



TEST REPORT

Reference No...... : WTD23D12265325W005
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Address..... : Lo so CN11-3, Que Vo 3 Industrial Park, Que Tan Commune, Que Vo District, Bac Ninh Province, Vietnam
Product..... : VistaZ
Model(s)..... : CVZ-0303, CVL-0303
Standards..... : ETSI EN 301 511 V12.5.1 (2017-03)
Date of Receipt sample.... : 2023-12-14
Date of Test..... : 2023-12-21 to 2024-01-16
Date of Issue..... : 2024-01-23
Test Result..... : **Pass**

Remarks:

1. The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.
2. "*" **manufacturer** means any natural or legal person who manufactures radio equipment or has radio equipment designed or manufactured, and markets that equipment under his name or trade mark.

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2 Contents

	Page
1 COVER PAGE	1
2 CONTENTS	2
3 REVISION HISTORY	3
4 GENERAL INFORMATION	4
4.1 GENERAL DESCRIPTION OF E.U.T	4
4.2 DETAILS OF E.U.T	4
5 TEST SUMMARY	5
6 EQUIPMENT USED DURING TEST	6
6.1 EQUIPMENTS LIST	6
6.2 DESCRIPTION OF SUPPORT UNITS	6
6.3 MEASUREMENT UNCERTAINTY	7
6.4 TEST MODE	7
7 RF REQUIREMENTS	8
7.1 RADIATED SPURIOUS EMISSIONS – MS ALLOCATED A CHANNEL	9
7.2 RADIATED SPURIOUS EMISSIONS –MS IN IDLE MODE	13
8 PHOTOGRAPHS OF TEST SETUP AND EUT.	17

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3 Revision History

Test Report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD23D12265325W005	2023-12-14	2023-12-21 to 2024-01-16	2024-01-23	Original	-	Valid

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4 General Information

4.1 General Description of E.U.T.

Product:	VistaZ
Model(s):	CVZ-0303, CVL-0303
Model Description:	Only the model name and cellular modular are different. The model CVZ-0303 with cellular modular. The model CVL-0303 without cellular modular. The test sample model was CVZ-0303.
GSM Band(s):	GSM 900/1800MHz
Hardware Version:	V01 Rev 0.02
Software Version:	v17.1

4.2 Details of E.U.T.

Operation Frequency:	GSM 900: Tx: 880-915MHz, Rx: 925-960MHz GSM 1800: Tx: 1710-1785MHz, Rx: 1805-1880MHz
Max. RF output power:	GPRS900: 32.21dBm GPRS1800: 29.28dBm
Type of Modulation:	GPRS: GMSK
Antenna installation:	Dipole Antenna
Antenna Gain:	4.84dBi

Note:

#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings:	DC 3.7V by battery
Battery:	DC 3.7V, 2500mAh, 9.25Wh



5 Test Summary

RF PART		
Test Items	Test Requirement	Result
Transmitter - Frequency error and phase error	ETSI EN 301 511	N/A
Transmitter - Frequency error under multipath and interference conditions	ETSI EN 301 511	N/A
Frequency error and phase error in GPRS multislot configuration	ETSI EN 301 511	PASS*
Transmitter output power and burst timing	ETSI EN 301 511	N/A
Transmitter - Output RF spectrum	ETSI EN 301 511	N/A
Transmitter output power in GPRS multislot configuration	ETSI EN 301 511	PASS*
Output RF spectrum in GPRS multislot configuration	ETSI EN 301 511	PASS*
Conducted spurious emissions - MS allocated a channel	ETSI EN 301 511	N/A
Conducted spurious emissions - MS in idle mode	ETSI EN 301 511	N/A
Radiated spurious emissions - MS allocated a channel	ETSI EN 301 511	N/A
Radiated spurious emissions - MS in idle mode	ETSI EN 301 511	N/A
Receiver Blocking and spurious response - speech channels	ETSI EN 301 511	N/A
Intermodulation rejection - speech channels	ETSI EN 301 511	N/A
AM suppression - speech channels	ETSI EN 301 511	N/A
Adjacent channel rejection - speech channels(TCH/FS)	ETSI EN 301 511	N/A
Minimum Input level for Reference Performance - GPRS	ETSI EN 301 511	PASS*
Frequency error and Modulation accuracy in EGPRS Configuration	ETSI EN 301 511	N/A
Frequency error under multipath and interference conditions in EGPRS Configuration	ETSI EN 301 511	N/A
EGPRS Transmitter output power	ETSI EN 301 511	N/A
Output RF spectrum in EGPRS configuration	ETSI EN 301 511	N/A
Blocking and spurious response in EGPRS configuration	ETSI EN 301 511	N/A
Intermodulation rejection - EGPRS	ETSI EN 301 511	N/A
Adjacent channel rejection - speech channels(TCH/FS)	ETSI EN 301 511	N/A
Minimum Input level for Reference Performance - EGPRS	ETSI EN 301 511	N/A
Remark: N/A: Not Applicable RF: In this whole report RF means Radio Frequency. *: The test result refer to the report R2304A0458-R1.		



6 Equipment Used during Test

6.1 Equipments List

3m Semi-anechoic Chamber for Radiation						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	Spectrum Analyzer	R&S	FSP30	100091	2023-04-24	2024-04-23
2.	Amplifier	Agilent	8447D	2944A10178	2023-07-27	2024-07-26
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2023-08-07	2024-08-06
4.	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2023-04-24	2024-04-23
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2023-02-02	2024-02-01
6.	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2023-08-08	2024-08-07
7	Coaxial Cable (above 1GHz)	ZT26-NJ-NJ-8M/FA	1GHz-18GHz	NA	2023-02-02	2024-02-01
8.	Fading Simulator	R&S	ABFS	100172	2023-04-24	2024-04-23
9.	ESG VECTOR SIGNAL GENERATOR	Malaysia Keysight	E4438C	MY45092536	2023-04-24	2024-04-23
10.	Universal Radio Communication Tester	R&S	CMU 200	114798	2023-07-27	2024-07-26

6.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
/	/	/	/



6.3 Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.42dB
Power Spectral Density, conducted	±0.7dB
Unwanted Emissions, conducted	±2.76dB
Time	±5%
Duty Cycle	±5%
Temperature	±1°C
Humidity	±2%
DC and low frequency voltages	±0.1%
Conduction disturbance(150kHz~30MHz)	±3.64dB
Radiated Emission(30MHz~1GHz)	±4.53dB
Radiated Emission(1GHz~6GHz)	±5.03dB

6.4 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

RF Part

Operation Band		Test Mode	Channel Frequency	Channel Number
Tx	E-GSM 900	GPRS	880.2 MHz	975
			897.4 MHz	37
			914.8 MHz	124
	PCS 1800	GPRS	1710.2 MHz	512
			1747.4 MHz	698
			1784.8 MHz	885
Rx	E-GSM 900	GPRS	idle	N/A
	PCS 1800	GPRS	idle	N/A
Remark: All mode(s) were tested and the worst data was recorded.				



7 RF Requirements

1. Normal Test Conditions:

Ambient Condition: 21 °C to 55 %RH

2. Extreme Test Conditions:

Extreme Temperature: -20°C to +50°C

Extreme Power Source Voltages:

Power source	Lower extreme	Higher extreme	Normal condition
AC mains	0.9	1.1	1.0
Regulated lead acid battery	0.9	1.3	1.1
Leclanché battery	0.85	1.0	1.0
Lithium battery	0.95	1.1	1.1
Mercury/nickel cadmium battery	0.9	1.0	1.0

The follow condition is applicable:

Test Conditions	Normal	LTLV	LTHV	HTHV	HTLV
Temperature (°C)	21	-20	-20	50	50
Voltage (VDC)	4.07	3.52	4.07	4.07	3.52



7.1 Radiated spurious emissions – MS allocated a channel

7.1.1 Definition

Radiated spurious emissions, when the MS has been allocated a channel, are any emissions radiated by the cabinet and structure of the mobile station, including all interconnecting cables.

This is also known as "cabinet radiation".

The test applies to all types of MS with the exception of the test at extreme voltages for an MS where a practical connection, to an external power supply, is not possible.

NOTE: A "practical connection" shall be interpreted to mean it is possible to connect extreme voltages to the MS without interfering with the configuration of the MS in a way which could invalidate the test.

7.1.2 Limit

Frequency range	Power level in dBm		
	GSM 400, GSM 700, T-GSM 810, GSM 850, GSM 900	DCS 1 800	PCS 1 900
30 MHz to 1 GHz	-36	-36	-36
1 GHz to 4 GHz	-30		-30
1 GHz to 1 710 MHz		-30	
1 710 MHz to 1 785 MHz		-36	
1 785 MHz to 4 GHz		-30	

7.1.3 EUT Operation Condition

The EUT was programmed to be in continuously transmitting mode.

7.1.4 Test Procedure

a) Initially the test antenna is closely coupled to the MS and any spurious emission radiated by the MS is detected by the test antenna and receiver in the range 30 MHz to 4 GHz.

NOTE 1: This is a qualitative step to identify the frequency and presence of spurious emissions which are to be measured in subsequent steps.

b) The test antenna separation is set to the appropriate measurement distance and at each frequency at which an emission has been detected, the MS shall be rotated to obtain maximum response and the effective radiated power of the emission determined by a substitution measurement. In case of an anechoic shielded chamber pre-calibration may be used instead of a substitution measurement.

c) The measurement bandwidth, based on a 5 pole synchronously tuned filter, is set according to table 6. The power indication is the peak power detected by the measuring system.

The measurement on any frequency shall be performed for at least one TDMA frame period, with the exception of the idle frame.

NOTE 2: This ensures that both the active times (MS transmitting) and the quiet times are measured.



NOTE 3: For these filter bandwidths some difficulties may be experienced with noise floor above required measurement limit. This will depend on the gain of the test antenna, and adjustment of the measuring system bandwidth is permissible. Alternatively, for test frequencies above 900 MHz, the test antenna separation from the MS may be reduced to 1 meter.

d) The measurements are repeated with the test antenna in the orthogonal polarization plane.

e) The test is repeated under extreme voltage test conditions (see [annex 1, TC2.2]).

7.1.5 Measurement Record

E-GSM 900

Test Condition	Test Channel			Result
Normal Voltage	Low Channel	Middle Channel	High Channel	PASS
Low Voltage	Low Channel	Middle Channel	High Channel	PASS
High Voltage	Low Channel	Middle Channel	High Channel	PASS
Remark: Only the worst date(Low Voltage) is recorded.				

DCS1800

Test Condition	Test Channel			Result
Normal Voltage	Low Channel	Middle Channel	High Channel	PASS
Low Voltage	Low Channel	Middle Channel	High Channel	PASS
High Voltage	Low Channel	Middle Channel	High Channel	PASS
Remark: Only the worst date(Low Voltage) is recorded.				



GPRS 900

Low Voltage Condition

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
Low Channel										
265.18	40.71	175	1.7	H	-58.69	0.18	0.00	-58.87	-36	-22.87
265.18	44.48	176	1.4	V	-56.26	0.18	0.00	-56.44	-36	-20.44
1760.40	56.90	251	1.2	H	-57.22	0.27	7.50	-49.99	-30	-19.99
1760.40	58.81	102	1.1	V	-54.72	0.27	7.50	-47.49	-30	-17.49
2640.60	55.04	342	1.3	H	-58.75	0.35	10.40	-48.70	-30	-18.70
2640.60	56.67	263	1.2	V	-53.13	0.35	10.40	-43.08	-30	-13.08
Middle Channel										
265.18	40.19	42	1.1	H	-59.21	0.18	0.00	-59.39	-36	-23.39
265.18	45.66	308	1.7	V	-55.08	0.18	0.00	-55.26	-36	-19.26
1794.80	57.22	93	1.2	H	-57.97	0.27	7.50	-50.74	-30	-20.74
1794.80	59.56	129	1.8	V	-54.93	0.27	7.50	-47.70	-30	-17.70
2692.20	54.29	9	1.0	H	-59.66	0.35	10.40	-49.61	-30	-19.61
2692.20	58.00	80	1.4	V	-53.88	0.35	10.40	-43.83	-30	-13.83
High Channel										
265.18	41.52	86	1.5	H	-57.88	0.18	0.00	-58.06	-36	-22.06
265.18	43.95	8	1.8	V	-56.79	0.18	0.00	-56.97	-36	-20.97
1829.60	56.90	354	1.9	H	-58.29	0.27	7.50	-51.06	-30	-21.06
1829.60	58.38	212	1.4	V	-56.11	0.27	7.50	-48.88	-30	-18.88
2744.40	55.25	45	1.2	H	-58.70	0.35	10.40	-48.65	-30	-18.65
2744.40	56.72	65	1.8	V	-55.16	0.35	10.40	-45.11	-30	-15.11

Remark: Absolute Level = SG Level - Cable Loss + Antenna Gain 2) Margin = Absolute Level - Limit



GPRS 1800 Band

Low Voltage Condition

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
Low Channel										
244.23	41.13	355	1.5	H	-58.27	0.18	0.00	-58.45	-36	-22.45
244.23	44.25	236	2.0	V	-56.49	0.18	0.00	-56.67	-36	-20.67
3420.40	58.55	252	1.6	H	-54.42	0.27	7.50	-47.19	-30	-17.19
3420.40	57.37	128	1.8	V	-52.69	0.27	7.50	-45.46	-30	-15.46
5130.60	52.84	282	1.0	H	-56.62	0.35	10.40	-46.57	-30	-16.57
5130.60	54.41	5	1.3	V	-54.36	0.35	10.40	-44.31	-30	-14.31
Middle Channel										
244.23	40.57	253	1.6	H	-58.83	0.18	0.00	-59.01	-36	-23.01
244.23	44.58	277	1.3	V	-56.16	0.18	0.00	-56.34	-36	-20.34
3494.80	59.25	28	1.5	H	-53.41	2.34	12.40	-43.35	-30	-13.35
3494.80	58.28	198	1.2	V	-52.47	2.34	12.40	-42.41	-30	-12.41
5242.20	53.12	127	1.7	H	-56.46	2.79	12.70	-46.55	-30	-16.55
5242.20	55.15	76	1.6	V	-53.65	2.79	12.70	-43.74	-30	-13.74
High Channel										
244.23	39.77	343	1.7	H	-59.63	0.18	0.00	-59.81	-36	-23.81
244.23	43.79	136	1.5	V	-56.95	0.18	0.00	-57.13	-36	-21.13
3569.60	58.77	104	1.1	H	-53.58	2.34	12.40	-43.52	-30	-13.52
3569.60	58.33	295	1.2	V	-52.11	2.34	12.40	-42.05	-30	-12.05
5354.40	54.00	35	1.8	H	-55.58	2.79	12.70	-45.67	-30	-15.67
5354.40	54.53	125	1.3	V	-54.27	2.79	12.70	-44.36	-30	-14.36

Remark: Absolute Level = SG Level - Cable Loss + Antenna Gain 2) Margin = Absolute Level - Limit



7.2 Radiated spurious emissions –MS in idle mode

7.2.1 Definition

Radiated spurious emissions, when the MS is in idle mode, are any emissions radiated by the cabinet and structure of the mobile station, including all interconnecting cables.

This is also known as "cabinet radiation".

The test applies to all types of MS with the exception of the test at extreme voltages for an MS where a practical connection, to an external power supply, is not possible.

NOTE: A "practical connection" shall be interpreted to mean it is possible to connect extreme voltages to the MS without interfering with the configuration of the MS in a way which could invalidate the test.

7.2.2 Limit

Frequency range	Power level in dBm	
	GSM 400, T-GSM 810, GSM 900, DCS 1 800	GSM 700, GSM 850, PCS 1 900
30 MHz to 880 MHz	-57	-57
880 MHz to 915 MHz	-59	-57
915 MHz to 1 000 MHz	-57	-57
1 GHz to 1 710 MHz	-47	
1 710 MHz to 1 785 MHz	-53	
1 785 MHz to 4GHz	-47	
1 GHz to 1 850 MHz		-47
1 850 MHz to 1 910 MHz		-53
1 910 MHz to 4GHz		-47

7.2.3 EUT Operation Condition

The EUT was programmed to be in idle mode.

7.2.4 Test Procedure

detected by the test antenna and receiver in the range 30 MHz to 4 GHz.

NOTE 1: This is a qualitative step to identify the frequency and presence of spurious emissions which are to be measured in subsequent steps.

b) The test antenna separation is set to the appropriate measurement distance and at each frequency at which a spurious emission has been detected the MS is rotated to obtain a maximum response. The effective radiated power of the emission is determined by a substitution measurement. In case of an anechoic shielded chamber pre-calibration may be used instead of a substitution measurement.

c) The measurement bandwidth based on a 5 pole synchronously tuned filter shall be according to table 8. The power indication is the peak power detected by the measuring system.

The measurement time on any frequency shall be such that it includes the time during which the MS receives a TDMA frame containing the paging channel.



NOTE 2: For these filter bandwidths some difficulties may be experienced with noise floor above required measurement limit. This will depend on the gain of the test antenna, and adjustment of the measuring system bandwidth is permissible. Alternatively, for test frequencies above 900 MHz, the test antenna separation from the MS may be reduced to 1 meter.

Frequency range	Filter bandwidth	Video bandwidth
30MHz to 50MHz	10kHz	30kHz
50MHz to 4GHz	100kHz	300kHz

d) The measurements are repeated with the test antenna in the orthogonal polarization plane.

e) The test is repeated under extreme voltage test conditions (see [Annex 1, TC2.2]).

7.2.5 Measurement Record

GPRS 900

Test Condition	Test Channel			Result
Normal Voltage	Low Channel	Middle Channel	High Channel	PASS
Low Voltage	Low Channel	Middle Channel	High Channel	PASS
High Voltage	Low Channel	Middle Channel	High Channel	PASS
Remark: Only the worst date(Low Voltage) is recorded.				

GPRS 1800

Test Condition	Test Channel			Result
Normal Voltage	Low Channel	Middle Channel	High Channel	PASS
Low Voltage	Low Channel	Middle Channel	High Channel	PASS
High Voltage	Low Channel	Middle Channel	High Channel	PASS
Remark: Only the worst date(Low Voltage) is recorded.				



GPRS 900

Low Voltage Condition

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
Low Channel										
325.81	40.22	58	1.1	H	-69.49	0.15	0.00	-69.64	-57	-12.64
325.81	38.77	44	1.8	V	-68.22	0.15	0.00	-68.37	-57	-11.37
2080.26	41.47	228	1.3	H	-71.91	0.34	10.50	-61.75	-47	-14.75
2080.26	45.48	317	2.0	V	-67.15	0.34	10.50	-56.99	-47	-9.99
Middle Channel										
325.81	40.58	227	1.1	H	-69.13	0.15	0.00	-69.28	-57	-12.28
325.81	39.84	147	1.9	V	-67.15	0.15	0.00	-67.30	-57	-10.30
2080.26	41.83	26	1.3	H	-71.55	0.34	10.50	-61.39	-47	-14.39
2080.26	44.43	356	1.1	V	-68.20	0.34	10.50	-58.04	-47	-11.04
High Channel										
325.81	38.79	224	1.2	H	-70.92	0.15	0.00	-71.07	-57	-14.07
325.81	38.64	167	1.2	V	-68.35	0.15	0.00	-68.50	-57	-11.50
2080.26	41.10	0	1.4	H	-72.28	0.34	10.50	-62.12	-47	-15.12
2080.26	44.74	271	1.2	V	-67.89	0.34	10.50	-57.73	-47	-10.73

Remark: Absolute Level = SG Level - Cable Loss + Antenna Gain 2) Margin = Absolute Level - Limit



GPRS 1800 Band

Low Voltage Condition

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
Low Channel										
286.32	37.59	358	1.1	H	-70.25	0.16	0.00	-70.41	-57	-13.41
286.32	37.95	353	1.8	V	-67.65	0.16	0.00	-67.81	-57	-10.81
2180.39	44.93	24	1.4	H	-64.53	2.15	7.50	-59.18	-47	-12.18
2180.39	45.95	220	1.4	V	-62.24	2.15	7.50	-56.89	-47	-9.89
Middle Channel										
286.32	36.81	152	1.9	H	-64.51	0.16	0.00	-64.67	-57	-7.67
286.32	37.35	277	1.9	V	-64.52	0.16	0.00	-64.68	-57	-7.68
2180.39	44.56	312	1.6	H	-64.90	2.15	7.50	-59.55	-47	-12.55
2180.39	45.22	212	1.7	V	-62.97	2.15	7.50	-57.62	-47	-10.62
High Channel										
286.32	38.62	12	1.1	H	-62.70	0.16	0.00	-62.86	-57	-5.86
286.32	38.51	207	1.4	V	-63.36	0.16	0.00	-63.52	-57	-6.52
2180.39	44.68	203	1.2	H	-64.78	2.15	7.50	-59.43	-47	-12.43
2180.39	44.88	268	1.3	V	-63.31	2.15	7.50	-57.96	-47	-10.96

Remark: Absolute Level = SG Level - Cable Loss + Antenna Gain 2) Margin = Absolute Level - Limit



8 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix-CVZ-0303-Photos.

=====End of Report=====

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