



VARIANT FCC TEST REPORT

(PART 24)

REPORT NO.: RF111206C14-2

MODEL NO.: MO6717

FCC ID: NCMOMO6717

RECEIVED: Dec. 06, 2011

TESTED: Dec. 07, 2011

ISSUED: Dec. 13, 2011

APPLICANT: Option nv

ADDRESS: Gaston Geenslaan 14, 3001 Leuven, Belgium

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

This test report consists of 18 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product, certification, approval or endorsement by TAF or any government agency. The test results in the report only apply to the tested sample.





TABLE OF CONTENTS

RELEASE CONTROL RECORD	3
1 CERTIFICATION	4
2 SUMMARY OF TEST RESULTS	5
2.1 MEASUREMENT UNCERTAINTY	5
3 GENERAL INFORMATION.....	6
3.1 GENERAL DESCRIPTION OF EUT.....	6
3.2 DESCRIPTION OF TEST MODES.....	7
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST	7
3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	8
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	9
3.4 DESCRIPTION OF SUPPORT UNITS	9
4 TEST TYPES AND RESULTS	10
4.1 RADIATED EMISSION MEASUREMENT	10
4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT.....	10
4.1.2 TEST INSTRUMENTS.....	11
4.1.3 TEST PROCEDURES	12
4.1.4 DEVIATION FROM TEST STANDARD	12
4.1.5 TEST SETUP.....	13
4.1.6 EUT OPERATING CONDITIONS	13
4.1.7 TEST RESULTS	14
5 PHOTOGRAPHS OF THE TEST CONFIGURATION.....	16
6 INFORMATION ON THE TESTING LABORATORIES	17
7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	18



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Dec. 13, 2011



1 CERTIFICATION

PRODUCT: GTM671WFS

MODEL NO.: MO6717

BRAND: Option

APPLICANT: Option nv

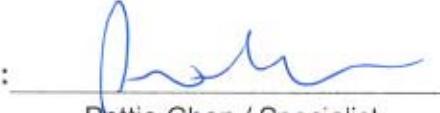
TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Dec. 07, 2011

TEST STANDARDS: FCC Part 24, Subpart E

ANSI C63.4-2003

This report is issued as a supplementary report of **FG0N2627 Rev. 01** (Issued on Apr. 20, 2011). This report shall be used combined together with its original report.

PREPARED BY :  , DATE : Dec. 13, 2011

Pettie Chen / Specialist

APPROVED BY :  , DATE : Dec. 13, 2011

Gary Chang / Technical Manager

NOTE: The radiated emission test was performed for the addendum. Refer to original report for the other test data.



2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 24.232	Maximum Peak Output Power	NA	Refer to Note
2.1055 24.235	Frequency Stability AFC Freq. Error vs. Voltage AFC Freq. Error vs. Temperature	NA	Refer to Note
2.1049 24.238(b)	Occupied Bandwidth	NA	Refer to Note
24.238(b)	Band Edge Measurements	NA	Refer to Note
2.1051 24.238	Conducted Spurious Emissions	NA	Refer to Note
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -27.8dB at 7520.0MHz.

NOTE: The radiated emission test was performed for the addendum. Refer to original report for the other test data.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	GTM671WFS	
MODEL NO.	MO6717	
FCC ID	NCMOMO6717	
POWER SUPPLY	3.3Vdc	
MODULATION TYPE	GSM, GPRS	GMSK, 8PSK
	WCDMA	BPSK
FREQUENCY RANGE	GSM, GPRS	TX: 1850MHz ~ 1910MHz RX: 1930MHz ~ 1990MHz
	WCDMA	TX: 1850MHz ~ 1910MHz RX: 1930MHz ~ 1990MHz
MAX. EIRP POWER	GSM	0.86Watts
MULTI-SLOTS CLASS	12	
ANTENNA TYPE	Fixed External antenna	
ANTENNA GAIN	2.0dBi	
DATA CABLE	NA	
I/O PORTS	Refer to user's manual	
ACCESSORY DEVICES	NA	

NOTE:

1. This report is a supplementary report of FG0N2627 Rev. 01 (Issued on Apr. 20, 2011). This report is prepared for FCC class II change. The difference compared with original report is as following.
 - ◆ The MO6717 has a Full Size PCI Express Minicard Form Factor, while the MO6712 has a Half Size PCI Express Minicard Form Factor.
 - ◆ The MO6717 additionally has a (U)SIM interface and MicroSD interface.Therefore the radiated emission test was re-tested in this report.
2. HW: V1.0
3. SW: 2.2.9.0
4. IMEI Code: 35173405*****.
5. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

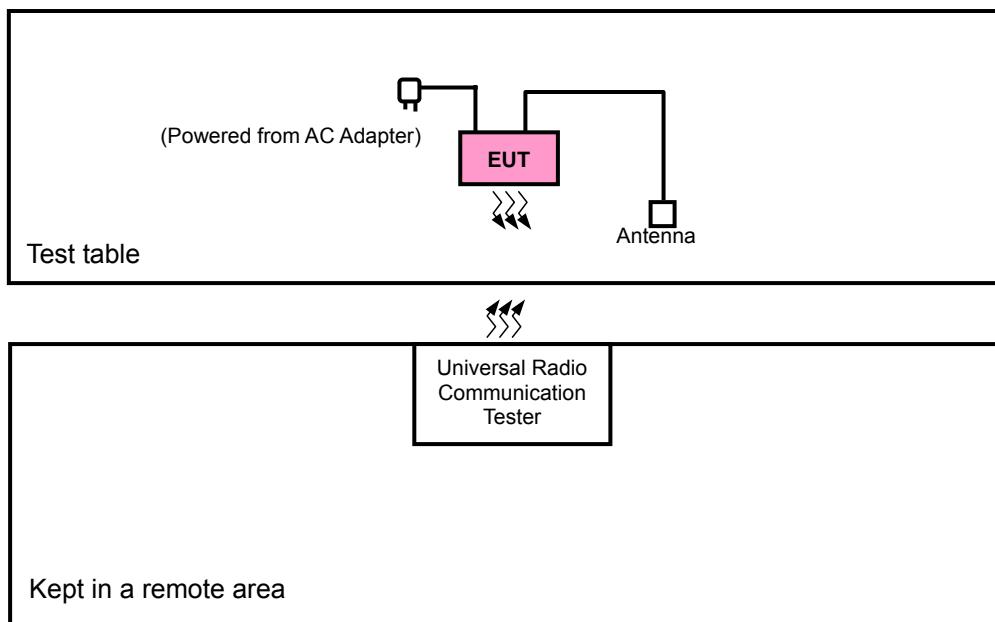
299 channels are provided to this EUT. Therefore, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	512	1850.2 MHz	GSM
MIDDLE	661	1880.0 MHz	GSM
HIGH	810	1909.8 MHz	GSM

NOTE:

1. Below 1 GHz, the channel 512, 661, and 810 were pre-tested in chamber. The channel 810 was chosen for final test.
2. Above 1 GHz, the channel 512, 661, and 810 were tested individually.
3. The worst case for final test is chosen when the power control level set 0.
4. The channel space is 0.2MHz.
5. The EUT is a GPRS class 12 device (Multislot class: 12), which provide 4 up-link. After pre-tested 4 functions, found up-link with 1 time slot is worse, therefore, test results of output power, frequency stability, occupied bandwidth and band edge tests came out from this.

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





A D T

3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO		DESCRIPTION
	RE<1G	RE≥1G	
-	√	√	-

Where RE<1G: Radiated emission below 1GHz RE≥1G: Radiated emission above 1GHz

RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
512 to 810	512	GSM

RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
512 to 810	512, 661, 810	GSM

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE < 1G	25deg. C, 68%RH	120Vac, 60Hz	Kay Wu
RE ≥ 1G	25deg. C, 68%RH	120Vac, 60Hz	Kay Wu



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2
FCC 47 CFR Part 24
ANSI C63.4-2003
ANSI/TIA/EIA-603-C 2004

NOTE: All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	104484	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE 1: All power cords of the above support units are non shielded (1.8m).

NOTE 2: Item 1 acted as a communication partners to transfer data.



A D T

4 TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 24.238(a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. The emission of limit equal to -13dBm .



4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Oct. 29, 2011	Oct. 28, 2012
Preamplifier Agilent	8449B	3008A01964	Oct. 29, 2011	Oct. 28, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.



A D T

4.1.3 TEST PROCEDURES

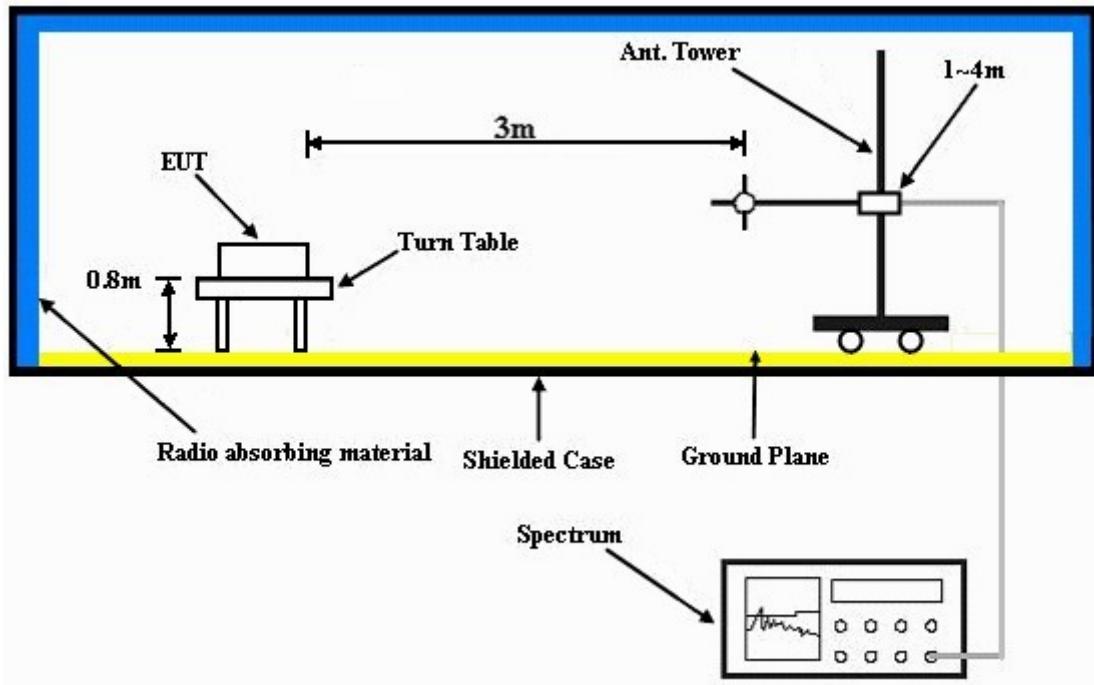
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
- c. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.



A D T

4.1.7 TEST RESULTS

Below 1GHz

MODE		TX channel 512					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	45.55	-56.7	-43.4	-10.5	-53.9	-13.0	-40.9
2	94.15	-46.6	-54.3	1.0	-53.3	-13.0	-40.3
3	201.06	-57.2	-68.4	5.5	-62.9	-13.0	-49.9
4	648.16	-68.3	-70.7	4.8	-65.9	-13.0	-52.9
5	844.49	-68.2	-66.8	4.0	-62.8	-13.0	-49.8
6	998.06	-69.0	-65.3	3.9	-61.4	-13.0	-48.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	127.19	-51.3	-55.1	-0.1	-55.2	-13.0	-42.2
2	199.12	-61.7	-69.5	5.4	-64.1	-13.0	-51.1
3	276.87	-66.5	-73.6	5.2	-68.4	-13.0	-55.4
4	416.83	-67.8	-71.5	5.2	-66.3	-13.0	-53.3
5	708.42	-67.5	-66.0	5.1	-60.9	-13.0	-47.9
6	949.46	-69.1	-62.7	3.9	-58.8	-13.0	-45.8

REMARKS: 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).

2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

Above 1GHz

MODE		TX channel 512					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-57.2	-52.8	7.1	-45.7	-13.0	-32.7
2	5640.00	-62.2	-51.2	6.8	-44.4	-13.0	-31.4
3	7520.00	-62.6	-45.0	4.2	-40.8	-13.0	-27.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-55.9	-51.9	7.1	-44.8	-13.0	-31.8
2	5640.00	-64.5	-54.8	6.8	-48.0	-13.0	-35.0
3	7520.00	-64.5	-47.7	4.2	-43.5	-13.0	-30.5

REMARKS: 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



A D T

6 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site:
www.adt.com.tw/index.5.phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232
Fax: 886-3-3185050
Email: service.adt@tw.bureauveritas.com
Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.



A D T

7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---