Lab Code: 200707-0

FCC PART 25

MEASUREMENT AND TEST REPORT

For

Shenzhen Castel Wireless Telecommunications Co., Ltd.

5/F, 5th Building, Software Park, No.2 Gaoxin C. 3rd Road,
Hi-Tech Industrial Park, Nanshan, Shenzhen, Guangdong, China

FCC ID: XDV802

Report Type:	**Product Type:**
Original Report	Iridium /GPRS Dual Mode Communication Terminal

Test Engineer:	Felix Li
Report Number:	RSZ11041907-25
Report Date:	2011-06-16
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Castel Wireless Telecommunications Co., Ltd.*'s product, model: *SAT802 (FCC ID: XDV802)* or the "EUT" as referred to in this report is an *Iridium /GPRS Dual mode communication terminal*, which measures approximately: 11.5 cm (L) x 8.5 cm (W) x 4.5 cm (H), rated input voltage: DC 9-36 V DC Power.

** All measurement and test data in this report was gathered from production sample serial number: 1104073 (Assigned by BACL, Shenzhen). The EUT was received on 2011-04-19.*

Objective

This type approval report is prepared on behalf of Shenzhen Castel Wireless Telecommunications Co., Ltd. in accordance with Part 25, subpart C of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

Original Satellite Module with FCC ID: Q639602.

FCC Part 22H/24E submission with FCC ID: XDV802

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 25, Subpart C as well as the following parts:

Part 25, Subpart C- Satellite Communications

Applicable standards: ANSI C63.4-2009 and TIA-603-C.

All radiated emissions measurements were performed at Bay Area Compliance Laboratories Corp. The Spurious Radiated emissions test item 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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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 an ISO/IEC 17025 accredited laboratory, and is accredited by 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

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

521 tools (V3.0.3) which was provided by client.

Equipment Modifications

No modifications were made to the EUT.

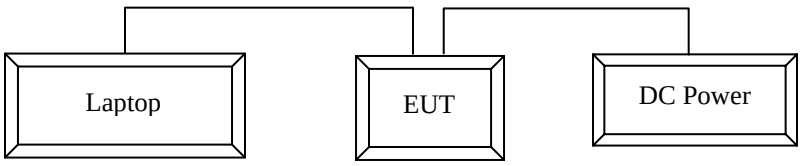
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	D600	B5RF831
ZAOXIN	DC Power Supply	RXN-605D	20030842184

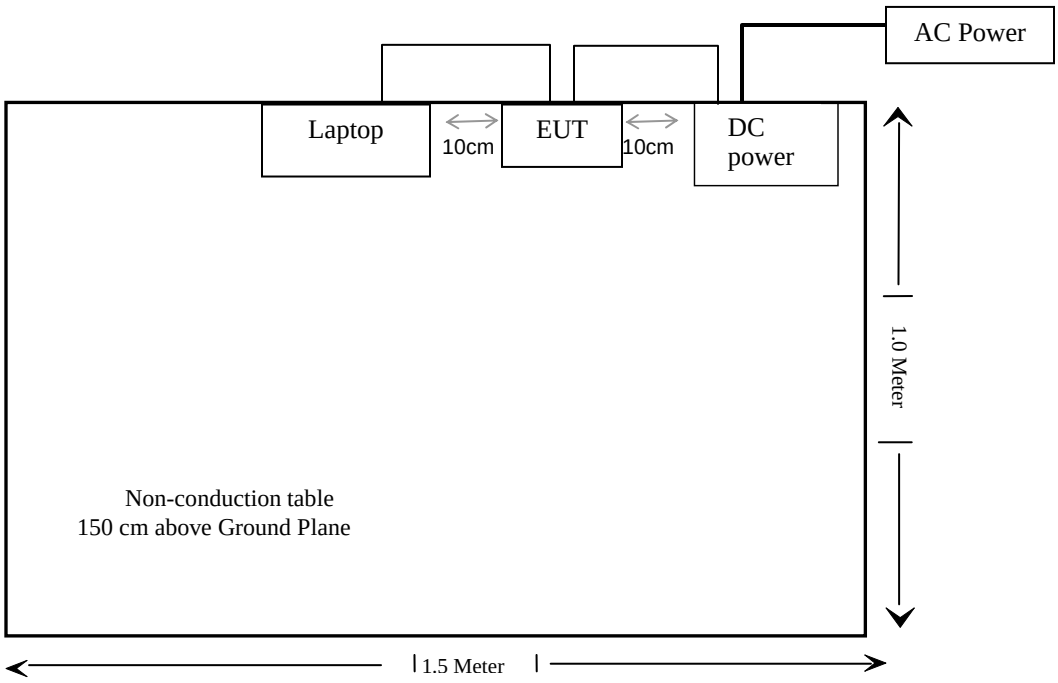
External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded detachable power cable	1.5	EUT	DC Power

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307, §2.1091	RF Exposure Information	Compliance
§2.1046; §25.204 (a)	RF Output Power	N/A*
§25.202(f)	Emissions Limitations	N/A*
§ 2.1051, §25.202 (f); §25.213	Spurious Emissions at Antenna Terminal	N/A*
§25.216(c), §25.216(f)	Protection of the Radio Navigation Satellite Service	N/A*
§2.1053, §25.202 (f); §25.213	Spurious Radiated Emissions	Compliance
§2.1055 §25.202(d)	Frequency stability vs. temperature Frequency stability vs. voltage	N/A*

Note: N/A* please refer to FCC ID: Q639602 with report No.: 0F3048WUS1.

FCC §1.1307 & §2.1091- RF EXPOSURE INFORMATION

Applicable Standard

According to FCC part 25 and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz;
* = Plane-wave equivalent power density;

MPE Calculation

Predication of MPE at a given distance, equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

S= power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Channel No.	**Antenna Gain**		**Conducted Power**		**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**MPE Limit (mW/cm^2)**
	(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
240	2	1.58	28.51	709.58	20	0.223	1.0

Result:

The MPE meets FCC limit at 20 cm distance.

FCC §25.202(f) & §25.213 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC§2.1053, §25.202(f) & §25.213

Test Procedure

The EUT system 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 Log_{10} (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	2011-05-05	2012-05-04
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-07-05	2011-07-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
HP	Signal Generator	HP8657A	2849U00982	2010-10-28	2011-10-27
HP	Amplifier	HP8447D	2944A09795	2010-08-02	2011-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2010-11-07	2011-11-06
COM POWER	Dipole Antenna	AD-100	041000	2010-09-25	2011-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2010-05-17	2011-05-17

*** 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 Felix Li on 2011-05-06.

Test mode: Transmitting

1) Below 1 GHz:

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)	Level (dBm)	Ant. Gain (dBd)	Cable Loss (dB)			
Low Channel (Channel 1)											
655.36	35.62	245	2.2	H	655.36	-60.7	0	0.58	-61.28	-13	48.28
655.36	33.82	354	2.1	V	655.36	-61.7	0	0.58	-62.28	-13	49.28
Middle Channel (Channel 75)											
655.36	35.23	15	2.4	H	655.36	-61.2	0	0.58	-61.78	-13	48.78
655.36	32.45	338	2.3	V	655.36	-61.3	0	0.58	-61.88	-13	48.88
Middle Channel (Channel 150)											
655.36	36.2	248	2.3	H	655.36	-60.3	0	0.58	-60.88	-13	47.88
655.36	34.1	147	2.3	V	655.36	-61.4	0	0.58	-61.98	-13	48.98
High Channel (Channel 240)											
655.36	35.12	145	2.1	H	655.36	-61.2	0	0.58	-61.78	-13	48.78
655.36	32.08	47	2.0	V	655.36	-62.3	0	0.58	-62.88	-13	49.88

2) Above 1 GHz:

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)	Level (dBm)	Ant. Gain (dBi)	Cable Loss (dB)			
Low Channel (Channel 1)											
4848.06	47.16	25	2.0	H	4848.06	-47.4	8.3	1.69	-40.79	-13	27.79
3232.04	48.63	256	2..4	H	3232.04	-46.5	6.9	1.35	-40.95	-13	27.95
4848.06	42.33	315	2.2	V	4848.06	-51.2	8.3	1.69	-44.59	-13	31.59
3232.04	43.56	128	2.2	V	3232.04	-50.8	6.9	1.35	-45.25	-13	32.25
Middle Channel (Channel 75)											
4857.30	48.55	45	2.4	H	4857.30	-46.2	8.3	1.69	-39.59	-13	26.59
3238.20	48.95	215	2.3	H	3838.20	-46.2	6.9	1.35	-40.65	-13	27.65
4857.30	44.84	247	2.3	V	4857.30	-49.3	8.3	1.69	-42.69	-13	29.69
3238.20	42.68	33	2.5	V	3838.20	-51.1	6.9	1.35	-45.55	-13	32.55
Middle Channel (Channel 150)											
3244.46	49.20	102	2.3	H	3244.46	-45.6	6.9	1.35	-40.05	-13	27.05
4866.69	46.68	2	2.3	H	4866.69	-49.3	8.3	1.69	-42.69	-13	29.69
3244.46	42.81	154	2.4	V	3244.46	-50.2	6.9	1.35	-44.65	-13	31.65
4866.69	40.02	354	2.5	V	4866.69	-53.4	8.3	1.69	-46.79	-13	33.79
High Channel (Channel 240)											
3251.96	47.52	67	2.4	H	3251.96	-47.8	6.9	1.35	-42.25	-13	29.25
4877.94	46.85	154	2.5	H	4877.94	-49.1	8.3	1.69	-42.49	-13	29.49
3251.96	42.84	235	2.2	V	3251.96	-50.9	6.9	1.35	-45.35	-13	32.35
4877.94	40.18	75	2.3	V	4877.94	-53.2	8.3	1.69	-46.59	-13	33.59

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