VARIANT FCC TEST REPORT

(PART 22)

REPORT NO.:	RF111206C14-1
MODEL NO.:	MO6717
FCC ID:	NCMOMO6717
RECEIVED:	Dec. 06, 2011
TESTED:	Dec. 07 ~ Dec. 08, 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.

TABLE OF CONTENTS

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
TESTED:	Dec. 07 ~ Dec. 08, 2011
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 22, Subpart H** 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 22 & Part 2			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
2.1046 22.913 (a)	Maximum Peak Output Power	NA	Refer to Note
2.1055	Frequency Stability AFC Freq. Error vs. Voltage AFC Freq. Error vs. Temperature	NA	Refer to Note
2.1049 (h)	Occupied Bandwidth	NA	Refer to Note
22.917	Band Edge Measurements	NA	Refer to Note
2.1051 22.917	Conducted Spurious Emissions	NA	Refer to Note
2.1053 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is –29.5dB at 1672.8MHz.

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
	EDGE	8PSK
	WCDMA	QPSK
	HSDPA	QPSK / 16QAM
	HSUPA	BPSK
FREQUENCY RANGE	**GSM 850**	TX: 824MHz ~ 849MHz RX: 869MHz ~ 894MHz
	WCDMA Band V	TX: 824MHz ~ 849MHz RX: 869MHz ~ 894MHz
MAX. ERP POWER	**GSM**	0.38Watts
ANTENNA TYPE	Fixed External antenna	
ANTENNA GAIN	1.0dBi	
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

FOR GSM:

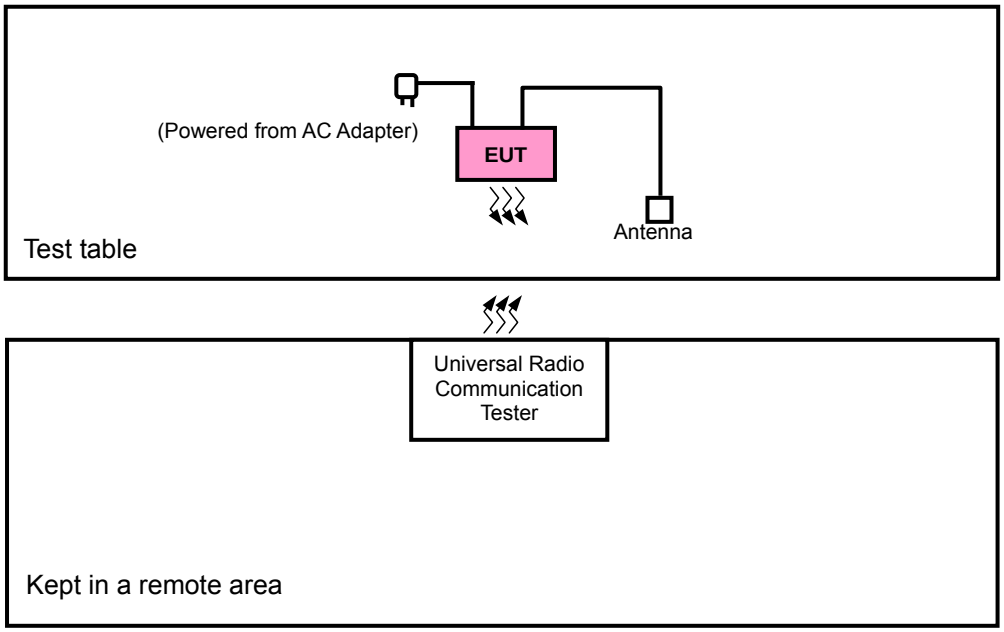
124 channels are provided to this EUT. Therefore, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	128	824.2 MHz	GSM
MIDDLE	189	836.4 MHz	GSM
HIGH	251	848.8 MHz	GSM

NOTE:

1. Below 1 GHz, the channel 128, 189, and 251 were pre-tested in chamber. The channel 251 was chosen for final test.
2. Above 1 GHz, the channel 128, 189, and 251 were tested individually. The channel 251 was chosen for final test.
3. The worst case for final test is chosen when the power control level set 5.
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



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR GSM:

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

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 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
128 to 251	128	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
128 to 251	128, 190, 251	GSM

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE < 1G	25 deg. C, 65% RH	120Vac, 60Hz	Kay Wu
RE ≥ 1G	25 deg. C, 65% 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 22

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
2	NJZ-2000 (GPRS+WCDMA SIMULATOR)	JRC	NJZ-2000	ET00054	NA

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

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

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

4 TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT (BELOW 1GHz)

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 22.917 (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 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.

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 = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

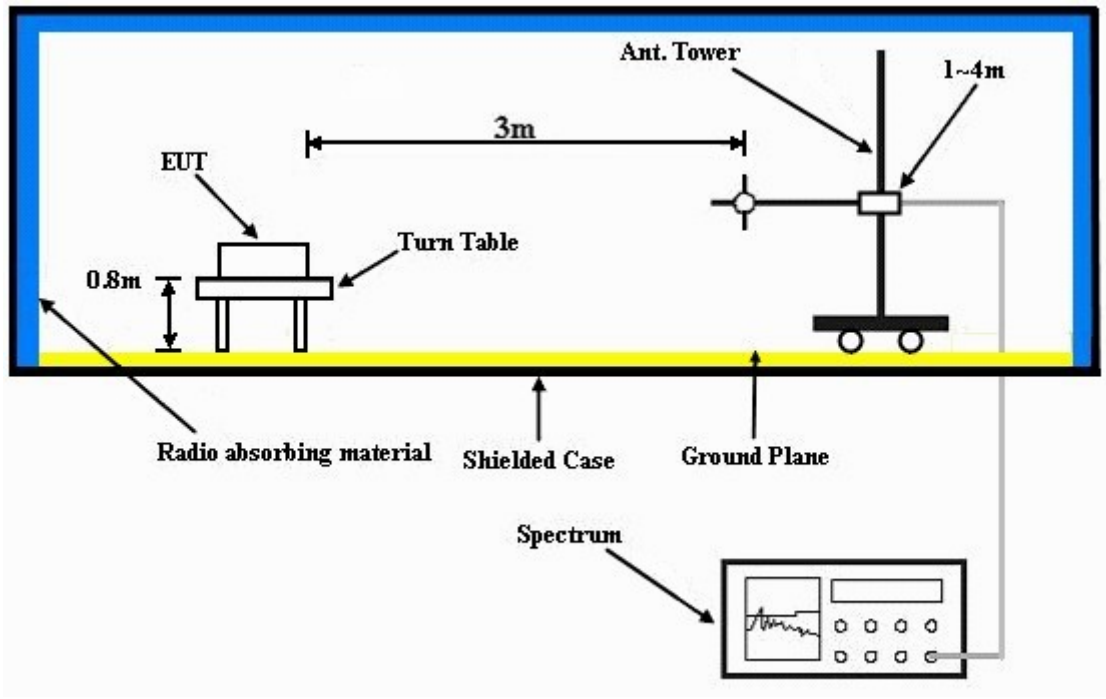
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

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.

4.1.7 TEST RESULTS

Below 1GHz

FOR GSM:

MODE	TX channel 251						
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	92.20	-45.9	-53.7	1.1	-54.8	-13.0	-41.8
2	204.95	-55.5	-66.8	5.5	-63.4	-13.0	-50.4
3	298.26	-63.4	-72.7	5.1	-69.8	-13.0	-56.8
4	368.24	-66.4	-72.9	5.2	-69.9	-13.0	-56.9
5	776.45	-68.0	-66.9	4.3	-64.8	-13.0	-51.8
6	988.34	-69.4	-65.8	3.9	-64.0	-13.0	-51.0
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	82.48	-50.3	-53.2	-1.0	-56.4	-13.0	-43.4
2	129.14	-49.3	-52.7	-0.1	-54.9	-13.0	-41.9
3	243.83	-53.1	-61.0	5.4	-57.8	-13.0	-44.8
4	366.29	-66.8	-72.3	5.2	-69.2	-13.0	-56.2
5	718.14	-67.9	-66.1	5.0	-63.2	-13.0	-50.2
6	980.56	-63.4	-56.7	3.9	-54.9	-13.0	-41.9

NOTE: Power Value (dBum) = S.G Power Value (dBm) + Correction Factor (dB).

Above 1GHz

FOR GSM BAND:

MODE	TX channel 251						
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	1672.80	-51.1	-51.7	5.5	-48.4	-13.0	-35.4
2	2509.20	-56.6	-54.2	6.4	-49.9	-13.0	-36.9
3	3345.60	-61.5	-57.8	6.9	-53.0	-13.0	-40.0
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	**1672.80**	**-43.5**	**-45.9**	**5.5**	**-42.5**	**-13.0**	**-29.5**
2	2509.20	-50.1	-47.7	6.4	-43.4	-13.0	-30.4
3	3345.60	-60.3	-56.8	6.9	-52.0	-13.0	-39.0

NOTE: Power Value (dBum) = S.G Power Value (dBm) + Correction Factor (dB).

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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.

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---