TEST REPORT

Report Number: 3191769MIN-001N
Project Number: 3191769

Testing performed on the
Simon iXT GSM Radio

FCC ID: B4Z-801-IXT
Industry Canada ID: 1175C-801IXT

to
47 CFR Part 22:2008
47 CFR Part 15:2008, §15.107 and §15.109, Class B
RSS-132 Issue 2, September 2005
ICES-003, Issue 4, February 2004

For
GE Security Inc.

Test Performed by:
Intertek Testing Services NA, Inc.
7250 Hudson Blvd., Suite 100
Oakdale, MN 55128

Test Authorized by:
GE Security Inc.
1275 Red Fox Road
Arden Hills, MN 55112

Prepared by: _____ Date: October 30, 2009
Uri Spector

Reviewed by: _____ Date: October 30, 2009
Norman Shpilsher

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1.0 GENERAL DESCRIPTION

Model:	Simon iXT GSM Radio
Type of EUT:	Security Alarm
Part Number:	600-1054-95R-IXT
FCC ID:	B4Z-801-IXT
Industry Canada ID:	1175C-801IXT
Related Submittal(s) Grants:	N/A
Company:	GE Security Inc.
Customer:	Rene Christian
Address:	1275 Red Fox Road Arden Hills, MN 55112
Phone:	(877) 699-6787
Fax:	(651) 779-4884
e-mail:	Rene.Christian@ge.com
Test Standards:	☒ 47 CFR, Part 22:2008 ☒ RSS–132, Issue 2, 2005 ☒ ICES-003, Issue 4, February 2004 ☒ 47 CFR, Part 15:2008, §15.107 and §15.109, Class B ☐ Other
Type of radio:	☐ Stand -alone ☒ Module ☐ Hybrid
Date Sample Submitted:	September 28, 2009
Test Work Started:	September 28, 2009
Test Work Completed:	October 30, 2009
Test Sample Conditions:	☐ Damaged ☐Poor (Usable) ☒ Good

1.1 Product Description; Test Facility

Product Description:	GSM 850 Radio
Transmitter Type:	☐ FHSS ☒ Digital Modulation ☐ WiFi ☐ Blue Tooth
Operating Frequency Range(s):	From 824.2 to 848.8 MHz
Modulation:	GMSK
Emission Designator:	290KGXW
Antenna Gain:	0.7dBi
Antenna Installation:	☐ User ☐ Professional ☐ Factory
Transmitter power configuration:	☐ Internal battery ☒ External power source ☒ 120VAC ☐ 230VAC ☐ 400VAC ☐ VDC ☐ Other: Amp. ☐ 50Hz ☒ 60Hz
Test Facility Accreditation:	A2LA (Certificate No. 1427.01)
Test Methodology:	Measurements performed according to the procedures in ANSI C63.4-2003, ANSI/TIA/EIA-603-A

1.2 EUT Configuration

The equipment under test was operated during the measurement under the following conditions:

☐ - Standby
☒ - Continuous transmissions (modulated signal)
☐ - Continuous transmissions (un-modulated signal)
☐ - Continuous receiving
☐ - Test program (customer specific)
☐ -

Operating modes of the EUT:

No.	Description
1	Continuous communication with Radio Communication Tester. Test was performed at low channel (128), middle channel (189), and upper channel (251)
2	

Cables:

No.	Type	Length	Designation	Note
1	N/A			
2				

Support equipment/Services:

No.	Item	Description
1	Rohde & Schwarz CMU 200	Universal Radio Communication Tester
2	Agilent 8960	GPRS Station
3	Mini-Circuits ZNDC-13-2G-S	800-2000MHz Coupler

1.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

☒ **Normal**

Temperature:	+15 to +35 ° C
Humidity:	20-75 %
Atmospheric pressure:	86-106 kPa

☒ **Extreme**

☒ **Temperature:**	-30 to +50 ° C

1.4 Measurement uncertainty

The expanded uncertainty (k = 2) for radiated measurements has been determined to be:
±4 dB at 10m and ±5.4 dB at 3m
The expanded uncertainty (k = 2) for conducted measurements at antenna terminal has been determined to be:
±1.0 dB
The expanded uncertainty (k = 2) for line conducted measurements has been determined to be:
±2.6 dB

1.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured emissions reading on the EMI Receiver.
The basic equation with a sample calculation is as follows:
FS = RA + AF + CF - AG

Where: FS = Field Strength in dB(μV/m)
RA = Receiver Amplitude in dB(μV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB(m^{-1})
AG = Amplifier Gain in dB

Assume a receiver reading of 48.1 dB(μV) is obtained. The antenna factor of 7.4 dB(m^{-1}) and cable factor of 1.6 dB is added and amplifier gain of 16.0 dB is subtracted giving field strength of 41.1 dB(μV/m).

RA = 48.1 dB(μV)
AF = 7.4 dB(m^{-1})
CF = 1.6 dB
AG = 16.0 dB
FS = RA + AF + CF - AG
FS = 48.1 + 7.4 + 1.6 – 16.0
FS = 41.1 dB(μV/m)

General notes:

2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST SPECIFICATION	TEST PARAMETERS	RESULT
22.913/RSS-132 (4.4)	RF output power ERP	Pass
2.1047/RSS-132 (4.2)	Modulation Characteristics	Pass
22.355/RSS-132 (4.3)	Frequency Stability	Pass
2.1049/RSS-Gen 4.6.1	Occupied Bandwidth	Pass
22.917/RSS-132 (4.5)	Antenna conducted spurious emissions	Pass
22.917/RSS-132 (4.5)	Enclosure Radiated spurious emissions	Pass
22.917/RSS-132 (4.5)	Spurious emissions at Block Edges	Pass
1.1310, 2.1091(c)/RSS- Gen 5.5	RF Exposure Compliance	Pass
15.109/ICES-003	Receiver/digital device radiated emissions	Pass
15.107/ICES-003	Digital device conducted emissions	Pass

3.0 TEST CONDITIONS AND RESULTS

3.1 RF Output Power ERP

3.1.1 Conducted ERP

Test location: ☐ OATS ☐ Anechoic Chamber ☐ Other

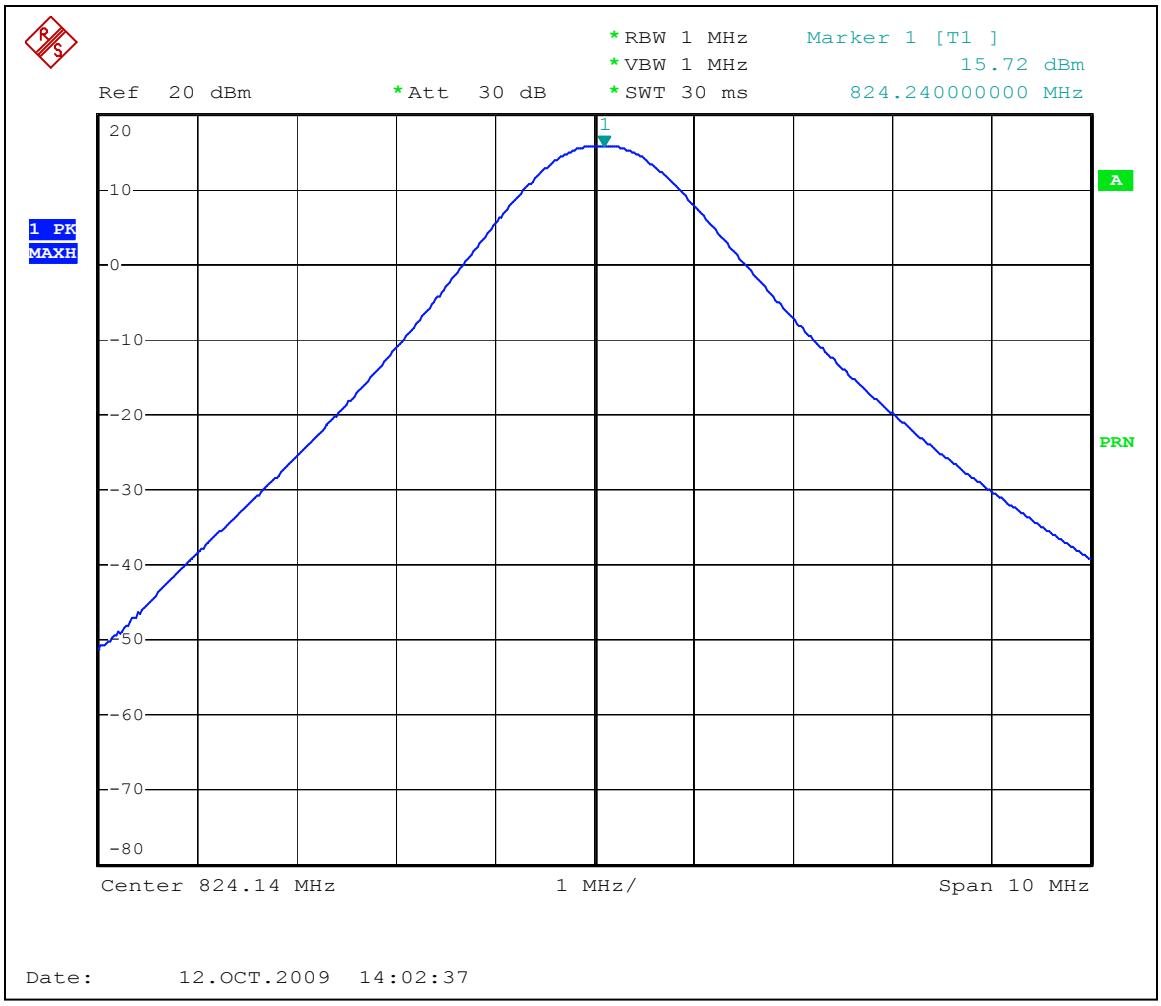
Test result: **Pass**

Max. Margin: 6.9 dB below the limits

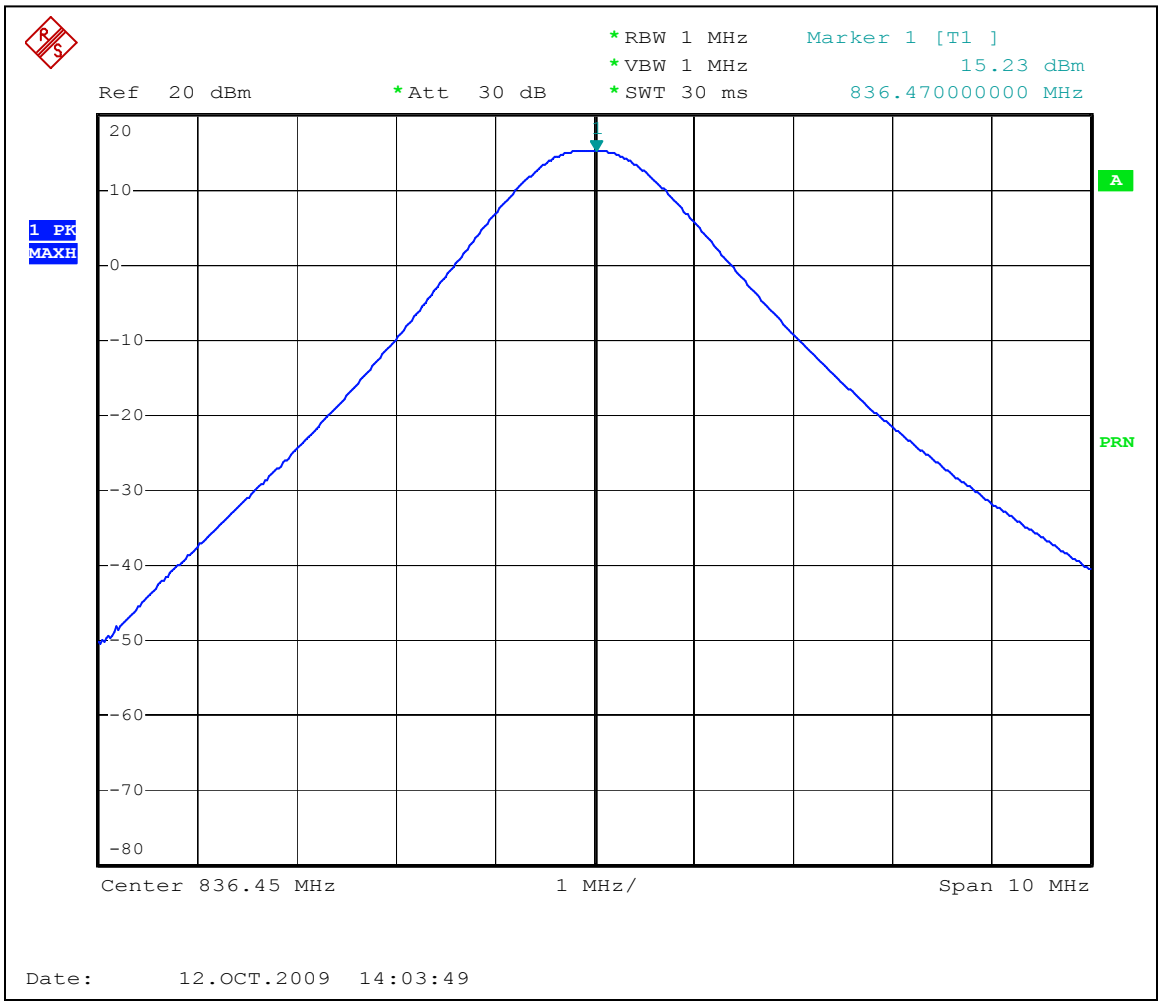
Power Output:	**Conducted**				
Frequency Range:	☒ 824.2-848.8MHz				
Low Frequency MHz	**Measured power dBm**	**Total CF dB**	**ERP dBm**	**ERP Limit dBm**	**Margin dB**
824.28	15.7	15.9	31.6	38.5	-6.9
Middle Frequency MHz					
836.40	15.2	15.9	31.1	38.5	-7.4
Upper Frequency MHz					
848.88	15.1	15.9	31.0	38.5	-7.5
RBW:	☒ 1MHz	☐ 3MHz	☐ 10MHz		
VBW:	☐ 1MHz	☒ 3MHz	☐ 10MHz		
CF=Cable/Coupler Insertion Loss:	☒ 15.2dB				
Antenna Gain (dBi)	☒ 0.7dBi				
Total CF=CF+Antenna Gain	☒ 15.9dBi				

Notes:

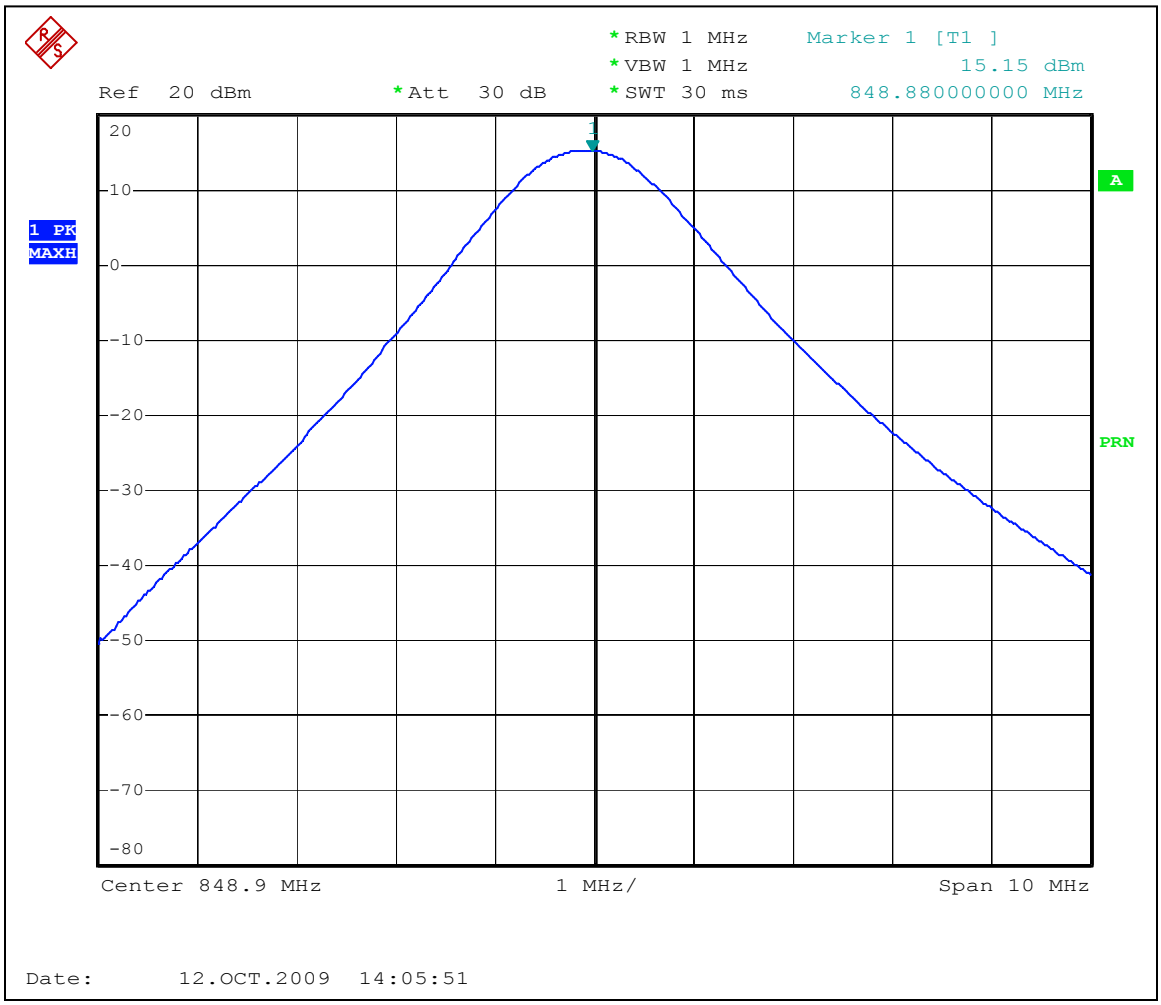
1. The Conducted RF output power measurements were made at the RF output terminal of the EUT using coupler and spectrum analyzer. The EUT was controlled via Rohde & Schwarz CMU 200 station selecting maximum power of the EUT and GMSK modulated signal.
2. Max ERP is 7W or 38.45dBm
3. The maximum output ERP is 31.6dBm or 1.45W


*RBW 1 MHz
*VBW 1 MHz
*SWT 30 ms
Marker 1 [T1]
15.72 dBm
824.240000000 MHz
Ref 20 dBm
*Att 30 dB
1 PK
MAXH
A
PRN
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 824.14 MHz
1 MHz/
Span 10 MHz
Date: 12.OCT.2009 14:02:37

Graph 3.1.1


*RBW 1 MHz
*VBW 1 MHz
*SWT 30 ms
Marker 1 [T1]
15.23 dBm
836.470000000 MHz
Ref 20 dBm
*Att 30 dB
1 PK
MAXH
A
PRN
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 836.45 MHz
1 MHz/
Span 10 MHz
Date: 12.OCT.2009 14:03:49

Graph 3.1.2


*RBW 1 MHz
*VBW 1 MHz
*SWT 30 ms
Marker 1 [T1]
15.15 dBm
848.880000000 MHz
Ref 20 dBm
*Att 30 dB
1 PK
MAXH
A
PRN
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 848.9 MHz
1 MHz/
Span 10 MHz
Date: 12.OCT.2009 14:05:51

Graph 3.1.3

3.1.2 Radiated ERP

Test location: ☐ OATS ☒ Anechoic Chamber ☐ Other

Test result: **Pass**

Max. Margin: 7.6dB below the limits

Date:	October 30, 2009	**Result:**	**Pass**
Standard:	FCC Part 22.913		
Tested by:	Uri Spector		
Test Point:	EUT with Antenna		
Operation mode:	Transmitting Mode		
Note:			

Table 3.1.2

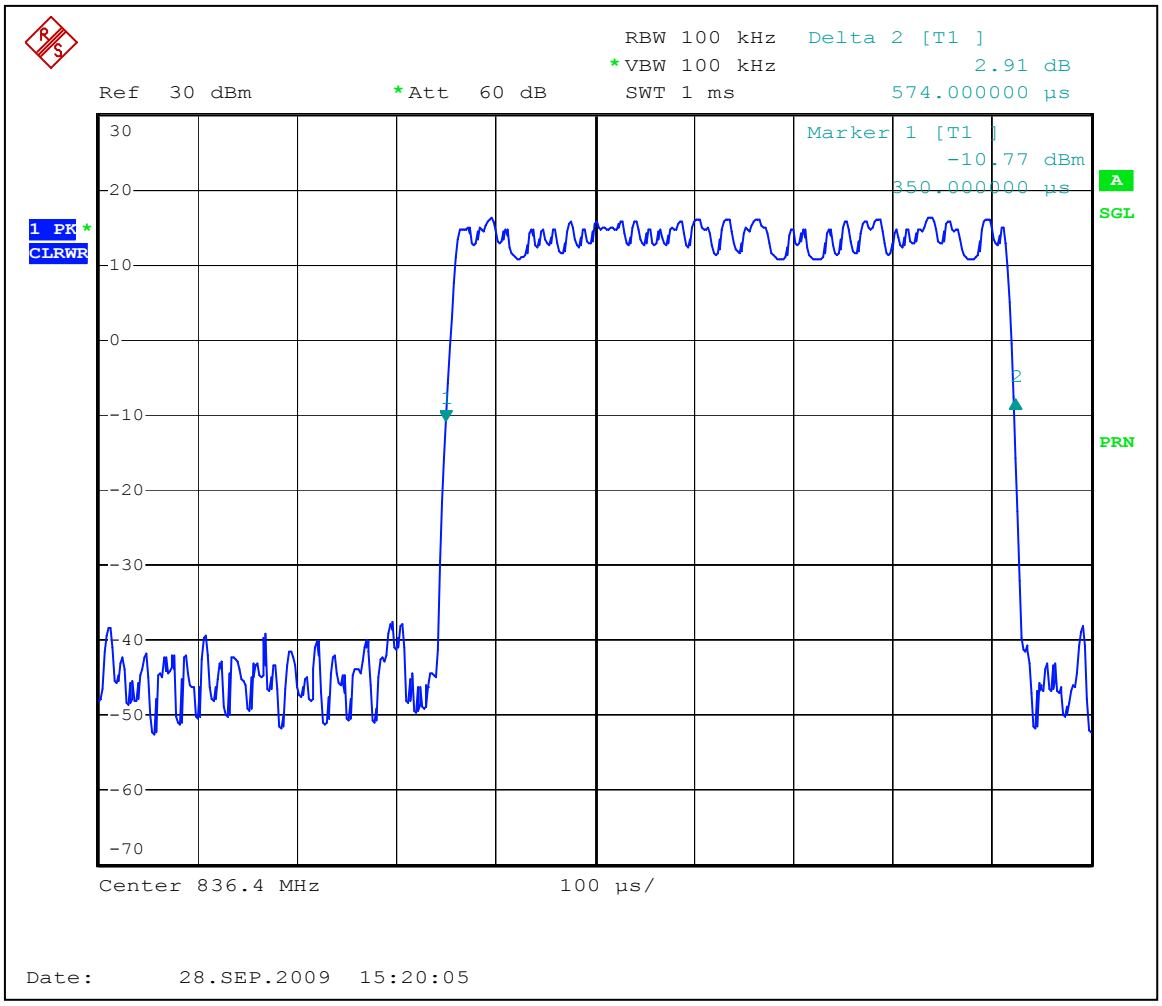
Frequency MHz	Antenna Polarity	Substitution Antenna Power dBm	Substitution Antenna Gain dBd	Cable Loss dB	ERP Emissions dBm	Limit dBm	Margin dB
824.35	V	31.2	0.0	0.3	30.9	38.5	-7.6
836.42	V	29.9	0.0	0.3	29.6	38.5	-8.9
848.80	V	26.9	0.0	0.3	26.6	38.5	-11.9
824.35	H	25.2	0.0	0.3	24.9	38.5	-13.6
836.42	H	20.3	0.0	0.3	20.0	38.5	-18.5
848.80	H	22.6	0.0	0.3	22.3	38.5	-16.2

Special Config. Info: Sabstitution Method
Limits 7W, or 38.5dBm

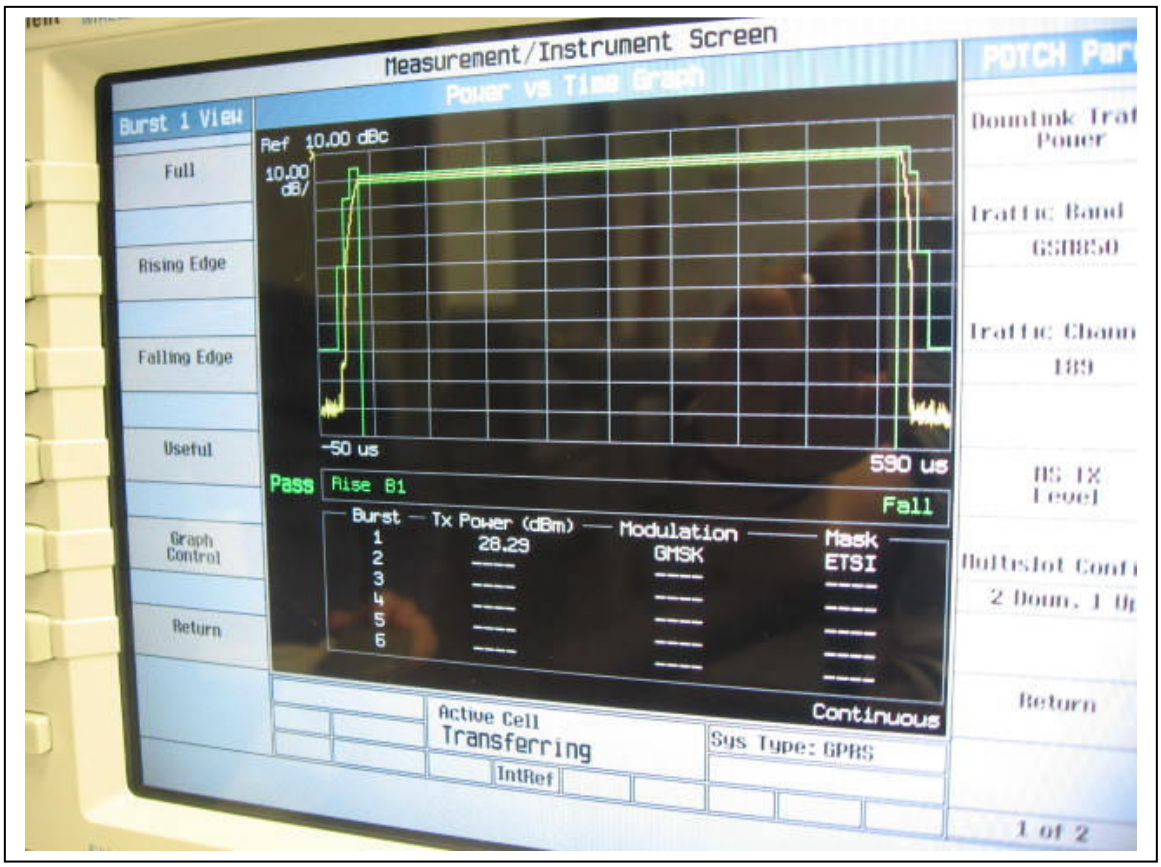
3.2 Modulation Characteristics

The EUT uses GMSK modulation in which information is digitized and coded into a bit system.

The following graph and picture show the modulation scheme in the EUT.



Graph 3.2.1


Measurement/Instrument Screen
Power vs Time Graph
Burst 1 View
Full
Rising Edge
Falling Edge
Useful
Graph Control
Return
Ref 10.00 dBc
10.00 dB/
-50 us
590 us
Pass
Rise B1
Fall
Burst
Tx Power (dBm)
Modulation
Mask
1
2
3
4
5
6
28.29
GMSK
ETSI
Continuous
Active Cell
Transferring
IntRef
Sys Type: GPRS
Return
1 of 2

Picture

3.3 Frequency Stability

Table 3.3.1

Temperature Degree C	Frequency Deviation Hz	Frequency Stability ppm	Frequency error limit ppm	Test Result
-30	47.0	0.056	±1.5	Pass
-20	-14.0	-0.017	±1.5	Pass
-10	-12.0	-0.014	±1.5	Pass
0	-13.0	-0.016	±1.5	Pass
10	-12.0	-0.014	±1.5	Pass
20	-10.0	-0.012	±1.5	Pass
30	-27.0	-0.032	±1.5	Pass
40	-30.0	-0.036	±1.5	Pass
50	23.0	0.027	±1.5	Pass

Frequency stability over voltage variations measurements were made at room temperature at the ±15% of the nominal mains 120VAC.

Table 3.3.2

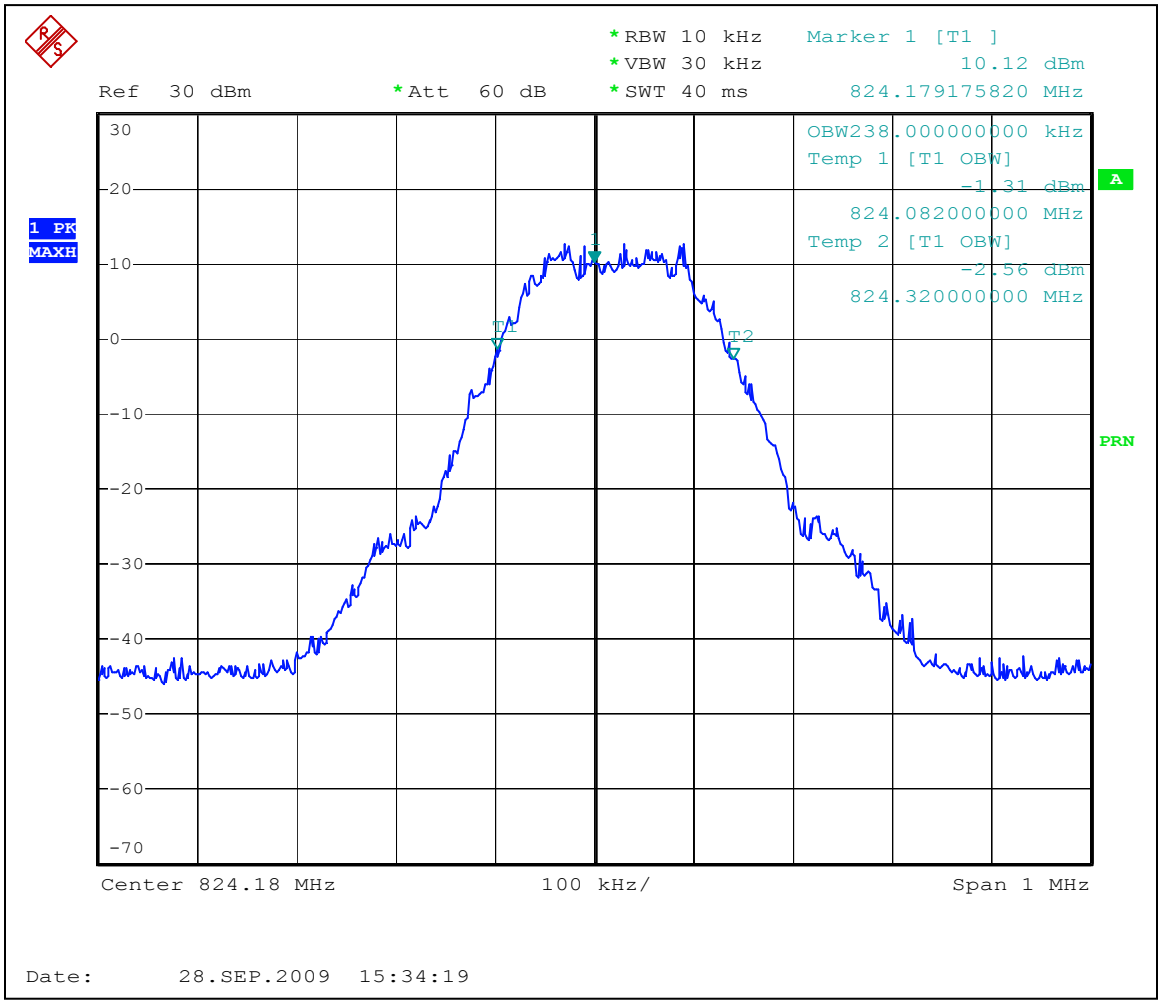
Input Voltage VAC	Frequency Error Hz	Frequency Error (ppm)	Test Result
138.0	-13	-0.016	Pass
102.0	-15	-0.018	Pass

Notes: The maximum frequency error was measured using the frequency meter of CMU200

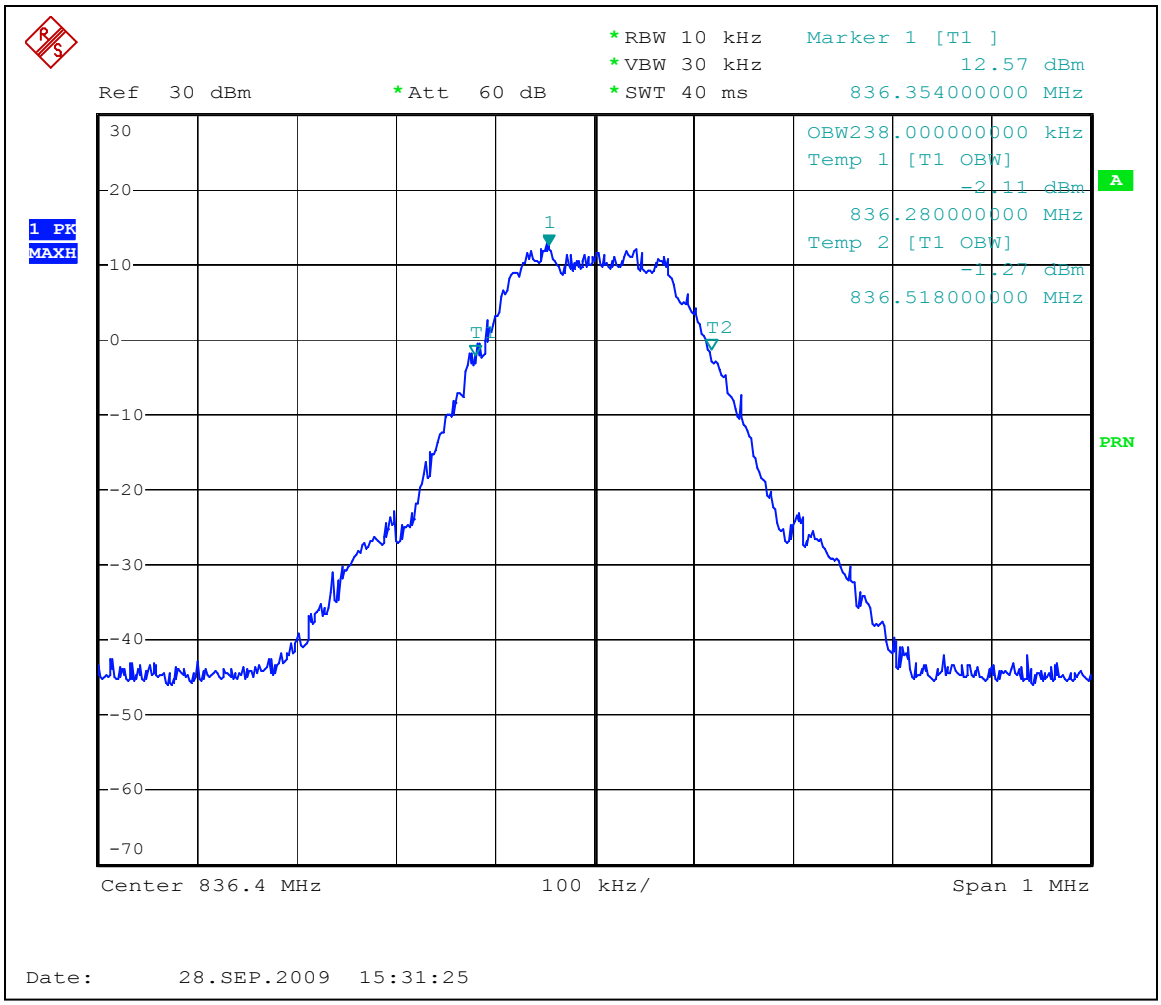
3.4 99% Occupied Bandwidth

Low Frequency Channel kHz	Middle Frequency Channel kHz	Upper Frequency Channel kHz
238	238	240
RBW: **VBW:**	☒ 10kHz ☐ other kHz ☒ 30kHz ☐ 300kHz ☐ other kHz	

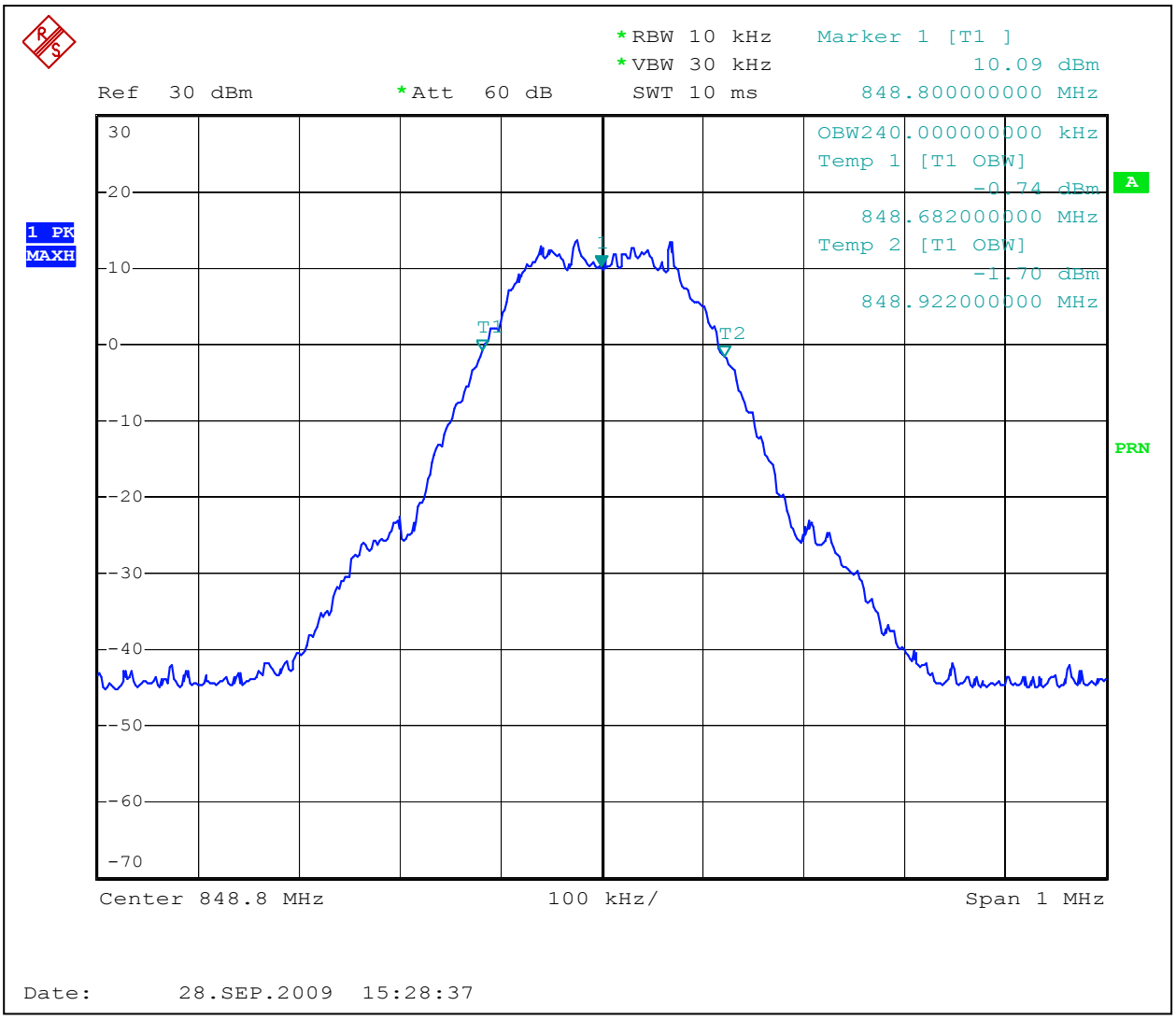
Notes: None


*RBW 10 kHz
*VBW 30 kHz
*SWT 40 ms
Marker 1 [T1]
10.12 dBm
824.179175820 MHz
Ref 30 dBm
*Att 60 dB
OBW238.000000000 kHz
Temp 1 [T1 OBW]
-1.31 dBm
824.082000000 MHz
Temp 2 [T1 OBW]
-2.56 dBm
824.320000000 MHz
1 PK
MAXH
A
PRN
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
T1
T2
Center 824.18 MHz
100 kHz/
Span 1 MHz
Date: 28.SEP.2009 15:34:19

Graph 3.4.1


*RBW 10 kHz
*VBW 30 kHz
*SWT 40 ms
Marker 1 [T1]
12.57 dBm
836.354000000 MHz
Ref 30 dBm
*Att 60 dB
OBW238.000000000 kHz
Temp 1 [T1 OBW]
-2.11 dBm
836.280000000 MHz
Temp 2 [T1 OBW]
-1.27 dBm
836.518000000 MHz
1 PK
MAXH
A
PRN
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
T1
T2
Center 836.4 MHz
100 kHz/
Span 1 MHz
Date: 28.SEP.2009 15:31:25

Graph 3.4.2


*RBW 10 kHz
*VBW 30 kHz
Ref 30 dBm
*Att 60 dB
SWT 10 ms
Marker 1 [T1]
10.09 dBm
848.800000000 MHz
OBW240.000000000 kHz
Temp 1 [T1 OBW]
-0.74 dBm
848.682000000 MHz
Temp 2 [T1 OBW]
-1.70 dBm
848.922000000 MHz
1 PK
MAXH
A
PRN
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
T1
T2
Center 848.8 MHz
100 kHz/
Span 1 MHz
Date: 28.SEP.2009 15:28:37

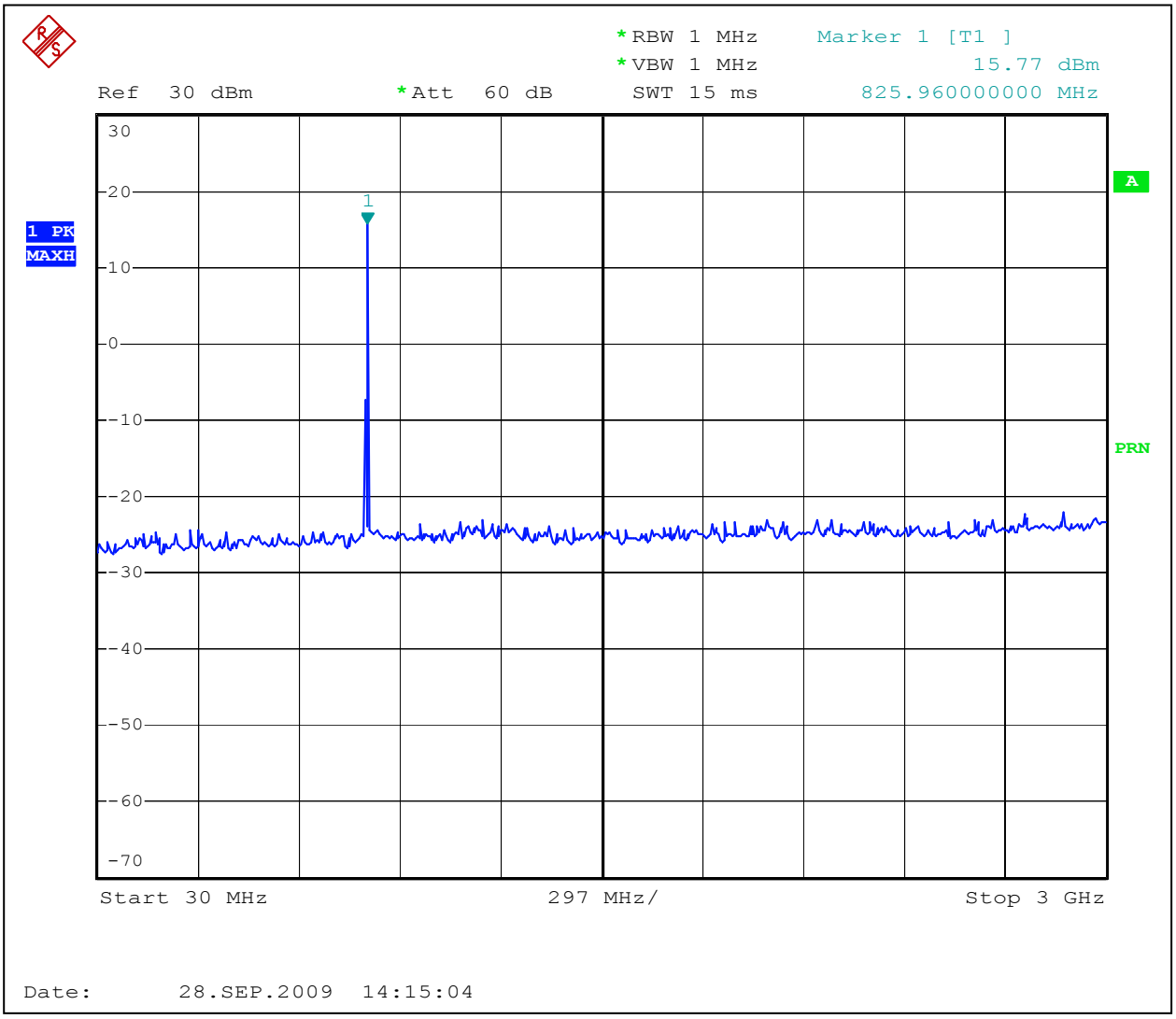
Graph 3.4.3

3.5 Antenna conducted spurious emissions

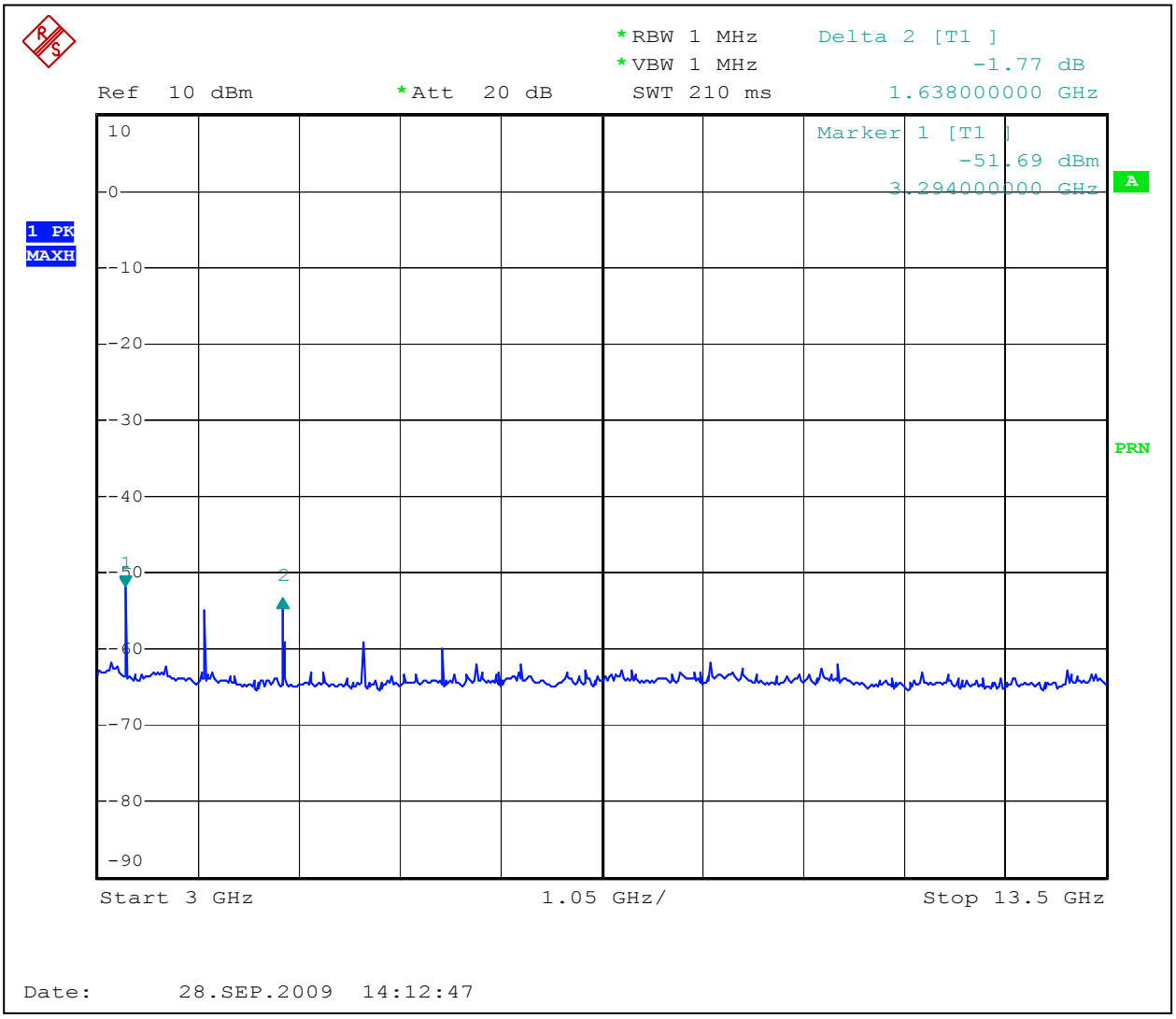
Test location: ☐ OATS ☐ Anechoic Chamber ☐ Other

Test result: **Pass**

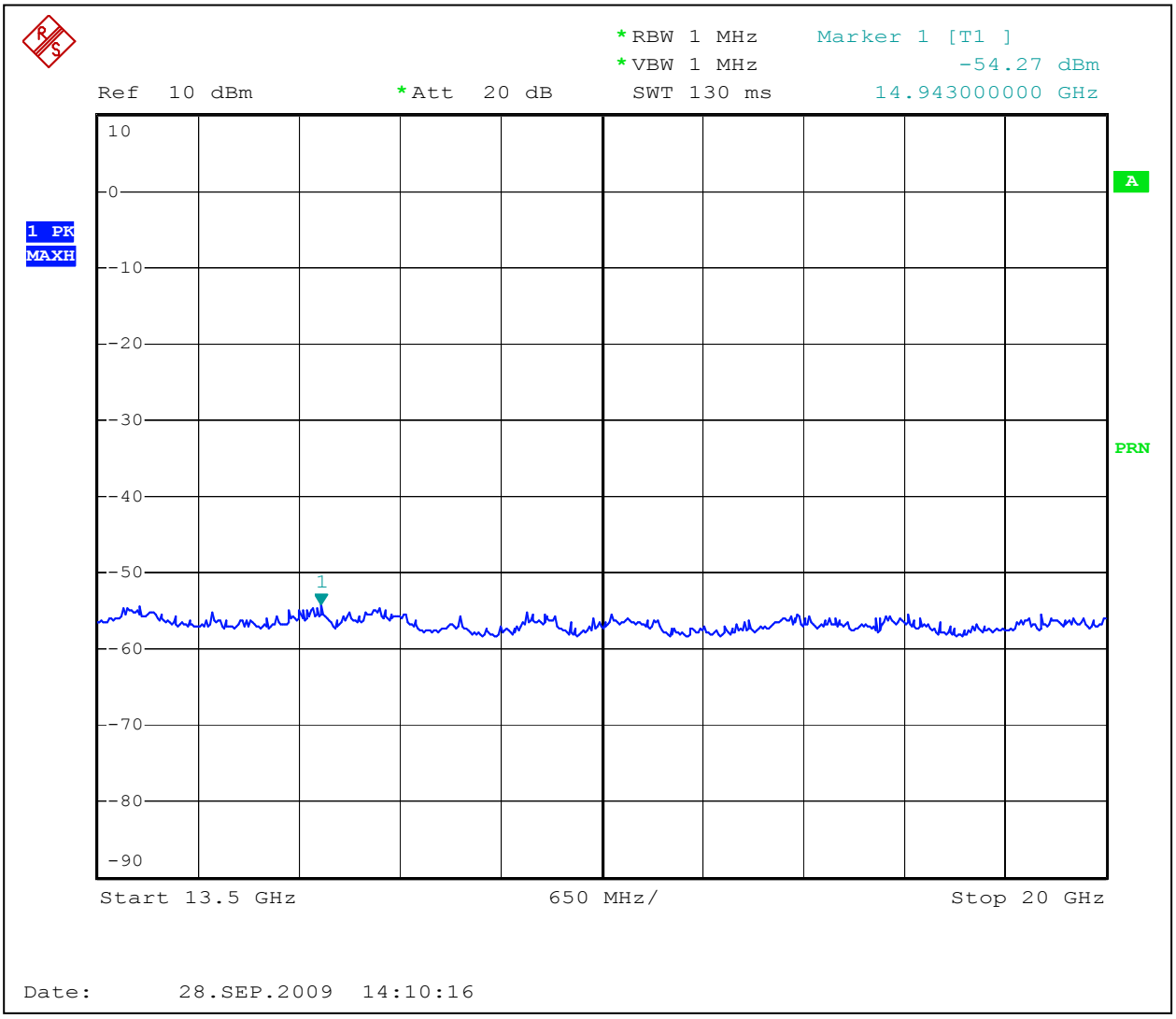
Notes: The power of spurious emissions should be attenuated at least 43+10log(P) dB, P in watts, so that the level in dBm is -13dBm.
The maximum detected spurious emission is -51.69dBm or -35.8dBm ERP. The margin of the maximum emissions is -35.8dB-(-13dB) = -22.8dB. For passing results see Graphs 3.5.1-3.5.9. Fundamental frequencies are excluded form the measurements.


*RBW 1 MHz
*VBW 1 MHz
SWT 15 ms
Marker 1 [T1]
15.77 dBm
825.960000000 MHz
Ref 30 dBm
*Att 60 dB
1 PK
MAXH
A
PRN
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 30 MHz
297 MHz/
Stop 3 GHz
Date: 28.SEP.2009 14:15:04

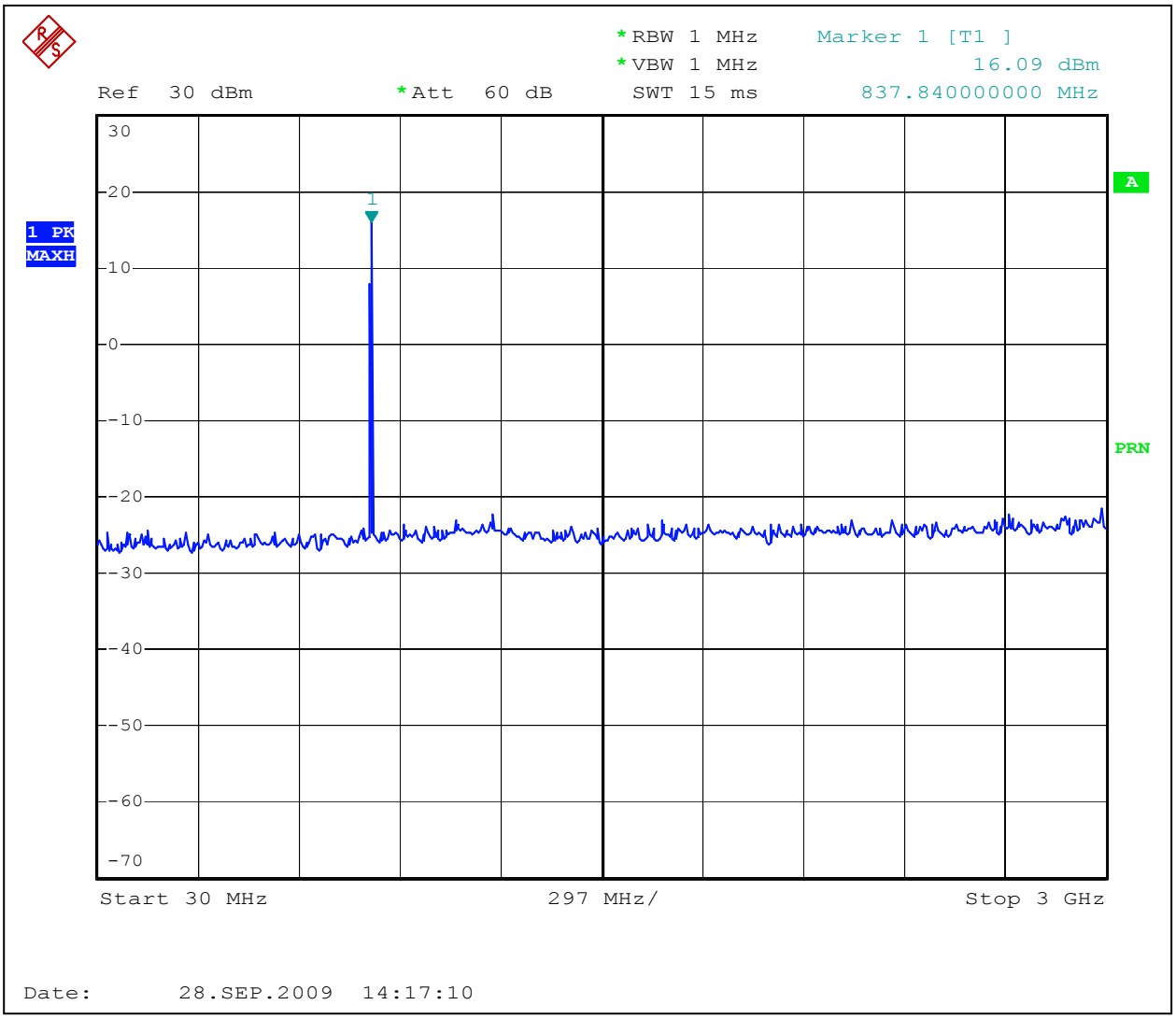
Graph 3.5.1


*RBW 1 MHz
*VBW 1 MHz
SWT 210 ms
Delta 2 [T1]
-1.77 dB
1.638000000 GHz
Ref 10 dBm
*Att 20 dB
Marker 1 [T1]
-51.69 dBm
3.294000000 GHz
1 PK
MAXH
A
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 3 GHz
1.05 GHz/
Stop 13.5 GHz
Date: 28.SEP.2009 14:12:47

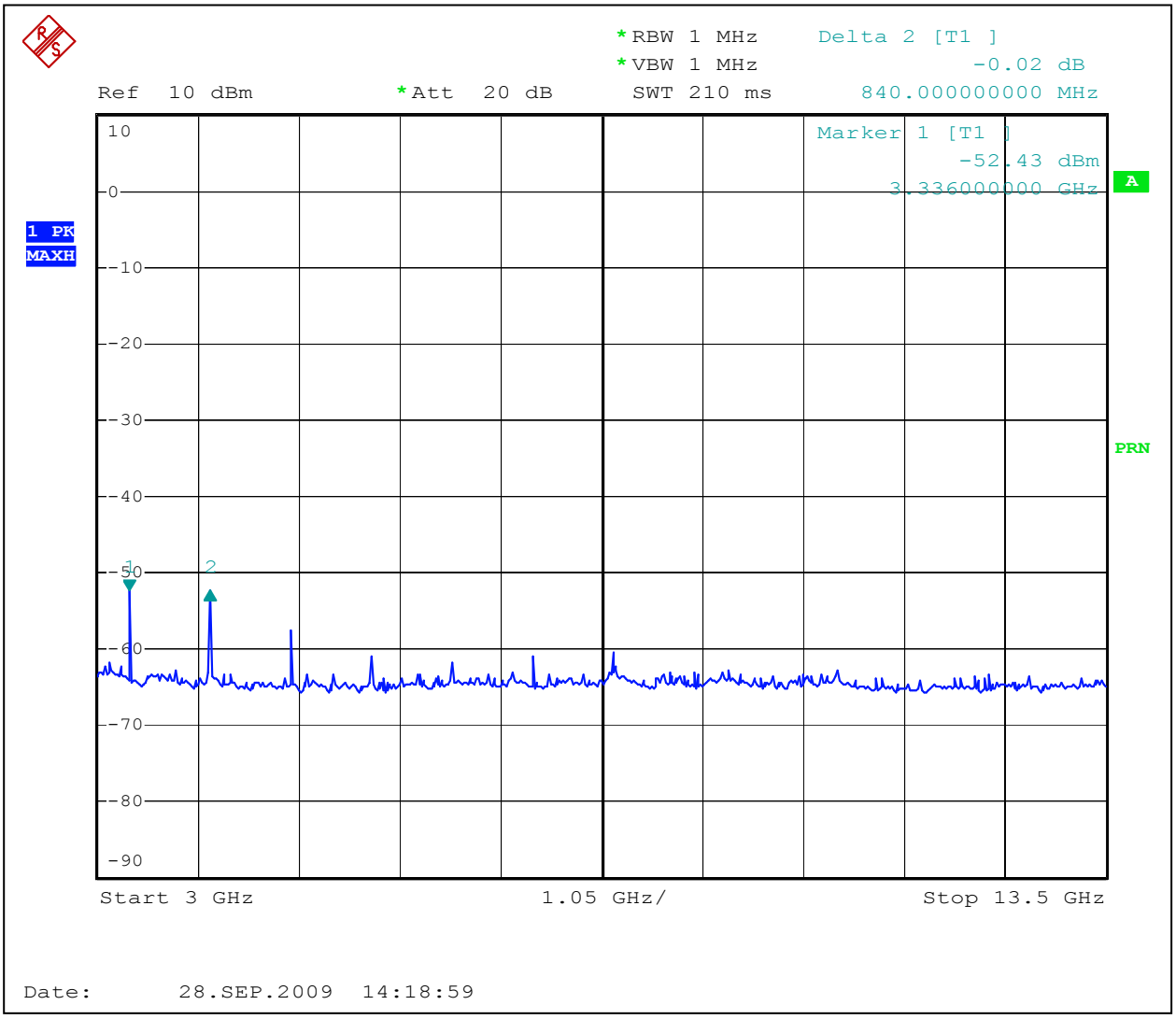
Graph 3.5.2


*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
-54.27 dBm
14.943000000 GHz
Ref 10 dBm
*Att 20 dB
SWT 130 ms
1 PK
MAXH
A
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1
Start 13.5 GHz
650 MHz/
Stop 20 GHz
Date: 28.SEP.2009 14:10:16

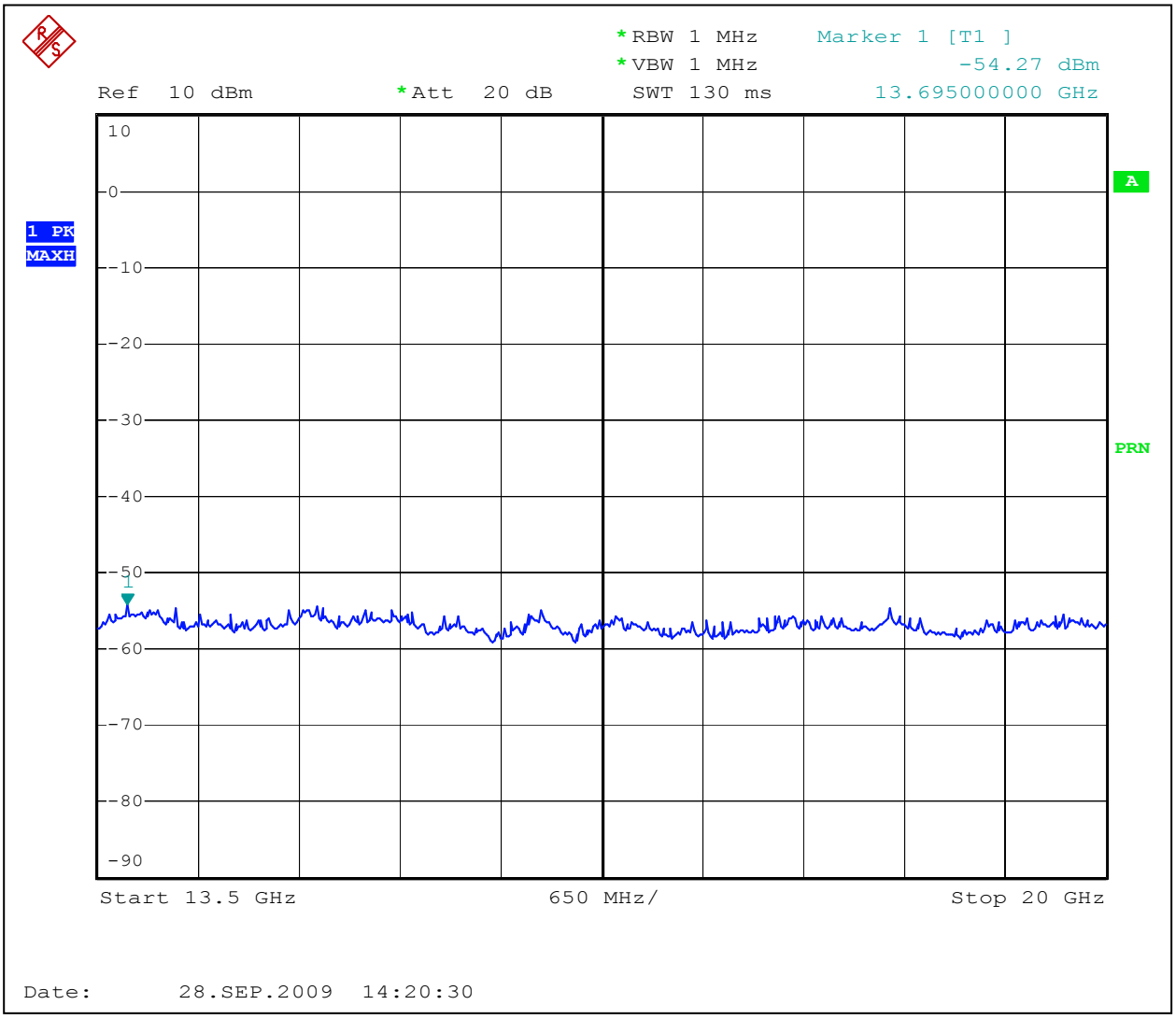
Graph 3.5.3


*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
16.09 dBm
837.840000000 MHz
Ref 30 dBm
*Att 60 dB
SWT 15 ms
1 PK
MAXH
A
PRN
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 30 MHz
297 MHz/
Stop 3 GHz
Date: 28.SEP.2009 14:17:10

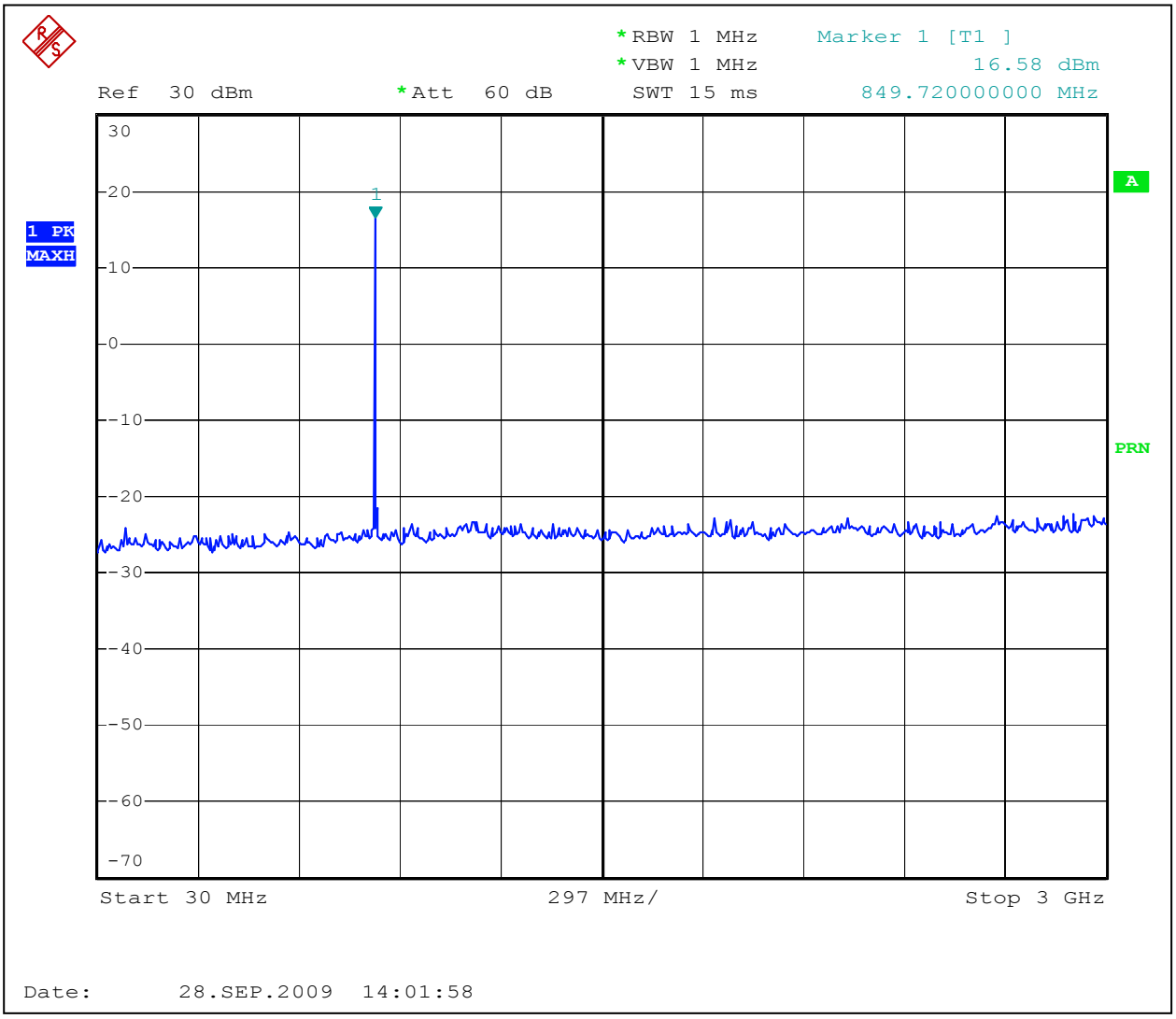
Graph 3.5.4


*RBW 1 MHz
*VBW 1 MHz
Delta 2 [T1]
-0.02 dB
Ref 10 dBm
*Att 20 dB
SWT 210 ms
840.000000000 MHz
Marker 1 [T1]
-52.43 dBm
3.336000000 GHz
1 PK
MAXH
A
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 3 GHz
1.05 GHz/
Stop 13.5 GHz
Date: 28.SEP.2009 14:18:59

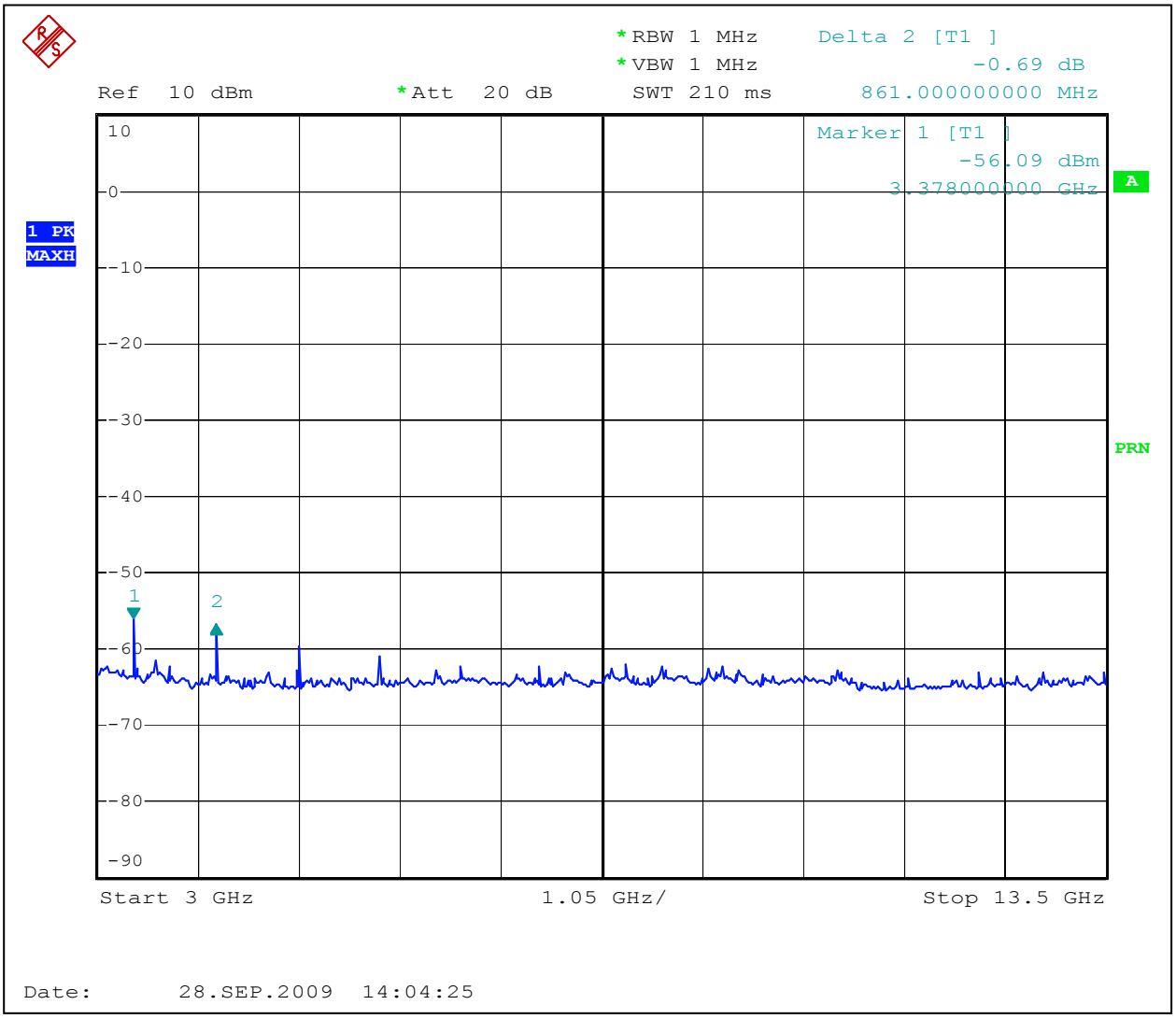
Graph 3.5.5


*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
-54.27 dBm
13.695000000 GHz
Ref 10 dBm
*Att 20 dB
SWT 130 ms
1 PK
MAXH
A
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 13.5 GHz
650 MHz/
Stop 20 GHz
Date: 28.SEP.2009 14:20:30

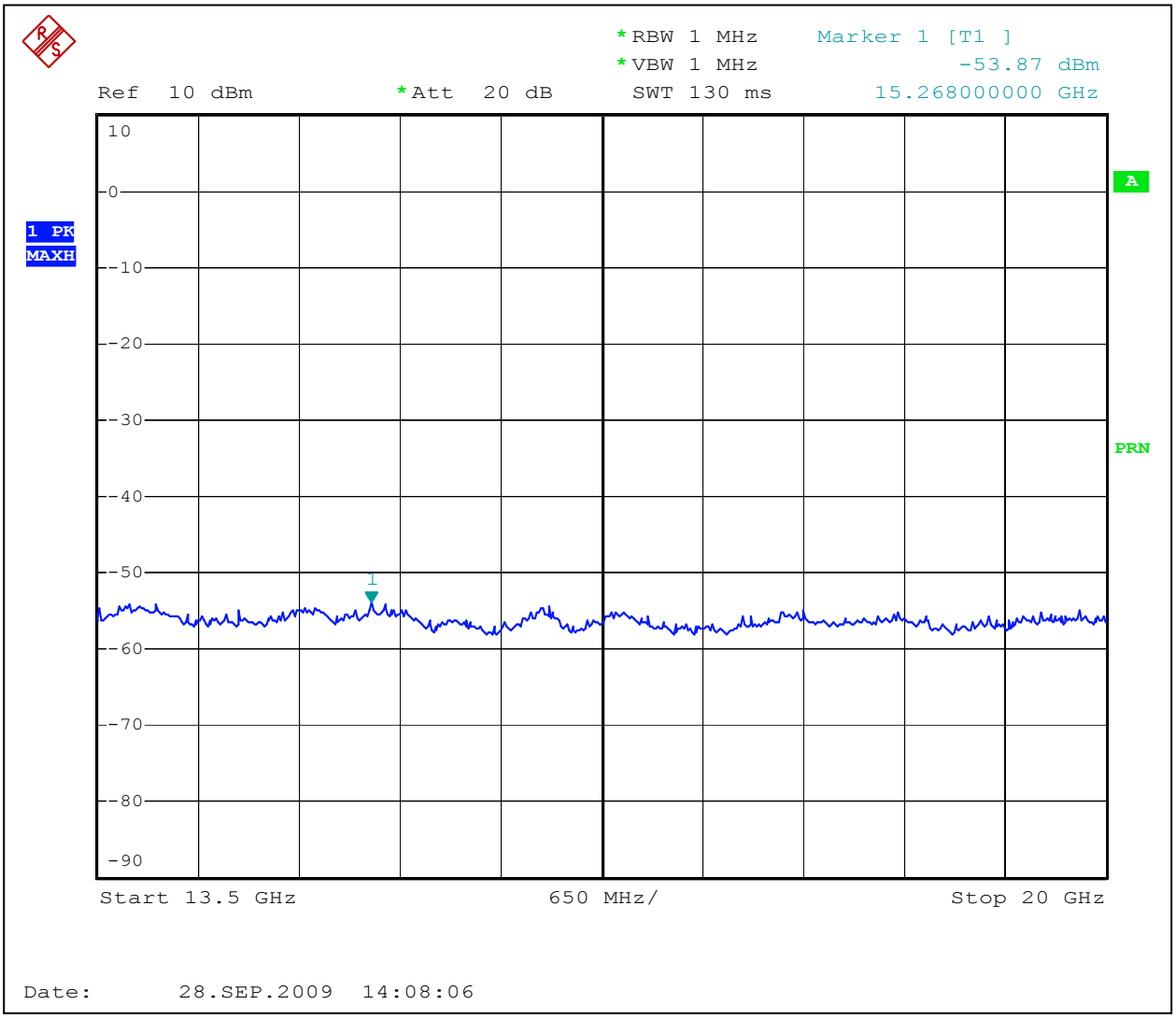
Graph 3.5.6


*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
16.58 dBm
849.720000000 MHz
Ref 30 dBm
*Att 60 dB
SWT 15 ms
1 PK
MAXH
A
PRN
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 30 MHz
297 MHz/
Stop 3 GHz
Date: 28.SEP.2009 14:01:58

Graph 3.5.7


*RBW 1 MHz
*VBW 1 MHz
Delta 2 [T1]
-0.69 dB
Ref 10 dBm
*Att 20 dB
SWT 210 ms
861.000000000 MHz
Marker 1 [T1]
-56.09 dBm
3.378000000 GHz
1 PK
MAXH
A
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1
2
Start 3 GHz
1.05 GHz/
Stop 13.5 GHz
Date: 28.SEP.2009 14:04:25

Graph 3.5.8


*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
-53.87 dBm
15.268000000 GHz
Ref 10 dBm
*Att 20 dB
SWT 130 ms
1 PK
MAXH
A
PRN
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1
Start 13.5 GHz
650 MHz/
Stop 20 GHz
Date: 28.SEP.2009 14:08:06

Graph 3.5.9

3.6 Enclosure Radiated spurious emissions

Test location: ☐ OATS ☒ Anechoic Chamber ☐ Other

Test result: **Pass**

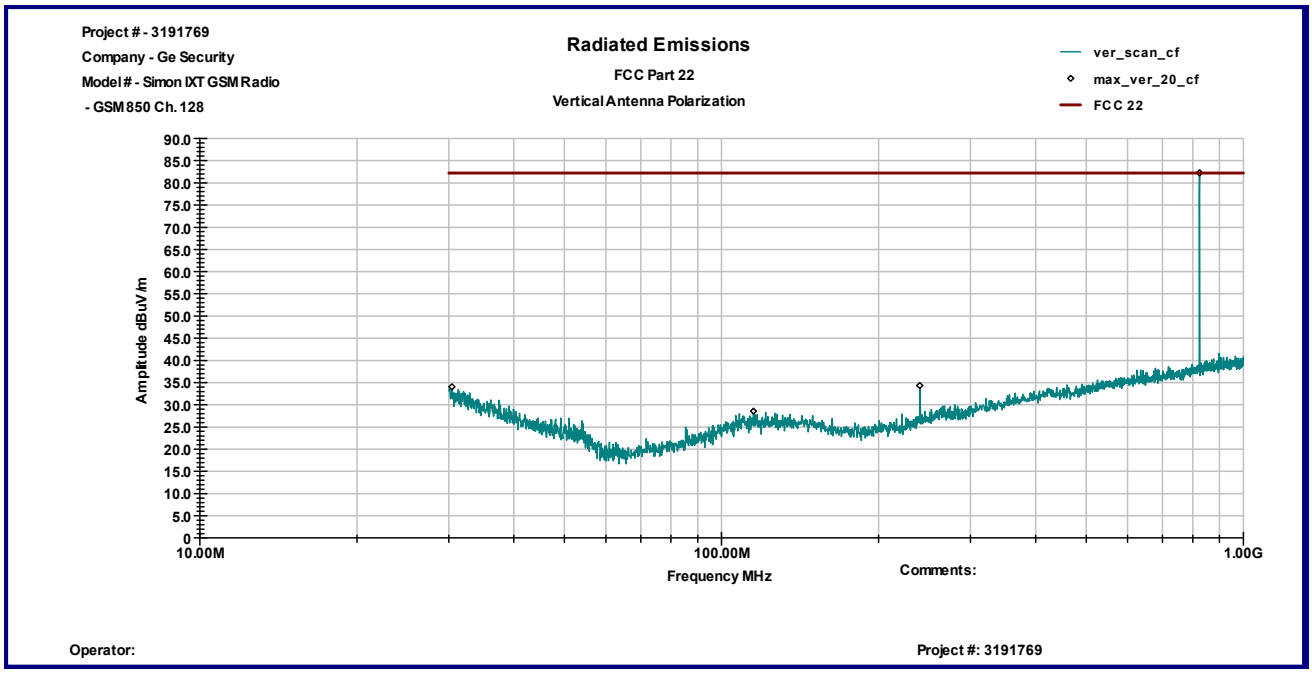
Tables 3.6.1-3.6.2 show detected Spurious Radiated Emissions from 30MHz to 1GHz and from 1GHz-10GHz respectively.
Graphs 3.6.1- to 3.6.12 show the EUT peak Radiated Emissions.
The Spurious Radiated Power limits of -13dBm was correlated with field strength reference level of 82.2dBµV/m during field strength measurements at 3m measurement distance.
No emissions were chosen for substitution measurements as the maximum emission is more than 20dB below the reference limit. The transmitting fundamental frequency was excluded form the measurements.

Table 3.6.1

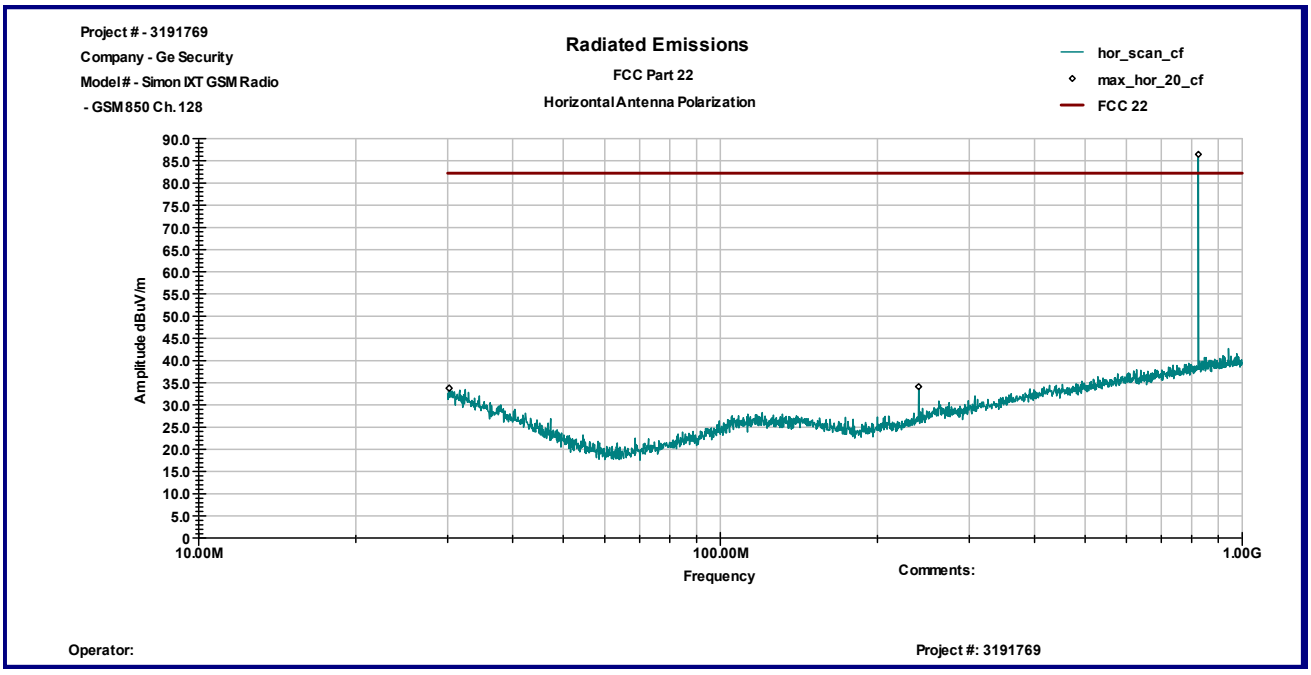
Frequency	Ant. Polarity	Peak Reading dBµV	Ant.Factor dB1/m	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
		Channel 128				
30.416 MHz	V	13.2	20.9	34.1	82.2	-48.2
115.22 MHz	V	14.6	14.0	28.5	82.2	-53.7
239.88 MHz	V	20.4	13.9	34.3	82.2	-47.9
30.208 MHz	H	12.8	21.0	33.8	82.2	-48.4
239.88 MHz	H	20.2	13.9	34.1	82.2	-48.1
		Channel 189				
30.139 MHz	V	12.6	21.0	33.7	82.2	-48.5
48.009 MHz	V	19.3	11.4	30.7	82.2	-51.5
53.966 MHz	V	18.4	8.9	27.3	82.2	-54.9
140.86 MHz	V	15.2	13.4	28.6	82.2	-53.6
30.831 MHz	H	13.5	20.6	34.1	82.2	-48.1
240.2 MHz	H	19.8	14.0	33.8	82.2	-48.4
		Channel 251				
31.732 MHz	V	13.4	20.1	33.5	82.2	-48.7
48.009 MHz	V	16.7	11.4	28.1	82.2	-54.1
54.312 MHz	V	18.7	8.8	27.5	82.2	-54.7
120.59 MHz	V	15.2	13.9	29.1	82.2	-53.1
239.88 MHz	V	18.5	13.9	32.4	82.2	-49.8
31.316 MHz	H	13.9	20.3	34.2	82.2	-48.0
122.83 MHz	H	15.5	13.9	29.5	82.2	-52.7
239.88 MHz	H	20.2	13.9	34.2	82.2	-48.0

Table 3.6.2

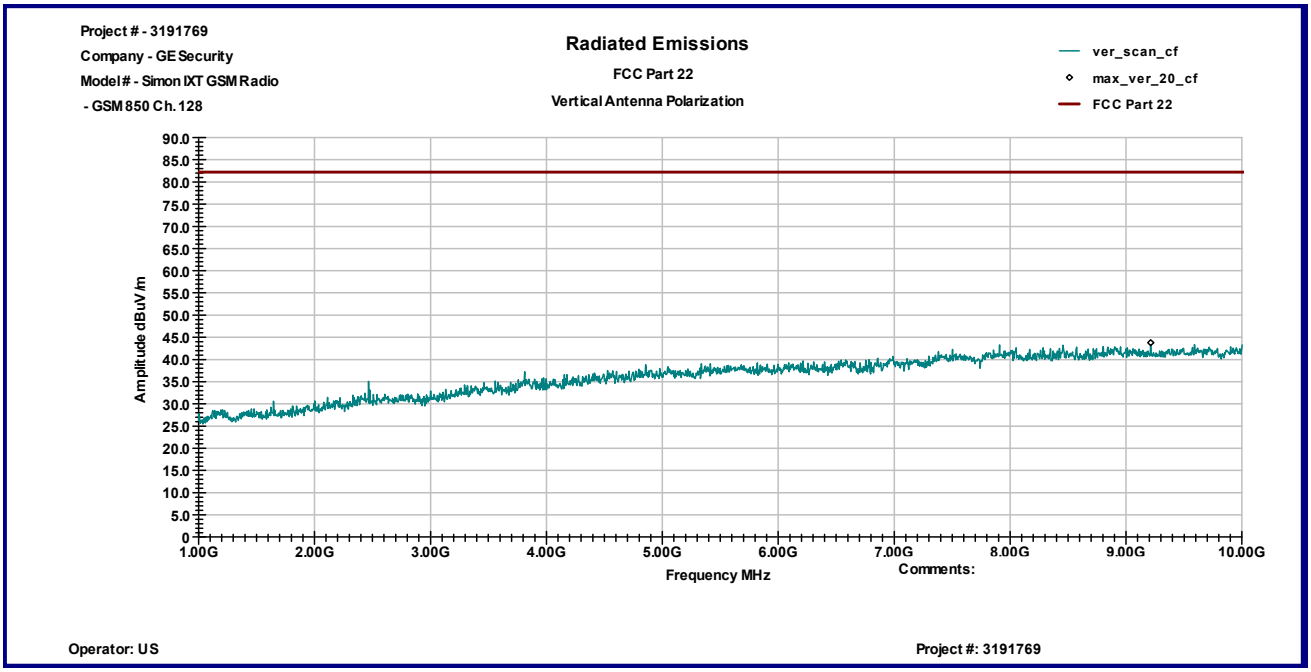
Frequency MHz	Antenna Polarity	Reading dBµV	Total C.F. dB1/m	Pre-Amp. Gain (dB)	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
Channel 128							
9.2125 GHz	V	37.8	46.3	40.3	43.8	82.2	-38.4
1.648 GHz	H	46.1	29.3	42.9	32.6	82.2	-49.7
9.4105 GHz	H	38.4	46.5	40.5	44.4	82.2	-37.8
Channel 189							
1.672 GHz	V	53.4	29.4	42.9	39.9	82.2	-42.3
9.706 GHz	V	37.7	46.8	40.8	43.7	82.2	-38.5
1.672 GHz	H	56.0	29.4	42.9	42.5	82.2	-39.7
9.112 GHz	H	38.1	46.2	40.2	44.1	82.2	-38.2
Channel 251							
1.696 GHz	V	51.6	29.5	42.9	38.2	82.2	-44.0
9.778 GHz	V	37.8	46.9	40.8	43.8	82.2	-38.4
1.696 GHz	H	56.1	29.5	42.9	42.7	82.2	-39.5
2.548 GHz	H	47.8	32.9	43.1	37.6	82.2	-44.6
9.424 GHz	H	38.1	46.5	40.5	44.1	82.2	-38.1



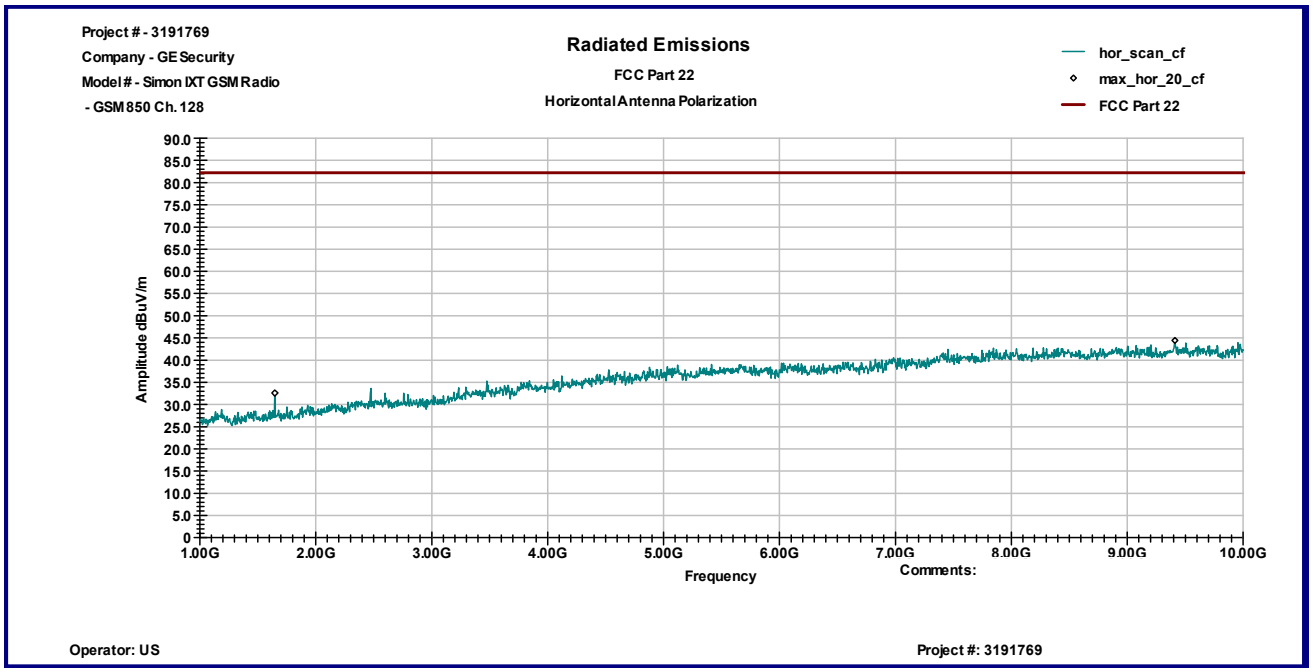
Graph 3.6.1



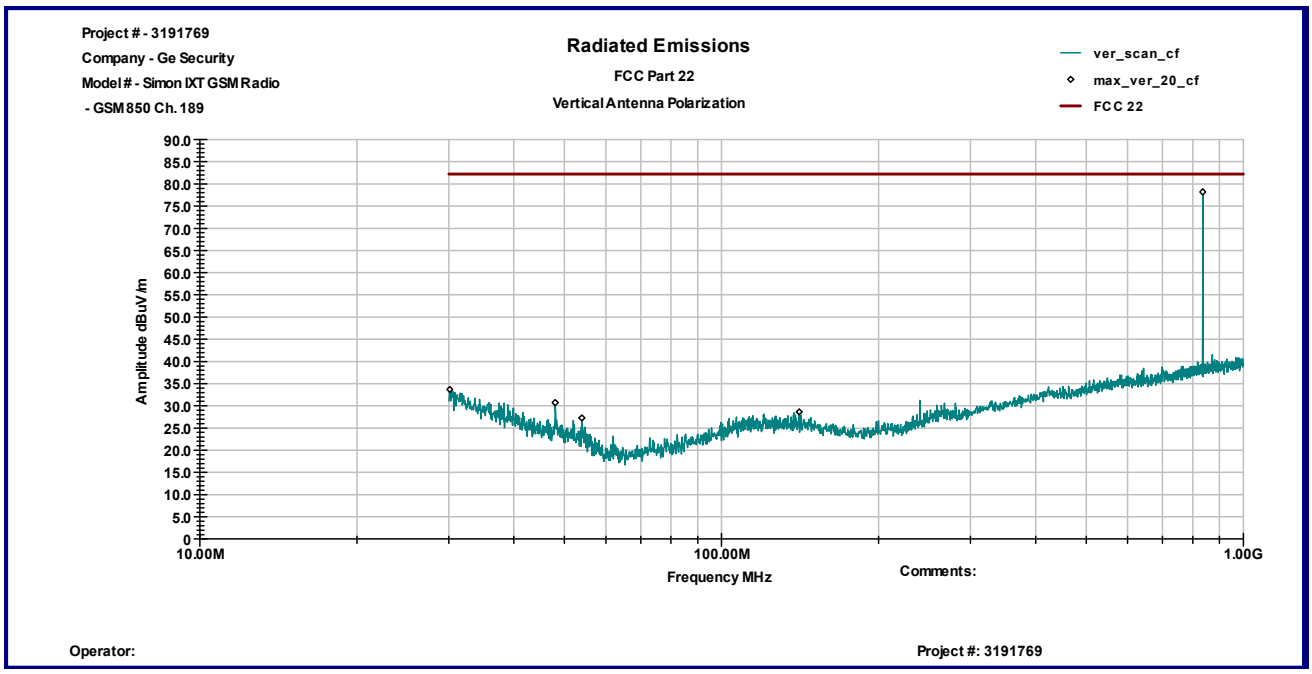
Graph 3.6.2



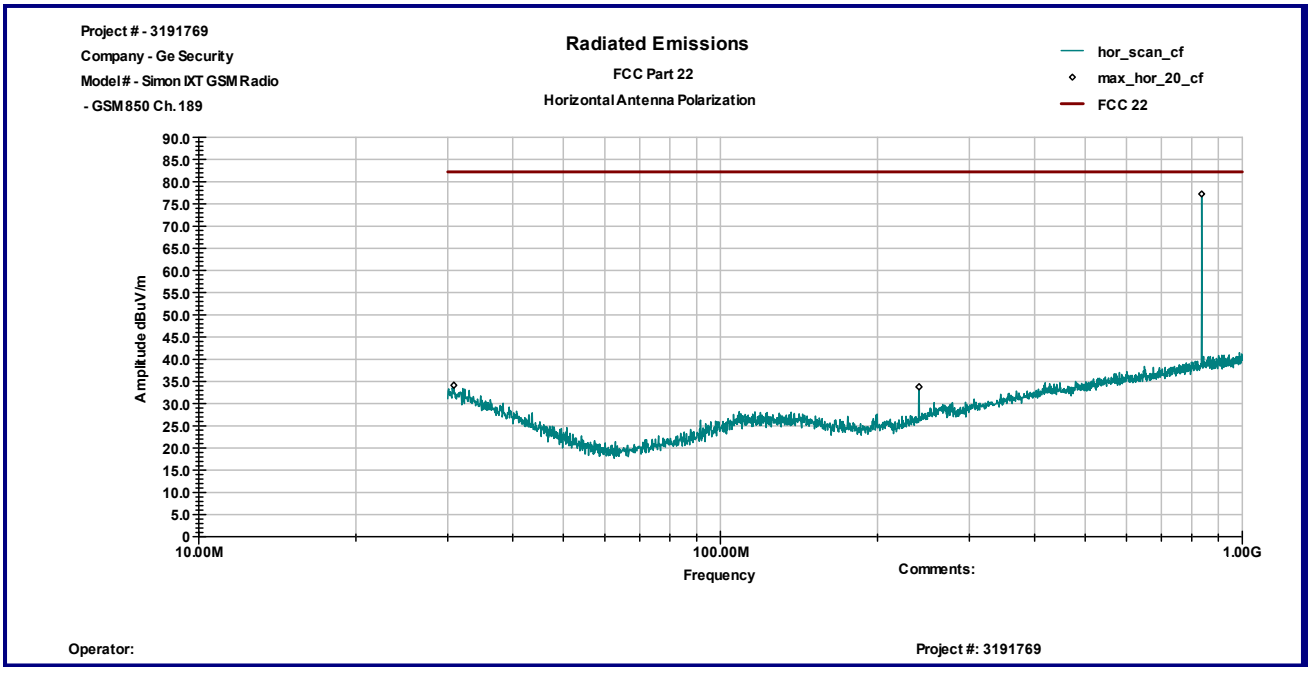
Graph 3.6.3



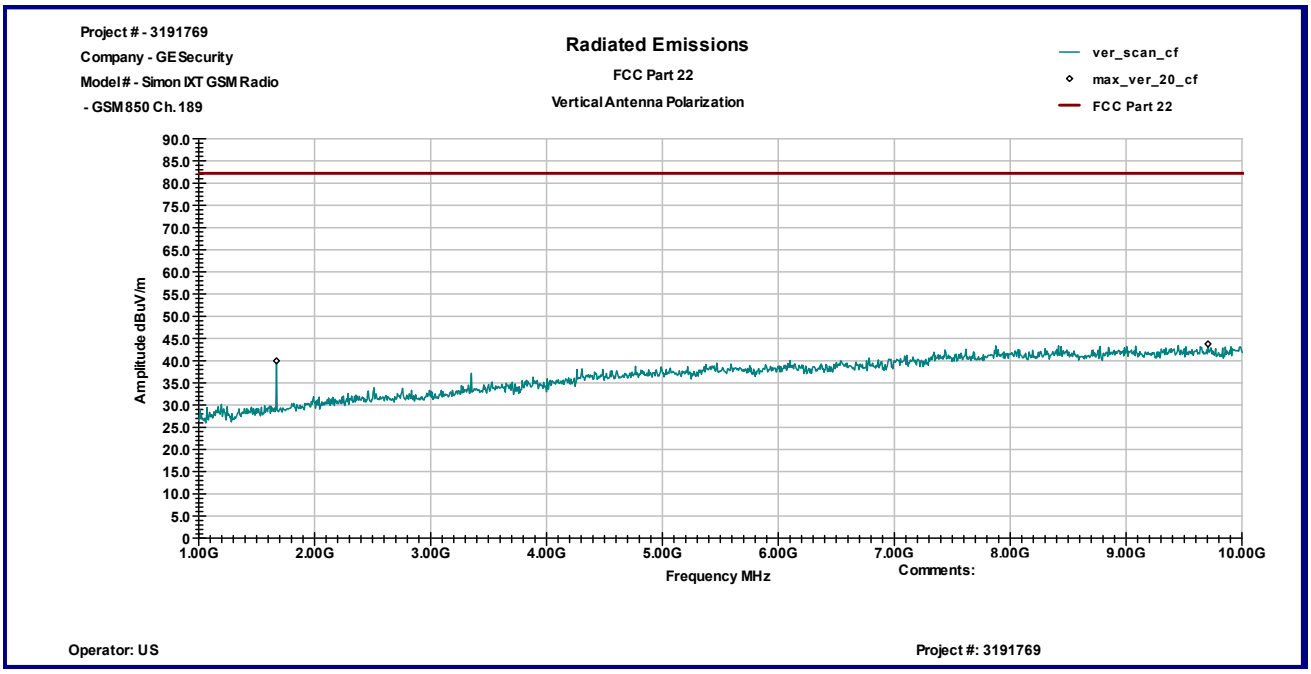
Graph 3.6.4



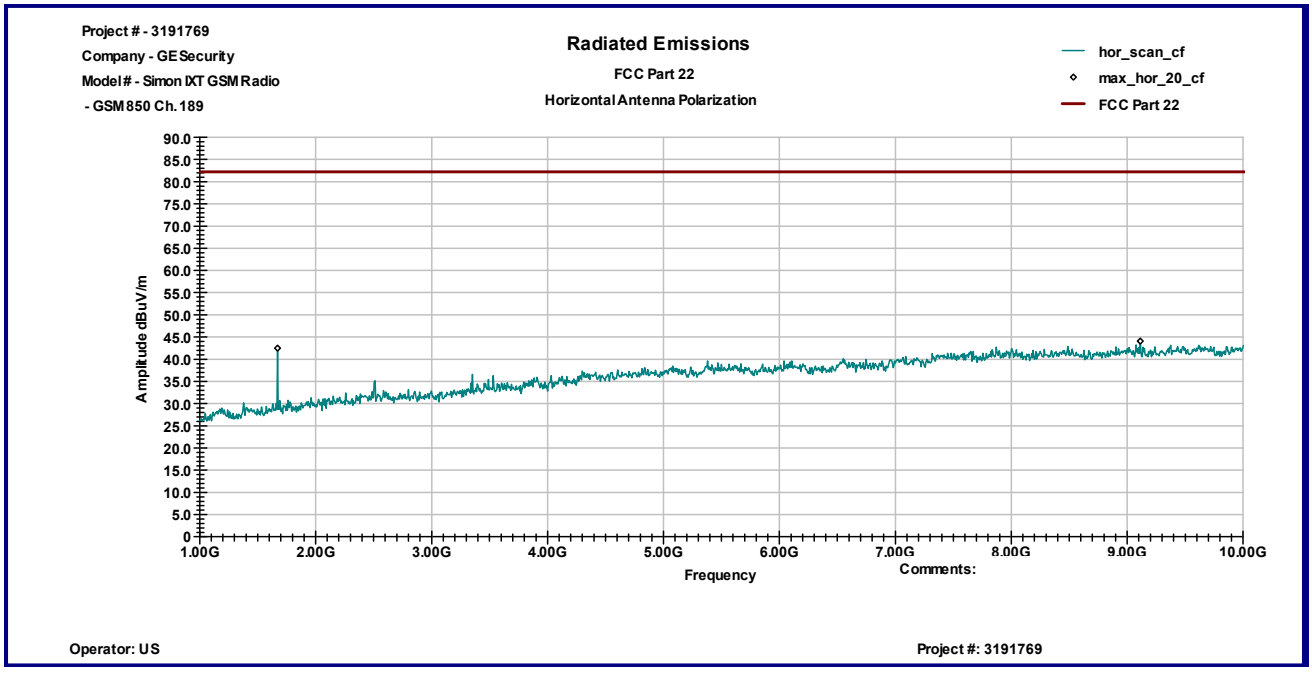
Graph 3.6.5



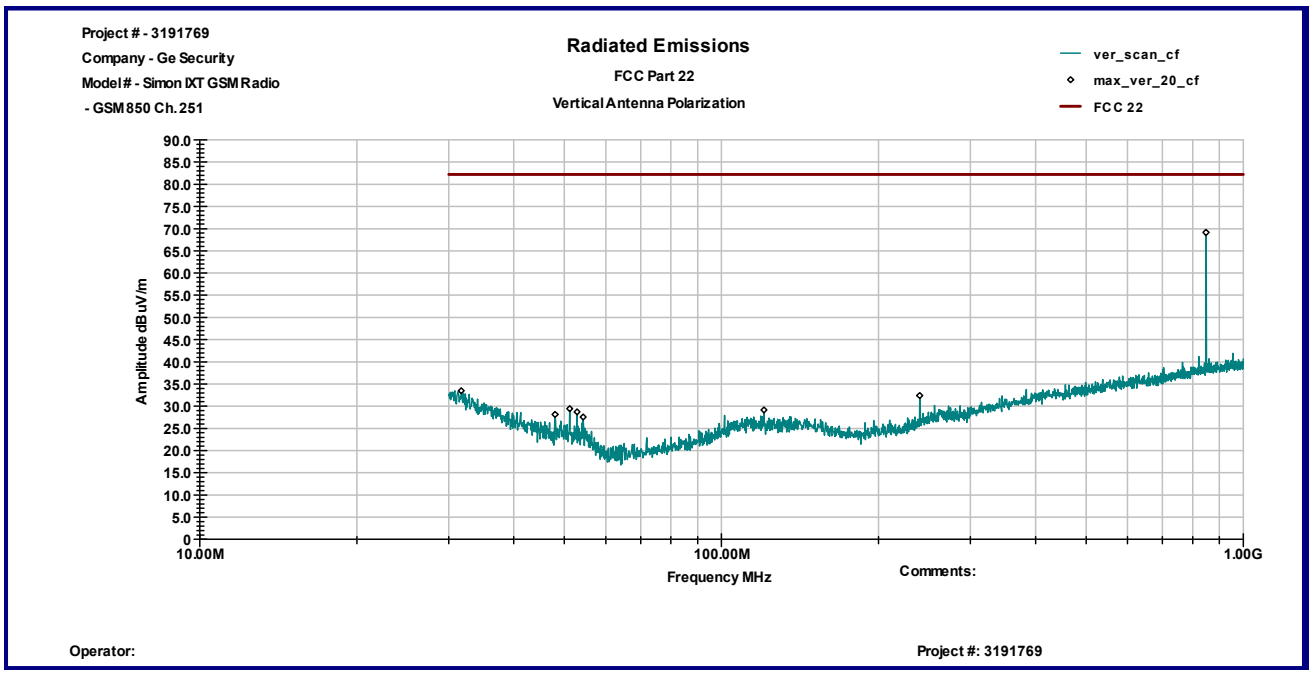
Graph 3.6.6



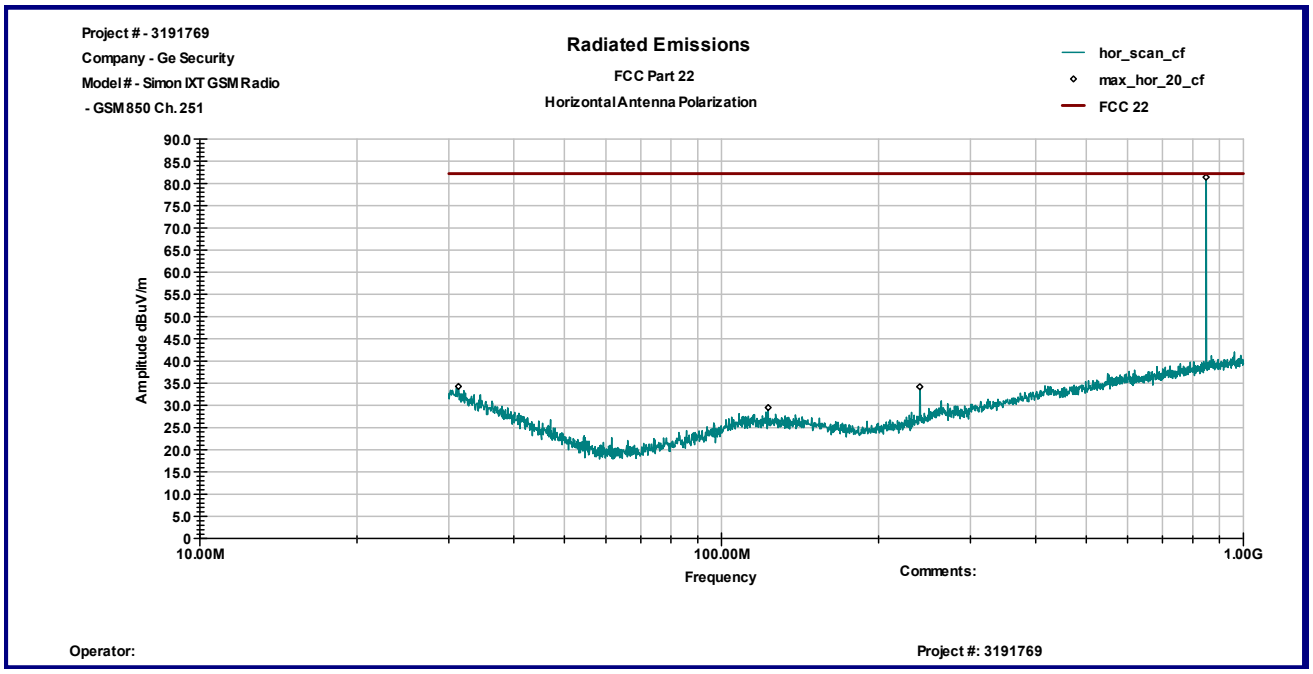
Graph 3.6.7



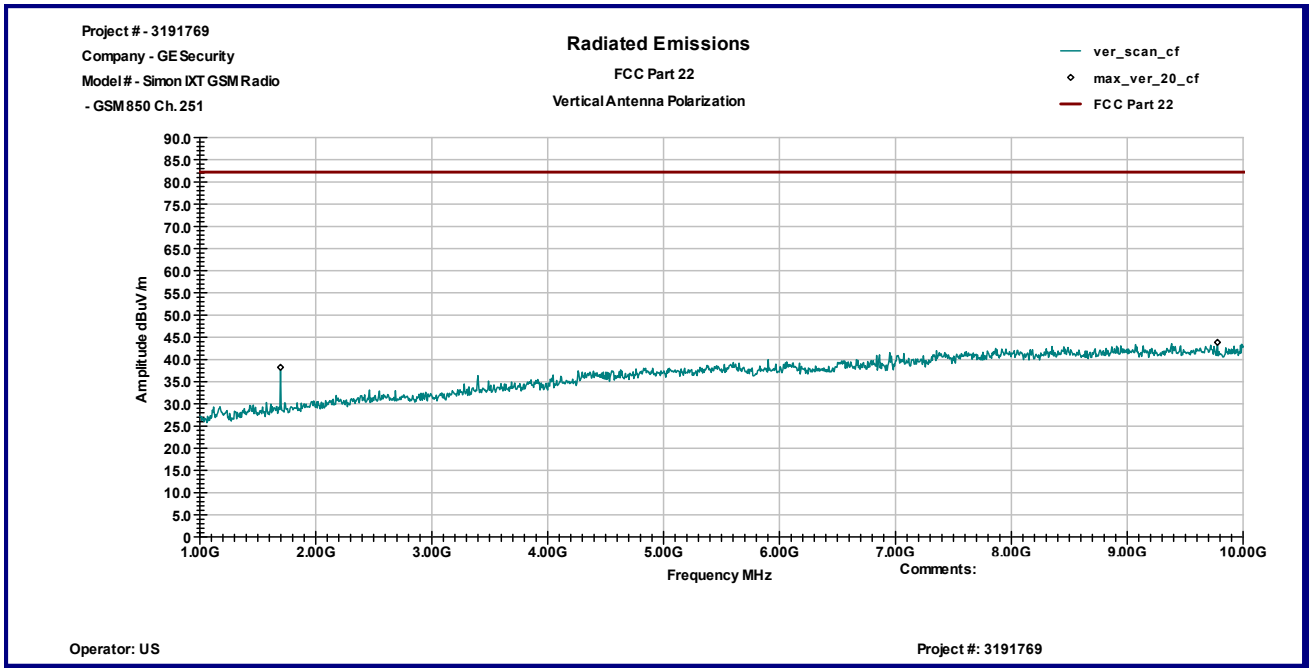
Graph 3.6.8



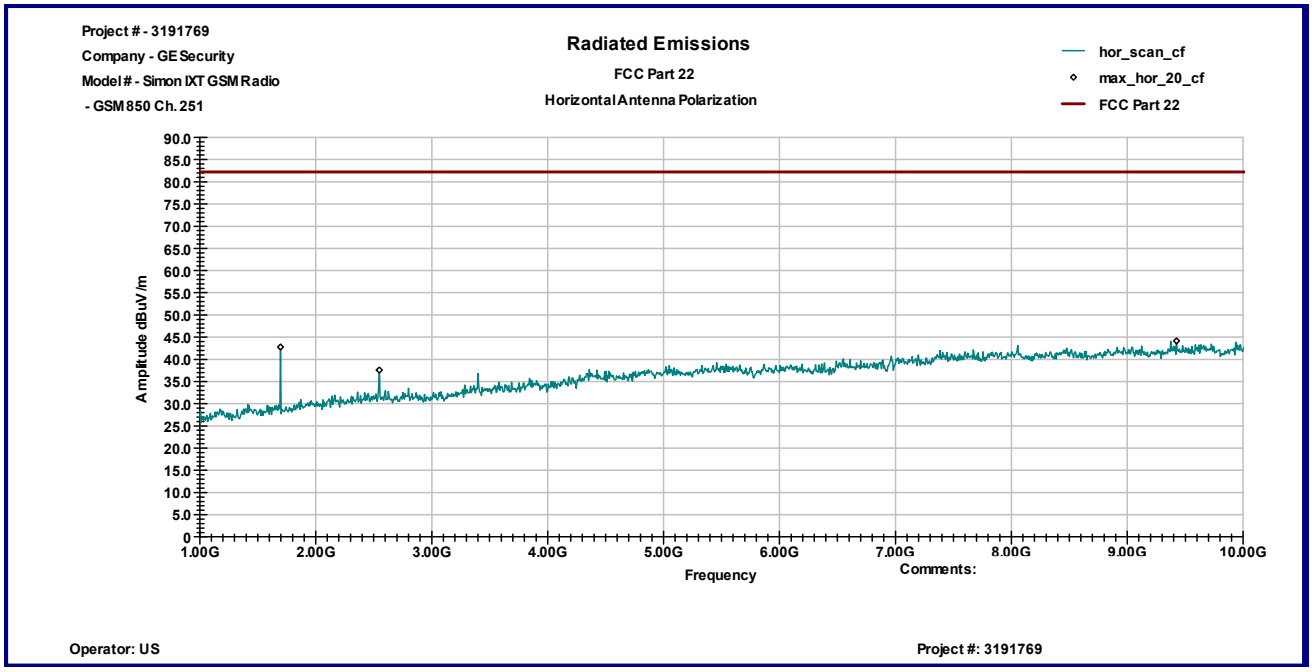
Graph 3.6.9



Graph 3.6.10



Graph 3.6.11



Graph 3.6.12

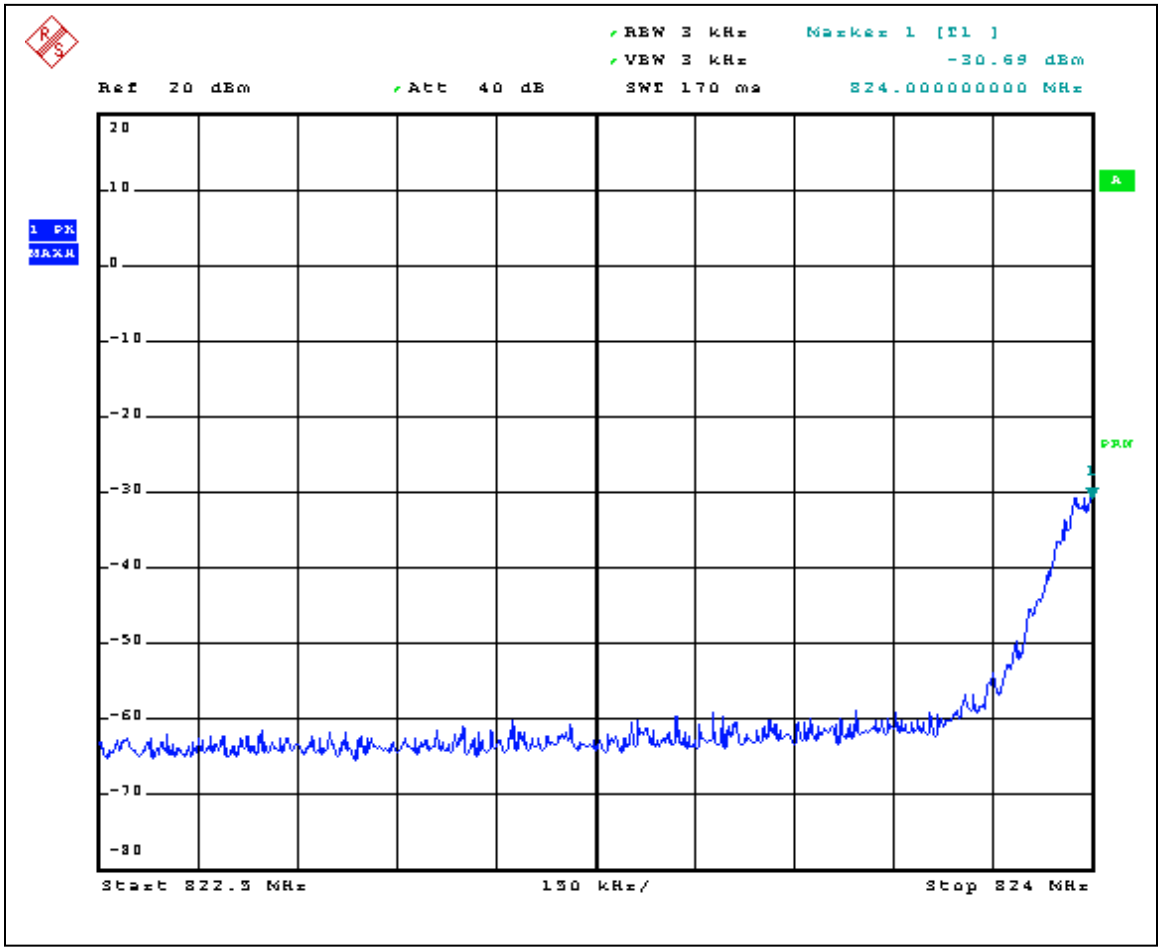
3.7 Spurious emissions at Block Edges

Test location: ☐ OATS ☐ Anechoic Chamber ☐ Other

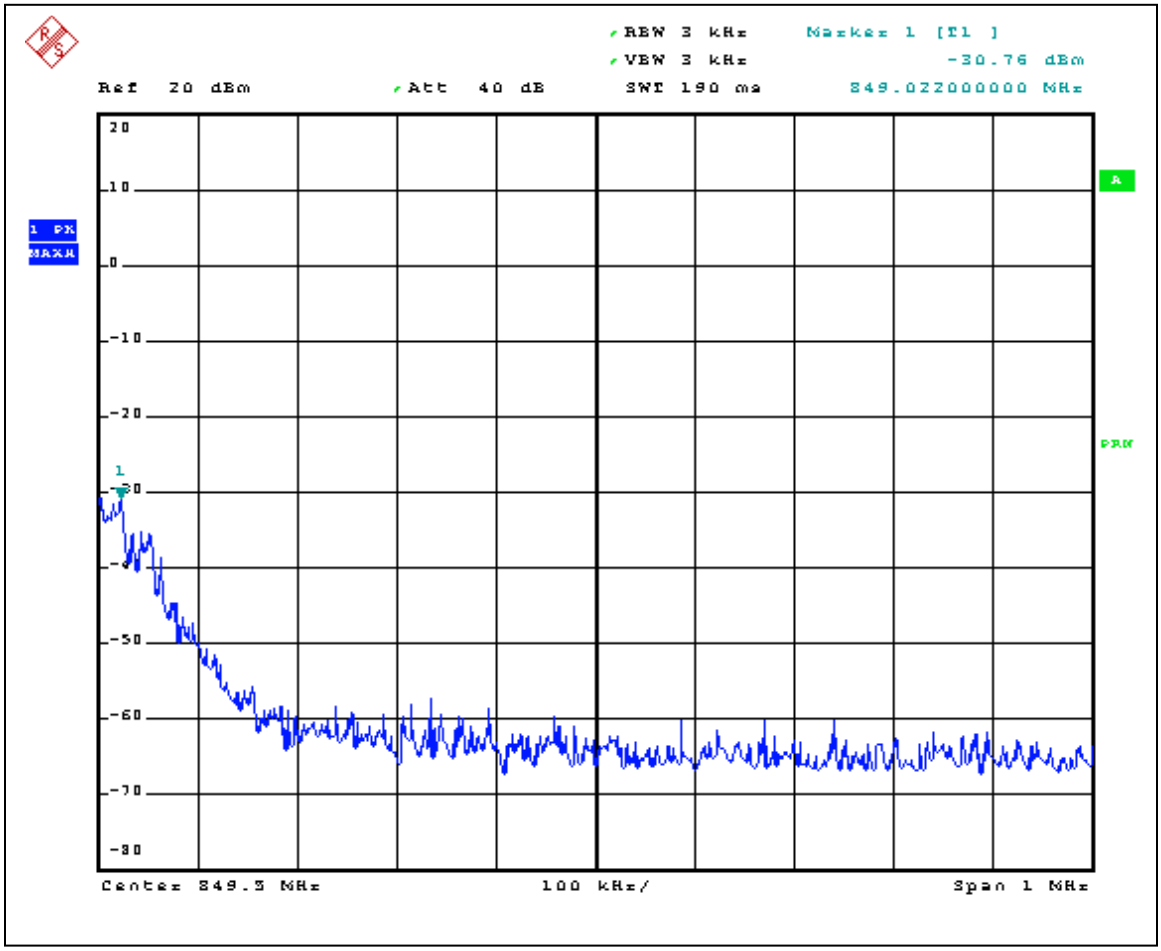
Test result: **Pass**

Low Channel	Measured power dBm	Total CF dB	Total dBm	Limit dBm	Margin dB
128	-30.69	15.9	-14.79	-13.0	-1.79
Highest Channel					
251	-30.76	15.9	-14.86	-13.0	-1.86
CF=Cable/Coupler Insertion Loss:	☒ 15.2dB				
Antenna Gain (dBi)	☒ 0.7dBi				

Notes: For passing results see Graphs 3.7.1-3.7.2. Fundamental frequencies are excluded form the measurements.


RBW 3 kHz
VBW 3 kHz
Marker 1 [T1]
-30.69 dBm
Ref 20 dBm
Att 40 dB
SWT 170 ms
824.000000000 MHz
1 PK
MAXH
A
PRN
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Start 822.5 MHz
150 kHz/
Stop 824 MHz

Graph 3.7.1


RBW 3 kHz
VBW 3 kHz
Marker 1 [T1]
-30.76 dBm
Ref 20 dBm
Att 40 dB
SWT 190 ms
849.022000000 MHz
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1 PK
MAXH
A
PRN
1
Center 849.5 MHz
100 kHz/
Span 1 MHz

Graph 3.7.2

3.8 RF Exposure Compliance

MPE Requirement:

S=f/1500 mW/cm^2
f= operating frequency
S=824/1500=0.55 mW/cm^2

Calculation:

Antenna Gain= 0.7d**i**
The maximum ERP power = 1.45W
D = distance of 20cm

$S_{(mW)}$ = ERP(mW) / $4\pi D^2$, or $S_{(mW)}$ = 1450 / 4π400= 0.288 mW/cm^2, < 0.55 mW/cm^2

3.9 Receiver/digital device radiated emissions, FCC Part 15.109

Test location: ☐ OATS ☒ Anechoic Chamber

Test distance: ☐ 10 meters ☒ 3 meters

Test result: **Pass**

Frequency range: 30MHz-13000MHz

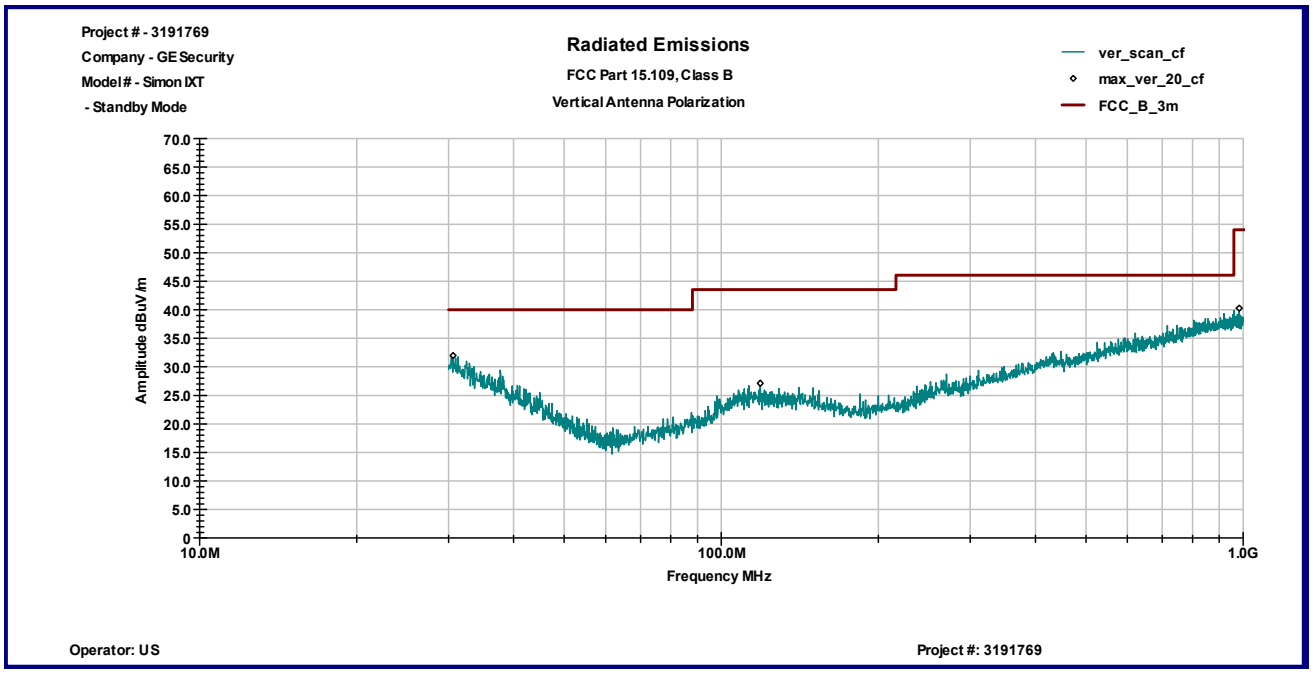
Max. Emissions margin: 7.7 dB below the limits

Notes: The Radiated Emissions test was performed in the Anechoic chamber at 3m measurement distance (see Table 3.8.1 and Graphs 3.8.1- and 3.8.4). No radiated emissions were detected above 1GHz (see Graphs 3.8.3, 3.8.4).

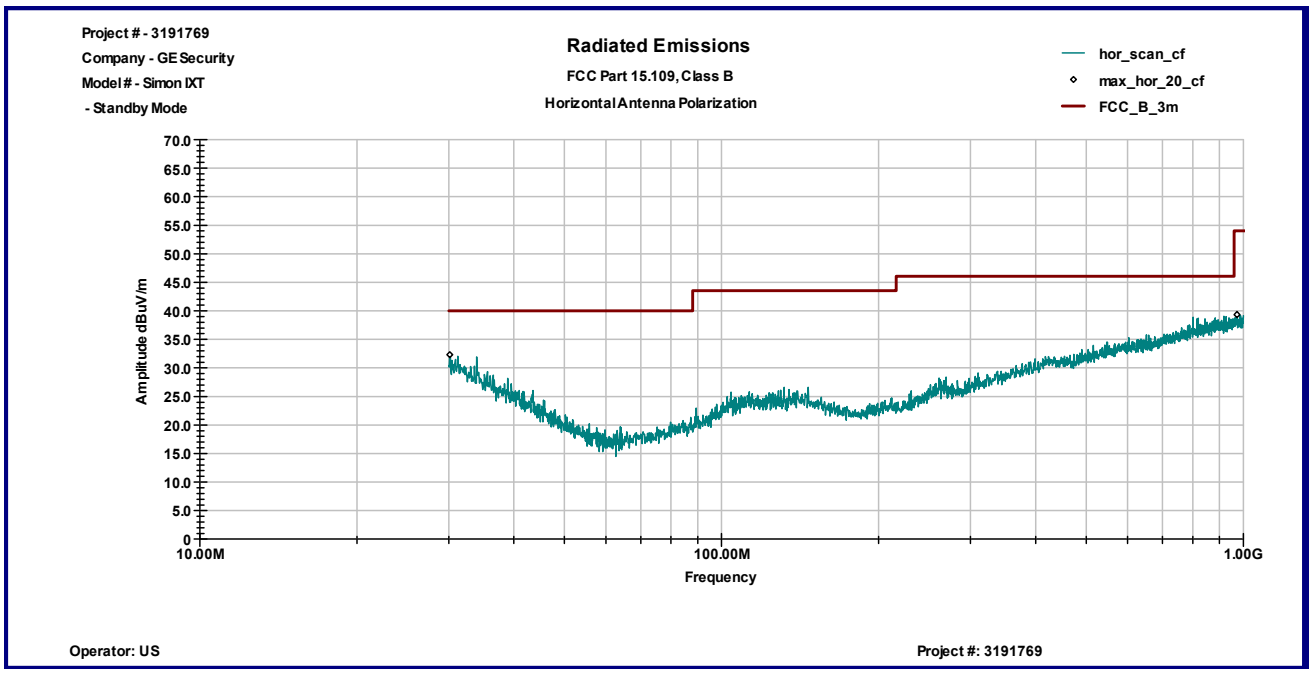
Date:	October 2, 2009	**Result:** **Pass**
Standard:	FCC Part 15.109, Class B	
Tested by:	Uri Spector	
Test Point:	Enclosure	
Operation mode:	Standby Mode	
Note:		

Table 3.8.1

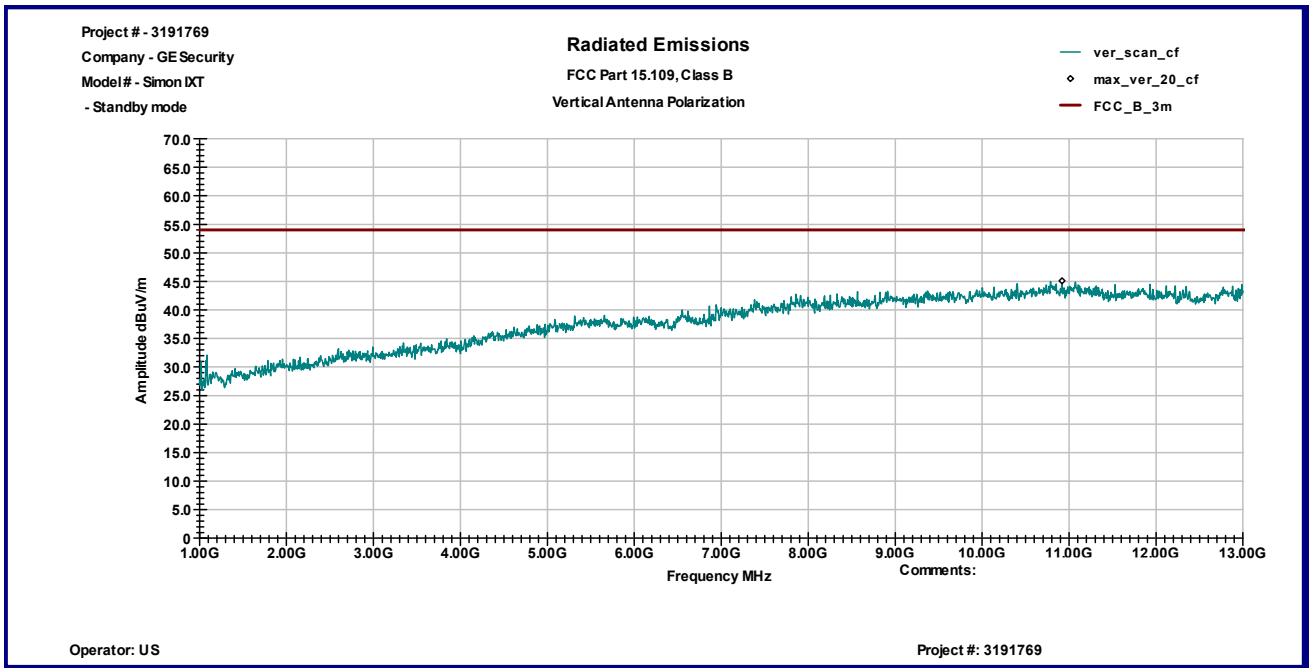
Frequency	Ant. Polarity	Peak Reading dBµV	Ant.Factor dB1/m	Total at 3m dBµV/m	QP Limit dBµV/m	Margin dB
30.623 MHz	V	11.2	20.7	32.0	40.0	-8.1
118.8 MHz	V	13.2	14.0	27.1	43.5	-16.4
983.02 MHz	V	14.1	26.1	40.3	54.0	-13.7
30.139 MHz	H	11.3	21.0	32.3	40.0	-7.7
972.41 MHz	H	13.3	26.0	39.3	54.0	-14.7



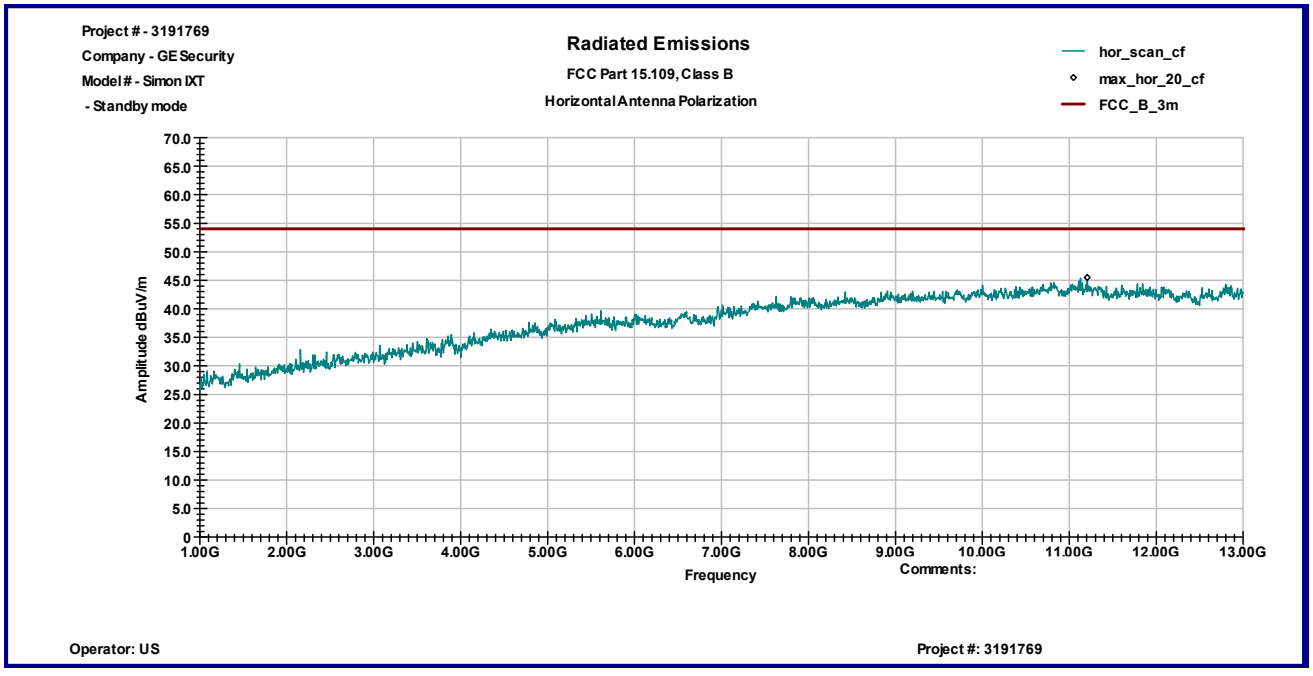
Graph 3.8.1



Graph 3.8.2



Graph 3.8.3



Graph 3.8.4

3.10 AC Power line conducted emissions, FCC Part 15.107

Test location: ☐ OATS ☒ Anechoic Chamber ☐ Other

Test result: **Pass**

Frequency range: 0.15MHz-30MHz

Max. Emissions margin: 13.2 dB below the limits

Notes: None

Date:	October 5, 2009	**Result:** **Pass**
Standard:	FCC 15.107, Class B	
Tested by:	Uri Spector	
Test Point:	Power Line	
Operation mode:	Standby Mode	
Note:		

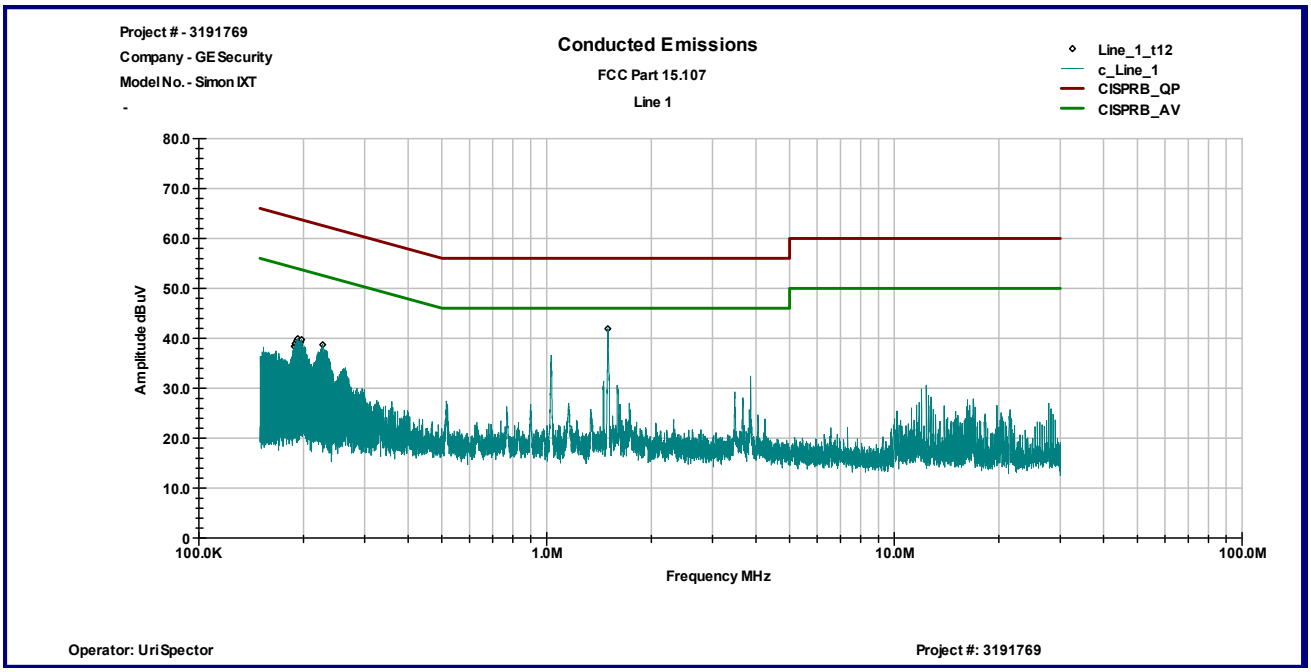
Table 3.9.1

Line 1

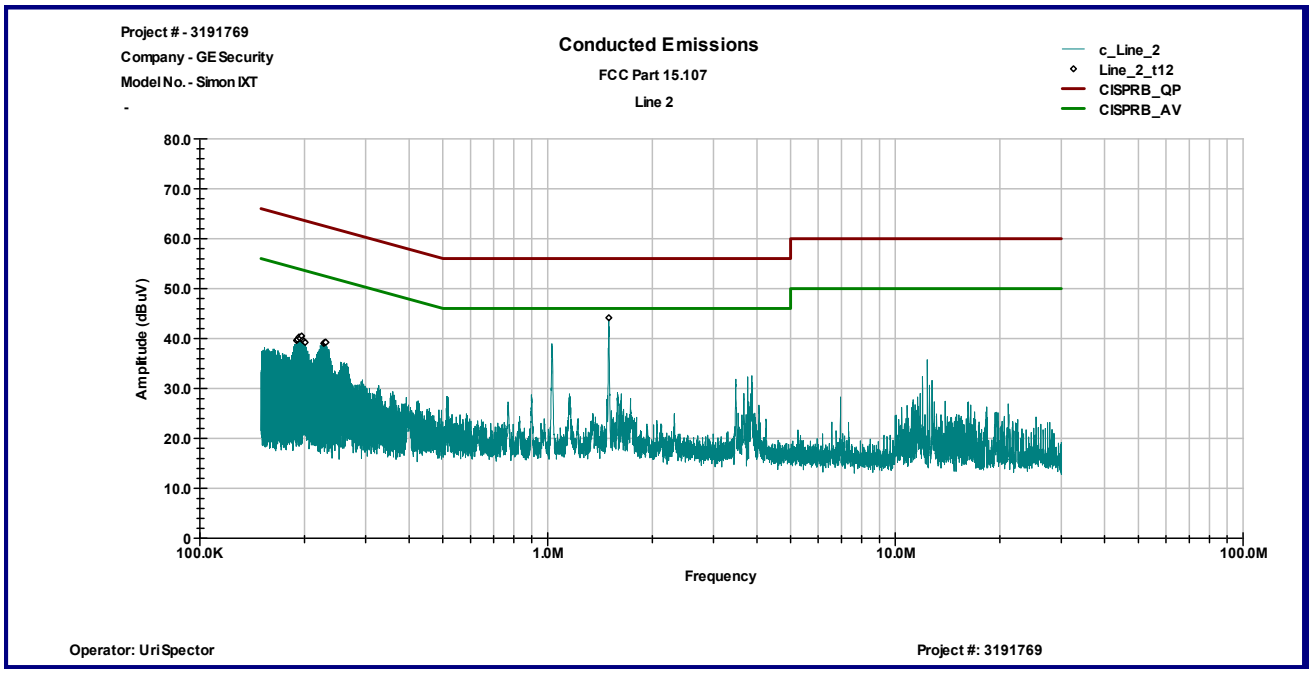
Frequency	Peak dBµV	QP Limit dBµV	AVG Limit dBµV	QP Margin dB	AVG Margin dB
189.45 KHz	39.0	64.1	54.1	-25.1	-15.1
191.16 KHz	39.5	64.0	54.0	-24.5	-14.5
192.75 KHz	39.9	63.9	53.9	-24.0	-14.0
197.52 KHz	39.7	63.7	53.7	-24.0	-14.0
227.22 KHz	38.7	62.6	52.6	-23.8	-13.8

Line 2

Frequency	Peak dBµV	QP Limit dBmV	AVG Limit dBmV	QP Margin dB	AVG Margin dB
189.69 KHz	39.6	64.1	54.1	-24.4	-14.4
192.87 KHz	40.3	63.9	53.9	-23.6	-13.6
196.17 KHz	40.5	63.8	53.8	-23.3	-13.3
199.23 KHz	39.5	63.6	53.6	-24.1	-14.1
200.94 KHz	39.2	63.6	53.6	-24.4	-14.4
228.57 KHz	39.2	62.5	52.5	-23.3	-13.3
230.16 KHz	39.3	62.4	52.4	-23.2	-13.2



Graph 3.9.1



Graph 3.9.2

4.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	R & S	FSP 40	100024	12559	09/10/2010	☒
Spectrum Analyzer	Agilent	E7402A	MY44212200	12660	11/13/2009	☒
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	14459	09/22/2010	☒
Horn Antenna	EMCO	3115	9507-4513	9936	03/04/2010	☒
Horn Antenna	EMCO	3115	6579	15580	04/03/2010	☒
Signal Generator	R & S	SMT 03	DE12157	9950	09/22/2010	☒
Roberts Antenna	CDI	A100	00599	9965	VBU	☒
LISN	Fischer Custom Communications	FCC-LISN-2 MOD.SD	316	9945	10/28/2009	☒
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	08/06/2010	☒
Pre-Amplifier	MITEQ	AMF-5D-00501800-28-13P	1402232	172081	08/07/2010	☒
Pre-Amplifier	MITEQ	AMF-6F-16002600-25-10P	1222383	MIN-0065	08/07/2010	☒
System	TILE! Instrument Control		Ver. 3.4.K.29	15259	VBU	☒