

# 47 CFR PART 22H & 24E

# **TEST REPORT**

of

#### **GSM** Mobile Phone

Brand Name: Avvio Model Name: 409 Report No.: SZ10060150E02 FCC ID.: WVBAVVIO409

prepared for

**Brightstar Corp** 9725 NW 117th Ave, #300 – Doral – FL – 33178



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Change History					
Issue Date Reason for change					
1.0	July 28, 2010	First edition			





## 1. TEST CERTIFICATION

Equipment under Test: GSM Mobile Phone

Brand Name:	Avvio
Model Name:	409
FCC ID:	WVBAVVIO409
Applicant:	Brightstar Corp
	9725 NW 117th Ave, #300 - Doral - FL - 33178
Manufacturer:	Longcheer Technology (Shanghai) Co., Ltd.
	Building 1, No.401, Caobao Rd, Xuhui District, Shanghai, P.R.China
Test Standards:	47 CFR Part 2
	47 CFR Part 22 Subpart H
	47 CFR Part 24 Subpart E
Test Date(s):	July 14, 2010 - July 17, 2010
Test Result:	PASS

#### \* We Hereby Certify That:

The equipment under test was tested by Shenzhen Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.





# 2. GENERAL INFORMATION

## 2.1 EUT Description

EUT Type:	GSM Mobile Phone				
Model Name:	409				
Serial No:	(n.a, marked #1 by test site)				
Hardware Version:	LK6M101B1-1				
Software Version:	LK63S02.8.28.1.0T02G0705_M101				
Frequency Range:	GSM 850MHz:				
	Tx: 824.20 - 848.80MHz (at intervals of 200kHz);				
	Rx: 869.20 - 893.80MHz (at intervals of 200kHz)				
	GSM 1900MHz:				
	Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);				
	Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)				
Modulation Type:	GMSK				
Emission Designators:	300KGXW				
Power Supply:	Battery				
	Model Name: BL-4C				
	Brand name: Avvio				
	Capacitance: 650mAh				
	Rated voltage: 3.7V				
	Manufacturer: Shenzhen BAK Battery Co.,Ltd				
	Manufacturer Address: BAK Industrial Park, Kuichong Town,				
	Longgang District, Shenzhen, P.R.C				
Ancillary Equipments:	AC Adapter (Charger for Battery)				
	Model Name: DSA-3RNA-05 FUS 050065				
	Brand Name: AVVIO				
	Serial No.: (n.a. marked #1 by test site)				
	Rated Input: ~ 100-240V, 50/60Hz, 300mA				
	Rated Output: $= 5.0V, 650mA$				
	Manufacturer: DEE VAN ENTERPRISE CO., LTD				
	Manufacturer Address: 5th Industrial District, Gong Ming Town,				
	Baoan County, Shen Zhen, Guang Dong, CHINA				
Note 1: The transmitter (Tx) from	equency arrangement of the Cellular 850MHz band used by the EUT				

*Note 1:* The transmitter (1x) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula F(n)=824.2+0.2\*(n-128), 128<=n<=251; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 190 (836.6MHz) and 251 (848.8MHz).

Note 2: The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can



be represented with the formula F(n)=1850.2+0.2\*(n-512), 512 <=n <=810; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

- *Note 3:* The GPRS was tested under 2 time-slots mode.
- *Note 4:* For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



## 2.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22 and Part 24 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General
	(10-1-05 Edition)	Rules and Regulations
2	47 CFR Part 22	Public Mobile Services
	(10-1-05 Edition)	
3	47 CFR Part 24	Personal Communications Services
	(10-1-05 Edition)	

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	2.106	Frequencies	PASS
	22.905		
	24.229		
2	2.1046	Conducted RF Output Power	PASS
3	2.1049	20dB Occupied Bandwidth	PASS
4	2.1055	Frequency Stability	PASS
	22.355		
	24.235		
5	2.1051	Conducted Out of Band Emissions	PASS
	2.1057		
	22.917		
	24.238		
6	2.1051	Band Edge	PASS
	2.1057		
	22.917		
	24.238		
7	22.913	Transmitter Radiated Power (EIPR/ERP)	PASS
	24.232		
8	2.1053	Radiated Out of Band Emissions	PASS
	2.1057		
	22.917		
	24.238		



## 2.3 Facilities and Accreditations

#### 2.3.1 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at 3/F, Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

#### **2.3.2** Test Environment Conditions

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86-106



# 3. 47 CFR PART 2, PART 22H & 24E REQUIREMENTS

### 3.1 Frequencies

#### 3.1.1 Requirement

According to FCC section 22.905, the frequency blocks assignment for the cellular radiotelephone service is listed as below:

- (a) Channel Block A: Mobile 824 - 835MHz, Base 869 - 880MHz; Mobile 845 - 846.5MHz, Base 890 - 891.5MHz
- (b) Channel Block B: Mobile 835 - 845 MHz, Base 880 - 890MHz; Mobile 846.5 - 849 MHz, Base 891.5 - 894MHz

According to FCC section 24.229, the frequencies available in the Broadband PCS services are listed as below, in accordance with the frequency allocations table of FCC section 2.106.

- (a) The following frequency blocks are available for assignment on an MTA basis: Block A: 1850 - 1865MHz paired with 1930 - 1945MHz; Block B: 1870 - 1885MHz paired with 1950 - 1965MHz.
- (b) The following frequency blocks are available for assignment on a BTA basis: Block C: 1895 - 1910 MHz paired with 1975 - 1990MHz; Block D: 1865 - 1870 MHz paired with 1945 - 1950MHz; Block E: 1885 - 1890 MHz paired with 1965 - 1970MHz; Block F: 1890 - 1895 MHz paired with 1970 - 1975MHz.

#### 3.1.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna



terminal is 500hm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2009.08	1year
Spectrum Analyzer	Agilent	E7405A	US44210471	2009.08	1year
Power Splitter	Weinschel	1506A	NW521	(n.a.)	(n.a.)
Attenuator 1	Resnet	20dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	3dB	(n.a.)	(n.a.)	(n.a.)

## 3.1.3 Test Result

The Tx frequency arrangement of the Cellular 850MHz band employed by the EUT should be from 824.2MHz to 848.8MHz (the corresponding frequency block is from 824MHz to 849MHz), and Tx frequency arrangement of the PCS 1900MHz band employed by the EUT should be from 1850.2MHz to 1909.8MHz (the corresponding frequency block is from 1850MHz to 1910MHz). Here the lowest and highest channels are tested to verify the EUT's using the frequency block required.

1. Test Verdict:

The required frequency block is employed legally, the verdict is PASS.

Band	1 Channel Frequency (MHz)		Measured Carrier (dBm)	Refer to Plot
GSM	128	824.2	22.51	Plot A
850MHz	251	848.8	22.19	Plot B
GSM	512	1850.2	17.03	Plot C
1900MHz	810	1909.8	15.54	Plot D



















## **3.2 Conducted RF Output Power**

#### 3.2.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

#### 3.2.2 Test Description

See section 3.1.2 of this report.

#### 3.2.3 Test Result

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT. For the GSM 850MHz operates at PCL=5 (where Power Class is 4), the rated conducted RF output power is 33dBm within the tolerance of  $\pm$ 3dB, and For the GSM 1900MHz operates at PCL=0 (where Power Class is 1), the rated conducted RF output power is 30dBm within the tolerance of  $\pm$ 3dB.

			Measured Output		Rated Output		
Rond	Channal	Eroquonov (MHz)	Power		Power		Vardiat
Daliu	Channel	Trequency (WITZ)	dBm	Pefer to Plot	d Tolerance	veruici	
			ubiii	Kelei to Flot	ubiii	(dB)	
CSM	128	824.2	30.9	Plot A			PASS
	190	836.6	30.87	Plot B	33	$\pm 3$	PASS
830IVITIZ	251	848.8	31.22	Plot C			PASS
CCM	512	1850.2	29.22	Plot D			PASS
	661	1880.0	28.67	Plot E	30	$\pm 3$	PASS
1900101112	810	1909.8	29.21	Plot F			PASS
CDDC 2TV	128	824.2	30.82	Plot G			PASS
GPRS-21A	190	836.6	30.8	Plot H	33	$\pm 3$	PASS
830IVITIZ	251	848.8	30.96	Plot I			PASS
CDDS 2TV	512	1850.2	29.22	Plot J			PASS
	661	1880.0	28.64	Plot K	30	±3	PASS
1900MHZ	810	1909.8	29.27	Plot L			PASS

















![](_page_14_Picture_0.jpeg)

![](_page_14_Picture_1.jpeg)

![](_page_14_Figure_2.jpeg)

![](_page_14_Figure_3.jpeg)

![](_page_14_Figure_4.jpeg)

![](_page_15_Picture_0.jpeg)

![](_page_15_Picture_1.jpeg)

![](_page_15_Figure_2.jpeg)

(Plot G: GPRS-2TX 850MHz Channel = 128)

![](_page_15_Figure_4.jpeg)

![](_page_16_Picture_1.jpeg)

![](_page_16_Figure_2.jpeg)

![](_page_16_Figure_3.jpeg)

![](_page_16_Figure_4.jpeg)

![](_page_17_Picture_0.jpeg)

![](_page_17_Picture_1.jpeg)

![](_page_17_Figure_2.jpeg)

![](_page_17_Figure_3.jpeg)

![](_page_17_Figure_4.jpeg)

![](_page_18_Picture_0.jpeg)

## **3.3 99%** Occupied Bandwidth

#### 3.3.1 Definition

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth,.

#### **3.3.2** Test Description

See section 3.1.2 of this report.

#### 3.3.3 Test Verdict

Here the lowest, middle and highest channels are tested to record the 99% occupied bandwidth, it's about 300kHz.

1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured 99% Occupied Bandwidth (kHz)	Refer to Plot
CSM	128	824.2	250.0	Plot A
	190	836.6	255.0	Plot B
830MHZ	251	848.8	255.0	Plot C
CSM	512	1850.2	255.0	Plot D
	661	1880.0	255.0	Plot E
THOUMINZ	810	1909.8	255.0	Plot F

![](_page_19_Picture_1.jpeg)

![](_page_19_Figure_2.jpeg)

![](_page_19_Figure_3.jpeg)

![](_page_19_Figure_4.jpeg)

![](_page_20_Picture_1.jpeg)

![](_page_20_Figure_2.jpeg)

(Plot C: GSM 850MHz Channel = 251)

![](_page_20_Figure_4.jpeg)

![](_page_21_Picture_1.jpeg)

![](_page_21_Figure_2.jpeg)

![](_page_21_Figure_3.jpeg)

![](_page_21_Figure_4.jpeg)

![](_page_22_Picture_0.jpeg)

## **3.4** Frequency Stability

#### 3.4.1 Requirement

According to FCC section 22.355 and FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(a) The temperature is varied from  $-30^{\circ}$ C to  $+50^{\circ}$ C at intervals of not more than  $10^{\circ}$ C.

(b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

## 3.4.2 Test Description

1. Test Setup:

![](_page_22_Figure_9.jpeg)

The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS via a Common Antenna.

#### 2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2009.08	1year
DC Power Supply	Good Will	GPS-3030DD	EF920938	2009.08	2year
Temperature	YinHe Experimental	HL4003T	(n.a.)	2009.08	1 year
Chamber	Equip.				

#### 3.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.6VDC, which are specified by the applicant; the normal temperature here used is 25°C. The frequency

![](_page_23_Picture_0.jpeg)

deviation limit of GSM 850MHz band is $\pm 2.5$ ppm, and GSM 1900MHz is $\pm 1$ ppm										
	Test C	onditions		Frequency Deviation						
Dond	Dorron	Tamananat	Channel = 128		Channel = 190		Channel = 251		Vandiat	
Band	Power (VDC)	remperat	(824.2MHz)		(836.	6MHz)	(848.8MHz)		Verdict	
	(VDC)	ure (°C)	Hz	Limits	Hz	Limits	Hz	Limits		
		-30	-7.18		-6.89		-13.22			
		-20	-17.52		-19.73		-5.82			
		-10	-11.21		9.53		-21.93			
		0	9.93		21.14		15.34			
GSM	3.8	+10	25.37		-1.28		23.24			
850MH7		+20	-11.82	$\pm 2060.5$	13.12	±2091.5	-15.92	±2122	PASS	
05011112		+30	-14.02		-5.86		-8.43			
		+40	-3.56		11.83		-11.24			
		+50	8.89		23.81	-	6.14			
	4.2	+25	18.93		-20.32		14.29			
	3.6	+25	-2.78		-8.94		9.58			
Test Conditions				Frequency Deviation						
Band	Power (VDC)	Temperat ure (°C)	Channel = 512		Channel = 661		Channel = 810		Verdict	
Duild			(1850.2MHz)		(1880.0MHz)		(1909.8MHz)		veraier	
			Hz	Limits	Hz	Limits	Hz	Limits		
		-30	9.39		24.01		8.45	-		
		-20	-8.81		-9.06		-14.32			
		-10	-5.31		-12.41		-2.79			
		0	-13.31		3.15		15.96			
GSM	3.8	+10	-2.04		-21.65		-6.38			
1900MHz		+20	16.28	±1850.2	6.45	±1880.0	21.23	±1909.8	PASS	
1900101112		+30	-8.32		-6.24		7.20			
		+40	-5.98		-5.88		-8.69			
		+50	11.50		27.51		8.49	-		
	4.2	+25	-12.02		8.75		-11.66			
	3.6	+25	7.31		5.39		23.84			

![](_page_24_Picture_0.jpeg)

## 3.5 Conducted Out of Band Emissions

#### 3.5.1 Requirement

According to FCC section 22.917(a) and FCC section 24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10\*log(P)dB. This calculated to be -13dBm.

#### 3.5.2 Test Description

See section 3.1.2 of this report.

#### 3.5.3 Test Result

The measurement frequency range is from 30MHz to the 10<sup>th</sup> harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

Band	Channe 1	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdic t
CSM	128	824.2	-28	Plot A		PASS
05MU7	190	836.6	-27.8	Plot B	-13	PASS
830MHZ	251	848.8	-28.27	Plot C		PASS
CSM	512	1850.2	-35.52	Plot D		PASS
I900MHz	661	1880.0	-36.35	Plot E -13		PASS
	810	1909.8	-34.91	Plot F		PASS

1. Test Verdict:

2. Test Plots for the Whole Measurement Frequency Range:

Note: the power of the EUT transmitting frequency should be ignored.

![](_page_25_Picture_0.jpeg)

![](_page_25_Figure_2.jpeg)

![](_page_26_Picture_0.jpeg)

![](_page_26_Figure_2.jpeg)

![](_page_27_Picture_0.jpeg)

![](_page_27_Figure_2.jpeg)

![](_page_28_Picture_0.jpeg)

![](_page_28_Picture_1.jpeg)

## **3.6 Band Edge**

#### 3.6.1 Requirement

According to FCC section 22.917(b) and FCC section 24.238(b), in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

#### **3.6.2** Test Description

See section 3.1.2 of this report.

#### 3.6.3 Test Result

The lowest and highest channels are tested to verify the band edge emissions.

1. Test Verdict:

Dand Channel		Frequency	Measured Max. Band	Refer to	Limit (dDm)	Vandiat	
Band	Channel	(MHz)	Edge Emission (dBm)	Plot	Liiiit (ubiii)	verdict	
GSM	128	824.2	-14.17	Plat A	12	PASS	
850MHz	251	848.8	-13.54	Plot B	-15	PASS	
GSM	512	1850.2	-15.22	Plat C	12	PASS	
1900MHz	810	1909.8	-15.99	Plot D	-15	PASS	

![](_page_29_Picture_1.jpeg)

![](_page_29_Figure_2.jpeg)

![](_page_30_Picture_0.jpeg)

![](_page_30_Picture_1.jpeg)

![](_page_30_Figure_2.jpeg)

![](_page_31_Picture_0.jpeg)

## **3.7** Transmitter Radiated Power (EIRP/ERP)

#### 3.7.1 Requirement

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2Watts e.i.r.p. peak power.

#### 3.7.2 Test Description

1. Test Setup:

![](_page_31_Figure_7.jpeg)

The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM850MHz band Power Control Level (PCL) = 5/19 and Power Class = 4, GSM1900MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded.

-Maximum RF output power: GSM850 31.38dBm, GSM 1900 24.81dBm

- Step size (dB): 3dB

- Minimum RF power: GSM850 1.3dBm, GSM 1900 0.9dBm

![](_page_32_Picture_0.jpeg)

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2009.08	1 year
Spectrum Analyzer	Agilent	E7405A	US44210471	2009.08	1 year
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2009.08	2year
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2009.08	1 year
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2009.08	1 year

## 3.7.3 Test Result

The Turn Table is actuated to turn from  $0^{\circ}$  to  $360^{\circ}$ , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

The substitution corrections are obtained as described below:

 $A_{SUBST} = P_{SUBST\_TX} - P_{SUBST\_RX} - L_{SUBST\_CABLES} + G_{SUBST\_TX\_ANT}$ 

 $A_{TOT} = L_{CABLES} + A_{SUBST}$ 

Where A<sub>SUBST</sub> is the final substitution correction including receive antenna gain.

P<sub>SUBST\_TX</sub> is signal generator level,

P<sub>SUBST\_RX</sub> is receiver level,

L<sub>SUBST\_CABLES</sub> is cable losses including both TX and RX cables,

G<sub>SUBST\_TX\_ANT</sub> is substitution antenna gain.

A<sub>TOT</sub> is total correction factor including cable loss and substitution correction

During the test, the data of  $A_{TOT}$  was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of  $A_{TOT}$ .

1. Test Verdict:

Band	Chann	Frequency	DCI	Me	Limit		Vordict		
	Daliu	el	(MHz)	rtl	dBm	W	Refer to Plot	dBm	W
CCM	128	824.20	5	30.9	0.9 1.23				PASS
GSM 850MHz	190	836.60	5	31.38	1.37	Plot A	38.45	7	PASS
	251	848.80	5	30.51	1.12				PASS
GSM	512	1850.2	0	24.81	0.30	Plot B	33	2	PASS

![](_page_33_Picture_0.jpeg)

#### Report No.: SZ10060150E02

Dand	Chann	Frequency	DCI	Me	easured EF	RP/EIRP	Limit		Vordict	
Dalla	el	(MHz)	PCL	dBm	W	Refer to Plot	dBm	W	verdict	
1900MH	661	1880.0	0	23.29	0.21				PASS	
Z	810	1909.8	0	21.73	0.15				PASS	
GPRS-2	128	824.20	5	31.82	1.52				PASS	
TX	190	836.60	5	32.12	1.63	Plot C	38.45	7	PASS	
850MHz	251	848.80	5	31.2	1.32				PASS	
GPRS-2	512	1850.2	0	24.75	0.30				PASS	
TX	661	1880.0	0	23.74	0.24	Plot D	22	2	PASS	
1900MH	810	1000.8	0				55	2	DASS	
Z	010	1909.8		21.79	0.15				газэ	

![](_page_33_Figure_4.jpeg)

![](_page_33_Figure_5.jpeg)

![](_page_34_Picture_1.jpeg)

![](_page_34_Figure_2.jpeg)

![](_page_34_Figure_3.jpeg)

![](_page_35_Picture_1.jpeg)

![](_page_35_Figure_2.jpeg)

![](_page_35_Figure_3.jpeg)

![](_page_36_Picture_0.jpeg)

## 3.8 Radiated Out of Band Emissions

#### 3.8.1 Requirement

According to FCC section 22.917(a) and section 24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10\*log(P)dB. This calculated to be -13dBm.

#### **3.8.2** Test Description

See section 3.7.2 of this report.

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

#### 3.8.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to  $360^{\circ}$ , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

#### 1. Test Verdict:

Band		Frequenc y (MHz)	Measured M Emissio	ax. Spurious			
	Channe 1		Test Antenna	Test Antenna	Refer to Plot	Limit (dBm)	Verdict
			Horizontal	Vertical			
CSM	128	824.2	-44.88	-44.50	Plot A.1/A.2		PASS
950MU7	190	836.6	-48.84	-44.33	Plot B.1/B.2	-13	PASS
830MHZ	251	848.8	-50.34	-39.52	Plot C.1/C.2		PASS
GSM	512	1850.2	-37.10	-36.93	Plot D.1/D.2		PASS
	661	1880.0	-54.52	-50.59	Plot E.1/E.2	-13	PASS
THUMME	810	1909.8	-59.43	-50.66	Plot F.1/F.2		PASS

2. Test Plots for the Whole Measurement Frequency Range:

Note: the power of the EUT transmitting frequency should be ignored.

![](_page_37_Picture_0.jpeg)

![](_page_37_Figure_2.jpeg)

![](_page_38_Picture_0.jpeg)

![](_page_38_Figure_2.jpeg)

![](_page_39_Picture_0.jpeg)

![](_page_39_Figure_2.jpeg)

![](_page_40_Picture_0.jpeg)

![](_page_40_Figure_2.jpeg)

![](_page_41_Picture_0.jpeg)

![](_page_41_Figure_2.jpeg)

![](_page_42_Picture_0.jpeg)

![](_page_42_Figure_2.jpeg)