

Laboratory Test Report

ELECTROMAGNETIC COMPATIBILITY

for the

TPGB1B Handportable Transceiver

Tested In accordance with

47CFR 15.109 & 15.111
and
RSS-Gen Issue 5, 7.3 & 7.4

Report Revision: 1
Issue Date: 11 April 2024
FCC ID: CASTPGB1B
ISED: 737A-TPGB1B

PREPARED BY: J. J. Aro


Test Technician

CHECKED & APPROVED BY: M. C. James


Laboratory Technical Manager



Tests indicated as not accredited are outside the laboratory's scope of accreditation.

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TELTEST Laboratories (A Division of Tait International Ltd)
PO Box 1645, 558 Wairakei Road, Christchurch, New Zealand.

Telephone: 64 3 358 3399

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Revision History

Date	Revision	Comments
11 April 2024	1	Initial test report

TELTEST Laboratories

Tait International Ltd
Report Number 4351

Introduction

This report is to prove compliance of the TPGB1B 136-174MHz IS Handportable Transceiver, in accordance with:

47CFR 15.109 & 15.111
and
RSS-Gen Issue 5, sections 7.3 & 7.4

This radio supports Analogue, Digital FFSK, Digital Mobile Radio (DMR), APCO P25 Phase-1, and APCO P25 Phase-2 modulations.

Previous PCB IPN: N/A
New PCB IPN: 220-01992-02

Report Prepared For

Tait International Ltd
245 Wooldridge Road
Harewood
Christchurch 8051
New Zealand

Description of Sample

Manufacturer: Tait International Limited
Equipment: Handportable Transceiver
Type: TPGB1B
Product Code: T03-25007-BAAA
Serial Number: 26908394
Quantity: 1

HARDWARE & SOFTWARE

Quantity: 1

Type	Code and Version	Target Hardware
Hardware ID	TPGB11-B101_0005	Portable
Firmware Package	QIDMR_3.04.00.0016	Portable
FPGA Image	QPG1G_S02_3.09.03.32c9	Portable

Test Requirements and Result Summary

FCC Specification	RSS-Gen Specification	Test Items	Test Methods	Result
FCC 47 CFR 15.109	RSS-Gen 7.3	Receiver Spurious Emissions (Radiated)	ANSI C63.4 8.3 *	Pass
FCC 47 CFR 15.111	RSS-Gen 7.4	Receiver Spurious Emissions (Conducted)	TIA-603-E 2.1.2	Pass

*Not Accredited

Statement of Compliance

The TPGB1B Handportable Transceiver as tested in this report was found to conform to the following standards:

47CFR 15.109 & 15.111
and
RSS-Gen Issue 5, sections 7.3 & 7.4

The results obtained in this test report pertain only to the item(s) tested. Teltest does not make any claims of compliance for samples or variants that were not tested.

Test Conditions

Environmental Conditions

All testing was performed on the 10th of April 2024, and under the following conditions:

Ambient Temperature 15° C → 30° C
Relative Humidity 20% → 75%
Standard Test Voltage 7.5 V_{DC}

Measurement Frequency Range for Unintentional Radiators

The measured frequency range is determined in accordance with FCC 47CFR 15.33 (b) (1) and RSS-Gen section 6.13.2

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement (MHz)	Upper frequency selected for test
Below 1.705	30	☐
1.705 – 108	1000	☐
108 – 500	2000	☒
500 – 1000	5000	☐
Above 1000	5 th Harmonic of highest frequency or 40 GHz, whichever is lower	☐ MHz

Test Results

RADIATED SPURIOUS EMISSIONS – Unintentional Radiator

Note: This test is not accredited

SPECIFICATION: FCC 47 CFR 15.109 RSS-Gen 7.3
GUIDE: ANSI C63.4 8.3

MEASUREMENT PROCEDURE: Direct Measurement

Initial Scan:

1. The EUT is placed in the S-Line TEM cell and emissions are measured from 30 MHz to 800 MHz. Any emission within 10 dB of the limit is then re-tested on the OATS.
2. The EUT is placed in the reverberation chamber and emissions are measured from 800 MHz to the upper frequency required. Any emission within 10 dB of the limit is then re-tested on the OATS.

OATS Measurement:

1. The EUT is placed on a wooden turntable at a distance of three metres from the test antenna. The output terminal is connected to an RF dummy load.
2. The test antenna is raised from 1 m to 4 m to obtain a maximum reading; the turntable is then rotated through 360° to obtain the maximum response of each spurious emission. Valid emissions are determined by switching the EUT on and off.
3. The maximum response of each spurious emission is recorded.

LIMIT CLAUSE: FCC 47CFR 15.109 RSS-Gen 7.3

EMISSION FREQUENCY (MHz)	µVolts / Metre @ 3 Metres
30 → 88	100
88 → 216	150
216 → 960	200
960 →	500

Measurement Uncertainty (dB)	< 1GHz ±5.0 dB > 1GHz ±5.5 dB
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RADIATED SPURIOUS EMISSIONS – Unintentional Radiator

MEASUREMENT RESULTS:

SPECIFICATION: FCC 47CFR 15.109 RSS-Gen 7.3

12.5 kHz Channel Spacing 138.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 10 dB of Limit.	

12.5 kHz Channel Spacing 143.950 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 10 dB of Limit.	

12.5 kHz Channel Spacing 148.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 10 dB of Limit.	

12.5 kHz Channel Spacing 150.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 10 dB of Limit.	

RADIATED SPURIOUS EMISSIONS – Unintentional Radiator

MEASUREMENT RESULTS:

SPECIFICATION: FCC 47CFR 15.109 RSS-Gen 7.3

12.5 kHz Channel Spacing 150.025 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 10 dB of Limit.	

12.5 kHz Channel Spacing 162.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 10 dB of Limit.	

12.5 kHz Channel Spacing 173.950 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 10 dB of Limit.	

CONDUCTED SPURIOUS EMISSIONS

SPECIFICATION: FCC 47CFR 15.111 RSS-Gen 7.4

GUIDE: TIA-603-E 2.1.2 (Analogue)
TIA-102-CAAA-C 2.1.2 (Digital)

MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment set up.
2. The measurement frequency range is from 30 MHz to the upper frequency limit as determined by FCC 47 CFR 15.33 and table 2
3. Spurious emissions which were attenuated more than 20 dB below the limit were not recorded.

LIMIT CLAUSE: FCC 47CFR 15.111 RSS-Gen 7.4

LIMIT	30 → 1000 MHz	2 nW (-57 dBm)
	> 1000 MHz	5 nW (-53 dBm)

Measurement Uncertainty	≤ 12.75 GHz ± 2.8 dB
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CONDUCTED SPURIOUS EMISSIONS

MEASUREMENT RESULTS:

SPECIFICATION: FCC 47CFR 15.111

RSS-Gen 7.4

12.5 kHz Channel Spacing 138.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

12.5 kHz Channel Spacing 143.950 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

12.5 kHz Channel Spacing 148.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

12.5 kHz Channel Spacing 150.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

CONDUCTED SPURIOUS EMISSIONS

MEASUREMENT RESULTS:

SPECIFICATION: FCC 47CFR 15.111

RSS-Gen 7.4

12.5 kHz Channel Spacing 150.025 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

12.5 kHz Channel Spacing 162.050 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

12.5 kHz Channel Spacing 173.950 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

Test Equipment List

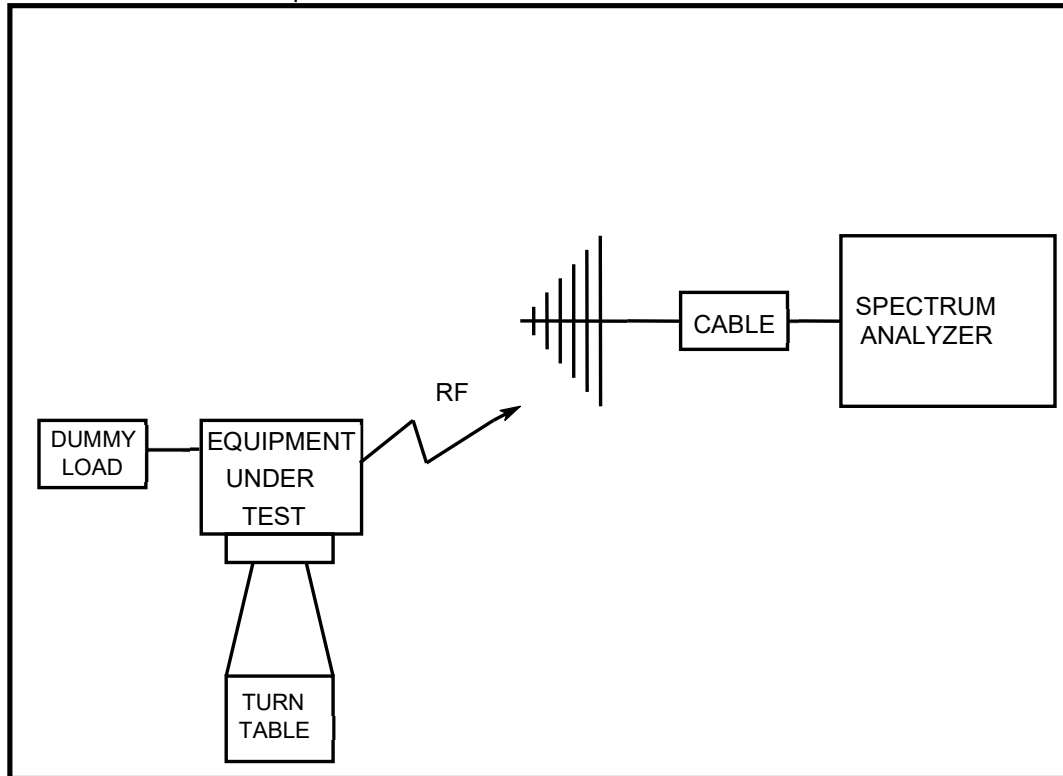
Equipment Type	Information	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
Antenna	Reverb - 1-18GHz DRG	Schwarzbeck	BBHA 9120 D	9120D-885	E4857	
Antenna	Reverb - 1-18GHz DRG	Schwarzbeck	BBHA 9120 D	9120D-884	E4858	
Coax Cable	Reverb - 4.5m Multiflex 141	TeltestBlue6	MF 141	TeltestBlue6	E4843	08-Oct-24
Coax Cable	Reverb - 2m Multiflex 141	TeltestBlue5	MF 141	TeltestBlue5	E4844	08-Oct-24
Coax Cable	Reverb - 2m Multiflex 141	TeltestBlue4	MF 141	TeltestBlue4	E4845	08-Oct-24
Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue3	MF 141	TeltestBlue3	E4846	08-Oct-24
Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue2	MF 141	TeltestBlue2	E4847	08-Oct-24
Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue1	MF 141	TeltestBlue1	E4848	08-Oct-24
Coax Cable	1.5m Blue	Suhner	Sucoflex 126EA	502868/126E A	E5028	08-Oct-24
Power Supply	TREVA 1 60V/25A	Agilent	N5767A	US23D6941R	E1137 2	03-Oct-24
RF Amplifier	+21.7 dB 1GHz	Tait	ZFL-1000LN	E3660	E3360	15-Aug-24
RF Amplifier	Pre-amplifier	Agilent	87405C	MY47010688	E4941	16-Oct-24
RF Chamber	S-LINE TEM CELL	Rohde & Schwarz	1089.9296.02	338232/003	E3636	07-May-25
RF Chamber	Reverb - Stirrer controller for reverb chamber	Teseq	Stirrer Controller	29765.1	E4854	
RF Chamber	Reverb - 0.5 - 18GHz Reverberation Chamber	Teseq	RVC XS	29765	E4855	
RF Load	50W	Weinschel	F1426	BF0487	E3675	08-Oct-24
Spectrum Analyser	13.2GHz	Agilent	PSA E4445A	MY42510072	E4139	18-Oct-24
Spectrum Analyser	26.5GHz	Agilent	PXA N9030A	MY49432161	E4907	02-Mar-25
Temp & Humidity datalogger		Hobo	U21-011	10134275	E4980	07-Aug-24
Testware	Conducted Emissions		March 2018	-	-	
Testware	Reverb Emissions		TTEL_REVEMIS 2.00.03	-	-	
Testware	S-Line Radiated Emissions		TTEL_SLINERADE M 2.00.01	-	-	

* NOTE: Items without calibration dates are calibrated immediately before use or was set using calibrated instruments.

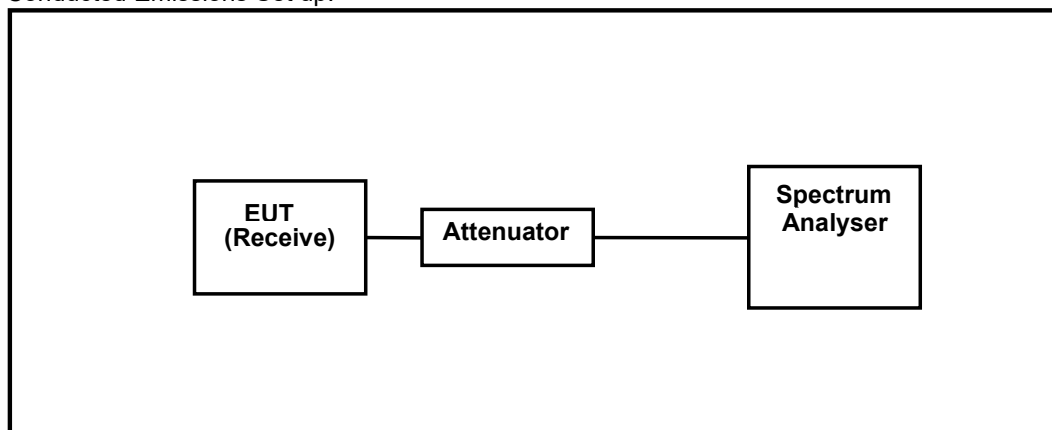
ANNEX A

Test Setup Details

Radiated Emissions Set up.



Conducted Emissions Set up.



END OF REPORT