

# FCC TEST REPORT (15.225)

**REPORT NO.:** RF140129C11-2

**MODEL NO.:** F-07F

FCC ID: VQK-F07F

**RECEIVED:** Jan. 29, 2014

**TESTED:** Mar. 12, 2014

**ISSUED:** Mar. 13, 2014

**APPLICANT:** FUJITSU LIMITED

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**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.

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# **RELEASE CONTROL RECORD**

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140129C11-2	Original release	Mar. 13, 2014

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# 1. CERTIFICATION

**PRODUCT:** Mobile Phone

MODEL: F-07F

**BRAND: FUJITSU** 

**APPLICANT: FUJITSU LIMITED** 

**TESTED:** Mar. 12, 2014

**TEST SAMPLE:** ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.225)

FCC Part 15, Subpart C (Section 15.215)

ANSI C63.10-2009

The above equipment (model: F-07F) has been tested by Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY: Cline Chou / Specialist , DATE: Mar. 13, 2014

Celine Chou / Specialist

APPROVED BY: \_\_\_\_\_\_\_, DATE: \_\_\_\_\_\_\_, Mar. 13, 2014



# 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.225, 15.215)				
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK	
15.207	Conducted emission test	NA	Power supply is 3.75Vdc from battery	
15.225 (a)	The field strength of any emissions within the band 13.553-13.567 MHz	PASS	Meet the requirement of limit. Minimum passing margin is -61.72dB at 13.56MHz.	
15.225 (d)	The field strength of any emissions appearing outside of the 13.110-14.010 MHz band	PASS	Meet the requirement of limit. Minimum passing margin is -6.50dB at 51.24MHz.	
15.225 (e)	The frequency tolerance	PASS	Meet the requirement of limit.	
15.215 (c)	20dB Bandwidth	PASS	Meet the requirement of limit.	

# 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
Dadiated emissions	30MHz ~ 200MHz	3.19 dB
Radiated emissions	200MHz ~1000MHz	3.21 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	Mobile Phone
MODEL NO.	F-07F
POWER SUPPLY	3.7Vdc (Battery) 5.4Vdc (Adapter or cradle or host equipment)
MODULATION TYPE	ASK
OPERATING FREQUENCY	13.56MHz
ANTENNA TYPE	loop antenna
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

#### NOTE:

1. The EUT contains the following accessories.

No.	Product	Brand	Model	Description
1	Battery	Fujitsu limited	CA54310-0028	3.7Vdc, 1000mA

- 2. SW version is R05A.
- 3. HW version is V2.1.0.
- 4. IMEI Code: 355276050003166.
- 5. The above EUT information is declared by manufacturer and for more detailed feature description, please refer to the manufacturer's specifications or User's Manual.

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# 3.2 DESCRIPTION OF TEST MODES

# 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE		APPLICA	ABLE TO		DESCRIPTION
MODE	RE	PLC	FS	BW	DESCRIPTION
-	$\checkmark$	NOTE 2	$\checkmark$	$\checkmark$	-

Where RE: Radiated Emission

FS: Frequency Stability BW: 20dB Bandwidth

NOTE 1: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when

positioned on **Z-plane**.

NOTE 2: No need to concern of Conducted Emission due to the EUT is powered by battery.

#### **RADIATED EMISSION TEST:**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
-	1	1	ASK

#### **FREQUENCY STABILITY:**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
-	1	1	ASK

# **20dB BANDWIDTH:**

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
-	1	1	ASK

#### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	24deg. C, 64%RH	3.7Vdc	Brad Tung
FS	22deg. C, 70%RH	3.7Vdc	Brad Tung
BW	22deg. C, 70%RH	3.7Vdc	Brad Tung

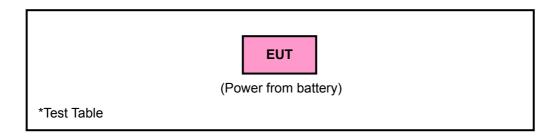
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# 3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

# 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



# 3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.225) FCC Part 15, Subpart C (15.215) ANSI C63.10-2009

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

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B. The test report has been issued separately.



# 4. TEST TYPES AND RESULTS

#### 4.1 RADIATED EMISSION MEASUREMENT

# 4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

#### NOTE:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level  $(dBuV/m) = 20 \log Emission level (uV/m)$ .
- 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

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# 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Sep. 09, 2013	Sep. 08, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU 43	100115	Dec. 18, 2013	Dec. 17, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 26, 2014	Feb. 25, 2015
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Jan. 05, 2014	Jan. 04, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2014	Jan. 30, 2015
Preamplifier Agilent	8449B	3008A01961	Oct. 28, 2013	Oct. 27, 2014
Preamplifier Agilent	8447D	2944A10738	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Aug. 26, 2013	Aug. 25, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table BV ADT	TT100.	TT93021704	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021704	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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
- 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 460141.
- 5. The IC Site Registration No. is IC7450F-4.



#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

#### NOTE:

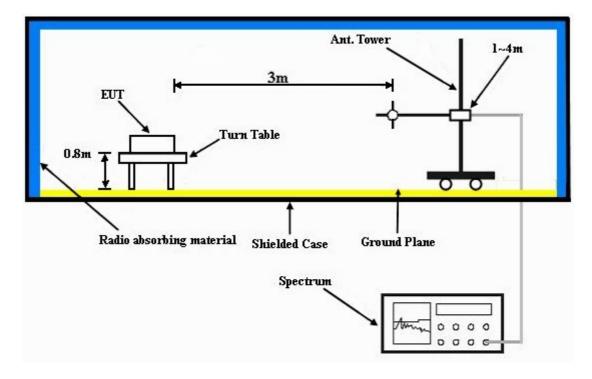
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. All modes of operation were investigated and the worst-case emissions are reported.

# 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

Set the EUT under transmission condition continuously at specific channel frequency.



# 4.1.7 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	HANNEL Channel 1 FREQUENCY RANGI		13.553 ~ 13.567MHz	
INPUT POWER	3.7Vdc	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Brad Tung	

	ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3m									
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)		
1	13.56	62.28	124.00	-61.72	1.00	199	42.35	19.93		

#### **REMARKS:**

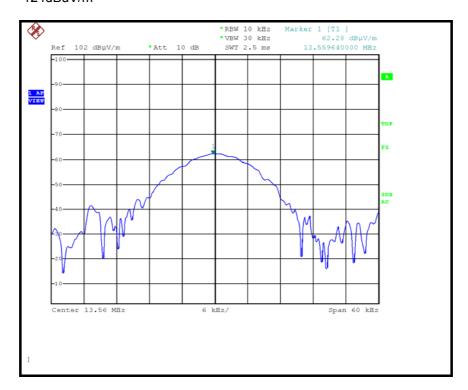
- 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.
- 5. Above limits have been translated by the formula

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance) Example:

13.56MHz = 15848uV/m 30m

= 84dBuV/m 30m =  $84+20log(30/3)^2$  3m

= 124dBuV/m





<b>EUT TEST CONDITION</b>		MEASUREMENT DETAIL		
CHANNEL Channel 1		FREQUENCY RANGE	13.553 ~ 13.567MHz	
INPUT POWER	3.7Vdc	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Brad Tung	

	ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE AT 3m										
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)			
1	13.56	56.86	124.00								

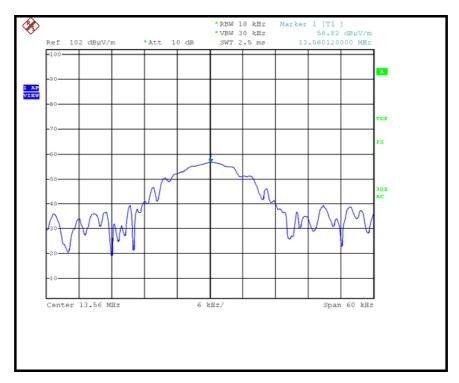
#### **REMARKS:**

- 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.
- 5. Above limits have been translated by the formula

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance) Example:

13.56MHz = 15848uV/m30m 30m = 84dBuV/m  $= 84 + 20\log(30/3)^2$ 3m

= 124dBuV/m





<b>EUT TEST CONDITION</b>		MEASUREMENT DETAIL		
CHANNEL Channel 1		FREQUENCY RANGE	Below 30MHz	
INPUT POWER	3.7Vdc	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Brad Tung	

	ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3m									
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)		
1	27.12	47.33	69.54	-22.21	1.00	203	27.30	20.03		
	ANT	ENNA POLA	RITY & TES	ST DISTANC	E: LOOP A	NTENNA CL	OSE AT 3m	1		
No.	Freq. Emission Limit			Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)		
1	27.12	45.75	69.54	-23.79	1.00	107	25.72	20.03		

#### **REMARKS:**

- Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
   Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz	
INPUT POWER	3.7Vdc	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Brad Tung	

		ANTENNA	POLARITY	& TEST DIS	TANCE: HO	RIZONTAL	AT 3 M			
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
1	121.10	25.7 QP	43.5	-17.8	2.00 H	122	41.70	-16.00		
2	179.31	21.7 QP	43.5	-21.8	1.50 H	55	36.70	-15.00		
3	270.51	25.3 QP	46.0	-20.7	1.00 H	184	38.60	-13.30		
4	419.92	29.5 QP	46.0	-16.5	1.25 H	13	39.80	-10.30		
5	610.08	32.5 QP	46.0	-13.5	1.50 H	10	38.90	-6.40		
6	637.25	32.6 QP	46.0	-13.4	1.00 H	12	38.60	-6.00		
	ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M									
	IO. FREQ. (MHz) EMISSION LIMIT (dBuV/m) MARGIN (dB) HEIGHT (m) TABLE RAW VALUE (dBuV)						. •			
NO.	FREQ. (MHz)	EMISSION	LIMIT		ANTENNA	TABLE	RAW VALUE	CORRECTION FACTOR (dB/m)		
NO. 1	FREQ. (MHz) 51.24	EMISSION LEVEL	LIMIT		ANTENNA	TABLE ANGLE	RAW VALUE	FACTOR		
	` ,	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	FACTOR (dB/m)		
1	51.24	EMISSION LEVEL (dBuV/m) 33.5 QP	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m) 1.25 V	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	FACTOR (dB/m) -14.10		
1 2	<b>51.24</b> 121.10	EMISSION LEVEL (dBuV/m) 33.5 QP	LIMIT (dBuV/m) 40.0 43.5	<b>MARGIN (dB)</b> -6.5 -13.2	ANTENNA HEIGHT (m) 1.25 V 1.00 V	TABLE ANGLE (Degree) 323 279	RAW VALUE (dBuV) 47.60 46.30	FACTOR (dB/m) -14.10 -16.00		
1 2 3	<b>51.24</b> 121.10 419.92	EMISSION LEVEL (dBuV/m) 33.5 QP 30.3 QP 33.0 QP	LIMIT (dBuV/m) 40.0 43.5 46.0	-6.5 -13.2 -13.0	ANTENNA HEIGHT (m) 1.25 V 1.00 V 1.00 V	TABLE ANGLE (Degree) 323 279 94	<b>RAW VALUE</b> (dBuV)  47.60  46.30  43.30	FACTOR (dB/m) -14.10 -16.00 -10.30		

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The other emission levels were very low against the limit.
- 4. Margin value = Emission level Limit value.



# 4.2 FREQUENCY STABILITY

#### 4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of –20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

# 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
R&S SPECTRUM ANALYZER	FSP40	100039	Jan. 31, 2014	Jan. 30, 2015
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 10, 2014	Jun. 09, 2015

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

# 4.2.3 TEST PROCEDURE

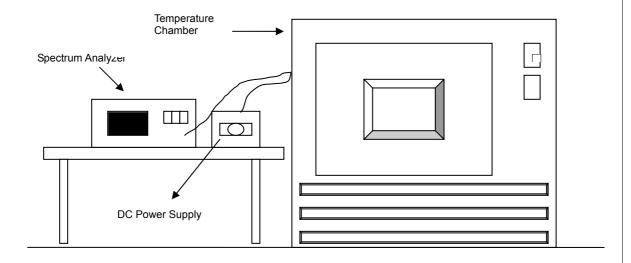
- a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.



# 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

# 4.2.5 TEST SETUP



# 4.2.6 EUT OPERATING CONDITION

Same as Item 4.1.6.



# 4.2.7 TEST RESULTS

	FREQUEMCY STABILITY VERSUS TEMP.									
		0 MIN	NUTE	2 MINUTE		5 MINUTE		10 MINUTE		
<b>TEMP.</b> (℃)	POWER SUPPLY (Vdc)	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%	
50	3.7	13.559995	-0.00004	13.559978	-0.00016	13.559975	-0.00018	13.559987	-0.00010	
40	3.7	13.560039	0.00029	13.560041	0.00030	13.560034	0.00025	13.560057	0.00042	
30	3.7	13.560007	0.00005	13.559996	-0.00003	13.55999	-0.00007	13.559987	-0.00010	
20	3.7	13.559951	-0.00036	13.559963	-0.00027	13.559951	-0.00036	13.559953	-0.00035	
10	3.7	13.560028	0.00021	13.560017	0.00013	13.56002	0.00015	13.56003	0.00022	
0	3.7	13.559985	-0.00011	13.560006	0.00004	13.56	0.00000	13.559991	-0.00007	
-10	3.7	13.559942	-0.00043	13.559947	-0.00039	13.559948	-0.00038	13.559938	-0.00046	
-20	3.7	13.559923	-0.00057	13.559931	-0.00051	13.55995	-0.00037	13.559933	-0.00049	

	FREQUEMCY STABILITY VERSUS VOLTAGE									
		0 MINUTE		2 MIN	2 MINUTE		5 MINUTE		10 MINUTE	
<b>TEMP</b> . (℃)	POWER SUPPLY (Vdc)	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%	
	4.26	13.55995	-0.00037	13.55996	-0.00029	13.559948	-0.00038	13.55995	-0.00037	
20	3.7	13.559951	-0.00036	13.559963	-0.00027	13.559951	-0.00036	13.559953	-0.00035	
	3.15	13.559951	-0.00036	13.55996	-0.00029	13.559953	-0.00035	13.55995	-0.00037	



# 4.3 20dB BANDWIDTH

# 4.3.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

The 20dB bandwidth shall be specified in operating frequency band.

# 4.3.2 TEST INSTRUMENTS

Same as Item 4.1.2.

# 4.3.3 TEST PROCEDURE

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 1kHz RBW and 1kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

# 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

# 4.3.5 TEST SETUP

Same as Item 4.1.5.

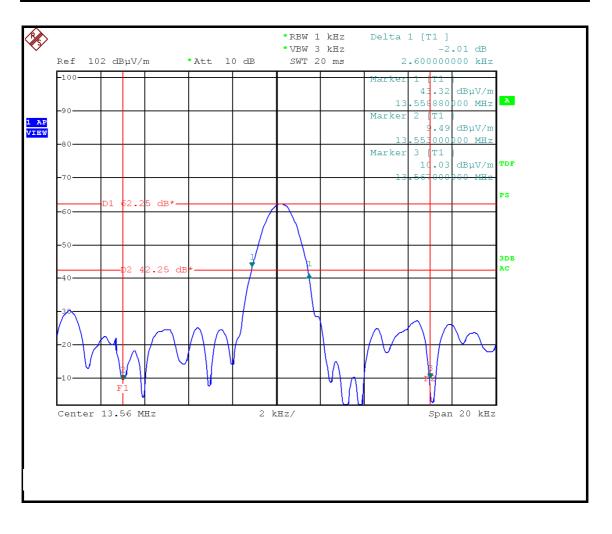
#### 4.3.6 EUT OPERATING CONDITION

Same as Item 4.1.6.



# 4.3.7 TEST RESULTS

20dBc point (Low)	20dBc point (High)	Operating frequency band (MHz)	PASS/FAIL
13.558880 MHz	13.561480 MHz	13.553~13.567	PASS





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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.

If you have any comments, please feel free to contact us at the following:

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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 any modifications are made to the EUT by the lab during the test.

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