

Report No. : FG322304-07A

FCC RF Test Report

APPLICANT : Motorola Solutions, Inc.

EQUIPMENT: Touch Computer

BRAND NAME : Motorola

MODEL NAME : TC55AH

FCC ID : UZ7TC55AH

STANDARD : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)

CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Jun. 02, 2013 and completely tested on Jul. 02, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Louis Wu / Manager

Louis Win

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

SPORTON INTERNATIONAL INC.

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Testing Laboratory
1190



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE	
FG322304-07A	Rev. 01	Initial issue of report	Aug. 14, 2013	

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.4)	Conducted Output Power	Reporting Only	PASS	-
3.2	§24.232(d) §27.50(d)(5)	RSS-132 (5.4) RSS-133(6.4) RSS-139 (6.4)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
3.3	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.3	§27.50(d)(4)	RSS-139 (6.4) SRSP-513(5.1.2)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.4	§2.1049 §22.917(b) §24.238(b)	RSS-GEN(4.6.1) RSS-132 (3.1) RSS-133(3.1) RSS-139 (3.1)	Occupied Bandwidth	Reporting Only	PASS	-
3.5	§2.1049 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.5)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) RSS-132 (5.5)		Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a) §27.53(h)	RSS-132 (5.5) RSS-133 (6.5) RSS-139 (6.5)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 25.13 dB at 7520.000 MHz
3.8	§2.1055 §22.355 RSS-132 (5.3) RSS-133 (6.3)		Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

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1 General Description

1.1 Applicant

Motorola Solutions, Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.2 Manufacturer

Motorola Solutions, Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.3 Feature of Equipment Under Test

Product Feature						
Equipment	Touch Computer					
Brand Name	Motorola					
Model Name	TC55AH					
FCC ID	UZ7TC55AH					
Sample 1	EUT with Scanner					
Sample 2	EUT without Scanner					
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE					
HW Version	DV1					
SW Version	Android 4.1.2					
FW Version	BSP 1.27					
EUT Stage	Identical Prototype					

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard							
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz						
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band IV: 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz						
Maximum Output Power to Antenna	GSM850: 33.44 dBm GSM1900: 30.40 dBm WCDMA Band V: 24.35 dBm WCDMA Band IV: 24.21 dBm WCDMA Band II: 24.40 dBm						
Antenna Type	Monopole Antenna						
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink)						

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

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1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (%, Hz, ppm)	Emission Designator
Part 22	GSM850 GSM	GMSK	1.0965	0.04 ppm	250KGXW
Part 22	GSM850 EDGE class 8	8PSK	0.2286	0.05 ppm	244KG7W
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.1517	0.01 ppm	4M16F9W
Part 24	GSM1900 GSM	GMSK	1.4256	0.01 ppm	250KGXW
Part 24	GSM1900 EDGE class 8	8PSK	0.4395	0.03 ppm	252KG7W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.3540	0.01 ppm	4M20F9W
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.4246	0.01 ppm	4M20F9W

1.7 Testing Site

Test Site	SPORTON INTERNATIONAL INC.						
	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park,						
Test Site Location	Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.						
lest Site Location	TEL: +886-3-327-3456						
	FAX: +886-3-328-4978						
Took Site No.	Sporton Site No.		FCC/IC Registration No.				
Test Site No.	TH02-HY	03CH07-HY	722060/4086B-1				

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1.8 Applied Standards

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

- 47 CFR Part 2, 22(H), 24(E), 27(L)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01

Remark:

- 1. All test items were verified and recorded according to the standards and without any deviation during the test
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

- 1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
- 2. 30 MHz to 19000 MHz for WCDMA Band IV.
- 3. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

	Test Modes								
Band	Radiated TCs	Conducted TCs							
GSM 850	■ GSM Link for Sample 1 with Battery 2	■ GSM Link							
GSIVI 650	■ EDGE class 8 Link for Sample 1 with Battery 2	■ EDGE class 8 Link							
	■ GSM Link for Sample 1 with Battery 2	■ GSM Link							
CSM 4000	■ EDGE class 8 Link for Sample 1 with Battery 2	■ EDGE class 8 Link							
GSM 1900	■ GSM Link for Sample 1 with Battery 1								
	■ GSM Link for Sample 2 with Battery 2								
WCDMA Band V	■ RMC 12.2Kbps Link for Sample 1 with Battery 2	■ RMC 12.2Kbps Link							
WCDMA Band	■ RMC 12.2Kbps Link for Sample 1 with Battery 2								
IV	■ RMC 12.2Kbps Link for Sample 1 with Battery 1	■ RMC 12.2Kbps Link							
	■ RMC 12.2Kbps Link for Sample 2 with Battery 2								
WCDMA Band	■ RMC 12.2Kbps Link for Sample 1 with Battery 2	■ RMC 12.2Kbps Link							

Note:

- The maximum power levels are GSM mode for GMSK link, EDGE multi-slot class 8 mode for 8PSK link, RMC 12.2Kbps mode for WCDMA band V, RMC 12.2Kbps mode for WCDMA band IV, and RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.
- 2. Because there are individual antennas for each WWAN, WLAN, and Bluetooth, the co-location test modes are not required.

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The conducted power tables are as follows:

Conducted Power (*Unit: dBm)									
Band		GSM850		GSM1900					
Channel	128	189	251	512 661		810			
Frequency	824.2	836.4	848.8	1850.2	1880	1909.8			
GSM	33.28	33.35	33.44	30.20	30.08	30.40			
GPRS class 8	33.26	33.37	33.43	30.19	30.08	30.39			
GPRS class 10	30.26	30.28	30.44	29.82	29.44	29.70			
GPRS class 11	30.11	30.15	30.34	29.64	29.26	29.48			
GPRS class 12	30.72	30.58	30.86	29.34	29.27	29.49			
EGPRS class 8	26.80	26.76	<mark>26.90</mark>	<mark>25.66</mark>	25.47	25.50			
EGPRS class 10	26.68	26.64	26.78	25.60	25.27	25.41			
EGPRS class 11	26.48	26.46	26.65	25.42	25.07	25.17			
EGPRS class 12	26.36	26.31	26.53	25.17	24.84	24.96			

	Conducted Power (*Unit: dBm)										
Band WCDMA Band V				WCDMA Band II				WCDMA Band IV			
Tx Channel	4132	4182	4233	9262	9400	9538	1312	1413	1513		
Frequency	826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6		
RMC 12.2K	<mark>24.35</mark>	24.25	24.30	<mark>24.21</mark>	24.19	24.08	24.33	24.18	<mark>24.40</mark>		
HSDPA Subtest-1	23.36	23.37	23.45	23.26	23.41	23.20	23.35	23.23	23.43		
HSDPA Subtest-2	23.30	23.31	23.26	23.23	23.24	23.11	23.28	23.19	23.40		
HSDPA Subtest-3	22.92	22.86	22.83	22.68	22.73	22.66	22.90	22.84	22.87		
HSDPA Subtest-4	22.89	22.77	22.81	22.65	22.71	22.61	22.82	22.78	22.81		
HSUPA Subtest-1	23.24	22.92	22.87	22.72	22.98	22.96	23.10	23.08	23.06		
HSUPA Subtest-2	22.00	21.98	21.78	21.75	21.80	21.66	21.62	21.54	21.46		
HSUPA Subtest-3	22.38	22.10	22.00	21.94	22.06	22.01	22.18	22.14	22.08		
HSUPA Subtest-4	22.01	21.90	20.97	21.68	21.70	21.59	21.54	21.46	21.37		
HSUPA Subtest-5	23.33	23.31	23.27	23.26	23.22	23.07	23.29	23.12	23.09		

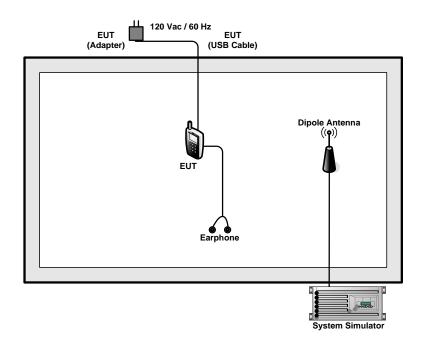
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2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m
2.	Earphone	Corton	MAX-300	N/A	Unshielded, 1.2 m	N/A

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2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

$$Offset(dB) = RF \ cable \ loss(dB) + attenuator \ factor(dB).$$

= 4.2 + 10 = 14.2 (dB)

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3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power

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

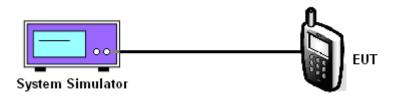
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

- 1. The transmitter output port was connected to base station.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set EUT at maximum power through base station.
- 4. Select lowest, middle, and highest channels for each band and different modulation.
- 5. Measure the maximum RMS conducted power for GSM and WCDMA modes.

3.1.4 Test Setup



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3.1.5 Test Result of Conducted Output Power

Cellular Band											
Modes	Modes GSM850 (GSM)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)				
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)		
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6		
Conducted Power (dBm)	33.28	33.35	33.44	26.80	26.76	26.90	24.35	24.25	24.30		
Conducted Power (Watts)	2.128	2.163	2.208	0.479	0.474	0.490	0.272	0.266	0.269		

	PCS Band								
Modes	GSM1900 (GSM)		GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)			
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Conducted Power (dBm)	30.20	30.08	30.40	25.66	25.47	25.50	24.21	24.19	24.08
Conducted Power (Watts)	1.047	1.019	1.096	0.368	0.352	0.355	0.264	0.262	0.256

	AWS Band								
Modes	WCDMA Band IV (RMC 12.2Kbps)								
Channel	1312(Low)	1413 (Mid)	1513 (High)						
Frequency (MHz)	1712.4	1732.6	1752.6						
Conducted Power (dBm)	24.33	24.18	24.40						
Conducted Power (Watts)	0.271	0.262	0.275						

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3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

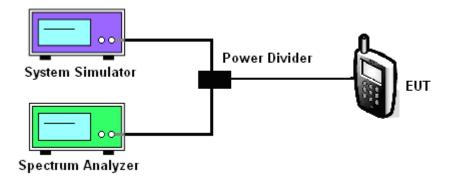
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

- 1. The EUT was connected to Spectrum Analyzer and System Simulator via power divider.
- 2. For GSM/EGPRS operating modes:
 - a. Set EUT in maximum power output.
 - b. Set the RBW = 1MHz, VBW = 3MHz, Peak detector in spectrum analyzer for first trace.
 - c. Set the RBW = 1MHz, VBW = 3MHz, RMS detector in spectrum analyzer for second trace.
 - d. The wanted burst signal is triggered by spectrum analyzer, and measured respectively the peak level and Mean level without burst-off time, after system simulator synchronized with the spectrum analyzer.
- 3. For UMTS operating modes:
 - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
 - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
- 4. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



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3.2.5 Test Result of Peak-to-Average Ratio

Cellular Band									
Modes	GSM850 (GSM)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8	826.4	836.4	846.6
Peak-to-Average Ratio (dB)	0.47	0.48	0.39	2.88	2.99	2.97	3.16	3.20	3.08

PCS Band									
Modes	GSM1900 (GSM)			GSM1900 (EDGE class 8)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8	1852.4	1880	1907.6
Peak-to-Average Ratio (dB)	0.33	0.28	0.34	2.77	2.80	2.91	3.00	3.08	3.28

AWS Band							
Modes	WCDMA Band IV (RMC 12.2Kbps)						
Channel	1312(Low)	1312(Low) 1413 (Mid) 1513 (High)					
Frequency (MHz)	1712.4	1732.6	1752.6				
Peak-to-Average Ratio (dB)	3.16	3.12	3.04				

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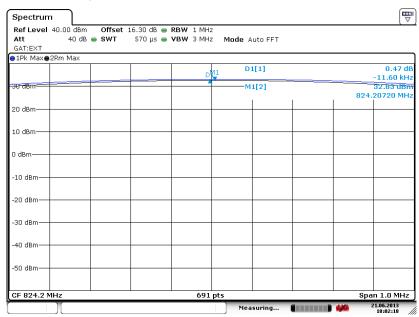


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Test Result (Plots) of Peak-to-Average Ratio 3.2.6

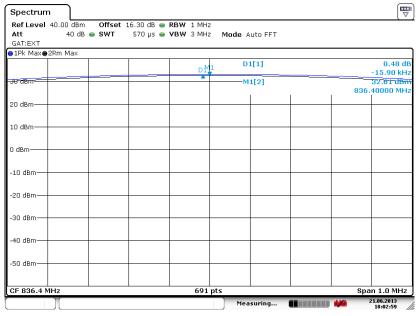
Band :	GSM 850	Test Mode :	GSM Link (GMSK)
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Peak-to-Average Ratio on Channel 128 (824.2 MHz)



Date: 21.JUN.2013 18:02:19

Peak-to-Average Ratio on Channel 189 (836.4 MHz)



Date: 21.JUN.2013 18:03:00

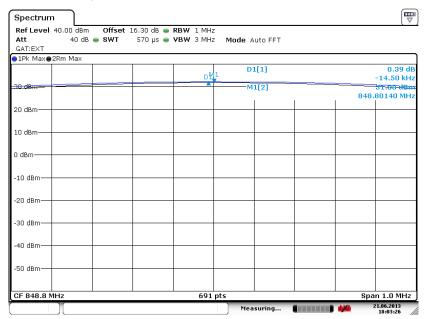
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Peak-to-Average Ratio on Channel 251 (848.8 MHz)



Date: 21.JUN.2013 18:03:26

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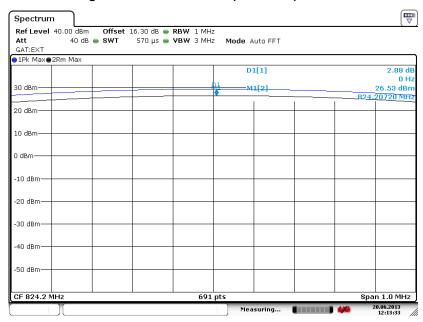
Band:

Test Mode:

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EDGE class 8 Link (8PSK)

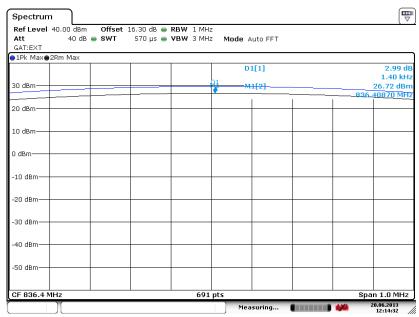
Peak-to-Average Ratio on Channel 128 (824.2 MHz)



Date: 20.JUN.2013 12:13:33

GSM 850

Peak-to-Average Ratio on Channel 189 (836.4 MHz)



Date: 20.JUN.2013 12:14:31

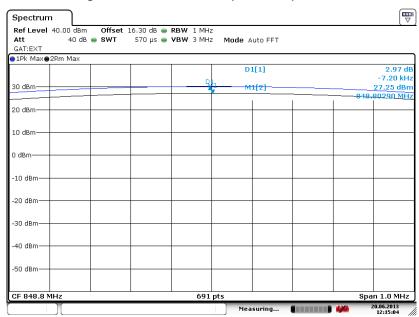
SPORTON INTERNATIONAL INC.

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Peak-to-Average Ratio on Channel 251 (848.8 MHz)



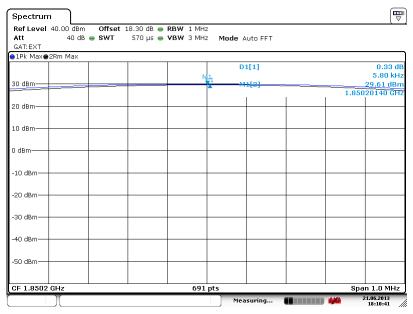
Date: 20.JUN.2013 12:15:03

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 20 of 128
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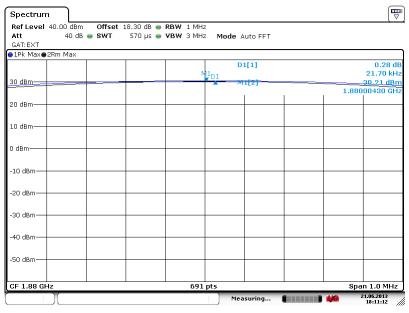
Band: GSM 1900 Test Mode: GSM Link (GMSK)

Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 21.JUN.2013 18:10:42

Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 21.JUN.2013 18:11:13

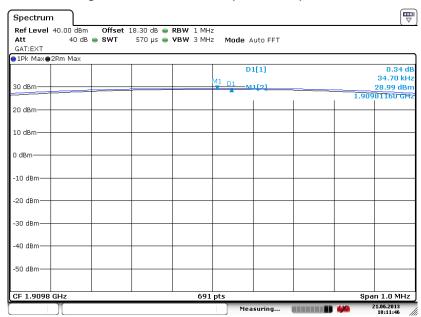
SPORTON INTERNATIONAL INC.

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Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



Date: 21.JUN.2013 18:11:47

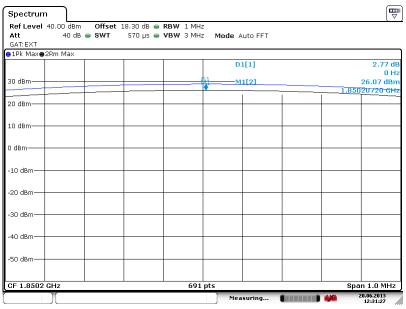
SPORTON INTERNATIONAL INC.

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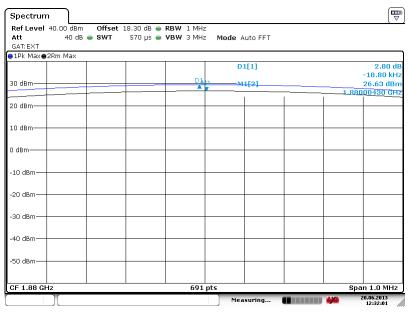
Band: GSM 1900 Test Mode: EDGE class 8 Link (8PSK)

Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



Date: 20.JUN.2013 12:31:26

Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 20.JUN.2013 12:32:01

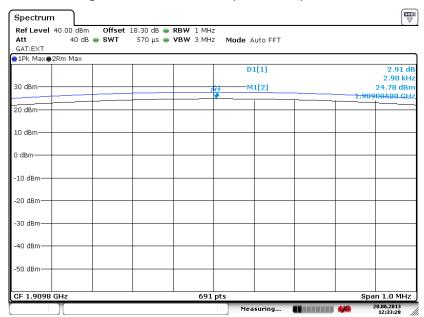
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Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



Date: 20.JUN.2013 12:33:28

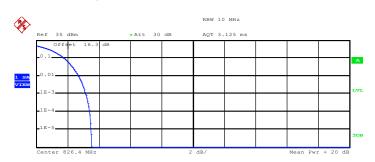
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FCC RF Test Report

Band: WCDMA Band V Test Mode: RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 4132 (826.4 MHz)



Complementary Cumulative Distribution Function (100000 samples)
Trace 1

Mean 24.01 dBm
Peak 27.56 dBm
Crest 3.55 dB

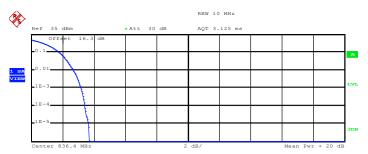
10 % 1.80 dB
1 % 2.68 dB
.1 % 3.16 dB

3.40 dB

Date: 19.JUN.2013 19:07:57

.01 %

Peak-to-Average Ratio on Channel 4182 (836.4 MHz)



Complementary Cumulative Distribution Function (100000 samples) ${\tt Trace} \ 1$

Mean 24.20 dBm
Peak 27.91 dBm
Crest 3.72 dB

10 % 1.80 dB
1 % 2.68 dB
.1 % 3.20 dB
.01 % 3.44 dB

Date: 19.JUN.2013 19:07:19

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Peak-to-Average Ratio on Channel 4233 (846.6 MHz)



Complementary Cumulative Distribution Function (100000 samples)

Trace 1
Mean 23.91 dBm
Peak 27.35 dBm
Crest 3.44 dB

1 % 2.60 dB .1 % 3.08 dB .01 % 3.32 dB

Date: 19.JUN.2013 19:06:50

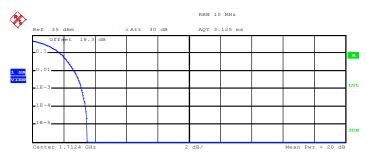
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 26 of 128
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FCC RF Test Report

Band: WCDMA Band IV Test Mode: RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 1312 (1712.4 MHz)



Complementary Cumulative Distribution Function (100000 samples) ${\tt Trace} \ 1$

Mean 24.77 dBm Peak 28.27 dBm Crest 3.50 dB 10 % 1.76 dB 1 % 2.68 dB .1 % 3.16 dB .01 % 3.40 dB

Date: 19.JUN.2013 18:43:19

Peak-to-Average Ratio on Channel 1413 (1732.6 MHz)



Complementary Cumulative Distribution Function (100000 samples ${\tt Trace} \quad 1$

Mean 24.03 dBm
Peak 27.49 dBm
Crest 3.46 dB

10 % 1.76 dB
1 % 2.60 dB
.1 % 3.12 dB
.01 % 3.32 dB

Date: 19.JUN.2013 18:42:29

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Peak-to-Average Ratio on Channel 1513 (1752.6 MHz)



Complementary Cumulative Distribution Function (100000 samples) ${\tt Trace} \quad {\tt 1}$

Mean 24.17 dBm Peak 27.56 dBm Crest 3.39 dB

10 % 1.76 dB 1 % 2.60 dB .1 % 3.04 dB .01 % 3.24 dB

Date: 19.JUN.2013 18:42:55

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 28 of 128
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FCC RF Test Report

Band: WCDMA Band II Test Mode: RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 9262 (1852.4 MHz)



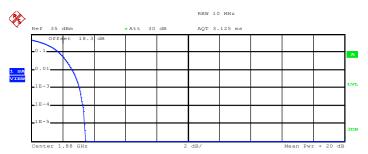
Complementary Cumulative Distribution Function (100000 samples) $\mbox{Trace } \ 1$

Mean 24.52 dBm
Peak 27.91 dBm
Crest 3.39 dB

10 % 1.76 dB
1 % 2.60 dB
.1 % 3.00 dB
.01 % 3.20 dB

Date: 19.JUN.2013 18:21:35

Peak-to-Average Ratio on Channel 9400 (1880.0 MHz)



Complementary Cumulative Distribution Function (100000 samples) ${\tt Trace} \ \ 1$

Mean 24.87 dBm
Peak 28.34 dBm
Crest 3.46 dB

10 % 1.76 dB
1 % 2.64 dB
.1 % 3.08 dB
.01 % 3.32 dB

Date: 19.JUN.2013 18:22:20

SPORTON INTERNATIONAL INC.

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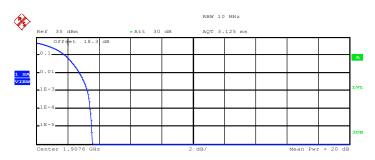
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Peak-to-Average Ratio on Channel 9538 (1907.6 MHz)



Complementary Cumulative Distribution Function (100000 samples)

Trace 1
Mean 23.36 dBm
Peak 26.93 dBm
Crest 3.56 dB

10 % 1.84 dB 1 % 2.76 dB .1 % 3.28 dB .01 % 3.44 dB

Date: 19.JUN.2013 18:24:50

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3.3.2

3.3 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.3.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r01. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts with GSM 1900 and WCDMA Band II and 1 Watts with WCDMA Band IV.

Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

 The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m

with a test antenna and a spectrum analyzer with RBW= 1MHz, VBW= 3MHz for GSM, RBW= 100

kHz, VBW= 300 kHz, used channel power option with bandwidth=5MHz for WCDMA, and RMS

detector settings per section 4.0 of KDB 971168 D01.

2. During the measurement, the EUT was enforced in maximum power and linked with a base station.

The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both

horizontally and vertically polarized orientations.

3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to

TIA/EIA-603-C. The EUT was replaced by dipole antenna (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 was calculated with the correction factor, EIRP= LVL + Correction factor and ERP =

EIRP - 2.15.

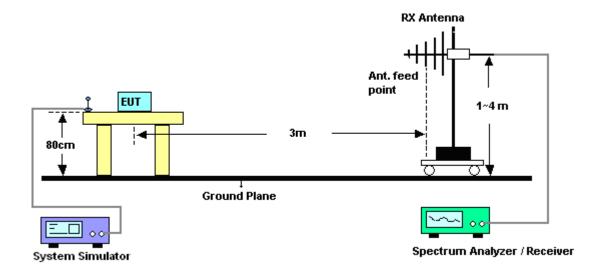
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3.3.4 Test Setup



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3.3.5 Test Result of ERP

GSM850 (GSM) Radiated Power ERP for sample 1 with Battery 1									
	Horizontal Polarization								
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	-0.09	31.54	29.30	0.8511					
836.4	-0.87	32.04	29.02	0.7980					
848.8	-0.04	32.59	30.40	1.0965					
		Vertical Polarization							
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	-8.37	32.93	22.41	0.1742					
836.4	-8.06	32.82	22.61	0.1824					
848.8	-7.49	33.62	23.98	0.2500					

^{*} ERP = LVL (dBm) + Correction Factor (dB) - 2.15

GSM850 (EDGE class 8) Radiated Power ERP for sample 1 with Battery 1									
	Horizontal Polarization								
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	-5.80	31.54	23.59	0.2286					
836.4	-7.14	32.04	22.75	0.1884					
848.8	-7.66	32.59	22.78	0.1897					
		Vertical Polarization							
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	-14.21	32.93	16.57	0.0454					
836.4	-14.43	32.82	16.24	0.0421					
848.8	-15.47	33.62	16.00	0.0398					

^{*} ERP = LVL (dBm) + Correction Factor (dB) - 2.15

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GSM850 (G	GSM850 (GSM) Radiated Power ERP for sample 1 with Battery 2								
	Horizontal Polarization								
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	-0.84	31.54	28.55	0.7161					
836.4	-1.72	32.04	28.17	0.6561					
848.8	-1.31	32.59	29.13	0.8185					
		Vertical Polarization							
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	-8.09	32.93	22.69	0.1858					
836.4	-7.95	32.82	22.72	0.1871					
848.8	-8.17	33.62	23.30	0.2138					

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

GSM850 (0	GSM850 (GSM) Radiated Power ERP for sample 2 with Battery 1								
	Horizontal Polarization								
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	0.62	31.54	30.01	1.0023					
836.4	-0.13	32.04	29.76	0.9462					
848.8	-0.42	32.59	30.02	1.0046					
		Vertical Polarization							
Frequency	LVL	Correction Factor	ERP	ERP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
824.2	-7.75	32.93	23.03	0.2009					
836.4	-7.54	32.82	23.13	0.2056					
848.8	-8.13	33.62	23.34	0.2158					

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

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WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP for sample 1 with Battery 1										
	Horizontal Polarization									
Frequency	LVL	Correction Factor	ERP	ERP						
(MHz)	(dBm)	(dB)	(dBm)	(W)						
826.4	-7.82	31.44	21.47	0.1403						
836.4	-8.08	32.04	21.81	0.1517						
846.6	-9.55	32.63	20.93	0.1239						
	Ve	rtical Polarization								
Frequency	LVL	Correction Factor	ERP	ERP						
(MHz)	(dBm)	(dB)	(dBm)	(W)						
826.4	-16.27	32.78	14.36	0.0273						
836.4	-15.86	32.82	14.81	0.0303						
846.6	-18.44	33.40	12.81	0.0191						

^{*} ERP = LVL (dBm) + Correction Factor (dB) -2.15

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3.3.6 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP for sample 1 with Battery 1									
	Horizontal Polarization								
Frequency	LVL	Correction Factor	EIRP	EIRP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
1850.2	-12.71	43.69	30.98	1.2531					
1880.0	-13.25	44.79	31.54	1.4256					
1909.8	-12.86	43.59	30.73	1.1830					
		Vertical Polarization							
Frequency	LVL	Correction Factor	EIRP	EIRP					
(MHz)	(dBm)	(dB)	(dBm)	(W)					
1850.2	-17.45	45.72	28.27	0.6714					
1880.0	-18.09	46.78	28.69	0.7396					
1909.8	-16.72	46.77	30.05	1.0116					

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

GSM1900 (EDGE class 8) Radiated Power EIRP for sample 1 with Battery 1				
Horizontal Polarization				
Frequency	LVL	Correction Factor	EIRP	EIRP
(MHz)	(dBm)	(dB)	(dBm)	(W)
1850.2	-17.57	43.69	26.12	0.4093
1880.0	-18.36	44.79	26.43	0.4395
1909.8	-17.86	43.59	25.73	0.3741
Vertical Polarization				
Frequency	LVL	Correction Factor	EIRP	EIRP
(MHz)	(dBm)	(dB)	(dBm)	(W)
1850.2	-22.34	45.72	23.38	0.2178
1880.0	-22.73	46.78	24.05	0.2541
1909.8	-21.77	46.77	25.00	0.3162

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

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GSM1900 (GSM1900 (GSM) Radiated Power EIRP for sample 1 with Battery 2				
		Horizontal Polarization	1		
Frequency	LVL	Correction Factor	EIRP	EIRP	
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1850.2	-12.72	43.69	30.97	1.2503	
1880.0	-13.84	44.79	30.95	1.2445	
1909.8	-13.54	43.59	30.05	1.0116	
		Vertical Polarization			
Frequency	LVL	Correction Factor	EIRP	EIRP	
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1850.2	-18.68	45.72	27.04	0.5058	
1880.0	-18.85	46.78	27.93	0.6209	
1909.8	-18.17	46.77	28.60	0.7244	

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

GSM1900 (GSM1900 (GSM) Radiated Power EIRP for sample 2 with Battery 1				
		Horizontal Polarization	1		
Frequency	LVL	Correction Factor	EIRP	EIRP	
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1850.2	-13.24	43.69	30.45	1.1092	
1880.0	-13.28	44.79	31.51	1.4158	
1909.8	-12.56	43.59	31.03	1.2677	
		Vertical Polarization			
Frequency	Frequency LVL Correction Factor EIRP E				
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1850.2	-17.89	45.72	27.83	0.6714	
1880.0	-19.05	46.78	27.73	0.7396	
1909.8	-17.83	46.77	28.94	1.0116	

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

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WCDMA Band IV (R	WCDMA Band IV (RMC 12.2Kbps) Radiated Power EIRP for sample 1 with Battery 1				
		Horizontal Polarization			
Frequency	LVL	Correction Factor	EIRP	EIRP	
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1712.4	-15.46	41.74	26.28	0.4246	
1732.6	-16.94	42.41	25.47	0.3524	
1752.6	-16.77	41.82	25.05	0.3199	
		Vertical Polarization			
Frequency	LVL	Correction Factor	EIRP	EIRP	
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1712.4	-25.63	43.38	17.75	0.0596	
1732.6	-25.98	45.43	19.45	0.0881	
1752.6	-27.19	44.43	17.24	0.0530	

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

WCDMA Band IV (R	WCDMA Band IV (RMC 12.2Kbps) Radiated Power EIRP for sample 1 with Battery 2					
		Horizontal Polarization				
Frequency	LVL	Correction Factor	EIRP	EIRP		
(MHz)	(dBm)	(dB)	(dBm)	(W)		
1712.4	-16.96	41.74	24.78	0.3006		
1732.6	-18.86	42.41	23.55	0.2265		
1752.6	-18.04	41.82	23.78	0.2388		
		Vertical Polarization				
Frequency	LVL	Correction Factor	EIRP	EIRP		
(MHz)	(dBm)	(dB)	(dBm)	(W)		
1712.4	-25.89	43.38	17.49	0.0561		
1732.6	-27.45	45.43	17.98	0.0628		
1752.6	-26.31	44.43	18.12	0.0649		

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

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WCDMA Band IV (F	VCDMA Band IV (RMC 12.2Kbps) Radiated Power EIRP for sample 2 with Battery 1					
		Horizontal Polarization	1			
Frequency	LVL	Correction Factor	EIRP	EIRP		
(MHz)	(dBm)	(dB)	(dBm)	(W)		
1712.4	-16.04	41.74	25.70	0.3715		
1732.6	-17.95	42.41	24.46	0.2793		
1752.6	-16.83	41.82	24.99	0.3155		
		Vertical Polarization				
Frequency	LVL	Correction Factor	EIRP	EIRP		
(MHz)	(dBm)	(dB)	(dBm)	(W)		
1712.4	-26.03	43.38	17.35	0.0543		
1732.6	-28.09	45.43	17.34	0.0542		
1752.6	-26.99	44.43	17.44	0.0555		

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP for sample 1 with Battery 1					
		Horizontal Polarizatio	n		
Frequency	LVL	Correction Factor	EIRP	EIRP	
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1852.4	-18.63	43.69	25.06	0.3206	
1880.0	-19.30	44.79	25.49	0.3540	
1907.6	-18.87	43.59	24.72	0.2965	
		Vertical Polarization			
Frequency	LVL	Correction Factor	EIRP	EIRP	
(MHz)	(dBm)	(dB)	(dBm)	(W)	
1852.4	-23.67	45.72	22.05	0.1603	
1880.0	-23.46	46.78	23.32	0.2148	
1907.6	-23.98	46.77	22.79	0.1901	

^{*} EIRP = LVL (dBm) + Correction Factor (dB)

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3.4 Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of Occupied Bandwidth and 26dB Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

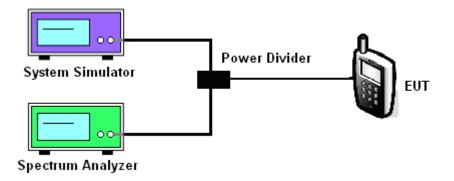
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

- 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold.
- 4. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.

3.4.4 Test Setup



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3.4.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

Cellular Band						
Modes	G	GSM850 (GSM) GSM850 (EDGE class 8)				
Channel	128	189	251	128	189	251
Channel	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	824.2	836.4	848.8	824.2	836.4	848.8
99% OBW (kHz)	246.00	250.00	244.00	242.00	244.00	242.00
26dB BW (kHz)	316.00	318.00	314.00	306.00	298.00	302.00

PCS Band						
Modes	GS	SM1900 (GS	M)	GSM19	000 (EDGE o	lass 8)
Channel	512	661	810	512	661	810
Channel	(Low)	(Mid)	(High)	(Low)	(Mid)	(High)
Frequency (MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
99% OBW (kHz)	246.00	248.00	250.00	250.00	252.00	248.00
26dB BW (kHz)	288.00	310.00	314.00	296.00	300.00	306.00

Cellular Band						
Modes	WCD	WCDMA Band V (RMC 12.2Kbps)				
Channel	4132 (Low)	4132 (Low) 4182 (Mid) 4233 (High)				
Frequency (MHz)	826.4	836.4	846.6			
99% OBW (MHz)	4.16	4.16	4.16			
26dB BW (MHz)	4.68	4.68	4.68			

AWS Band							
Modes	WCDMA Band IV (RMC 12.2Kbps)						
Channel	1312(Low)	1312(Low) 1413 (Mid) 1513 (High)					
Frequency (MHz)	1712.4	1732.6	1752.6				
99% OBW (MHz)	4.16	4.20	4.18				
26dB BW (MHz)	4.68	4.68	4.68				

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FCC RF Test Report

PCS Band							
Modes	WCDMA Band II (RMC 12.2Kbps)						
Channel	9262 (Low)	9262 (Low) 9400 (Mid) 9538 (High)					
Frequency (MHz)	1852.4	1880	1907.6				
99% OBW (MHz)	4.16	4.18	4.20				
26dB BW (MHz)	4.68	4.68 4.68 4.68					

SPORTON INTERNATIONAL INC.

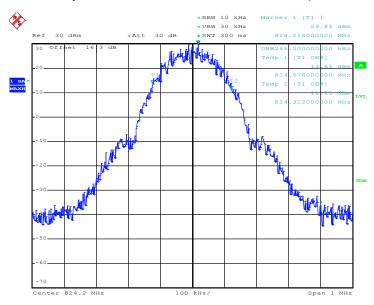
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 42 of 128
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4.6 Test Result (Plots) of Occupied Bandwidth and 26dB Bandwidth

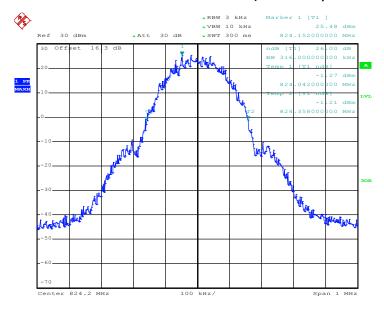
Band: GSM 850 Test Mode: GSM Link (GMSK)

99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 19.JUN.2013 15:42:09

26dB Bandwidth Plot on Channel 128 (824.2 MHz)

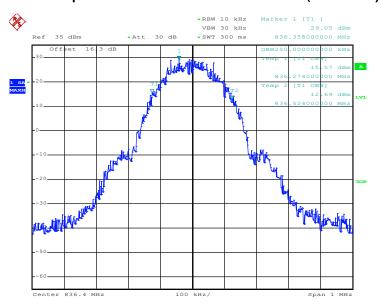


Date: 19.JUN.2013 15:40:50

SPORTON INTERNATIONAL INC.

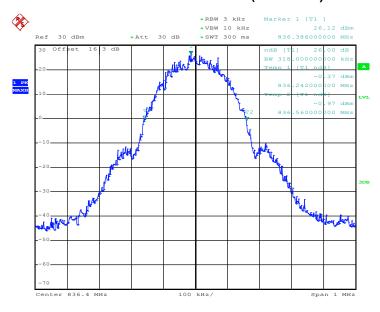
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 43 of 128
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99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 19.JUN.2013 15:57:36

26dB Bandwidth Plot on Channel 189 (836.4 MHz)



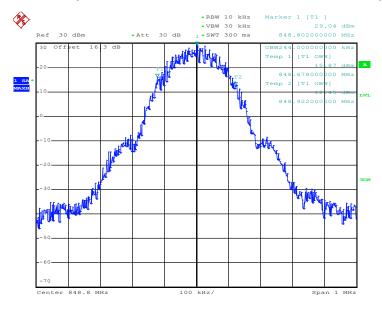
Date: 19.JUN.2013 15:41:16

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 44 of 128
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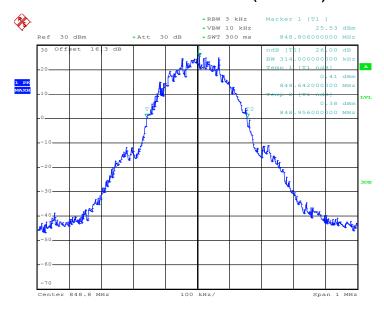


99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 19.JUN.2013 15:43:00

26dB Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 19.JUN.2013 15:41:42

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 45 of 128 Report Issued Date: Aug. 14, 2013

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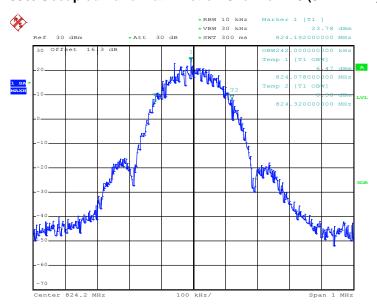


Band:

GSM 850 EDGE class 8 Link (8PSK)

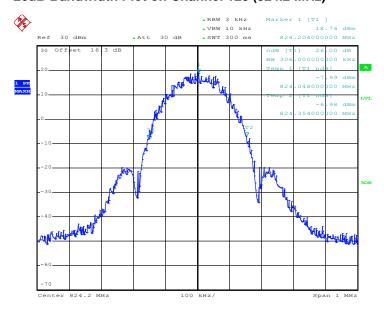
Test Mode:

99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



Date: 19.JUN.2013 16:27:51

26dB Bandwidth Plot on Channel 128 (824.2 MHz)



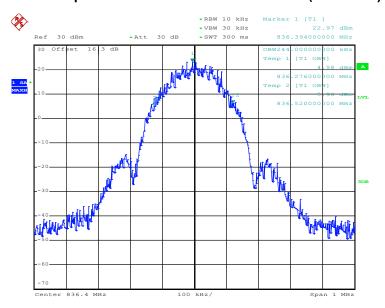
Date: 19.JUN.2013 16:26:33

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TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 46 of 128 Report Issued Date: Aug. 14, 2013 Report Version : Rev. 01

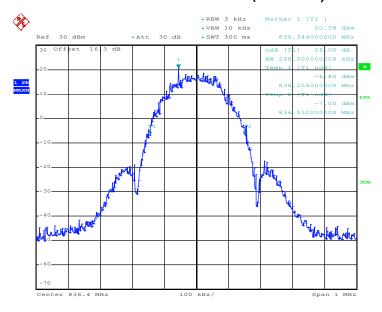


99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



Date: 19.JUN.2013 16:28:17

26dB Bandwidth Plot on Channel 189 (836.4 MHz)

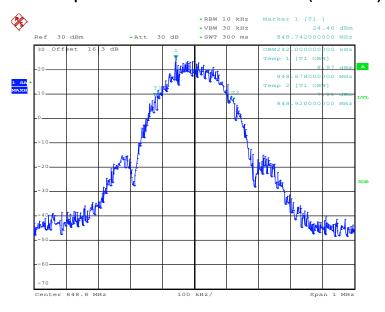


Date: 19.JUN.2013 16:26:59

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 47 of 128
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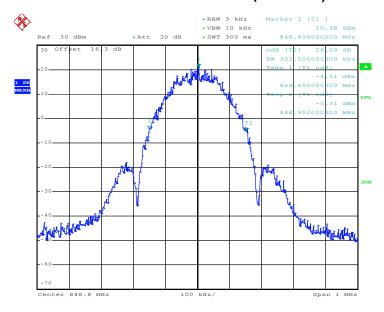


99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 19.JUN.2013 16:28:43

26dB Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 19.JUN.2013 16:27:25

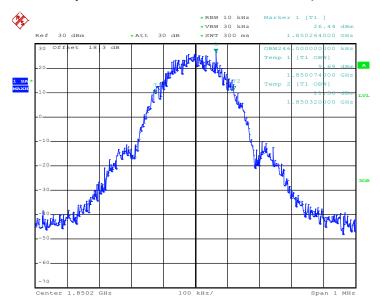
SPORTON INTERNATIONAL INC.

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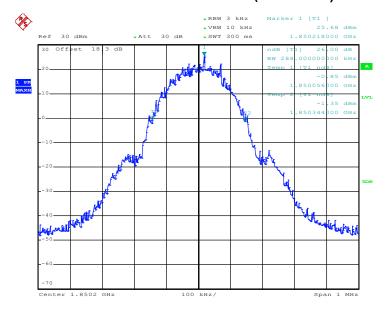
Band: GSM 1900 Test Mode: GSM Link (GMSK)

99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 19.JUN.2013 17:08:12

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



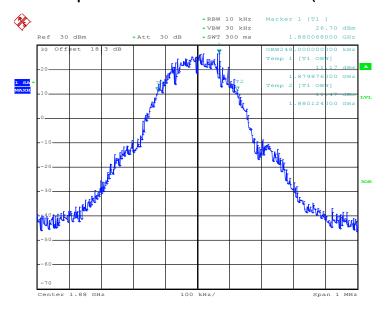
Date: 19.JUN.2013 17:06:54

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 49 of 128
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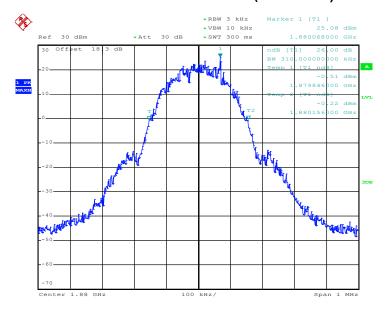


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 19.JUN.2013 17:08:38

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 19.JUN.2013 17:07:20

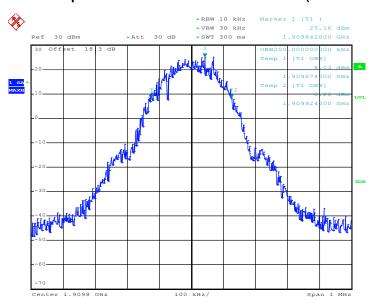
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 50 of 128
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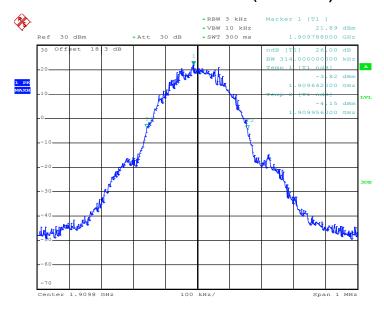


99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 19.JUN.2013 17:09:04

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



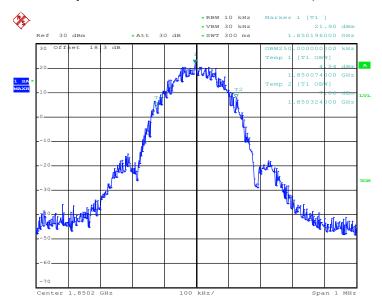
Date: 19.JUN.2013 17:07:46

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 51 of 128
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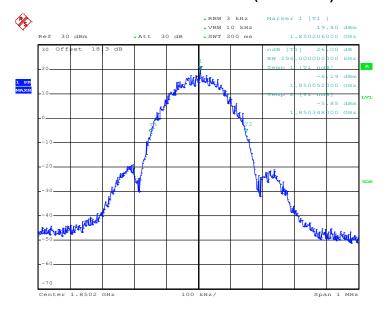
Band: GSM 1900 Test Mode: EDGE class 8 Link (8PSK)

99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



Date: 19.JUN.2013 17:29:00

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



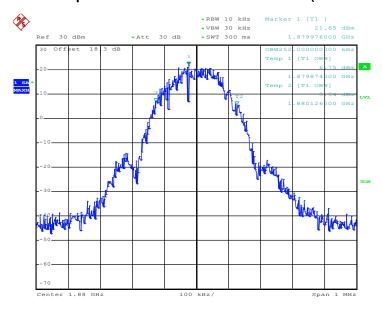
Date: 19.JUN.2013 17:27:41

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 52 of 128
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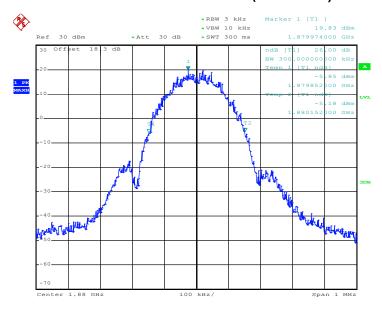


99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



Date: 19.JUN.2013 17:29:26

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)

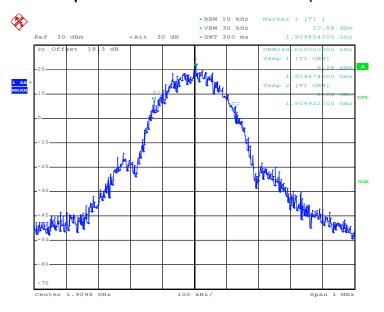


Date: 19.JUN.2013 17:28:08

SPORTON INTERNATIONAL INC.

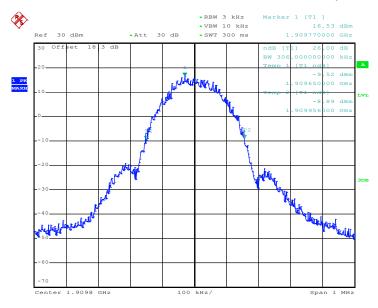
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 53 of 128
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99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 19.JUN.2013 17:29:52

26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 19.JUN.2013 17:28:34

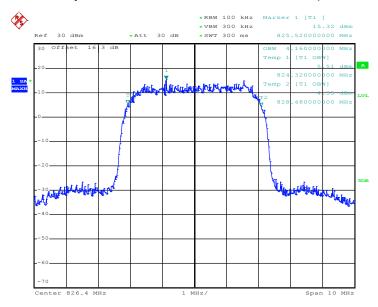
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 54 of 128
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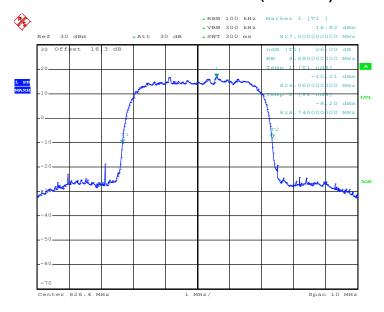
Band: WCDMA Band V Test Mode: RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 4132 (826.4 MHz)



Date: 19.JUN.2013 18:49:59

26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



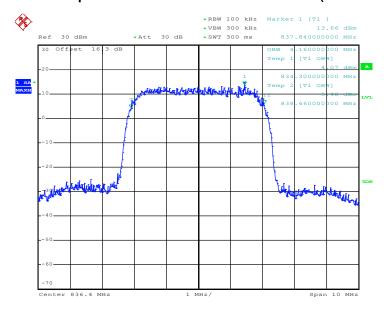
Date: 19.JUN.2013 18:48:40

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 55 of 128
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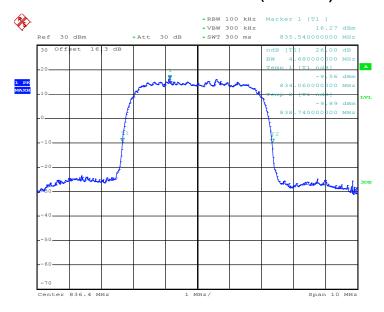


99% Occupied Bandwidth Plot on Channel 4182 (836.4 MHz)



Date: 19.JUN.2013 18:50:25

26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



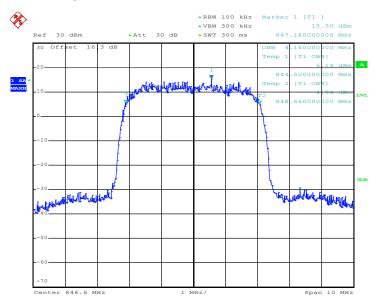
Date: 19.JUN.2013 18:49:06

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 56 of 128
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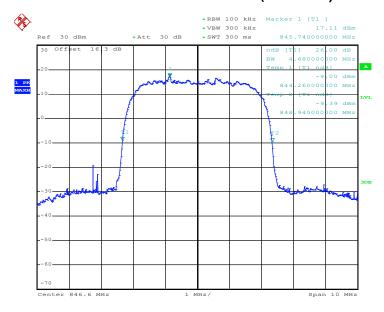


99% Occupied Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 19.JUN.2013 18:50:51

26dB Bandwidth Plot on Channel 4233 (846.6 MHz)



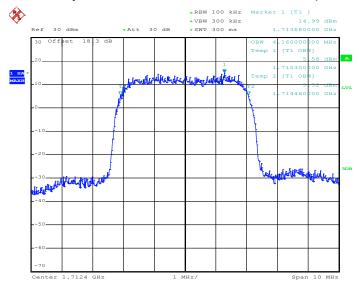
Date: 19.JUN.2013 18:49:32

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 57 of 128
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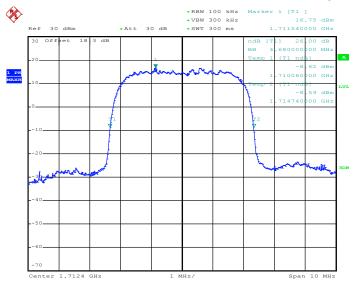


99% Occupied Bandwidth Plot on Channel 1312 (1712.4 MHz)



Date: 19.JUN.2013 18:30:50

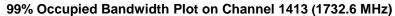
26dB Bandwidth Plot on Channel 1312 (1712.4 MHz)

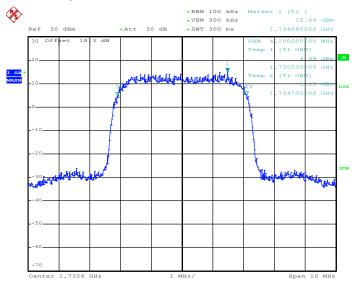


Date: 19.JUN.2013 18:29:32

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 58 of 128
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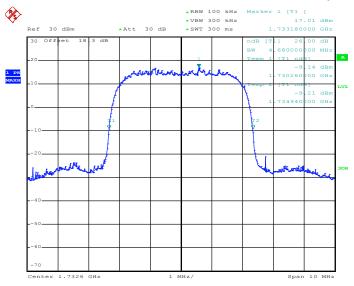






Date: 19.JUN.2013 18:31:16

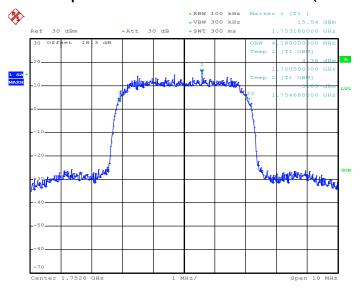
26dB Bandwidth Plot on Channel 1413 (1732.6 MHz)



Date: 19.JUN.2013 18:29:58

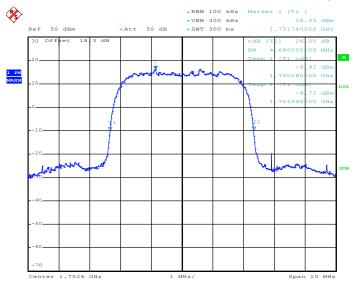
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 59 of 128
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99% Occupied Bandwidth Plot on Channel 1513 (1752.6 MHz)



Date: 19.JUN.2013 18:31:42

26dB Bandwidth Plot on Channel 1513 (1752.6 MHz)



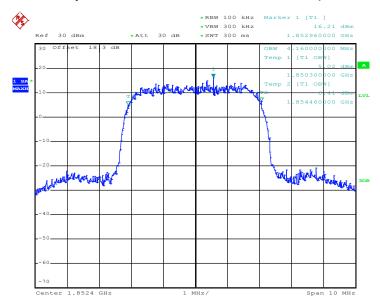
Date: 19.JUN.2013 18:30:24

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 60 of 128
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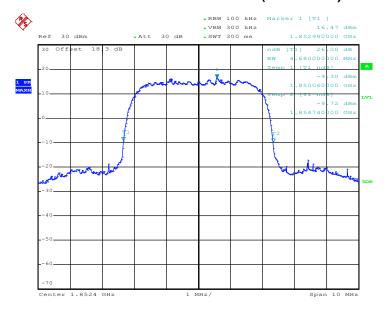
Band: WCDMA Band II Test Mode: RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 19.JUN.2013 18:14:52

26dB Bandwidth Plot on Channel 9262 (1852.4 MHz)



Date: 19.JUN.2013 18:13:33

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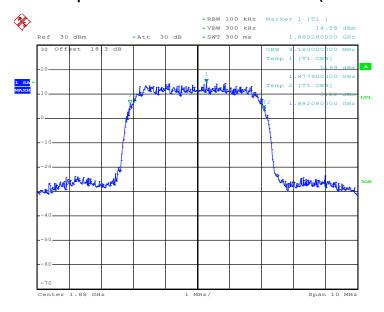
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 61 of 128
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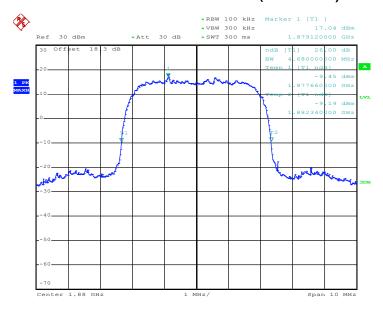


99% Occupied Bandwidth Plot on Channel 9400 (1880.0 MHz)



Date: 19.JUN.2013 18:15:18

26dB Bandwidth Plot on Channel 9400 (1880.0 MHz)



Date: 19.JUN.2013 18:13:59

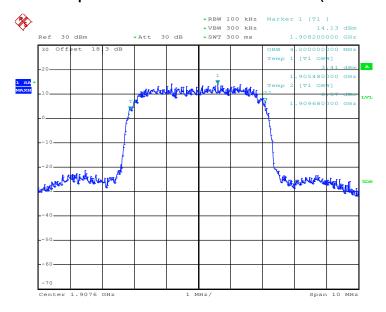
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 62 of 128
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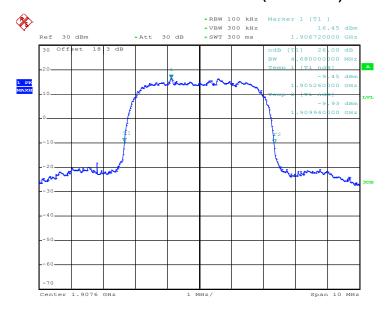


99% Occupied Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 19.JUN.2013 18:15:44

26dB Bandwidth Plot on Channel 9538 (1907.6 MHz)



Date: 19.JUN.2013 18:14:26

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 63 of 128
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3.5 Band Edge Measurement

3.5.1 Description of Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

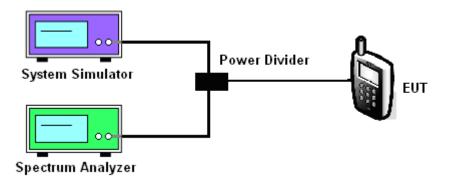
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

- 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.
- 4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 5. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
 - = P(W) [43 + 10log(P)] (dB)
 - = [30 + 10log(P)] (dBm) [43 + 10log(P)] (dB)
 - = -13dBm.

3.5.4 Test Setup



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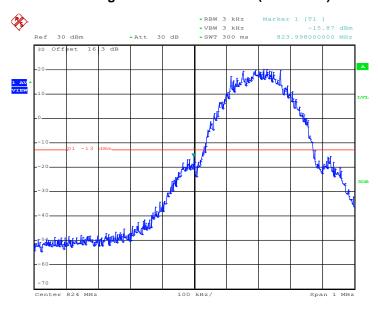
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 64 of 128
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3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.25 dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-15.62 dBm	Measurement Value :	-15.87dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)



Date: 19.JUN.2013 15:43:27

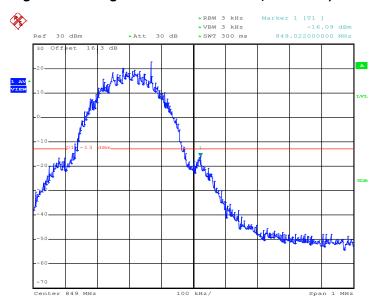
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 65 of 128
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Band :	GSM850	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.25 dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-15.84 dBm	Measurement Value :	-16.09dBm

Higher Band Edge Plot on Channel 251 (848.8 MHz)



Date: 19.JUN.2013 15:43:53

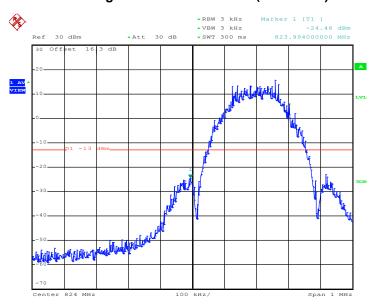
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 66 of 128
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Band :	GSM850	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.09 dB	Maximum 26dB Bandwidth :	0.306MHz
Band Edge :	-24.37 dBm	Measurement Value :	-24.46dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)



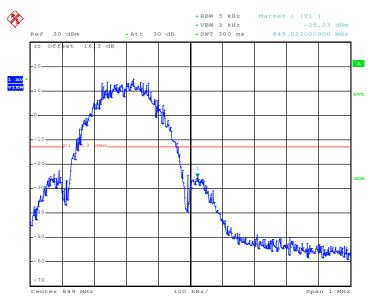
Date: 19.JUN.2013 16:29:10

- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 67 of 128
Report Issued Date : Aug. 14, 2013
Report Version : Rev. 01

Band :	GSM850	Test Mode :	EDGE class 8 Link
	GSIVIOSO	Test wode .	(8PSK)
Correction Factor :	0.09 dB	Maximum 26dB Bandwidth :	0.306MHz
Band Edge :	-25.14dBm	Measurement Value :	-25.23dBm

Higher Band Edge Plot on Channel 251 (848.8 MHz)



Date: 19.JUN.2013 16:29:36

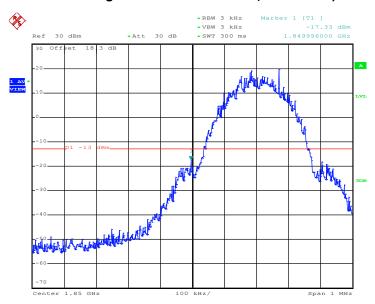
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 68 of 128
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Band :	GSM1900	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-17.13dBm	Measurement Value :	-17.33dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)



Date: 19.JUN.2013 17:11:33

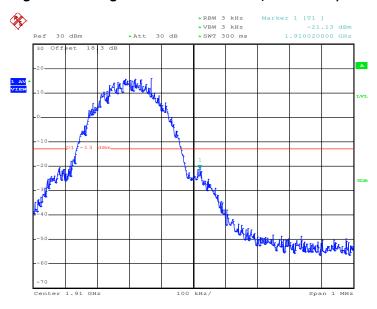
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 69 of 128
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Band :	GSM1900	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.20dB	Maximum 26dB Bandwidth :	0.314MHz
Band Edge :	-20.93dBm	Measurement Value :	-21.13dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)



Date: 19.JUN.2013 17:11:59

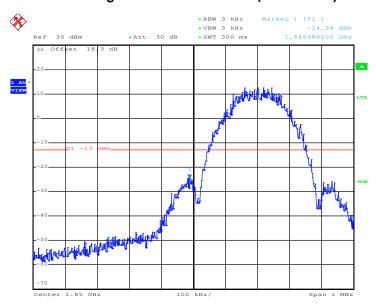
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 70 of 128
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Band :	GSM1900	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.09 dB	Maximum 26dB Bandwidth :	0.306MHz
Band Edge :	-24.25 dBm	Measurement Value :	-24.34dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)



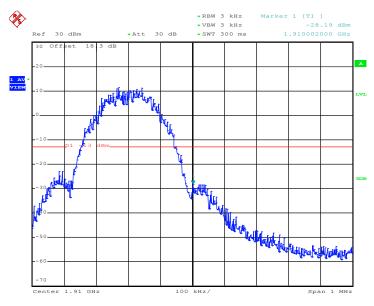
Date: 19.JUN.2013 17:32:02

- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 71 of 128
Report Issued Date : Aug. 14, 2013
Report Version : Rev. 01

Band :	GSM1900	Test Mode :	EDGE class 8 Link (8PSK)
Correction Factor :	0.09 dB	Maximum 26dB Bandwidth :	0.306MHz
Band Edge :	-28.10 dBm	Measurement Value :	-28.19dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)



Date: 19.JUN.2013 17:30:45

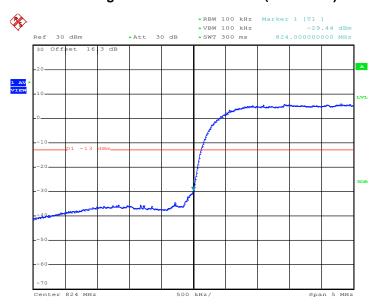
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 72 of 128
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Dan d.	WCDMA Band V	Took Mode	RMC 12.2Kbps Link
Band :		Test Mode :	(QPSK)
Correction Factor :	-3.30 dB	Maximum 26dB Bandwidth :	4.68MHz
Band Edge :	-32.74 dBm	Measurement Value :	-29.44 dBm

Lower Band Edge Plot on Channel 4132 (826.4 MHz)



Date: 19.JUN.2013 18:51:17

- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

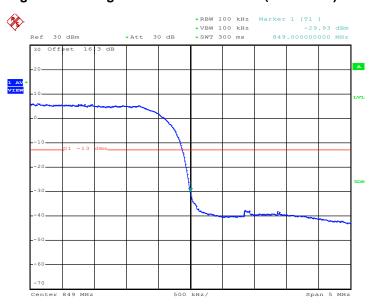
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 73 of 128
Report Issued Date : Aug. 14, 2013
Report Version : Rev. 01

FCC RF Test Report

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link
Band :	WODINA Band V	rest mode .	(QPSK)
Correction Factor :	-3.30 dB	Maximum 26dB Bandwidth :	4.68MHz
Band Edge :	-33.23 dBm	Measurement Value :	-29.93 dBm

Higher Band Edge Plot on Channel 4233 (846.6 MHz)



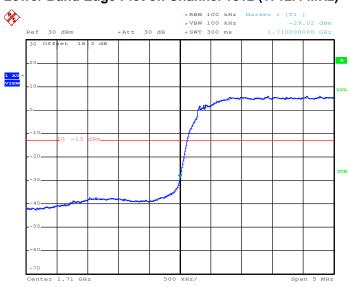
Date: 19.JUN.2013 18:51:44

- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 74 of 128
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Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30 dB	Maximum 26dB Bandwidth :	4.68 MHz
Band Edge :	-32.32 dBm	Measurement Value :	-29.02 dBm

Lower Band Edge Plot on Channel 1312 (1712.4 MHz)



Date: 19.JUN.2013 18:32:09

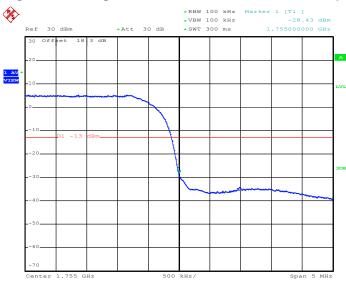
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 75 of 128
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Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30 dB	Maximum 26dB Bandwidth :	4.68 MHz
Band Edge :	-31.73 dBm	Measurement Value :	-28.43 dBm

Higher Band Edge Plot on Channel 1513 (1752.6 MHz)



Date: 19.JUN.2013 18:32:35

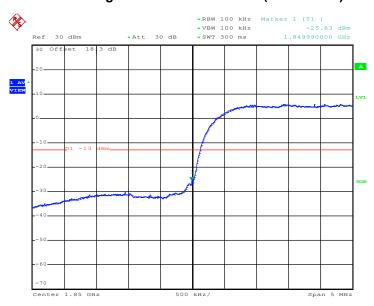
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 76 of 128
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-			
D I	WCDMA Band II	Total Maria	RMC 12.2Kbps Link
Band :		Test Mode :	(QPSK)
Correction Factor :	-3.30 dB	Maximum 26dB Bandwidth :	4.68MHz
Band Edge :	-28.93 dBm	Measurement Value :	-25.63 dBm

Lower Band Edge Plot on Channel 9262 (1852.4 MHz)



Date: 19.JUN.2013 18:07:40

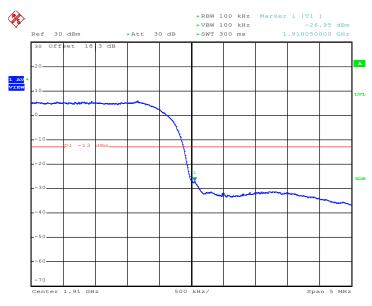
- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 77 of 128
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Report Version : Rev. 01

FCC RF Test Report Report No.: FG322304-07A

Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30 dB	Maximum 26dB Bandwidth :	4.68MHz
Band Edge :	-30.25 dBm	Measurement Value :	-26.95 dBm

Higher Band Edge Plot on Channel 9538 (1907.6 MHz)



Date: 19.JUN.2013 18:08:06

- 1. Correction Factor(dB)= 10log(1% Emission BW/RBW)
- 2. Band Edge= Measurement Value + Correction Factor(dB)

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 78 of 128
Report Issued Date : Aug. 14, 2013
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3.6 Conducted Spurious Emission Measurement

3.6.1 **Description of Conducted Spurious Emission Measurement**

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

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

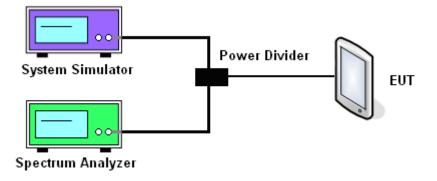
3.6.2 **Measuring Instruments**

See list of measuring instruments of this test report.

3.6.3 **Test Procedures**

- 1. The EUT was connected to spectrum analyzer and base station via power divider.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- The middle channel for the highest RF power within the transmitting frequency was measured. 3.
- 4. The conducted spurious emission for the whole frequency range was taken.
- 5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
 - = P(W) [43 + 10log(P)] (dB)
 - = [30 + 10log(P)] (dBm) [43 + 10log(P)] (dB)
 - = -13dBm.

Test Setup 3.6.4



SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH

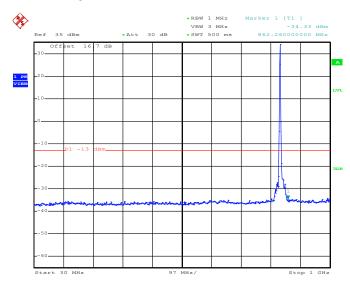
: 79 of 128 Page Number Report Issued Date: Aug. 14, 2013 Report Version : Rev. 01



Test Result (Plots) of Conducted Emission

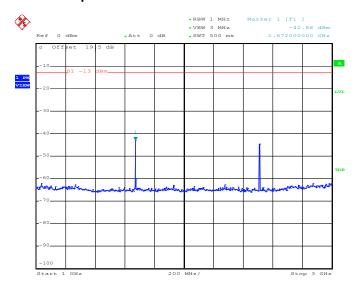
Band :	GSM850	Channel:	CH189
Test Mode :	GSM Link (GMSK)	Frequency:	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 19.JUN.2013 15:34:22

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



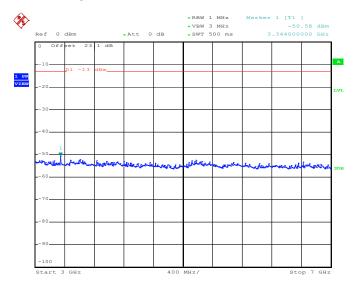
Date: 19.JUN.2013 15:24:48

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 80 of 128 Report Issued Date: Aug. 14, 2013 : Rev. 01 Report Version

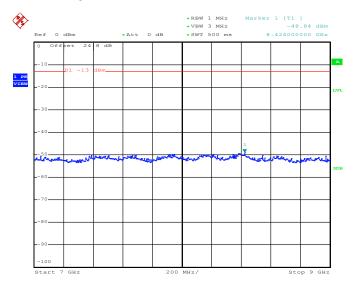


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 19.JUN.2013 15:25:00

Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 19.JUN.2013 15:25:13

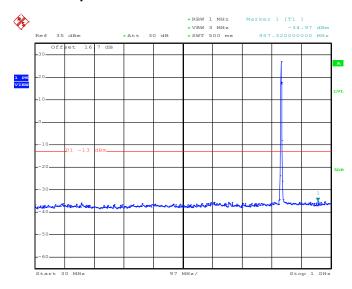
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 81 of 128
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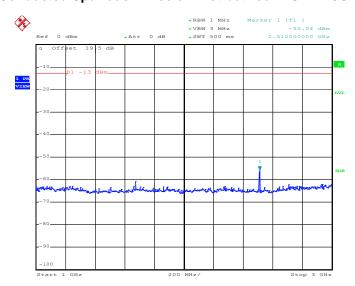
Band :	GSM850	Channel:	CH189
Test Mode :	EDGE class 8 Link (8PSK)	Frequency:	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 19.JUN.2013 16:17:16

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



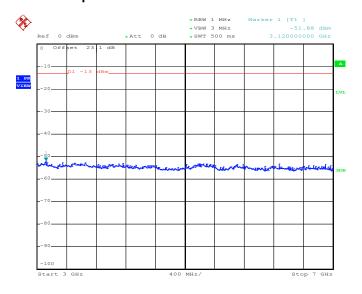
Date: 19.JUN.2013 16:17:33

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 82 of 128
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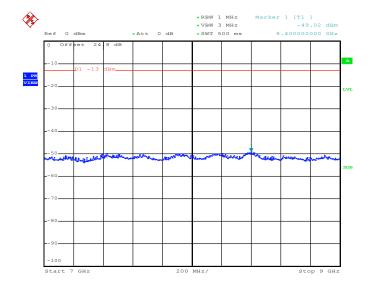


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 19.JUN.2013 16:17:45

Conducted Spurious Emission Plot between 7GHz ~ 9GHz



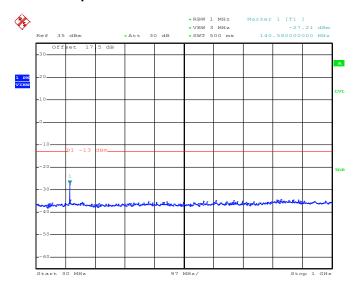
Date: 19.JUN.2013 16:17:57

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 83 of 128
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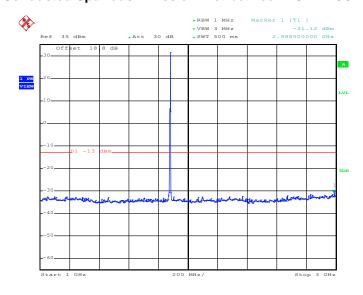
Band :	GSM1900	Channel:	CH661
Test Mode :	GSM Link (GMSK)	Frequency:	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 19.JUN.2013 17:04:22

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



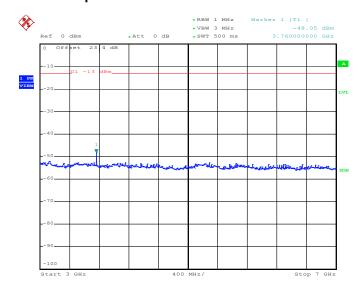
Date: 19.JUN.2013 17:04:35

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 84 of 128
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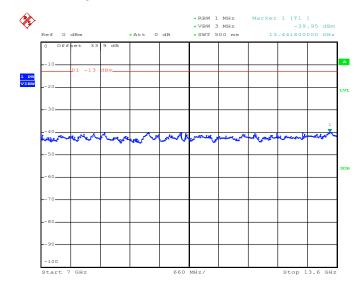


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 19.JUN.2013 17:04:52

Conducted Spurious Emission Plot between 7GHz ~ 13.6G



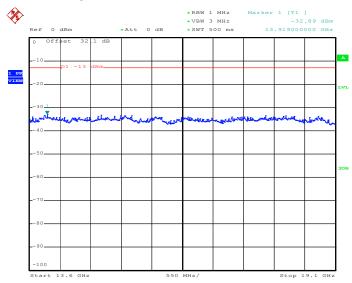
Date: 19.JUN.2013 17:05:04

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 85 of 128
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Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 19.JUN.2013 17:05:17

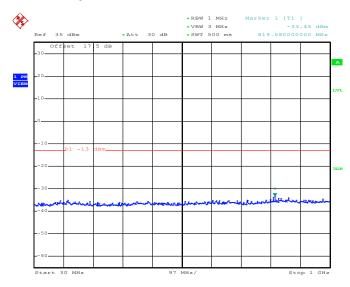
SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 86 of 128
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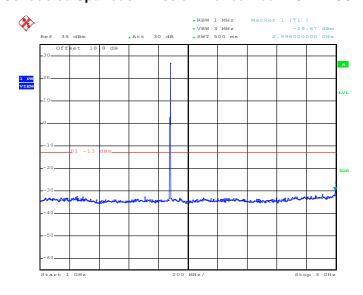
Band :	GSM1900	Channel:	CH661
Test Mode :	EDGE class 8 Link (8PSK)	Frequency:	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 19.JUN.2013 17:18:40

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



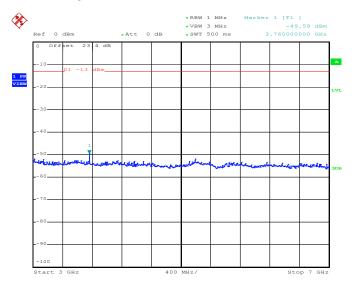
Date: 19.JUN.2013 17:18:52

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 87 of 128
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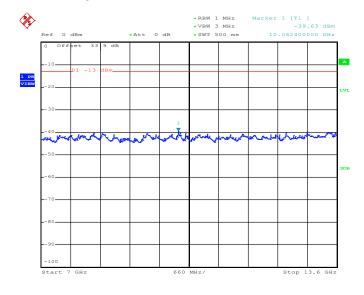


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 19.JUN.2013 17:19:09

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



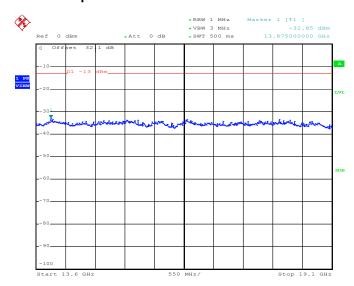
Date: 19.JUN.2013 17:19:21

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 88 of 128
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Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



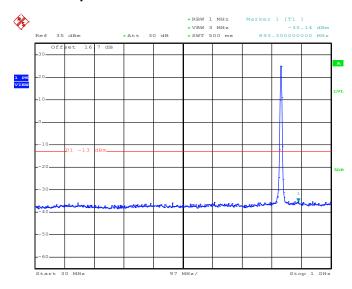
Date: 19.JUN.2013 17:19:34

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 89 of 128
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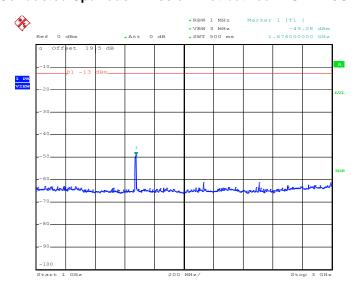
Band :	WCDMA Band V	Channel:	CH4182
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency:	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 19.JUN.2013 18:46:31

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



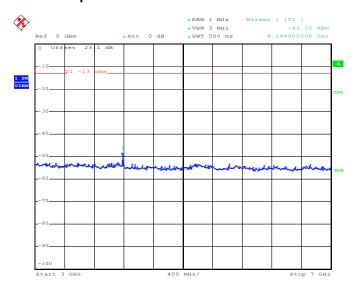
Date: 19.JUN.2013 18:46:48

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 90 of 128
Report Issued Date : Aug. 14, 2013
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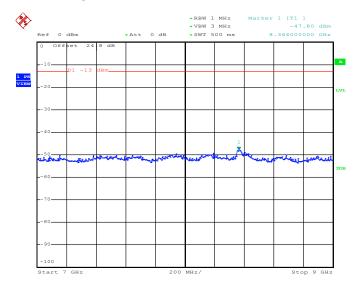


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 19.JUN.2013 18:47:00

Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 19.JUN.2013 18:47:13

SPORTON INTERNATIONAL INC.

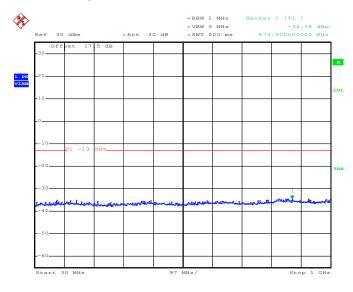
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 91 of 128 Report Issued Date : Aug. 14, 2013

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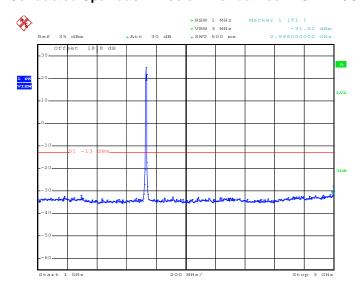
Band :	WCDMA Band IV	Channel:	CH1413
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency:	1732.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 19.JUN.2013 18:26:56

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



Date: 19.JUN.2013 18:27:08

SPORTON INTERNATIONAL INC.

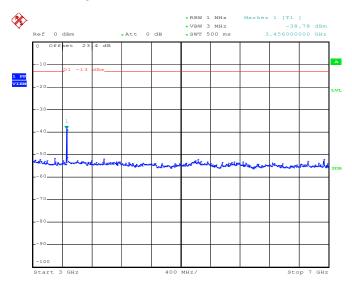
TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 92 of 128 Report Issued Date: Aug. 14, 2013

Report No.: FG322304-07A

Report Version : Rev. 01

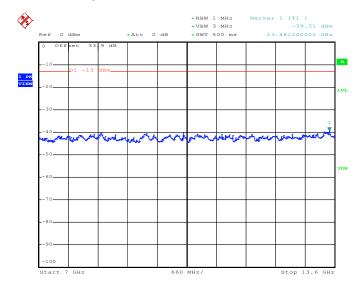


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 19.JUN.2013 18:27:25

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



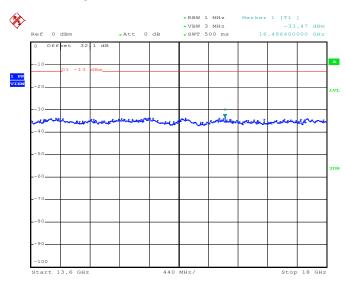
Date: 19.JUN.2013 18:27:37

SPORTON INTERNATIONAL INC.

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Conducted Spurious Emission Plot between 13.6GHz ~ 18GHz



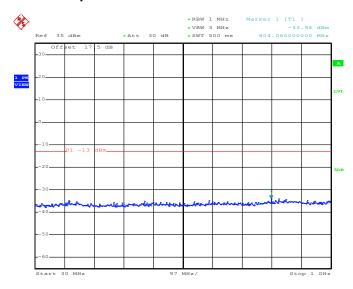
Date: 19.JUN.2013 18:27:49

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 94 of 128
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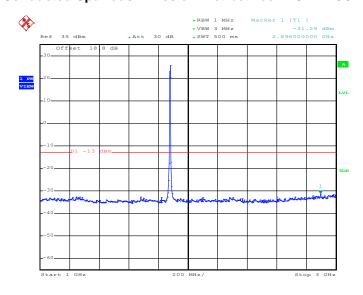
Band :	WCDMA Band II	Channel:	CH9400
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency:	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



Date: 19.JUN.2013 18:02:30

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



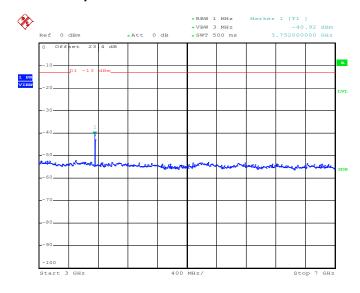
Date: 19.JUN.2013 18:02:42

SPORTON INTERNATIONAL INC.

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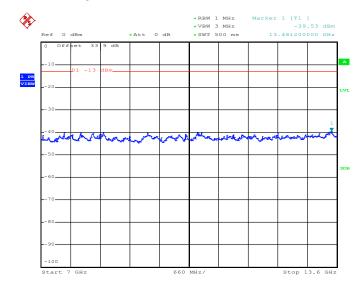


Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 19.JUN.2013 18:02:59

Conducted Spurious Emission Plot between 7GHz ~ 13.6GHz



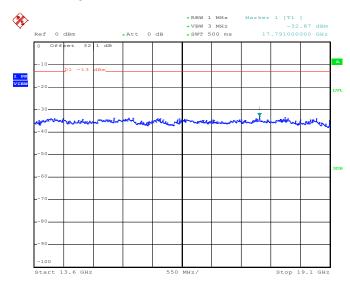
Date: 19.JUN.2013 18:03:12

SPORTON INTERNATIONAL INC.

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Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 19.JUN.2013 18:03:24

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3.7 Field Strength of Spurious Radiation Measurement

3.7.1 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.

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3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

- 1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
- 2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 3. The table was 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 the maximum spurious emission for both horizontal and vertical polarizations.
- 5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- 6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- 8. Taking the record of output power at antenna port.
- 9. Repeat step 7 to step 8 for another polarization.
- The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

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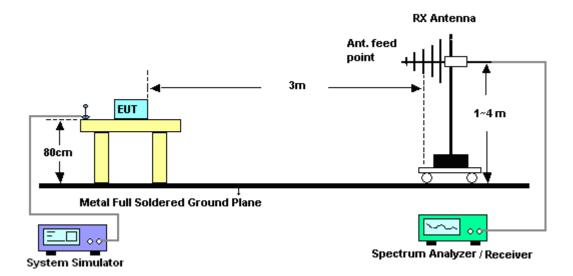
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- 11. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
 - = P(W) [43 + 10log(P)] (dB)
 - = [30 + 10log(P)] (dBm) [43 + 10log(P)] (dB)
 - = -13dBm.
- 12. EIRP (dBm) = S.G. Power Tx Cable Loss + Tx Antenna Gain
- 13. ERP (dBm) = EIRP 2.15

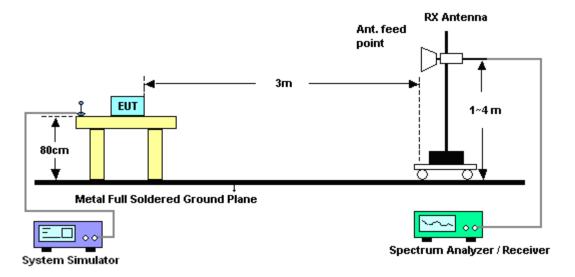


3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

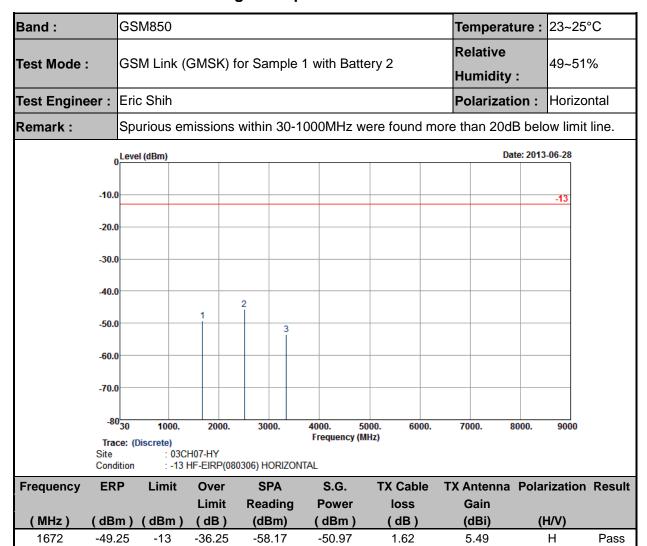


SPORTON INTERNATIONAL INC.

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3.7.5 Test Result of Field Strength of Spurious Radiated



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2509

3345

-45.73

-53.49

-13

-13

-32.73

-40.49

-59.02

-67.59

-47.7

-56.38

2.1

3.03

6.22

8.07

Н

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Pass

Pass

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FCC RF Test Report

Band :		GSM8	50						To	emperat	ure :	23~25	°C			
Test Mode	:	GSM I	Link (GMSK)	for Sa	mple	1 with Bat	tery 2		elative umidity	:	49~51	%			
Test Engine	eer:	Eric S	hih						Р	olarizati	on :	Vertica	ıl			
Remark :		Spuric	us en	nission	s withir	า 30-′	1000MHz v	vere found	more t	han 20d	B belo	ow limit	line.			
	0	Level (dB	Bm)							Da	te: 2013	-06-28				
	-10.0											-13				
	-20.0															
	-30.0															
	-40.0			1												
	-50.0				2	3										
	-60.0															
	-70.0															
	-80 Trac Site Condi	e: (Discr	: 03Cl	2000 H07-HY HF-EIRP((00.	Frequency (5000. 6000 MHz)	0. 7	7000. 8	3000.	9000				
Frequency	ERI	P L	imit	Over Limit		PA dina	S.G. Power	TX Cable		Antenna Gain	Pola	rization	Result			
(MHz)	(dBr	n) (d	Bm)	(dB)		ding 3m)	(dBm)	(dB)		Gain (dBi)	(1	- 1/V)				
1672	-40.8		-13	-27.81	•	.97	-42.53	1.62		5.49		V	Pass			

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH

2509

3345

-48.02

-52.43

-13

-13

-35.02

-39.43

-61.76

-68.02

-49.99

-55.32

2.1

3.03

6.22

8.07

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Pass

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FCC RF Test Report

Band :		GSN	/l850								Temperat	ture :	23~25	°C			
Test Mode	:	EDO	EDGE class 8 Link (8PSK) for Sample 1 with Battery 2 Humidity: 49~51%														
Test Engine	eer:	Eric	Shih								Polarizat	ion :	Horizo	ntal			
Remark:		Spu	rious en	nissio	ns w	vithin 30)-100	00MHz w	ere four	nd mor	e than 20d	B belo	ow limit	line.			
	0	Level	(dBm)								Da	ate: 2013	-06-28				
	-10.0		-13														
	-20.0																
	-30.0																
	-40.0				2	2											
	-50.0			1		3	1										
	-60.0			i													
	-70.0																
	-80 Trac Site Condi	e: (Di		200 H07-HY HF-EIRF		3000. 3006) HORIZ	ı	requency (N		6000.	7000.	8000.	9000				
Frequency	ERI	P	Limit	Ove	-	SPA Reading		S.G. Power	TX Ca		ΓX Antenna	Pola	rization	Result			
(MHz)	(dBr	n) ((dBm)	Limi (dB		s ;)	Gain (dBi)	(1	H/V)								
1672	-56.5		-13	-43.5	•	(dBm) -65.46		(dBm) -58.26	1.62	•	5.49	•	H	Pass			

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH

2509

3345

-42.38

-53.20

-13

-13

-29.38

-40.20

-55.67

-67.3

-44.35

-56.09

2.1

3.03

6.22

8.07

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Pass

Pass

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FCC RF Test Report Report No.: FG322304-07A

Band :		GSM85	0						T	emperat	ure :	23~25	°C
Test Mode :		EDGE o	lass	8 Link ((8PSK)	for Sa	mple 1	with Battery 2	2	elative umidity	:	49~51	%
Test Engine	er:	Eric Shi	h						Р	olarizati	on :	Vertica	ıl
Remark :		Spuriou	s en	nissions	within 3	0-100	00MHz v	vere found m	ore t	han 20d	B belo	ow limit	line.
	0	Level (dBm)							Da	te: 2013	-06-28	
	-10.0											-13	
	-20.0												
	-30.0												
	-40.0				2								
	-50.0			1		3							
	-60.0												
	-70.0												
	-80	30 10	000.	2000.	3000.			6000. 6000.	7	7000. 8	8000.	9000	
	Trac Site	e: (Discret		H07-HY		ı	requency (I	MHz)					
	Condi			HF-EIRP(080	0306) VER	TICAL							
Frequency	ERI	P Lin	nit	Over	SPA		S.G.	TX Cable		Antenna	Pola	rization	Result
				Limit	Readin		Power	loss		Gain			
(MHz)	(dBr			(dB)	(dBm	-	(dBm)	(dB)		(dBi)	-	1/V)	
1672	-49.8			-36.83	-60.9		-51.55	1.62		5.49		V	Pass
2509	-45.5	54 -1	3	-32.54	-59.28	8	-47.51	2.1		6.22		V	Pass

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH

3345

-51.95

-13

-38.95

-67.54

-54.84

3.03

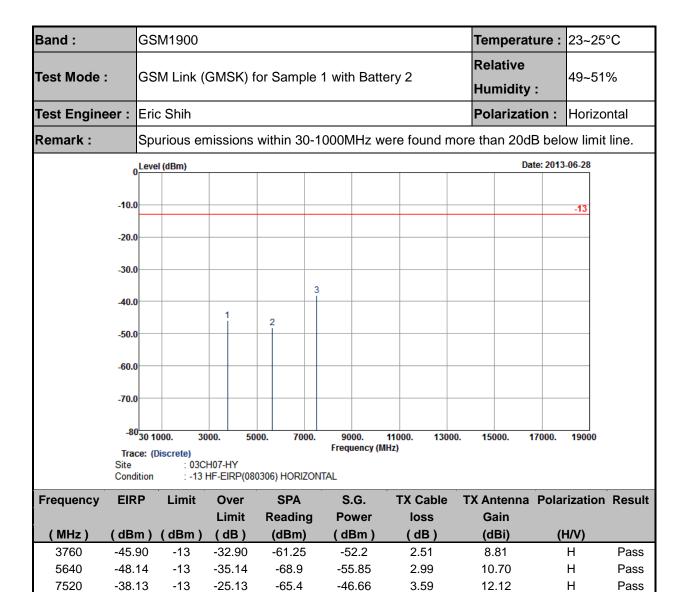
8.07

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Pass

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FCC RF Test Report

Band :		GSM	1900								Tempe	rature :	23~25°C				
Test Mode :		GSM	SSM Link (GMSK) for Sample 1 with Battery 2 Relative Humidity:														
Test Enginee	er:	Eric S	Shih								Polariz	ation:	Vertical				
Remark :		Spuri	purious emissions within 30-1000MHz were found more than 20dB below limit														
	0	Level (d	Bm)									Date: 2013	-06-28				
	-10.0		-13														
	-20.0																
	-30.0																
	-40.0						3										
	-50.0			1	2												
	-60.0																
	-70.0																
		30 1000 ce: (Disc	rete) : 03Cl	00. H07-HY HF-EIRP(5000.	7000	Free	000. 1 quency (MH	1000. z)	13000.	15000.	17000.	19000				
Frequency	EIR	PΙ	_imit	Over Limit		SPA eading		S.G. ower	TX C		X Anten Gain	na Pola	rization Res				

(dBm)

-54.56

-56.5

-48.68

(dB)

2.51

2.99

3.59

(dBi)

8.81

10.70

12.12

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH

(MHz)

3760

5640

7520

(dBm) (dBm)

-13

-13

-13

-48.26

-48.79

-40.15

(dB)

-35.26

-35.79

-27.15

(dBm)

-64.56

-69.36

-67.2

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(H/V)

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V

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Pass

Pass

Pass

FCC RF Test Report Report No.: FG322304-07A

Band :		GSN	/1900								Ter	nperati	ure :	23~25	.C
Test Mode :		EDG	SE class	8 Lini	k (8F	PSK) fo	or San	nple 1	with Ba	attery 2	2	ative midity	:	49~51°	%
Test Engine	er:	Eric	Shih								Pol	arizati	on :	Horizo	ntal
Remark :		Spui	rious en	nissior	ns wi	thin 30)-1000	MHz v	vere fo	und mo	ore tha	an 20dE	3 belo	ow limit	line.
	0	Level ((dBm)									Dat	te: 2013	-06-28	
	-10.0													-13	
	-20.0														
	-30.0														
	-40.0			1		_	3								
	-50.0					2									
	-60.0														
	-70.0														
			screte) : 03Cl	 00. H07-HY HF-EIRP(5000.	700 (6) HORIZ	Fre	9000. equency (I	11000. MHz)	13000	. 150	 	7000.	19000	
Frequency	EIR	Р	Limit	Over		SPA		S.G.		Cable			Pola	rization	Result
(MHz)	(dBr	n) (dBm)	Limit (dB)		Readin (dBm)		ower dBm)		ss B)		ain Bi)	(H	H/V)	
3760	-47.′		-13	-34.10		-62.45		-53.4		51		.81		Н	Pass
5640	-48.5		-13	-35.52		-69.28		56.23		99		.70		H	Pass
7520	-41.9) 1	-13	-28.9		-69.18	-	50.44	3.	59	12	.12		Н	Pass

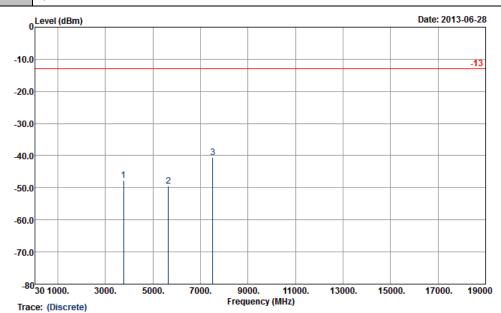
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Test Engineer:

Band: GSM1900 Temperature: 23~25°C

Test Mode: EDGE class 8 Link (8PSK) for Sample 1 with Battery 2 Humidity: 49~51%

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



Site : 03CH07-HY

Eric Shih

Condition : -13 HF-EIRP(080306) VERTICAL

Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
3760	-47.67	-13	-34.67	-63.97	-53.97	2.51	8.81	V	Pass
5640	-49.44	-13	-36.44	-70.01	-57.15	2.99	10.70	V	Pass
7520	-40.47	-13	-27.47	-67.52	-49	3.59	12.12	V	Pass

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 107 of 128
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Vertical

Polarization:

FCC RF Test Report

Band :		GSM1	900						7	Temperat	ure :	23~25°	,C
Test Mode	:	GSM L	ink (0	GMSK) 1	for Sam _l	ole 1	with Batto	ery 1		Relative Humidity	:	49~519	%
Test Engin	eer :	Eric Sł	nih						F	Polarizati	on :	Horizo	ntal
Remark :		Spurio	us em	nissions	within 3	0-10	00MHz w	ere found m	ore	than 20d	B belo	w limit	line.
	0 ^L	evel (dBm	1)								ate: 201	3-06-30	
	-10.0											-13	
	-20.0												
	-30.0												
	-40.0					3							
	-50.0			1	2								
	-60.0												
	-70.0												
	-803	0 1000.	300	0. 50	00. 70	00.	9000.	11000. 1300	00.	15000.	17000.	19000	
		: (Discret	te) : 03CH	07-HY	0306) HORI		Frequency (N					3-	
Frequency	EIR	P Li	mit	Over	SPA		S.G.	TX Cable	TX	Antenna	Polar	ization	Result
				Limit	Readir	_	Power	loss		Gain			
(MHz)	(dBı		Bm)	(dB)	(dBm	•	(dBm)	(dB)		(dBi)	•	1 /V)	
3760	-45.		13	-32.27	-60.6		-51.57	2.51		8.81		Н	Pass
5640	-48.		13	-35.77	-69.5		-56.48	2.99		10.70		H	Pass

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH

7520

-38.88

-13

-25.88

-66.15

-47.41

3.59

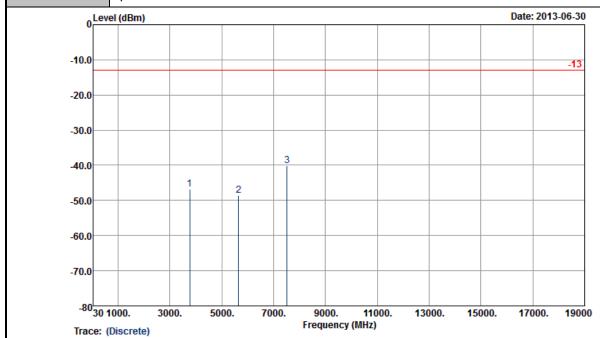
12.12

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Pass

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Band :	GSM1900	Temperature :	23~25°C
Test Mode :		Relative	49~51%
rest wode.	GSM Link (GMSK) for Sample 1 with Battery 1	Humidity :	49~31%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more	e than 20dB belo	ow limit line.

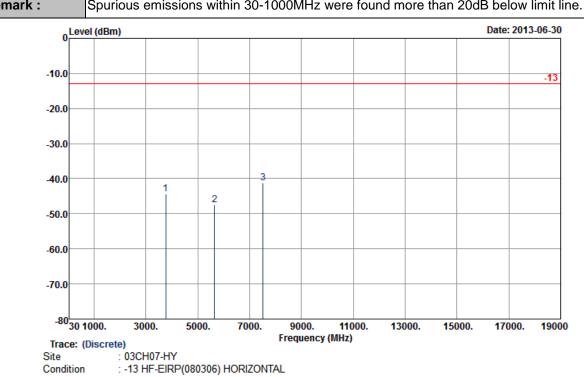


Site : 03CH07-HY Condition : -13 HF-EIRP(080306) VERTICAL

Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
3760	-46.85	-13	-33.85	-63.15	-53.15	2.51	8.81	V	Pass
5640	-48.60	-13	-35.60	-69.17	-56.31	2.99	10.70	V	Pass
7520	-40.18	-13	-27.18	-67.23	-48.71	3.59	12.12	V	Pass

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Band :	GSM1900	Temperature :	23~25°C
Test Mode :	GSM Link (GMSK) for Sample 2 with Battery 2	Relative	49~51%
rest wode .	GSW LINK (GWSK) for Sample 2 with battery 2	Humidity :	49~31%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark ·	Spurious emissions within 30-1000MHz were found more	e than 20dB held	w limit line



				-					
Frequency	EIRP	Limit	Over	SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(H/V)	
3760	-44.25	-13	-31.25	-59.6	-50.55	2.51	8.81	Н	Pass
5640	-47.48	-13	-34.48	-68.24	-55.19	2.99	10.70	Н	Pass
7520	-41.20	-13	-28.20	-68.47	-49.73	3.59	12.12	Н	Pass

Condition

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 110 of 128 Report Issued Date: Aug. 14, 2013 : Rev. 01 Report Version

Band :		GS	M1900					Temperatur	e : 23~25	°C					
Test Mode	:	GS	M Link (GMSK) f	or Sample	2 with Batt	ery 2	Relative Humidity :	49~51	%					
Test Engine	eer :	Eric	Shih					Polarization	: Vertica	al					
Remark :		Spu	purious emissions within 30-1000MHz were found more than 20dB below limit I												
	οL	evel (rel (dBm) Date: 2013-06-30												
	-10.0								-13						
	-20.0														
	-30.0														
	-40.0			1	2	3									
	-50.0														
	-60.0														
	-80 ₃	80 100		00. 500	00. 7000.	9000. Frequency (N	11000. 1300	00. 15000. 170	000. 19000						
	Site Conditi	•		107-HY IF-EIRP(080	0306) VERTICA										
Frequency	EIR	P	Limit	Over	SPA	S.G.	TX Cable	TX Antenna Po	olarization	Result					
(MHz)	(dBı	m)	(dBm)	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)						
3760	-49.	29	-13	-36.29	-65.59	-55.59	2.51	8.81	V	Pass					
5640	-48.		-13	-35.67	-69.24	-56.38	2.99	10.70	V	Pass					
7520	-42.	13	-13	-29.13	-69.18	-50.66	3.59	12.12	V	Pass					

TEL: 886-3-327-3456 FAX: 886-3-328-4978 FCC ID: UZ7TC55AH Page Number : 111 of 128 Report Issued Date: Aug. 14, 2013 Report Version : Rev. 01

Band :		WCDI	ИА Ва	ınd V					Temperatu	ure :	23~25	°C
Test Mode	:	RMC ·	12.2K	bps Link	(QPSk	() for S	ample 1	with Battery 2	Relative Humidity		49~51	%
Test Engine	eer :	Eric S	hih						Polarizatio	on :	Horizo	ntal
Remark :		Spurio	ous en	nissions	within 3	30-100	0MHz w	ere found mor	e than 20dE	B belo	w limit	line.
	0 ^L	evel (dBr	n)						Da	ate: 201	3-06-28	
	-10.0										-13	
	-20.0											
	-30.0											
	-40.0				2							
	-50.0			1		3						
	-60.0											
	-70.0											
	-80 ₃	30 1	1000.	2000.	3000.			000. 6000.	7000.	8000.	9000	
	Trace Site Condit	: (Discre	: 03CH	07-HY F-EIRP(080)306) HOR		requency (N	ЛНZ)				
Frequency	ER	P L	imit	Over	SPA		S.G.		TX Antenna	Polar	ization	Result
(MHz)	(dB	m) (d	lBm)	Limit (dB)	Readi (dBn	_	Power (dBm)	loss (dB)	Gain (dBi)	/ F	I /V)	
1672	-55.		-13	-42.00	-63.9	•	-56.72	1.62	5.49	•	., • , Н	Pass
2506	-46.		-13	-33.99	-60.2		-48.96	2.1	6.22		 H	Pass
3345	-54.		-13	-41.06	-68.1		-56.95	3.03	8.07		Н	Pass

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Band :		WCDM	A Baı	nd V					Temperat	ure :	23~25°	°C
Test Mode	•	RMC 12	2.2Kb	ops Link	(QPSK	() for S	Sample 1	with Battery 2	Relative Humidity	:	49~519	%
Test Engine	eer:	Eric Sh	ih						Polarizati	on :	Vertica	I
Remark :		Spuriou	ıs em	nissions	within 3	30-100	0MHz we	ere found mo	re than 20dl	B belo	ow limit	line.
	o ^L	evel (dBm)							D	ate: 201	3-06-28	
	-10.0										-13	
	-20.0											
	-30.0											
	-40.0			1								
	-50.0				2	3						
	-60.0											
	-70.0											
	Site	: (Discrete	03CH(3000.	F	000. 50 requency (Mi	00. 6000. Hz)	7000.	8000.	9000	
F	Conditi		-		306) VER	•	6.0	TV Cable	TV Antonno	Dala		Daguit
Frequency	ERI	P Lir	nit	Over Limit	SPA Readii		S.G. Power	TX Cable Ioss	TX Antenna Gain	Polal	ization	Result
(MHz)	(dBr	n) (dE	m)	(dB)	(dBm		(dBm)	(dB)	(dBi)	(H	1/V)	
1669	-47.6	68 -1	3	-34.68	-58.7	5	-49.4	1.62	5.49		V	Pass
2509	-54.2			-41.27	-68.0		-56.24	2.1	6.22		V	Pass
3346	-52.′	12 -1	3	-39.12	-67.7	1	-55.01	3.03	8.07		V	Pass

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Band :	,	WCDMA B	and IV				Temperature	23~25	°C						
Test Mode :		RMC 12.2	C 12.2Kbps Link (QPSK) for Sample 1 with Battery 2 Humidity: 49~51%												
Test Engine	er:	Eric Shih					Polarization :	Horizo	ntal						
Remark :		Spurious e	purious emissions within 30-1000MHz were found more than 20dB below limit lin												
	0 ^{Le}	evel (dBm)	vel (dBm) Date: 2013-07-01												
	-10.0							-13							
	-20.0														
	-30.0														
	-40.0			3											
	-50.0		1	2											
	-60.0														
	-70.0														
	-80 ₃₀	0 1000. 30	000. 50	00. 70 00.	9000.	11000. 13000). 15000. 1700 0). 19000							
		(Discrete) : 03C	H07-HY HF-EIRP(080	0306) HORIZO	Frequency (N	IHz)									
Frequency	EIRI	P Limit	Over	SPA	S.G.	TX Cable	TX Antenna Pola	arization	Result						
(MHz)	/ dD=	a \	Limit (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)							
3464	(dBn -48.7		-35.74	-63.04	-52.57	4.48	8.31	<u>(⊓/V)</u> H	Pass						
5198	-49.4		-36.41	-68.2	-54.05	5.332	9.98	Н	Pass						

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6928

-42.66

-13

-29.66

-68.82

-47.9

6.1

11.34

Н

Pass

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Band :	WCDMA B	and IV				Temperatu	ire: 23~25°	,C
Test Mode :	RMC 12.2	Kbps Link	(QPSK) for	Sample 1	with Battery	Relative Humidity:	49~519	%
Test Engineer :	Eric Shih					Polarizatio	on: Vertica	I
Remark :	Spurious e	missions	within 30-10	000MHz w	ere found mo	ore than 20dB	below limit	line.
0	Level (dBm)					Da	te: 2013-07-01	
-10.0							-13	
-20.0								
-30.0								
-40.0		1	3					
-50.0			2					
-60.0								
-70.0								
	e: (Discrete)	000. 500 H07-HY	0. 7000.	9000. Frequency (N	11000. 13000 IHz)). 15000. 1	17000. 19000	
Frequency Elf		HF-EIRP(080) Over	306) VERTICAL SPA	S.G.	TX Cable	TX Antenna	Polarization	Posult
. ,	Sm) (dBm)	Limit	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	Result
3468 -46	.60 -13	-33.60	-62.14	-50.43	4.48	8.31	V	Pass
5198 -49 6928 -44		-36.65 -31.43	-68.48 -69.77	-54.29 -49.67	5.332 6.1	9.98 11.34	V V	Pass Pass

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Band :		WCDMA E	Band IV				Temperat	ture : 23~25	°C				
Test Mode	:	RMC 12.2	Kbps Link	(QPSK) fo	or Sample 1	with Battery	Relative Humidity	49~51	%				
Test Engine	eer:	Eric Shih					Polarizati	ion : Horizo	ntal				
Remark :		Spurious e	urious emissions within 30-1000MHz were found more than 20dB below limit line.										
	o ^L	evel (dBm)					Г	Date: 2013-07-01					
	-10.0							-13					
	-20.0												
	-30.0												
	-40.0			3									
	-50.0		1										
	-60.0												
	-70.0												
			000. 50	00. 7000.	9000. Frequency (N	11000. 1300 //Hz)	00. 15000.	17000. 19000					
	Site Conditi		CH07-HY HF-EIRP(08))306) HORIZON	NTAL								
Frequency	EIR	P Limit	Over	SPA	S.G.	TX Cable		Polarization	Result				
(BAL! -)	/ dD	··) (-ID::	Limit	Reading	Power	loss	Gain	(1100					
(MHz)	-	n) (dBm)		(dBm)	(dBm)	(dB)	(dBi)	(H/V)	D-				
3464	-50.2	_	-37.22	-64.52	-54.05	4.48	8.31	Н	Pass				
5198	-48.7	71 -13	-35.71	-67.5	-53.35	5.332	9.98	Н	Pass				

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6928

-43.75

-13

-30.75

-69.91

-48.99

6.1

11.34

Н

Pass

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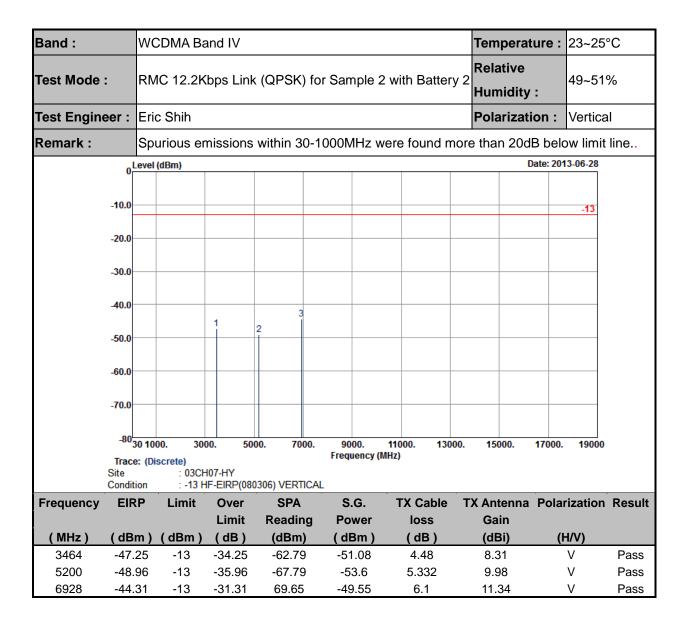
Band :		WCI	DMA Ba	ınd IV					Tempera	ture :	23~25	°C		
Test Mode	:	RMO	C 12.2K	bps Link	(QPSK)	for Sam _l	ole 1 wi	ith Battery	Relative Humidity	/ :	49~51	%		
Test Engine	eer :	Eric	Shih						Polarizat	tion :	Vertica	ıl		
Remark :		Spu	rious en	nissions	within 30	-1000Ml	dz were	e found mo	re than 20d	dB belo	ow limit	line		
	o ^L	evel (d	vel (dBm) Date: 2013-07-01											
	-10.0										-13			
	-20.0													
	-30.0													
	-40.0			1	3									
	-50.0				2									
	-60.0													
	-70.0													
		0 1000 e: (Disc	crete) : 03CH	107-HY	00. 700 0	Freque). 110 ncy (MHz)	000. 13000	15000.	17000.	19000			
Frequency	EIR	P	Limit	Over	SPA	S.0			TX Antenna	Pola	rization	Result		
(MHz)	(dBı	m) ((dBm)	Limit (dB)	Reading (dBm)	g Pow (dB		loss (dB)	Gain (dBi)	(H	-			
3468	-47.		-13	-34.53	-63.07	-51.		4.48	8.31		V	Pass		
5198 6928	-49. -44.		-13	-36.95 -31.28	-68.78 -69.62	-54. -49.		5.332 6.1	9.98 11.34		V V	Pass Pass		
0920	-44.	۷۷	-13	-31.20	-03.02	-49.	J <u>Z</u>	0.1	11.04		v	газэ		

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Band :		WCDMA I	Band IV				Temperati	ure: 23~25	°C
Test Mode	:	RMC 12.2	2Kbps Linl	k (QPSK) fo	or Sample 2	with Battery	Relative Humidity	49~51	%
Test Engine	er:	Eric Shih					Polarization	on : Horizo	ntal
Remark :		Spurious	emissions	within 30-	1000MHz w	ere found m	ore than 20dE	3 below limit	line.
	0 ^L	evel (dBm)					Da	ate: 2013-06-28	
	-10.0							-13	
	-20.0								
	-30.0								
	-40.0			3					
	-50.0		1	2					
	-60.0								
	-70.0								
		: (Discrete) : 03	CH07-HY	00. 7000 .	Frequency (I	11000. 1300 MHz)	00. 15000.	 17000. 19000	
Frequency	EIR	•		SPA	S.G.	TX Cable	TX Antenna	Polarization	Result
(MHz)	(dBr	n) (dBm	Limit) (dB)	Reading (dBm)	Power (dBm)	loss (dB)	Gain (dBi)	(H/V)	
3464	-48.3	, ,	-35.32	-62.62	-52.15	4.48	8.31	H	Pass
5198	-49.4	43 -13	-36.43	-68.22	-54.07	5.332	9.98	Н	Pass
6928	-43.8	35 -13	-30.85	-70.01	-49.09	6.1	11.34	Н	Pass

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Band :	WC	DMA Ba	ınd II					Temperatu	ıre :	23~25°	,C
Test Mode :	RM	RMC 12.2Kbps Link (QPSK) for Sample 1 with Battery 2				Relative Humidity :		49~519	%		
Test Engineer :	Eric	Shih						Polarizatio	n:	Horizo	ntal
Remark :	Spu	ırious en	nissions	within 30	-1000N	1Hz wer	e found mo	re than 20dB	belo	w limit	line.
0	Level (dBm)						Da	te: 201	3-06-28	-
-10.0										-13	
-20.0											
-30.0											
-40.0			1	2	3						
-50.0				2							
-60.0											
-70.0											
		crete) : 03CH	07-HY	00. 700 0	Frequ	00. 11 Jency (MHz	000. 13000	. 15000. 1	7000.	19000	
Frequency Ell	RP	Limit	Over	SPA	S.	G.	TX Cable	TX Antenna	Polar	ization	Result
(MHz) (dB	Sm)	(dBm)	Limit (dB)	Reading (dBm)		wer 3m)	loss (dB)	Gain (dBi)	(F	I/V)	
3760 -44		-13	-31.91	-60.26	•	.21	2.51	8.81		H	Pass
5640 -48	.69	-13	-35.69	-69.45	-5	6.4	2.99	10.70		Н	Pass

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7520

-41.22

-13

-28.22

-68.49

-49.75

3.59

12.12

Н

Pass

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3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center

frequency.

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.

2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.

3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was

recorded within one minute.

3.8.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.

2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured

at the input to the EUT.

3. The variation in frequency was measured for the worst case.

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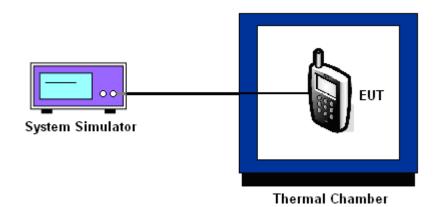
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3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

Band :	GSM 850	Channel:	189
Limit (ppm) :	2.5	Frequency:	836.4 MHz

	GSM		EDGE class 8		
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	35	0.04	45	0.05	
-20	38	0.04	44	0.05	
-10	34	0.04	42	0.05	
0	32	0.04	38	0.04	
10	23	0.03	34	0.04	PASS
20	24	0.03	37	0.04	
30	31	0.04	36	0.04	
40	30	0.04	42	0.05	
50	36	0.04	44	0.05	

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Band :	GSM 1900	Channel:	661
Limit (ppm):	2.5	Frequency:	1880.0 MHz

	GSM		EDGE		
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	26	0.01	63	0.03	
-20	20	0.01	58	0.03	
-10	18	0.01	54	0.03	
0	16	0.01	52	0.03	
10	-17	-0.01	49	0.03	PASS
20	-15	-0.01	48	0.03	
30	-14	-0.01	51	0.03	
40	-20	-0.01	52	0.03	
50	-24	-0.01	61	0.03	

Band :	WCDMA Band V	Channel:	4182
Limit (ppm):	2.5	Frequency:	836.4 MHz

	RMC 12		
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	10	0.01	
-20	12	0.01	
-10	8	0.01	
0	7	0.01	
10	5	0.01	PASS
20	6	0.01	
30	-6	-0.01	
40	7	0.01	
50	10	0.01	

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Band :	WCDMA Band IV	Channel:	1413
Limit (ppm):	2.5	Frequency:	1732.6 MHz

	RMC 1		
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	-16	-0.01	
-20	-14	-0.01	
-10	-15	-0.01	
0	12	0.01	
10	10	0.01	PASS
20	11	0.01	
30	13	0.01	
40	12	0.01	
50	14	0.01	

Band :	WCDMA Band II	Channel:	9400
Limit (ppm):	2.5	Frequency:	1880 MHz

	RMC 12		
Temperature (°C)	Freq. Dev. (Hz)	Deviation (ppm)	Result
-30	-16	-0.01	
-20	-18	-0.01	
-10	-15	-0.01	
0	-12	-0.01	
10	-14	-0.01	PASS
20	-13	-0.01	
30	-14	-0.01	
40	-16	-0.01	
50	-15	-0.01	

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3.8.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
		3.7	28	0.03		
	GSM	BEP	34	0.04		
GSM 850		4.2	20	0.02		
CH189	ED0E	3.7	41	0.05		
	EDGE class 8	BEP	37	0.04		
	01000 0	4.2	33	0.04		
		3.7	19	0.01		PASS
	GSM	BEP	14	0.01	2.5	
GSM 1900		4.2	28	0.01		
CH661	EDGE class 8	3.7	58	0.03		
		BEP	54	0.03		
		4.2	54	0.03		
MODMA Dawell	DMO	3.7	7	0.01		
WCDMA Band V CH4182	RMC 12.2Kbps	BEP	5	0.01		
0114102	12.21000	4.2	-6	-0.01		
		3.7	9	0.01		
WCDMA Band IV CH1413	RMC 12.2Kbps	BEP	12	0.01		
0111410		4.2	11	0.01		
		3.7	-12	-0.01		
WCDMA Band II CH9400	RMC 12.2Kbps	BEP	-14	-0.01		
	-12	4.2	-11	-0.01		

Note:

- 1. Normal Voltage = 3.7V.
- 2. Battery End Point (BEP) = 3.55 V.

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4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 07, 2013	Jun. 19, 2013 ~ Jun. 21, 2013	Jun. 06, 2014	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 23, 2012	Jun. 19, 2013 ~ Jun. 21, 2013	Jul. 22, 2013	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9kHz~30GHz	Nov. 30, 2012	Jun. 27, 2013 ~ Jul. 02, 2013	Nov. 29, 2013	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz~1GHz	Oct. 06, 2012	Jun. 27, 2013 ~ Jul. 02, 2013	Oct. 05, 2013	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2012	Jun. 27, 2013 ~ Jul. 02, 2013	Aug. 21, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Sep. 28, 2012	Jun. 27, 2013 ~ Jul. 02, 2013	Sep. 27, 2013	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	30MHz~1GHz	Feb. 26, 2013	Jun. 27, 2013 ~ Jul. 02, 2013	Feb. 25, 2014	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Dec. 01, 2012	Jun. 27, 2013 ~ Jul. 02, 2013	Nov. 30, 2013	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Jun. 27, 2013 ~ Jul. 02, 2013	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	ChainTek 3000	N/A	N/A	N/A	Jun. 27, 2013 ~ Jul. 02, 2013	N/A	Radiation (03CH07-HY)

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5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of	2.54	
Confidence of 95% (U = 2Uc(y))		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of	4.70
Confidence of 95% (U = 2Uc(y))	4.72

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