



{ user manual }



DSG1 *Lite* **Digital Signal Generator**

Please direct all questions to your local CPAT Flex sales office representative, or distributor, or contact CPAT Flex technical support at: www.cpatflex.com.

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CPAT Flex User Manual (DSG1 *Lite*)

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Published by: CPAT Flex
8566 Ave de L'Esplanade Montreal, Quebec
CANADA H2P 2R8

Sales and Support Team
+1-514-307-2728 | 1-888-307-2728 | support@cpatflex.com

www.cpatflex.com

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1. GENERAL INFORMATION

1.1 About this Manual

This manual describes the components, installation, and operation of the CPAT Flex DSG1 *Lite* unit.

You will find important safety information in this manual. We strongly recommend that all users read this manual. Use of this product other than for its intended application may compromise the unit's safety features.

1.2 Explanation of Symbols Used

The following symbols are used on the DSG1 *Lite* label and in this Manual:



Direct current (DC)



Caution. Indicates that operations or procedures, if carried out without caution, may cause personal injury or damage to the unit.



Note. Indicates additional information about the product.

1.3 Certification

This section describes the certifications that the DSG1 *Lite* complies with.

1.3.1 Test Specifications

CISPR11/EN55011 (2015) A1 (2016), Class B.

FCC Part 15 (2018) Subpart B, Class B.

ICES-003 (2016), Class B.

IEC61000-4-2 (2008) / IEC61000-4-3 (2006) A1 (2007) A2 (2010) / IEC61000-4-5 (2014).

Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: Generic requirements.

1.3.2 Compliance

This Class B digital apparatus complies with Canadian ICES-003(2016).

This Class B digital apparatus also complies with European CISPR11 (2015) A1 (2016).

This digital apparatus complies with IEC61000-4-2 (2008).

This digital apparatus complies with IEC61000-4-3 (2006) A1 (2007) A2 (2010).

This digital apparatus complies with IEC61000-4-5 (2014) Criterion B.

1.3.3 Note

This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation.



NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, according to Part 15 of the FCC Rules. These limits are designed to offer reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used according to the instruction manual, it may cause harmful interference to radio communications. Operating this equipment in a residential area is likely to cause harmful interference. In such cases, the user will need to correct the interference at their own expense.



NOTE

Any modifications made to this device that are not approved by CPAT Flex may invalidate the user's authority granted by the FCC to operate this equipment.

1.4 Technical Support

CPAT Flex Technical Support Service is available from Monday through Friday from 9:00 AM to 5:00 PM Eastern Time.

Toll-free from the U.S. and Canada: 1-888-307-2728 / International: +1-514-307-2728
support@cpatflex.com

1.5 Calibration

Your DSG1 *Lite* unit has been calibrated and tested at the factory and does not need further calibration before use. However, if the unit suffers damage or is repaired, it is recommended that the unit be tested by an authorized CPAT Flex service center. Also, if your company requires regular calibration of any grammar or requires a calibration certificate for the DSG1 *Lite*, a calibration service is available through CPAT Flex. For more information on our calibration service, please contact your CPAT Flex representative.

1.6 CPAT Flex Website

CPAT Flex's website contains product specifications, information, press releases, brochures, downloads, and Frequently Asked Questions (FAQ). Please visit our website at: www.cpatflex.com

2. System Components

2.1 Product Overview

This section describes the DSG1 *Lite* unit, including its accessories.

The DSG1 *Lite* is a portable dual-band signal generator, which inserts a high-level dual-frequency signal to perform a “pressure test” from the customer drop feed. The DSG1 *Lite* operates simultaneously in both aeronautical and LTE bands using only one RF output.

The DSG1 *Lite* operates at fixed frequencies of 126 MHz (Mid-band) and 612 MHz (LTE-band) to cover both bands.

The DSG1 *Lite* provides:

- High output RF level in mid and LTE bands to facilitate the detection of any leakage inside the customer premises' installation.
- Design to feed the DRV3 and DRV3 *Lite* leakage detector.
- Rechargeable Li-ion battery pack.

2.2 Initial Verification

Your DSG1 *Lite* unit is charged, calibrated, and ready to use right out of the box. Upon delivery, visually inspect each item for any damage that may have occurred during shipping.

If you notice any physical damage, please contact CPAT Flex:

- Toll-free from the U.S. and Canada: 1-888-307-2728
- International callers can dial: +1-514-307-2728

If there are no apparent signs of physical damage, turn on the unit by pressing the button for approximately three (3) seconds, and ensure the unit boots up properly.

Check that your package contains all the standard items as well as any accessories you may have ordered. If you ordered the DSG1 *Lite* Digital Signal Generator kit, the following items are included:

- DSG1 *Lite* unit
- AC/DC adapter, compatible with 110V/220V and 50/60 Hz power distribution networks.



Figure 1: DSG1 *Lite*, and AC/DC adapter

If any of the standard accessories are lost or damaged, you can order a replacement. Please Quote the following DSG1 *Lite* part numbers when ordering:

Part No.	Accessory Description
150-00034-001	DSG1 <i>Lite</i> - Portable Signal Generator
110-00005-001	DSG1 <i>Lite</i> AC/DC adapter
110-00010-001	+12 VDC power supply
113-00005-001	DSG1 <i>Lite</i> Strap

For orders, contact CPAT Flex at 1-888-307-2728 or +1-514-307-2728

3. Setup

The DSG1 *Lite* uses fixed frequencies and tagged modulation. The table below details the parameters and their corresponding values. Operational parameters of DSG1 *Lite*:

Band	Parameter	Values
Mid	Frequency	126 MHz
	Mode	AM 32 kHz
	Output level	50 dBmV (High) 30 dBmV (Low)
LTE	Frequency	612 MHz
	Mode	AM 32 kHz
	Output level	50 dBmV (High) 30 dBmV (Low)
Both	Transmit carriers	Yes
	AM modulation depth	2 dB



CAUTION!

The DSG1 *Lite* High output level is set at 50 dBmV. It must not be connected to a live cable network in order to avoid interference with the current channel lineup.



CAUTION!

Even if the case resists splashing, this device is not waterproof. Do not leave it exposed to rain or any environment conducive to liquid immersion.



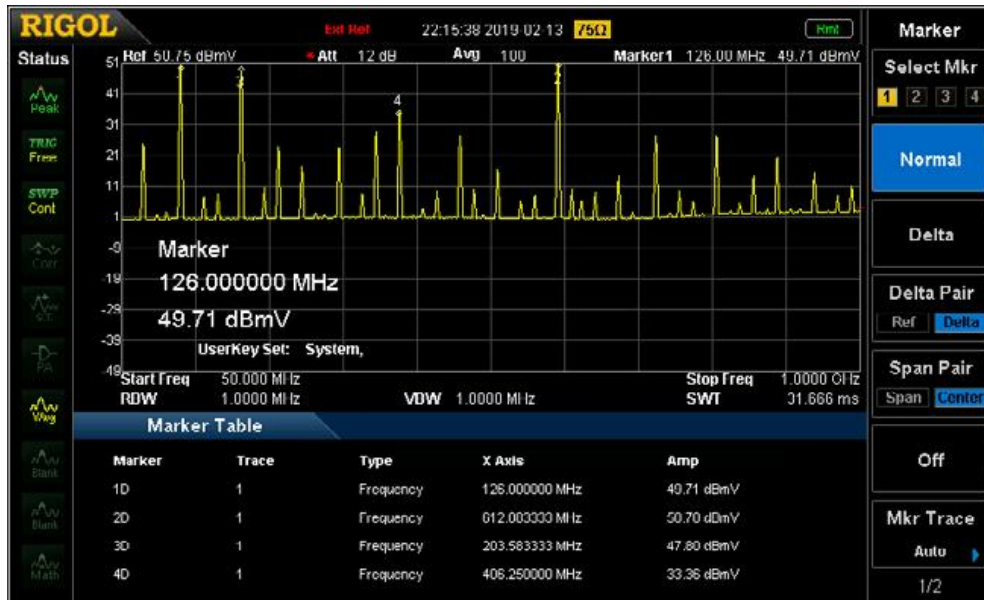
NOTE

The suggested F connector tightening torque is 10 inch-pounds. The maximum torque is 15 inch-pounds.




NOTE

In addition to producing dedicated signals at 126 MHz and 612 MHz, the device also performs other functions. DSG1 *Lite* will generate harmonics at 252 MHz, 378 MHz, etc. The RF levels of these harmonics are lower in level than the main signals but must be taken into consideration if RF measurements are recorded while the DSG1 *Lite* transmits.



Harmonics levels based on 126 & 612 MHz at 50 dBmV

 **NOTE**
 A pad may be required at the output of the DSG1 *Lite*, especially if there is some active equipment connected to the cable drop feed (set-top box, cable modem, etc.). In this situation, use a pad of sufficient attenuation value to bring the output level of the DSG1 *Lite* below the maximum RF input level specified by the manufacturer of the active equipment(s) connected.

4. System Operation

4.1 Power On

To power the DSG1 *Lite*, press the power button on the front panel, and then release it. You should see the power LED (surrounding the power button) and the battery LED turn on.

4.2 LED Information

The two front panel LEDs indicate the status of the unit.

POWER:

- When the power LED is steadily lit RED or GREEN, the DSG1 *Lite* is powered up.
- When the power LED is OFF, the DSG1 *Lite* power is shut down.
- RED means a Low-level output. GREEN means High-level output. Press the Power button briefly to toggle between low and high level.

BATTERY:

- The battery LED is ON when the 12 VDC charger is plugged in. It is:
 - ORANGE when the battery is charging.
 - GREEN when the battery is fully charged.
 - RED when there is a problem with the battery.

4.3 Auto-Shutdown

There is a self-auto shutdown feature that will automatically turn off the device after ~1H of operation from the time it has been powered on. This timer is available from rev 1.7, contact CPAT Flex support for more details.



CAUTION!

Turning OFF the Power will briefly toggle the alternative output mode (High or Low level) before shutting down. Make sure you disconnect the DSG1 *Lite* prior to turning it off. Injecting at a high level might be harmful with the current channel lineup.

5. System Maintenance

5.1 Charging the Battery

The DSG1 *Lite* can operate on battery power for hours when fully charged.

To maintain good battery health and ensure the extended battery life, you must follow these recommendations when charging the battery:

- Only use or replace battery packs provided by CPAT Flex.
- Only use or replace chargers provided by CPAT Flex. The DSG1 *Lite* status LED will turn green when the battery pack is fully charged.
- Charge the DSG1 *Lite* at room temperature. Do not charge the unit in a physical location where extreme temperatures occur during charging.

5.2 Cleaning the Equipment

Your DSG1 *Lite* unit can be cleaned using a damp cloth. Do not immerse the unit in water. Avoid the use of solvents and commercial cleaners.

5.3 Preventive Maintenance

The technician shall perform regular visual inspections of the RF connector for loose or broken connectivity, which could affect the system's performance of the system. If any replacement parts are required, please contact CPAT Flex for more information.

Appendix A – Specifications

TECHNICAL	DETAILS
Modulator type	Dual-band digital signal modulator
Output type	Single "F" 75 Ω female connector
Frequency output 1 of 2	Fixed at 126 MHz (mid-band)
Frequency output 2 of 2	Fixed at 612 MHz (LTE-band)
Frequency stability	±5 kHz
Modulated signal	32 Hz AM tag
Output level from each RF output	High: 50±2 dBmV at 126 MHz / 50±2 dBmV at 612 MHz Low: 30±2 dBmV at 126 MHz / 30±2 dBmV at 612 MHz
Transmission status display	Through an illuminated power button
Power adapter	+12 VDC 1.2 A max
Battery	Pack of 2 rechargeable 7.2 VDC lithium-ion batteries of 2000 mAh ~0.3 A
AC Battery Charger	Input 100-240 VAC ~50-60 Hz 0.7A Output: +12 VDC 1.66 A Transient overvoltage II Rated pollution degree 2
Main supply voltage fluctuations	Up to ±10% of the nominal voltage
Operation Time	10 hrs. Continuous on battery power
Operating temperature*	-20°C to +40°C (-4°F to +104°C)
Charging temperature*	0°C to 45°C (32°F to 110°C)
Battery charge time	2.25 hrs. for full charge
Storage temperature	-20°C to +45°C (-4°F to +113°C)
Maximum relative humidity	80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
Dimensions	4 cm x 12 cm x 13 cm / 1.5" x 4.7" x 5.1" [H x W x D]
Weight	500 g / 17 oz
Recommended use	Indoor use or outdoor use without exposure to direct sunshine or a wet location.

* Specifications subject to change without prior notice.

Appendix B. Our Services

CPAT Flex offers a range of services to deploy and support purchased equipment through its Customer Support organization. Customer Support is included with every product sale and comprises business hour technical assistance, in-warranty repair, and calibration.

B.1 Customer Support

Customer Support is available with the sale of every CPAT Flex product. Customer Support services include:

- Product and Service *Literature*
- Technical Assistance (Business Hour)
- Equipment Repair (Under Warranty Repair and Calibration Services)
- Equipment Return Authorizations (RA)

Contact a Customer Support representative through your local distributor or by accessing www.cpatflex.com for information on calibration and warranty policies.

B.1.1 Equipment Return Instructions

Please contact your local Customer Support location via telephone for a Return Authorization to accompany your equipment. For each piece of equipment returned for repair, attach a tag that includes the following information:

- Owner's name, address, and telephone number
- The serial number, product type, and model
- Warranty status (If you are unsure of the warranty status of your instrument, contact CPAT Flex's Customer Support.)
- A detailed description of the problem or service requested
- The name and telephone number of the person to contact regarding questions about the repair
- The return authorization (RA) number

If possible, return the equipment using the original shipping container and materials. If the original container is not available, pack the unit carefully to prevent damage during transit. If necessary, suitable packing materials can be obtained by contacting CPAT Flex Support.

CPAT Flex is not responsible for any damage that may occur during shipping. The customer should clearly mark the RA or reference number issued by CPAT Flex on the outside of the package and ship it prepaid and insured to CPAT Flex.

Equipment repaired or replaced under warranty will be returned at CPAT Flex's expense to the Customer (Canada/USA) or CPAT Flex's representative (all other countries). All other non-warranty repairs will be returned at the customer's expense to the customer (Canada/ USA) or CPAT Flex's representative (all other countries).

B.2 Limited Product Warranty

B.2.1 Hardware

CPAT Flex warrants to the original end user (Customer) that the new CPAT Flex branded products will be free from defects in workmanship and materials, under normal use, for one (1) year from the date of original shipment.

CPAT Flex warrants repaired products for ninety (90) days from date of shipment. Any Product repaired or replaced under warranty is only warranted for the period of time remaining on the original warranty for the Product.

Any third-party products, including software, included with CPAT Flex products are not covered by this CPAT Flex warranty, and CPAT Flex makes no representations or warranties on behalf of such third parties. Any warranty on such products is from the supplier or licensor of the product.

B.2.2 Software

CPAT Flex warrants to the customer that new CPAT Flex branded software and firmware will perform in substantial conformance to program specifications for a period of ninety (90) days from the date of original shipment.

CPAT Flex warrants the media containing software against failure during the warranty period.

CPAT Flex makes no warranty or representation that the operation of the software products will be uninterrupted or error-free, or that all defects in the software products will be corrected.

B.2.3 Exclusions

This warranty excludes:

- Damage to the physical surface of the product, including cracks or scratches to any part.

- Damage caused by misuse, neglect, improper installation or testing, unauthorized attempts to open, repair, or modify the product, or any other cause beyond the intended use.
- Use of the product with any non-recommended device or service if such device or service causes the problem.
- Installation or maintenance of the product by someone other than CPAT Flex or persons certified by CPAT Flex.
- Changes to the customer environment in which the product was installed.
- Damage caused by accidents, fire, power changes, other hazards, or acts of nature.
- Consumable product or parts thereof (e.g., parts with an expected useful life of less than ninety (90) days, such as certain batteries).
- Product not returned following CPAT Flex's RA procedure.

B.2.4 Refurbished Parts and Prior Testing

The product may include reconditioned or refurbished parts or subassemblies and may have undergone testing before being sold.

B.2.5 Exclusive Remedies

If any product materially fails to conform to the limited warranty set forth in this section (Limited Warranty) and actually fails during the applicable warranty period and under normal use, CPAT Flex shall, at its sole discretion, (i) repair or replace the non-conforming product to remedy the nonconformity identified by the customer in accordance with this section (Limited Product Warranty); or (ii) issue a credit to the customer for the amounts paid for the product in exchange for the return of the non-conforming product, in which case the customer's licenses to any firmware shall be automatically revoked. The customer hereby transfers to CPAT Flex title and ownership of any parts that CPAT Flex replaces.

B.2.6 Disclaimer

THE REMEDIES EXPRESSLY PROVIDED IN THIS SECTION WILL BE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES AND SHALL BE IN LIEU OF ANY OTHER RIGHTS OR REMEDIES CUSTOMER MAY HAVE AGAINST CPAT FLEX WITH RESPECT TO ANY NON-CONFORMANCE OF PRODUCTS. EXCEPT AS SPECIFIED IN THIS LIMITED PRODUCT WARRANTY, CPAT FLEX MAKES NO EXPRESS REPRESENTATIONS OR WARRANTIES WITH REGARD TO ANY PRODUCT.

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CANADA H2P 2R8

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