FCC Test Report

FCC ID	:	**2AQYEFMP176**
Equipment	:	**Mobile Phone**
Model No.	:	**F-51A**
Brand Name	:	**FUJITSU**
Applicant	:	**FUJITSU CONNECTED TECHNOLOGIES Ltd.**
Address	:	**Chuorinkan 7-10-1 Yamato, Kanagawa 242-0007, Japan.**
Standard	:	**47 CFR FCC Part 24 Subpart E**
Received Date	:	**Mar. 03, 2020**
Tested Date	:	**Apr. 08 ~ Apr. 17, 2020**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: **Approved by:**

Along Chen / Assistant Manager **Gary Chang / Manager**

Testing Laboratory 2732

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
FR011605P24	Rev. 01	Initial issue	May 18, 2020

Summary of Test Results

FCC Rules	Test Items	Measured	Result
2.1046 / 24.232(c)	Equivalent Isotropically Radiated Power	Power[dBm]: 25.95	Pass
2.1053 / 24.238(a)	Radiated Emissions	Meet the requirement of limit	Pass
2.1051 / 24.238(a)	Conducted Emissions	Meet the requirement of limit	Pass
2.1051 / 24.238(a)	Band Edge	Meet the requirement of limit	Pass
2.1049	Occupied Bandwidth	Meet the requirement of limit	Pass
24.232(d)	Peak to Average Ratio	Meet the requirement of limit	Pass
2.1055 / 24.235	Frequency Stability	Meet the requirement of limit	Pass

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

1.1.1 Product Details

Product Name	Mobile Phone
Brand Name	FUJITSU
Model Name	F-51A
IMEI Code	353704110012010 / 353704110012127
H/W Version	v2.1.0
S/W Version	R047.4

1.1.2 Specification of the Equipment under Test (EUT)

Operating Band	1850.2 ~ 1909.8 MHz
Modulation	GSM / GPRS: GMSK
Multislot Class	11 for GPRS

1.1.3 Antenna Details

Ant. No.	Type	Connector	Gain (dBi)	Remark
1	Monopole	No	-4.0	---

1.1.4 EUT Operational Condition

Supply Voltage	3.83Vdc from battery: 9Vdc,1.5A from adapter (No bundle, support unit only)		
Operational Climatic	☒ Tnom (20°C)	☒ Tmax (55°C)	☒ Tmin (-10°C)

1.1.5 Accessories

No.	Equipment	Description
1	Battery	Brand: FUJITSU CONNECTED TECHNOLOGIES LIMITED Model: CA54310-0079-A1 Rated: 4000mAh, 15.4Wh Typ. 4070mAh, 15.6Wh
2	Type-C <-> Earphone	9.5cm non-shielded without core

1.1.6 Maximum EIRP and Emission Designator

Mode	Modulation	Maximum EIRP(W)	Emission Designator
GSM 1900	GMSK	0.394	245KGXW

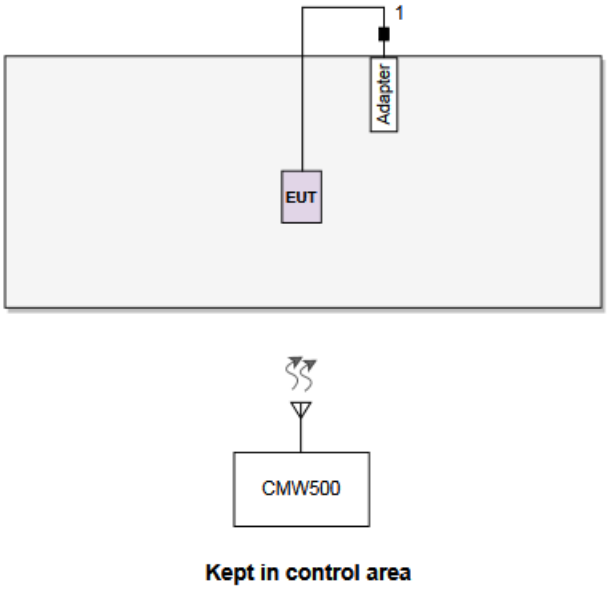
1.1.7 Operating Channel List

GSM & GPRS		
	Channel	Frequency (MHz)
Low	512	1850.2
Middle	661	1880.0
High	810	1909.8

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	S/N	Remarks
1	AC Adapter	NTT docomo	AC Adapter 06	---	Provided by applicant.

1.3 Test Setup Chart

Test Setup Diagram


No.	Signal cable / Length (m)
1	USB, 1.2m non-shielded with one core.

1.4 The Equipment List

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Wideband Radio Communication Tester	R&S	CMW500	106070	Feb. 06, 2020	Feb. 05, 2021
Spectrum Analyzer	R&S	FSV40	101498	Dec. 17, 2019	Dec. 16, 2020
Receiver	R&S	ESR3	101657	Feb. 14, 2020	Feb. 13, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 12, 2019	Jul. 11, 2020
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 12, 2019	Dec. 11, 2020
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2019	Nov. 14, 2020
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2019	Nov. 12, 2020
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 07, 2019	Oct. 06, 2020
Preamplifier	EMC	EMC02325	980225	Jul. 09, 2019	Jul. 08, 2020
Preamplifier	Agilent	83017A	MY39501308	Oct. 08, 2019	Oct. 07, 2020
Preamplifier	EMC	EMC184045B	980192	Aug. 01, 2019	Jul. 31, 2020
RF Cable	EMC	EMC104-SM-SM-8000	181106	Oct. 07, 2019	Oct. 06, 2020
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 07, 2019	Oct. 06, 2020
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 07, 2019	Oct. 06, 2020
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	160502	Oct. 07, 2019	Oct. 06, 2020
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 07, 2019	Oct. 06, 2020
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Oct. 07, 2019	Oct. 06, 2020
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101498	Dec. 17, 2019	Dec. 16, 2020
Spectrum Analyzer	R&S	FSV40	101499	Jan. 09, 2020	Jan. 08, 2021
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 12, 2019	Dec. 11, 2020
Power Meter	Anritsu	ML2495A	1241002	Oct. 23, 2019	Oct. 22, 2020
Power Sensor	Anritsu	MA2411B	1207366	Oct. 23, 2019	Oct. 22, 2020
Wideband Radio Communication Tester	R&S	CMW500	106070	Feb. 06, 2020	Feb. 05, 2021
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 02, 2019	Dec. 01, 2020
Measurement Software	Sporton	SENSE-FCC_2G-4G	V5.10.5	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards.

47 CFR FCC Part 24 Subpart E
ANSI C63.4-2014
ANSI C63.26-2015
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
FCC KDB 971168 D02 Misc Rev Approv License Devices v02r01
FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.6 Deviation from Test Standard and Measurement Procedure

None

1.7 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.130 Hz
Conducted power	±0.808 dB
Frequency error	$\pm 1 \times 10^{-9}$
Conducted emission	±2.715 dB
Radiated emission ≤ 1GHz	±3.41 dB
Radiated emission > 1GHz	±4.59 dB
Temperature	±0.4 °C

2 Test Configuration

2.1 Testing Condition and Location Information

Test Item	Test Site	Ambient Condition	Tested By
Radiated Emissions	03CH01-WS	22-23°C / 65-69%	Roger Lu Akun Chung
RF Conducted	TH01-WS	17-25°C / 60-67%	Aska Huang

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Frequency (MHz)
E.I.R.P	GPRS 1 Tx slot	1850.2 / 1880.0 / 1909.8
Radiated Emission ≤ 1GHz	GPRS 1 Tx slot	1850.2
Radiated Emission > 1GHz	GPRS 1 Tx slot	1850.2 / 1880.0 / 1909.8
Conducted Emissions	GPRS 1 Tx slot	1850.2 / 1880.0 / 1909.8
Band Edge	GPRS 1 Tx slot	1850.2 / 1909.8
Occupied Bandwidth	GPRS 1 Tx slot	1850.2 / 1880.0 / 1909.8
Peak to Average Ratio	GPRS 1 Tx slot	1850.2 / 1880.0 / 1909.8
Frequency Stability	GPRS 1 Tx slot	1880.0
NOTE: 1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Y-plane** results were found as the worst case and were shown in this report.		

3 Test Results

3.1 Equivalent Isotropically Radiated Power

3.1.1 Limit of Equivalent Isotropically Radiated Power

Mobile and portable stations are limited to 2 watts EIRP.

3.1.2 Test Procedures

For E.I.R.P measurement

EIPR can be calculated by below formula from KDB 412172 D01.

1. EIRP = $P_T + G_T - L_C$

   P_T = transmitter output power, in dBm.

   G_T = gain of the transmitting antenna, in dBi (EIRP).

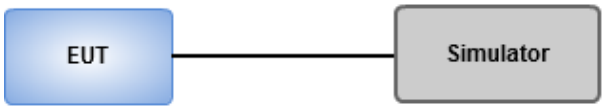
   L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For Conducted power measurement

1. The EUT links up with simulator and is set to maximum output power level at low / middel / high channel.
2. Measure the output power of low / middle / high channel of the EUT

3.1.3 Test Setup

Conducted Power Measurement



3.1.4 Test Result of Conducted power (dBm)

Band		GSM 1900		
Channel		512	661	810
Frequency (MHz)		1850.2	1880.0	1909.8
GSM 1 Tx slot		29.91	29.43	29.20
GPRS 1 Tx slot		29.95	29.47	29.21
GPRS 2 Tx slots		26.77	26.88	26.77
GPRS 3 Tx slots		25.00	24.89	24.78
GPRS 4 Tx slots		23.61	23.61	23.65
DTM Multi-slot class 5	GSM 1 Tx slot	26.71	26.83	26.73
	GPRS 1 Tx slot	26.72	26.81	26.72
DTM Multi-slot class 9	GSM 1 Tx slot	26.68	26.78	26.68
	GPRS 1 Tx slot	26.65	26.73	26.65
DTM Multi-slot class 11	GSM 1 Tx slot	24.87	24.91	24.73
	GPRS 2 Tx slots	24.86	24.88	24.71

3.1.5 Test Result of Equivalent Isotropically Radiated Power (dBm)

Summary

Mode	Power (dBm)	Power (W)	EIRP (dBm)	EIRP (W)
1900	-	-	-	-
GPRS_200kHz_Nss1,Slots 1_1TX	29.95	0.989	25.95	0.39355

Result

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP (W)	EIRP Lim. (W)	Power (dBm)	Power (W)	Power Lim. (W)	Port 1 (dBm)
1900_GPRS_200kHz_Nss1_1TX	-	-	-	-	-	-	-	-	-
1850.2MHz_Slots 1	Pass	-4.00	25.95	0.39355	2	29.95	0.989	Inf	29.95
1880MHz_Slots 1	Pass	-4.00	25.47	0.35237	2	29.47	0.885	Inf	29.47
1909.8MHz_Slots 1	Pass	-4.00	25.21	0.33189	2	29.21	0.834	Inf	29.21

DG = Directional Gain; **Port n** = Port n output power

3.2 Radiated Emissions

3.2.1 Limit of Radiated Emissions

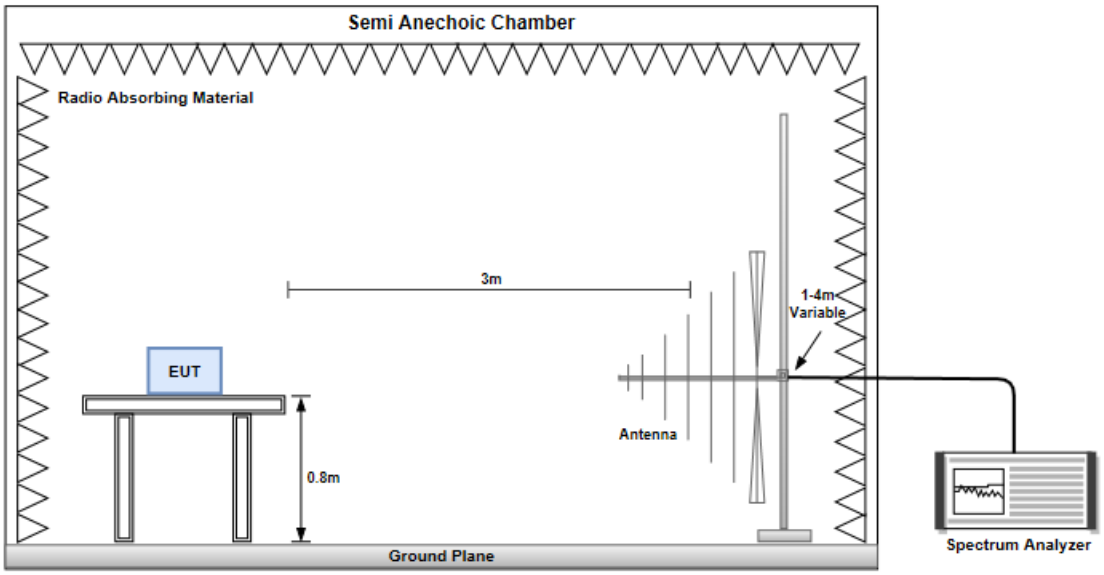
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB equal to -13dBm.

3.2.2 Test Procedures

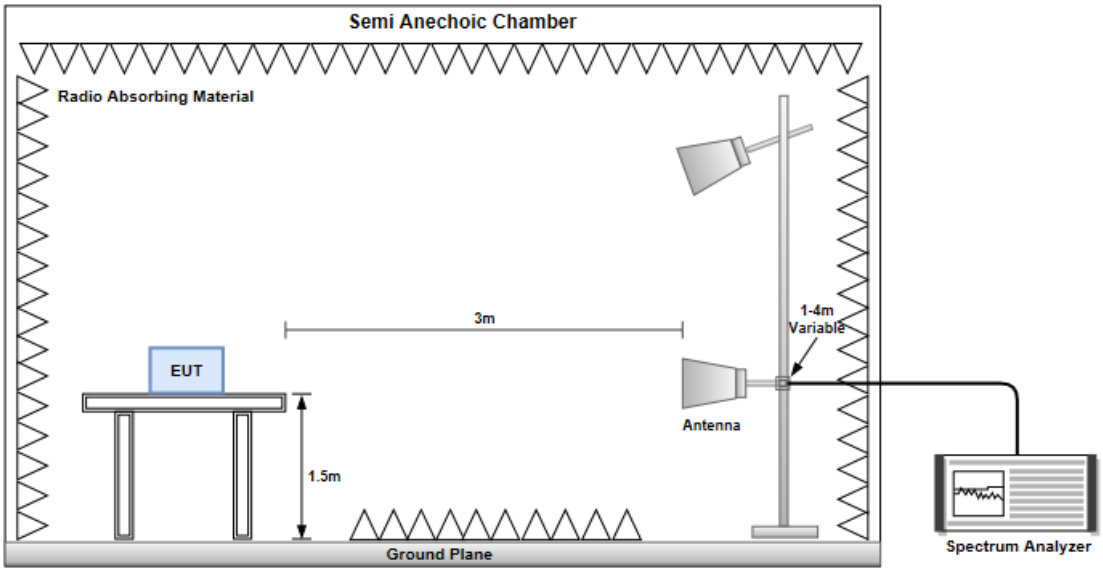
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.
4. After finding the max radiated emission, substitution method will be used for getting effective radiated power. EUT will be removed and substitution antenna will be placed at same position. Signal generator will output CW signal to substitution antenna through a RF cable. Rotate turntable and move antenna to find maximum radiated emission. Adjust output power of signal generator to let the maximum radiated emission is same as step 3. Record the output power level.
5. E.I.R.P = output power of step 4 + gain of substitution antenna – cable loss of RF cable.

3.2.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.2.4 Test Result of Radiated Emissions below 1GHz

Mode	GPRS 1Tx slot, Channel : 512						
Frequency (MHz)	Antenna Polarity	E.I.R.P (dBm)	Limit (dBm)	Margin (dB)	S.A Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)
39.70	H	-68.92	-13.00	-55.92	-75.57	-51.28	-17.64
70.74	H	-67.27	-13.00	-54.27	-65.21	-56.96	-10.31
114.39	H	-71.16	-13.00	-58.16	-68.58	-65.39	-5.77
155.13	H	-73.21	-13.00	-60.21	-72.45	-66.82	-6.39
267.65	H	-65.60	-13.00	-52.60	-63.19	-64.34	-1.26
345.25	H	-68.74	-13.00	-55.74	-70.37	-67.63	-1.11
39.70	V	-73.01	-13.00	-60.01	-69.14	-55.37	-17.64
46.49	V	-71.90	-13.00	-58.90	-69.18	-55.23	-16.67
70.74	V	-55.16	-13.00	-42.16	-52.65	-44.85	-10.31
90.14	V	-65.81	-13.00	-52.81	-63.49	-60.90	-4.91
155.14	V	-72.05	-13.00	-59.05	-74.22	-65.66	-6.39
268.62	V	-65.41	-13.00	-52.41	-67.35	-64.15	-1.26

Note: EIRP = S.G Power value + Correction factor

3.2.5 Test Result of Radiated Emissions above 1GHz

Mode	GPRS 1Tx slot , Channel : 512						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Value (dBm)**	**Correction Factor (dB)**
3700.40	H	-41.88	-13.00	-28.88	-57.36	-48.75	6.87
5550.60	H	-38.84	-13.00	-25.84	-56.25	-45.47	6.63
9251.00	H	-40.99	-13.00	-27.99	-63.25	-42.61	1.62
3700.40	V	-44.20	-13.00	-31.20	-59.52	-51.07	6.87
5550.60	V	-38.99	-13.00	-25.99	-56.58	-45.62	6.63
9251.00	V	-41.98	-13.00	-28.98	-62.14	-43.60	1.62

Mode	GPRS 1Tx slot , Channel: 661						
Frequency (MHz)	**Antenna Polarity**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Value (dBm)**	**Correction Factor (dB)**
3760.00	H	-42.64	-13.00	-29.64	-58.27	-49.56	6.92
5640.00	H	-39.93	-13.00	-26.93	-57.42	-46.49	6.56
9400.00	H	-42.31	-13.00	-29.31	-64.96	-43.84	1.53
3760.00	V	-44.71	-13.00	-31.71	-60.18	-51.63	6.92
5640.00	V	-39.45	-13.00	-26.45	-57.16	-46.01	6.56
9400.00	V	-42.54	-13.00	-29.54	-62.67	-44.07	1.53

Mode	GPRS 1Tx slot , Channel: 810						
Frequency (MHz)	**Antenna Polarity.**	**E.I.R.P (dBm)**	**Limit (dBm)**	**Margin (dB)**	**S.A Reading (dBm)**	**S.G Power Value (dBm)**	**Correction Factor (dB)**
3819.60	H	-43.10	-13.00	-30.10	-58.69	-50.05	6.95
5729.40	H	-40.60	-13.00	-27.60	-57.89	-47.10	6.50
9549.00	H	-41.37	-13.00	-28.37	-64.52	-42.89	1.52
3819.60	V	-44.97	-13.00	-31.97	-60.44	-51.92	6.95
5729.40	V	-40.65	-13.00	-27.65	-58.18	-47.15	6.50
9549.00	V	-41.38	-13.00	-28.38	-62.26	-42.90	1.52

Note: EIRP = S.G Power value + Correction factor

3.3 Conducted Emissions & Band Edge

3.3.1 Limit of Conducted Emissions & Band Edge

The power of any emission outside of the authorized operating frequencyranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB equal to -13dBm.

3.3.2 Test Procedures

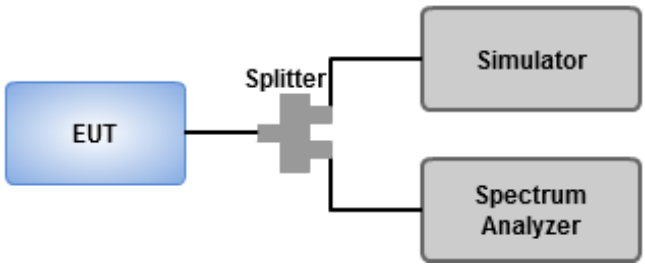
Out of band emission

1. Lowest, middle and highest operating channels are tested for this item.
2. Scan frequency range is from 30 MHz ~ 20 GHz.
3. Set RBW = 1 MHz, VBW = 3 MHz, detector = RMS, sweep time = auto.
4. Record the max trace value and capture the test plot of each sub frequency band.

Band edge

1. Lowest and highest operating channels are tested for this item.
2. Set RBW = 1% of EBW, VBW = 3 x RBW, detector = RMS, sweep time = auto.
3. Record the max trace value and capture the test plot of each sub frequency band.

3.3.3 Test Setup



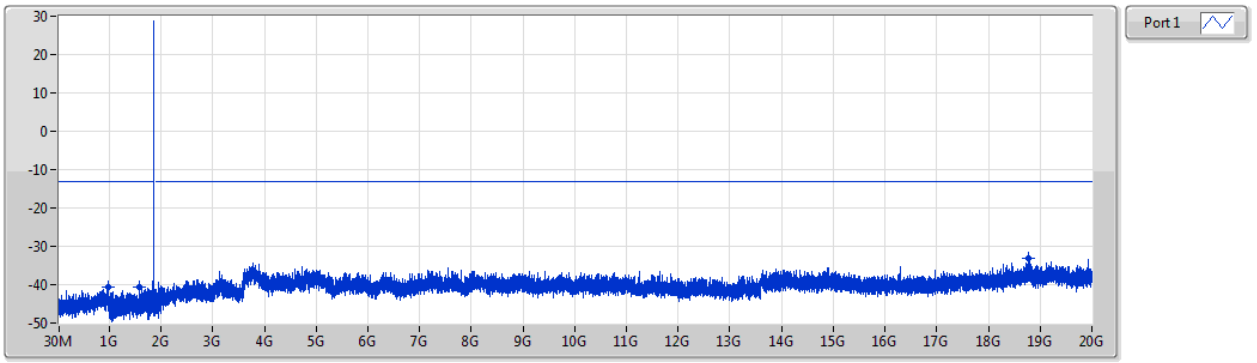
3.3.4 Test Result of Conducted Emissions & Band Edge

Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Port	Remark	Ref.Limit (dB)
1900	-	-	-	-	-	-	-	-	-	-	-	-	-
GPRS	Pass	2.01G	20G	1M	3M	Peak	18.77758G	-33.27	-13.00	-20.27	1	-	-

1900 **CSE-TX-Port**

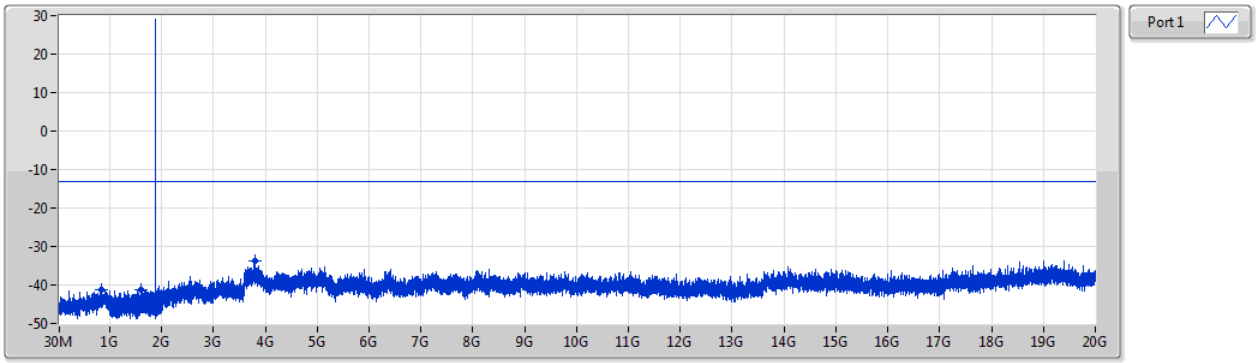
1850.2MHz



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark
30M	1G	1M	3M	Peak	974.78M	-40.73	-13.00	-27.73	1	-
1G	1.75G	1M	3M	Peak	1.56925G	-40.58	-13.00	-27.58	1	-
2.01G	20G	1M	3M	Peak	18.77758G	-33.27	-13.00	-20.27	1	-

1900 **CSE-TX-Port**

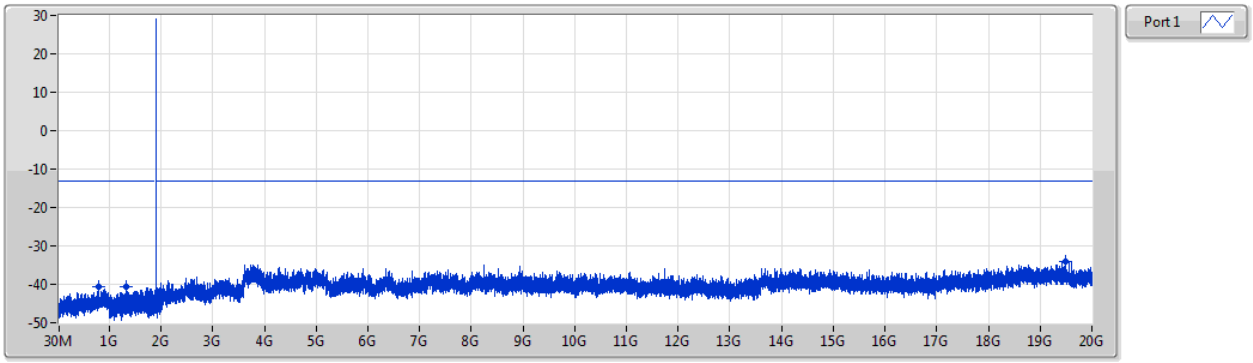
1880MHz



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark
30M	1G	1M	3M	Peak	829.28M	-41.18	-13.00	-28.18	1	-
1G	1.75G	1M	3M	Peak	1.60825G	-41.16	-13.00	-28.16	1	-
2.01G	20G	1M	3M	Peak	3.79281G	-33.78	-13.00	-20.78	1	-

1900 **CSE-TX-Port**

1909.8MHz



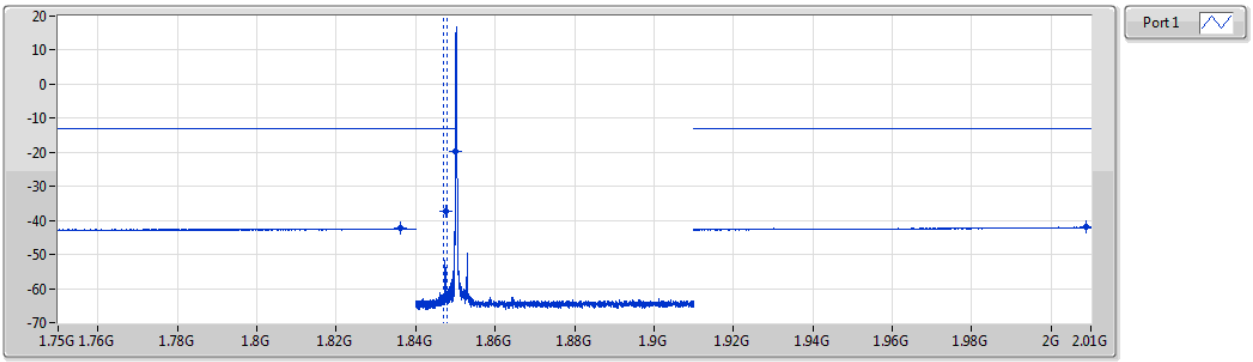
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark
30M	1G	1M	3M	Peak	797.27M	-40.55	-13.00	-27.55	1	-
1G	1.75G	1M	3M	Peak	1.33525G	-40.70	-13.00	-27.70	1	-
2.01G	20G	1M	3M	Peak	19.48369G	-34.18	-13.00	-21.18	1	-

Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Port	Remark	Ref.Limit (dB)
1900	-	-	-	-	-	-	-	-	-	-	-	-	-
GPRS	Pass	1.91G	1.911G	6.2k	20k	RMS	1.91002G	-17.64	-13.00	-4.64	1	-	-

1900 **CSE-TX-Port**

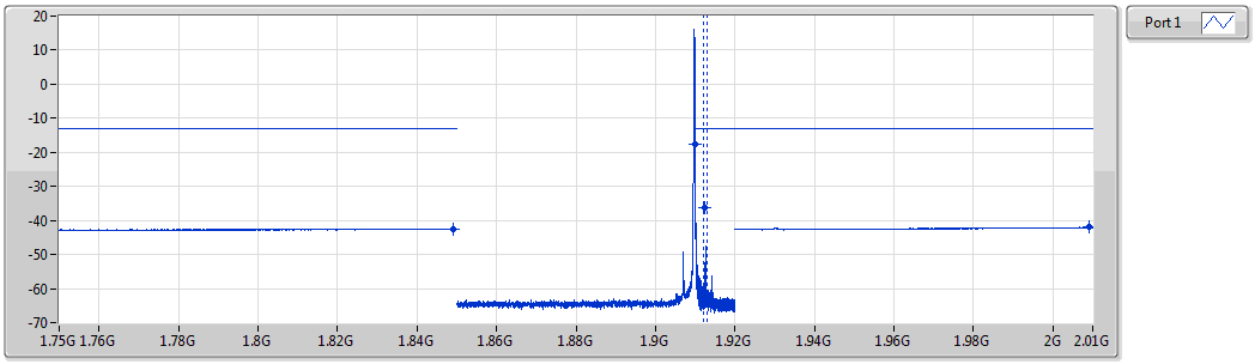
1850.2MHz



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark
1.75G	1.84G	1M	3M	RMS	1.83622G	-42.10	-13.00	-29.10	1	-
1.84G	1.849G	6.2k	20k	RMS	1.8475G	-37.41	-13.00	-24.41	1	MBW 1M
1.849G	1.85G	6.2k	20k	RMS	1.84998G	-19.64	-13.00	-6.64	1	-
1.91G	2.01G	1M	3M	RMS	2.00865G	-41.98	-13.00	-28.98	1	-

1900 **CSE-TX-Port**

1909.8MHz



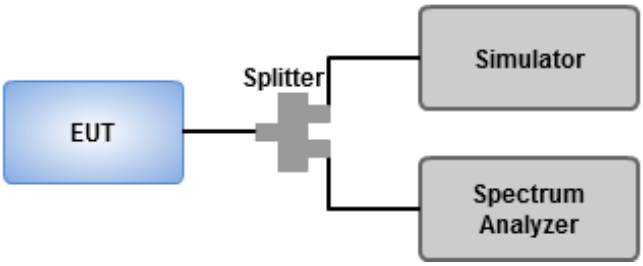
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Port	Remark
1.75G	1.85G	1M	3M	RMS	1.8492G	-42.44	-13.00	-29.44	1	-
1.91G	1.911G	6.2k	20k	RMS	1.91002G	-17.64	-13.00	-4.64	1	-
1.911G	1.92G	6.2k	20k	RMS	1.9125G	-36.09	-13.00	-23.09	1	MBW 1M
1.92G	2.01G	1M	3M	RMS	2.00906G	-42.01	-13.00	-29.01	1	-

3.4 Occupied and 26 dB Bandwidth

3.4.1 Test Procedures

1. Set resolution bandwidth (RBW) = 1% ~ 5 % of OBW, Video bandwidth = 3 x RBW
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Using occupied bandwidth measurement function of spectrum analyzer to measure occupied bandwidth
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26dB relative to the maximum level measured in the fundamental emission.

3.4.2 Test Setup



3.4.3 Test Result of Occupied and 26 dB Bandwidth

Summary

Mode	Max-NdB (Hz)	Max-OBW (Hz)	ITU-Code	Min-NdB (Hz)	Min-OBW (Hz)
1900	-	-	-	-	-
GPRS_200kHz_Nss1_1TX	318.25k	245.021k	245KGXW	307k	243.395k

Max-N dB = Maximum 26dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 26dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

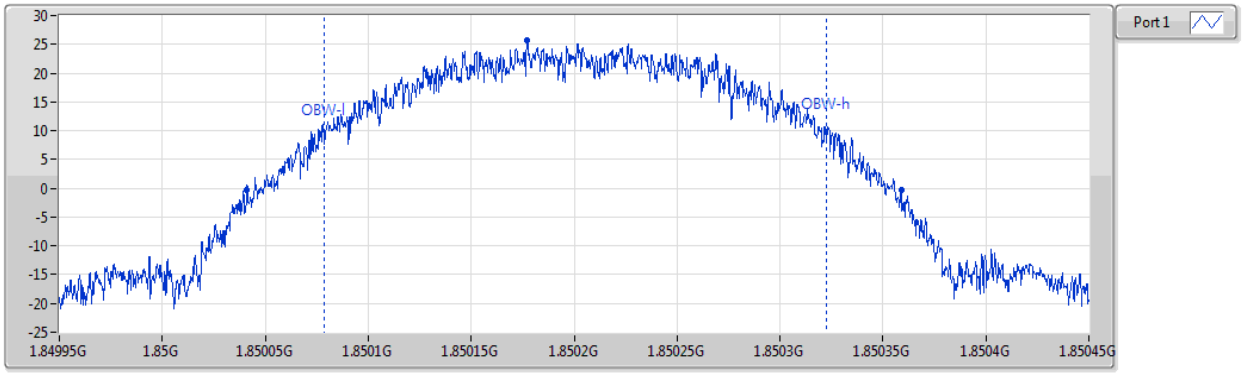
Result

Mode	Result	Limit (Hz)	Port 1-NdB (Hz)	Port 1-OBW (Hz)
1900_GPRS_200kHz_Nss1_1TX	-	-	-	-
1850.2MHz	Pass	Inf	317.75k	243.395k
1880MHz	Pass	Inf	307k	245.021k
1909.8MHz	Pass	Inf	318.25k	244.298k

Port X-N dB = Port **X** 26dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

1900_GPRS_200kHz_Nss1_1TX **EBW**

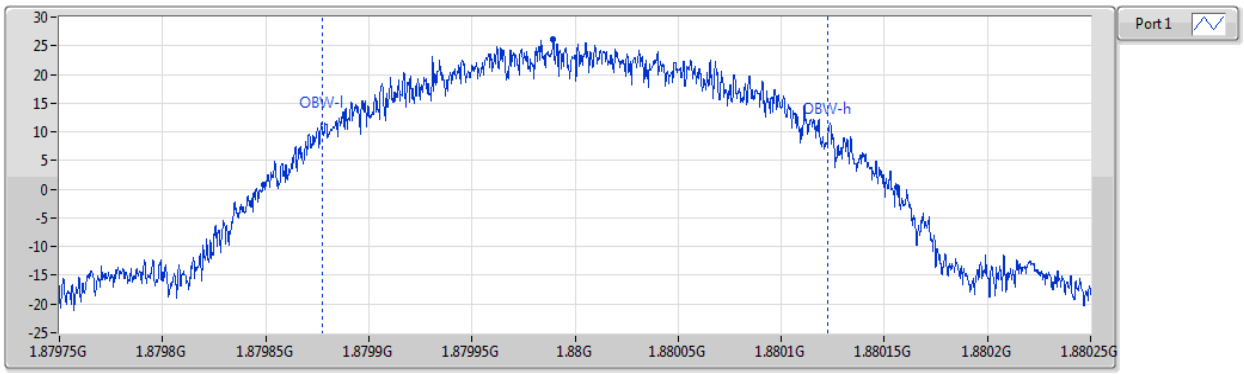
1850.2MHz



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
317.75k	1.850041G	1.850359G	243.395k	1.850079G	1.850322G	1	1.8502G	500k	10k	30k

1900_GPRS_200kHz_Nss1_1TX **EBW**

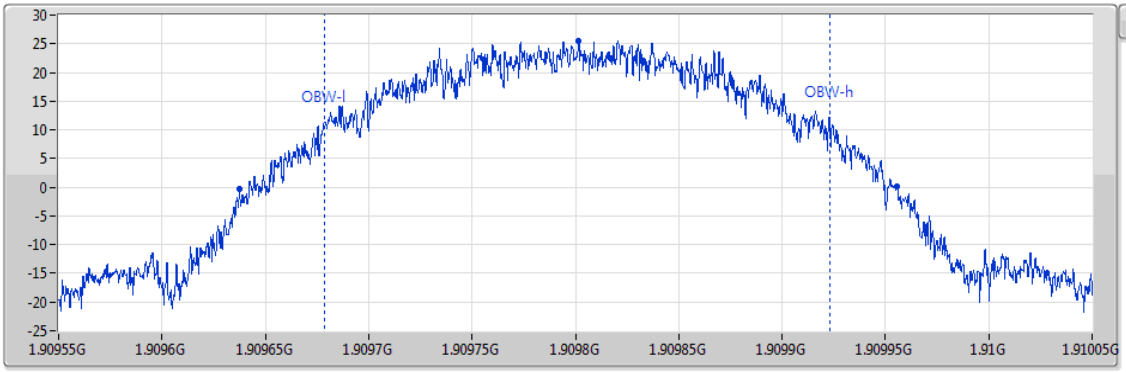
1880MHz



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
307k	1.879849G	1.880156G	245.021k	1.879878G	1.880123G	1	1.88G	500k	10k	30k

1900_GPRS_200kHz_Nss1_1TX **EBW**

1909.8MHz



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
318.25k	1.909638G	1.909956G	244.298k	1.909679G	1.909923G	1	1.9098G	500k	10k	30k

3.5 Peak to Average Ratio

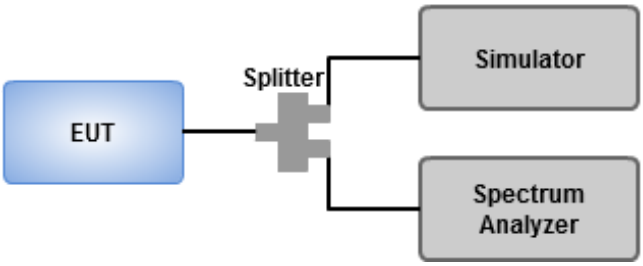
3.5.1 Limit of Peak to Average Ratio

Peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.5.2 Test Procedures

1. Set RBW=1MHz, RBW=3MHz, Peak detector in Trace 1
2. Set RBW=1MHz, RBW=3MHz, RMs detector in Trace 2
3. Trigger function is enabled for measuring singal at burst on time. Measure the difference between trace1 and trace 2.

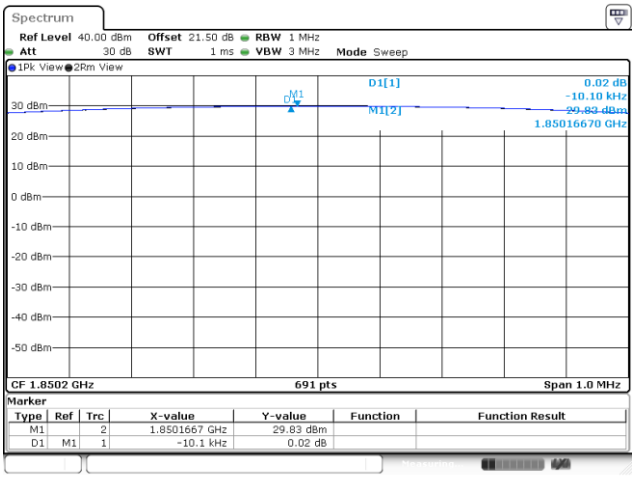
3.5.3 Test Setup



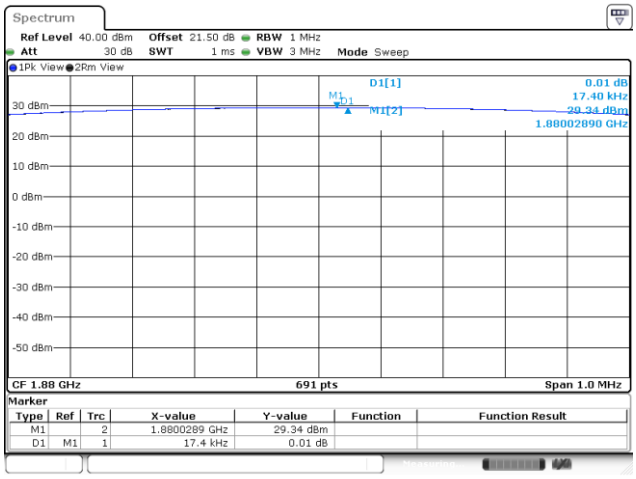
3.5.4 Test Result of Peak to Average ratio

MODE	Frequency (MHz)	Peak to Average ratio (dB)	Result
1900_GSM	1850.2	0.02	Pass
1900_GSM	1880.0	0.01	Pass
1900_GSM	1909.8	0.01	Pass

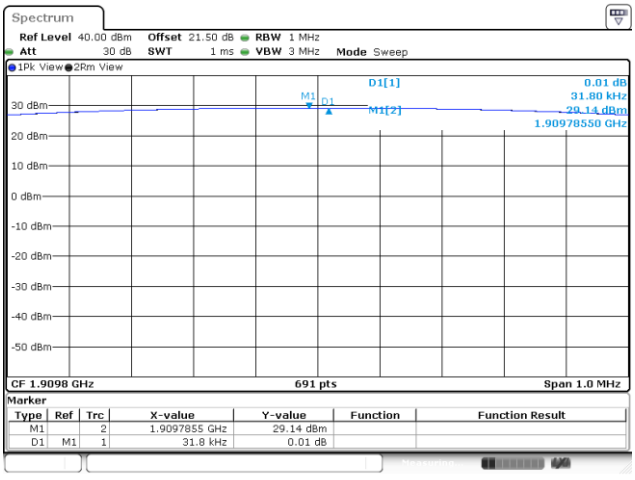
1850.2MHz



1880.0MHz



1909.8MHz



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3.6 Frequency Stability

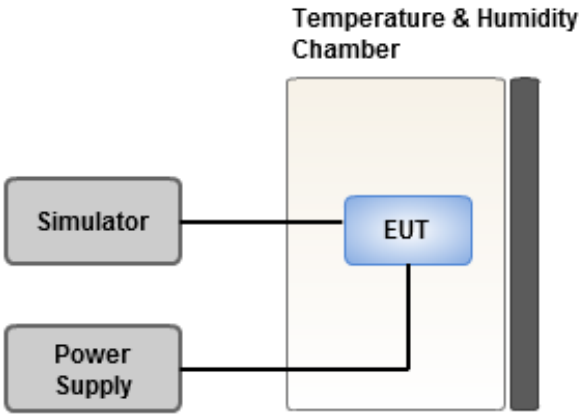
3.6.1 Limit of Frequency Stability

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.6.2 Test Procedures

1. EUT was placed at temperature chamber and connected to an external power supply.
2. Temperature and voltage condition shall be tested to confirm frequency stability.
3. The test shall be performed under normal and extreme condition for temperature and voltage.
4. Tem Link up EUT and simulator. Confirm frequency drift value of simulator and record it.

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

Temperature (°C)	Voltage (dc)	Frequency Drift (ppm)
T20°CVmax	4.29	0.0015
T20°CVmin	3.51	0.0015
T55°CVnom	3.9	0.0022
T50°CVnom	3.9	0.0021
T40°CVnom	3.9	0.0021
T30°CVnom	3.9	0.0018
T20°CVnom	3.9	0.0016
T10°CVnom	3.9	0.0018
T0°CVnom	3.9	0.0017
T-10°CVnom	3.9	0.0016
T-20°CVnom	3.9	0.0017
T-30°CVnom	3.9	0.0016

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C..

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

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