Laboratory Test Report

ELECTROMAGNETIC COMPATIBILITY

for the

TPGHKB Hand Portable Transceiver

Tested In accordance with

47CFR 15.109 & 15.111

Report Revision:	1
Issue Date:	31 July 2024
FCC ID:	CASTPGHKB

PREPARED BY: I. D. Russell
Test Technician

CHECKED & APPROVED BY: M. C. James
Laboratory Technical Manager

ACCREDITED
TESTING LABORATORY
№ 9, 577

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

TABLE OF CONTENTS

Revision History

Date	Revision	Comments
31 July 2024	1	Initial test report

Introduction

Type approval testing of the TPGHKB, 4 Watt, Hand Portable transceiver in order to demonstrate compliance with 47CFR 15.109 & 15.111.

Report Prepared For

Tait International Ltd
245 Wooldridge Road
Harewood
Christchurch 8051
New Zealand

Description of Sample

Manufacturer	Tait International Limited
Equipment:	Hand Portable Transceiver
Type:	TPGHKB
Product Code:	T03-25007-EBAZ
Serial Numbers:	26966389
Quantity:	1

HARDWARE & SOFTWARE
Quantity: 1

Hardware ID	TPGB11-HK01_0005
Firmware Package	QIDMR_2024.25.7842

TEST REQUIREMENTS AND RESULT SUMMARY

FCC Specification	Test Items	Test Methods	Result
FCC 47 CFR 15.109	Receiver Spurious Emissions (Radiated)	ANSI C63.4 8.3 *	Pass
FCC 47 CFR 15.111	Receiver Spurious Emissions (Conducted)	TIA-603-E 2.1.2	Pass
FCC 47 CFR 15.107	Power Line Conducted Emissions	ANSI C63.4 7.3	N/A

*Not Accredited

Statement of Compliance

The TPGHKB Hand Portable transceiver as tested in this report was found to conform to the following standards:

47CFR 15.109 & 15.111

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 between 18 → 31 July 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)

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	5th 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

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

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

RADIATED SPURIOUS EMISSIONS – Unintentional Radiator

SPECIFICATION: FCC 47CFR 15.109

12.5 kHz Channel Spacing	406.15 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (µV/m)
~	~
12.5 kHz Channel Spacing	418.05 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (µV/m)
~	~
12.5 kHz Channel Spacing	429.95 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (µV/m)
~	~
12.5 kHz Channel Spacing	438.05 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (µV/m)
~	~
12.5 kHz Channel Spacing	450.05 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (µV/m)
~	~
12.5 kHz Channel Spacing	460.05 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (µV/m)
~	~
12.5 kHz Channel Spacing	469.95 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (µV/m)
~	~
No emissions were detected within 20 dB of Limit.	

CONDUCTED SPURIOUS EMISSIONS - Receiver

SPECIFICATION: FCC 47CFR 15.111

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.
3. Spurious emissions which were attenuated more than 20 dB below the limit were not recorded.

LIMIT CLAUSE: FCC 47CFR 15.111

LIMIT	2 nW (-57 dBm)

Measurement Uncertainty	≤12.75 GHz ± 2.8 dB

MEASUREMENT RESULTS:

12.5 kHz Channel Spacing 406.15 MHz Receiver / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
12.5 kHz Channel Spacing 418.05 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~
12.5 kHz Channel Spacing 429.95 MHz Receive / Tx Standby	
Emission Frequency (MHz)	Level (dBm)
~	~

Conducted Spurious Emissions - continued

12.5 kHz Channel Spacing	438.05 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (dBm)
~	~
12.5 kHz Channel Spacing	450.05 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (dBm)
~	~
12.5 kHz Channel Spacing	460.05 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (dBm)
~	~
12.5 kHz Channel Spacing	469.95 MHz Receive / Tx Standby
Emission Frequency (MHz)	Level (dBm)
~	~
No emissions were detected within 20 dB of Limit.	

TEST EQUIPMENT LIST

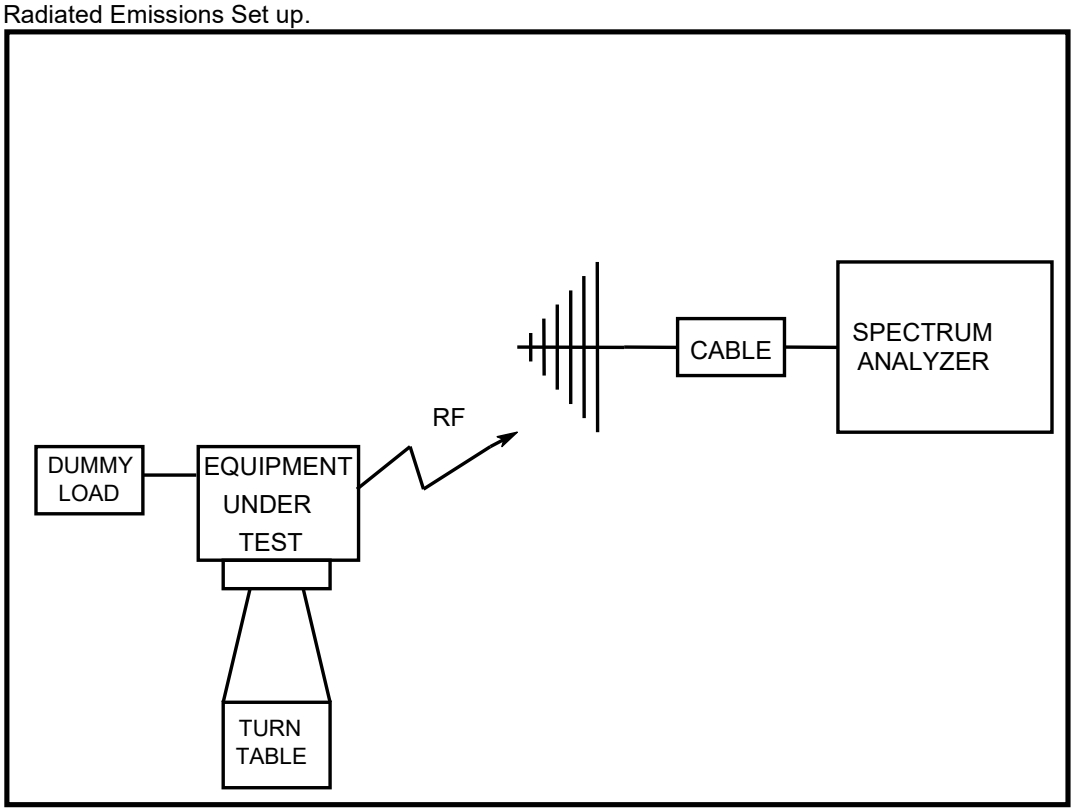
Equipment Type	Information	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
Antenna	Reverb - 1-18GHz DRG	Schwarzbeck	BBHA 9120 D	9120D-885	E4857	
Antenna	Reverb - 1-18GHz DRG	Schwarzbeck	BBHA 9120 D	9120D-884	E4858	
Coax Cable	2m Black	Suhner	RG214HF/Nm/ Nm/2000	TeltestBlack2	E4623	8-Oct-24
Coax Cable	Reverb - 4.5m Multiflex 141	TeltestBlue6	MF 141	TeltestBlue6	E4843	8-Oct-24
Coax Cable	Reverb - 2m Multiflex 141	TeltestBlue5	MF 141	TeltestBlue5	E4844	8-Oct-24
Coax Cable	Reverb - 2m Multiflex 141	TeltestBlue4	MF 141	TeltestBlue4	E4845	8-Oct-24
Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue3	MF 141	TeltestBlue3	E4846	8-Oct-24
Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue2	MF 141	TeltestBlue2	E4847	8-Oct-24
Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue1	MF 141	TeltestBlue1	E4848	8-Oct-24
Coax Cable	2m Black	Suhner	RG214HF/Nm/ Nm/2000	TeltestBlack6	E4849	8-Oct-24
Coax Cable	1.5m Blue	Suhner	Sucoflex 126EA	502868/126EA	E5028	8-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 Attenuator	10dB 50W	Weinschel	24-10-34	BC3293	E4364	8-Oct-24
RF Attenuator	10dB 50W	Weinschel	24-10-34	AZ0401	E3388	8-Oct-24
RF Attenuator	20dB 25W	Weinschel	33-20-33	BD5871	E3673	8-Oct-24
RF Attenuator	3dB 0.5W	Weinschel	Model 1	CH6863	E5013	8-Oct-24
RF Chamber	S-LINE TEM CELL	Rohde & Schwarz	1089.9296.02	338232/003	E3636	7-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	AE2490	E3624	8-Oct-24
Signal Generator	Analog 4GHz	Agilent	E4422B	GB40050320	E3788	12-Oct-24
Spectrum Analyser	13.2GHz	Agilent	PSA E4445A	MY42510072	E4139	18-Oct-24
Spectrum Analyser	26.5GHz	Agilent	PXA N9030A	MY49432161	E4907	2-Mar-25
Temp & Humidity datalogger		TP-Link TAPO	T315	22383M6000671	E11377	8-Feb-25
Testware	Conducted Emissions		March 2018	-	-	
Testware	Reverb Emissions		TTEL_REVEMIS 2.00.03	-	-	
Testware	S-Line Radiated Emissions		TTEL_SLINERADEM 2.00.01	-	-	

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

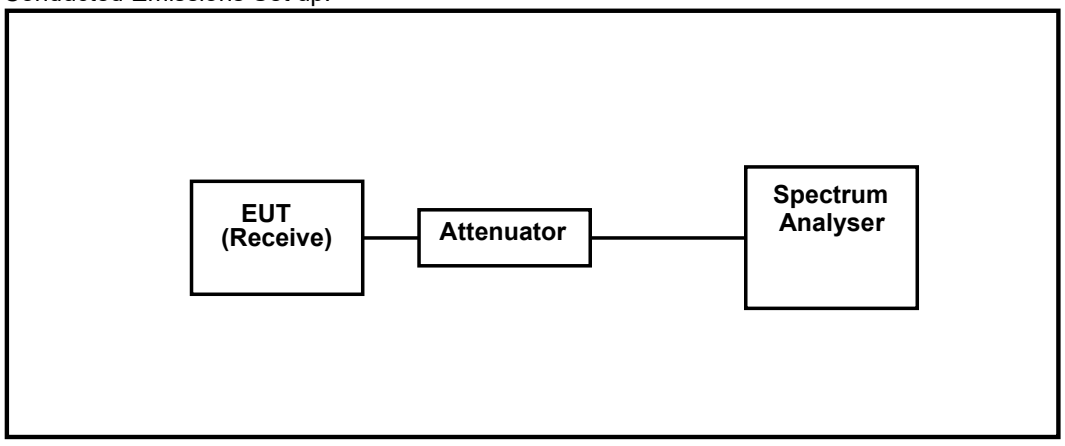
ANNEX A

TEST SETUP DETAILS

Radiated Emissions Set up.



Conducted Emissions Set up.



END OF REPORT