



RADIO TEST REPORT

Report No.: STS192007251W03

Issued for

Spark Technology Labs Inc.

680 Davenport Rd., Unit D, Waterloo, ON, Canada N2V 2C3

Product Name:	CH4G Asset Tracker
Brand Name:	CloudHawk
Model Name:	CH4G
Series Model:	N/A
FCC ID:	2AA5OCH4G
IC:	21738-CH4G
Test Standard:	FCC Part 22 FCC Part 24 RSS-132 issue 3 RSS-133 issue 6

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**TEST RESULT CERTIFICATION**

Applicant's Name: Spark Technology Labs Inc.
Address: 680 Davenport Rd., Unit D, Waterloo, ON, Canada N2V 2C3
Manufacture's Name: Spark Technology Labs Inc.
Address: 680 Davenport Rd., Unit D, Waterloo, ON, Canada N2V 2C3

Product Description

Product Name: CH4G Asset Tracker
Brand Name: CloudHawk
Model Name: CH4G
Series Model: N/A
Test Standards: FCC Part 22
FCC Part 24
RSS-132 issue 3
RSS-133 issue 6
Test Procedure: KDB 971168 D01 v03r01, ANSI C63.26(2015)

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC/IC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....:

Date of receipt of test item.....: 16 July 2020
Date (s) of performance of tests.: 16 July 2020 ~ 30 July 2020
Date of Issue: 30 July 2020
Test Result: Pass

Testing Engineer :

(Chris Chen)

Technical Manager :

(Sean she)

Authorized Signatory :

(Vita Li)





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**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	30 July 2020	STS2007251W03	ALL	Initial Issue





SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

The radiated emission testing was performed according to the procedures of KDB 971168 D01 v03r01 and ANSI C63.26(2015)

FCC Rules	Test Description	Test Result
2.1049, 22.913, 24.232 RSS-132 Issue 3(5.4) RSS-133 Issue 6 (6.4)	Equivalent Isotropic Radiated Power	PASS
2.1053, 22.917, 24.238 RSS-132 Issue 3 (5.5) RSS-133 Issue 6 (6.5)	Field Strength of Spurious Radiation	PASS
RSS-132 Issue 3 (5.6) RSS-133 Issue 6 (6.6) RSS-Gen Issue 5 (7.3)	Receiver spurious emissions	PASS

The module has been certified by FCC/IC, The original module FCC ID is R17ME910G1WW, IC is 513A-ME910G1WW. The report number of FCC&IC certified is STS1912245W03.

In this report, this certified module is same as the original module. We have tested the new radiated power and radiated emission.



1 INTRODUCTION

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement data shown herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	All emissions, radiated 30-1GHz	$\pm 6.7\text{dB}$
4	All emissions, radiated 1G-6GHz	$\pm 5.5\text{dB}$
5	All emissions, radiated >6G	$\pm 5.8\text{dB}$
6	Conducted Emission (9KHz-150KHz)	$\pm 3.37\text{dB}$
7	Conducted Emission (150KHz-30MHz)	$\pm 3.83\text{dB}$



2 PRODUCT INFORMATION

Product Name	CH4G Asset Tracker
Trade Name	CloudHawk
Model Name	CH4G
Series Model	N/A
Model Difference	N/A
Tx Frequency:	GPRS/EDGE: 850: 824 MHz ~ 849MHz 1900: 1850 MHz ~ 1910MHz
Rx Frequency:	GPRS/EDGE: 850: 869 MHz ~ 894 MHz 1900: 1930 MHz ~ 1990MHz
Modulation Mode:	GMSK for GPRS; GMSK and 8PSK for EDGE
SIM Card:	Only support single SIM Card.
Antenna:	Internal monopole
Antenna gain:	GPRS 850: -2dBi ,PCS 1900: -2dBi
Battery:	Capacity: 5200 mAh Rated Voltage: 3.7V Charge Limit: 4.2V
Power Rating:	Input:12~24V DC
GPRS/EDGE Class:	Multi-Class12
Extreme Voltage:	3.5V to 4.2V (Normal: 3.7V)
Extreme Temp. Tolerance:	-20℃ to +45℃
Hardware version number:	Rev. B
Software version number:	M0C.400001



3 TEST CONFIGURATION OF EQUIPMENT UNDER TEST

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 and ANSI C63.26 2015 Power Meas. License Digital Systems with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 10th harmonic for GSM850.
2. 30 MHz to 10th harmonic for GSM1900.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

	TEST MODES AND CHANNELS	
	RADIATED TCS	CONDUCTED TCS
BAND		
GSM 850 (824.2/836.6/848.8MHZ)	GPRS/EDGE CLASS 12 LINK	GPRS/EDGE CLASS 12 LINK
GSM 1900 (1850.2/1880/1909.8MHZ)	GPRS/EDGE CLASS 12 LINK	GPRS/EDGE CLASS 12 LINK



4 MEASUREMENT INSTRUMENTS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY51110105	2020.03.05	2021.03.04
Wireless Communications Test Set	R&S	CMW 500	133884	2020.03.05	2021.03.04
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2018.10.19	2021.10.18
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2021.03.10
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2019.10.09	2020.10.08
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2019.10.12	2020.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2019.10.12	2020.10.11
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
Test SW	BULUN	BL410-E/18.905			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Universal Radio communication tester	R&S	CMU200	119907	2020.10.11	2021.10.10
Wireless Communications Test Set	R&S	CMW 500	133884	2020.03.05	2021.03.04
Signal Analyzer	Agilent	N9020A	MY49100060	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
Test SW	FARAD	LZ-RF /LzRf-3A3			

Equipment with a calibration date of "NCR" shown in this list was not used to make direct calibrated measurements.



5 TEST ITEMS

5.1 TRANSMITTER RADIATED POWER (EIRP/ERP)

TEST OVERVIEW

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI C63.26 2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

TEST PROCEDURE

1. The testing follows FCC KDB 971168 Section 5.8 and ANSI C63.26-2015 Section 5.2.
2. The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.
3. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
4. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
5. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a nonradiating cable. The absolute levels of the spurious emissions were measured by the substitution.
6. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to ANSI C63.26-2015. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.
The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP/ERP was calculated with the correction factor,
$$ERP/EIRP = P.SG + GT - LC$$

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as P_{Me} as, typically dBW or dBm);
P_{Meas}(PK) = measured transmitter output power or PSD, in dBm or dBW;
GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

TEST RESULT

Note: Test data See Appendix 1.



5.2 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

TEST OVERVIEW

Radiated spurious emissions measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power and at the appropriate frequencies.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

Note: The radiated spurious emissions which are attenuated more than 20 dB below the permissible Value for above 18GHz, so it's don't need not be reported.

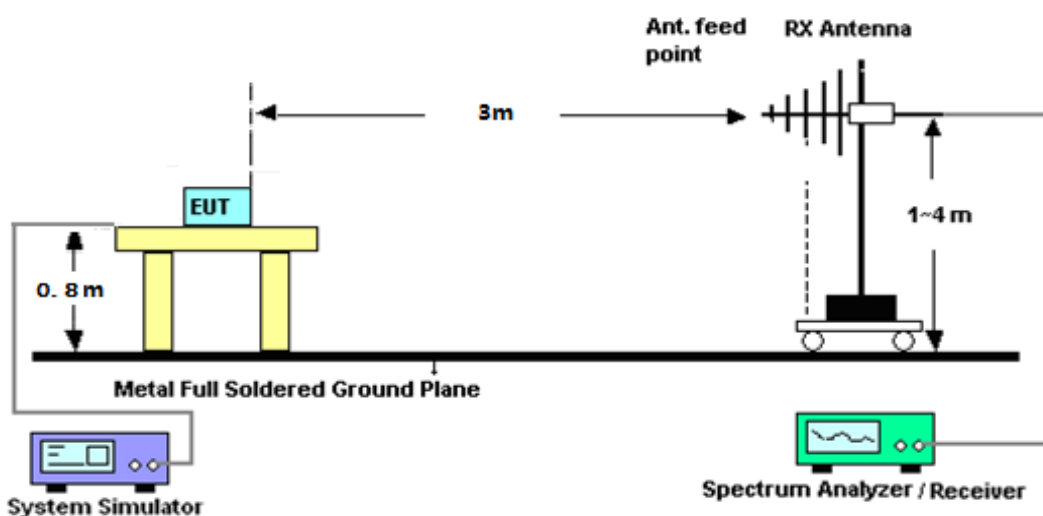
TEST PROCEDURE

1. The testing FCC KDB 971168 D01 Section 7 and ANSI C63.26-2015-Section 5.5.
2. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $> 2 \times$ span/RBW
6. Detector = Peak
7. Trace mode = max hold
8. The trace was allowed to stabilize
9. Effective Isotropic Spurious Radiation was measured by substitution method according to TIA/EIA-603-D. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.
The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP/ERP was calculated with the correction factor, $ERP/EIRP = P.SG + GT - LC$
 $ERP/EIRP$ = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);
P.SG = measured transmitter output power or PSD, in dBm or dBW;
GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.
10. Limit

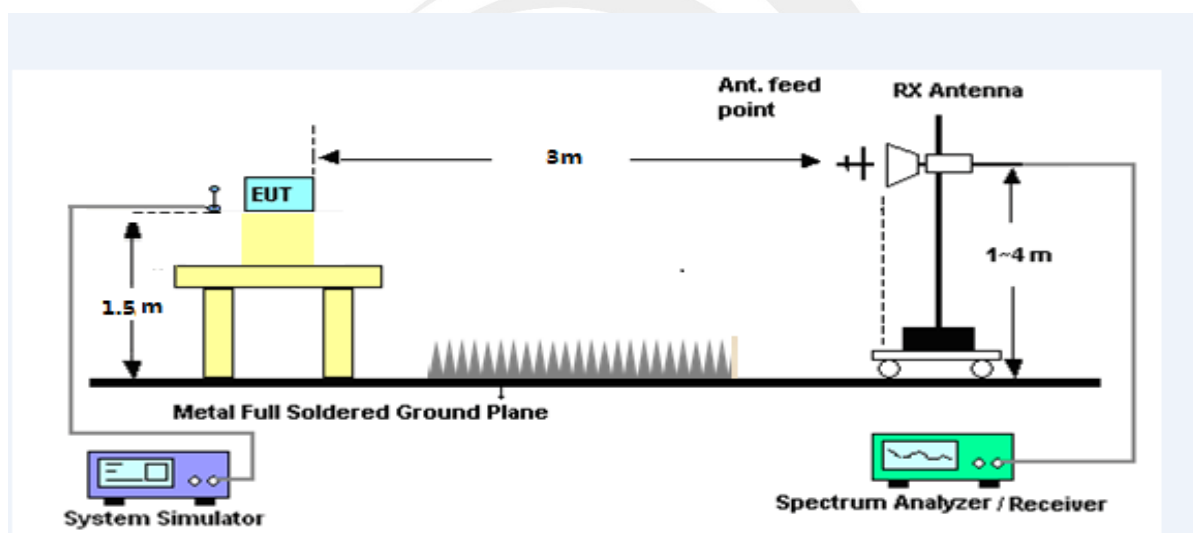
Operating band	FCC Limit	ISED Limit
GPRS/EDGE 850	< - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz	< - 13 dBm / 100 kHz
GPRS/EDGE 1900	< - 13 dBm /1MHz	< - 13 dBm /1MHz

TEST SETUP

For radiated test from 30MHz to 1GHz



For radiated test from above 1GHz



TEST RESULT

Note: Test data See Appendix 2.



5.3 RECEIVER SPURIOUS EMISSIONS

TEST LIMIT

Radiated emission measurements shall be performed with the receiver antenna connected to the receiver antenna ports. The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least five times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.

Spurious emissions from receivers shall not exceed the radiated emissions limits shown in table 3.

Table 3 – Receiver radiated emissions limits

Frequency (MHz)	Field strength ($\mu\text{V/m}$ at 3 metres)Note 1
30-88	100
88-216	150
216-960	200
Above 960	500

Note 1: Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with section 6.6.

TEST PROCEDURE

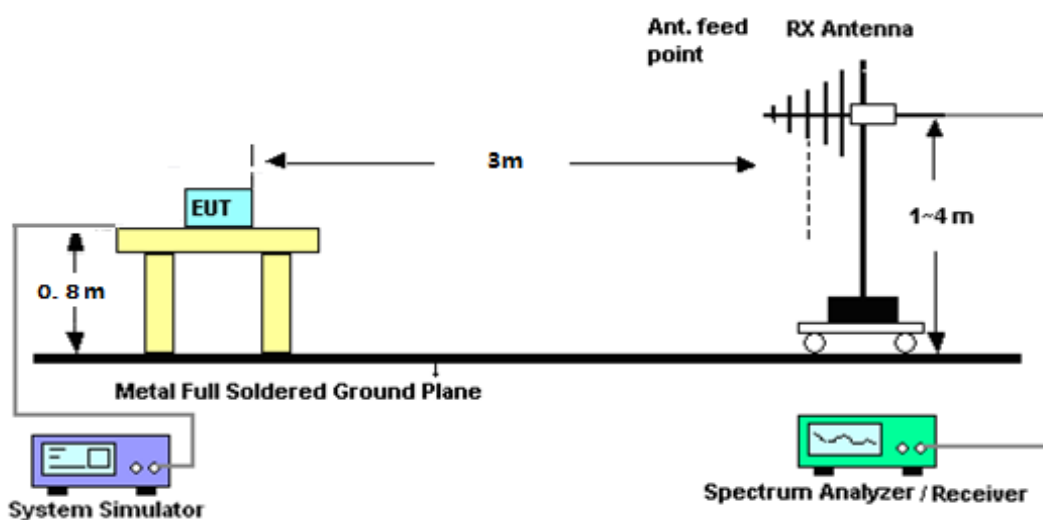
- The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then QuasiPeak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

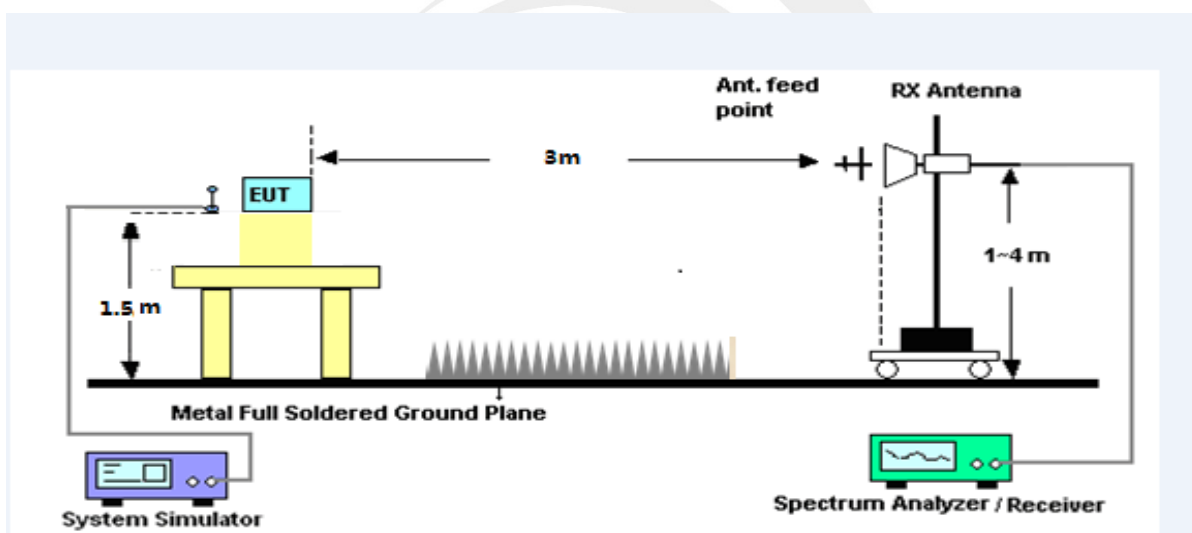
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

TEST SETUP

For radiated test from 30MHz to 1GHz



For radiated test from above 1GHz



TEST RESULT

Note: Test data See Appendix 3.



APPENDIX A.TESTRESULT

A1. TRANSMITTER RADIATED POWER (EIRP/ERP)

Note: Test is divided into three directions, X/Y/Z. X pattern for the worst

Radiated Power (ERP) for GSM 850 MHZ								
Mode	Frequency	Result						Conclusion
		S G.Level (dBm)	Cable loss	Gain(dBi)	correction factor(dB)	PMeas E.R.P(dBm)	Polarization	
							Of Max. ERP	
GPRS850	824.2	24.86	0.44	6.5	2.15	28.77	Horizontal	Pass
	824.2	27.05	0.44	6.5	2.15	30.96	Vertical	Pass
	836.6	24.54	0.45	6.5	2.15	28.44	Horizontal	Pass
	836.6	26.99	0.45	6.5	2.15	30.89	Vertical	Pass
	848.8	24.24	0.46	6.5	2.15	28.13	Horizontal	Pass
	848.8	26.55	0.46	6.5	2.15	30.44	Vertical	Pass
EGPRS850	824.2	19.58	0.44	6.5	2.15	23.49	Horizontal	Pass
	824.2	21.69	0.44	6.5	2.15	25.60	Vertical	Pass
	836.6	19.46	0.45	6.5	2.15	23.36	Horizontal	Pass
	836.6	21.55	0.45	6.5	2.15	25.45	Vertical	Pass
	848.8	19.57	0.46	6.5	2.15	23.46	Horizontal	Pass
	848.8	21.92	0.46	6.5	2.15	25.81	Vertical	Pass
Limit	ERP<7W=38.45dBm							

Radiated Power (EIRP) for PCS 1900 MHZ							
Mode	Frequency	Result					Conclusion
		S G.Level (dBm)	Cable loss	Gain (dBi)	PMeas E.I.R.P.(dBm)	Polarization	
						Of Max. ERP	
GPRS1900	1850.2	15.64	2.41	10.35	23.58	Horizontal	Pass
	1850.2	17.73	2.41	10.35	25.67	Vertical	Pass
	1880	15.08	2.42	10.35	23.01	Horizontal	Pass
	1880	17.2	2.42	10.35	25.13	Vertical	Pass
	1909.8	14.05	2.43	10.35	21.97	Horizontal	Pass
	1909.8	16.38	2.43	10.35	24.30	Vertical	Pass
EGPRS1900	1850.2	12.43	2.41	10.35	20.37	Horizontal	Pass
	1850.2	14.78	2.41	10.35	22.72	Vertical	Pass
	1880	11.63	2.42	10.35	19.56	Horizontal	Pass
	1880	14.12	2.42	10.35	22.05	Vertical	Pass
	1909.8	11.02	2.43	10.35	18.94	Horizontal	Pass
	1909.8	13.27	2.43	10.35	21.19	Vertical	Pass
Limit	EIRP<2W=33dBm						



A2. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

Note: (1) Below 30MHz no Spurious found is the worst condition.

(2) Above 3.5GHz amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value

(3) Test is divided into three directions, X/Y/Z. X pattern for the worst.

GPRS 850: (30-9000)MHz							
The Worst Test Results Channel 128/824.2 MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1648.46	-41.37	9.40	4.75	-36.72	-13.00	-23.72	H
2472.69	-40.08	10.60	8.39	-37.87	-13.00	-24.87	H
3296.52	-30.92	12.00	11.79	-30.71	-13.00	-17.71	H
1648.41	-44.46	9.40	4.75	-39.81	-13.00	-26.81	V
2472.59	-43.99	10.60	8.39	-41.78	-13.00	-28.78	V
3296.60	-42.92	12.00	11.79	-42.71	-13.00	-29.71	V
The Worst Test Results Channel 190/836.6 MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1672.80	-40.65	9.50	4.76	-35.91	-13.00	-22.91	H
2509.62	-39.51	10.70	8.40	-37.21	-13.00	-24.21	H
3346.03	-31.87	12.20	11.80	-31.47	-13.00	-18.47	H
1673.12	-43.25	9.40	4.75	-38.60	-13.00	-25.60	V
2509.68	-44.78	10.60	8.39	-42.57	-13.00	-29.57	V
3346.21	-42.72	12.20	11.82	-42.34	-13.00	-29.34	V
The Worst Test Results Channel 251/848.8 MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1697.25	-41.25	9.60	4.77	-36.42	-13.00	-23.42	H
2546.33	-40.47	10.80	8.50	-38.17	-13.00	-25.17	H
3395.16	-31.37	12.50	11.90	-30.77	-13.00	-17.77	H
1697.41	-44.57	9.60	4.77	-39.74	-13.00	-26.74	V
2546.35	-44.22	10.80	8.50	-41.92	-13.00	-28.92	V
3394.94	-42.52	12.50	11.90	-41.92	-13.00	-28.92	V



EGPRS 850: (30-9000)MHz							
The Worst Test Results Channel 128/824.2 MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1648.29	-40.68	9.40	4.75	-36.03	-13.00	-23.03	H
2472.54	-39.89	10.60	8.39	-37.68	-13.00	-24.68	H
3296.55	-31.39	12.00	11.79	-31.18	-13.00	-18.18	H
1648.36	-43.29	9.40	4.75	-38.64	-13.00	-25.64	V
2472.43	-44.02	10.60	8.39	-41.81	-13.00	-28.81	V
3296.66	-42.74	12.00	11.79	-42.53	-13.00	-29.53	V
The Worst Test Results Channel 190/836.6 MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1672.99	-41.47	9.50	4.76	-36.73	-13.00	-23.73	H
2509.84	-39.67	10.70	8.40	-37.37	-13.00	-24.37	H
3346.12	-31.38	12.20	11.80	-30.98	-13.00	-17.98	H
1673.26	-43.46	9.40	4.75	-38.81	-13.00	-25.81	V
2509.82	-44.44	10.60	8.39	-42.23	-13.00	-29.23	V
3346.14	-43.74	12.20	11.82	-43.36	-13.00	-30.36	V
The Worst Test Results Channel 251/848.8 MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1697.19	-41.01	9.60	4.77	-36.18	-13.00	-23.18	H
2546.11	-40.43	10.80	8.50	-38.13	-13.00	-25.13	H
3395.24	-31.61	12.50	11.90	-31.01	-13.00	-18.01	H
1697.62	-44.28	9.60	4.77	-39.45	-13.00	-26.45	V
2546.53	-44.03	10.80	8.50	-41.73	-13.00	-28.73	V
3394.96	-43.45	12.50	11.90	-42.85	-13.00	-29.85	V



GPRS1900: (30-20000)MHz							
The Worst Test Results for Channel 512/1850.2MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
3700.47	-33.81	12.60	12.93	-34.14	-13.00	-21.14	H
5550.59	-35.25	13.10	17.11	-39.26	-13.00	-26.26	H
7400.56	-32.29	11.50	22.20	-42.99	-13.00	-29.99	H
3700.06	-34.72	12.60	12.93	-35.05	-13.00	-22.05	V
5550.23	-34.22	13.10	17.11	-38.23	-13.00	-25.23	V
7400.87	-32.62	11.50	22.20	-43.32	-13.00	-30.32	V
The Worst Test Results for Channel 661/1880.0MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
3760.13	-34.17	12.60	12.93	-34.50	-13.00	-21.50	H
5640.02	-35.03	13.10	17.11	-39.04	-13.00	-26.04	H
7519.99	-32.80	11.50	22.20	-43.50	-13.00	-30.50	H
3760.29	-35.73	12.60	12.93	-36.06	-13.00	-23.06	V
5640.19	-33.89	13.10	17.11	-37.90	-13.00	-24.90	V
7519.88	-33.08	11.50	22.20	-43.78	-13.00	-30.78	V
The Worst Test Results for Channel 810/1909.8MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
3819.66	-33.64	12.60	12.93	-33.97	-13.00	-20.97	H
5729.02	-34.66	13.10	17.11	-38.67	-13.00	-25.67	H
7639.29	-33.57	11.50	22.20	-44.27	-13.00	-31.27	H
3819.74	-34.67	12.60	12.93	-35.00	-13.00	-22.00	V
5729.08	-34.66	13.10	17.11	-38.67	-13.00	-25.67	V
7639.03	-32.62	11.50	22.20	-43.32	-13.00	-30.32	V



EGPRS 1900: (30-20000)MHz							
The Worst Test Results for Channel 512/1850.2MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
3700.42	-33.50	12.60	12.93	-33.83	-13.00	-20.83	H
5550.39	-35.02	13.10	17.11	-39.03	-13.00	-26.03	H
7400.72	-32.18	11.50	22.20	-42.88	-13.00	-29.88	H
3700.02	-35.02	12.60	12.93	-35.35	-13.00	-22.35	V
5550.37	-33.90	13.10	17.11	-37.91	-13.00	-24.91	V
7400.95	-32.70	11.50	22.20	-43.40	-13.00	-30.40	V
The Worst Test Results for Channel 661/1880.0MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
3760.21	-34.30	12.60	12.93	-34.63	-13.00	-21.63	H
5639.84	-34.66	13.10	17.11	-38.67	-13.00	-25.67	H
7520.18	-32.84	11.50	22.20	-43.54	-13.00	-30.54	H
3759.95	-35.13	12.60	12.93	-35.46	-13.00	-22.46	V
5639.87	-34.31	13.10	17.11	-38.32	-13.00	-25.32	V
7519.85	-32.38	11.50	22.20	-43.08	-13.00	-30.08	V
The Worst Test Results for Channel 810/1909.8MHz							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
3819.53	-33.98	12.60	12.93	-34.31	-13.00	-21.31	H
5729.12	-33.99	13.10	17.11	-38.00	-13.00	-25.00	H
7638.87	-32.95	11.50	22.20	-43.65	-13.00	-30.65	H
3819.78	-35.04	12.60	12.93	-35.37	-13.00	-22.37	V
5729.13	-34.57	13.10	17.11	-38.58	-13.00	-25.58	V
7638.96	-33.18	11.50	22.20	-43.88	-13.00	-30.88	V



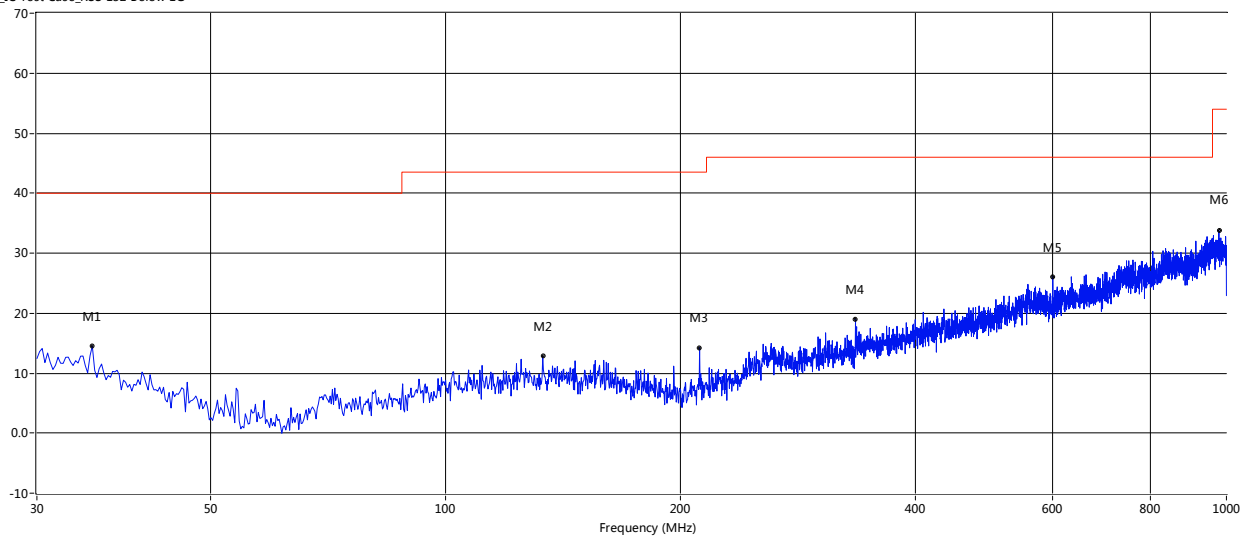
A3. RECEIVER SPURIOUS EMISSIONS

Note: All mode has been tested, only show the worst case in this report.

GPRS 850 (30MHz -1GHz):

Mid channel
Horizontal

RE_IC Test Case_RSS 132 Below 1G

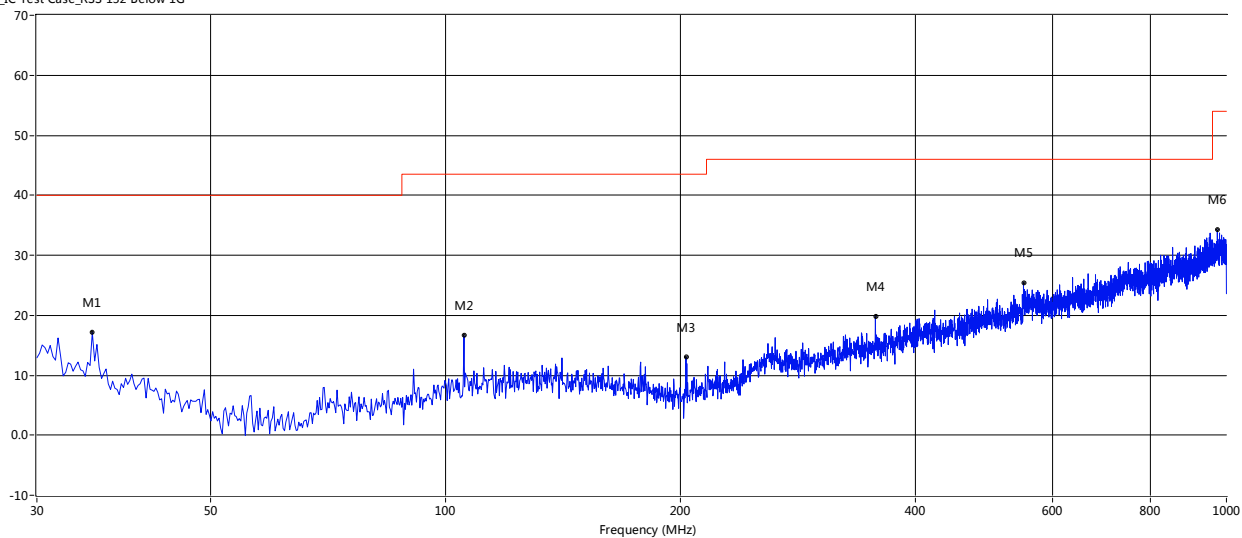


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
35.335	14.54	--	--	-14.68	--	40.0	--	-25.46	Horizontal	Pass
133.305	12.82	--	--	-16.74	--	43.5	--	-30.68	Horizontal	Pass
211.633	14.26	--	--	-18.58	--	43.5	--	-29.24	Horizontal	Pass
335.065	19.02	--	--	-11.39	--	46.0	--	-26.98	Horizontal	Pass
599.633	26.05	--	--	-3.25	--	46.0	--	-19.95	Horizontal	Pass
978.417	33.82	--	--	5.91	--	54.0	--	-20.18	Horizontal	Pass



Vertical

RE_IC Test Case_RSS 132 Below 1G

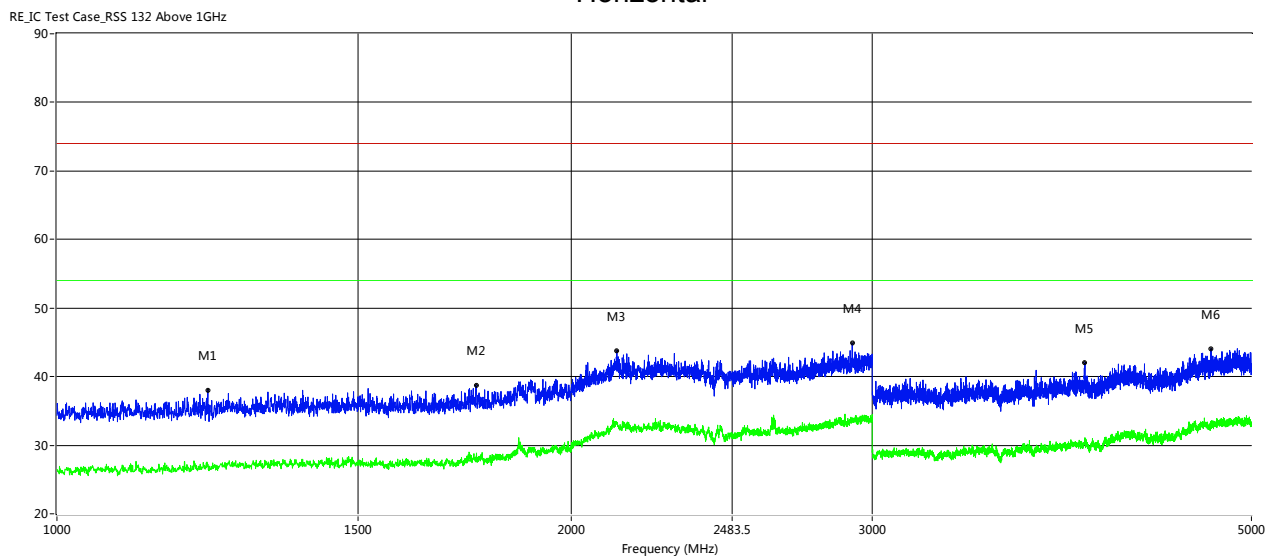


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
35.335	17.13	--	--	-14.68	--	40.0	--	-22.87	Vertical	Pass
105.660	16.61	--	--	-18.29	--	43.5	--	-26.89	Vertical	Pass
203.388	13.06	--	--	-19.23	--	43.5	--	-30.44	Vertical	Pass
355.435	19.80	--	--	-10.74	--	46.0	--	-26.20	Vertical	Pass
549.920	25.45	--	--	-3.24	--	46.0	--	-20.55	Vertical	Pass
973.810	34.23	--	--	5.61	--	54.0	--	-19.77	Vertical	Pass



GPRS 850 (Above 1GHz):

Mid channel
Horizontal

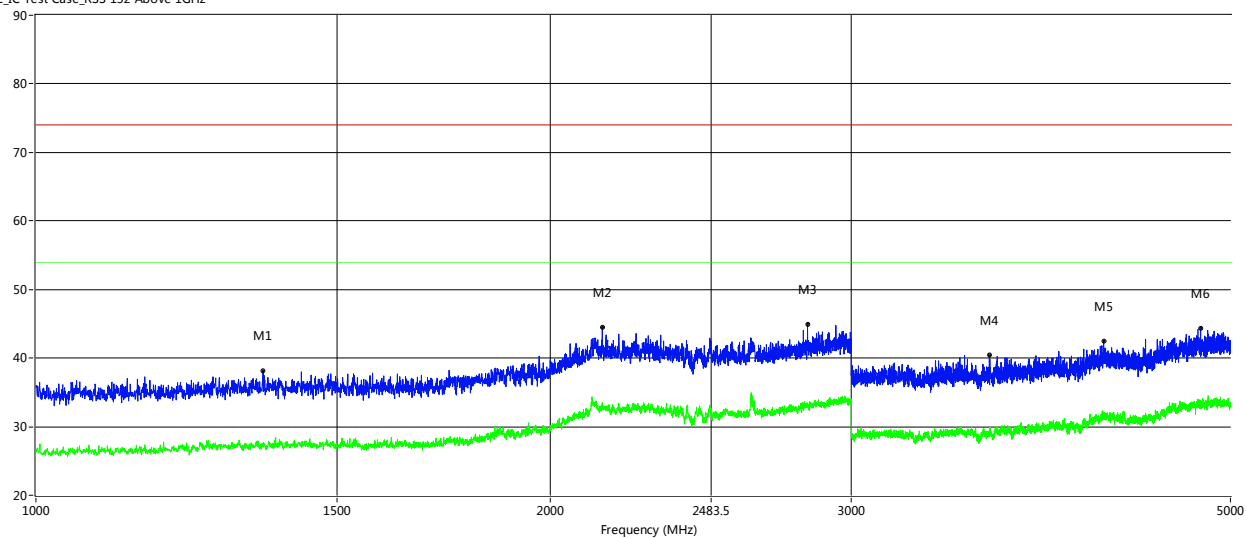


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1225.500	38.07	--	27.21	-1.06	74.0	--	54.0	-26.79	Horizontal	Pass
1759.000	38.77	--	27.99	0.03	74.0	--	54.0	-26.01	Horizontal	Pass
2126.500	43.84	--	33.33	4.24	74.0	--	54.0	-20.67	Horizontal	Pass
2920.000	44.92	--	33.69	5.72	74.0	--	54.0	-20.31	Horizontal	Pass
3995.500	42.06	--	31.11	-10.20	74.0	--	54.0	-22.89	Horizontal	Pass
4734.000	44.06	--	33.45	-7.27	74.0	--	54.0	-20.55	Horizontal	Pass



Vertical

RE_IC Test Case_RSS 132 Above 1GHz



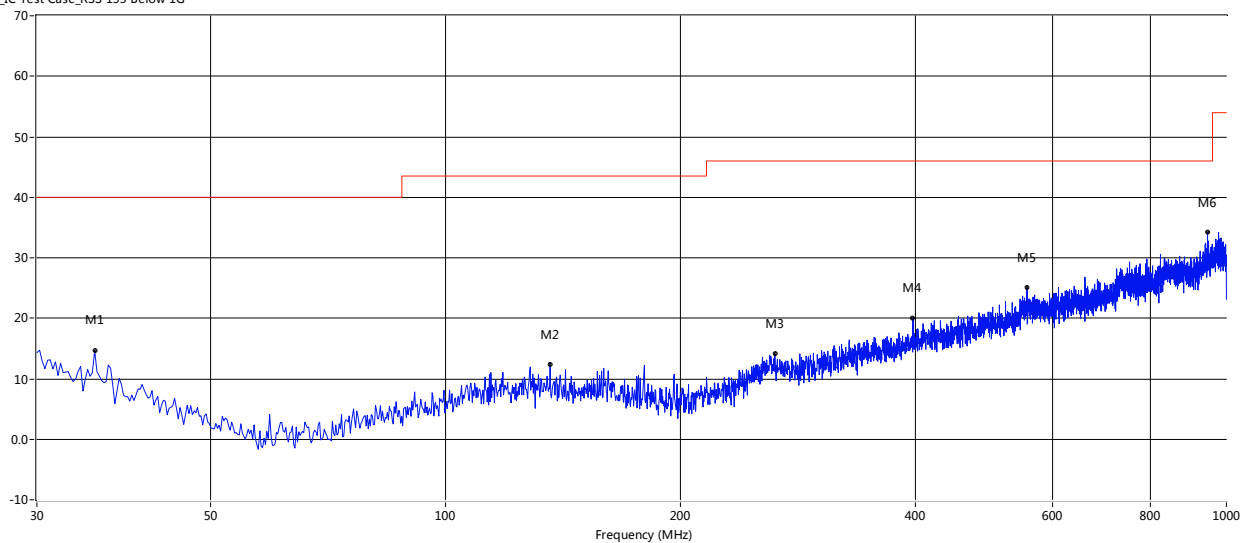
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1358.000	38.12	--	27.27	-0.77	74.0	--	54.0	-26.73	Vertical	Pass
2145.000	44.50	--	33.52	4.55	74.0	--	54.0	-20.48	Vertical	Pass
2828.500	44.96	--	32.85	5.46	74.0	--	54.0	-21.15	Vertical	Pass
3613.500	40.41	--	28.59	-11.91	74.0	--	54.0	-25.41	Vertical	Pass
4215.500	42.48	--	31.70	-9.05	74.0	--	54.0	-22.30	Vertical	Pass
4803.500	44.30	--	33.79	-6.96	74.0	--	54.0	-20.21	Vertical	Pass



GPRS 1900 (30MHz -1GHz):

Mid channel
Horizontal

RE_IC Test Case_RSS 133 Below 1G

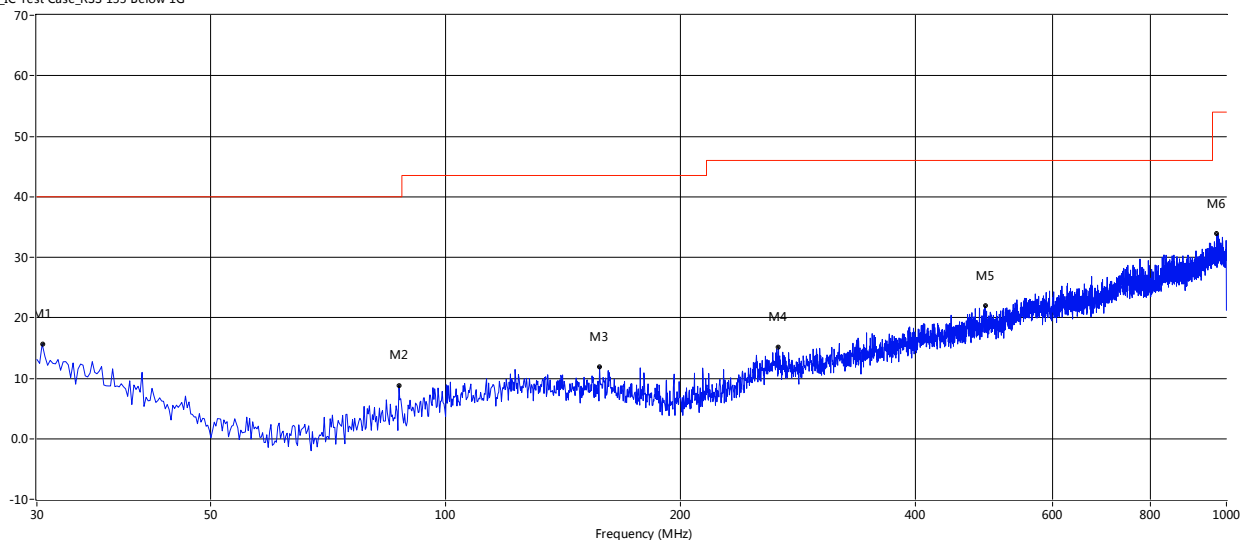


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
35.578	14.65	--	--	-14.81	--	40.0	--	-25.35	Horizontal	Pass
136.215	12.29	--	--	-16.65	--	43.5	--	-31.21	Horizontal	Pass
264.255	14.08	--	--	-12.78	--	46.0	--	-31.92	Horizontal	Pass
396.902	20.11	--	--	-8.95	--	46.0	--	-25.89	Horizontal	Pass
555.013	25.03	--	--	-3.09	--	46.0	--	-20.97	Horizontal	Pass
946.165	34.21	--	--	4.81	--	46.0	--	-11.79	Horizontal	Pass



Vertical

RE_IC Test Case_RSS 133 Below 1G



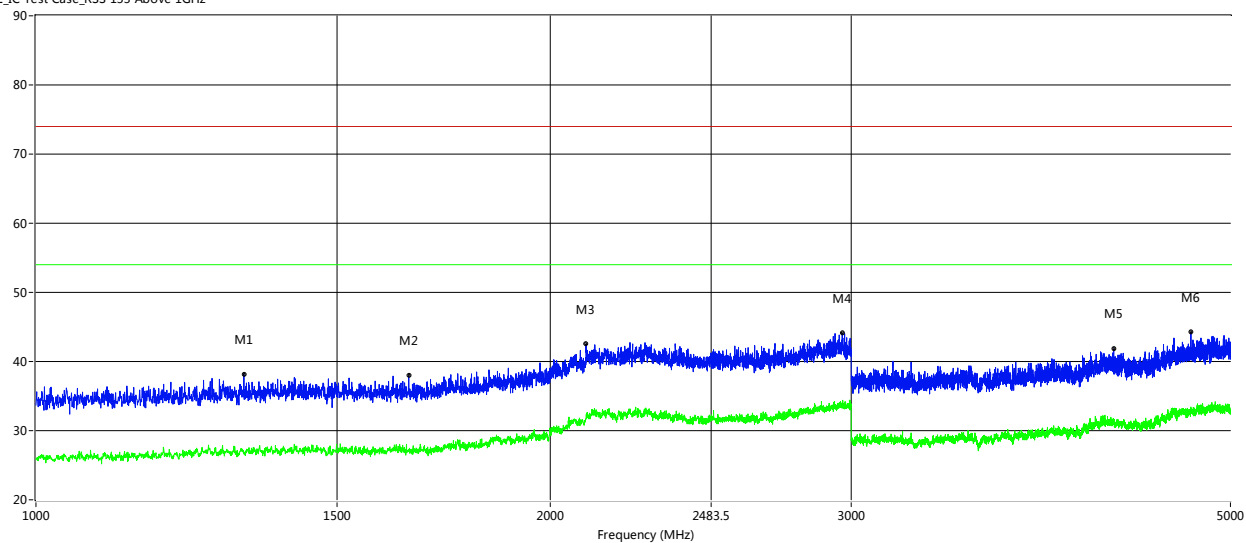
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
30.000	13.12	--	--	-12.01	--	40.0	--	-26.88	Vertical	Pass
87.230	8.84	--	--	-20.70	--	40.0	--	-31.16	Vertical	Pass
157.555	11.89	--	--	-17.25	--	43.5	--	-31.61	Vertical	Pass
267.165	15.17	--	--	-13.03	--	46.0	--	-30.83	Vertical	Pass
490.992	21.96	--	--	-5.84	--	46.0	--	-24.04	Vertical	Pass
972.355	33.85	--	--	5.51	--	54.0	--	-20.15	Vertical	Pass



GPRS 1900 (Above 1GHz):

Mid channel
Horizontal

RE_IC Test Case_RSS 133 Above 1GHz

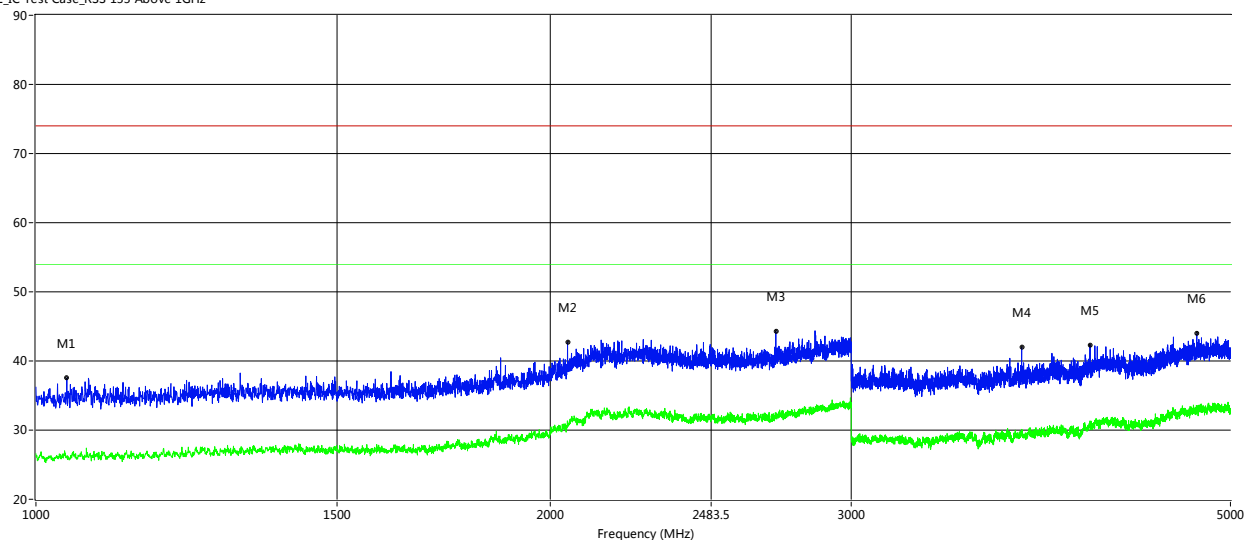


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1323.500	38.13	--	26.94	-0.87	74.0	--	54.0	-27.06	Horizontal	Pass
1653.000	37.94	--	27.06	-0.49	74.0	--	54.0	-26.94	Horizontal	Pass
2098.500	42.51	--	31.84	3.76	74.0	--	54.0	-22.16	Horizontal	Pass
2963.500	44.10	--	34.09	5.95	74.0	--	54.0	-19.91	Horizontal	Pass
4272.500	41.81	--	31.61	-8.97	74.0	--	54.0	-22.39	Horizontal	Pass
4741.500	44.22	--	32.71	-7.24	74.0	--	54.0	-21.29	Horizontal	Pass



Vertical

RE_IC Test Case_RSS 133 Above 1GHz



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1042.500	37.54	--	26.22	-1.85	74.0	--	54.0	-27.78	Vertical	Pass
2047.000	42.68	--	30.99	2.74	74.0	--	54.0	-23.01	Vertical	Pass
2710.000	44.28	--	31.96	4.58	74.0	--	54.0	-22.04	Vertical	Pass
3774.500	41.94	--	30.10	-11.15	74.0	--	54.0	-23.90	Vertical	Pass
4138.500	42.30	--	31.34	-9.57	74.0	--	54.0	-22.66	Vertical	Pass
4779.000	43.93	--	33.37	-7.07	74.0	--	54.0	-20.63	Vertical	Pass



APPENDIX-PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

*****END OF THE REPORT*****

