

EMC Test Report

Project Number: 4254084

Report Number: 4254084EMC01

Revision Level: 1

Client: Motorola Solutions, Inc.

Equipment Under Test: Two-Way Radio

Model Name: CLP 446

US Model Number: CLU1060BBLBA

IC Model Number: CLU1063BBLAB

Tanapa Number: PMUE3605D

FCC ID: AZ489FT7110

IC ID: 109U-89FT7110

FCC Rule Parts: FCC 47 CFR Part 90 (§90.205 and §90.210)

RSS-119, Issue 12 (Sections 5.4 and 5.8)

RSS-GEN, Issue 4

ANSI C63.26-2015

Report issued on: 15 January 2018

Test Result: Compliant

Tested by:



Jeremy Pickens, Senior EMC Engineer

Reviewed by:



David Schramm, Operations Manager

Remarks: This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

TABLE OF CONTENTS

1	SUMMARY OF TEST RESULTS	3
1.1	MODIFICATIONS REQUIRED FOR COMPLIANCE.....	3
2	GENERAL INFORMATION	4
2.1	CLIENT INFORMATION.....	4
2.2	TEST LABORATORY.....	4
2.3	GENERAL INFORMATION OF EUT.....	4
2.4	OPERATING MODES AND CONDITIONS.....	4
2.5	MODIFICATIONS REQUIRED TO COMPLIANCE.....	4
2.6	EUT CONNECTION BLOCK DIAGRAM.....	5
2.7	SYSTEM CONFIGURATIONS.....	5
2.8	CABLE LIST.....	5
2.9	TEST EQUIPMENT.....	6
3	EFFECTIVE RADIATED POWER	7
3.1	TEST RESULT.....	7
3.2	TEST METHOD.....	7
3.3	TEST DATA.....	7
4	UNWANTED EMISSIONS	8
4.1	TEST RESULT.....	8
4.2	TEST METHOD.....	8
4.3	TEST SITE.....	8
4.4	TEST DATA.....	9
5	REVISION HISTORY	15

1 Summary of Test Results

Test Description	Test Specification		Test Result
ERP / Output Power	§90.205	RSS-119 S5.4	Compliant
Unwanted Emissions	§90.210	RSS-119 S5.8	Compliant

1.1 *Modifications Required for Compliance*

None

2 General Information

2.1 Client Information

Name: Motorola Solutions Malaysia Sdn. Bhd.
 Address: Plot 2A, Medan Bayan Lepas
 City, State, Zip, Country: Mukim 12, S.W.D 11900 Bayan Lepas, Penang, Malaysia

2.2 Test Laboratory

Name: SGS North America, Inc.
 Address: 620 Old Peachtree Road NW, Suite 100
 City, State, Zip, Country: Suwanee, GA 30024, USA

Environmental Conditions over duration of testing

	Min	Max
Temperature:	24.5 °C	25.6 °C
Relative Humidity:	46.8 %	53.9%

2.3 General Information of EUT

Type of Product: Two-Way Radio
 Model Name: CLP 446
 US Model Number: CLU1060BBLBA
 IC Model Number: CLU1063BBLAB
 Tanapa Number: PMUE3605D
 Serial Number: 0098TY0162

Frequency Range: 450-470MHz, 12.5kHz and 25kHz Channel Spacings

Antenna: Internal

Rated Voltage: 3.7Vdc
 Test Voltage: 3.7Vdc Li-Ion Battery

Sample Received Date: 14 December 2017
 Dates of testing: 15 - 20 December 2017

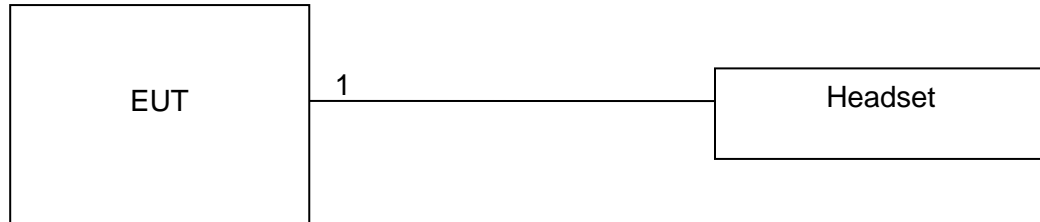
2.4 Operating Modes and Conditions

During testing, the device was configured in software to transmit continuously by taping down the Push to Talk (PTT) button. Firmware was altered to prevent the device from timing out.

2.5 Modifications Required to Compliance

None

2.6 EUT Connection Block Diagram



2.7 System Configurations

Device reference	Manufacturer	Description	Model Number	Serial Number
A	Motorola Solutions, Inc.	Two-Way Radio	CLU1060BBLBA	0098TY0162

2.8 Cable List

Cable reference	Port Name	Start	End	Cable Length (m)	Ferrite installed?	Shielded?
1	AUX	Accessory Port	Headset	1	No	Yes

2.9 Test Equipment

Test End Date: 20-Dec-2017

Tester: JOP

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU8	ROHDE & SCHWARZ	B085759	25-Jul-2018
ANTENNA, BILOG	JB6	SUNOL	B079690	29-Nov-2018
RF CABLE	SF106	HUBER & SUHNER	B079712	24-Jul-2018
RF CABLE	NFS-290-78.7-NFS	FLORIDA RF LABS	B095019	24-Jul-2018
RF CABLE	SF106	HUBER & SUHNER	B079661	25-Jul-2018
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	24-Jul-2018
ANTENNA, DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079691	27-Jul-2018
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	22-Feb-2018

Note: The equipment calibration period is 1 year.

3 Effective Radiated Power

3.1 Test Result

Test Description	Test Specification	Test Result
Effective Radiated Power	§90.205 RSS-119 S5.4	Reported

3.2 Test Method

Radiated ERP measurements were performed according to ANSI C63.26-2015, Section 5.2.7.

3.3 Test Data

Frequency (MHz)	Measured ERP (dBm)	Measured ERP (mW)
451.1875	29.9	977.2
461.0375	29.75	944.1
469.5625	29.31	853.1

4 Unwanted Emissions

4.1 Test Result

Test Description	Test Specifications	Test Result
Unwanted emissions	§90.210 RSS-119 S5.8	Compliant

4.2 Test Method

Radiated spurious emissions measurements were performed according to ANSI C63.26-2015, Section 5.5.

Limit:

The attenuation requirements are:

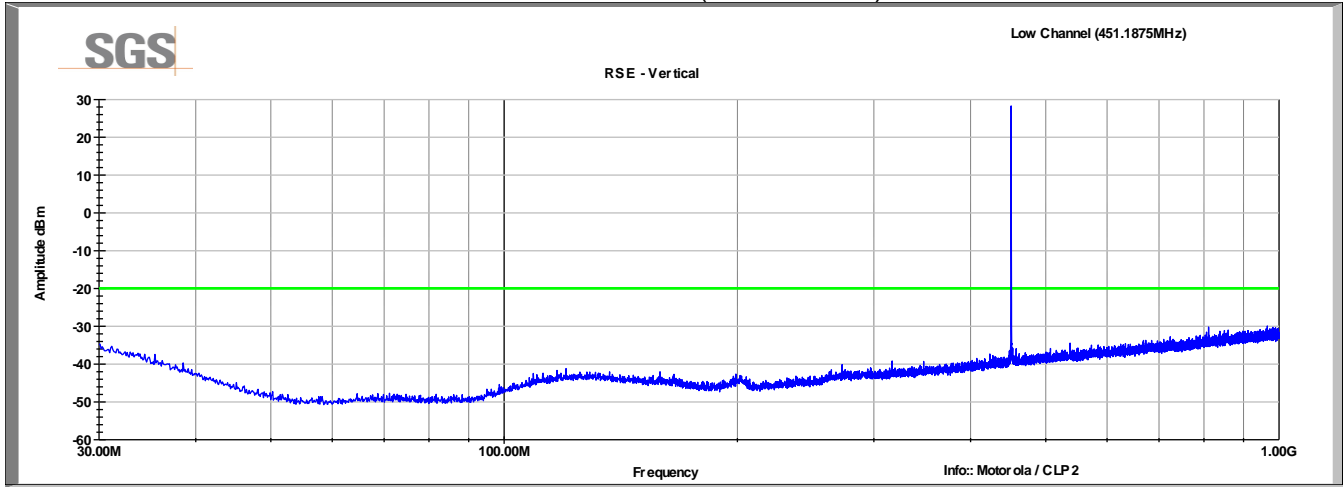
- 1) $43 + 10 \log(P)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth (FCC Rules)
- 2) $50 + 10 \log_{10} p$ dB or to the general field strength limits specified in RSS-Gen, whichever is less stringent, for emissions at frequencies more than 12.5 kHz away from the channel centre frequency for 12.5kHz channel spacing
- 3) $43 + 10 \log_{10} p$ dB or to the general field strength limits specified in RSS-Gen, whichever is less stringent, for emissions at frequencies more than 50 kHz away from the channel centre frequency for 25kHz channel spacing

4.3 Test Site

10m Absorber Lined Shielded Enclosure (ALSE), Suwanee, GA

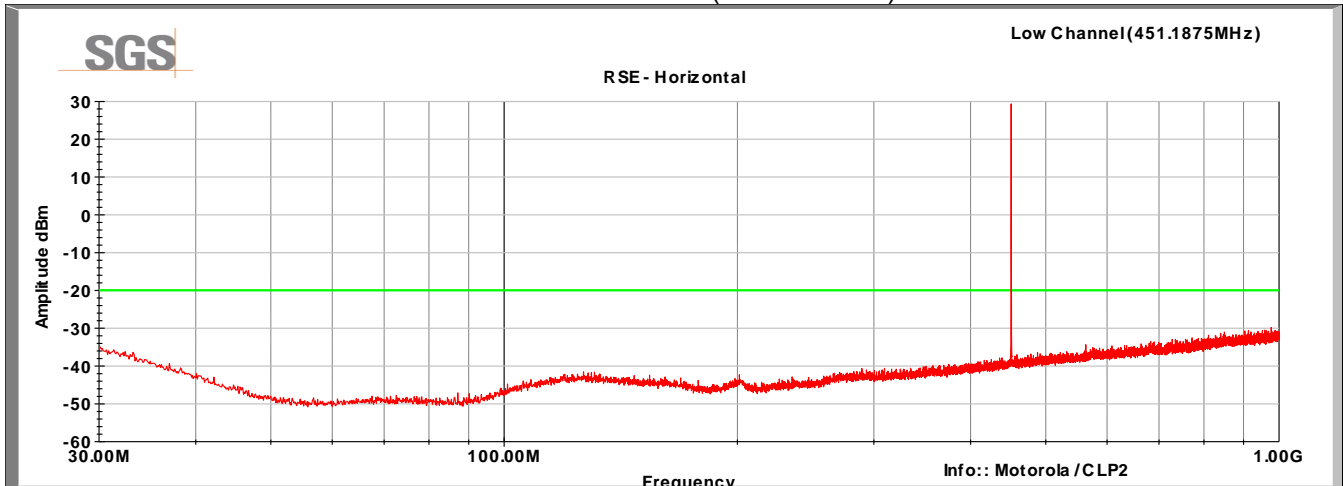
4.4 Test Data

Vertical Radiated Emissions Plot (30-1000MHz) – Low Channel



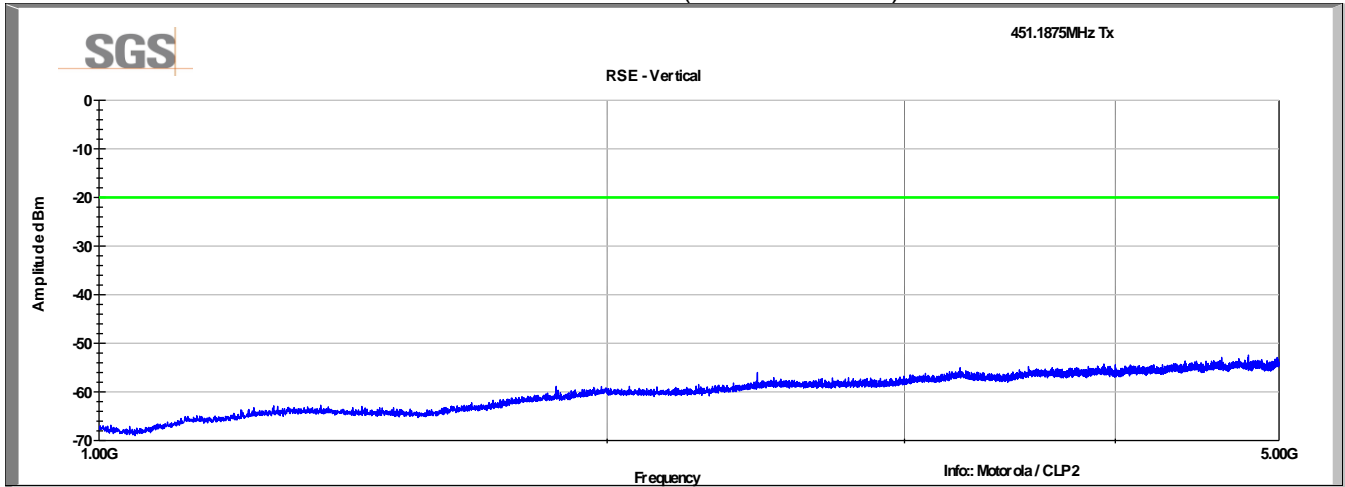
No spurious emissions within 10dB of the limit

Horizontal Radiated Emissions Plot (30-1000MHz) – Low Channel



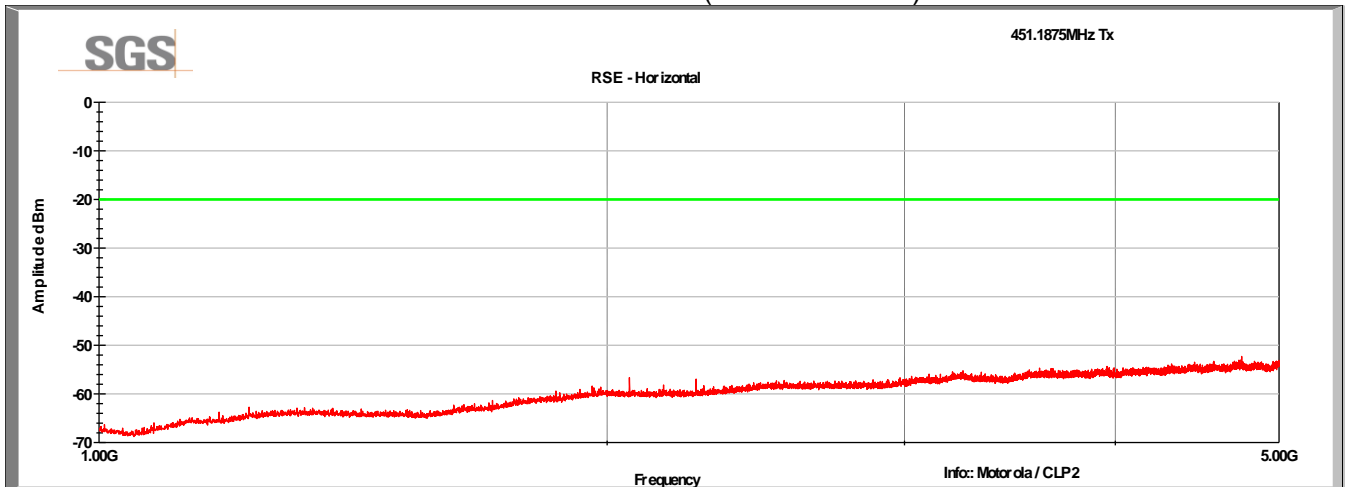
No spurious emissions within 10dB of the limit

Vertical Radiated Emissions Plot (1000-5000MHz) – Low Channel



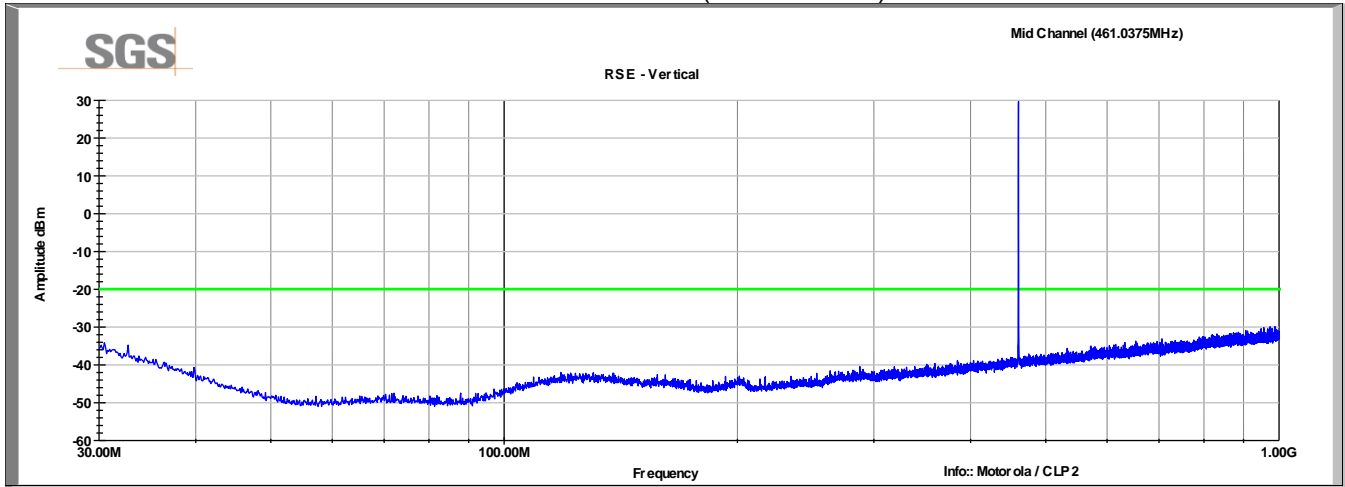
No spurious emissions within 20dB of the limit

Horizontal Radiated Emissions Plot (1000-5000MHz)– Low Channel



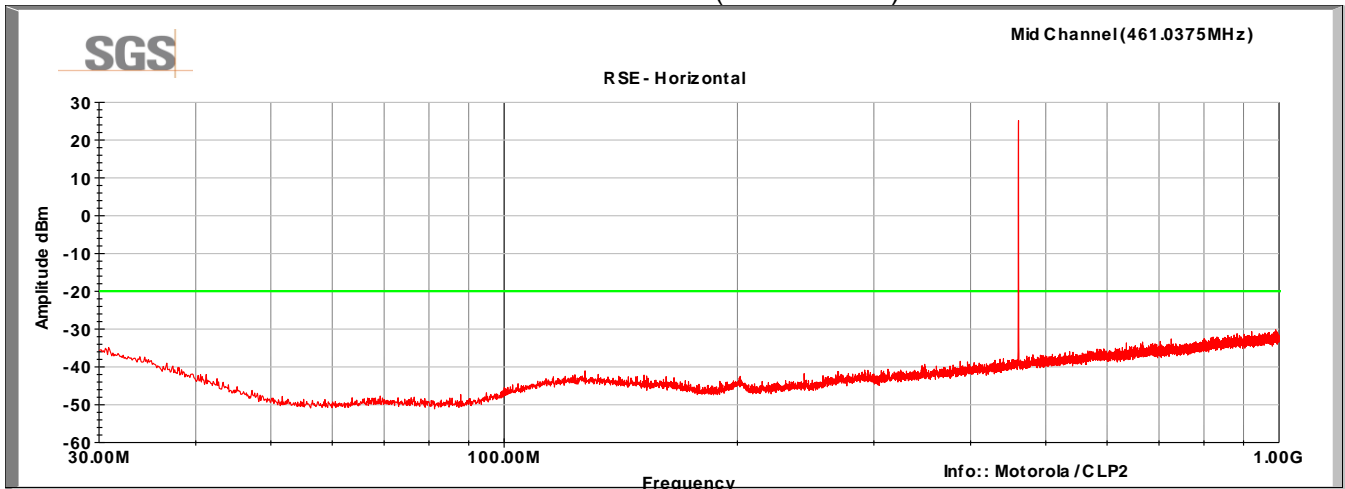
No spurious emissions within 20dB of the limit

Vertical Radiated Emissions Plot (30-1000MHz) – Mid Channel



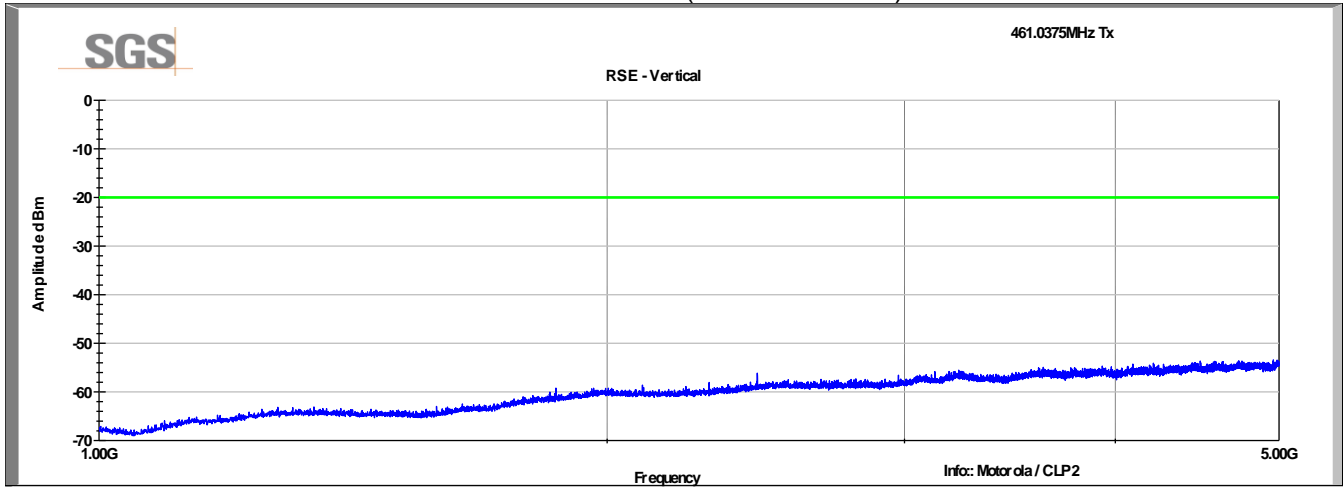
No spurious emissions within 10dB of the limit

Horizontal Radiated Emissions Plot (30-1000MHz) – Mid Channel



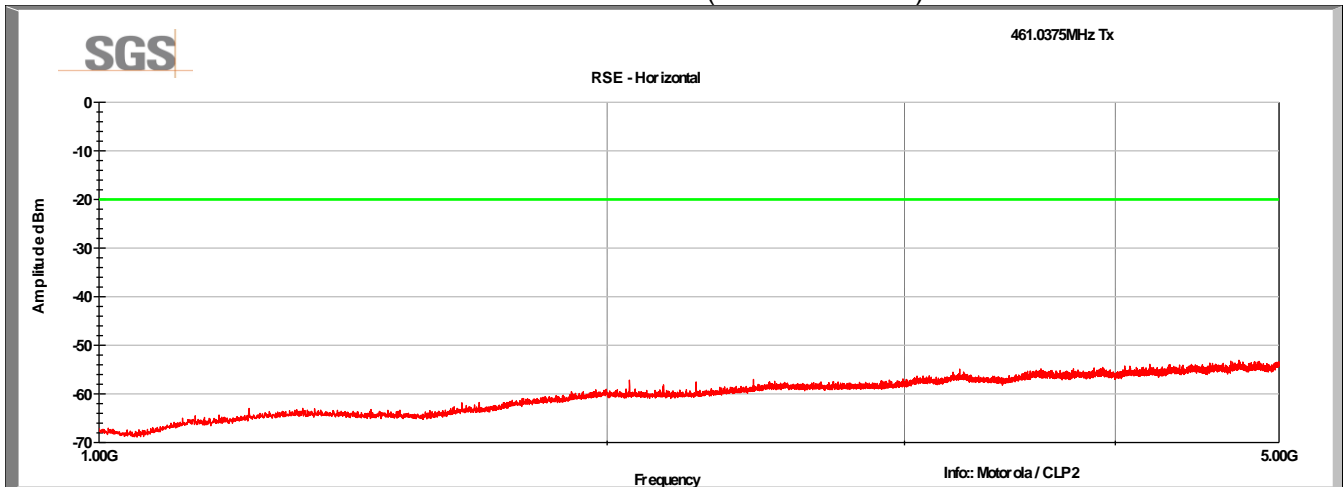
No spurious emissions within 10dB of the limit

Vertical Radiated Emissions Plot (1000-5000MHz) – Mid Channel



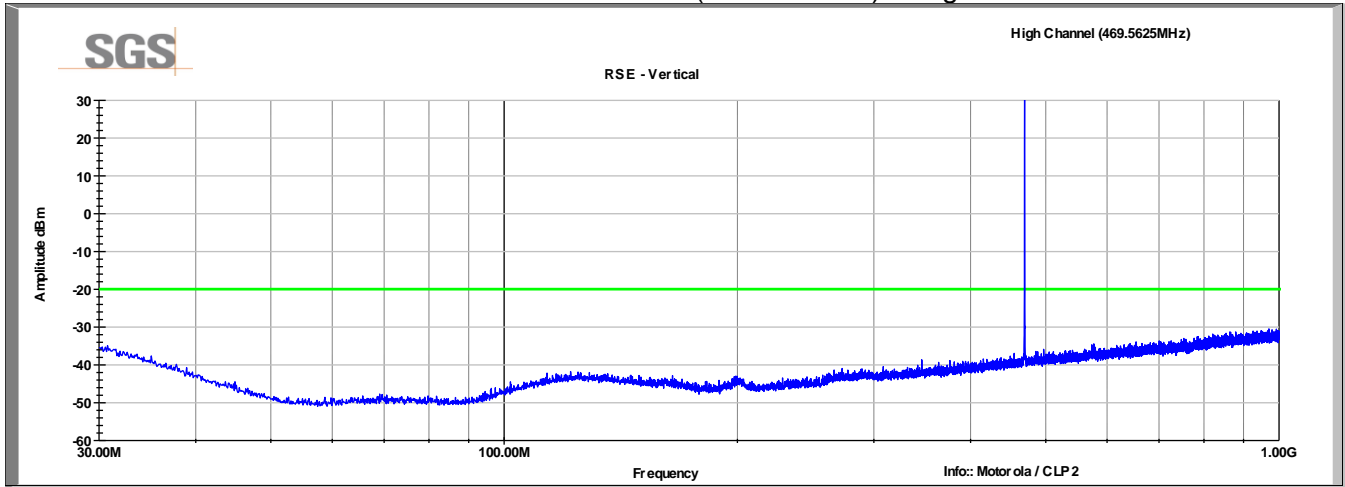
No spurious emissions within 20dB of the limit

Horizontal Radiated Emissions Plot (1000-5000MHz)– Mid Channel



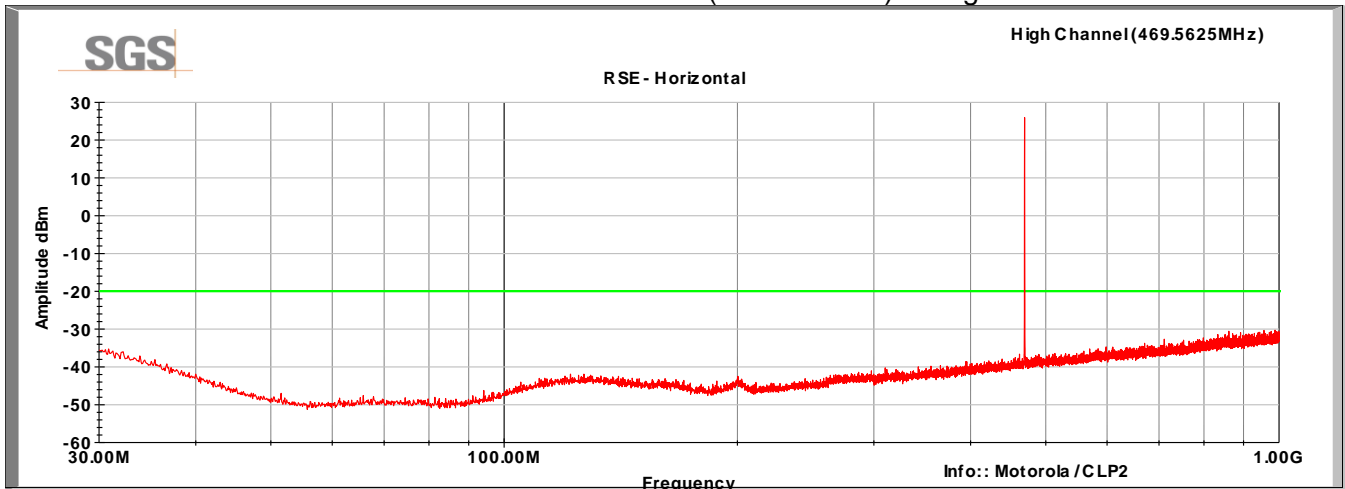
No spurious emissions within 20dB of the limit

Vertical Radiated Emissions Plot (30-1000MHz) – High Channel



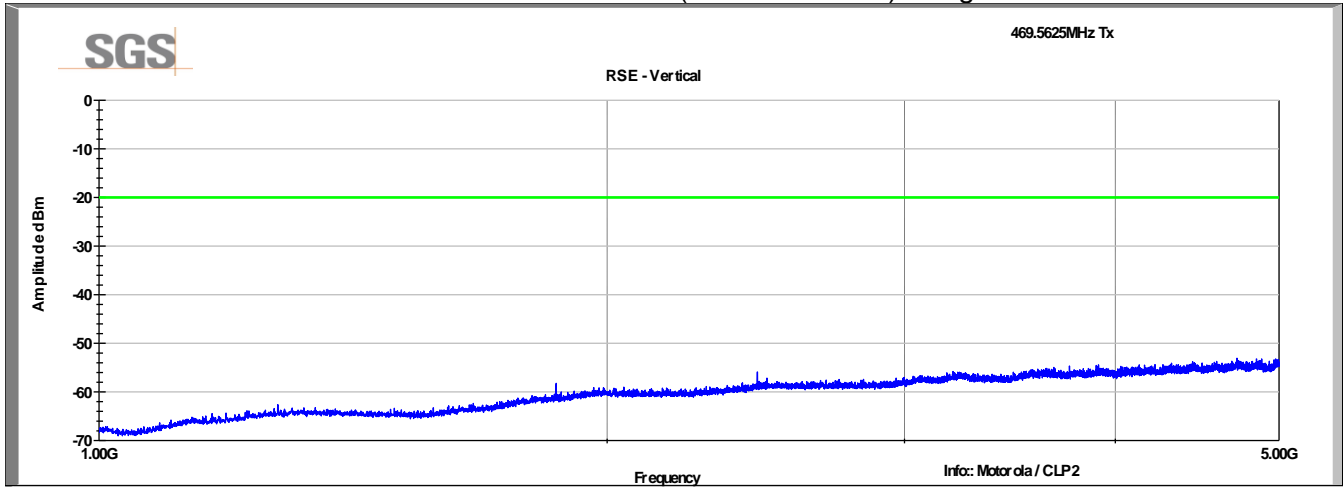
No spurious emissions within 10dB of the limit

Horizontal Radiated Emissions Plot (30-1000MHz) – High Channel



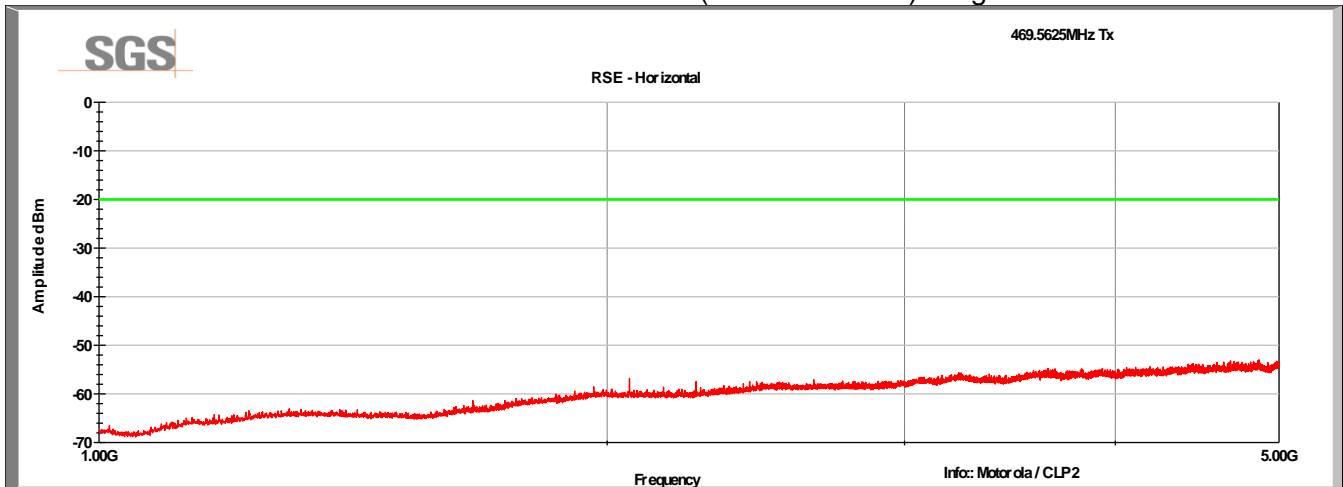
No spurious emissions within 10dB of the limit

Vertical Radiated Emissions Plot (1000-5000MHz) – High Channel



No spurious emissions within 20dB of the limit

Horizontal Radiated Emissions Plot (1000-5000MHz)– High Channel



No spurious emissions within 20dB of the limit

5 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	27 December 2017
1	- Corrected unwanted emissions limit from -13dBm to -20dBm on all plots.	15 January 2018