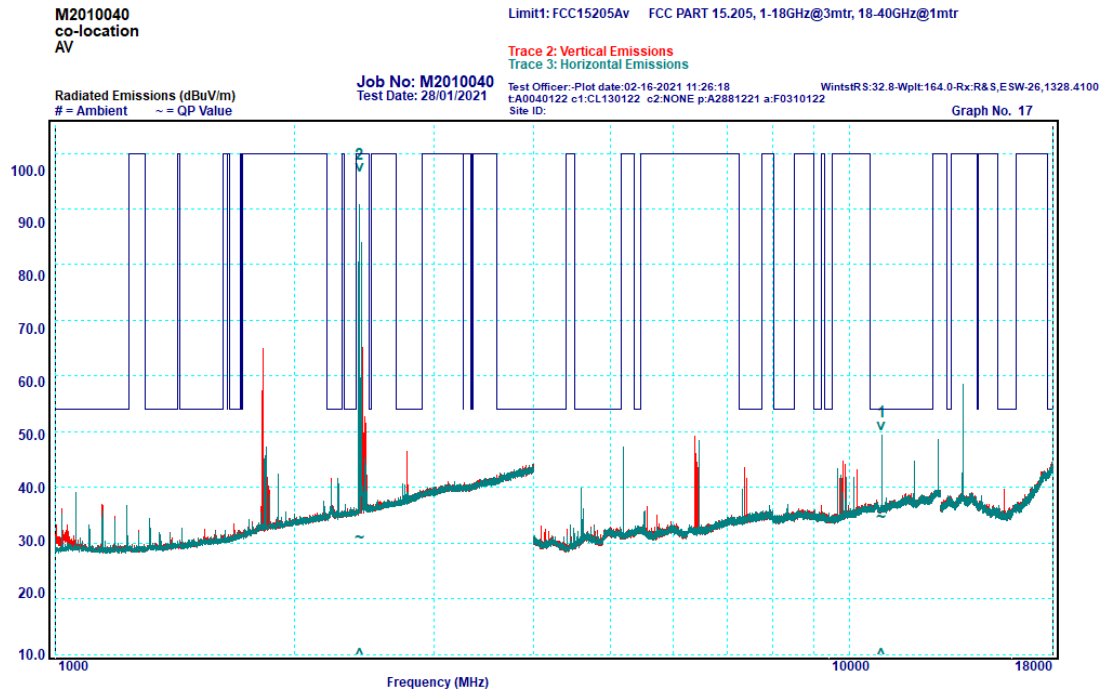
Graph 6-3: Transmitter Spurious Emissions, 1 – 18 GHz, Peak

Table 6-2: Transmitter Spurious Emissions, 1 – 18 GHz, Peak

Peak	Frequency [MHz]	Polarisation	Peak		
			Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
1	2754.81	Vertical	73.7	74	-0.3
2	2778.61	Vertical	71.9	74	-2.1
3	2773.06	Vertical	70.3	74	-3.7
4	3704.86	Vertical	70.2	74	-3.8
5	4623.46	Vertical	68.3	74	-5.7
6	3664.71	Vertical	65.7	74	-8.3
7	7384.91	Vertical	63.4	74	-10.6
8	4581.96	Vertical	59	74	-15
9	2753.5	Horizontal	73.6	74	-0.4
10	3683.61	Horizontal	73.6	74	-0.4
11	4631.49	Horizontal	73.5	74	-0.5
12*	2453.5	Horizontal	N/A	N/A	N/A
13	2760.12	Horizontal	73.1	74	-0.9
14	7387.12	Horizontal	68.5	74	-5.5
15	4618.65	Horizontal	64.2	74	-9.8
16	7337.95	Horizontal	63.3	74	-10.7

\*Note: Peak 12 is a fundamental transmission and is not subject to the spurious emissions limit of the standard.

**Average Measurement:**



Graph 6-4: Transmitter Spurious Emissions, 1 – 18 GHz, Average

Table 6-3: Transmitter Spurious Emissions, 1 – 18 GHz, Average

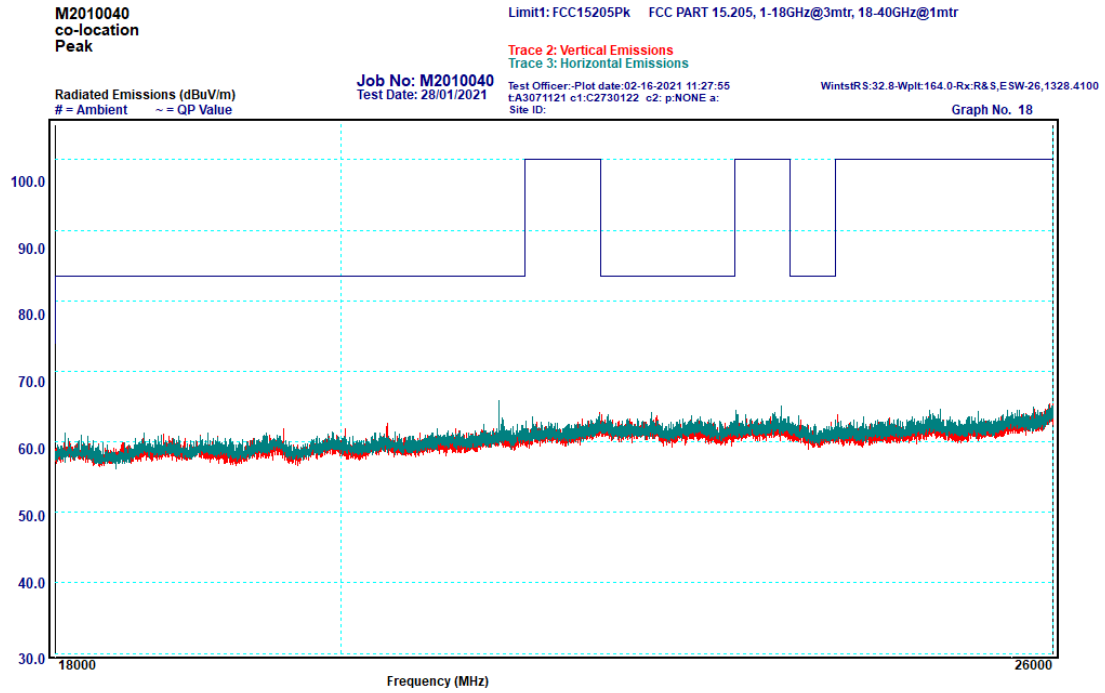
Peak	Frequency [MHz]	Polarisation	Peak		
			Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]
1	10964.78	Horizontal	34.7	54	-19.3
2*	2416.29	Horizontal	N/A	N/A	N/A

\*Note: Peaks 2 is fundamental transmissions and is not subject to the spurious emissions limit of the standard.

### 6.1.7 Transmitter Spurious Emissions: 18 – 26 GHz

All emissions measured in the frequency band 18 – 26 GHz complied with the requirements of the standard.

#### Peak Measurement:



Graph 6-5: Transmitter Spurious Emissions, 18 – 26 GHz, Peak

No peaks were measured within 10 dB of the limit.

**Average Measurement:**

M2010040  
co-location  
AV

Limit1: FCC15205Av FCC PART 15.205, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions  
Trace 3: Horizontal Emissions

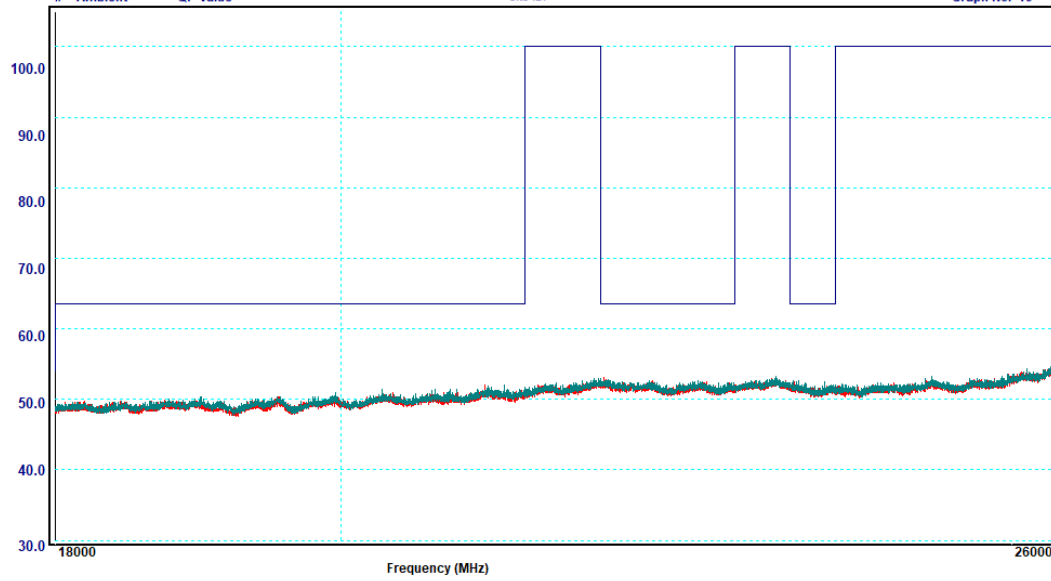
Radiated Emissions (dBuV/m)  
# = Ambient ~ = QP Value

Job No: M2010040  
Test Date: 28/01/2021

Test Officer: Plot date: 02-16-2021 11:29:16  
tA307f121 c1:C2730122 c2:p:NONE a:  
Site ID:

WintstRS:32.8-Wplt:164.0-Rx:R&S,ESW-26,1328.4100

Graph No. 19



Graph 6-6: Transmitter Spurious Emissions, 18 – 26 GHz, Average

No peaks were measured within 10 dB of the limit.

**END OF REPORT**