



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Partial Test of: Cello 6 V2

To: FCC Part 22: 2009 Subpart H and FCC Part 24: 2009 Subpart E

Test Report Serial No:
RFI/RPT2/RP75861JD02A

Supersedes Test Report Serial No:
RFI/RPT1/RP75861JD02A

This Test Report Is Issued Under The Authority Of Brian Watson, COO Payments and Consultancy:	pp 
Checked By:	R. Graham
Signature:	
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1. Customer Information





Company Name:	Technolog Ltd
Address:	Technolog House, Ravenstor Road Wirksworth, Matlock Derbyshire DE4 4FY

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR22
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 22 Subpart H (Public Mobile Services)
Specification Reference:	47CFR24
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 24 Subpart E (Personal Communication Services)
Site Registration:	FCC: 209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	01 October 2009 to 04 March 2010

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Port Type	Result
Part 22.913(a)	Transmitter Effective Radiated Power (ERP)	Antenna	
Part 24.232	Transmitter Equivalent Isotropic Radiated Power (EIRP)	Antenna	
Key to Results  = Complied  = Did not comply			

2.3. Methods and Procedures

Reference:	ANSI/TIA-603-C-2004
Title:	Land Mobile Communications Equipment, Measurements and performance Standards

2.4. Deviations from the Test Specification

Only the testing of transmitter ERP in the GSM850 band and EIRP in the PCS1900 band was performed.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Cello 6 V2
Model Name or Number:	v2 TC65i T5H2000D
Serial Number:	092101019
IMEI Number:	353234020013361
Hardware Version Number:	Rev.D
Software Version Number:	F.E.P = 2.17; Modem = 2.10
FCC ID:	XUVC6V2D

3.2. Description of EUT

The equipment under test was a lower power, Intrinsically Safe, fully integrated wireless data logger designed for the remote monitoring & analysis of flow within the gas distribution system. The EUT incorporates a GSM module operating in the GSM850 and PCS1900 bands.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	GSM850 and PCS1900		
Type of Radio Device:	Transceiver		
Mode:	GSM/GPRS		
Power Supply Requirement(s):	Nominal	3.8 V	
Maximum Output Power (ERP):	GSM	34.0 dBm	
	GPRS	33.8 dBm	
Transmit Frequency Range GSM850:	824 to 849 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	128	824.2
	Middle	190	836.4
	Top	251	848.8
Maximum Output Power (EIRP):	GSM	30.2 dBm	
	GPRS	29.2 dBm	
Transmit Frequency Range PCS1900:	1850 to 1910 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1850.2
	Middle	660	1879.8
	Top	810	1909.8

3.5. Support Equipment

No support equipment was used to exercise the EUT during testing:

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- EUT was tested in GSM single timeslot circuit switched and GPRS Multislot Class 8 transmitting on one timeslot in the uplink.
- Constantly transmitting at full power on bottom, centre and top channels as required.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- Connected to a GSM/GPRS system simulator, operating in transceiver mode

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

5.2. Test Results

5.2.1. Transmitter Effective Radiated Power (ERP)

Test Summary:

FCC Part:	22.913(a)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

Results: GSM

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	34.0	38.5	4.5	Complied
Middle	836.4	Horizontal	32.6	38.5	5.9	Complied
Top	848.8	Vertical	32.3	38.5	6.2	Complied

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	824.2	Horizontal	33.6	38.5	4.9	Complied
Middle	836.6	Horizontal	33.1	38.5	5.4	Complied
Top	848.8	Vertical	33.8	38.5	4.7	Complied

Note(s):

1. Measurements were performed with the test antenna in the vertical and horizontal planes and the EUT in the X, Y and Z planes. The highest level was recorded.

5.2.2. Transmitter Equivalent Isotropic Radiated Power (EIRP)**Test Summary:**

FCC Part:	24.232
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

Results: GSM

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	30.2	33.0	2.8	Complied
Middle	1879.8	Horizontal	27.0	33.0	6.0	Complied
Top	1909.8	Vertical	25.4	33.0	7.6	Complied

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	1850.2	Horizontal	29.2	33.0	3.8	Complied
Middle	1879.8	Horizontal	27.7	33.0	5.3	Complied
Top	1909.8	Vertical	27.8	33.0	5.2	Complied

Note(s):

1. Measurements were performed with the test antenna in the vertical and horizontal planes and the EUT in the X, Y and Z planes. The highest level was recorded.

6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Effective Radiated Power (ERP)	Not applicable	95%	±2.94 dB
Equivalent Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
A1299	Antenna	Schaffner	CBL6143	5094	13 Aug 2009	12
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	27 Nov 2009	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
L0990	Comms Test Set	Rohde & Schwarz	CMU 200	S220447	Calibration not required	-
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12

NB In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.