



FCC RADIO TEST REPORT

FCC ID : LHJ-FE4RW0110
Equipment : FE4RW0110
Brand Name : Continental
Model Name : FE4RW0110
Applicant : Continental Automotive Systems, Inc.
21440 W Lake Cook Rd., Deer Park, IL 60010, USA
Manufacturer : Continental Automotive Systems, Inc.
21440 W Lake Cook Rd., Deer Park, IL 60010, USA
Standard : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)

The product was received on Nov. 17, 2022 and testing was performed from Apr. 25, 2023 to May 15, 2023. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



Table of Contents

History of this test report..... 3

Summary of Test Result..... 4

1 General Description 6

 1.1 Product Feature of Equipment Under Test 6

 1.2 Product Specification of Equipment Under Test 6

 1.3 Modification of EUT 7

 1.4 Testing Location 8

 1.5 Applicable Standards 9

2 Test Configuration of Equipment Under Test 10

 2.1 Test Mode..... 10

 2.2 Connection Diagram of Test System 10

 2.3 Support Unit used in test configuration 11

 2.4 Frequency List of Low/Middle/High Channels 11

3 Conducted Test Result 12

 3.1 Measuring Instruments 12

 3.2 Conducted Output Power and ERP/EIRP 13

4 Radiated Test Items 14

 4.1 Measuring Instruments 14

 4.2 Test Setup 14

 4.3 Test Result of Radiated Test 15

 4.4 Field Strength of Spurious Radiation Measurement 16

5 List of Measuring Equipment..... 17

6 Measurement Uncertainty 18

Appendix A. Test Results of Conducted Test

Appendix B. Test Results of Radiated Test

Appendix C. Test Setup Photographs



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Pass	-
	§22.913 (a)(5)	Effective Radiated Power (GSM850) (WCDMA Band V)		
	§24.232 (c)	Equivalent Isotropic Radiated Power (GSM1900) (WCDMA Band II)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (WCDMA Band IV)		
-	§24.232 (d)	Peak-to-Average Ratio	Not Required	-
-	§2.1049 §22.917 (b) §24.238 (b) §27.53 (g)	Occupied Bandwidth (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Not Required	-
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Band Edge Measurement (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Not Required	-
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g)	Conducted Emission (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Not Required	-
-	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	Not Required	-
4.4	§2.1053 §22.917 (a) §24.238 (a) §27.53 (h)	Field Strength of Spurious Radiation (GSM850) (WCDMA Band V) (GSM1900) (WCDMA Band II) (WCDMA Band IV)	Pass	16.36 dB under the limit at 1697.000 MHz

Note:

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by adding host information. All the test cases were performed on original report which can be referred to Sporton Report Number FG150634-01A. Based on the original report, the test cases were verified.



Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturee who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Yun Huang

Report Producer: Michelle Chen



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	FE4RW0110
Brand Name	Continental
Model Name	FE4RW0110
FCC ID	LHJ-FE4RW0110
Installed into the Host	Equipment name: G12R400G1 Brand name: Continental Model name: G12R400G1
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/LTE/GNSS
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer.

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx Frequency	GSM/GPRS/EDGE: 850: 824.2 MHz ~ 848.8 MHz 1900: 1850.2 MHz ~ 1909.8 MHz WCDMA: Band V: 826.4 MHz ~ 846.6 MHz Band II: 1852.4 MHz ~ 1907.6 MHz Band IV: 1712.4 MHz ~ 1752.6 MHz
Rx Frequency	GSM/GPRS/EDGE: 850: 869.2 MHz ~ 893.8 MHz 1900: 1930.2 MHz ~ 1989.8 MHz WCDMA: Band V: 871.4 MHz ~ 891.6 MHz Band II: 1932.4 MHz ~ 1987.6 MHz Band IV: 2112.4 MHz ~ 2152.6 MHz
Maximum Output Power to Antenna	GSM/GPRS/EDGE: 850: 31.33 dBm 1900: 28.23 dBm WCDMA: Band V: 22.76 dBm Band II: 22.27 dBm Band IV: 22.26 dBm



Product Specification is subject to this standard	
Antenna Type / Gain	<p><Internal Antenna>: Internal Fix Antenna GSM/GPRS/EDGE: 850: 4.69 dBi 1900: 5.15 dBi WCDMA: Cellular Band: 4.69 dBi PCS Band: 5.15 dBi AWS Band: 4.82 dBi</p> <p><External Antenna>: External Sharkfin Antenna GSM/GPRS/EDGE: 850: -0.10 dBi 1900: 2.60 dBi WCDMA: Cellular Band: -0.10 dBi PCS Band: 2.60 dBi AWS Band: 2.40 dBi</p>
Type of Modulation	GSM / GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA: QPSK (Uplink) HSDPA: 64QAM (Downlink) HSUPA: QPSK (Uplink)

Remark:

1. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.
2. The manufacturer declared that signal attenuation of the connecting cable for GSM1900 between the transmitter and antenna is 1.70 dB.

1.3 Modification of EUT

No modifications made to the EUT during the testing.



1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No.
	TH03-HY
Test Engineer	Cotty Hsu
Temperature (°C)	22.1~22.8
Relative Humidity (%)	53~55

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.
	03CH11-HY (TAF Code: 3786)
Test Engineer	Yuan Lee, Fu Chen and Troye Hsieh
Temperature (°C)	19.9~22.4
Relative Humidity (%)	53.1~68.6
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786



1.5 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 22(H), 24(E), 27(L)
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Radiated emissions were investigated as following frequency range:

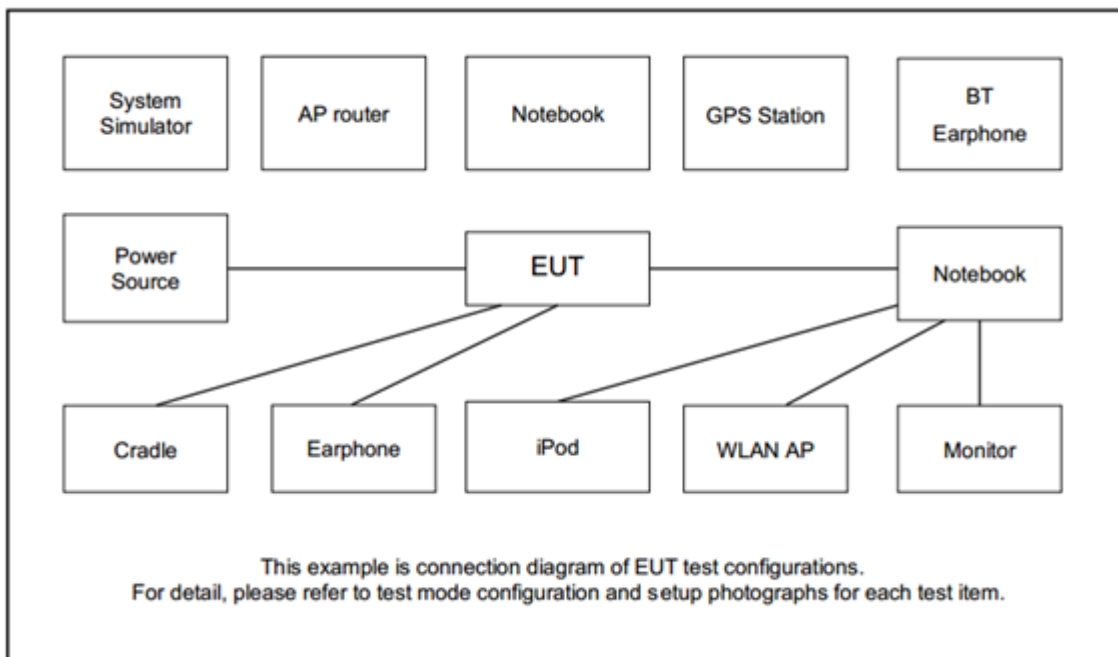
1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V
2. 30 MHz to 18000 MHz for WCDMA Band IV
3. 30 MHz to 19100 MHz for GSM1900 and WCDMA Band II

All modes, data rates and positions were investigated.

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

Test Modes		
Band	Radiated TCs	Conducted TCs
GSM850	<ul style="list-style-type: none"> ■ GPRS Class 8 Link ■ EDGE Class 8 Link 	<ul style="list-style-type: none"> ■ GPRS Class 8 Link ■ EDGE Class 8 Link
GSM1900	<ul style="list-style-type: none"> ■ GPRS Class 8 Link ■ EDGE Class 8 Link 	<ul style="list-style-type: none"> ■ GPRS Class 8 Link ■ EDGE Class 8 Link
WCDMA Band V	<ul style="list-style-type: none"> ■ RMC 12.2Kbps Link 	<ul style="list-style-type: none"> ■ RMC 12.2Kbps Link
WCDMA Band II	<ul style="list-style-type: none"> ■ RMC 12.2Kbps Link 	<ul style="list-style-type: none"> ■ RMC 12.2Kbps Link
WCDMA Band IV	<ul style="list-style-type: none"> ■ RMC 12.2Kbps Link 	<ul style="list-style-type: none"> ■ RMC 12.2Kbps Link

2.2 Connection Diagram of Test System





2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Metal Plate	N/A	N/A	N/A	N/A	N/A
2.	Adapter	TePoo	PT-WC-03	N/A	N/A	N/A
3.	Teddy Jr Load Box	Continental	N/A	N/A	N/A	N/A
4.	External Antenna	Molex	85597238	N/A	N/A	N/A
5.	Power Supply	GW Insteak	GE0821767	N/A	N/A	N/A
6.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m

2.4 Frequency List of Low/Middle/High Channels

Frequency List				
Band	Channel/Frequency(MHz)	Lowest	Middle	Highest
GSM850	Channel	128	189	251
	Frequency	824.2	836.4	848.8
WCDMA Band V	Channel	4132	4182	4233
	Frequency	826.4	836.4	846.6
GSM1900	Channel	512	661	810
	Frequency	1850.2	1880.0	1909.8
WCDMA Band II	Channel	9262	9400	9538
	Frequency	1852.4	1880.0	1907.6
WCDMA Band IV	Channel	1312	1413	1513
	Frequency	1712.4	1732.6	1752.6

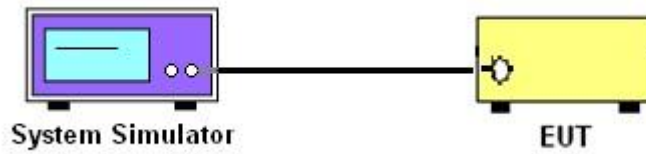
3 Conducted Test Result

3.1 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



3.1.3 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power and ERP/EIRP

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for GSM850 and WCDMA Band V

The EIRP of mobile transmitters must not exceed 2 Watts for GSM1900 and WCDMA Band II

The EIRP of mobile transmitters must not exceed 1 Watts for WCDMA Band IV

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port is connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select the lowest, middle, and the highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

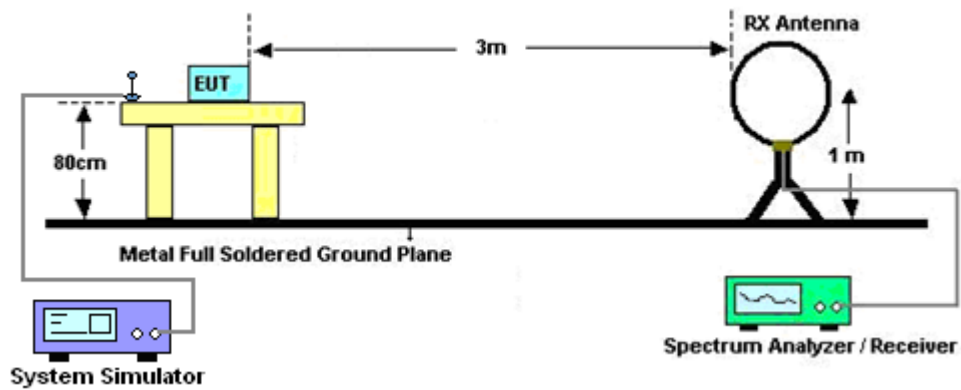
4 Radiated Test Items

4.1 Measuring Instruments

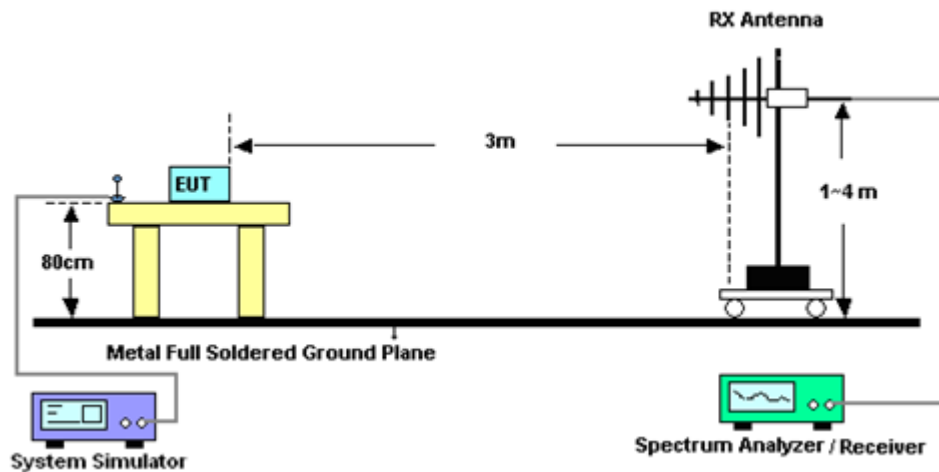
Please refer to the measuring equipment list in this test report.

4.2 Test Setup

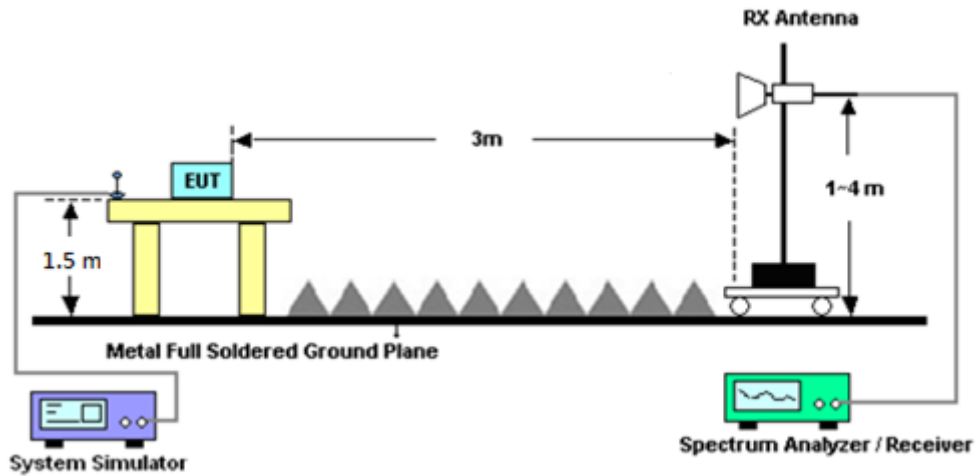
For radiated test below 30MHz



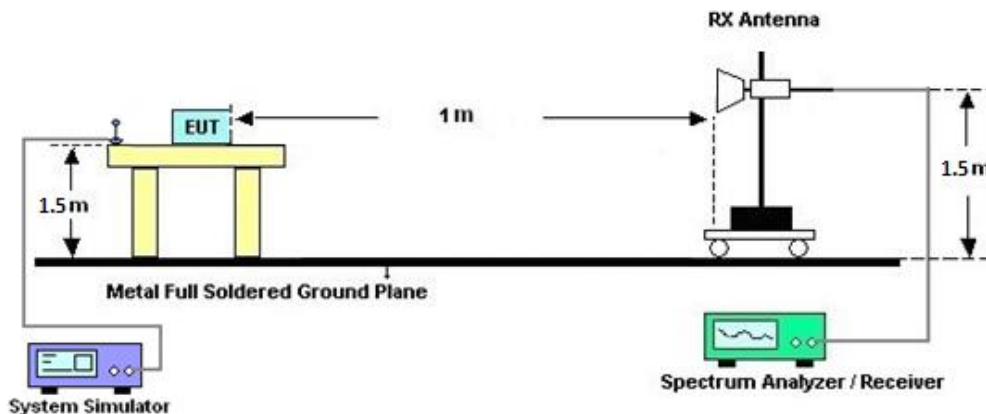
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT is placed on a rotatable wooden table 0.8 meters for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz above the ground.
2. The EUT is set 3 meters away from the receiving antenna, which is mounted on the antenna tower.
3. The table is rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1 MHz, VBW = 3 MHz, taking record of maximum spurious emission.
6. A horn antenna is substituted in place of the EUT and is driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Take the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency shall be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LOOP Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 20, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Sep. 19, 2023	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 08, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Oct. 07, 2023	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Aug. 24, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Aug. 23, 2023	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz~40GHz	Nov. 24, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Nov. 23, 2023	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 09, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Dec. 08, 2023	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 09, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Nov. 08, 2023	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055007	1GHz~18GHz	Jun. 15, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Jun. 14, 2023	Radiation (03CH11-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 28, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Jun. 27, 2023	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 07, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Oct. 06, 2023	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 18, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Oct. 17, 2023	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Apr. 25, 2023 ~ Apr. 27, 2023	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Apr. 25, 2023 ~ Apr. 27, 2023	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Apr. 25, 2023 ~ Apr. 27, 2023	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Apr. 25, 2023 ~ Apr. 27, 2023	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz~40GHz	Mar. 07, 2023	Apr. 25, 2023 ~ Apr. 27, 2023	Mar. 06, 2024	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801595/2	30MHz~40GHz	Mar. 07, 2023	Apr. 25, 2023 ~ Apr. 27, 2023	Mar. 06, 2024	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 07, 2023	Apr. 25, 2023 ~ Apr. 27, 2023	Mar. 06, 2024	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	30M~40G	Mar. 07, 2023	Apr. 25, 2023 ~ Apr. 27, 2023	Mar. 06, 2024	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60SS	SN3	3GHz High Pass Filter	Sep. 12, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Sep. 11, 2023	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-900-1000-15000-60SS	SN12	1GHz High Pass Filter	Sep. 12, 2022	Apr. 25, 2023 ~ Apr. 27, 2023	Sep. 11, 2023	Radiation (03CH11-HY)
Radio Communication Analyzer	Anritsu	MT8821C	6262025353	LTE FDD/TDD LTE-2CC DLCA/ULCA	Oct. 13, 2022	May 15, 2023	Oct. 12, 2023	Conducted (TH03-HY)



6 Measurement Uncertainty

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.15 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.41 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.45 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) & ERP / EIRP

GSM850 Maximum Average Power [dBm] (GT - LC = 4.69 dB)					
Channel	128	189	251	ERP (dBm)	ERP (W)
Frequency	824.2	836.4	848.8		
GPRS class 8	31.31	31.33	31.17	33.87	2.4378
GPRS class 10	29.87	29.67	29.63		
GPRS class 11	27.71	27.57	27.52		
GPRS class 12	26.70	26.55	26.60		
EGPRS class 8	25.20	25.11	25.03	27.74	0.5943
EGPRS class 10	23.77	23.83	23.88		
EGPRS class 11	22.88	22.68	22.72		
EGPRS class 12	21.82	21.67	21.75		
Limit	ERP < 7W			Result	Pass

GSM1900 Maximum Average Power [dBm] (GT - LC = 3.45 dB)					
Channel	512	661	810	EIRP (dBm)	EIRP (W)
Frequency	1850.2	1880	1909.8		
GPRS class 8	27.89	28.08	28.23	31.68	1.4723
GPRS class 10	26.42	26.52	26.68		
GPRS class 11	24.34	24.39	24.55		
GPRS class 12	23.32	23.40	23.63		
EGPRS class 8	23.58	23.77	23.81	27.26	0.5321
EGPRS class 10	22.36	22.38	22.56		
EGPRS class 11	21.42	21.09	21.31		
EGPRS class 12	20.31	20.14	20.13		
Limit	EIRP < 2W			Result	Pass



WCDMA Band V Maximum Average Power [dBm] (GT - LC = 4.69 dB)					
Channel	4132	4182	4233	ERP (dBm)	ERP (W)
Frequency	826.4	836.4	846.6		
RMC 12.2K	22.76	22.74	22.60	25.30	0.3388
HSDPA Subtest-1	21.75	21.80	21.29		
HSDPA Subtest-2	21.26	21.73	21.71		
HSDPA Subtest-3	21.20	21.17	21.62		
HSDPA Subtest-4	21.56	21.08	21.09		
HSUPA Subtest-1	21.80	21.71	21.60		
HSUPA Subtest-2	19.79	19.66	19.61		
HSUPA Subtest-3	20.77	20.73	20.64		
HSUPA Subtest-4	19.80	19.69	19.57		
HSUPA Subtest-5	21.80	21.70	21.70		
Limit	ERP < 7W				

WCDMA Band II Maximum Average Power [dBm] (GT - LC = 3.45 dB)					
Channel	9262	9400	9538	EIRP (dBm)	EIRP (W)
Frequency	1852.4	1880	1907.6		
RMC 12.2K	22.07	22.22	22.27	25.72	0.3733
HSDPA Subtest-1	21.07	21.20	21.32		
HSDPA Subtest-2	21.02	21.18	21.27		
HSDPA Subtest-3	20.54	20.68	20.75		
HSDPA Subtest-4	20.51	20.66	20.78		
HSUPA Subtest-1	21.05	21.22	21.31		
HSUPA Subtest-2	19.03	19.22	19.28		
HSUPA Subtest-3	20.09	20.26	20.28		
HSUPA Subtest-4	19.03	19.19	19.32		
HSUPA Subtest-5	21.00	21.20	21.30		
Limit	EIRP < 2W				

WCDMA Band IV Maximum Average Power [dBm] (GT - LC = 4.82 dB)					
Channel	1312	1413	1513	EIRP (dBm)	EIRP (W)
Frequency	1712.4	1732.6	1752.6		
RMC 12.2K	22.02	22.24	22.26	27.08	0.5105
HSDPA Subtest-1	20.88	21.07	21.03		
HSDPA Subtest-2	20.85	21.04	21.04		
HSDPA Subtest-3	20.41	20.56	20.60		
HSDPA Subtest-4	20.48	20.49	20.53		
HSUPA Subtest-1	20.88	21.07	21.07		
HSUPA Subtest-2	18.86	19.05	19.10		
HSUPA Subtest-3	19.80	19.97	20.02		
HSUPA Subtest-4	18.81	19.05	19.08		
HSUPA Subtest-5	20.80	21.00	21.10		
Limit	EIRP < 1W				



Appendix B. Test Results of Radiated Test

<External Antenna>

GPRS 850

GPRS 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-46.77	-13	-33.77	-56.12	-50.23	3.88	9.49	H
	2472	-47.31	-13	-34.31	-60.87	-50.9	4.80	10.54	H
	3296	-48.70	-13	-35.70	-64.54	-53.17	5.55	12.18	H
	4121	-49.80	-13	-36.80	-68.49	-54.11	6.28	12.74	H
									H
									H
									H
	1648	-39.14	-13	-26.14	-48.62	-42.6	3.88	9.49	V
	2472	-44.97	-13	-31.97	-58.88	-48.56	4.80	10.54	V
	3296	-39.99	-13	-26.99	-56.31	-44.46	5.55	12.18	V
	4121	-45.54	-13	-32.54	-64.08	-49.85	6.28	12.74	V
									V
									V
									V
Middle	1672	-46.26	-13	-33.26	-55.72	-49.83	3.91	9.63	H
	2509	-51.05	-13	-38.05	-64.58	-54.72	4.84	10.65	H
	3345	-46.23	-13	-33.23	-62.05	-50.86	5.60	12.38	H
	4182	-53.02	-13	-40.02	-71.85	-57.35	6.32	12.80	H
									H
									H
									H
	1672	-43.12	-13	-30.12	-52.7	-46.69	3.91	9.63	V
	2509	-46.12	-13	-33.12	-60.06	-49.79	4.84	10.65	V
	3345	-40.17	-13	-27.17	-56.49	-44.8	5.60	12.38	V
	4182	-49.16	-13	-36.16	-67.84	-53.49	6.32	12.80	V
									V
									V
									V



Highest	1697	-44.13	-13	-31.13	-53.71	-47.82	3.94	9.78	H
	2546	-44.57	-13	-31.57	-58.18	-48.42	4.87	10.88	H
	3395	-48.16	-13	-35.16	-63.95	-52.86	5.64	12.49	H
	4244	-55.42	-13	-42.42	-74.37	-59.71	6.36	12.80	H
									H
									H
									H
	1697	-40.79	-13	-27.79	-50.49	-44.48	3.94	9.78	V
	2546	-42.96	-13	-29.96	-56.83	-46.81	4.87	10.88	V
	3395	-43.54	-13	-30.54	-59.85	-48.24	5.64	12.49	V
	4244	-49.95	-13	-36.95	-68.9	-54.24	6.36	12.80	V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA 850

WCDMA 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1653	-61.20	-13	-48.20	-70.58	-64.68	3.89	9.52	H
	2479	-60.27	-13	-47.27	-73.81	-63.87	4.81	10.56	H
	3306	-59.06	-13	-46.06	-74.91	-63.57	5.56	12.22	H
									H
									H
									H
									H
	1653	-57.99	-13	-44.99	-67.48	-61.47	3.89	9.52	V
	2479	-59.54	-13	-46.54	-73.45	-63.14	4.81	10.56	V
	3306	-58.23	-13	-45.23	-74.56	-62.74	5.56	12.22	V
									V
									V
									V
									V
Middle	1673	-58.17	-13	-45.17	-67.63	-61.75	3.91	9.64	H
	2509	-59.92	-13	-46.92	-73.45	-63.59	4.84	10.65	H
	3346	-58.70	-13	-45.70	-74.52	-63.34	5.60	12.38	H
									H
									H
									H
									H
	1673	-56.43	-13	-43.43	-66.01	-60.01	3.91	9.64	V
	2509	-59.17	-13	-46.17	-73.11	-62.84	4.84	10.65	V
	3346	-58.20	-13	-45.20	-74.52	-62.84	5.60	12.38	V
									V
									V
									V
									V
								V	



Highest	1693	-59.84	-13	-46.84	-69.42	-63.51	3.93	9.76	H
	2540	-60.00	-13	-47.00	-73.6	-63.82	4.87	10.84	H
	3386	-59.11	-13	-46.11	-74.9	-63.8	5.64	12.47	H
									H
									H
									H
									H
	1693	-58.49	-13	-45.49	-68.16	-62.16	3.93	9.76	V
	2540	-59.35	-13	-46.35	-73.23	-63.17	4.87	10.84	V
	3386	-58.12	-13	-45.12	-74.43	-62.81	5.64	12.47	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GPRS 1900

GPRS 1900									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700	-56.71	-13	-43.71	-74.12	-63.09	5.92	12.30	H
	5550	-54.81	-13	-41.81	-77.4	-60.37	7.74	13.30	H
	7400	-49.30	-13	-36.30	-78.54	-51.78	8.72	11.20	H
									H
									H
									H
									H
	3700	-56.63	-13	-43.63	-74.09	-63.01	5.92	12.30	V
	5550	-54.42	-13	-41.42	-77.31	-59.98	7.74	13.30	V
	7400	-49.63	-13	-36.63	-78.78	-52.11	8.72	11.20	V
									V
									V
									V
									V
Middle	3760	-56.59	-13	-43.59	-74.11	-62.91	5.98	12.30	H
	5640	-54.45	-13	-41.45	-76.94	-60.12	7.81	13.48	H
	7520	-49.00	-13	-36.00	-77.89	-51.51	8.77	11.28	H
									H
									H
									H
									H
	3760	-56.83	-13	-43.83	-74.45	-63.15	5.98	12.30	V
	5640	-53.79	-13	-40.79	-76.74	-59.46	7.81	13.48	V
	7520	-49.02	-13	-36.02	-78	-51.53	8.77	11.28	V
									V
									V
									V
									V



Highest	3819	-56.98	-13	-43.98	-74.7	-63.21	6.03	12.26	H
	5729	-54.23	-13	-41.23	-76.92	-59.73	7.89	13.38	H
	7639	-49.08	-13	-36.08	-77.61	-51.93	8.82	11.68	H
									H
									H
									H
									H
	3819	-56.94	-13	-43.94	-74.77	-63.17	6.03	12.26	V
	5729	-53.67	-13	-40.67	-76.79	-59.17	7.89	13.38	V
	7639	-48.25	-13	-35.25	-77.35	-51.1	8.82	11.68	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA 1900

WCDMA 1900									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3704	-56.78	-13	-43.78	-74.2	-63.15	5.93	12.30	H
	5557	-48.98	-13	-35.98	-71.55	-54.55	7.75	13.31	H
	7409	-48.50	-13	-35.50	-77.72	-50.98	8.72	11.20	H
									H
									H
									H
									H
	3704	-56.75	-13	-43.75	-74.22	-63.12	5.93	12.30	V
	5557	-53.58	-13	-40.58	-76.47	-59.15	7.75	13.31	V
	7409	-48.75	-13	-35.75	-77.87	-51.23	8.72	11.20	V
									V
									V
									V
									V
Middle	3760	-56.95	-13	-43.95	-74.47	-63.27	5.98	12.30	H
	5640	-54.10	-13	-41.10	-76.59	-59.77	7.81	13.48	H
	7520	-48.44	-13	-35.44	-77.33	-50.95	8.77	11.28	H
									H
									H
									H
									H
	3760	-56.58	-13	-43.58	-74.2	-62.9	5.98	12.30	V
	5640	-53.54	-13	-40.54	-76.49	-59.21	7.81	13.48	V
	7520	-48.41	-13	-35.41	-77.39	-50.92	8.77	11.28	V
									V
									V
									V
									V



Highest	3815	-56.72	-13	-43.72	-74.4	-62.96	6.03	12.27	H
	5722	-53.81	-13	-40.81	-76.49	-59.34	7.88	13.41	H
	7630	-46.67	-13	-33.67	-75.18	-49.51	8.82	11.66	H
									H
									H
									H
									H
	3815	-53.81	-13	-40.81	-71.61	-60.05	6.03	12.27	V
	5722	-53.51	-13	-40.51	-76.62	-59.04	7.88	13.41	V
	7630	-48.03	-13	-35.03	-77.14	-50.87	8.82	11.66	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA 1700

WCDMA 1700									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3424	-58.32	-13	-45.32	-74.93	-65.15	5.67	12.50	H
	5137	-55.32	-13	-42.32	-76.63	-60.25	7.55	12.47	H
	6849	-50.66	-13	-37.66	-77.94	-54.42	8.44	12.20	H
									H
									H
									H
									H
	3424	-57.81	-13	-44.81	-74.89	-64.64	5.67	12.50	V
	5137	-55.16	-13	-42.16	-76.47	-60.09	7.55	12.47	V
	6849	-50.58	-13	-37.58	-77.85	-54.34	8.44	12.20	V
									V
									V
									V
									V
Middle	3465	-57.87	-13	-44.87	-74.83	-64.63	5.71	12.47	H
	5197	-55.82	-13	-42.82	-77.34	-61.12	7.57	12.88	H
	6930	-50.53	-13	-37.53	-77.43	-53.97	8.50	11.94	H
									H
									H
									H
									H
	3465	-57.59	-13	-44.59	-74.94	-64.35	5.71	12.47	V
	5197	-55.66	-13	-42.66	-77.17	-60.96	7.57	12.88	V
	6930	-49.79	-13	-36.79	-77.32	-53.23	8.50	11.94	V
									V
									V
									V
									V



Highest	3505	-57.55	-13	-44.55	-74.81	-64.18	5.74	12.37	H
	5257	-55.67	-13	-42.67	-77.59	-61.3	7.60	13.23	H
	7010	-50.01	-13	-37.01	-76.66	-53.3	8.55	11.84	H
									H
									H
									H
									H
	3505	-57.01	-13	-44.01	-74.57	-63.64	5.74	12.37	V
	5257	-55.76	-13	-42.76	-77.63	-61.39	7.60	13.23	V
	7010	-48.98	-13	-35.98	-76.76	-52.27	8.55	11.84	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



<Internal Antenna>

GPRS 850

GPRS 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-47.28	-13	-34.28	-56.63	-50.74	3.88	9.49	H
	2472	-45.44	-13	-32.44	-59	-49.03	4.80	10.54	H
	3296	-58.59	-13	-45.59	-74.43	-63.06	5.55	12.18	H
									H
									H
									H
									H
	1648	-47.01	-13	-34.01	-56.49	-50.47	3.88	9.49	V
	2472	-35.61	-13	-22.61	-49.52	-39.2	4.80	10.54	V
	3296	-58.06	-13	-45.06	-74.38	-62.53	5.55	12.18	V
									V
									V
									V
									V
Middle	1672	-44.35	-13	-31.35	-53.81	-47.92	3.91	9.63	H
	2509	-47.70	-13	-34.70	-61.23	-51.37	4.84	10.65	H
	3345	-58.60	-13	-45.60	-74.72	-63.23	5.60	12.38	H
									H
									H
									H
									H
	1672	-46.45	-13	-33.45	-56.03	-50.02	3.91	9.63	V
	2509	-40.47	-13	-27.47	-54.41	-44.14	4.84	10.65	V
	3345	-74.84	-13	-61.84	-74.84	-79.47	5.60	12.38	V
									V
									V
									V
									V
								V	



Highest	1697	-31.09	-13	-18.09	-40.67	-34.78	3.94	9.78	H
	2546	-47.51	-13	-34.51	-61.12	-51.36	4.87	10.88	H
	3395	-56.82	-13	-43.82	-72.61	-61.52	5.64	12.49	H
									H
									H
									H
									H
	1697	-29.36	-13	-16.36	-39.06	-33.05	3.94	9.78	V
	2546	-43.52	-13	-30.52	-57.39	-47.37	4.87	10.88	V
	3395	-57.29	-13	-44.29	-73.6	-61.99	5.64	12.49	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA 850

WCDMA 850									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1652	-62.98	-13	-49.98	-72.35	-66.46	3.89	9.51	H
	2479	-59.95	-13	-46.95	-73.49	-63.55	4.81	10.56	H
	3305	-58.69	-13	-45.69	-74.54	-63.2	5.56	12.22	H
									H
									H
									H
									H
	1652	-63.14	-13	-50.14	-72.64	-66.62	3.89	9.51	V
	2479	-58.25	-13	-45.25	-72.16	-61.85	4.81	10.56	V
	3305	-57.93	-13	-44.93	-74.26	-62.44	5.56	12.22	V
									V
									V
									V
									V
Middle	1672	-60.51	-13	-47.51	-69.97	-64.08	3.91	9.63	H
	2509	-60.04	-13	-47.04	-73.57	-63.71	4.84	10.65	H
	3345	-58.39	-13	-45.39	-74.21	-63.02	5.60	12.38	H
									H
									H
									H
									H
	1672	-59.16	-13	-46.16	-68.74	-62.73	3.91	9.63	V
	2509	-59.28	-13	-46.28	-73.22	-62.95	4.84	10.65	V
	3345	-57.67	-13	-44.67	-74.08	-62.3	5.60	12.38	V
									V
									V
									V
									V



Highest	1693	-54.25	-13	-41.25	-63.8	-57.92	3.93	9.76	H
	2539	-59.55	-13	-46.55	-73.15	-63.37	4.87	10.83	H
	3386	-58.27	-13	-45.27	-74.07	-62.96	5.64	12.47	H
									H
									H
									H
									H
	1693	-52.28	-13	-39.28	-61.95	-55.95	3.93	9.76	V
	2539	-57.59	-13	-44.59	-71.47	-61.41	4.87	10.83	V
	3386	-57.75	-13	-44.75	-74.07	-62.44	5.64	12.47	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



GPRS 1900

GPRS 1900									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3700	-57.04	-13	-44.04	-74.45	-63.42	5.92	12.30	H
	5550	-54.40	-13	-41.40	-76.99	-59.96	7.74	13.30	H
	7400	-49.49	-13	-36.49	-78.73	-51.97	8.72	11.20	H
									H
									H
									H
									H
	3700	-56.97	-13	-43.97	-74.43	-63.35	5.92	12.30	V
	5550	-54.21	-13	-41.21	-77.1	-59.77	7.74	13.30	V
	7400	-49.45	-13	-36.45	-78.6	-51.93	8.72	11.20	V
									V
									V
									V
									V
Middle	3760	-57.21	-13	-44.21	-74.73	-63.53	5.98	12.30	H
	5640	-54.62	-13	-41.62	-77.11	-60.29	7.81	13.48	H
	7520	-49.39	-13	-36.39	-78.28	-51.9	8.77	11.28	H
									H
									H
									H
									H
	3760	-58.68	-13	-45.68	-74.6	-65.00	5.98	12.30	V
	5640	-54.25	-13	-41.25	-77.2	-59.92	7.81	13.48	V
	7520	-48.98	-13	-35.98	-77.96	-51.49	8.77	11.28	V
									V
									V
									V
									V



Highest	3819	-57.28	-13	-44.28	-75	-63.51	6.03	12.26	H
	5729	-54.60	-13	-41.60	-77.29	-60.1	7.89	13.38	H
	7639	-49.19	-13	-36.19	-77.72	-52.04	8.82	11.68	H
									H
									H
									H
									H
	3819	-57.05	-13	-44.05	-74.88	-63.28	6.03	12.26	V
	5729	-54.01	-13	-41.01	-77.13	-59.51	7.89	13.38	V
	7639	-48.51	-13	-35.51	-77.61	-51.36	8.82	11.68	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA 1900

WCDMA 1900									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3704	-56.94	-13	-43.94	-74.36	-63.31	5.93	12.30	H
	5557	-54.57	-13	-41.57	-77.14	-60.14	7.75	13.31	H
	7409	-49.28	-13	-36.28	-78.5	-51.76	8.72	11.20	H
									H
									H
									H
									H
	3704	-56.88	-13	-43.88	-74.35	-63.25	5.93	12.30	V
	5557	-54.13	-13	-41.13	-77.02	-59.7	7.75	13.31	V
	7409	-49.07	-13	-36.07	-78.19	-51.55	8.72	11.20	V
									V
									V
									V
									V
Middle	3760	-56.86	-13	-43.86	-74.38	-63.18	5.98	12.30	H
	5640	-54.48	-13	-41.48	-76.97	-60.15	7.81	13.48	H
	7520	-49.30	-13	-36.30	-78.19	-51.81	8.77	11.28	H
									H
									H
									H
									H
	3760	-57.09	-13	-44.09	-74.71	-63.41	5.98	12.30	V
	5640	-48.18	-13	-35.18	-76.8	-53.85	7.81	13.48	V
	7520	-48.97	-13	-35.97	-77.95	-51.48	8.77	11.28	V
									V
									V
									V
									V



Highest	3815	-56.94	-13	-43.94	-74.62	-63.18	6.03	12.27	H
	5722	-54.64	-13	-41.64	-77.32	-60.17	7.88	13.41	H
	7630	-49.45	-13	-36.45	-77.96	-52.29	8.82	11.66	H
									H
									H
									H
									H
	3815	-56.86	-13	-43.86	-74.66	-63.1	6.03	12.27	V
	5722	-54.71	-13	-41.71	-77.82	-60.24	7.88	13.41	V
	7630	-48.94	-13	-35.94	-78.05	-51.78	8.82	11.66	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



WCDMA 1700

WCDMA 1700									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3424	-58.03	-13	-45.03	-74.64	-64.86	5.67	12.50	H
	5137	-56.44	-13	-43.44	-77.75	-61.37	7.55	12.47	H
	6849	-51.10	-13	-38.10	-78.38	-54.86	8.44	12.20	H
									H
									H
									H
									H
	3424	-57.76	-13	-44.76	-74.84	-64.59	5.67	12.50	V
	5137	-56.25	-13	-43.25	-77.56	-61.18	7.55	12.47	V
	6849	-50.83	-13	-37.83	-78.1	-54.59	8.44	12.20	V
									V
									V
									V
									V
Middle	3465	-58.08	-13	-45.08	-75.04	-64.84	5.71	12.47	H
	5197	-56.52	-13	-43.52	-78.04	-61.82	7.57	12.88	H
	6930	-50.63	-13	-37.63	-77.53	-54.07	8.50	11.94	H
									H
									H
									H
									H
	3465	-57.29	-13	-44.29	-74.64	-64.05	5.71	12.47	V
	5197	-56.14	-13	-43.14	-77.65	-61.44	7.57	12.88	V
	6930	-50.40	-13	-37.40	-77.93	-53.84	8.50	11.94	V
									V
									V
									V
									V



Highest	3505	-57.62	-13	-44.62	-74.88	-64.25	5.74	12.37	H
	5257	-56.46	-13	-43.46	-78.38	-62.09	7.60	13.23	H
	7010	-50.39	-13	-37.39	-77.04	-53.68	8.55	11.84	H
									H
									H
									H
									H
	3505	-57.21	-13	-44.21	-74.77	-63.84	5.74	12.37	V
	5257	-56.55	-13	-43.55	-78.42	-62.18	7.60	13.23	V
	7010	-49.79	-13	-36.79	-77.57	-53.08	8.55	11.84	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.