

EMC Test Report

Project Number: 4076029

Report Number: 4076029EMC01

Revision Level: 1

Client: Social Bicycles Inc.

Equipment Under Test: Smart Bike Share System

Model: SB3

FCC ID: 2ADEK22017SB3

IC ID: 12433A-22017SB3

FCC Rule Parts: Part 2, Part 22(H), Part 24(E)

Industry Canada: RSS-GEN, Issue 4: 2014

RSS-132, Issue 3: 2013

RSS-133, Issue 6: 2013

Report issued on: 07 March 2017

Test Result: Compliant

Tested by:


Martin Taylor, Project Engineer

Reviewed by:


Jeremy Pickens, Senior EMC Engineer

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.

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1 Summary of Test Results

Reference Sections		Test Description	Test Limit	Test Condition	Test Result
FCC	IC				
2.1046	RSS-GEN (6.12)	Conducted Output Power	N/A	Conducted	Reported
24.232(d)	RSS-132 (5.4) RSS-133 (6.4)	Peak-to-Average Ratio	<13 dB		Pass
2.1049 22.917(a) 24.238(a)	RSS-GEN(6.6) RSS-133 (2.3)	Occupied Bandwidth	N/A		Reported
2.1051 22.917(a) 24.238(a)	RSS-132 (5.5) RSS-133 (6.5.1)	Band Edge / Conducted Spurious Emissions	$< 43 + 10\log_{10}(P_{\text{Watts}})$ at band edge and for all out of band emissions		Pass
22.913(a)(2)	--	Effective Radiated Power	< 7 Watts max ERP	Radiated	Pass
--	RSS-132 (5.4)	Equivalent Isotropically Radiated Power	< 11.5 Watts max ERP		Pass
24.232(c)	RSS-133 (6.4) SRSP-510 (5.1.2)		< 2 Watts max EIRP		Pass
2.1053 22.917(a) 24.238(a)	RSS-GEN (6.13) RSS-132 (5.5) RSS-133 (6.5.1)	Radiated Spurious Emissions	$< 43 + 10\log_{10}(P_{\text{Watts}})$ at band edge and for all out of band emissions		Pass
2.1055 22.917(a) 24.238(a)	RSS-GEN (6.11) RSS-132 (5.3) RSS-133 (6.3)	Frequency Stability	<2.5 ppm		Pass

1.1 Modifications Required to Compliance

None

2 General Information

2.1 Client Information

Name: Social Bicycles Inc.
Address: 55 Prospect Street, Ste 304
City, State, Zip, Country: Brooklyn, NY 11201, USA

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

2.3 General Information of EUT

Type of Product: Smart Bike Share System
Model Number: SB3
Serial Number: SC2-02AD5-EBMW-0716-P09 (Conducted)
SC2-02B6E-EBMW-0716-P09 (Radiated)

IMEI Number: 356118040855322 (Conducted)
356118040981078 (Radiated)
Rated Voltage: 3.7 Vdc
Test Voltage: 3.7 Vdc
Tx Frequency Range: 824.2– 848.8 MHz (GSM850)
1850.2– 1909.8 MHz (GSM1900)
Antenna: Antenna, P/N: A10340, Peak Gain: 1.7 / 3.0 dBi (850/1900 Bands)
FCC Classification: PCS Licensed Transmitter PCB
Type: Pre Production

Sample Received Date: 05 December 2016
Dates of testing: 07 – 23 December 2016

2.4 Operating Modes and Conditions

The EUT was exercised by connecting a CMW communications tester to the device. The CMW was used to control signaling and channel during testing.

3 RF Output Power

3.1 Test Result

Test Description	Basic Standards	Test Result
RF Output Power	FCC Part 2.1046 RSS-GEN (6.12)	Reported

3.2 Test Method

A radio link was established between EUT and Radio Communication Tester. The output power of the EUT was set to maximum value by using the maximum power setting on the Radio Communications Tester. A spectrum analyzer was used to measure the peak output power using the methods defined in ANSI/TIA-603-D.

The measurements were conducted at the low, middle, and high channel.

3.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 22.9 °C
 Relative Humidity: 28.5%
 Atmospheric Pressure: 98.5 kPa

3.4 Test Equipment

Test Date: 9-Dec-2016

Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	20-Jun-2017
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	19-Jan-2018
RF CABLE	141	HUBER & SUHNER	B095590	26-Jul-2017
ATTENUATOR, 10DB	10DB	ROHDE & SCHWARZ	B095594	27-Jul-2017

- Unless otherwise noted, equipment is on a 1 year calibration cycle.
- Based on manufacturer's specifications, the CMW-500 is on a 2 year calibration cycle.

3.5 Test Data

Band	UpLink Channel	UL Frequency (MHz)	Mode	Slots	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
850	128	824.2	GPRS	1	30.87	0.7	31.57
850	128	824.2	GPRS	2	30.87	0.7	31.57
850	128	824.2	GPRS	3	30.87	0.7	31.57
850	128	824.2	GPRS	4	30.87	0.7	31.57
850	190	836.6	GPRS	1	31.03	0.7	31.73
850	190	836.6	GPRS	2	31.03	0.7	31.73
850	190	836.6	GPRS	3	31.03	0.7	31.73
850	190	836.6	GPRS	4	31.02	0.7	31.72
850	251	848.8	GPRS	1	30.94	0.7	31.64
850	251	848.8	GPRS	2	30.93	0.7	31.63
850	251	848.8	GPRS	3	30.93	0.7	31.63
850	251	848.8	GPRS	4	30.92	0.7	31.62
850	128	824.2	EGPRS	1	31.02	0.7	31.72
850	128	824.2	EGPRS	2	30.97	0.7	31.67
850	128	824.2	EGPRS	3	30.96	0.7	31.66
850	128	824.2	EGPRS	4	30.96	0.7	31.66
850	190	836.6	EGPRS	1	31.05	0.7	31.75
850	190	836.6	EGPRS	2	31.05	0.7	31.75
850	190	836.6	EGPRS	3	31.05	0.7	31.75
850	190	836.6	EGPRS	4	31.05	0.7	31.75
850	251	848.8	EGPRS	1	30.92	0.7	31.62
850	251	848.8	EGPRS	2	30.92	0.7	31.62
850	251	848.8	EGPRS	3	30.92	0.7	31.62
850	251	848.8	EGPRS	4	30.92	0.7	31.62
1900	512	1850.2	GPRS	1	26.14	1.08	27.22
1900	512	1850.2	GPRS	2	26.14	1.08	27.22
1900	512	1850.2	GPRS	3	26.14	1.08	27.22
1900	512	1850.2	GPRS	4	26.13	1.08	27.21
1900	661	1880	GPRS	1	26.25	1.08	27.33
1900	661	1880	GPRS	2	26.25	1.08	27.33
1900	661	1880	GPRS	3	26.25	1.08	27.33
1900	661	1880	GPRS	4	26.25	1.08	27.33
1900	810	1909.8	GPRS	1	26.58	1.12	27.7
1900	810	1909.8	GPRS	2	26.58	1.12	27.7
1900	810	1909.8	GPRS	3	26.58	1.12	27.7
1900	810	1909.8	GPRS	4	26.58	1.12	27.7
1900	512	1850.2	EGPRS	1	26.12	1.08	27.2
1900	512	1850.2	EGPRS	2	26.12	1.08	27.2
1900	512	1850.2	EGPRS	3	26.11	1.08	27.19
1900	512	1850.2	EGPRS	4	26.11	1.08	27.19
1900	661	1880	EGPRS	1	26.23	1.08	27.31
1900	661	1880	EGPRS	2	26.23	1.08	27.31
1900	661	1880	EGPRS	3	26.23	1.08	27.31
1900	661	1880	EGPRS	4	26.24	1.08	27.32
1900	810	1909.8	EGPRS	1	26.56	1.12	27.68
1900	810	1909.8	EGPRS	2	26.56	1.12	27.68
1900	810	1909.8	EGPRS	3	26.56	1.12	27.68
1900	810	1909.8	EGPRS	4	26.56	1.12	27.68

GSM850 Max: 31.75dBm (1.496W)

GSM1900 Max: 27.7dBm (0.589W)

4 Peak to Average Ratio

4.1 Test Result

Test Description	Basic Standards	Test Result
Peak to Average Ratio	FCC 24.232(d) RSS-132 (5.4) RSS-133 (6.4)	Pass

4.2 Test Method

KDB document 971168 D01 Power Meas License Digital Systems v02r02 was used to determine peak-to-average ratio. For the measurements, Clause 5.7.1 was used which defined the measurement method using the CCDF function of the spectrum analyzer. Measurements were recorded at the mid channels at the highest power.

4.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 22.8 °C
 Relative Humidity: 26.7 %
 Atmospheric Pressure: 97.9 kPa

4.4 Test Equipment

Test Date: 12-Dec-2016

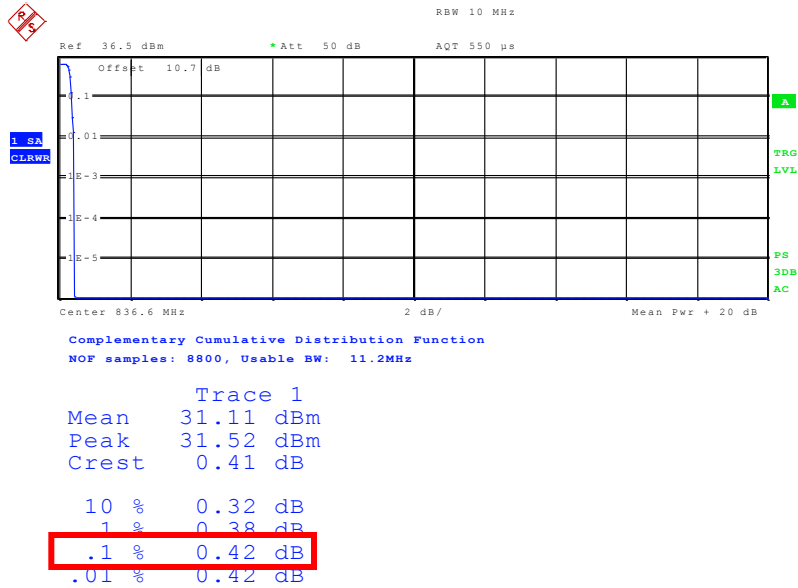
Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	19-Jan-2018
RF CABLE	141	HUBER & SUHNER	B095590	26-Jul-2017
ATTENUATOR, 10DB	10DB	ROHDE & SCHWARZ	B095594	27-Jul-2017
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	20-Jun-2017

- Unless otherwise noted, equipment is on a 1 year calibration cycle.
- Based on manufacturer's specifications, the CMW500 is on a 2 year calibration cycle.

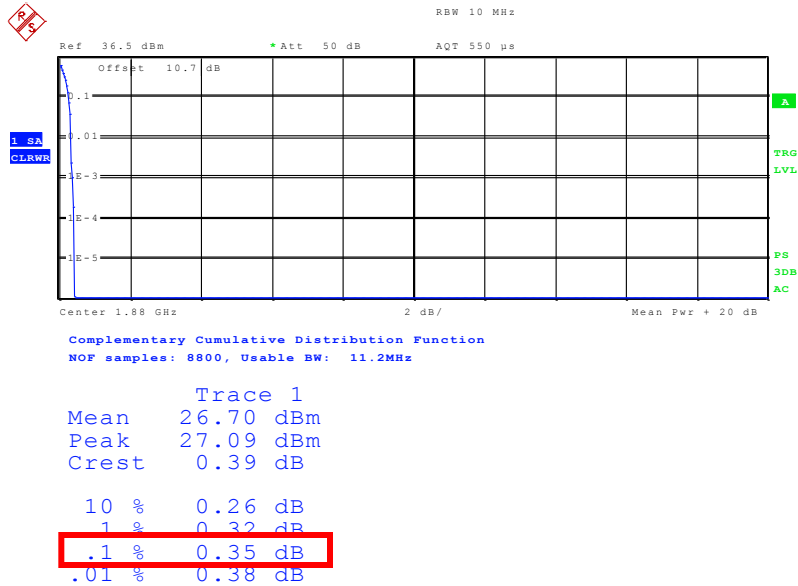
4.5 Test Data

GSM850 CH 190



Date: 12.DEC.2016 17:35:49

GSM1900 CH 661



Date: 12.DEC.2016 17:43:02

5 Occupied Bandwidth

5.1 Test Result

Test Description	Basic Standards	Test Result
Occupied Bandwidth	FCC Part 2.1049 FCC Part 22.917(a) FCC Part 24.238(a) RSS-GEN(6.6) RSS-133 (2.3)	Reported

5.2 Test Method

KDB document 971168 D01 Power Meas License Digital Systems v02r02, Clause 4 was used to determine the occupied measurement.

The 99% measurement function of the spectrum analyzer was used.

The measurement was conducted at the center channel of each band.

5.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 22.8 °C
 Relative Humidity: 26.7 %
 Atmospheric Pressure: 97.9 kPa

5.4 Test Equipment

Test Date: 12-Dec-2016

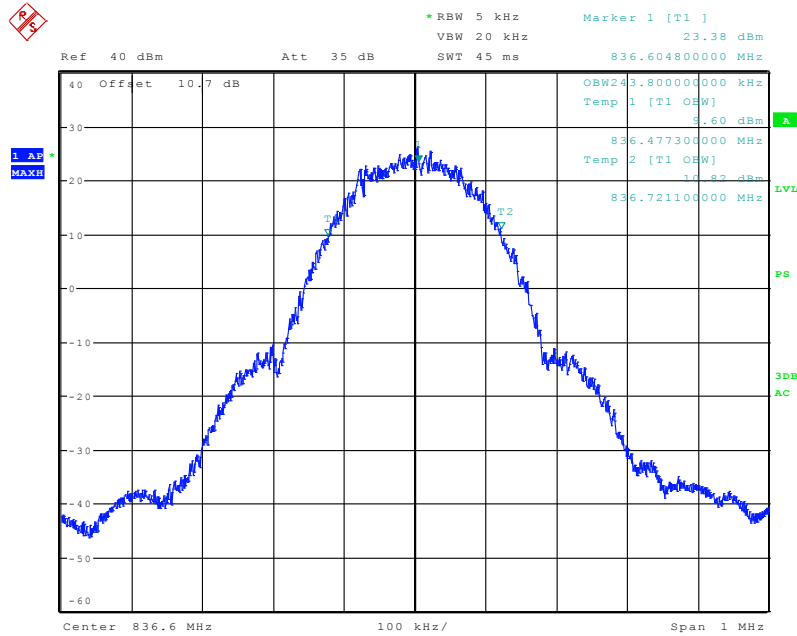
Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	19-Jan-2018
RF CABLE	141	HUBER & SUHNER	B095590	26-Jul-2017
ATTENUATOR, 10DB	10DB	ROHDE & SCHWARZ	B095594	27-Jul-2017
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	20-Jun-2017

- Unless otherwise noted, equipment is on a 1 year calibration cycle.
- Based on manufacturer's specifications, the CMW500 is on a 2 year calibration cycle.

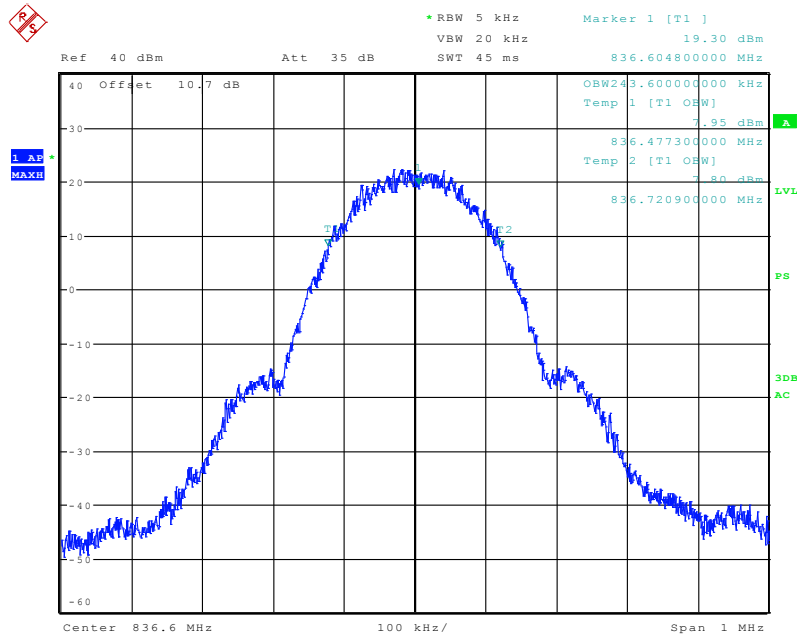
5.5 Test Data

GSM850 CH 190 - 99% Occupied Bandwidth GPRS



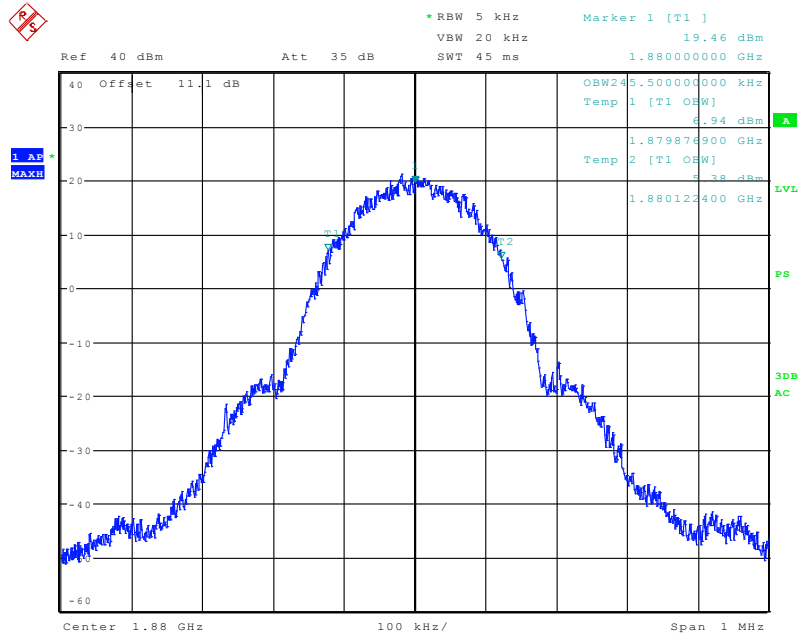
Date: 12.DEC.2016 10:42:42

EGPRS



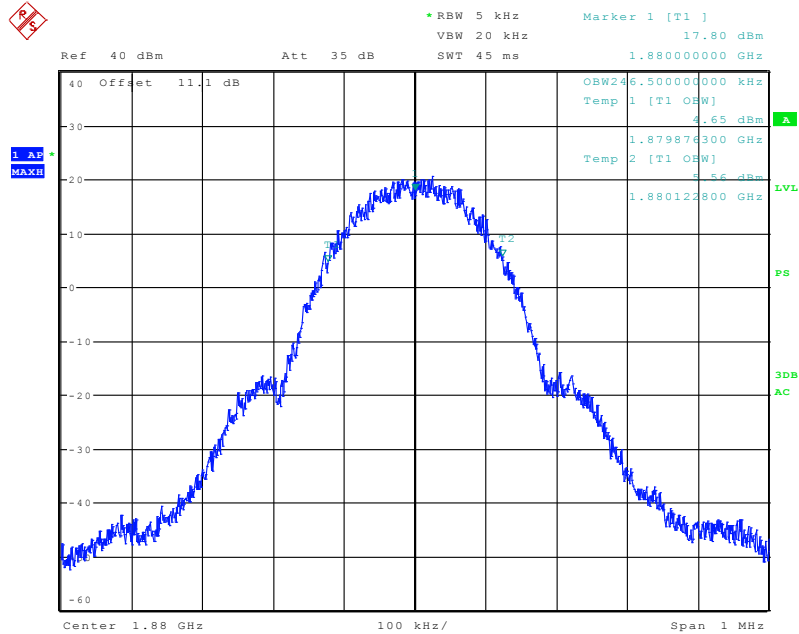
Date: 12.DEC.2016 10:21:31

GSM1900 CH 661 - 99% Occupied Bandwidth GPRS



Date: 12.DEC.2016 10:53:04

EGPRS



Date: 12.DEC.2016 10:55:32

6 Band Edge and Conducted Spurious Emissions

6.1 Test Result

Test Description	Basic Standards	Test Result
Conducted spurious emissions and Band Edge	2.1051 22.917(a) 24.238(a) RSS-132 (5.5) RSS-133 (6.5.1)	Pass

6.2 Test Method

KDB document 971168 D01 Power Meas License Digital Systems v02r02, Clause 6 was used to measure spurious emissions at the antenna terminals.

6.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 22.8 °C
 Relative Humidity: 26.7 %
 Atmospheric Pressure: 97.9 kPa

6.4 Test Equipment

Test Date: 12-Dec-2016

Tester: MT

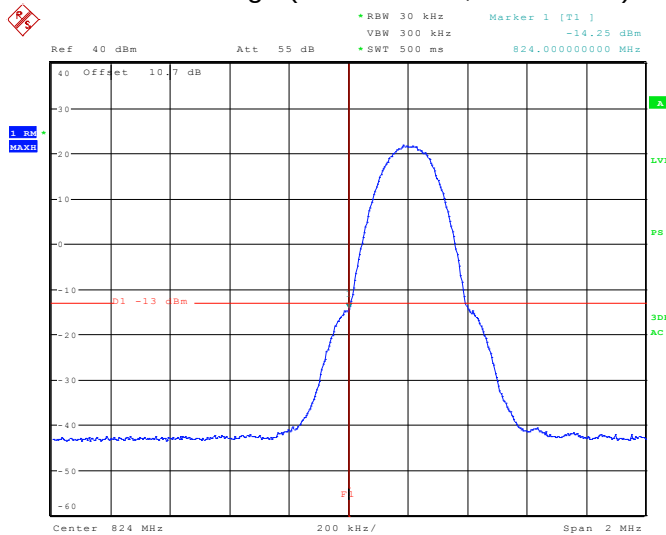
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	19-Jan-2018
RF CABLE	141	HUBER & SUHNER	B095590	26-Jul-2017
ATTENUATOR, 10DB	10DB	ROHDE & SCHWARZ	B095594	27-Jul-2017
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	20-Jun-2017

- Unless otherwise noted, equipment is on a 1 year calibration cycle.
- Based on manufacturer's specifications, the CMW500 is on a 2 year calibration cycle.

6.5 Test Data – Band Edge Plots

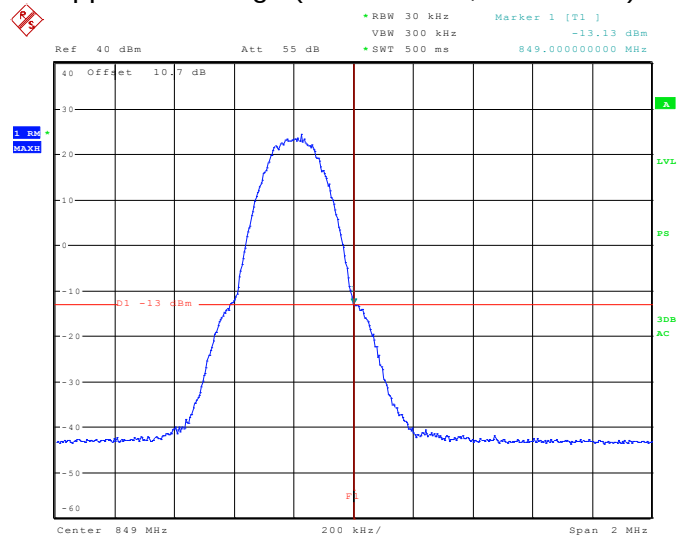
GSM850

Lower Band Edge (Channel 128, 824.2 MHz)



Date: 12.DEC.2016 15:53:09

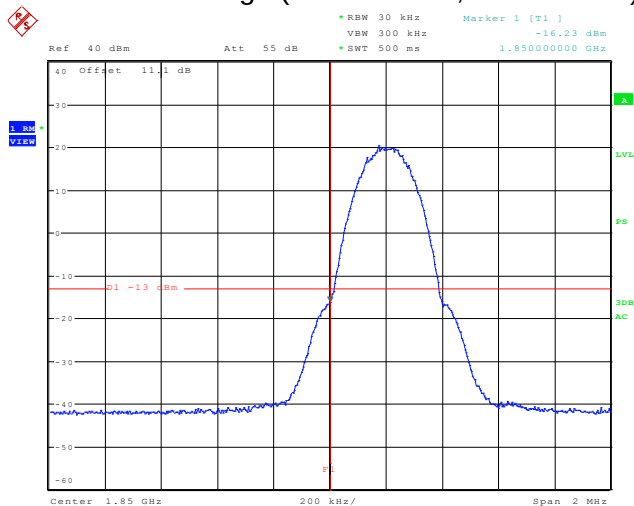
Upper Band Edge (Channel 251, 848.8 MHz)



Date: 12.DEC.2016 16:12:44

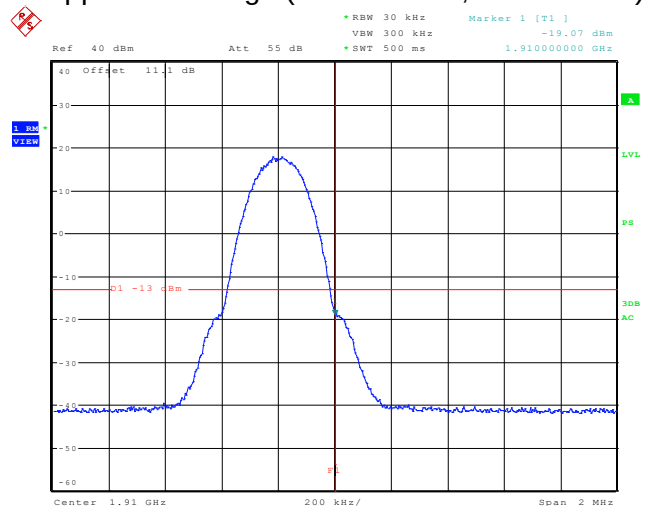
GSM1900

Lower Band Edge (Channel 512, 1850.2 MHz)



Date: 12.DEC.2016 11:52:28

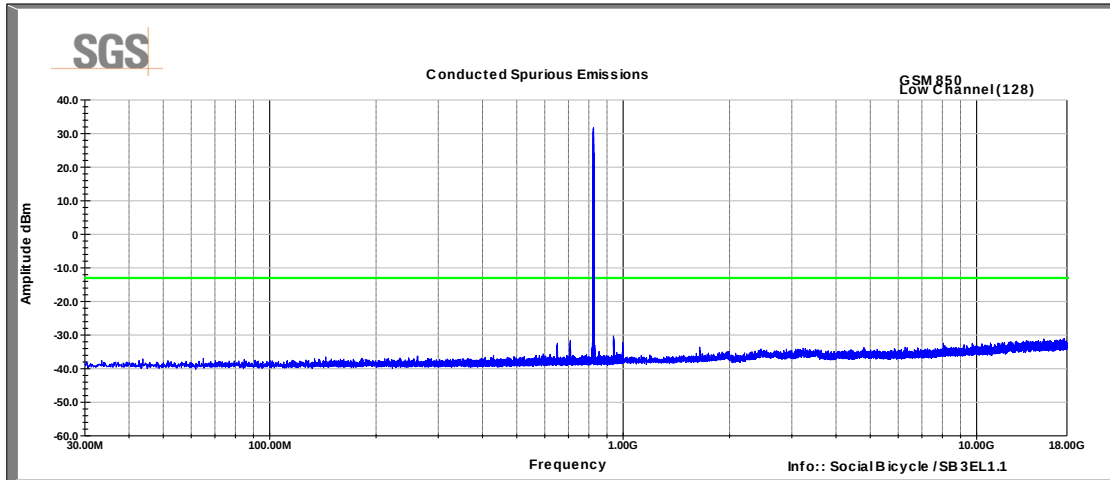
Upper Band Edge (Channel 810, 1909.8 MHz)



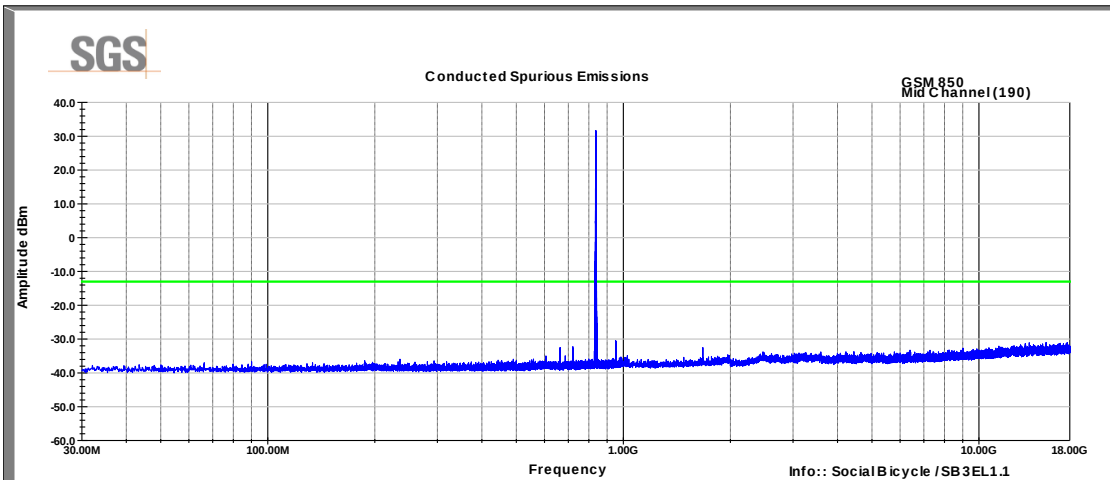
Date: 12.DEC.2016 11:56:57

6.6 Test Data – Conducted Spurious Emissions Plots

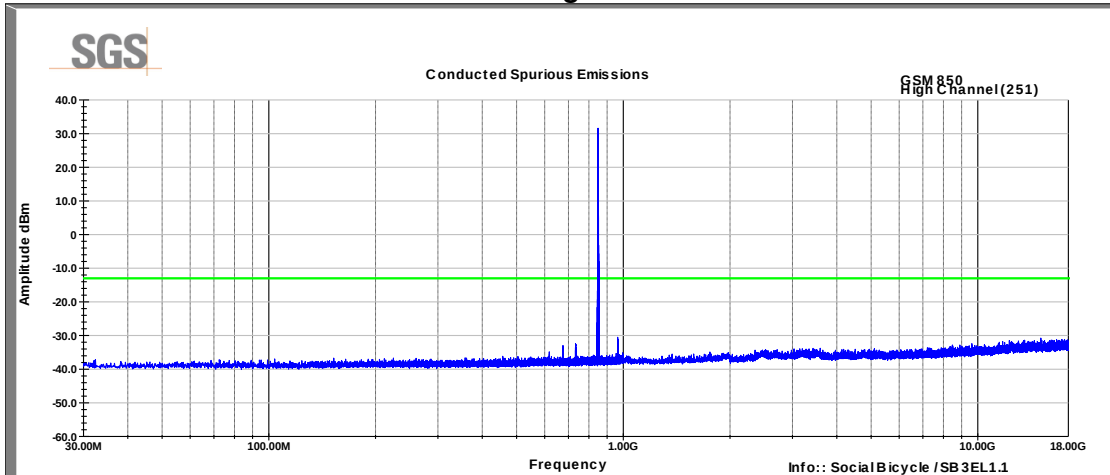
GSM850 Low Channel



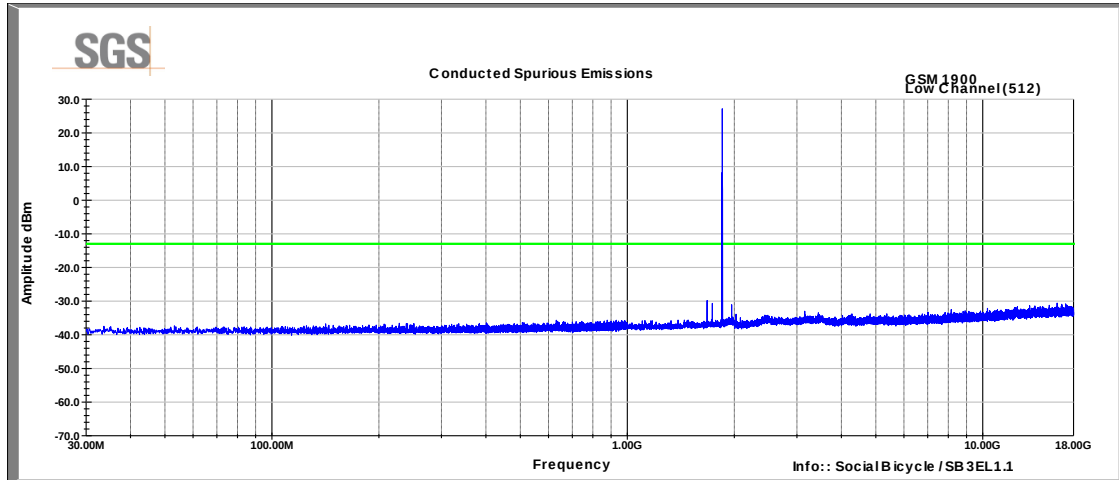
GSM850 Mid Channel



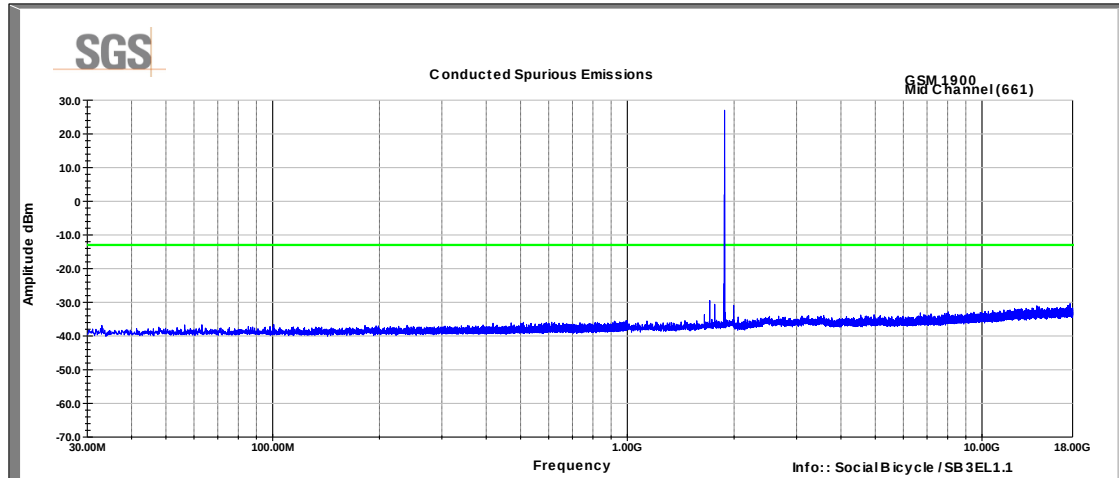
GSM850 High Channel



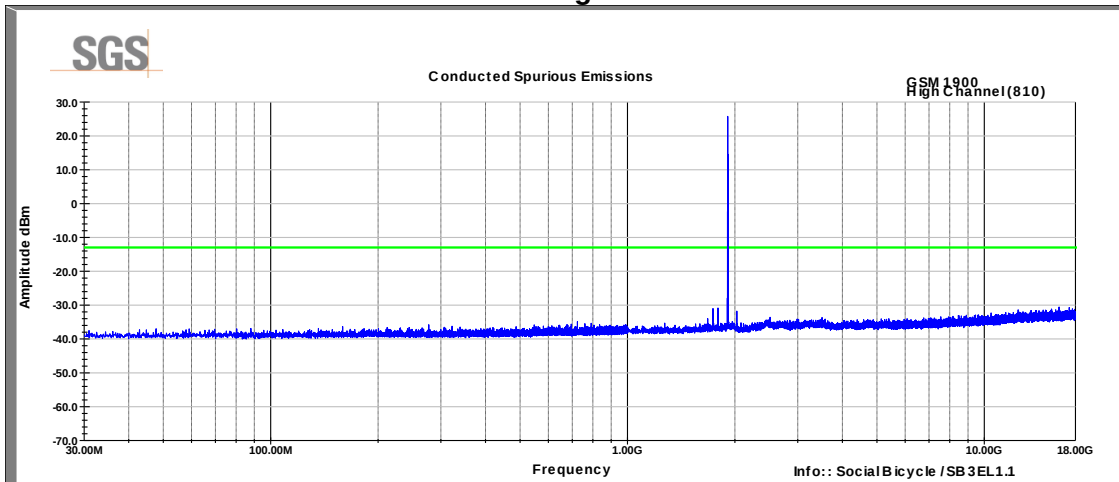
GSM1900 Low Channel



GSM1900 Mid Channel



GSM1900 High Channel



7 Effective Radiated Power

7.1.1 Test Result

Test Description	Basic Standards	Test Result
Effective Radiated Power	FCC Part 22.913(a)(2) RSS-132 5.4	Pass
Effective Isotropic Radiated Power	24.232(c) RSS-133 6.4	Pass

7.1.2 Test Method

For ERP/EIRP calculations, the peak antenna gains obtained from the antenna datasheet were used for each band.

7.2 Test Site

SGS EMC Laboratory, Suwanee, GA

7.3 Test Equipment

None

7.4 Test Data

Band	Max Power dBm	Antenna Gain dBd/dBi	Cable Loss, dB	ERP/EIRP (dBm)	ERP/EIRP Limit, dBm		Result	
					FCC	IC	FCC	IC
GSM850 / 824.2	31.72	1.7	0	33.42	38.5	40.6	PASS	PASS
GSM850 / 836.6	31.75	1.7	0	33.45	38.5	40.6	PASS	PASS
GSM850 / 848.8	31.64	1.7	0	33.34	38.5	40.6	PASS	PASS
GSM1900 / 1850.2	27.22	3	0	30.22	33	33	PASS	PASS
GSM1900 / 1880	27.33	3	0	30.33	33	33	PASS	PASS
GSM1900 / 1909.8	27.7	3	0	30.7	33	33	PASS	PASS

8 Radiated Spurious Emissions

8.1 Test Result

Test Description	Basic Standards		Test Result
Radiated Spurious Emissions	FCC Part 2.1053 FCC Part 22.917(a) FCC Part 24.238(a) ANSI/TIA-603-D-2009	RSS-GEN (6.13) RSS-132 5.5 RSS-133 6.5	Pass

8.2 Test Method

The levels of the carrier and the various conducted spurious and harmonics frequencies are measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB. Compliance is based on the use of a spectrum analyzer employing a resolution bandwidth of 1 MHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of a least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emissions bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The EUT was manipulated in 30° increments from 0 to 330°.

A radio link was established between EUT and Radio Communications Tester. The output power of the EUT was set to maximum value by using the maximum power setting on the Radio Communications Tester. The measurements were conducted at the low, middle, and high channels in RC3/SO55 which was determined to be the worst case operating mode.

8.3 Test Site

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

Environmental Conditions

Temperature: 26.5 °C
Relative Humidity: 21.3 %
Atmospheric Pressure: 99.1 kPa

8.4 Test Equipment

Test Date: 20-Dec-2016

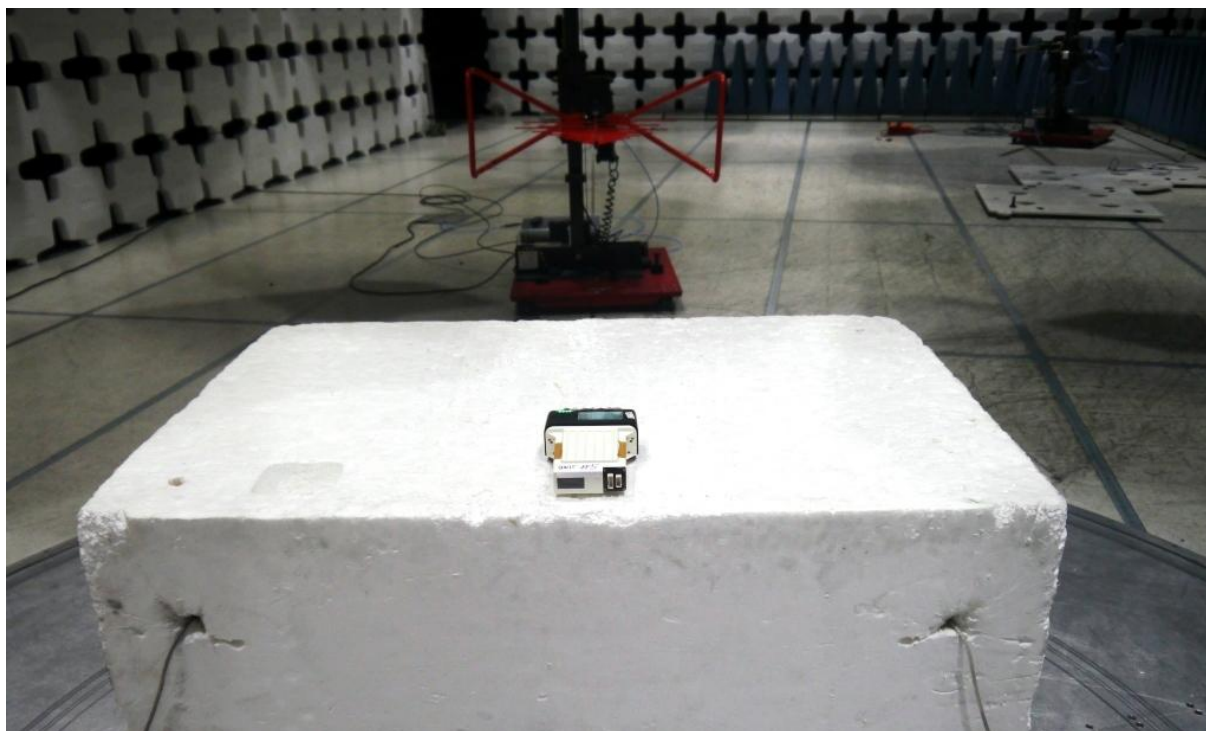
Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
ANTENNA, BILOG	JB6	SUNOL	B079690	10-Nov-2017
DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079691	27-Jul-2017
HORN(SMALL)	LB-180400-20-C-KF	A-INFO	15007	29-Mar-2017
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B085757	27-Oct-2018
RF CABLE	SF106	HUBER & SUHNER	B079712	27-Jul-2017
RF CABLE	SF106	HUBER & SUHNER	B079716	27-Jul-2017
RF CABLE	SF106	HUBER & SUHNER	B079713	27-Jul-2017
RF CABLE	SF106	HUBER & SUHNER	B085892	27-Jul-2017
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	4-Aug-2017
RF CABLE	SF102	HUBER & SUHNER	B079822	27-Jul-2017
RF CABLE	SF102	HUBER & SUHNER	B079824	27-Jul-2017
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	16-Feb-2017
LOW NOISE AMPLIFIER	NSP1840-HG	MITEQ	B087572	29-Jul-2017
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	20-Jun-2017
FILTER, BAND REJECT (835MHZ)	4N45 836/E26.4	K&L MICROWAVE	B101738	28-Jul-2017
FILTER, BAND REJECT	BRC50720	MICRO-TRONICS	B079784	28-Jul-2017
FILTER, HIGH PASS	HPM50108	MICRO-TRONICS	B079802	28-Jul-2017
FILTER, HIGH PASS	HPM50110	MICRO-TRONICS	B079792	28-Jul-2017

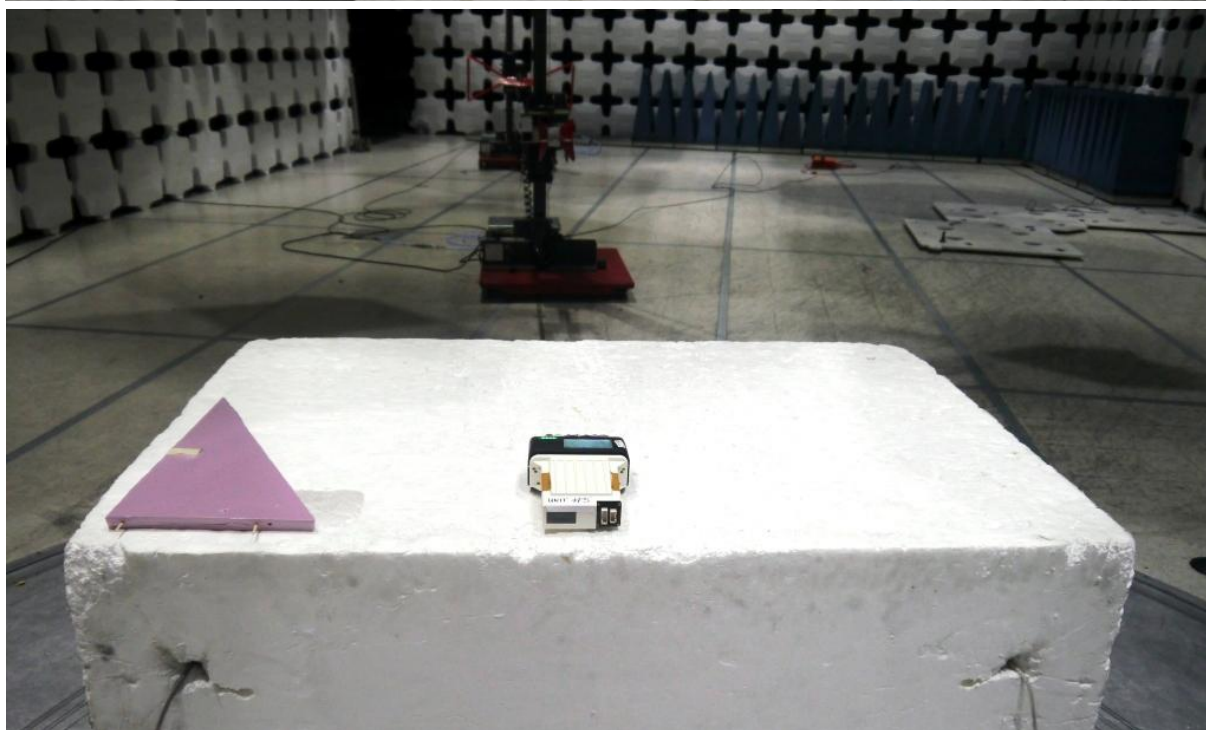
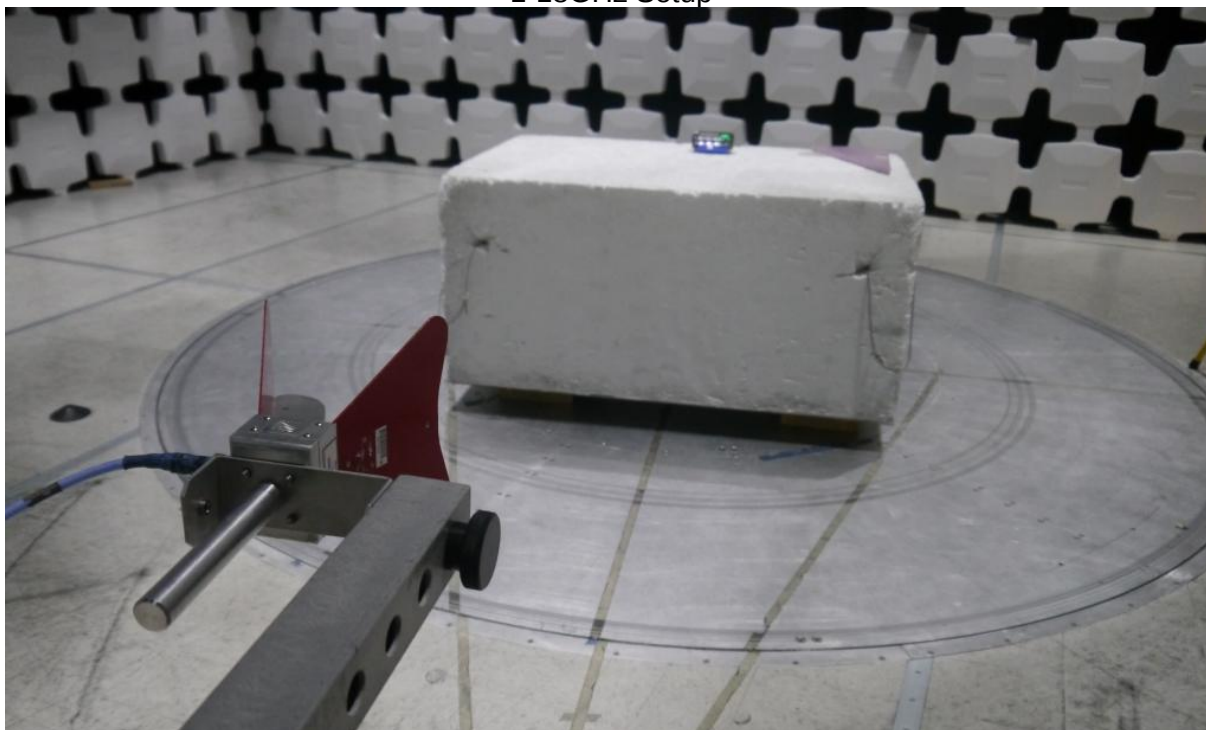
- Unless otherwise noted, equipment is on a 1 year calibration cycle.
- Based on manufacturer's specifications, the CMW-500 is on a 2 year calibration cycle.

8.5 Test Setup Photographs

30MHz to 1GHz Setup

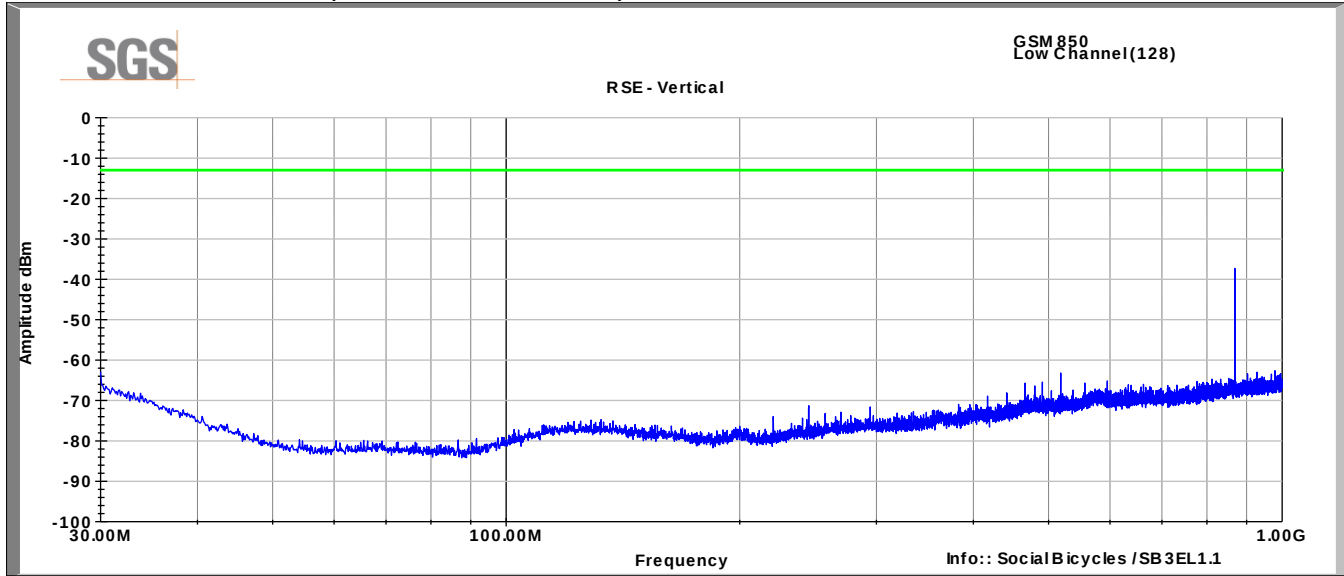


1-18GHz Setup

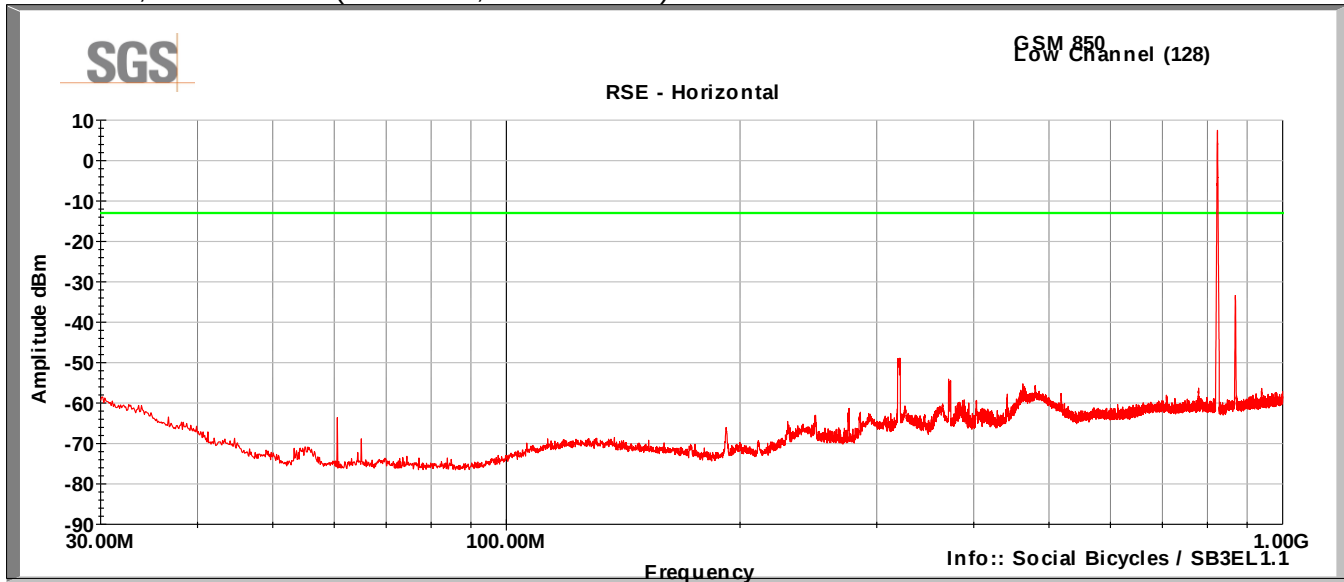


8.6 Test Data – GSM 850

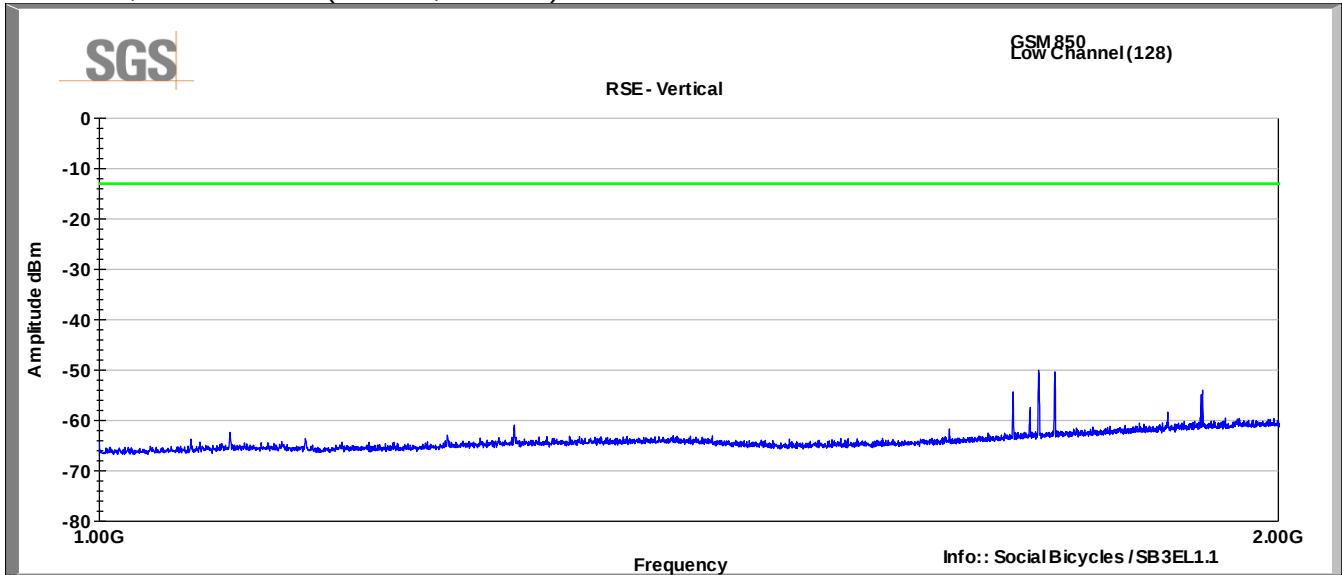
GSM 850, Low Channel (Vertical, 30-1000MHz)



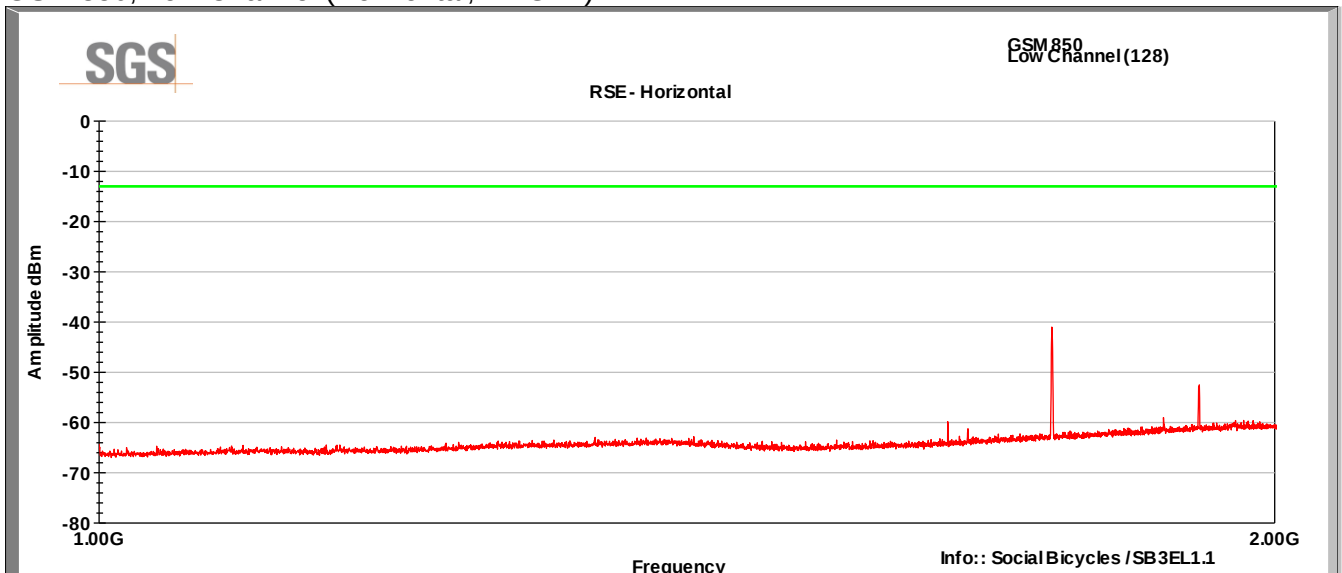
GSM 850 , Low Channel (Horizontal, 30-1000MHz)



GSM 850, Low Channel (Vertical, 1-2GHz)

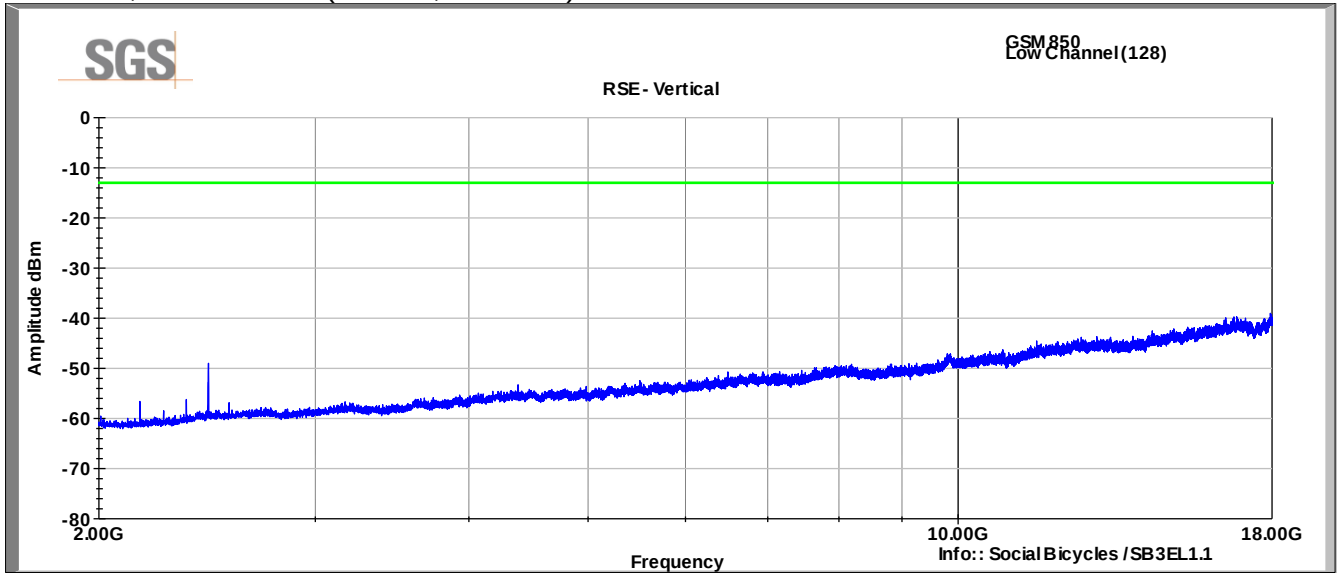


GSM 850, Low Channel (Horizontal, 1-2GHz)

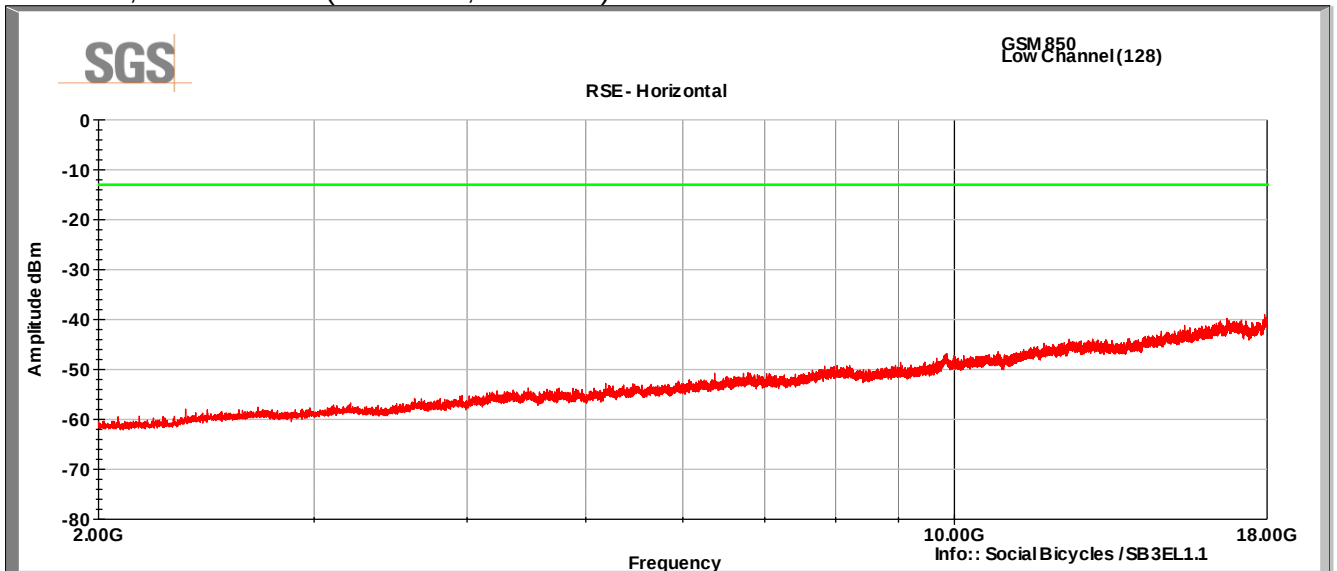


Worst case spur: -41dBm @ 1753.8MHz

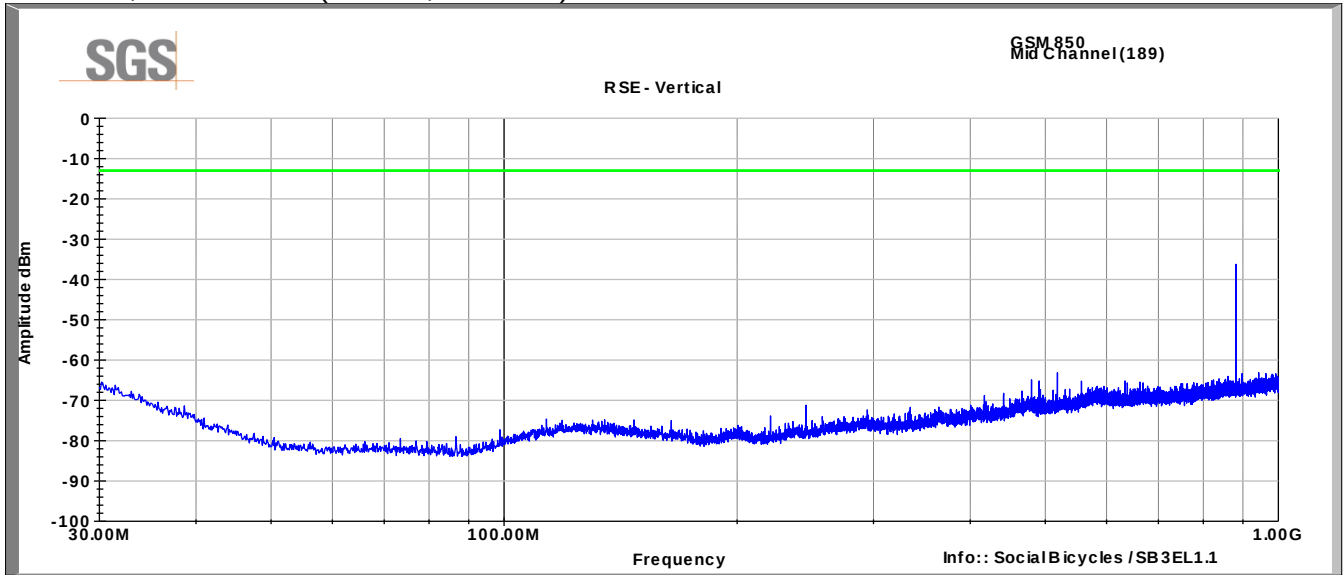
GSM 850, Low Channel (Vertical, 2-18GHz)



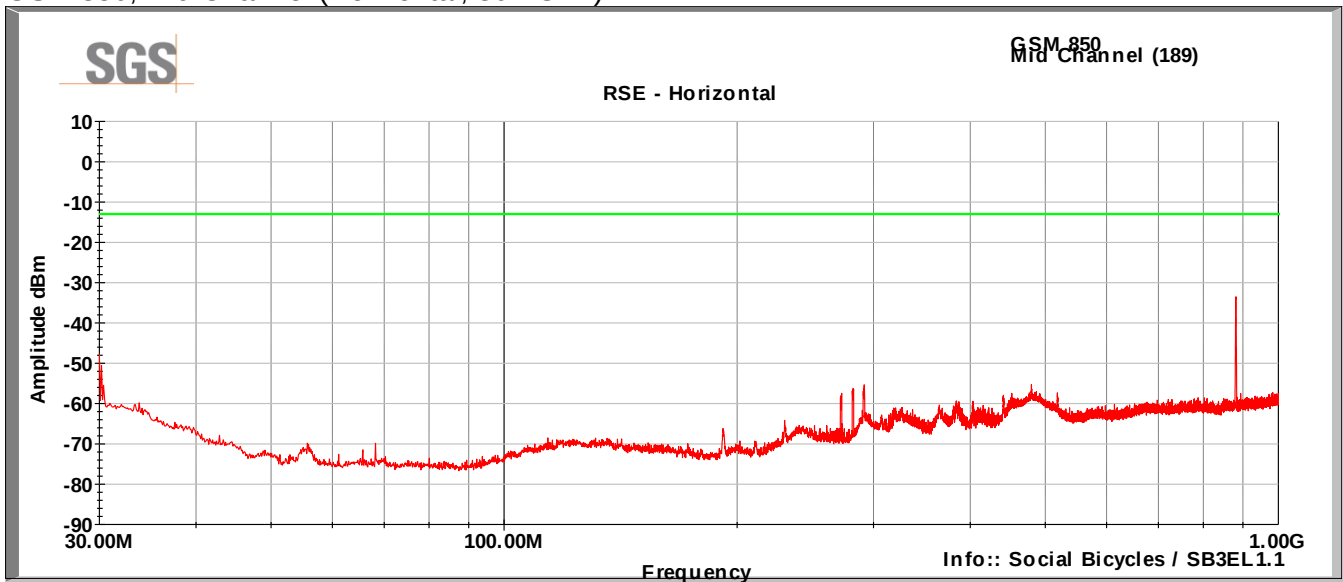
GSM 850, Low Channel (Horizontal, 2-18GHz)



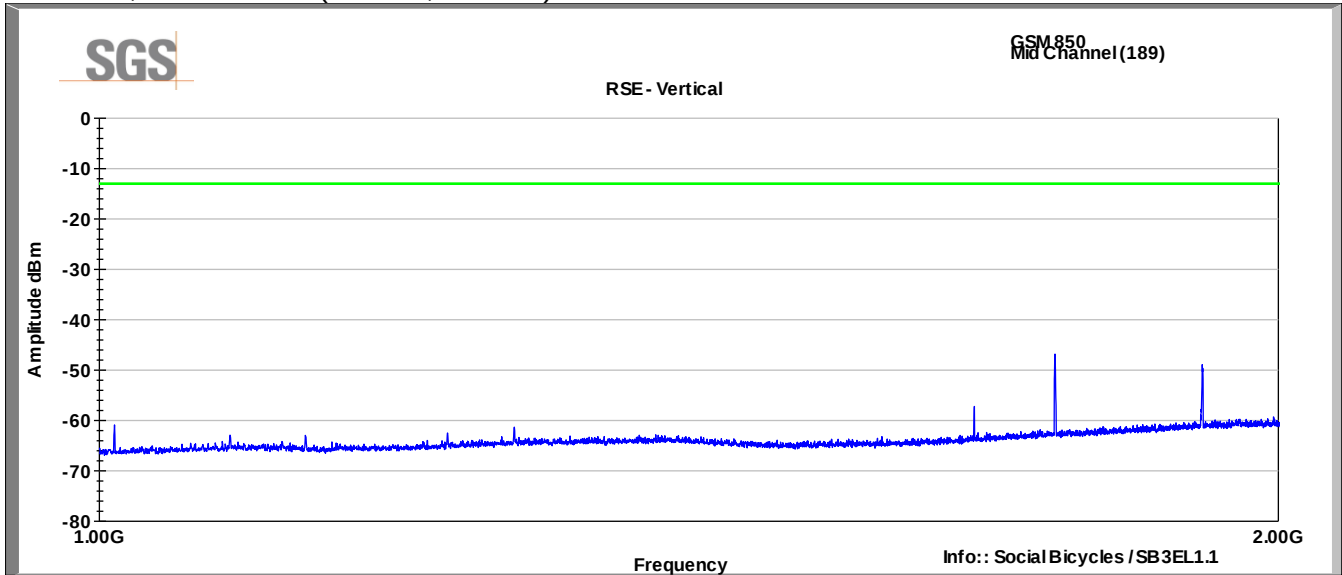
GSM 850, Mid Channel (Vertical, 30-1GHz)



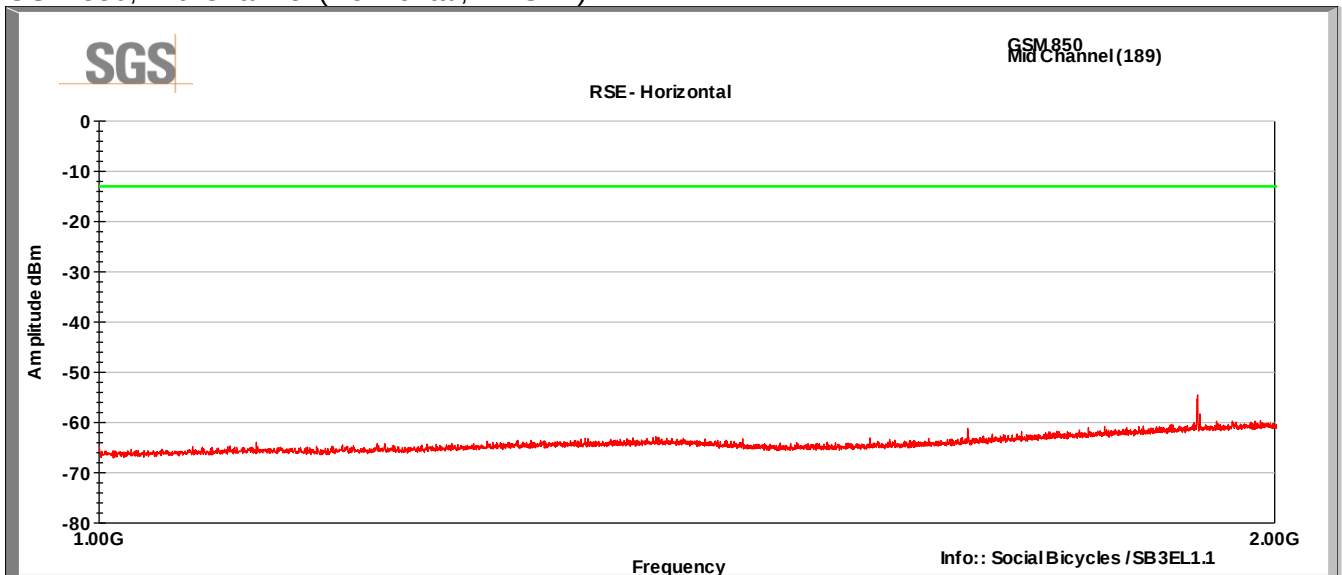
GSM 850, Mid Channel (Horizontal, 30-1GHz)



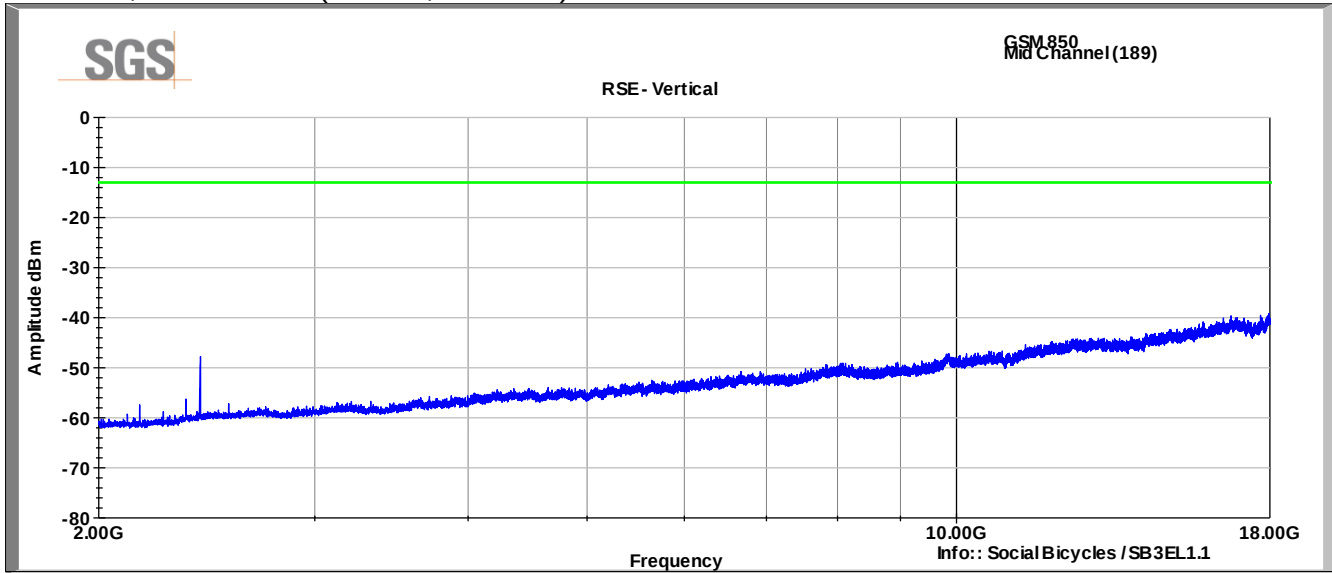
GSM 850, Mid Channel (Vertical, 1-2GHz)



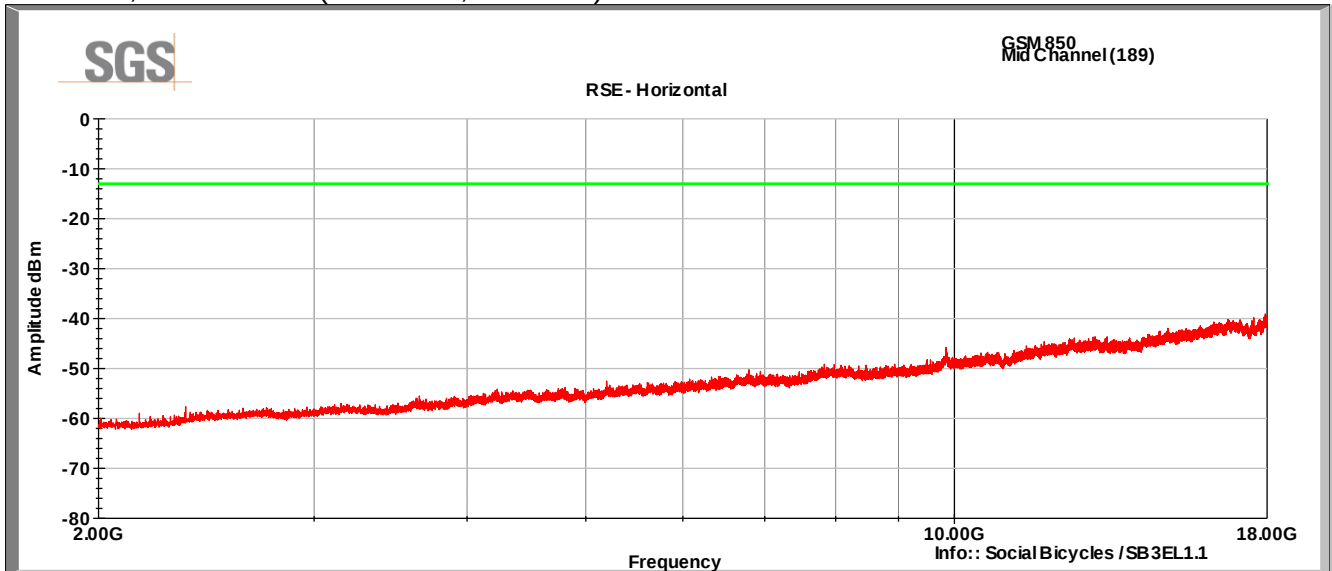
GSM 850, Mid Channel (Horizontal, 1-2GHz)



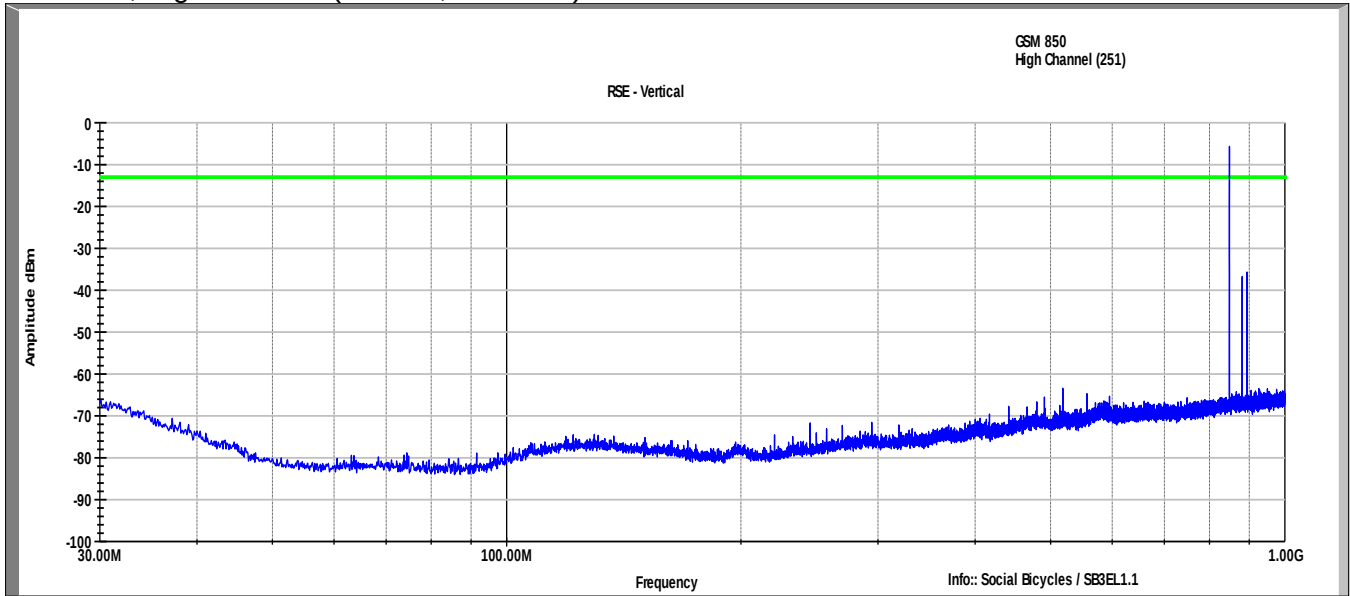
GSM 850, Mid Channel (Vertical, 2-18GHz)



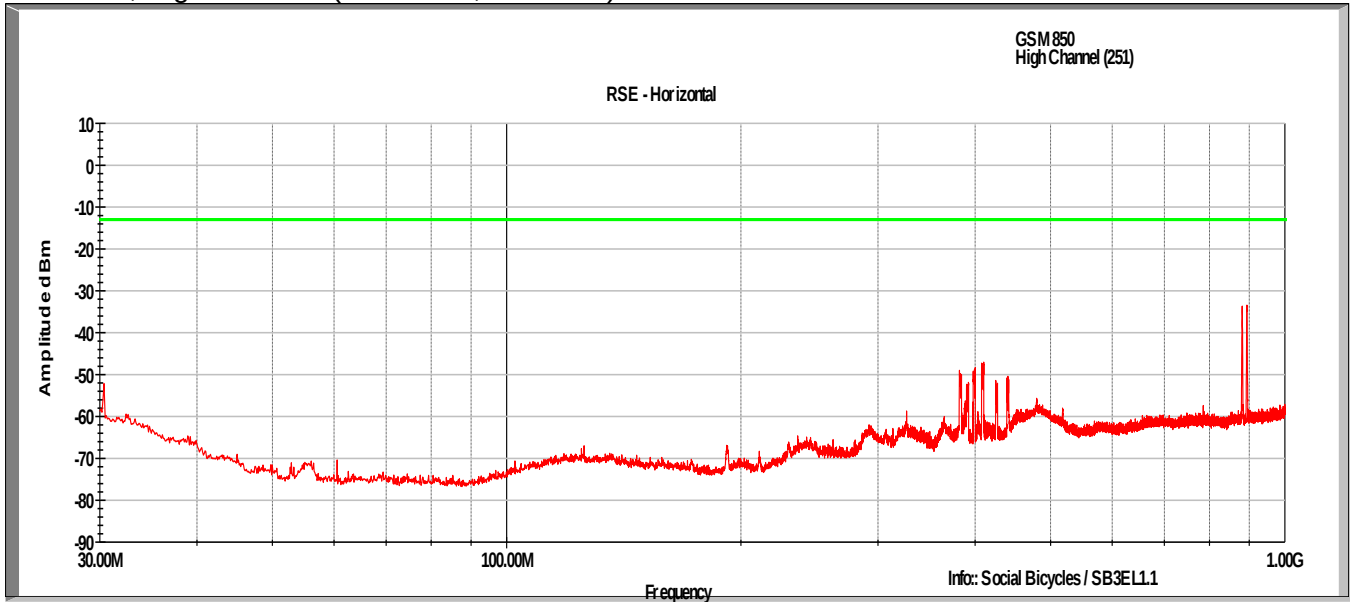
GSM 850, Mid Channel (Horizontal, 2-18GHz)



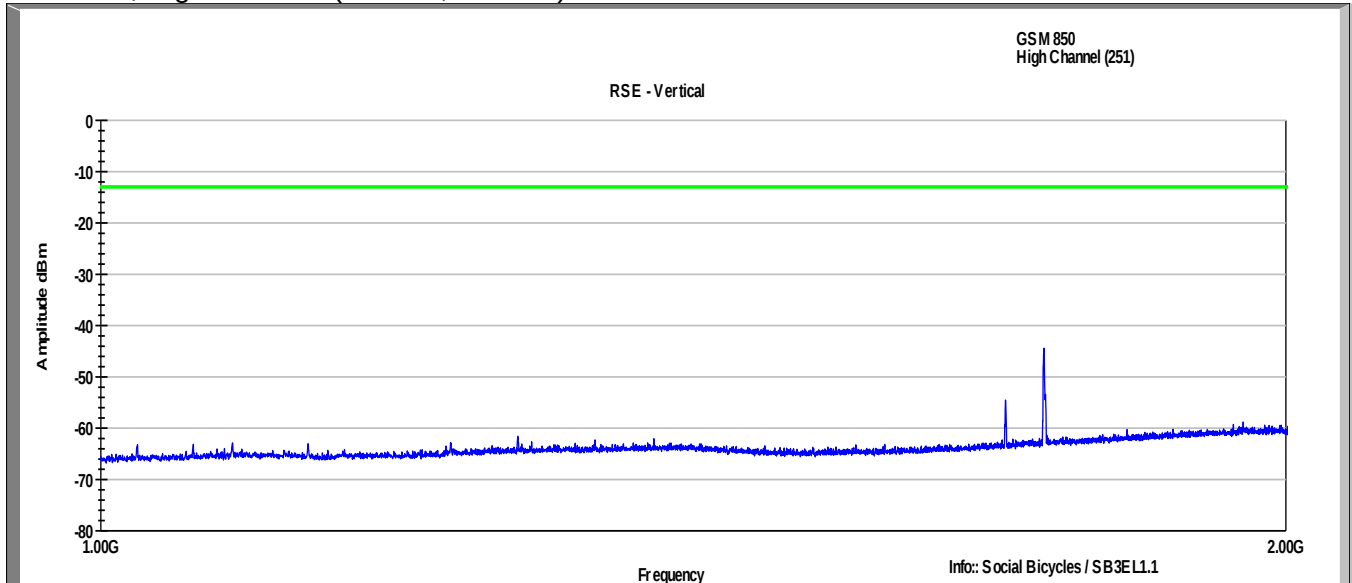
GSM 850, High Channel (Vertical, 30-1GHz)



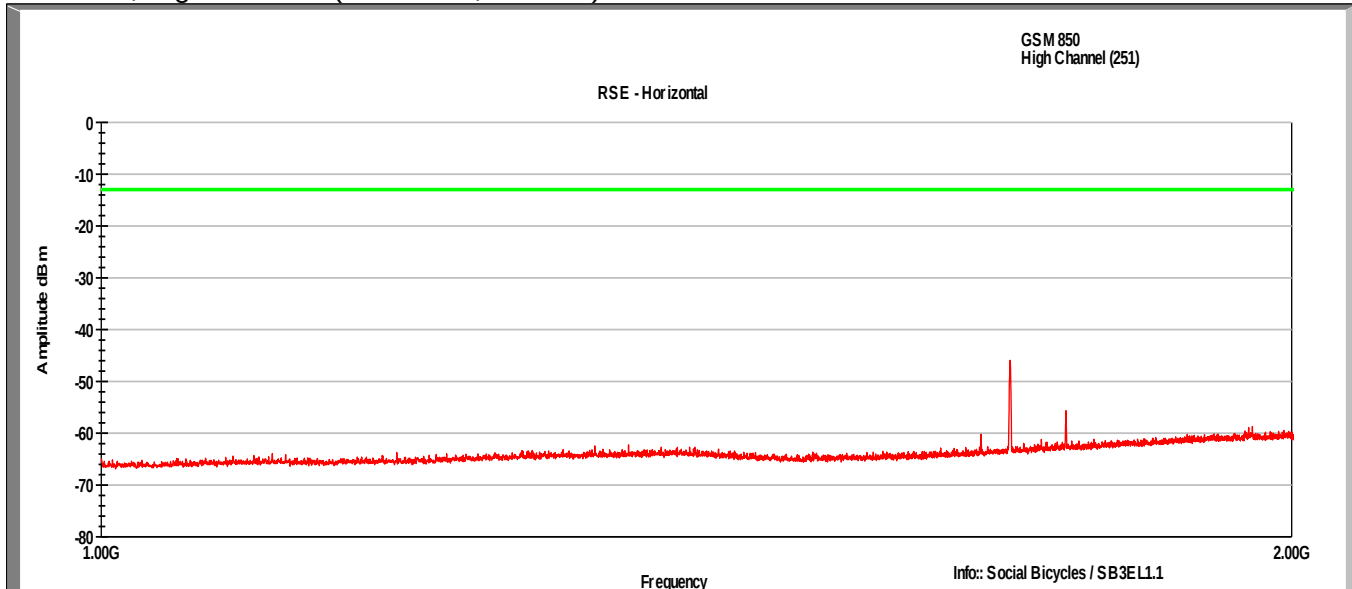
GSM 850, High Channel (Horizontal, 30-1GHz)



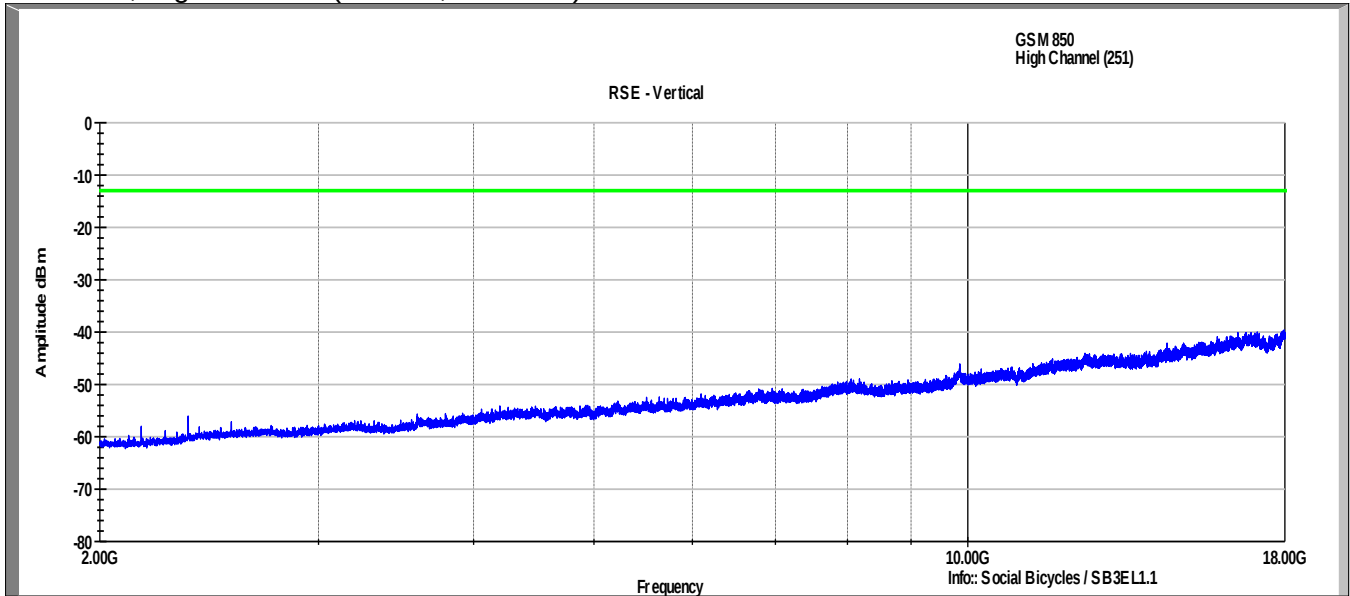
GSM 850, High Channel (Vertical, 1-2GHz)



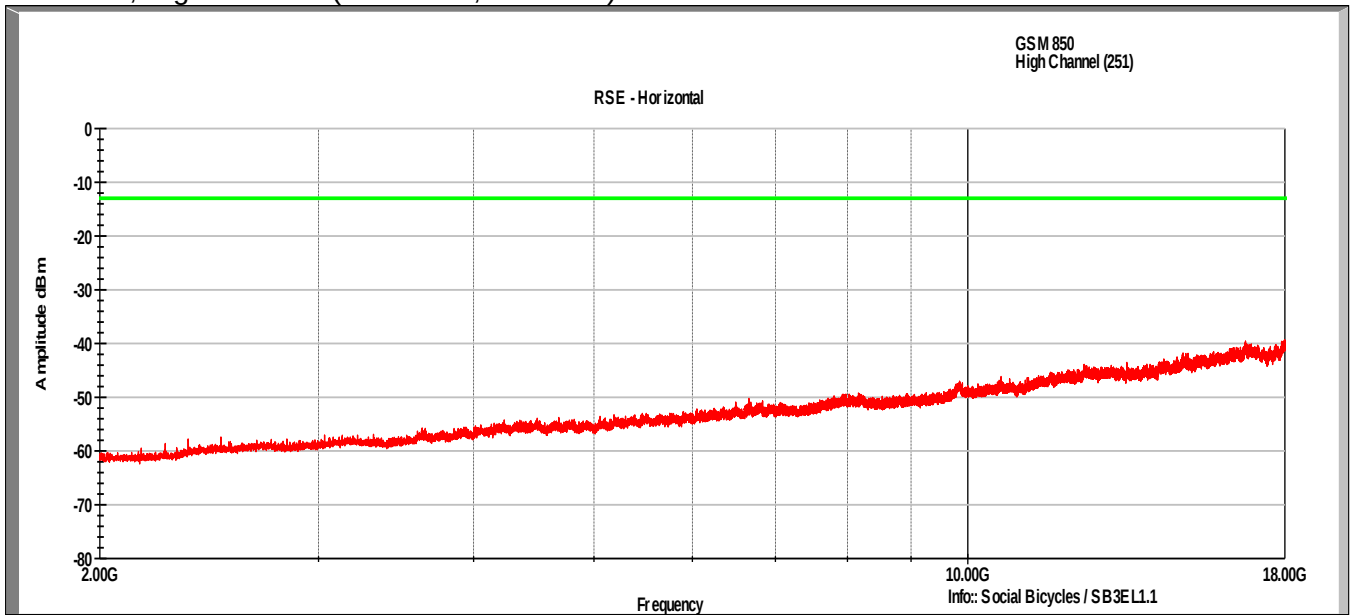
GSM 850, High Channel (Horizontal, 1-2GHz)



GSM 850, High Channel (Vertical, 2-18GHz)

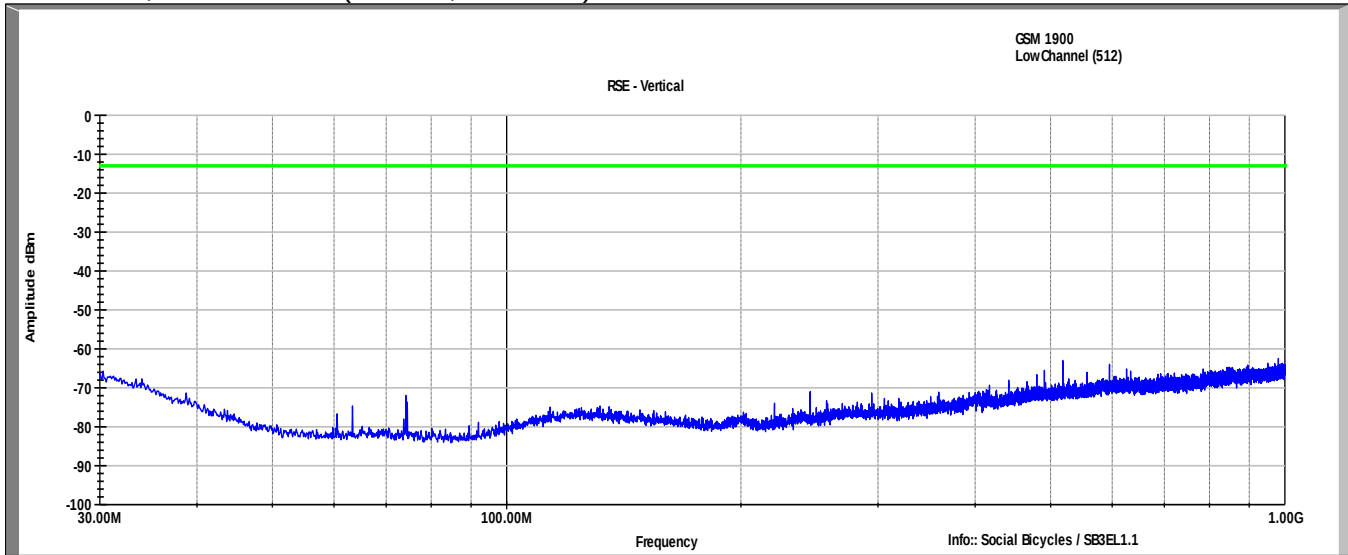


GSM 850, High Channel (Horizontal, 2-18GHz)

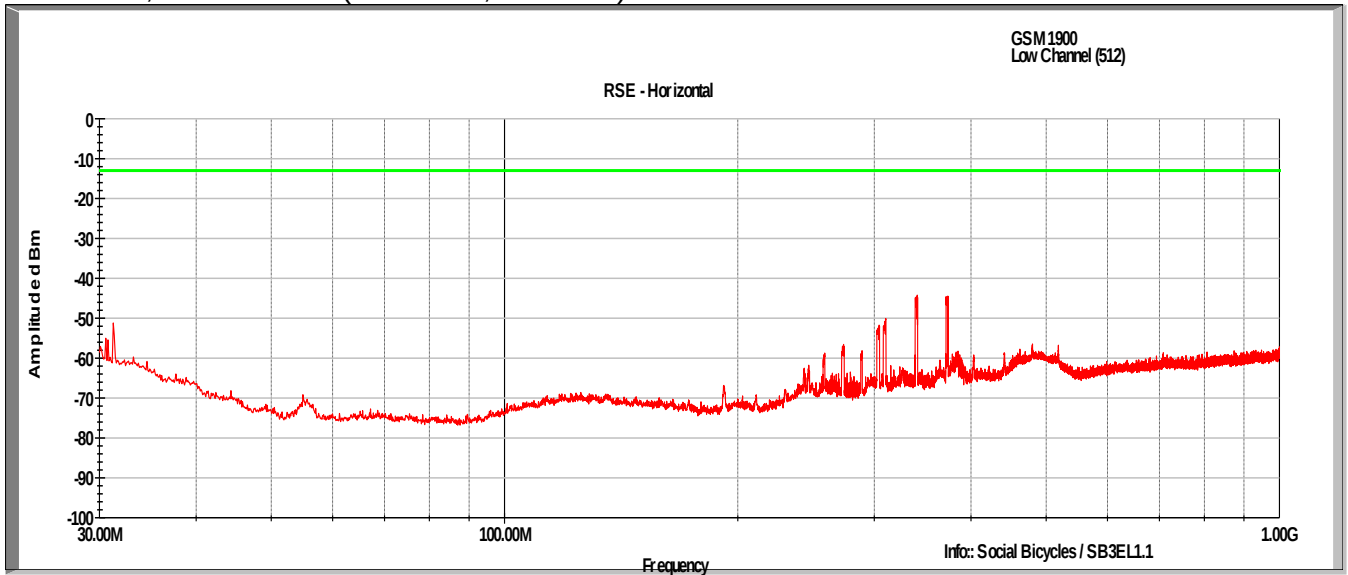


8.7 Test Data – GSM 1900

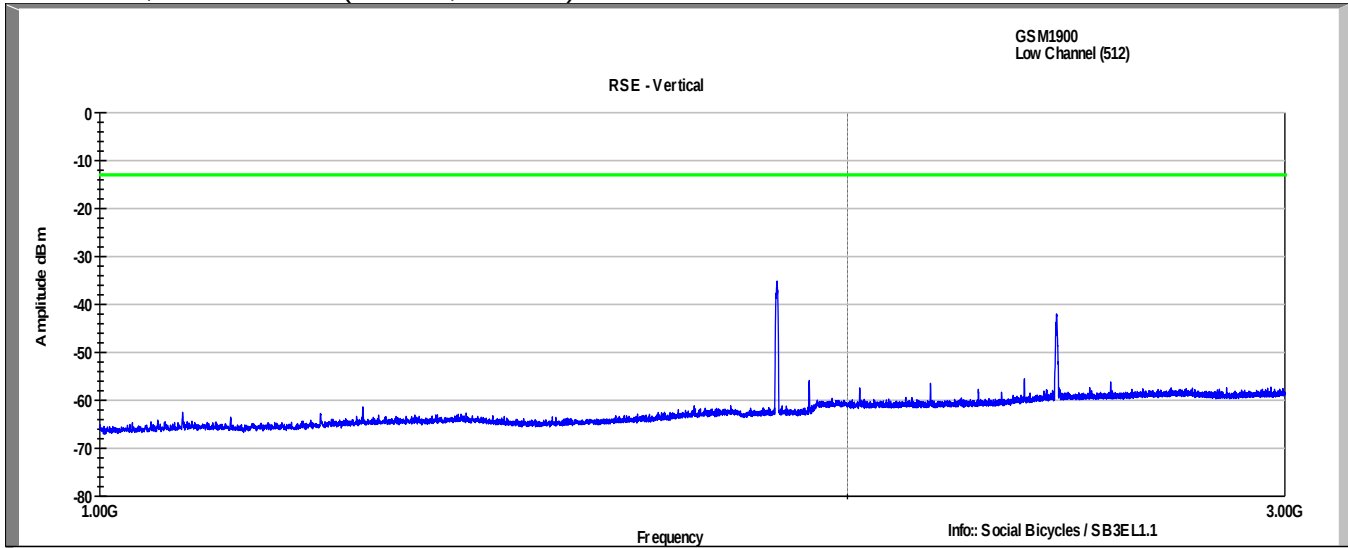
GSM 1900, Low Channel (Vertical, 30-1GHz)



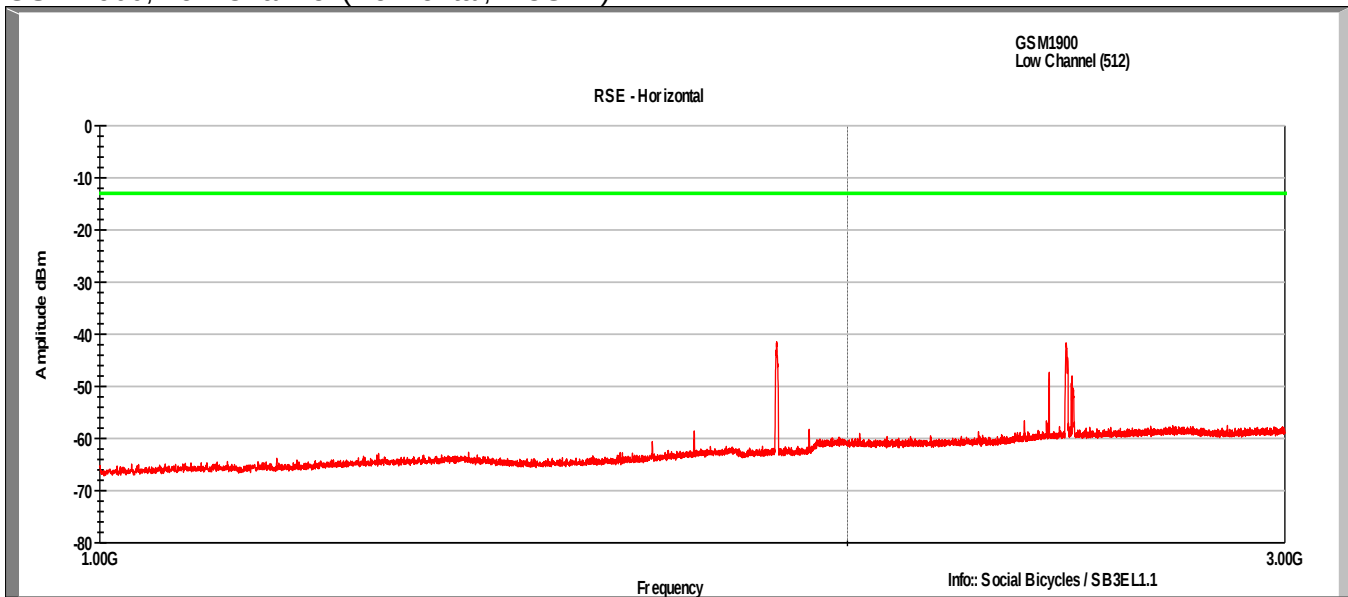
GSM 1900, Low Channel (Horizontal, 30-1GHz)



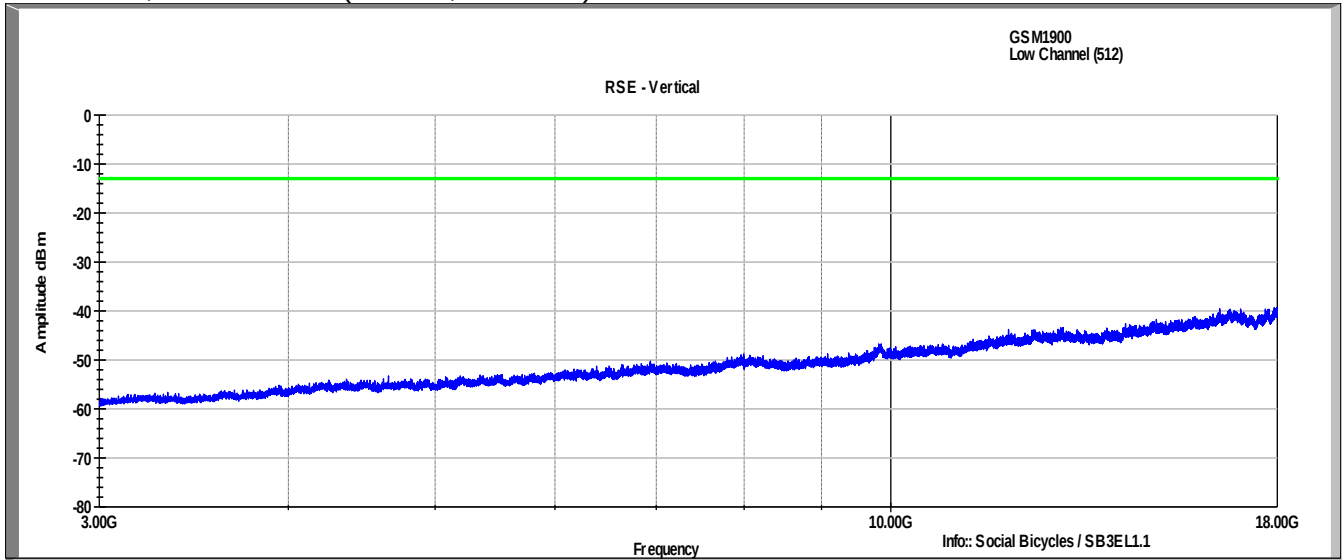
GSM 1900, Low Channel (Vertical, 1-3GHz)



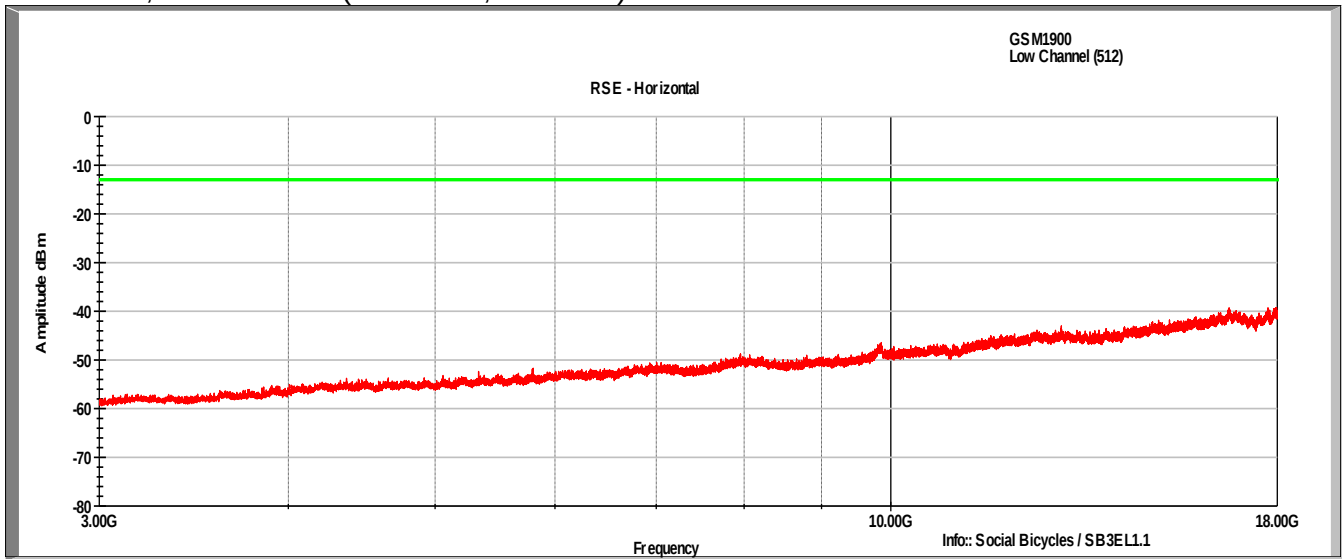
GSM 1900, Low Channel (Horizontal, 1-3GHz)



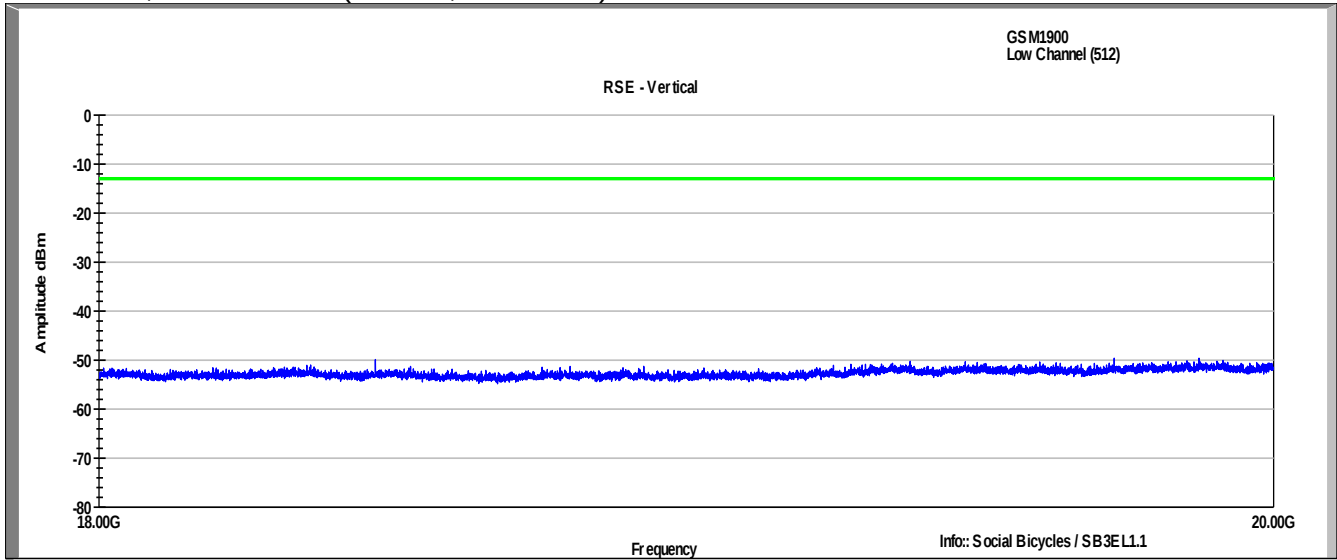
GSM 1900, Low Channel (Vertical, 3-18GHz)



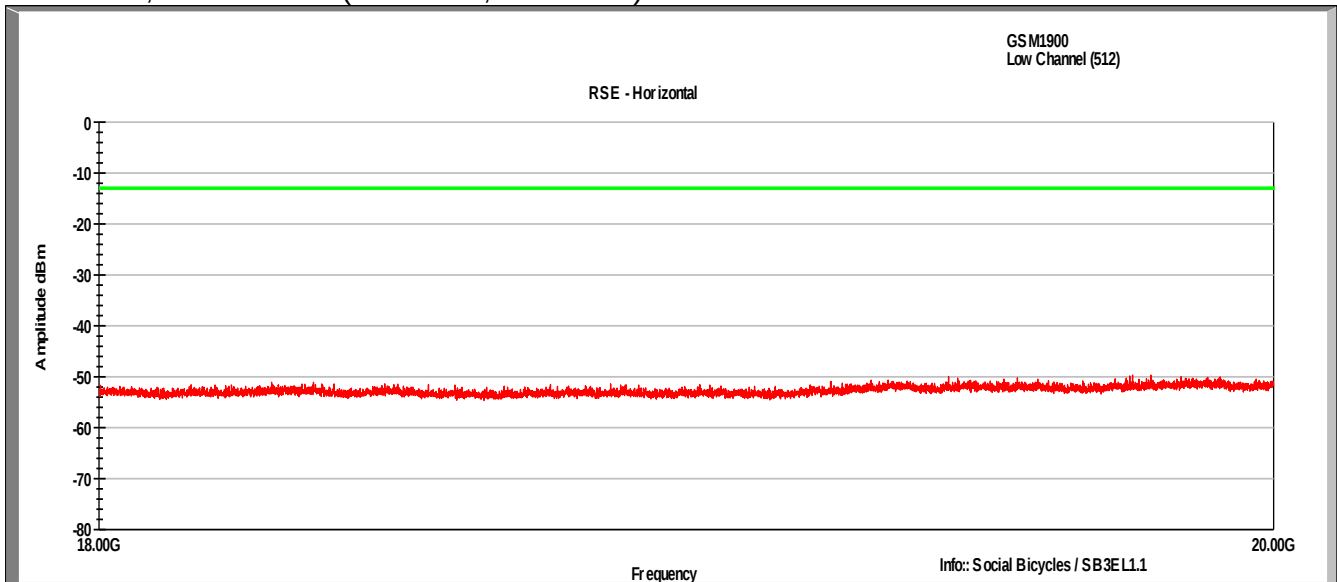
GSM 1900, Low Channel (Horizontal, 3-18GHz)



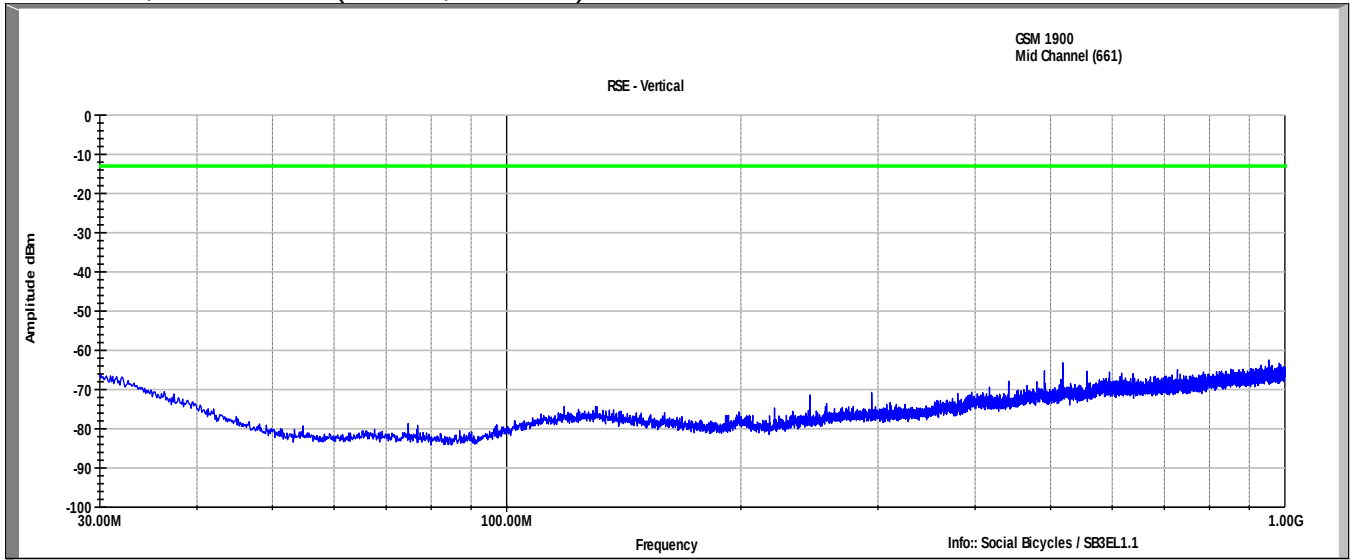
GSM 1900, Low Channel (Vertical, 18-20GHz)



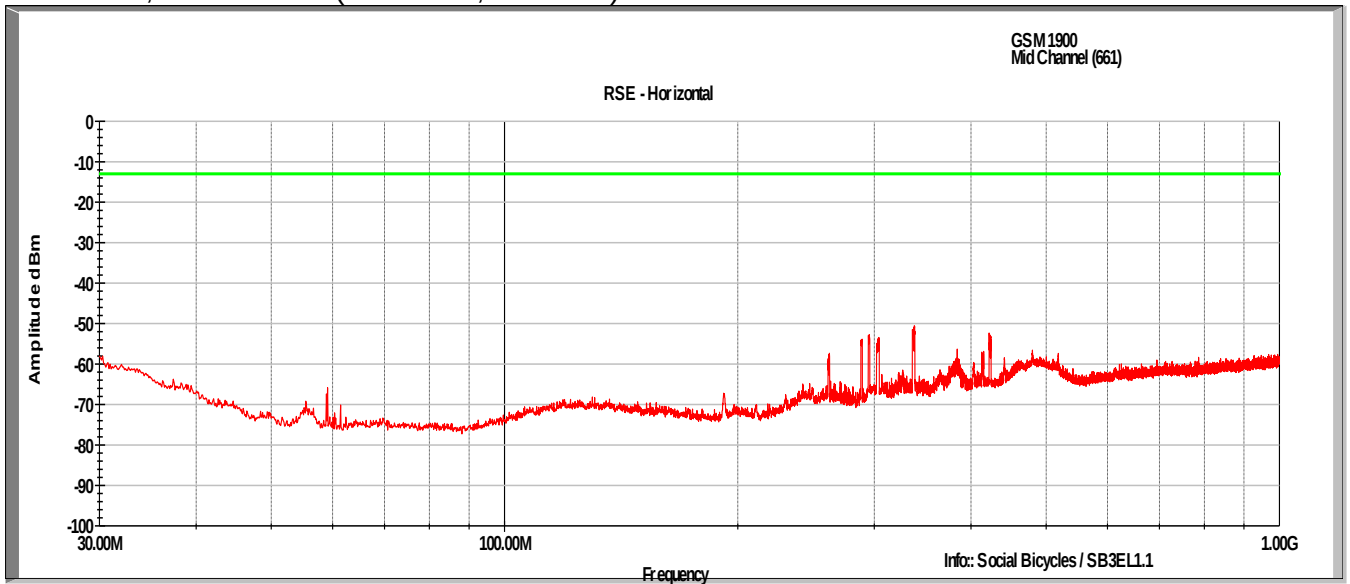
GSM 1900, Low Channel (Horizontal, 18-20GHz)



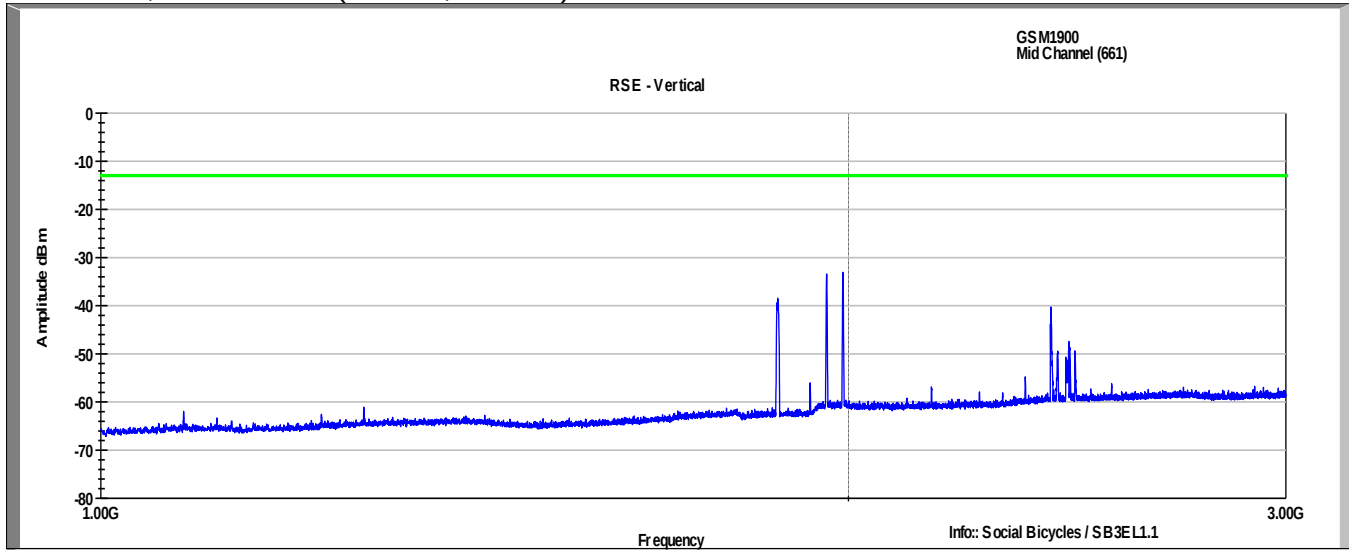
GSM 1900, Mid Channel (Vertical, 30-1GHz)



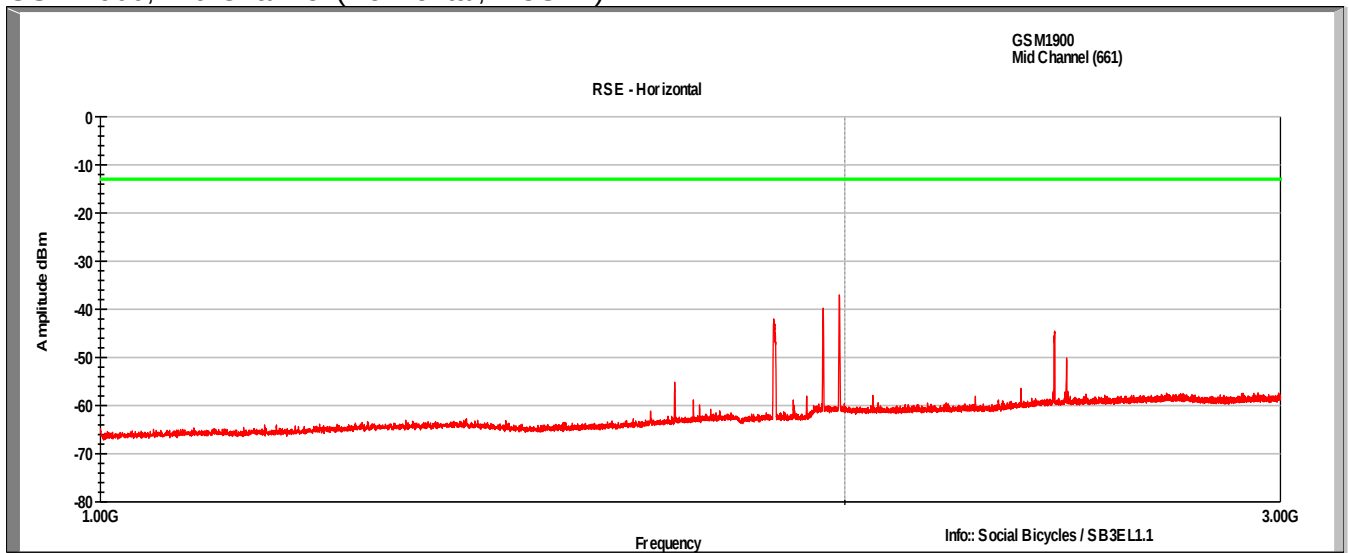
GSM 1900, Mid Channel (Horizontal, 30-1GHz)



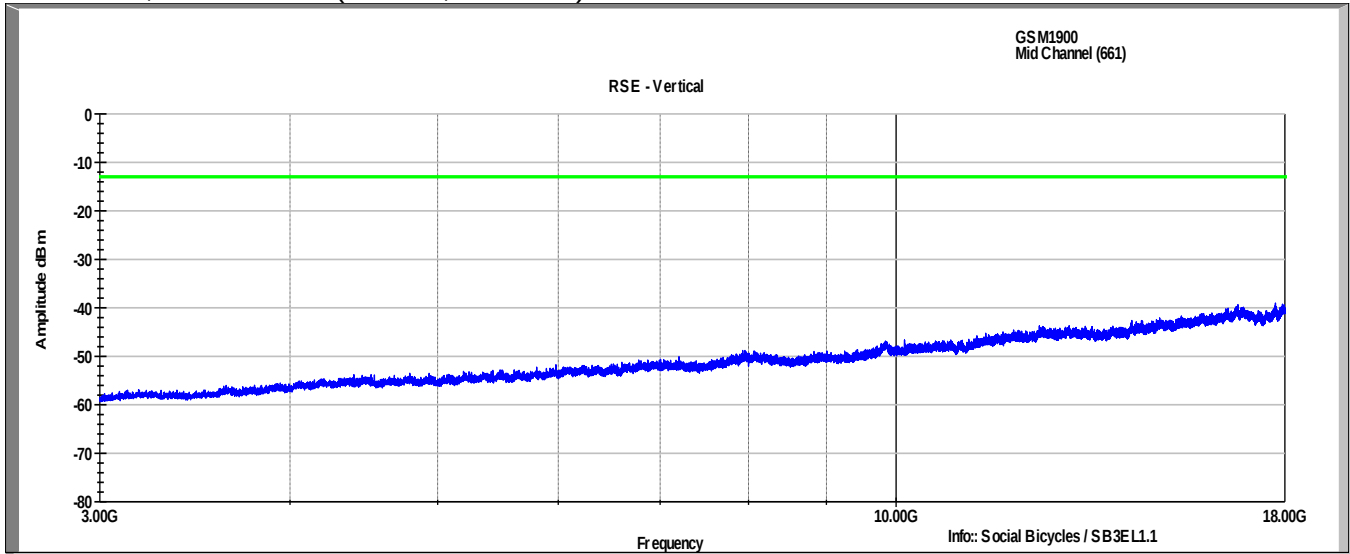
GSM 1900, Mid Channel (Vertical, 1-3GHz)



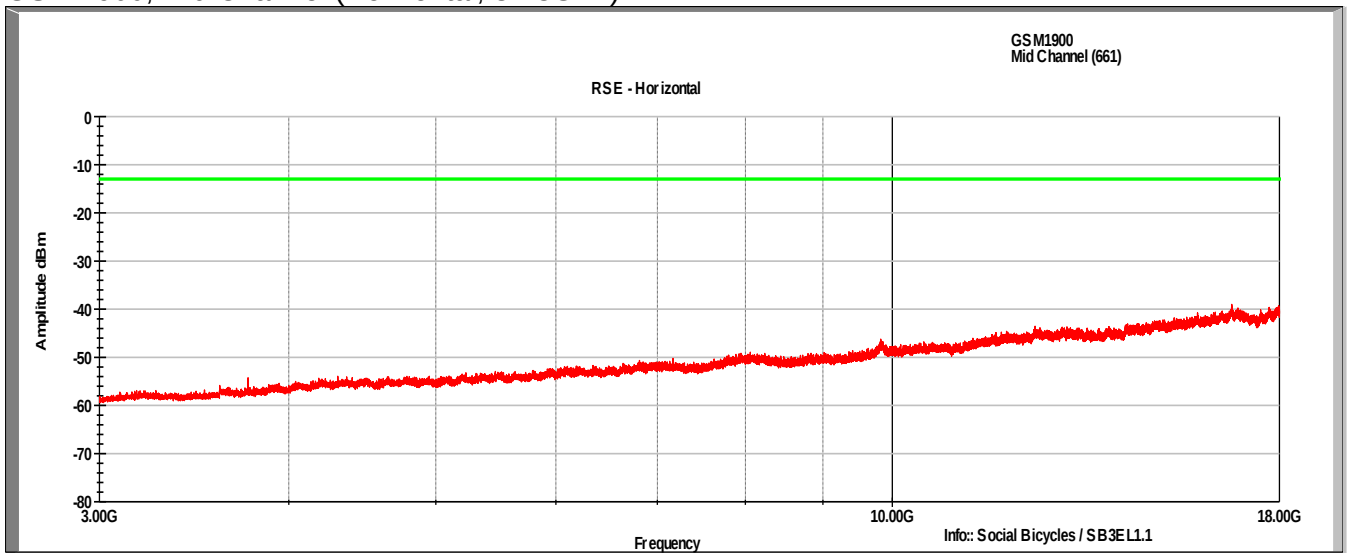
GSM 1900, Mid Channel (Horizontal, 1-3GHz)



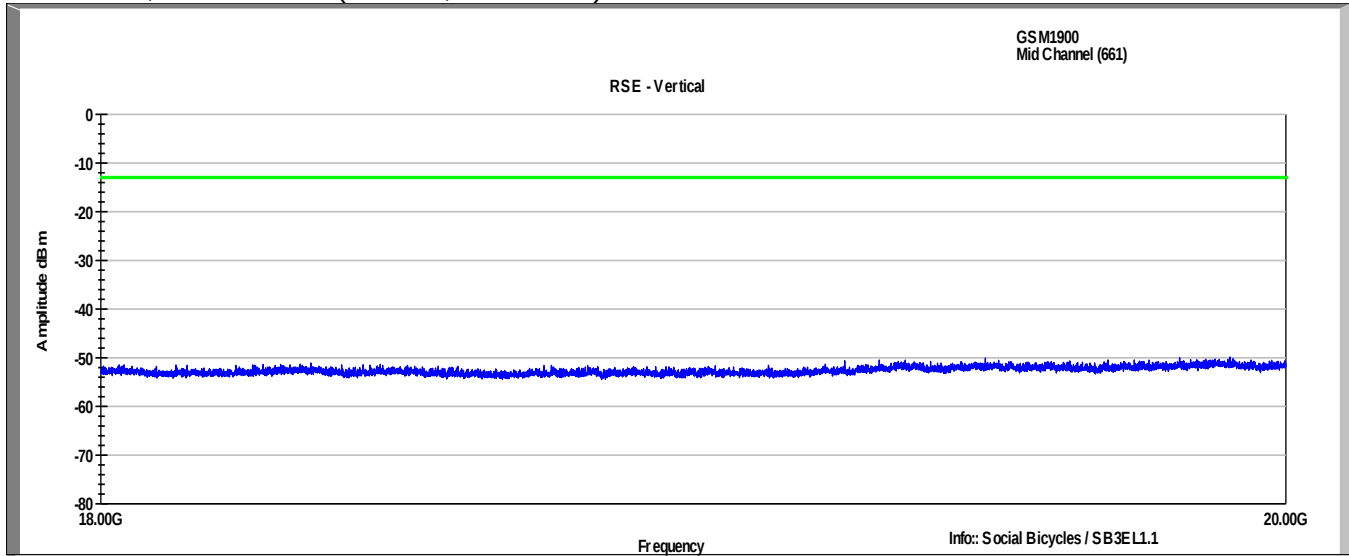
GSM 1900, Mid Channel (Vertical, 3-18GHz)



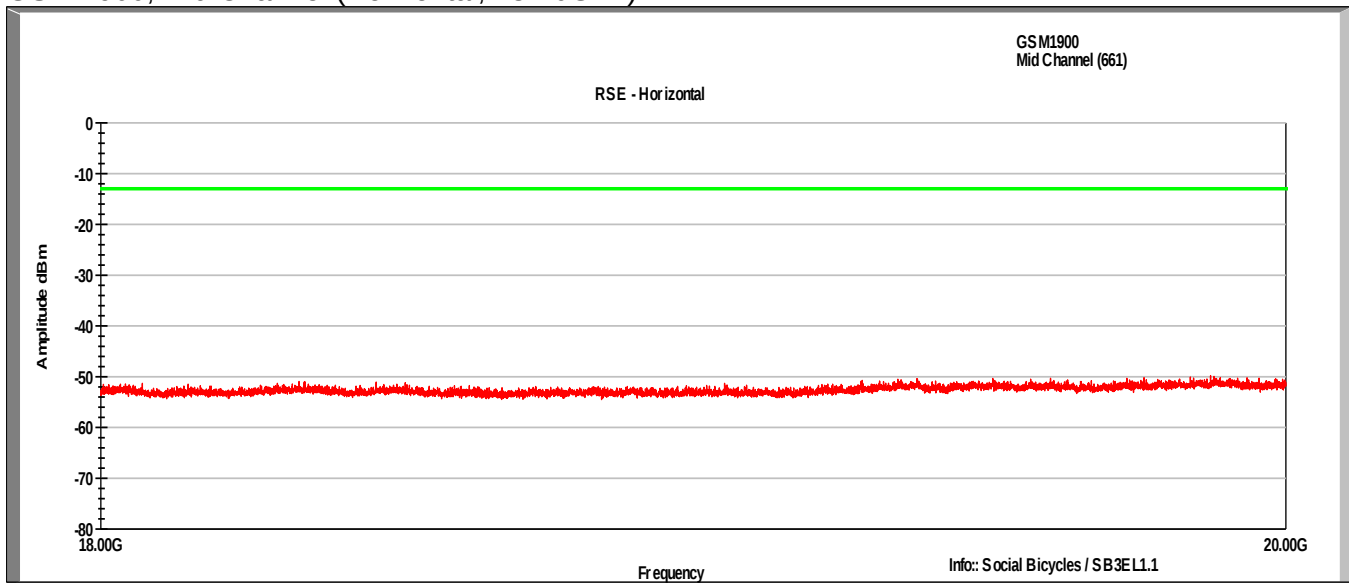
GSM 1900, Mid Channel (Horizontal, 3-18GHz)



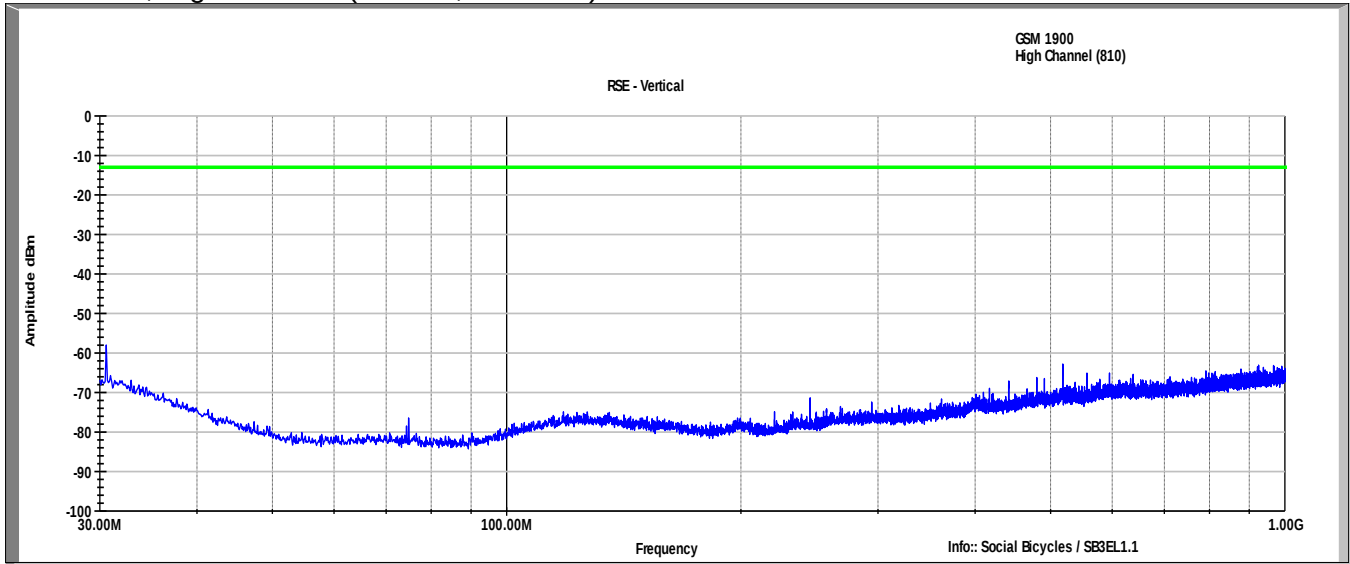
GSM 1900, Mid Channel (Vertical, 18-20GHz)



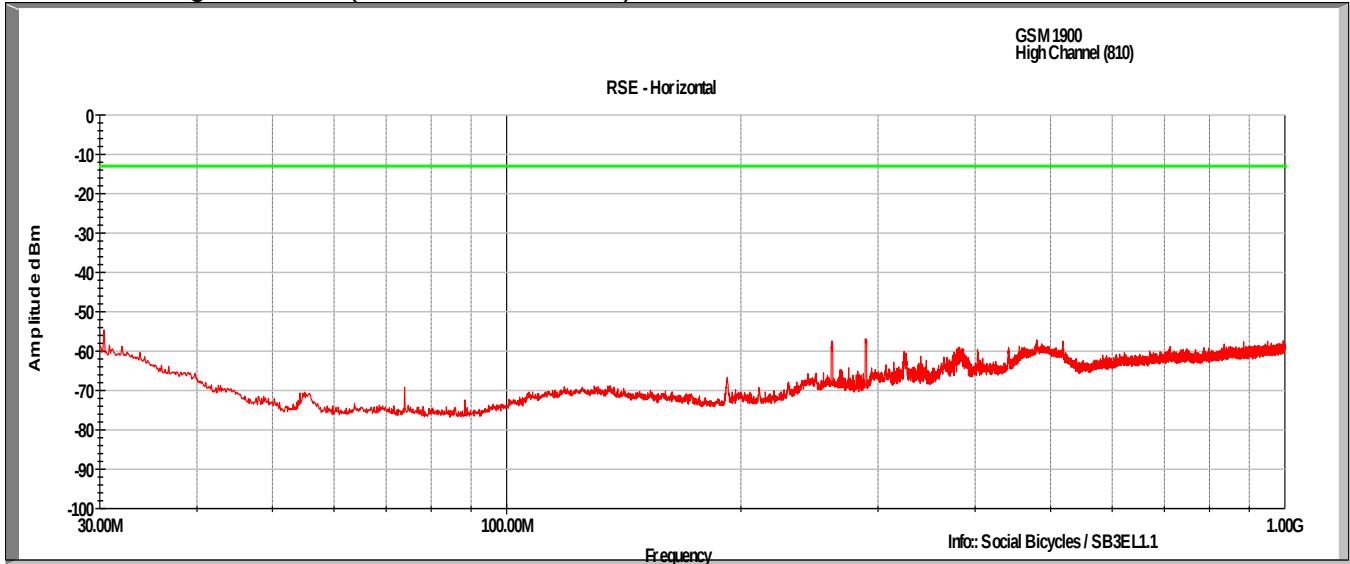
GSM 1900, Mid Channel (Horizontal, 18-20GHz)



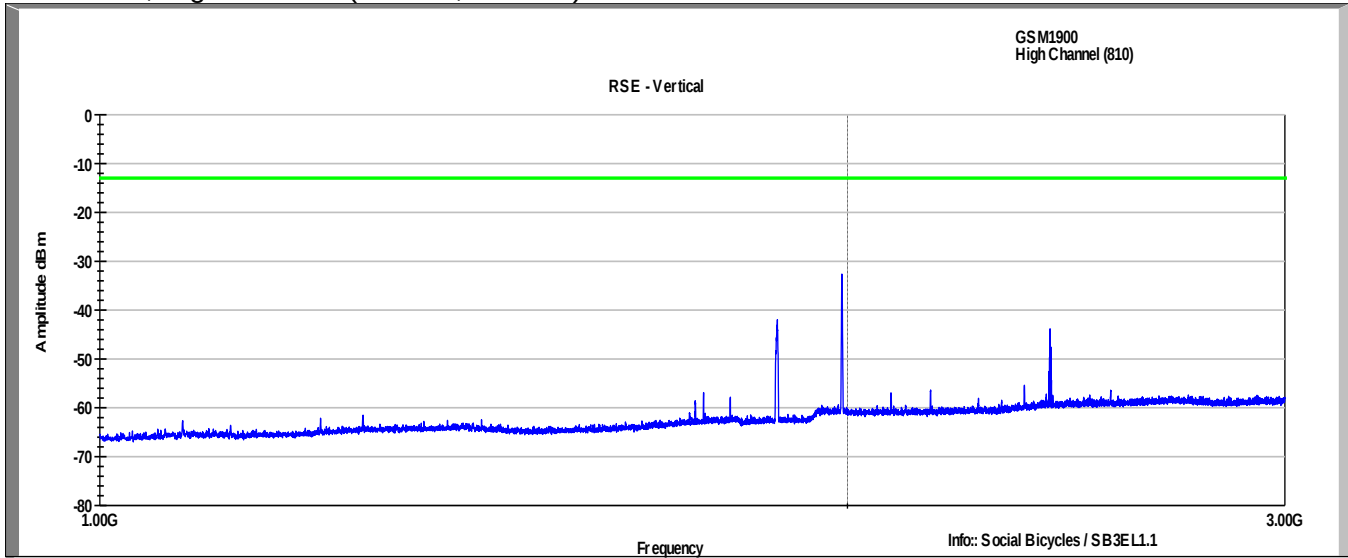
GSM 1900, High Channel (Vertical, 30-1GHz)



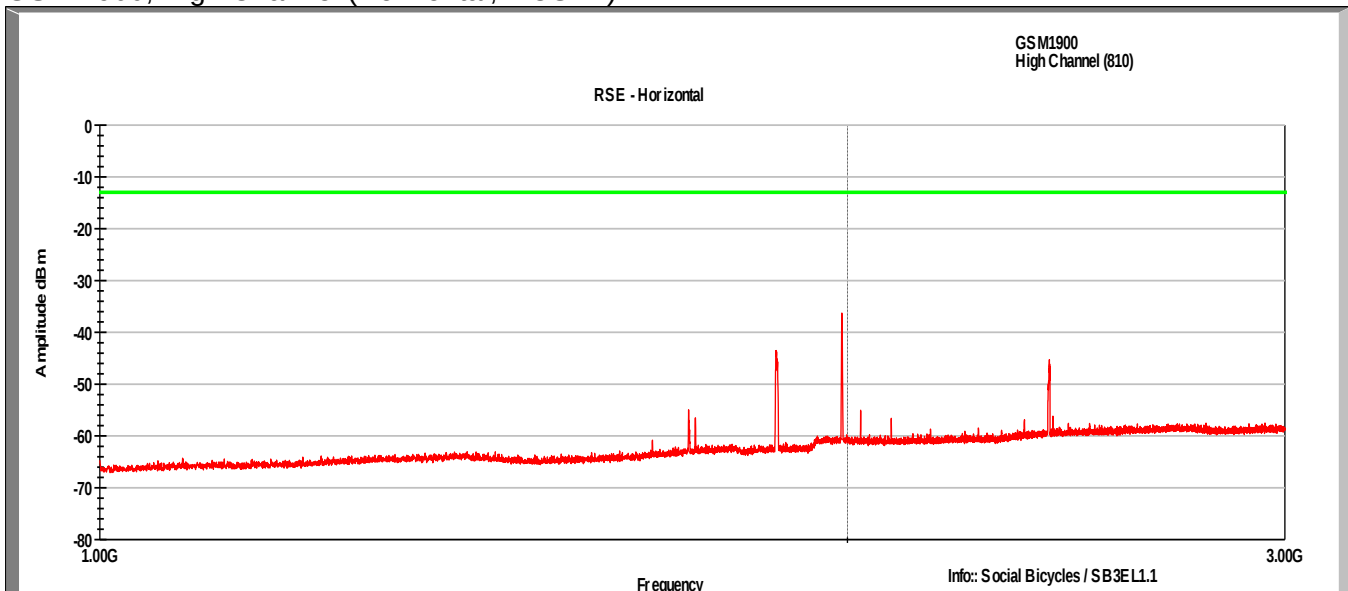
GSM 1900, High Channel (Horizontal, 30-1GHz)



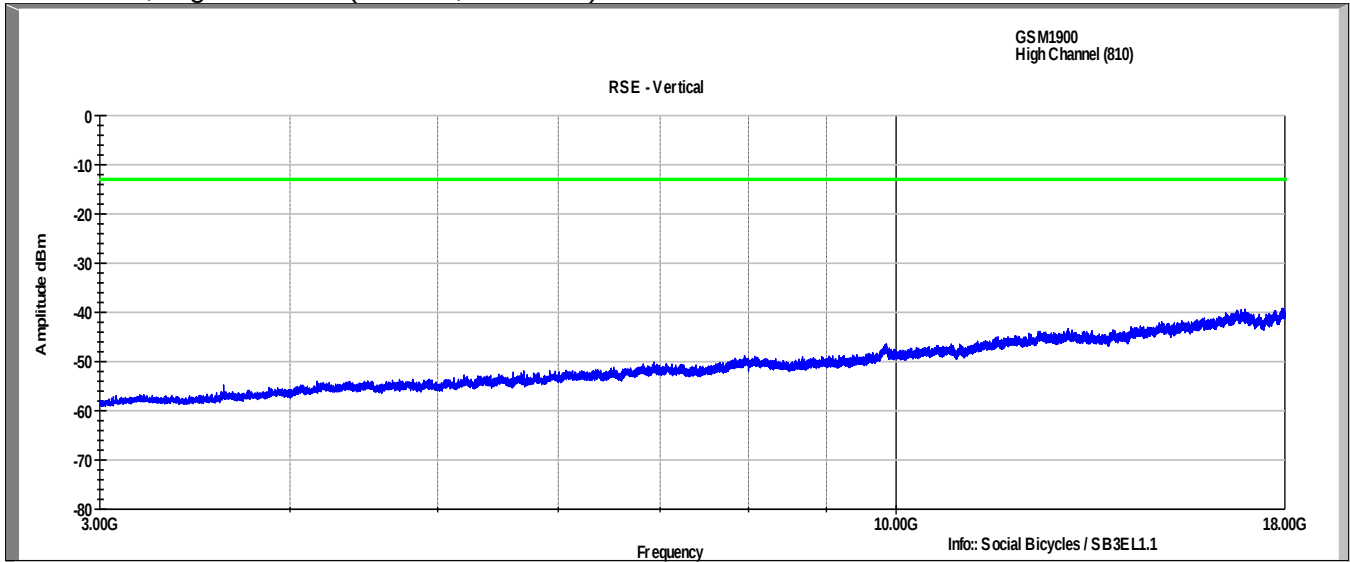
GSM 1900, High Channel (Vertical, 1-3GHz)



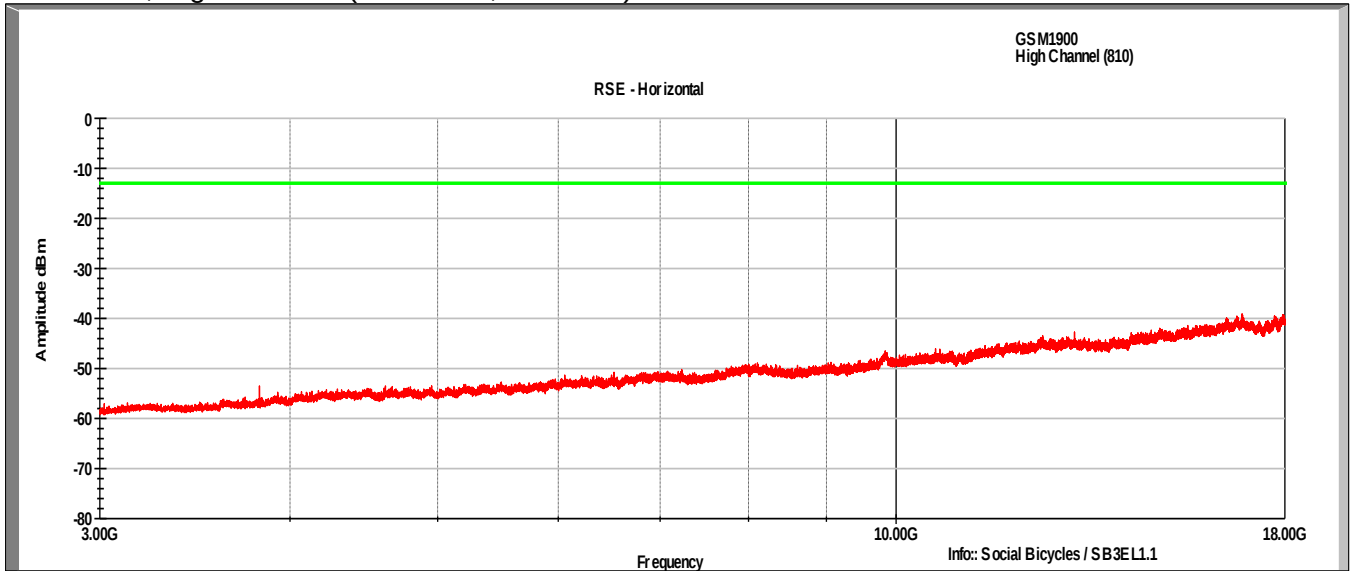
GSM 1900, High Channel (Horizontal, 1-3GHz)



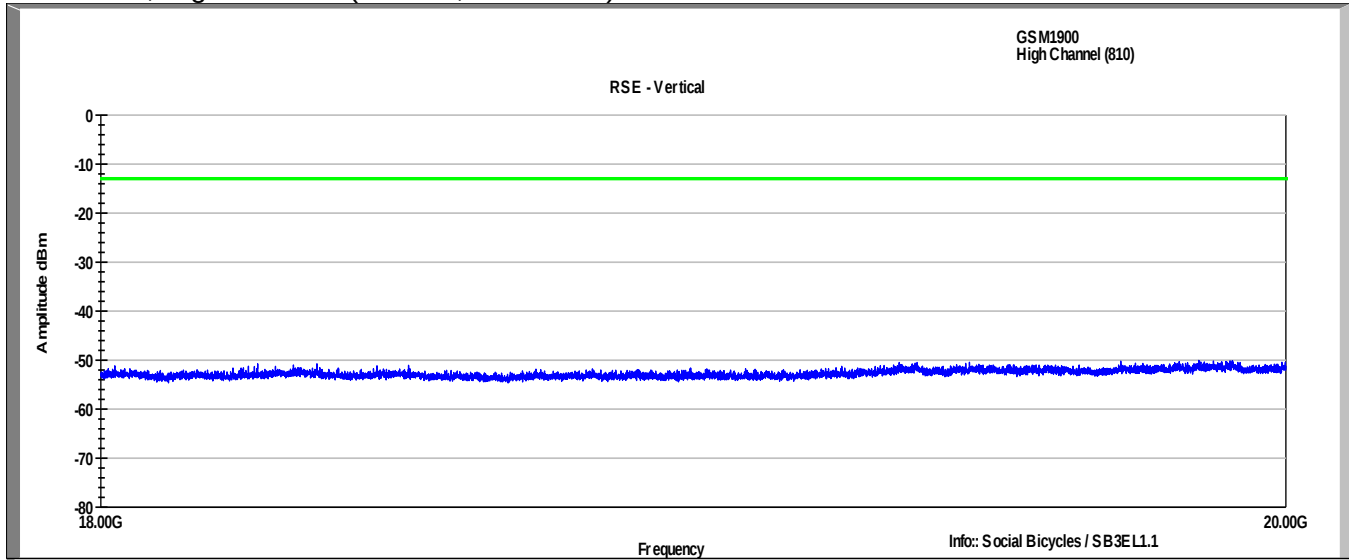
GSM 1900, High Channel (Vertical, 3-18GHz)



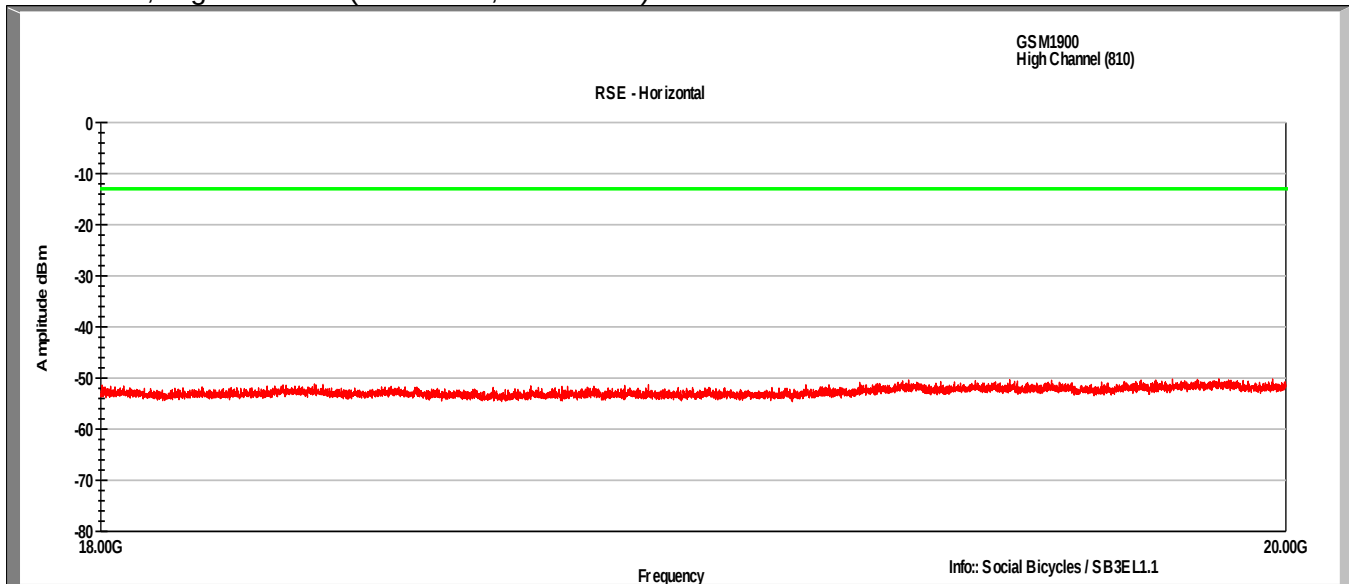
GSM 1900, High Channel (Horizontal, 3-18GHz)



GSM 1900, High Channel (Vertical, 18-20GHz)



GSM 1900, High Channel (Horizontal, 18-20GHz)



9 Frequency Stability

9.1 Test Result

Test Description	Basic Standards	Test Result
Frequency Stability	FCC Part 2.1055 FCC Part 22.917(a) FCC Part 24.238(a) RSS-GEN (6.11) RSS-132 5.3 RSS-132 6.3	Pass

9.2 Test Method

The EUT was placed inside the Environmental Chamber and was left inside chamber to stabilize to set temperature for minimum of thirty minutes before any measurements were made. The EUT was tested at GSM 850 Channel 190 and GSM 1900 Channel 661.

9.3 Test Site

SGS EMC Laboratory, Suwanee, GA

9.4 Test Equipment

Test Date: 23-Dec-2016

Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
ENVIRONMENTAL TEST CHAMBER	T2RC	TENNEY ENVIRONMENTAL	B094877	CNR
HANDHELD MULTIMETER	87V	FLUKE	B079677	29-Jul-2017
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	19-Jan-2018
ATTENUATOR, 10DB	10DB	ROHDE & SCHWARZ	B095594	27-Jul-2017
RF CABLE	141	HUBER & SUHNER	B095590	26-Jul-2017

- Unless otherwise noted, equipment is on a 1 year calibration cycle.
- Based on manufacturer's specifications, the CMW-500 is on a 2 year calibration cycle.

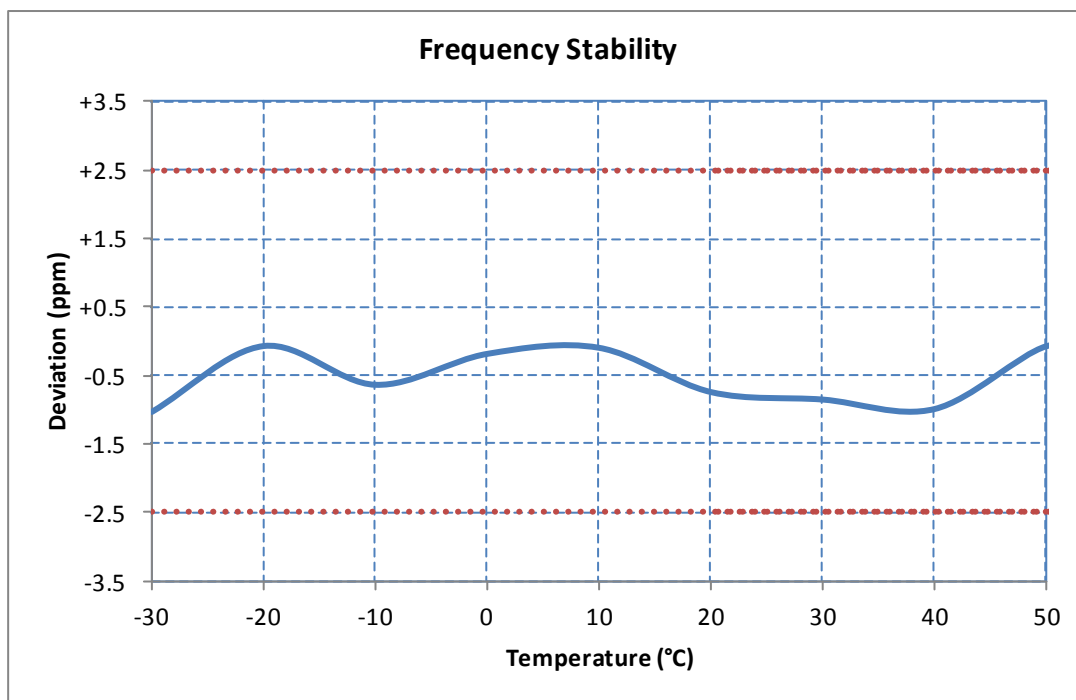
9.5 Test Data

Test Date: 23 December 2016

GSM 850, Channel 190 (836.6MHz)

Voltage %	Power V _{DC}	Temp °C	Frequency Hz	Freq Dev Hz	Freq Dev ppm	Deviation %
100%	3.70	+20 (Ref)	836,599,378	-622	-0.74	-0.000074
100%	3.70	-30	836,599,137	-863	-1.03	-0.000103
100%	3.70	-20	836,599,937	-63	-0.07	-0.000007
100%	3.70	-10	836,599,466	-534	-0.64	-0.000064
100%	3.70	0	836,599,842	-158	-0.19	-0.000019
100%	3.70	+10	836,599,916	-84	-0.10	-0.000010
100%	3.70	+20	836,599,378	-622	-0.74	-0.000074
100%	3.70	+30	836,599,287	-713	-0.85	-0.000085
100%	3.70	+40	836,599,171	-829	-0.99	-0.000099
100%	3.70	+50	836,599,935	-65	-0.08	-0.000008
100%	3.70	+55	836,599,770	-230	-0.27	-0.000027
114%	4.20	+20	836,599,938	-62	-0.07	-0.000007
95%	3.52	+20	836,599,295	-705	-0.84	-0.000084

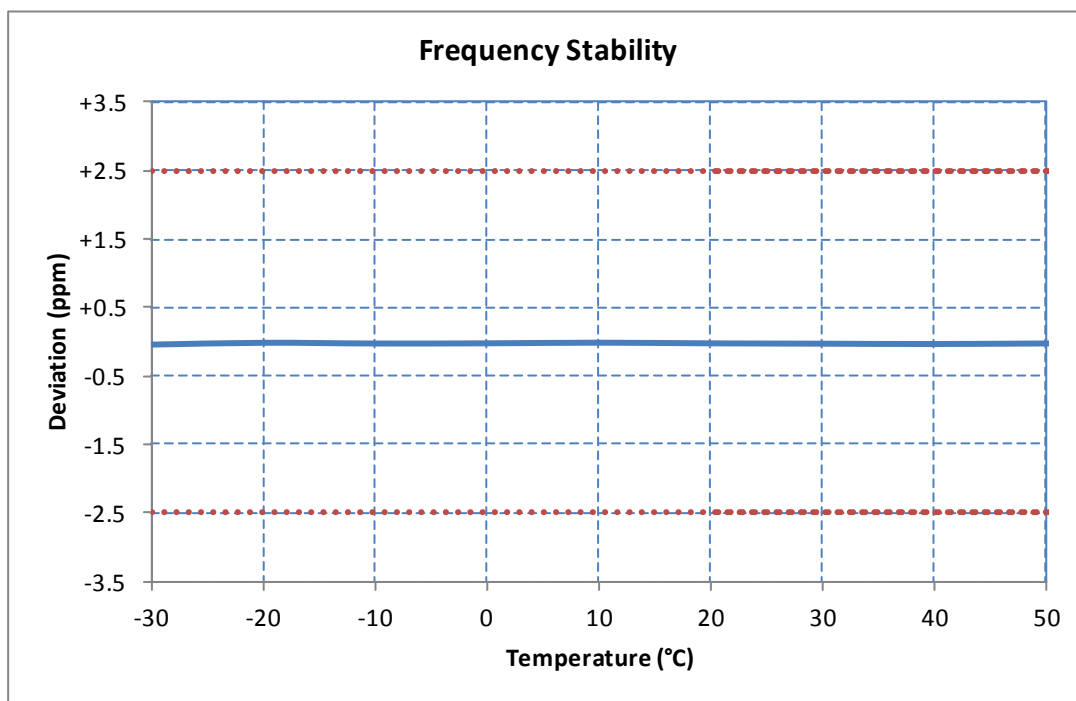
Note: Call would not remain connected when voltage was set to 85% value of 3.145V



GSM 1900, Channel 661 (1880MHz)

Voltage %	Power V _{DC}	Temp °C	Frequency Hz	Freq Dev Hz	Freq Dev ppm	Deviation %
100%	3.70	+20 (Ref)	1,879,999,957	-43	-0.02	-0.000002
100%	3.70	-30	1,879,999,909	-91	-0.05	-0.000005
100%	3.70	-20	1,879,999,979	-21	-0.01	-0.000001
100%	3.70	-10	1,879,999,951	-49	-0.03	-0.000003
100%	3.70	0	1,879,999,958	-42	-0.02	-0.000002
100%	3.70	+10	1,879,999,983	-17	-0.01	-0.000001
100%	3.70	+20	1,879,999,957	-43	-0.02	-0.000002
100%	3.70	+30	1,879,999,945	-56	-0.03	-0.000003
100%	3.70	+40	1,879,999,931	-69	-0.04	-0.000004
100%	3.70	+50	1,879,999,953	-47	-0.02	-0.000002
100%	3.70	+55	1,879,999,952	-48	-0.03	-0.000003
114%	4.20	+20	1,879,999,942	-59	-0.03	-0.000003
90%	3.33	+20	1,879,999,891	-109	-0.06	-0.000006

Note: Call would not remain connected when voltage was set to 85% value of 3.145V



10 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	30 January 2017
1	Changed references from "SB1" to "SB3" Corrected FCC and IC IDs	07 March 2017