



NVLAP LAB CODE 200707-0



FCC PART 22 H/24 E

MEASUREMENT AND TEST REPORT

For

PAX Technology Limited

Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road,

Wanchai Hong Kong, 518057 CHN

FCC ID: V5PS90

Report Type: Original Report	Product Type: Mobile Payment Terminal
Test Engineer:	<u>Vicent Kang</u> <i>Vicent. Kang</i>
Report Number:	<u>RSZ09022501</u>
Report Date:	<u>2009-04-09</u>
Reviewed By:	<u>EMC Engineer</u> <i>Merry Zhao</i>
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, NIST, or any agency of the Federal Government.

* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "*" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The PAX Technology Limited's product, model number: S90 or the "EUT" as referred to in this report is a *Mobile Payment Terminal*, which measures approximately: 20.0cm L x 8.5 cm W x 6.0 cm H, rated input voltage: DC 9.5V adapter or DC 7.4V battery.

Item	Technical Specification
Frequency Band	Cellular Band: 824-849 MHz (TX) 869-894 MHz (RX) PCS Band: 1850-1910 MHz (TX) 1930-1990 MHz (RX)
Modulation	GMSK
RF Output Power	Cellular Band: 33±2 dBm PCS Band: 30±2 dBm

AC/DC Adapter Information:

Model: ADP036-094B

Input: 100~240 V, 1.0A 50/60Hz

Output: 9.5 V 4A

** All measurement and test data in this report was gathered from production sample serial number: S/N: 32500819 (Assigned by the applicant). The EUT was received on 2009-02-25.*

EUT Photo



Please see additional photos in Exhibit B&C

Objective

This type approval report is prepared on behalf of *PAX Technology Limited* in accordance with Part 2, Subpart J, Part 22 Subpart H, and Part 24 Subpart E of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, band edge and radiated margin.

Related Submittal(s)/Grant(s)

No Related Submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services

Applicable Standards: TIA/EIA 603-C, ANSI C63.4-2003.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at
<http://ts.nist.gov/Standards/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-C.

The final qualification test was performed with the EUT operating at normal mode.

Equipment Modifications

No modifications were made to the EUT.

Host System Configuration List and Details

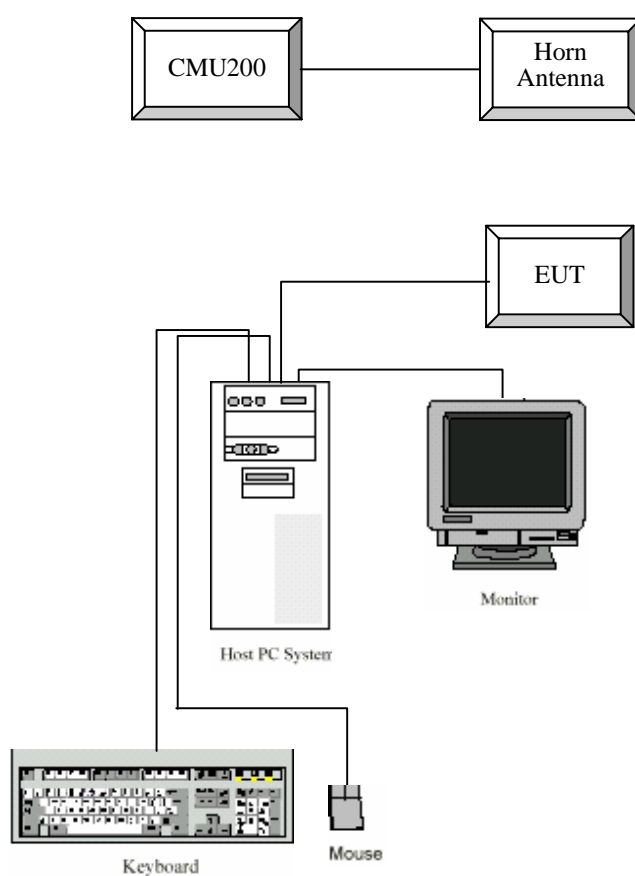
Manufacturer	Description	Model	Serial Number	FCC ID
DELL	Motherboard	OWC297	CN-OWC297-70821-564-00NI	DoC
DELL	Power	NPS-250KB D	CN-0H2678-17972-56E-80BM	DoC
Seagate	Hard Disk	ST340014A	5JXK3GXE	DoC
DELL	3.5' Floppy	N/A	CN-0N8893-69802-54Q-02P0	DoC
Lite-ON	CD-Rom	LTN-489S	N/A	DoC
ProMOS	Memory	V826632K24SATG-C0	0525-K1933700	N/A
Intel	CPU	Celeron D-2533	N/A	N/A
Intel	Ethernet	PRO 10/100 VE	N/A	DoC

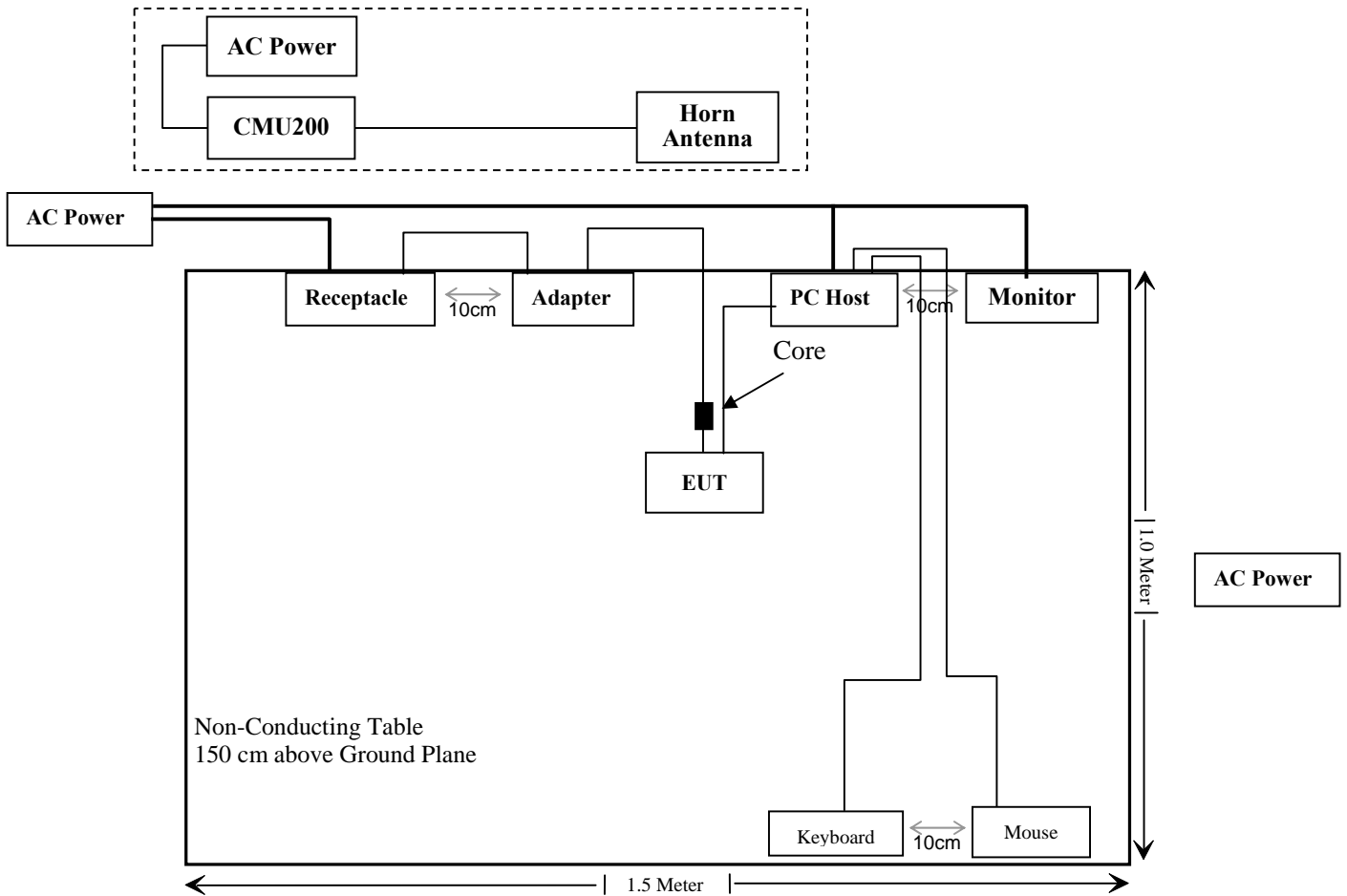
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	PC	DELL 170L	CN-0TC670-70821-560-F4Q6	DoC
DELL	Keyboard	SK-8110	CN07N244-71616-56A-1B1E	DoC
DELL	Mouse	M071KC	520027907	DoC
DELL	LCD Monitor	1505FP	Y4287-7168-571-GBSH	DoC

External I/O Cable

Cable Description	Length (m)	From Port	To
Shielded Detachable K/B Cable	1.50	K/B Port / Host	K/B
Shielded Detachable Mouse Cable	1.50	Mouse Port / Host	Mouse
Shielded Detachable VGA Cable	1.50	VGA Port/ Host	Monitor
Unshielded Detachable Power Cable	1.15	Adapter	EUT
Unshielded Detachable Control Cable	1.45	PC	EUT

Configuration of Test Setup

Block Diagram of Test Setup

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307, §2.1093	RF Exposure (SAR)	Compliant *
§2.1046; § 22.913 (a), § 24.232 (c)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	N/A
§ 2.1049 § 22.917, § 24.238	99% & -26 dB Occupied Bandwidth	Compliant
§ 2.1051, § 22.917 (a), § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053 § 22.917 (a), § 24.238 (a)	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a)	Out of band emission, Band Edge	Compliant
§ 2.1055 § 22.355, § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant

Note: * SAR report released by BACL, Report Number: RSZ09022501-SAR

§1.1037, §2.1093 - RF EXPOSURE

Applicable Standard

§1.1307 and §2.1093.

Test Result

The EUT is a portable device and thus requires SAR evaluation; please refer to BACL SAR Report: RSZ09022501-SAR.

§2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

§ 2.1046, § 22.913 (a), & § 24.232 (c) - RF OUTPUT POWER

Applicable Standard

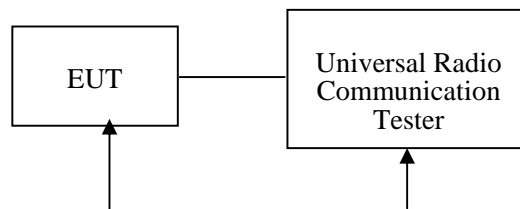
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), in no case may the peak output power of a base station transmitter exceed 2 watt EIRP.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

TIA 603-C section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2009-03-11	2010-03-11
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09
HP	Preamplifier	8449B	3008A00277	2008-09-12	2009-09-11
HP	Signal Generator	HP8657A	2849U00982	2008-10-16	2009-10-16
HP	Amplifier	HP8447D	2944A09795	2008-08-02	2009-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2008-11-07	2009-11-06
COM POWER	Dipole Antenna	AD-100	041000	2008-09-25	2009-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2008-05-17	2009-05-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Vicent Kang on 2009-03-18.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)
GSM	Low	824.2	32.40	38.45
	Middle	836.6	32.39	38.45
	High	848.8	32.28	38.45
GRPS	Low	824.2	32.31	38.45
	Middle	836.6	32.27	38.45
	High	848.8	32.29	38.45

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)
GSM	Low	1850.2	29.71	33
	Middle	1880.0	28.89	33
	High	1909.8	28.13	33
GRPS	Low	1850.2	29.64	33
	Middle	1880.0	28.39	33
	High	1909.8	28.20	33

Radiated Power (ERP and EIRP)**Cellular Band (Part 22H)**

GSM:

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Part 22H
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Polar (H/V)				Limit (dBm)
Low Channel											
824.2	117.55	120	1.0	H	824.2	28.27	H	0	0.9	27.37	38.45
824.2	114.18	80	1.5	V	824.2	25.14	V	0	0.9	24.24	38.45
Middle Channel											
836.6	118.96	120	125	H	836.6	29.99	H	0	0.9	29.09	38.45
836.6	118.91	88	155	V	836.6	29.99	V	0	0.9	29.09	38.45
High Channel											
848.8	118.84	120	1.00	H	848.8	29.94	H	0	0.9	29.04	38.45
848.8	118.92	82	1.54	V	848.8	30.17	V	0	0.9	29.27	38.45

GPRS:

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Part 22H
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Polar (H/V)				Limit (dBm)
Low Channel											
824.2	117.64	120	1.0	H	824.2	28.36	H	0	0.9	27.46	38.45
824.2	114.28	80	1.5	V	824.2	25.24	V	0	0.9	24.34	38.45
Middle Channel											
836.6	119.06	120	125	H	836.6	30.09	H	0	0.9	29.19	38.45
836.6	119.01	88	155	V	836.6	30.09	V	0	0.9	29.19	38.45
High Channel											
848.8	118.93	120	1.00	H	848.8	30.03	H	0	0.9	29.13	38.45
848.8	119	82	1.54	V	848.8	30.25	V	0	0.9	29.35	38.45

PCS Band (Part 24E)

GSM:

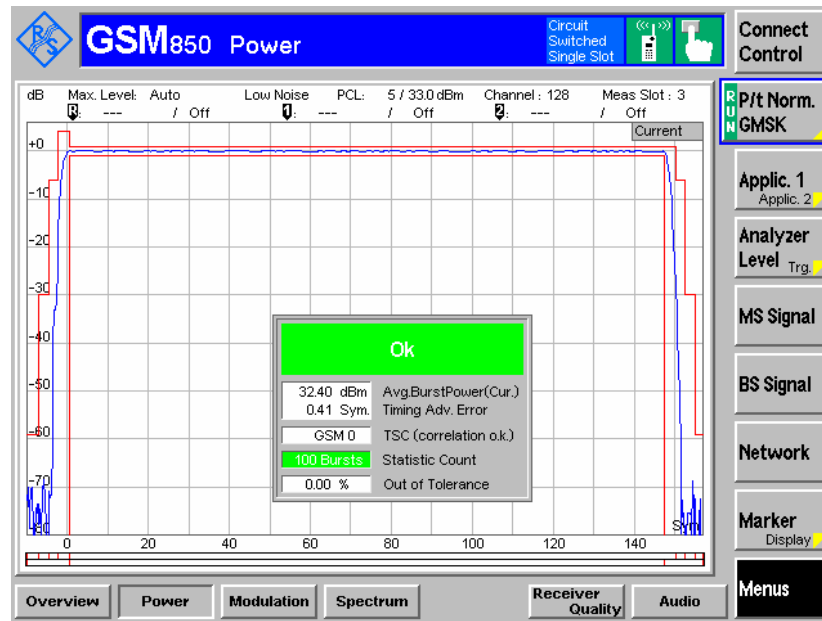
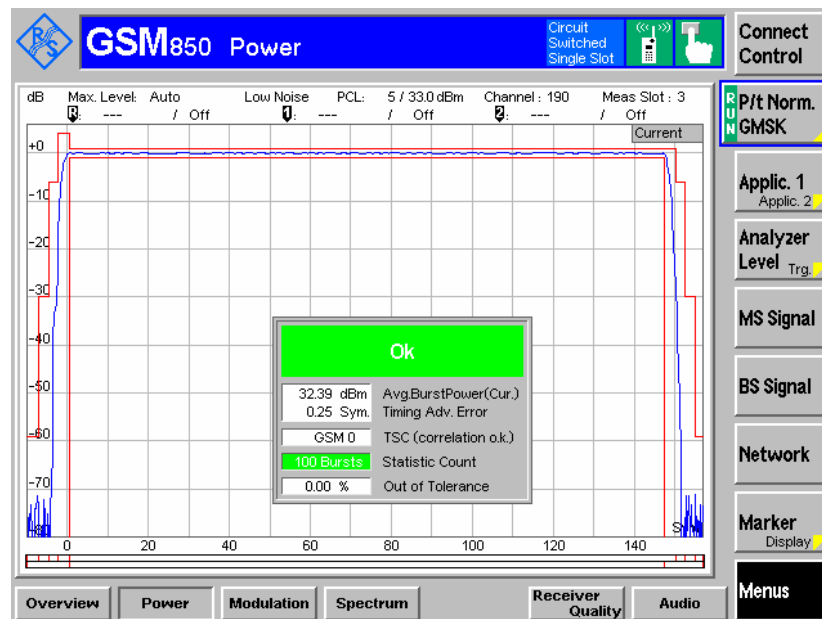
Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Part 24E
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Polar (H/V)				Limit (dBm)
Low Channel											
1850.2	120.18	240	1.8	H	1850.2	19.00	H	6.2	1.02	24.18	33
1850.2	123.55	80	1.0	V	1850.2	23.71	V	6.2	1.02	28.89	33
Middle Channel											
1880	120.36	230	1.85	H	1880	19.14	H	6.2	1.03	24.31	33
1880	123.57	82	1.00	V	1880	22.57	V	6.2	1.03	27.74	33
High Channel											
1909.8	120.54	240	1.90	H	1909.8	20.80	H	6.2	1.03	25.97	33
1909.8	124.57	82	1.04	V	1909.8	24.37	V	6.2	1.03	29.54	33

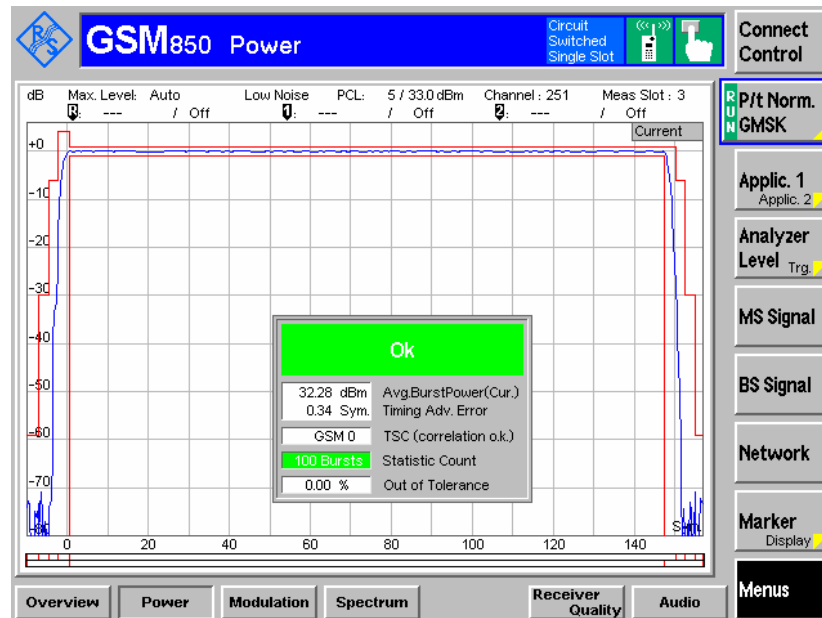
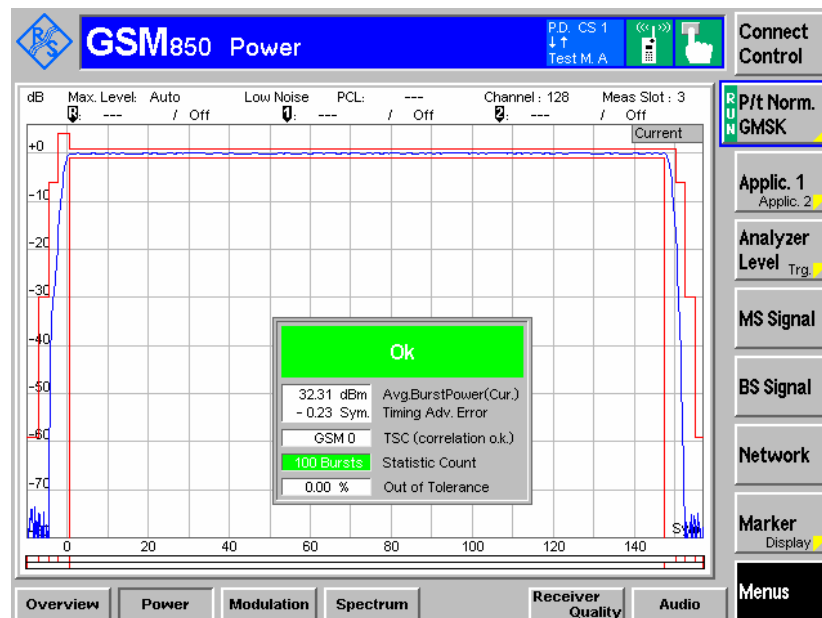
GPRS:

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Part 24E
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Polar (H/V)				Limit (dBm)
Low Channel											
1850.2	120.28	240	1.8	H	1850.2	19.10	H	6.2	1.02	24.28	33
1850.2	123.62	80	1.0	V	1850.2	23.78	V	6.2	1.02	28.96	33
Middle Channel											
1880	120.37	230	1.85	H	1880	19.15	H	6.2	1.03	24.32	33
1880	123.75	82	1.00	V	1880	22.75	V	6.2	1.03	27.92	33
High Channel											
1909.8	120.56	240	1.90	H	1909.8	20.82	H	6.2	1.03	25.99	33
1909.8	124.72	82	1.04	V	1909.8	24.52	V	6.2	1.03	29.69	33

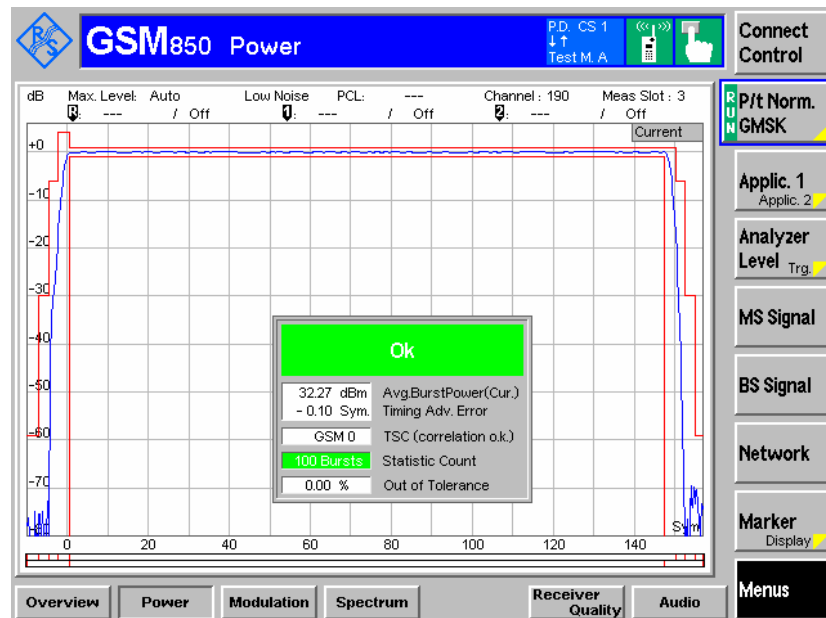
Plots of Conducted Output Power:

Cellular Band (Part 22H)

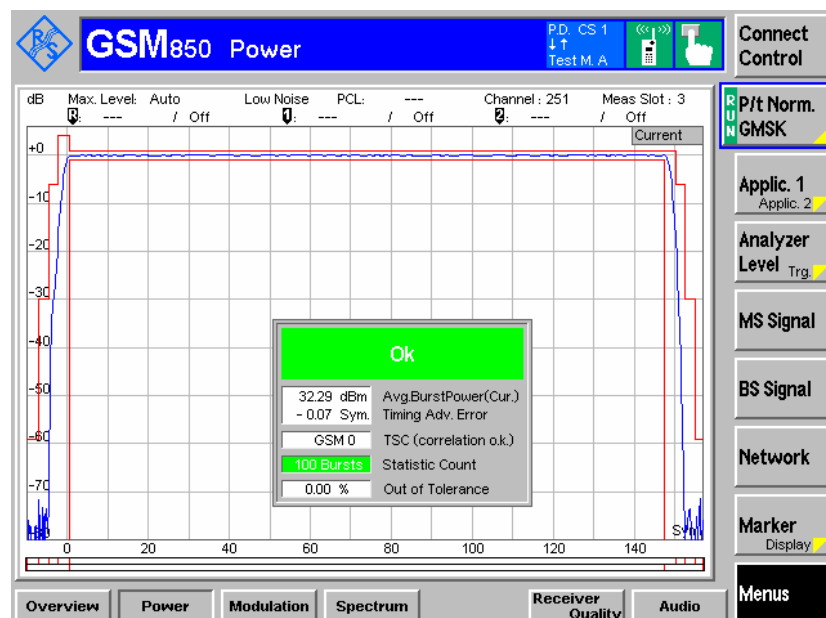
Low Channel (GSM)**Middle Channel (GSM)**

High Channel (GSM)**Low Channel (GPRS)**

Middle Channel (GPRS)

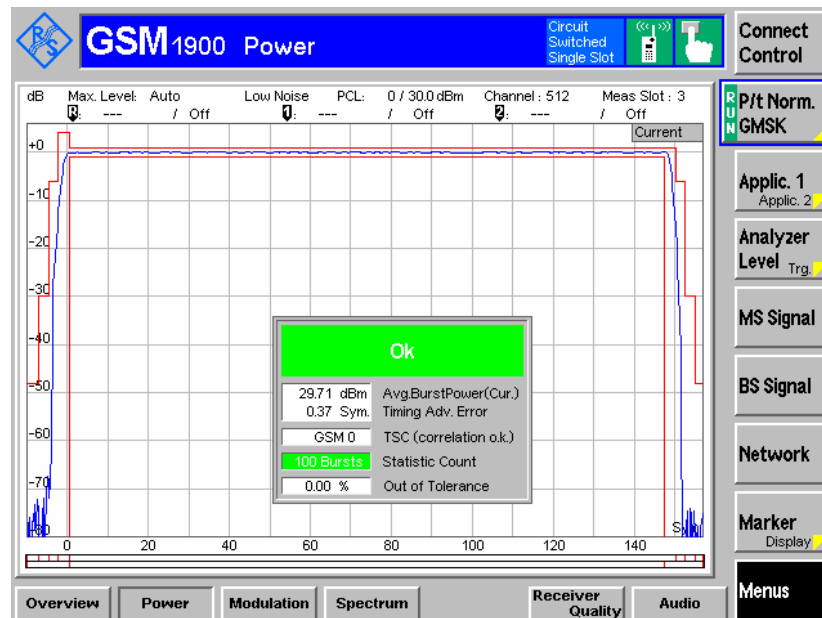


High Channel (GPRS)

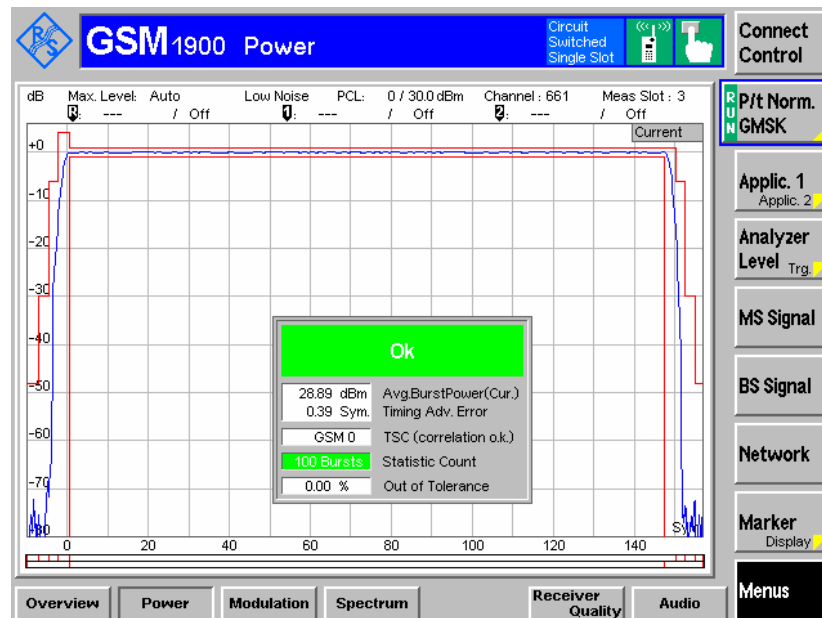


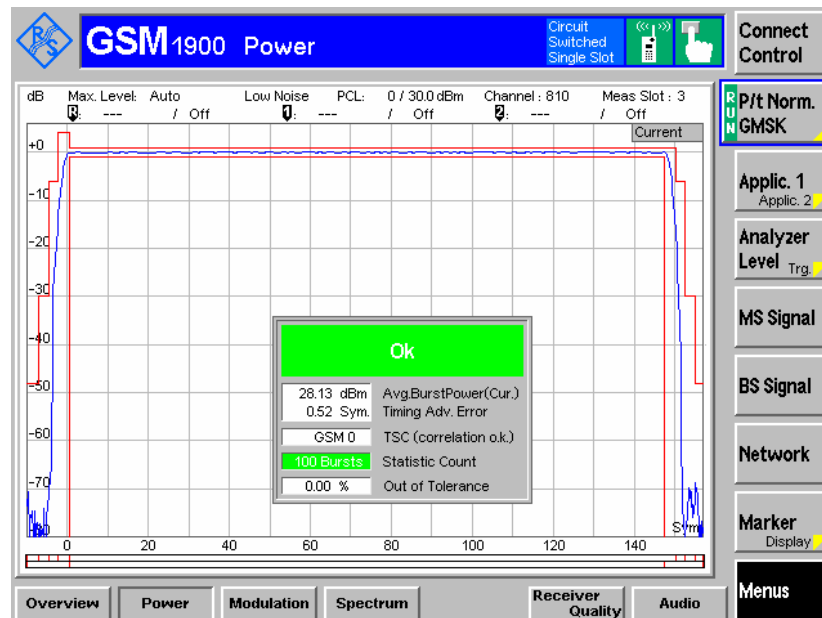
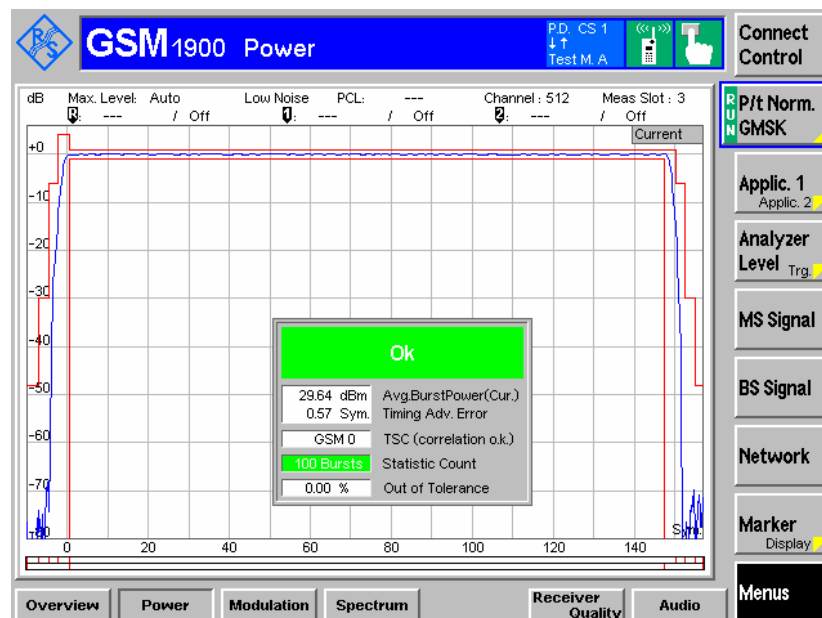
PCS Band (Part 24E)

Low Channel (GSM)

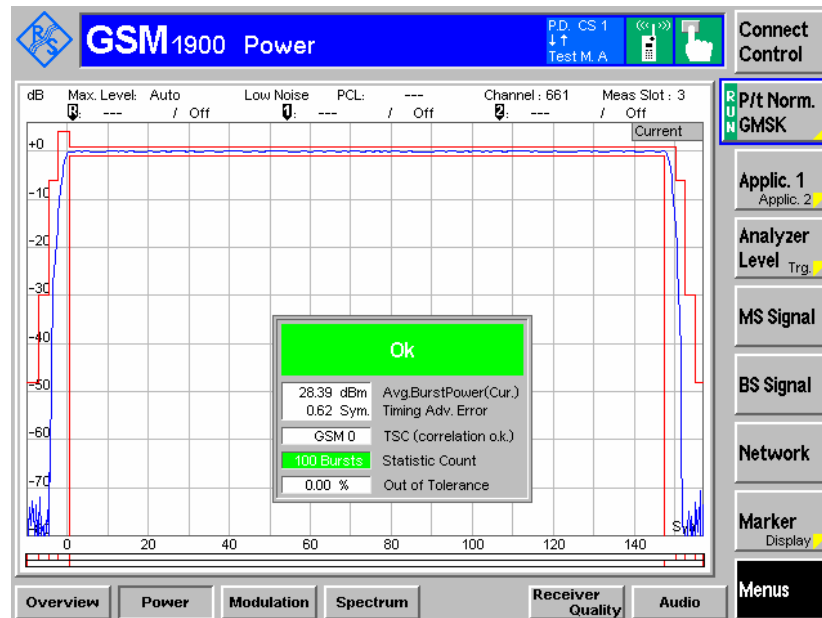


Middle Channel (GSM)

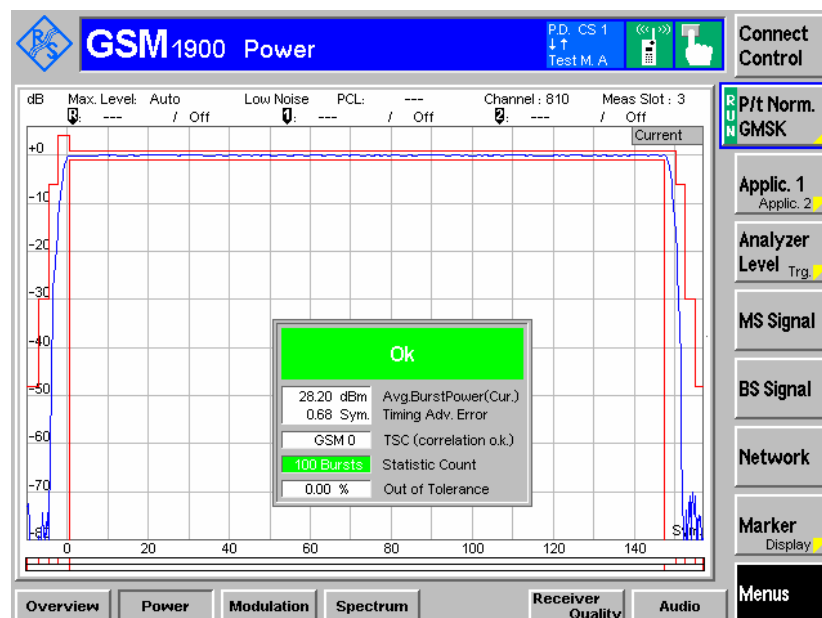


High Channel (GSM)**Low Channel (GPRS)**

Middle Channel (GPRS)



High Channel (GPRS)



§2.1049, §22.917, §22.905, & §24.238 - OCCUPIED BANDWIDTH

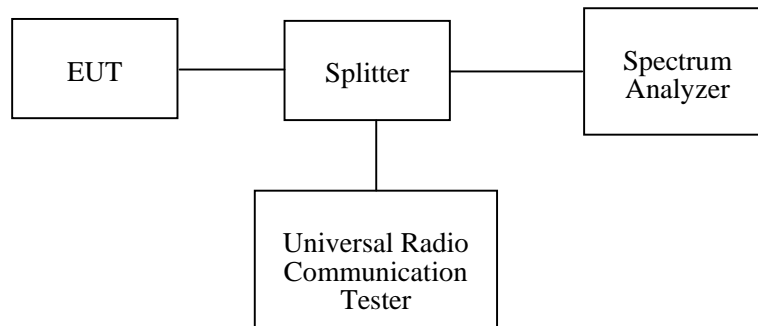
Applicable Standards

CFR 47 §2.1049, §22.917, §22.905 and §24.238.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 30 kHz (Cellular /PCS) and the 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2008-10-16	2009-10-16
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

The testing was performed by Vicent Kang on 2009-03-17.

GMSK Modulation:

Cellular Band (Part 22H)

Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	26 dB Bandwidth (kHz)
190	836.6	248.4969	336.6733

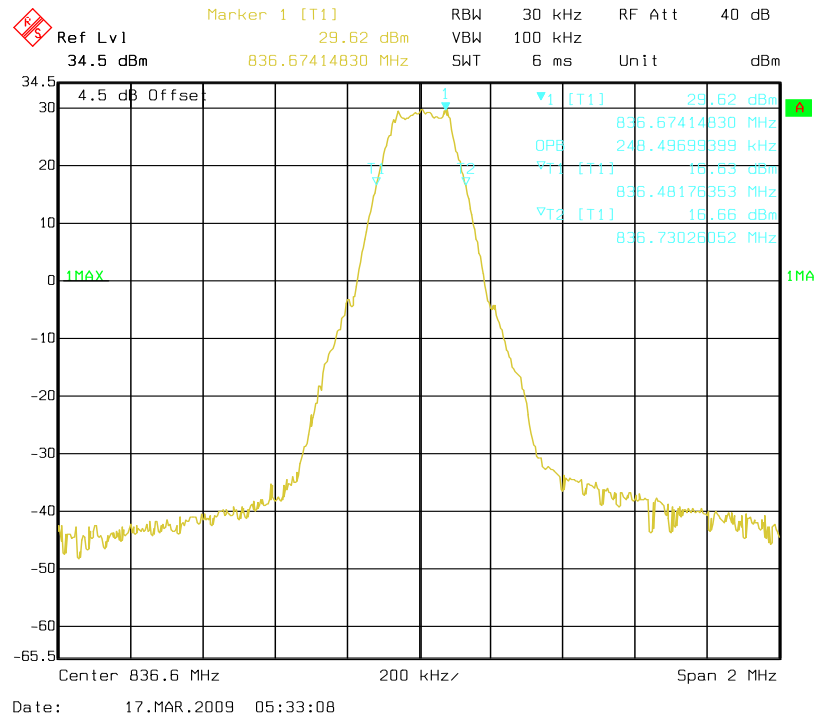
PCS Band (Part 24E)

Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	26 dB Bandwidth (kHz)
661	1880.0	248.4969	332.6653

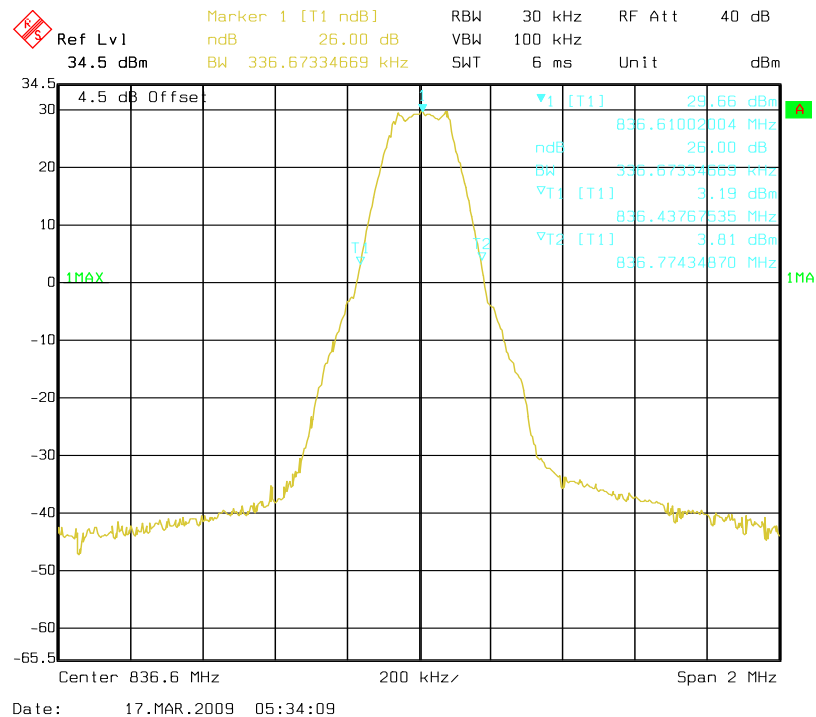
Please refer to the following plots.

OBW of Cellular Band (Part 22H)

99% Bandwidth

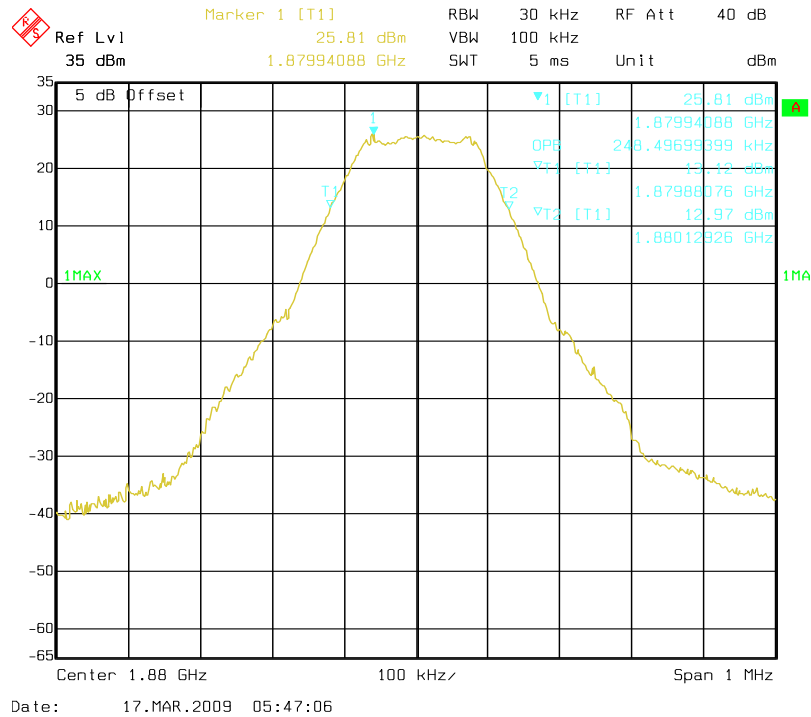


26 dB Bandwidth

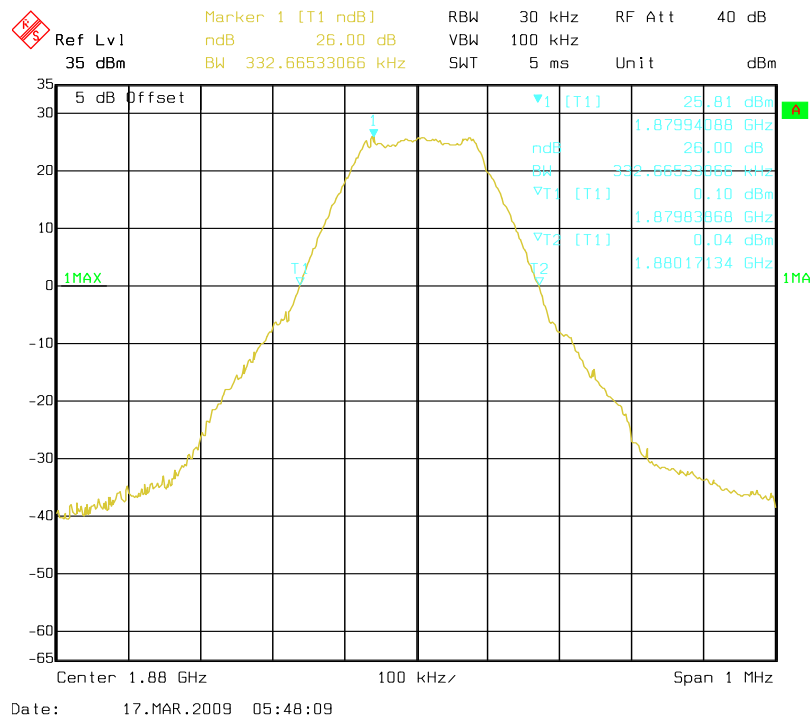


OBW of PCS Band (Part 24E)

99% Bandwidth



26 dB Bandwidth



§2.1051, §22.917(a), & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

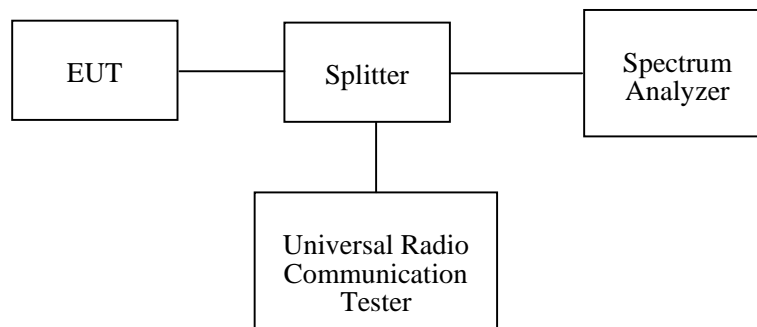
Applicable Standards

CFR 47 §2.1051, §22.917(a) and §4.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

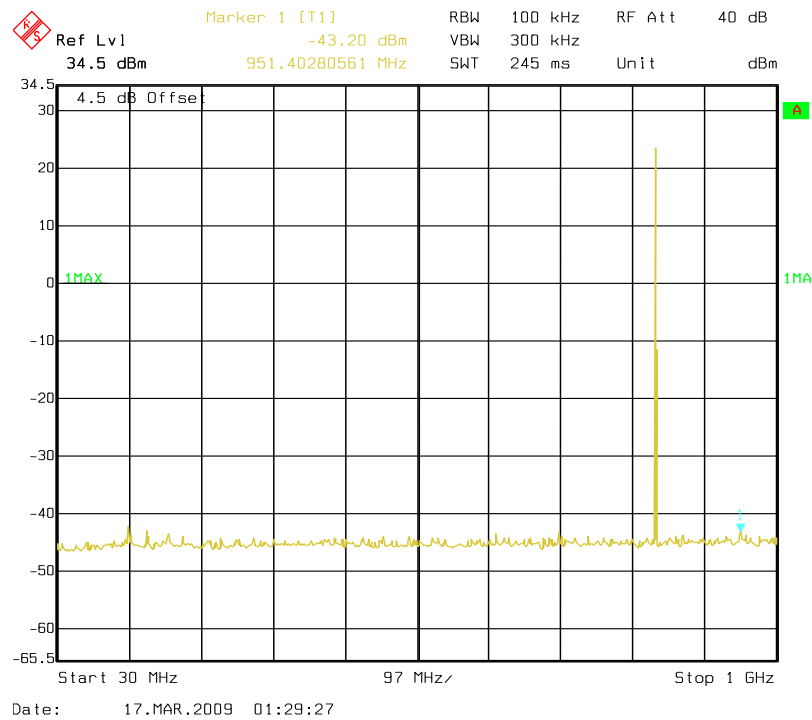
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Vicent Kang on 2009-03-17 to 2009-03-19.

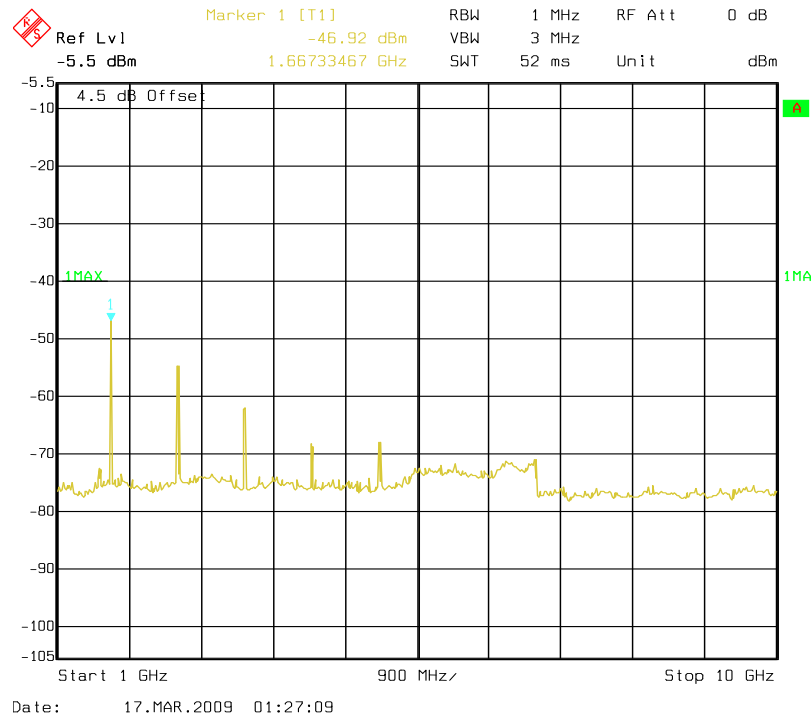
Please refer to the following plots.

Cellular Band (Part 22H)

30 – 1000 MHz - Middle Channel (GSM)

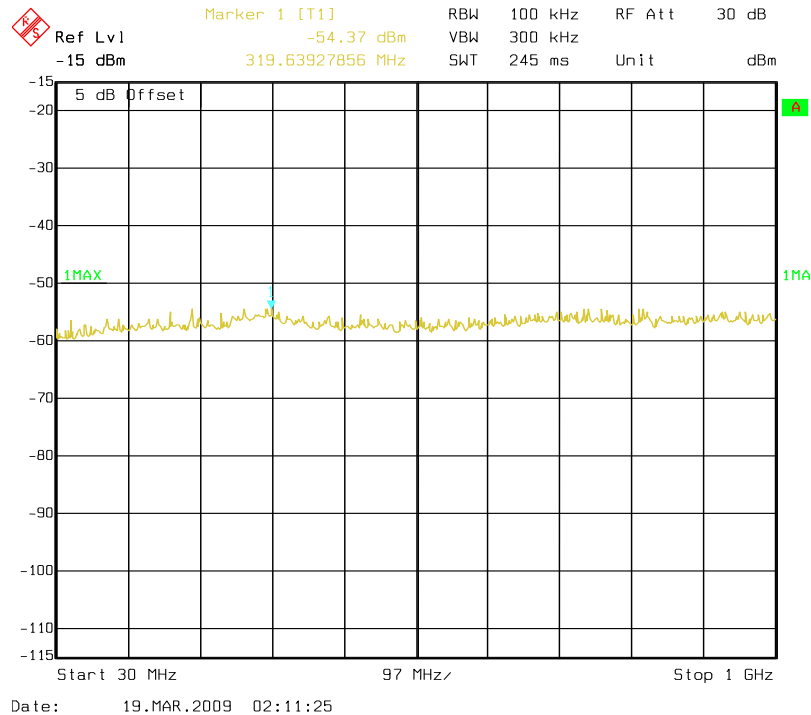


1 – 10 GHz - Middle Channel (GSM)

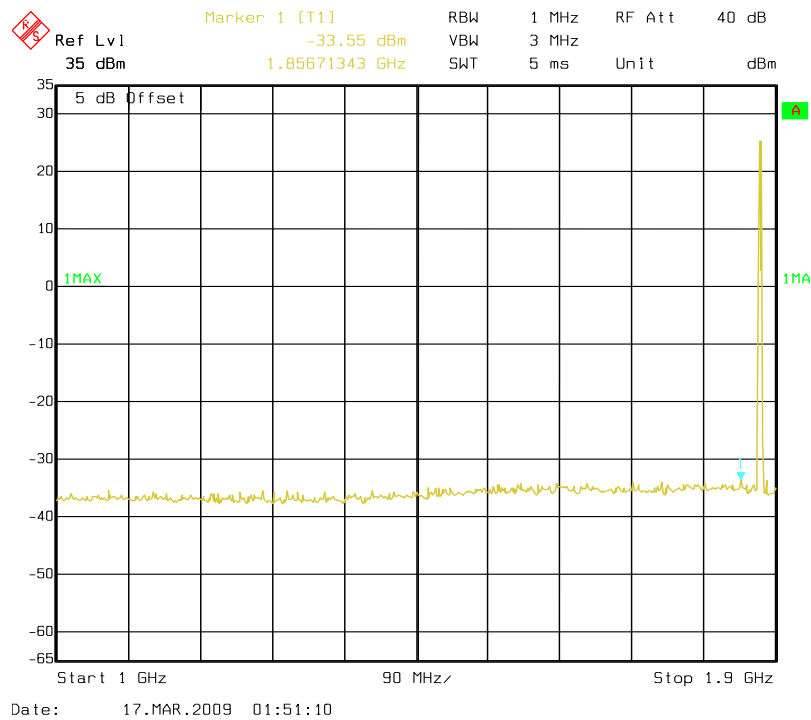


PCS Band (Part24E)

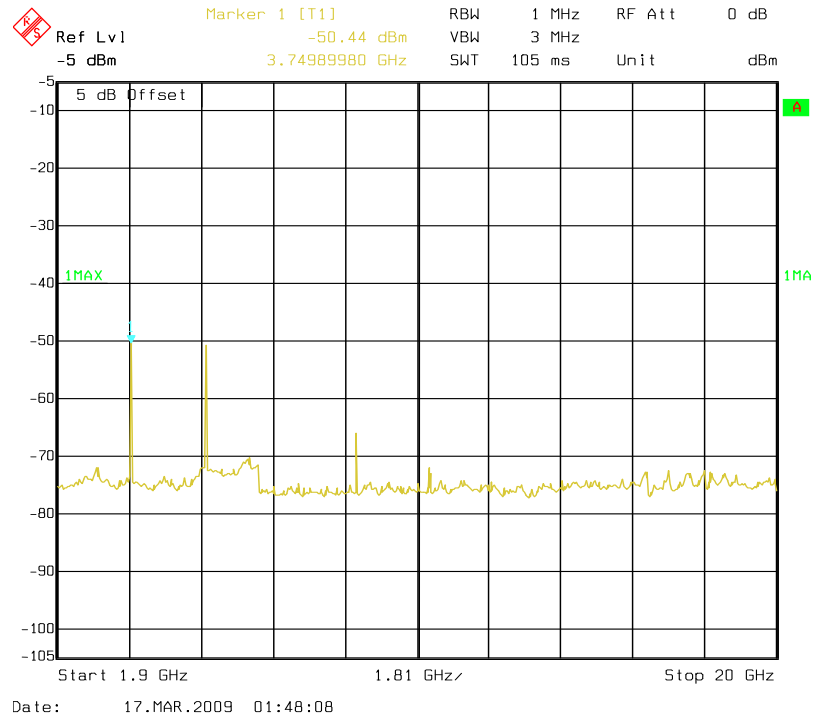
30 – 1000 MHz - Middle Channel (GSM)

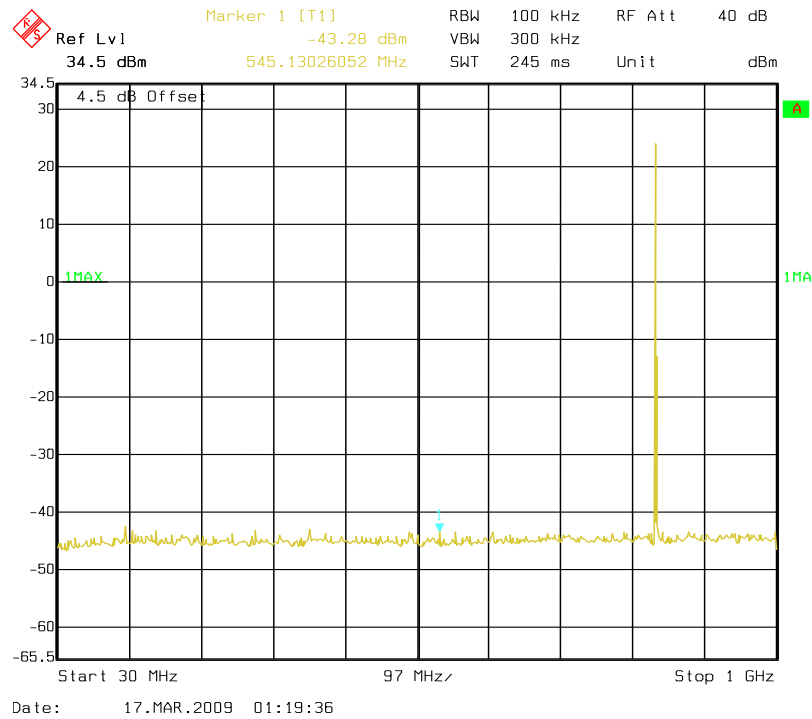
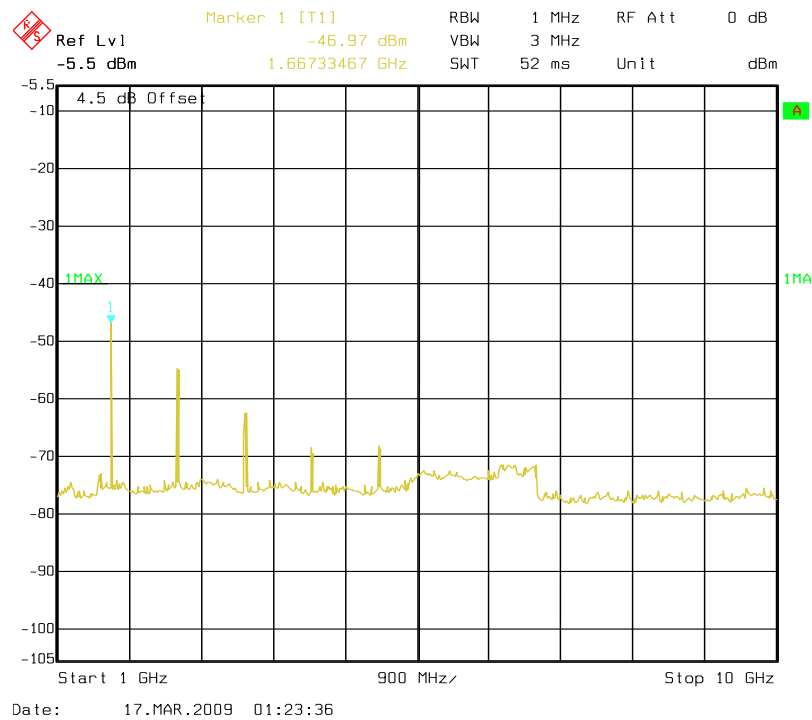


1 -1.9 GHz - Middle Channel (GSM)



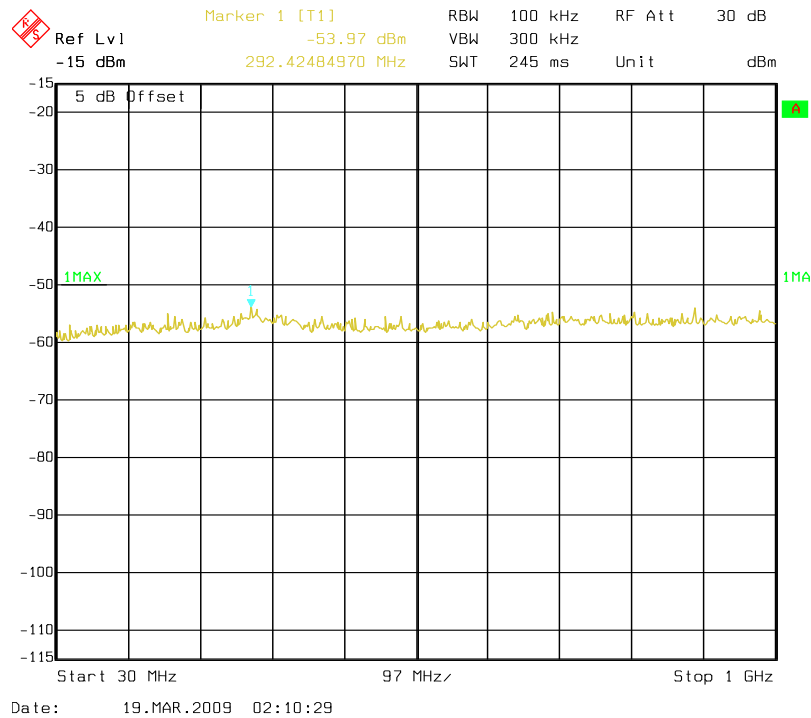
1.9 – 20 GHz - Middle Channel (GSM)



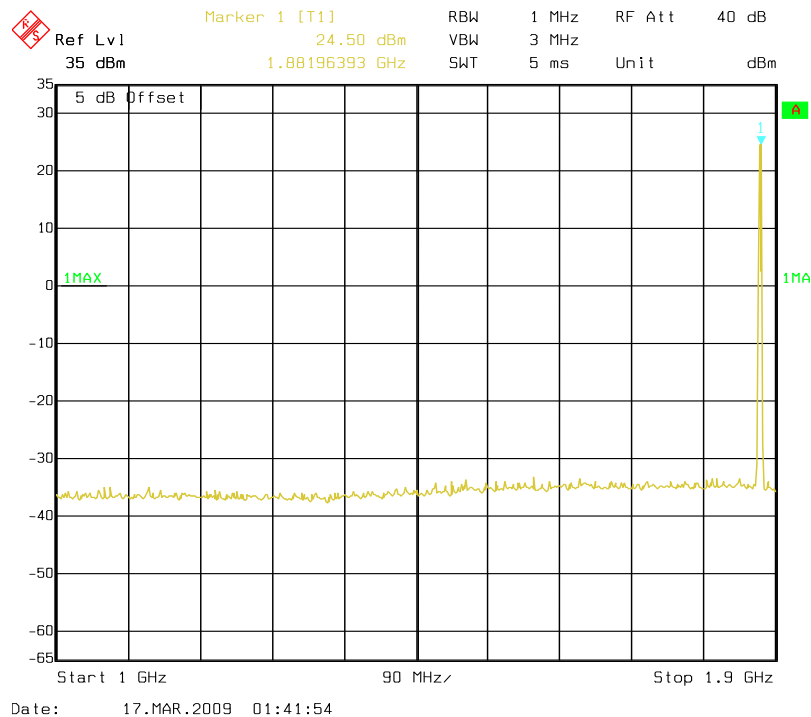
Cellular Band (Part22H)**30 – 1000 MHz - Middle Channel (GPRS)****1 – 10 GHz - Middle Channel (GPRS)**

PCS Band (Part24E)

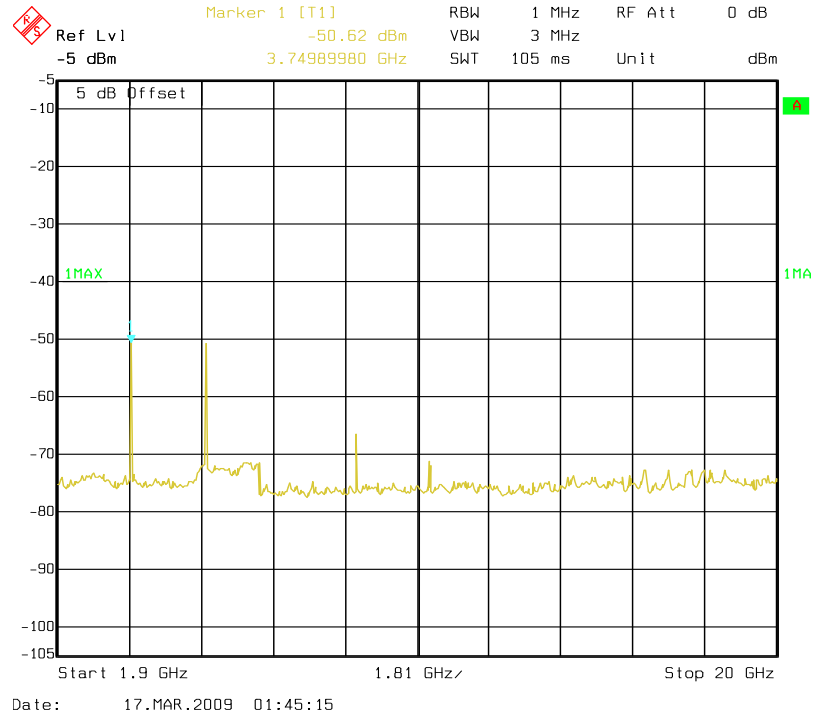
30 – 1000 MHz - Middle Channel (GPRS)



1 – 1.9 GHz - Middle Channel (GPRS)



1.9 – 20 GHz - Middle Channel (GPRS)



§2.1053, §22.917, §24.238 - SPURIOUS RADIATED EMISSIONS

Applicable Standards

CFR 47 § 2.1053, §22.917 and § 24.238.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log₁₀ (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2009-03-11	2010-03-11
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2008-05-09	2009-05-09
HP	Preamplifier	8449B	3008A00277	2008-09-12	2009-09-11
HP	Signal Generator	HP8657A	2849U00982	2008-10-16	2009-10-16
HP	Amplifier	HP8447D	2944A09795	2008-08-02	2009-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2008-11-07	2009-11-06
COM POWER	Dipole Antenna	AD-100	041000	2008-09-25	2009-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2008-05-17	2009-05-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

The testing was performed by Vicent Kang on 2009-03-18.

Test mode: Transmitting

Below 1 GHz:**Cellular Band**

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Ant. Gain (dBi)	Cable Loss (dB)			
Middle Channel											
992.24	40.54	150	1.5	H	992.24	-56.3	0	0.80	-57.10	-13	44.10
540.22	38.37	242	1.2	V	540.22	-57.8	0	0.65	-58.45	-13	45.45
631.40	38.85	210	1.0	H	631.40	-58.6	0	0.77	-59.37	-13	46.37
720.64	36.93	70	1.5	V	720.64	-60.1	0	0.76	-60.86	-13	47.86

PCS Band

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Ant. Gain (dBi)	Cable Loss (dB)			
Middle Channel											
540.22	41.35	150	1.5	H	540.22	-55.3	0	0.65	-55.95	-13	42.95
906.88	36.36	242	1.2	V	906.88	-58.1	0	0.76	-56.06	-13	43.06
720.64	39.79	210	1.0	H	720.64	-58.3	0	0.74	-59.04	-13	46.04
992.24	35.65	70	1.5	V	992.24	-61.1	0	0.80	-61.90	-13	48.90

Above 1 GHz:**Cellular Band**

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Ant. Gain (dBi)	Cable Loss (dB)			
Middle Channel											
1673.2	66.11	220	1.0	V	1673.2	-34.14	6.2	0.94	-28.88	-13	15.88
1673.2	60.34	100	1.9	H	1673.2	-39.81	6.2	0.94	-34.55	-13	21.55
2509.8	44.94	130	1.5	V	2509.8	-56.88	7.3	1.19	-50.77	-13	37.77
2509.8	43.52	210	1.8	H	2509.8	-58.72	7.3	1.19	-52.61	-13	39.61
3346.6	44.79	150	1.4	V	3346.6	-58.85	6.7	1.38	-53.53	-13	40.53
3346.6	43.07	130	1.6	H	3346.6	-60.8	6.7	1.38	-55.48	-13	42.48

PCS Band

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Ant. Gain (dBi)	Cable Loss (dB)			
Middle Channel											
5640	54.07	80	1.5	V	5640	-47.95	8.3	1.76	-41.41	-13	28.41
5640	48.87	170	1.6	H	5640	-53.35	8.3	1.76	-46.81	-13	33.81
7520	42.81	110	1.5	V	7520	-57.23	7.6	2.09	-51.72	-13	38.72
7520	42.74	180	1.5	H	7520	-57.24	7.6	2.09	-51.73	-13	38.73
3760	46.28	200	1.6	V	3760	-57.24	6.9	1.47	-51.81	-13	38.81
3760	44.77	190	1.9	H	3760	-58.61	6.9	1.47	-53.18	-13	40.18

§22.917(a) & §24.238(a) - BAND EDGES

Applicable Standards

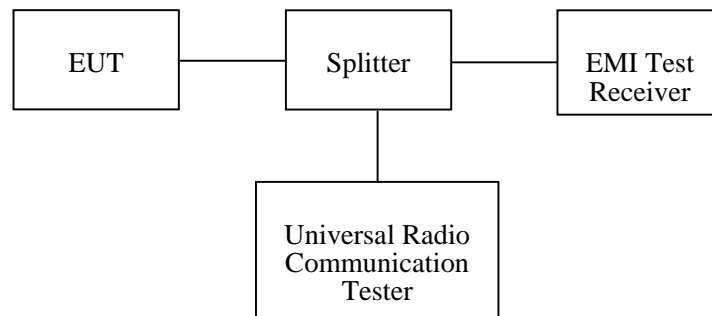
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §24.238(a), the power of any emissions 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.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency, RBW set to 10 kHz.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2008-11-07	2009-11-06
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Vicent Kang on 2009-03-17.

Please refer to the following tables and plots.

Cellular Band

GSM:

Frequency (MHz)	Emission (dBm)	Limit (dBm)
824	-15.36	-13
849	-17.06	-13

GPRS:

Frequency (MHz)	Emission (dBm)	Limit (dBm)
824	-15.44	-13
849	-16.74	-13

PCS Band

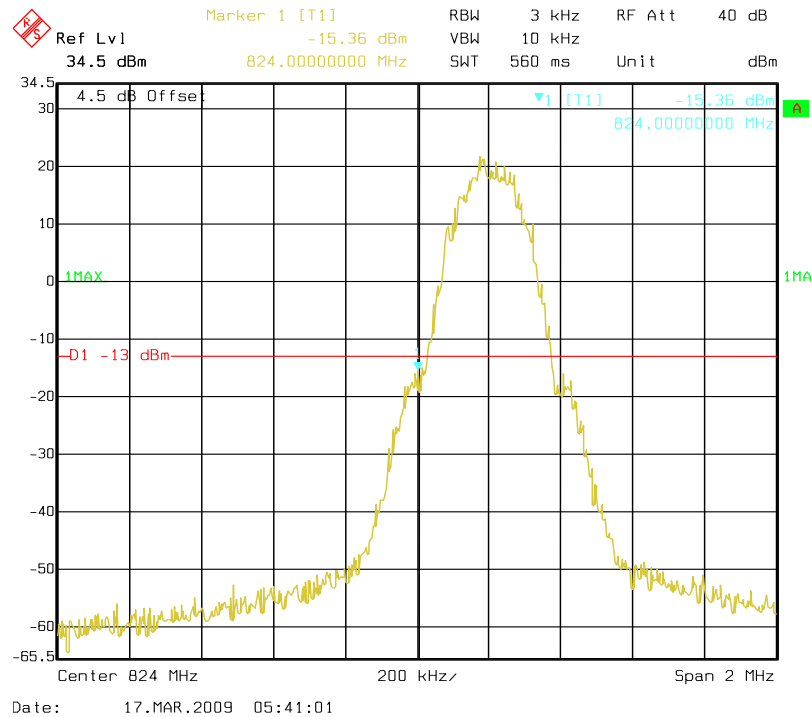
GSM:

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1850	-16.13	-13
1910	-24.22	-13

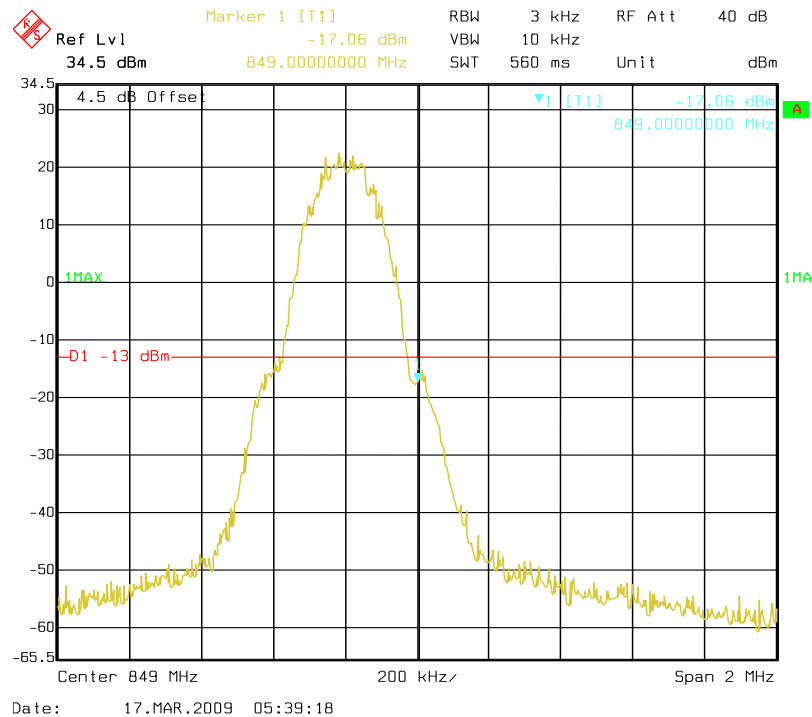
GPRS:

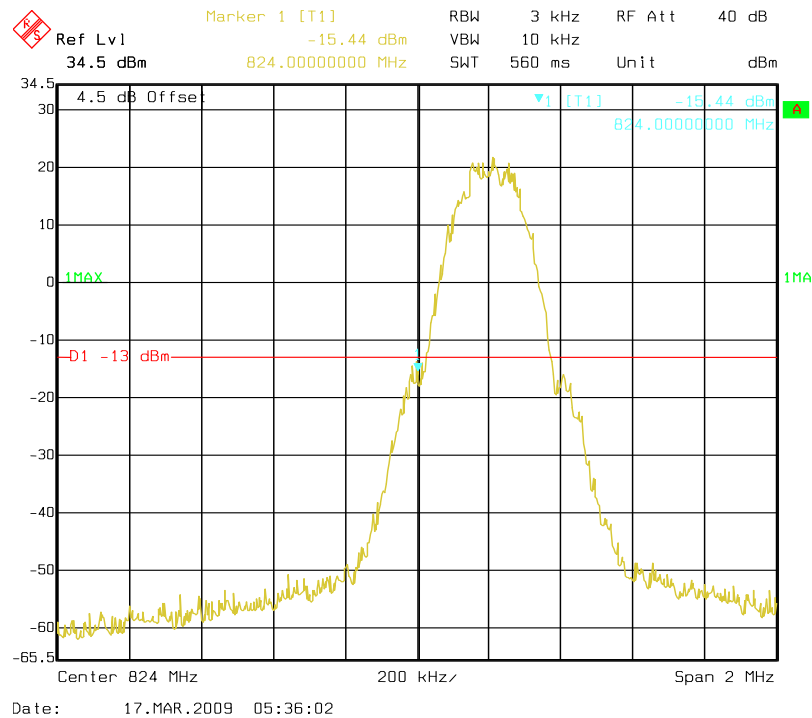
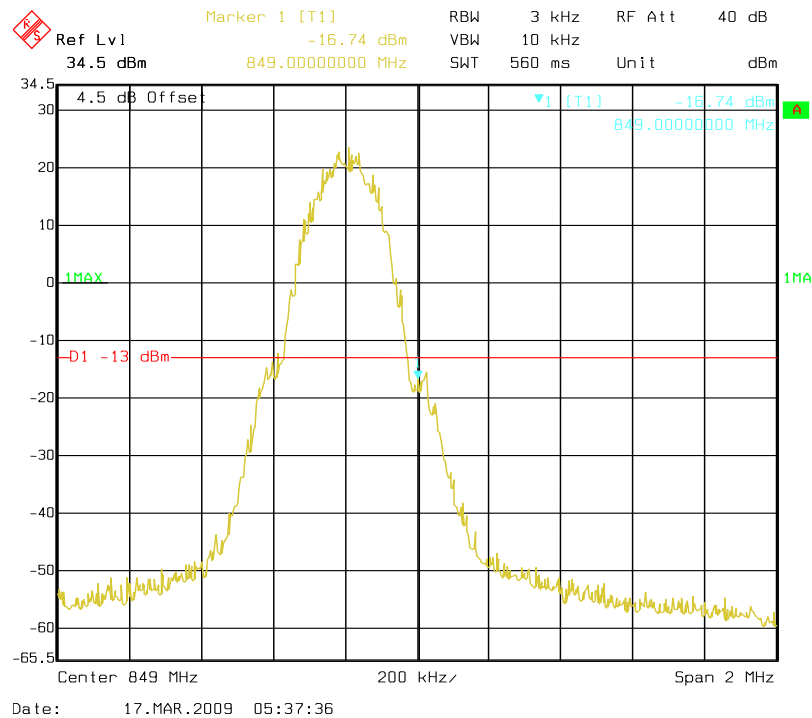
Frequency (MHz)	Emission (dBm)	Limit (dBm)
1850	-14.10	-13
1910	-20.98	-13

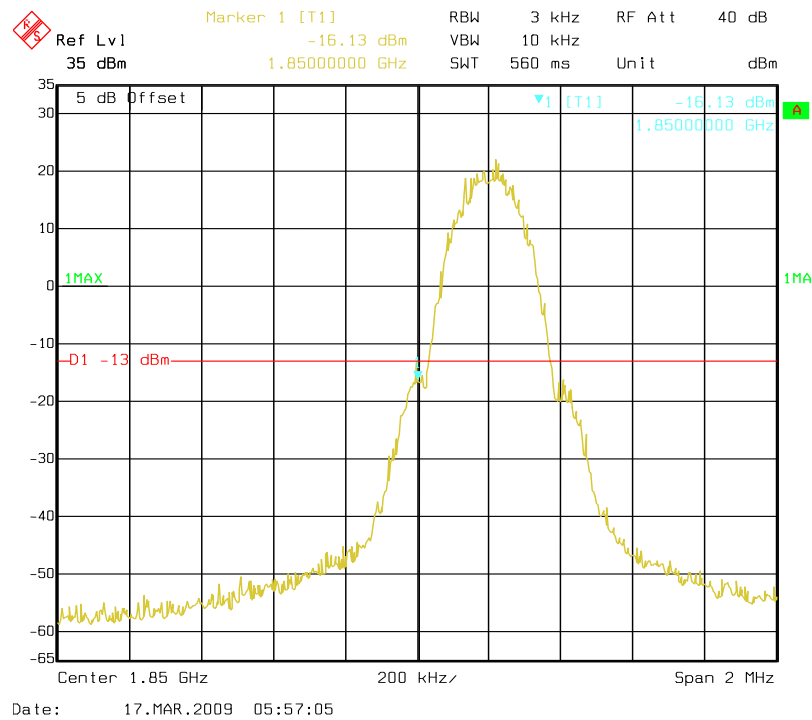
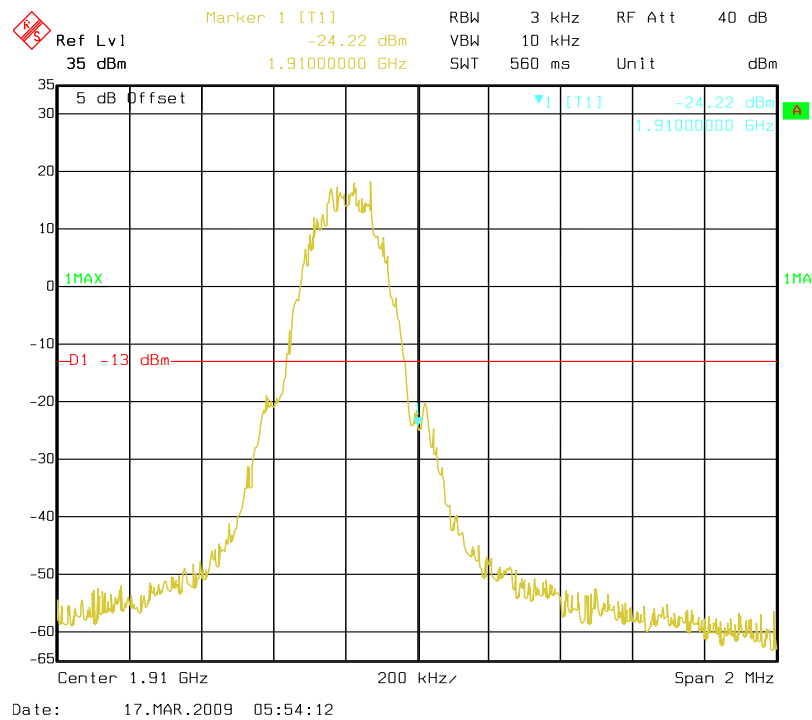
Cellular Band, Lowest Channel (GSM)



Cellular Band, Highest Channel (GSM)



Cellular Band, Lowest Channel (GPRS)**Cellular Band, Highest Channel (GPRS)**

PCS Band, Lowest Channel (GSM)**PCS Band, Highest Channel (GSM)**

Ref Lvl 35 dBm

Marker 1 [T1] -14.10 dBm

1.85000000 GHz

RBW 3 kHz

VBW 10 kHz

SWT 560 ms

RF Att 40 dB

Unit dBm

5 dB Offset

1MAX

-D1 -13 dBm

Center 1.85 GHz

200 kHz

Span 2 MHz

Date: 17.MAR.2009 05:51:00

Ref Lvl 35 dBm
 Marker 1 [T1] -20.98 dBm
 RBW 3 kHz
 VBW 10 kHz
 RF Att 40 dB
 1.91000000 GHz
 SWT 560 ms
 Unit dBm

5 dB Offset
 1MAX
 -D1 -13 dBm
 1 [T1] -20.98 dBm
 1.91000000 GHz

Center 1.91 GHz
 200 kHz
 Span 2 MHz

Date: 17.MAR.2009 05:52:58

§2.1055, §22.355, & §24.235 - FREQUENCY STABILITY

Applicable Standard

CFR47 § 2.1055 (a), § 2.1055 (d), §22.355, §24.235

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

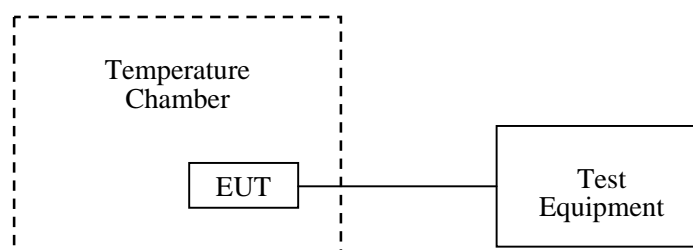
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2008-12-28	2009-12-28
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2008-06-21	2009-06-21

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

The testing was performed by Vicent Kang on 2009-03-18.

Cellular Band (AC Power):

Middle Channel, fo = 836.6 MHz				
Temperature (°C)	Power Supplied (Vac)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	102	-17	-0.0203	2.5
	120	-16	-0.0191	2.5
	138	-19	-0.0227	2.5
-20	102	-18	-0.0215	2.5
	120	-18	-0.0215	2.5
	138	-16	-0.0191	2.5
-10	102	-16	-0.0191	2.5
	120	-15	-0.0179	2.5
	138	-9	-0.0108	2.5
0	102	-10	-0.0120	2.5
	120	-11	-0.0131	2.5
	138	-8	-0.0096	2.5
10	102	-15	-0.0179	2.5
	120	-16	-0.0191	2.5
	138	-13	-0.0155	2.5
20	102	-16	-0.0191	2.5
	120	-12	-0.0143	2.5
	138	-9	-0.0108	2.5
30	102	-16	-0.0191	2.5
	120	-13	-0.0155	2.5
	138	-12	-0.0143	2.5
40	102	-15	-0.0179	2.5
	120	-9	-0.0108	2.5
	138	-11	-0.0131	2.5
50	102	-10	-0.0120	2.5
	120	-7	-0.0084	2.5
	138	-18	-0.0215	2.5

PCS Band (AC Power):

Middle Channel, fo = 1880 MHz				
Temperature (°C)	Power Supplied (Vac)	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	102	-26	-0.0138	Pass
	120	-31	-0.0165	Pass
	138	-16	-0.0085	Pass
-20	102	-31	-0.0165	Pass
	120	-28	-0.0149	Pass
	138	-17	-0.0090	Pass
-10	102	-21	-0.0112	Pass
	120	-18	-0.0096	Pass
	138	-6	-0.0032	Pass
0	102	-21	-0.0112	Pass
	120	-26	-0.0138	Pass
	138	-8	-0.0043	Pass
10	102	-26	-0.0138	Pass
	120	-23	-0.0122	Pass
	138	-14	-0.0074	Pass
20	102	-15	-0.0080	Pass
	120	-21	-0.0112	Pass
	138	-19	-0.0101	Pass
30	102	-18	-0.0096	Pass
	120	-21	-0.0112	Pass
	138	-16	-0.0085	Pass
40	102	-26	-0.0138	Pass
	120	-33	-0.0176	Pass
	138	-28	-0.0149	Pass
50	102	-15	-0.0080	Pass
	120	-8	-0.0043	Pass
	138	-11	-0.0059	Pass

Cellular Band (Battery Operation):

Middle Channel, fo = 836.6 MHz				
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	7.4	-15	-0.0179	2.5
	5.5	-18	-0.0215	2.5
-20	7.4	-19	-0.0227	2.5
	5.5	-15	-0.0179	2.5
-10	7.4	-16	-0.0191	2.5
	5.5	-13	-0.0155	2.5
0	7.4	-12	-0.0143	2.5
	5.5	-18	-0.0215	2.5
10	7.4	-13	-0.0155	2.5
	5.5	-12	-0.0143	2.5
20	7.4	-9	-0.0108	2.5
	5.5	-15	-0.0179	2.5
30	7.4	-8	-0.0096	2.5
	5.5	-12	-0.0143	2.5
40	7.4	-11	-0.0131	2.5
	5.5	-15	-0.0179	2.5
50	7.4	-13	-0.0155	2.5
	5.5	-9	-0.0108	2.5

PCS Band (Battery Operation):

Middle Channel, fo = 1880 MHz				
Temperature (°C)	Power Supplied (Vdc)	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	7.4	-28	-0.0149	Pass
	5.5	-31	-0.0165	Pass
-20	7.4	-30	-0.0160	Pass
	5.5	-27	-0.0144	Pass
-10	7.4	-19	-0.0101	Pass
	5.5	-26	-0.0138	Pass
0	7.4	-19	-0.0101	Pass
	5.5	-15	-0.0080	Pass
10	7.4	-11	-0.0059	Pass
	5.5	-26	-0.0138	Pass
20	7.4	-17	-0.0090	Pass
	5.5	-19	-0.0101	Pass
30	7.4	-26	-0.0138	Pass
	5.5	-25	-0.0133	Pass
40	7.4	-16	-0.0085	Pass
	5.5	-19	-0.0101	Pass
50	7.4	-23	-0.0122	Pass
	5.5	-25	-0.0133	Pass

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