RF TEST REPORT

Report No.: Q191108S002-FCC-R1

Supersede Report No.: N/A

Applicant	Cedar Kingdom Corporation Limited
Product Name	Mobile Phone
Model No.	V205
Serial No.	N/A
Test Standard	FCC Part 22(H) ;FCC Part 24(E); ANSI/TIA-603-E: 2016
Test Date	Nov. 15 to Dec. 03, 2019
Issue Date	Dec. 10, 2019
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Aaron Liang	David Huang
Aaron Liang Test Engineer	David Huang Checked By

This test report may be reproduced in full only

Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

This page has been left blank intentionally.

CONTENTS

1. Report Revision History

Report No.	Report Version	Description	Issue Date
Q191108S002-FCC-R1	NONE	Original	Dec. 10, 2019

2. Customer information

Applicant Name	Cedar Kingdom Corporation Limited
Applicant Add	Flat/Rm 05, 14/F, Lucky Centre, 165-171 Wanchai Road, Wanchai, Hong Kong
Manufacturer	Cedar Kingdom Corporation Limited
Manufacturer Add	Flat/Rm 05, 14/F, Lucky Centre, 165-171 Wanchai Road, Wanchai, Hong Kong

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	535293
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

4. Equipment under Test (EUT) Information

Description of EUT:	Mobile Phone
Main Model:	V205
Serial Model:	N/A
Date EUT received:	Nov. 13, 2019
Test Date(s):	Nov. 15 to Dec. 03, 2019
Equipment Category :	PCE
Antenna Gain:	GSM850: -1.12dBi PCS1900: -1.45dBi Bluetooth: -2.06dBi
Antenna Type:	Fixed Internal Antenna
Type of Modulation:	GSM / GPRS: GMSK Bluetooth: GFSK, π /4DQPSK, 8DPSK GPS:BPSK

RF Operating Frequency (ies):	GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz Bluetooth& BLE: 2402-2480 MHz
Maximum Conducted AV Power to Antenna:	GSM Vioce:GSM850: 32.41 dBm PCS1900: 29.10 dBm GPRS:GSM850: 32.44 dBm PCS1900: 29.36 dBm
ERP/EIRP:	GSM Vioce:GSM850: 30.99 dBm / ERP PCS1900: 28.21 dBm / EIRP GPRS:GSM850: 30.71 dBm / ERP PCS1900: 28.31 dBm / EIRP
Number of Channels:	GSM 850: 124CH PCS1900: 299CH Bluetooth: 79CH
Port:	Please refer to the user's manual
Input Power:	Adapter : Model: V205 Input: AC100-240V~50/60Hz,.0.15A Output: DC 5.0V, 500mA Battery : Model: BL-25BI Spec: 3.7V, 3000mAh/11.1Wh Limited charge voltage: 4.2V
Trade Name :	VIRZO
GPRS Multi-slot class	13
FCC ID:	2AKQUVZCKV205

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§ 1.1307; § 2.1093	RF Exposure (SAR)	Compliance
§2.1046; § 22.913(a); § 24.232(c); § 27.50(c.10) ;	RF Output Power	Compliance
§ 24.232 (d) ;	Peak-Average Ratio	Compliance
§ 2.1049; § 22.905; § 22.917; § 24.238;	99% & -26 dB Occupied Bandwidth	Compliance
§ 2.1051; § 22.917(a); § 24.238(a);	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917(a); § 24.238(a);	Field Strength of Spurious Radiation	Compliance
§ 22.917(a); § 24.238(a);	Out of band emission, Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235;	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

Measurement Uncertainty

Emissions		
Test Item	**Description**	**Uncertainty**
Band Edge and Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

6.1 RF Exposure (SAR)

Test Result: Pass

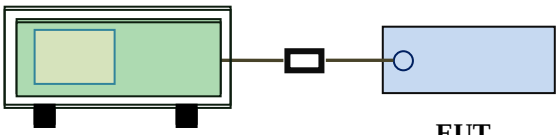
The EUT is a portable device, thus requires SAR evaluation;

Please refer to RF Exposure Evaluation Report: Q191108S002-FCC-H2

6.2 RF Output Power

Temperature	27℃
Relative Humidity	35%
Atmospheric Pressure	1013mbar
Test date :	Nov. 22,2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§22.913 (a)	a)	ERP:38.45dBm	☑
§24.232 (c)	b)	EIRP:33dBm	☑
Test Setup			
Test Procedure	For Conducted Power: - The transmitter output port was connected to base station. - Set EUT at maximum power through base station. - Select lowest, middle, and highest channels for each band and different test mode. For ERP/EIRP: According with KDB 971168 v02r02 - The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. - The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. - The frequency range up to tenth harmonic of the fundamental frequency was investigated.		

	- Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. - Spurious emissions in dB = 10 log (TX power in Watts/0.001) – the absolute level - Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

Conducted Power

GSM Mode:

Burst Average Power (dBm);								
Band	GSM850				PCS1900			
Channel	128	190	251	Tune up Power tolerant	512	661	810	Tune up Power tolerant
Frequency (MHz)	824.2	836.6	848.8	/	1850.2	1880	1909.8	/
GSM Voice (1 uplink),GMSK	32.39	32.31	32.41	32±1	29.07	29.1	29.06	29±1
GPRS Multi-Slot Class 8 (1 uplink),GMSK	32.31	32.41	32.44	32±1	29.02	29.11	29.36	29±1
GPRS Multi-Slot Class 10 (2 uplink) GMSK	30.95	31.06	31.05	30.5±1	27.42	27.41	27.73	27.5±1
GPRS Multi-Slot Class 11 (3 uplink) GMSK	29.25	29.32	29.42	29±1	26.09	26.01	26.31	26±1
GPRS Multi-Slot Class 12 (4 uplink) GMSK	27.63	27.69	27.67	27±1	24.26	24.15	24.45	24±1

Remark :

GPRS, CS1 coding scheme.

EGPRS, MCS1 coding scheme.

Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link

Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link

Multi-Slot Class 11 , Support Max 4 downlink, 2 uplink , 5 working link

Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link

ERP & EIRP

GSM Voice

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Antenna Polarization (H/V)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
824.2	V	30.59	38.45	-7.86
824.2	H	30.21	38.45	-8.24
836.6	V	30.95	38.45	-7.5
836.6	H	30.44	38.45	-8.01
848.8	V	30.58	38.45	-7.87
848.8	H	30.99	38.45	-7.46

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Antenna Polarization (H/V)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
1850.2	V	28.1	33	-10.35
1850.2	H	28.06	33	-10.39
1880	V	28.09	33	-10.36
1880	H	27.99	33	-10.46
1909.8	V	28.15	33	-10.3
1909.8	H	28.21	33	-10.24

GPRS:

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Antenna Polarization (H/V)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
824.2	V	30.48	38.45	-7.97
824.2	H	30.71	38.45	-7.74
836.6	V	30.62	38.45	-7.83
836.6	H	30.55	38.45	-7.9
848.8	V	30.42	38.45	-8.03
848.8	H	30.39	38.45	-8.06

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Antenna Polarization (H/V)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
1850.2	V	28.05	33	-10.4
1850.2	H	28.31	33	-10.14
1880	V	28.19	33	-10.26
1880	H	28.06	33	-10.39
1909.8	V	28.31	33	-10.14
1909.8	H	28.22	33	-10.23

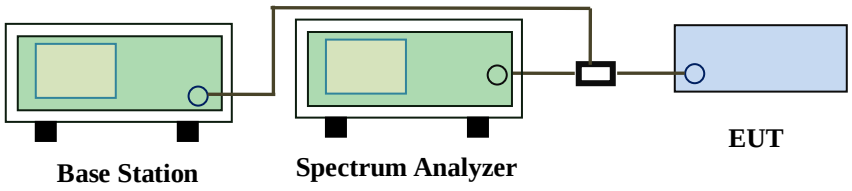
6.3 Peak-Average Ratio

Temperature	27℃
Relative Humidity	35%
Atmospheric Pressure	1013mbar
Test date :	Nov. 22,2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§24.232(d)	a)	The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.	☑

Test Setup



Test Procedure

According with KDB 971168 v02r02

5.7.2 Alternate procedure for PAPR

5.1.2 Peak power measurements with a peak power meter

The total peak output power may be measured using a broadband peak RF power meter. The power meter must have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector.

5.2.3 Average power measurement with average power meter

As an alternative to the use of a spectrum/signal analyzer or EMI receiver to perform a measurement of the total in-band average output power, a wideband RF average power meter with a thermocouple detector or equivalent can be used under certain conditions

If the EUT can be configured to transmit continuously (i.e., the burst duty cycle ≥ 98%) and at all times the EUT is transmitting at is maximum output power level, then a conventional wide-band RF power meter can be used.

	If the EUT cannot be configured to transmit continuously (i.e., the burst duty cycle < 98%), then there are two options for the use of an average power meter. First, a gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only over active transmission bursts at maximum output power levels. A conventional average power meter can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to 10log(1/duty cycle)
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

GSM : GSM 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	30.07	29.07	1.00
1880	29.95	29.1	0.85
1909.8	29.76	29.06	0.70

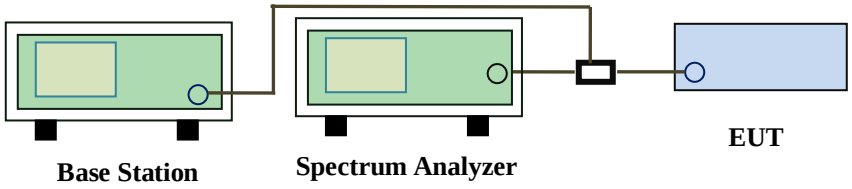
GPRS 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	30.02	29.02	1.00
1880	30.08	29.11	0.97
1909.8	30.36	29.36	1.00

6.4 Occupied Bandwidth

Temperature	27℃
Relative Humidity	35%
Atmospheric Pressure	1013mbar
Test date :	Nov. 22,2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§2.1049, §22.917, §22.905 §24.238	a)	99% Occupied Bandwidth(kHz)	☑
	b)	26 dB Bandwidth(kHz)	☑
Test Setup			
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

GSM Voice:

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	243.19	316.7
190	836.6	244.16	312.8
251	848.8	244.64	312.3

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850.2	240.55	302.2
661	1880	242.51	317.2
810	1909.8	245.48	314.6

GPRS:

Cellular Band (Part 22H) result

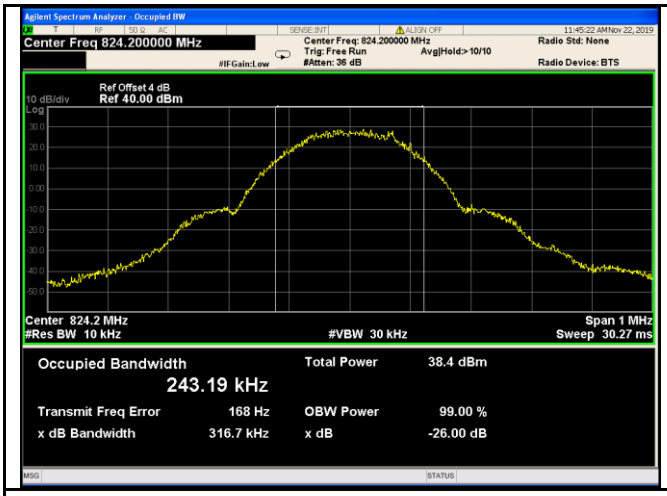
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	245.11	312.9
190	836.6	243.29	311.4
251	848.8	247.11	310.2

PCS Band (Part 24E) result

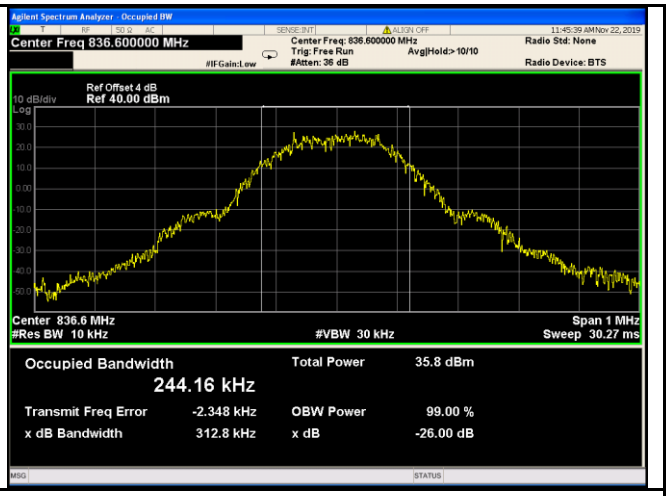
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850.2	241.84	306.9
661	1880	246.02	317.5
810	1909.8	244.25	314.3

Test Plots

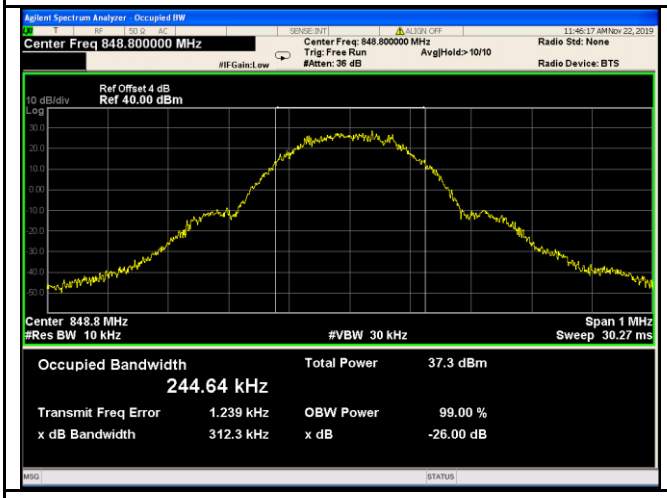
GSM Voice:



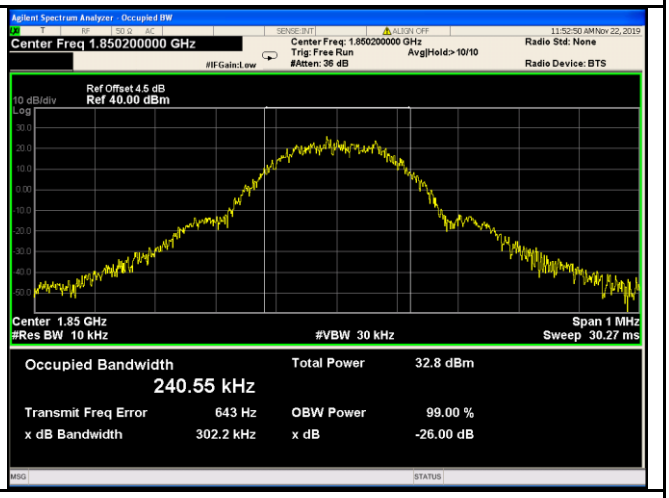
GSM 850 BW - Low CH 824.2MHz



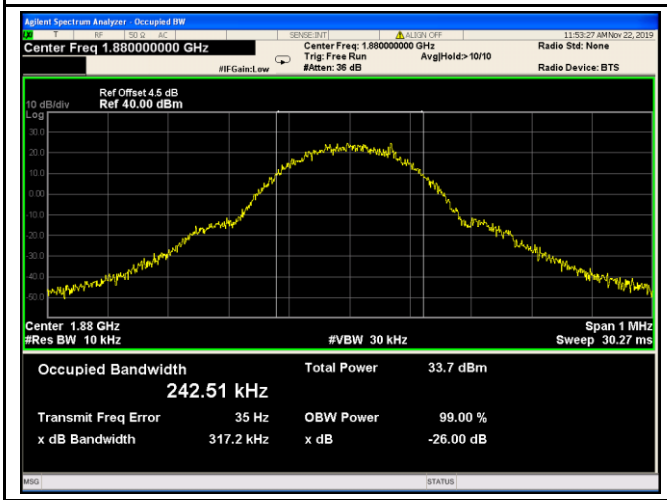
GSM 850 BW - Mid CH 836.6MHz



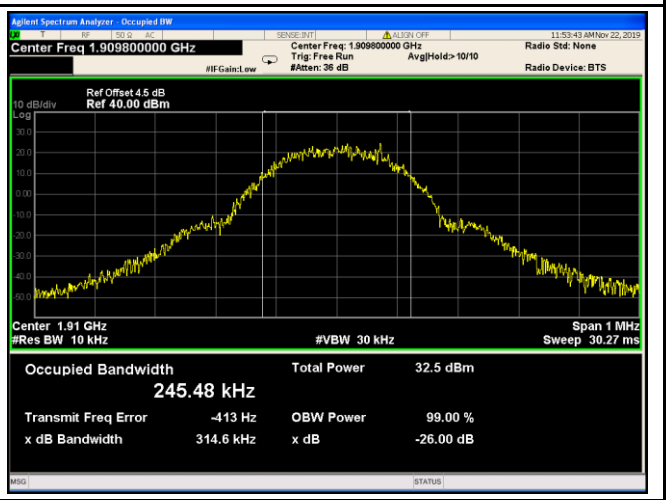
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850MHz

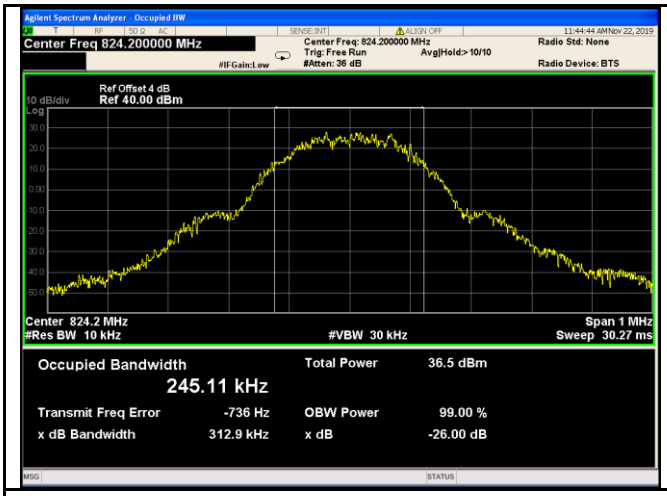


PCS 1900 BW - Mid CH 1880MHz

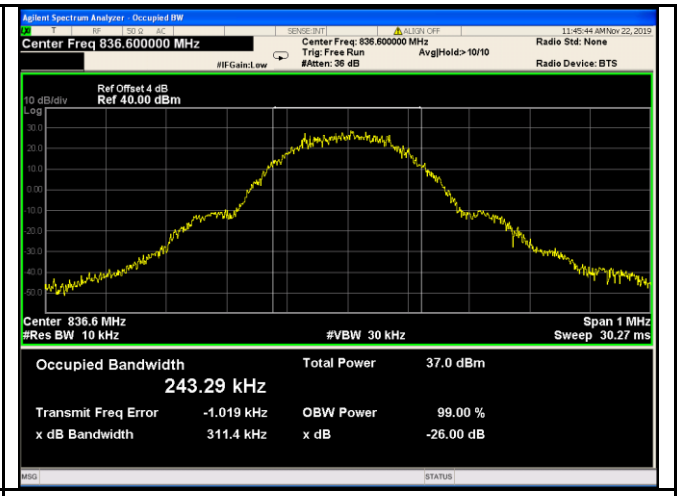


PCS 1900 BW - High CH 1910MHz

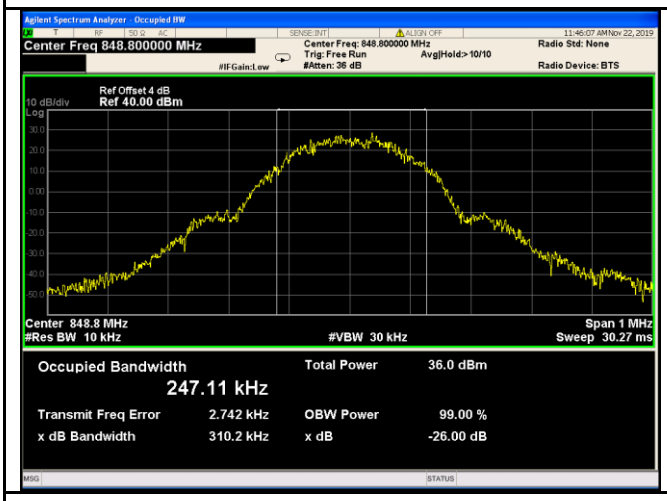
GPRS:



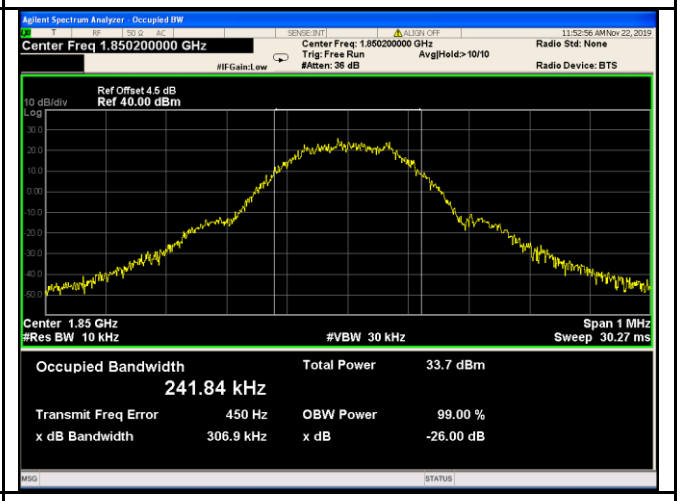
GSM 850 BW - Low CH 824.2MHz



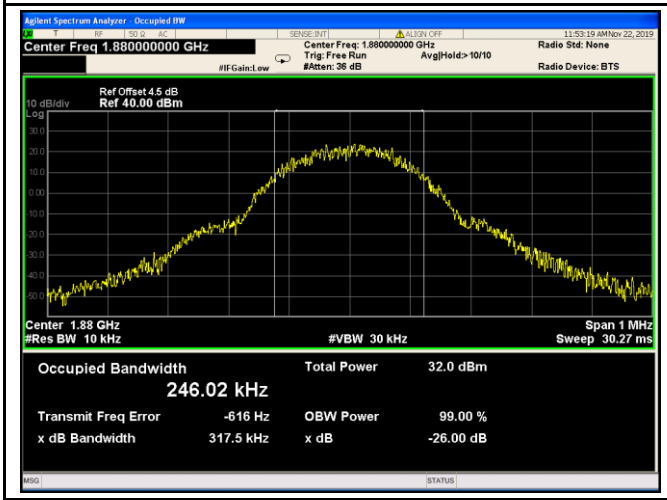
GSM 850 BW - Mid CH 836.6MHz



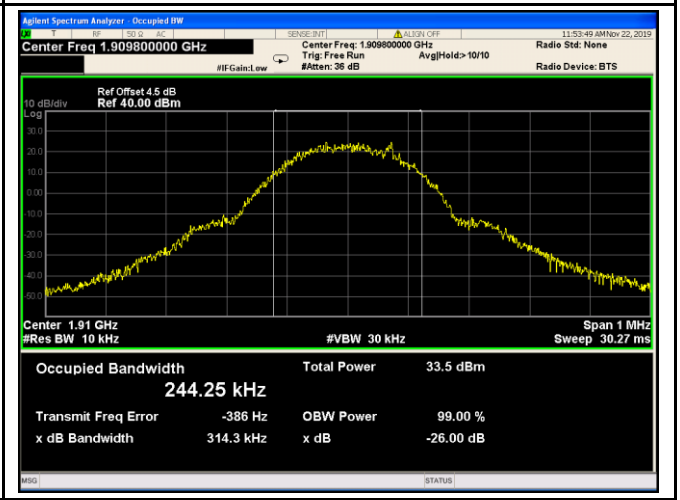
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850MHz



PCS 1900 BW - Mid CH 1880MHz

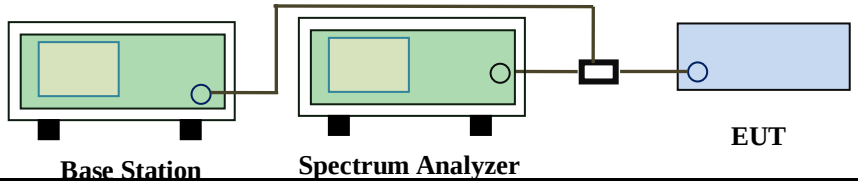


PCS 1900 BW - High CH 1910MHz

6.5 Spurious Emissions at Antenna Terminals

Temperature	27℃
Relative Humidity	35%
Atmospheric Pressure	1013mbar
Test date :	Nov. 22,2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§2.1051, §22.917(a)& §24.238(a)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB	☑
Test Setup			
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. - Setting RBW as roughly BW/100.		
Remark			
Result	☑ Pass ☐ Fail		

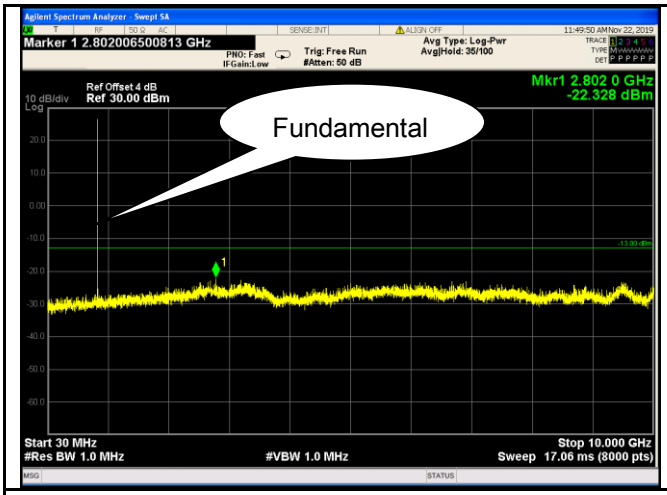
Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

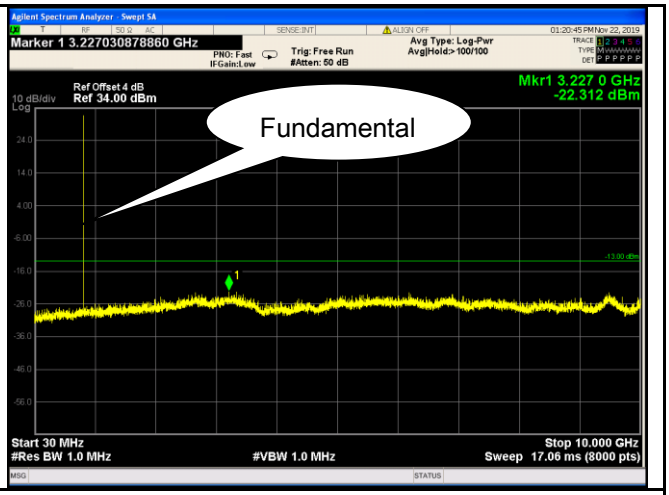
Test Plots

GSM Voice:

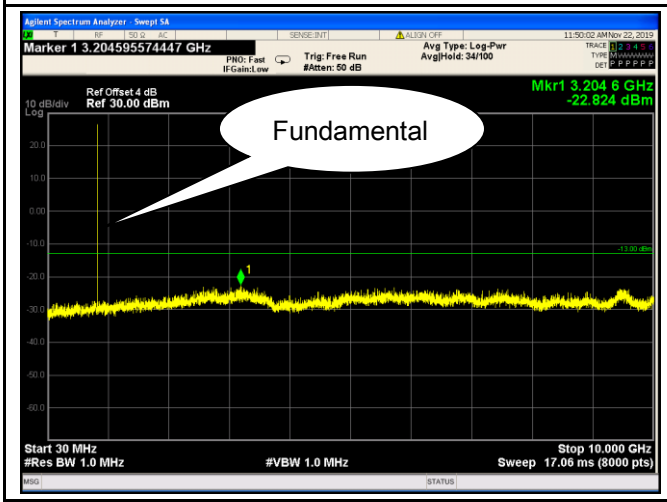
Cellular Band (Part 22H) result



GSM 850 - Low Channel

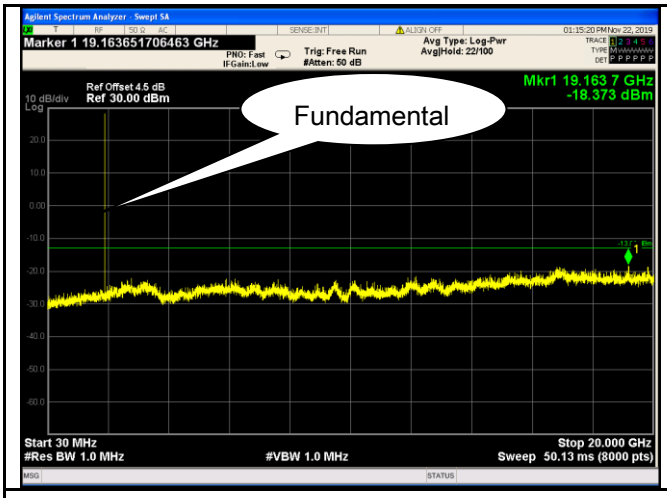


GSM 850 Middle Channel

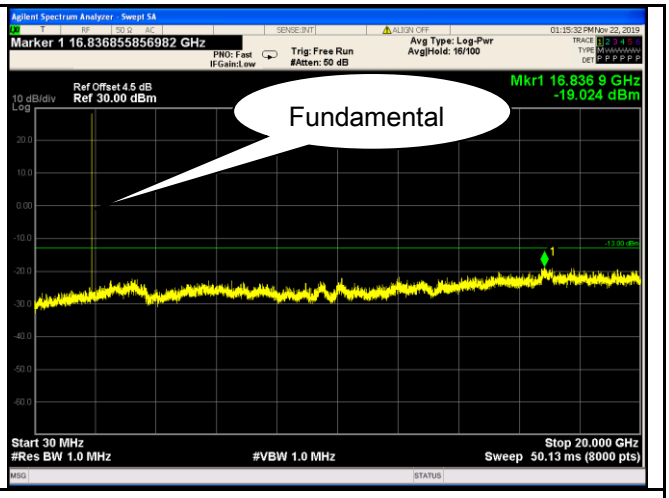


GSM 850 - High Channel

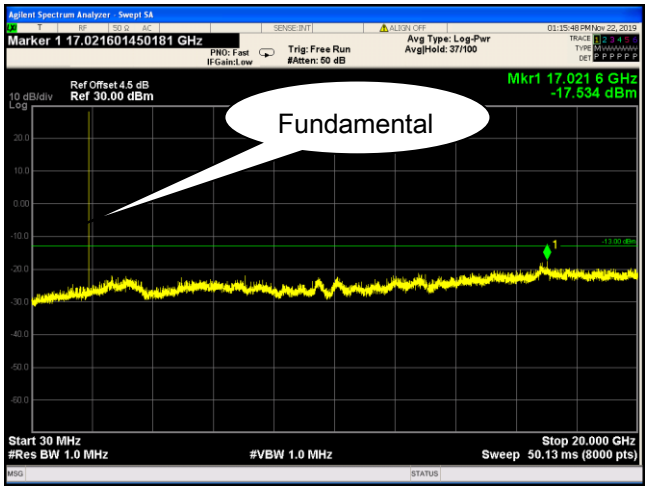
PCS Band (Part24E) result



PCS1900 - Low Channel



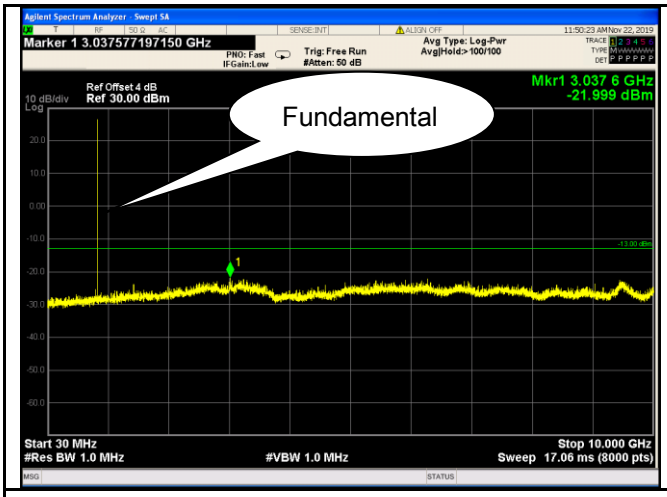
PCS1900 - Middle Channel



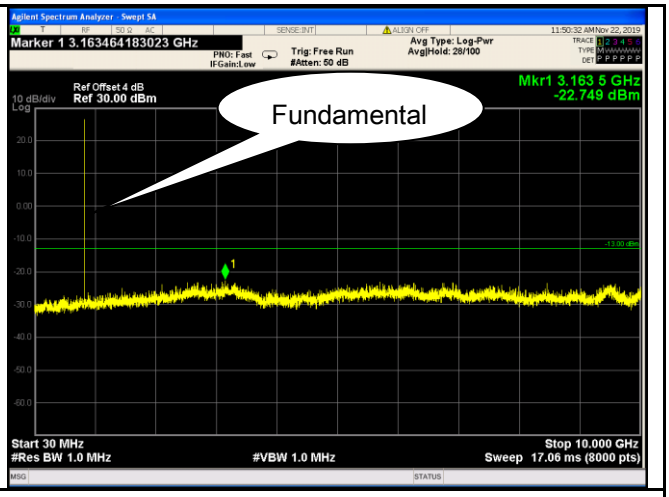
PCS1900 - High Channel

GPRS:

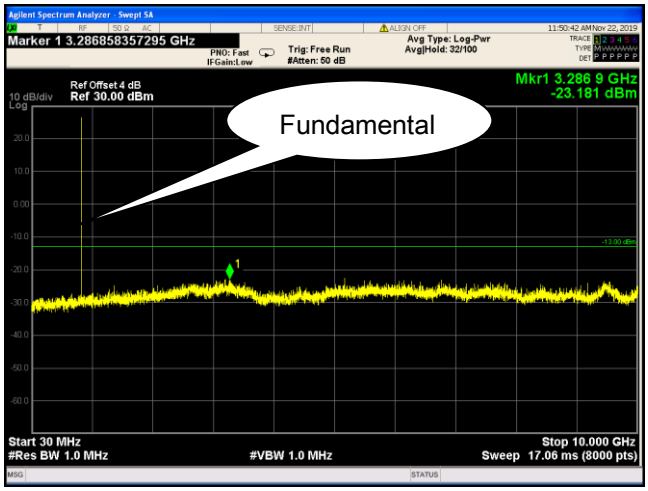
Cellular Band (Part 22H) result



GSM 850 - Low Channel

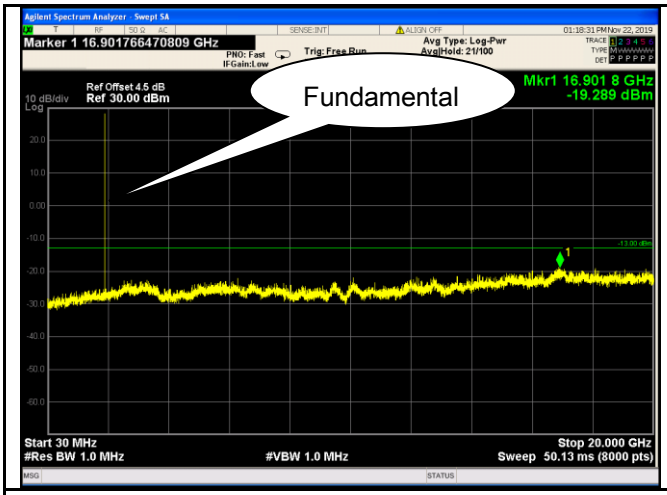


GSM 850 Middle Channel

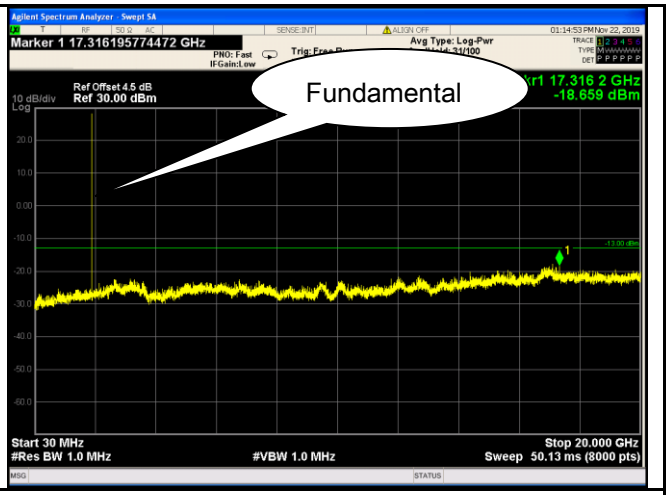


GSM 850 - High Channel

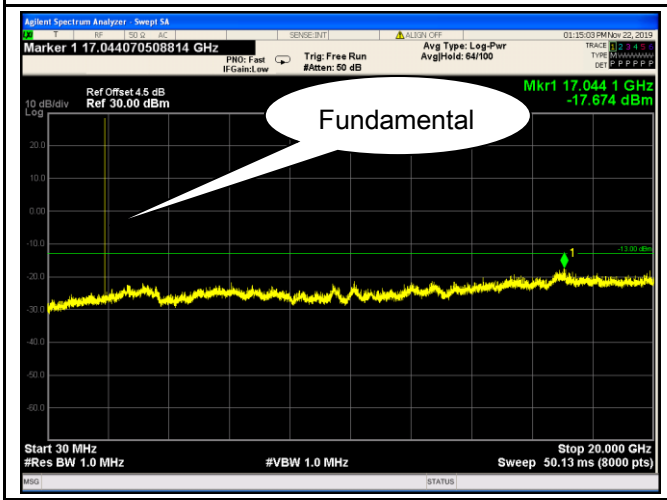
PCS Band (Part24E) result



PCS1900 - Low Channel



PCS1900 - Middle Channel

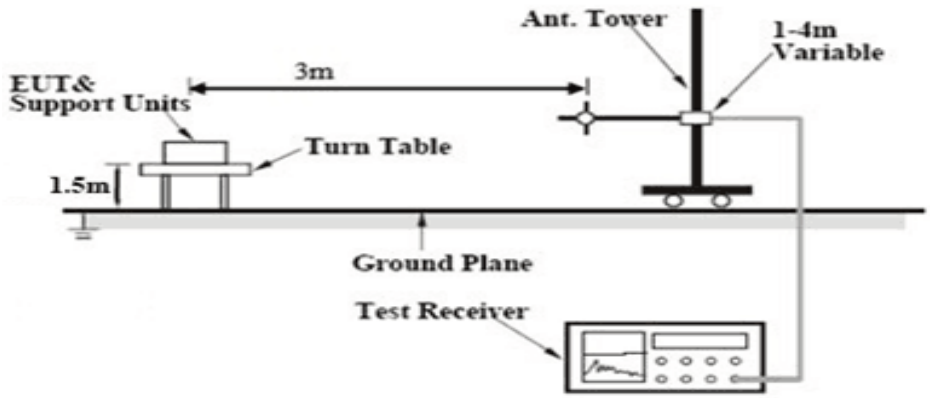


PCS1900 - High Channel

6.6 Spurious Radiated Emissions

Temperature	27℃
Relative Humidity	35%
Atmospheric Pressure	1013mbar
Test date :	Nov. 22,2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§2.1053, §22.917 & §24.238	a)	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.	☑
Test setup			
Test Procedure	1. The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. 2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. 3. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. Sample Calculation: EUT Field Strength = Raw Amplitude (dBμV/m) – Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used)		

Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

Cellular Band (Part 22H) result

Low channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1648.4	V	-38.54	-13	-25.54
1648.4	H	-42.56	-13	-29.56
2472.6	V	-33.16	-13	-20.16
2472.6	H	-29.54	-13	-16.54
224.1	V	-44.78	-13	-31.78
351.7	H	-45.81	-13	-32.81

Middle channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1673.2	V	-39.84	-13	-26.84
1673.2	H	-43.7	-13	-30.7
2509.8	V	-34.77	-13	-21.77
2509.8	H	-30.13	-13	-17.13
511.7	V	-45.21	-13	-32.21
337.8	H	-46.77	-13	-33.77

High channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1697.6	V	-38.24	-13	-25.24
1697.6	H	-42.55	-13	-29.55
2546.4	V	-33.19	-13	-20.19
2546.4	H	-29.11	-13	-16.11
299.5	V	-47.84	-13	-34.84
822.3	H	-45.26	-13	-32.26

Note:

*1, The testing has been conformed to 10*848.8MHz=8,488MHz*
2, All other emissions more than 30 dB below the limit
3,GSM voice , GPRS and EGPRS mode were investigated. The results above show only the worse cases
4, X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.

PCS Band (Part24E) result

Low channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3700.4	V	-33.69	-13	-20.69
3700.4	H	-31.47	-13	-18.47
5550.6	V	-28.52	-13	-15.52
5550.6	H	-31.96	-13	-18.96
552.7	V	-47.2	-13	-34.2
315.6	H	-49.21	-13	-36.21

Middle channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3760	V	-32.06	-13	-19.06
3760	H	-30.49	-13	-17.49
5640	V	-27.77	-13	-14.77
5640	H	-31.02	-13	-18.02
294.7	V	-46.85	-13	-33.85
521.6	H	-48.21	-13	-35.21

High channel

Frequency (MHz)	Antenna Polarization (H/V)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3819.6	V	-33.14	-13	-20.14
3819.6	H	-32.47	-13	-19.47
5729.4	V	-28.44	-13	-15.44
5729.4	H	-28.89	-13	-15.89
566.3	V	-46.81	-13	-33.81
338.4	H	-49.72	-13	-36.72

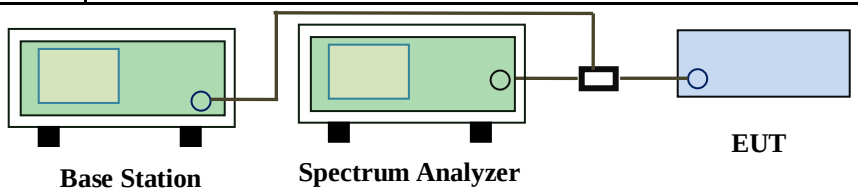
Note:

*1, The testing has been conformed to 10*1909.8MHz=19,098MHz*
2, All other emissions more than 30 dB below the limit
3,GSM voice , GPRS and EGPRS mode were investigated. The results above show only the worse cases
4, X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.

6.7 Band Edge

Temperature	27℃
Relative Humidity	35%
Atmospheric Pressure	1013mbar
Test date :	Nov. 22,2019
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§22.917(a) §24.238(a)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.	☑
Test setup			
Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

GSM Voice:

Cellular Band (Part 22H) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.996	-19.458	-13
849.027	-17.621	-13

PCS Band (Part24E) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.98	-16.459	-13
1910.013	-16.326	-13

GPRS:

Cellular Band (Part 22H) result

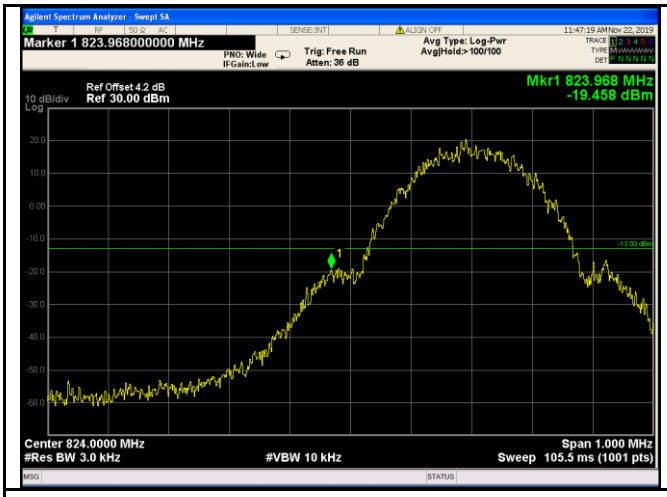
Frequency (MHz)	Emission (dBm)	Limit (dBm)
822.979	-18.891	-13
849.02	-18.142	-13

PCS Band (Part24E) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.979	-16.207	-13
1910.01	-15.459	-13

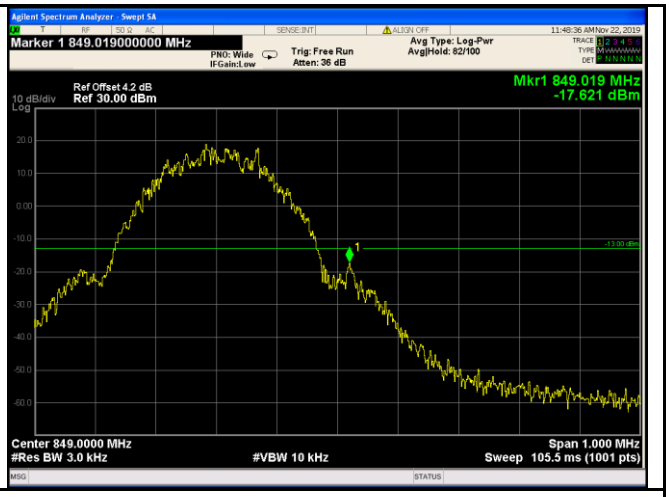
GSM Voice:

Test Plots



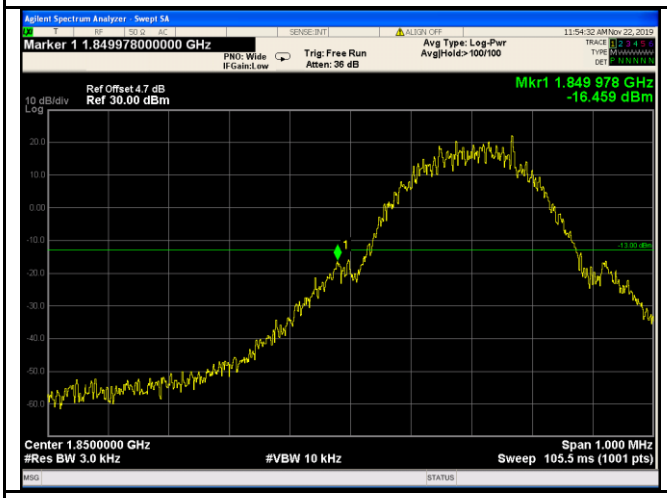
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log (3.167/3)=4.0+0.2=4.2dB



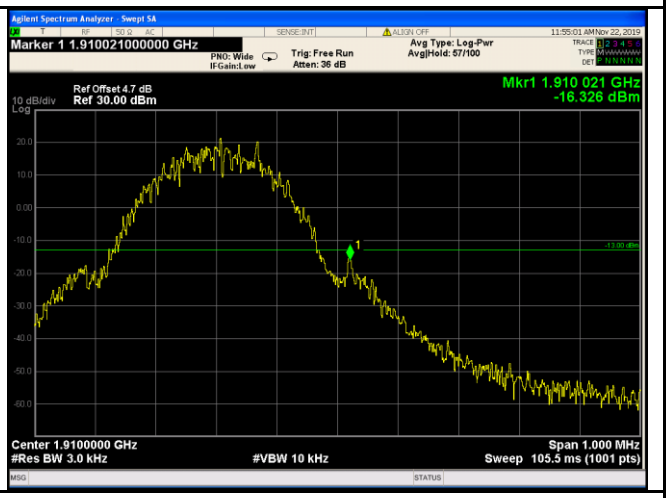
Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log (3.123/3)=4.0+0.2=4.2dB



PCS Band - Low Channel

Note: Offset=Cable loss (4.5) + 10log (3.129/3)=4.5+0.2=4.7dB

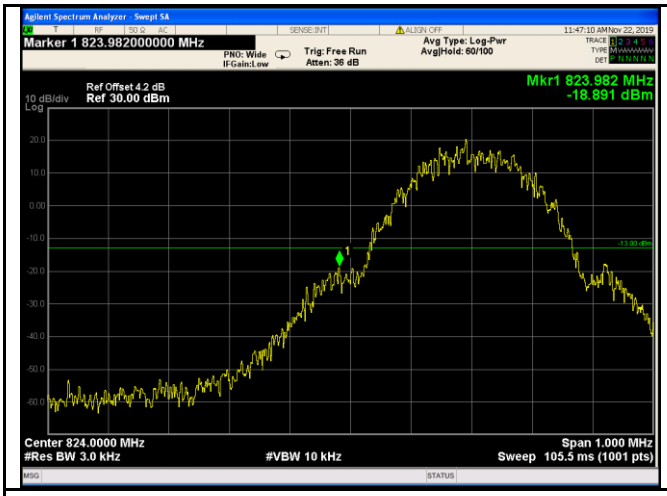


PCS Band - High Channel

Note: Offset=Cable loss (4.5) + 10log (3.102/3)=4.5+0.2=4.7dB

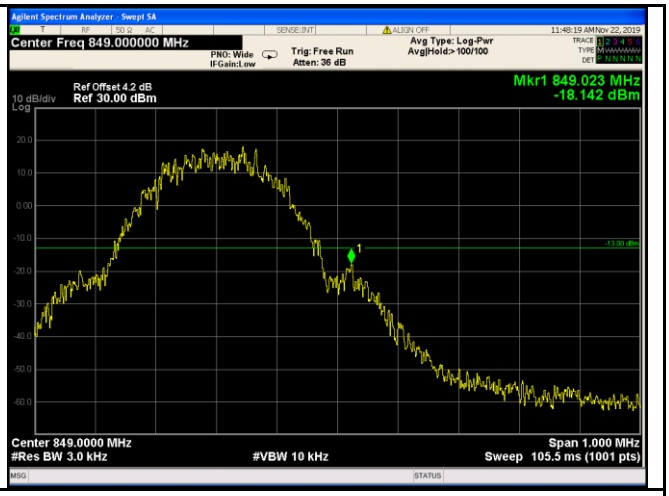
GPRS:

Test Plots



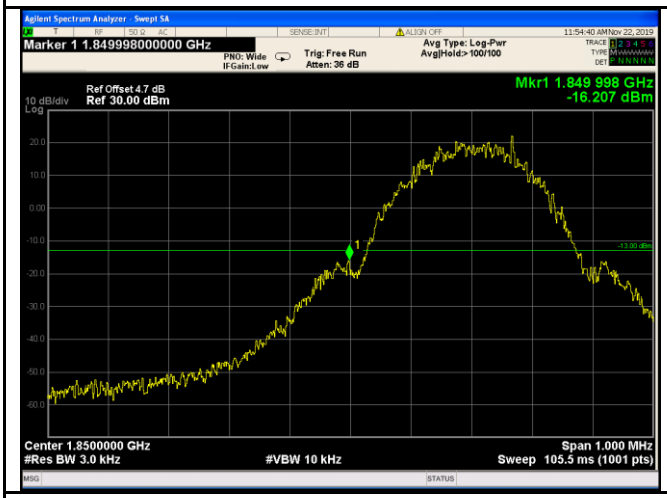
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log (3.022/3)=4.0+0.2=4.2dB



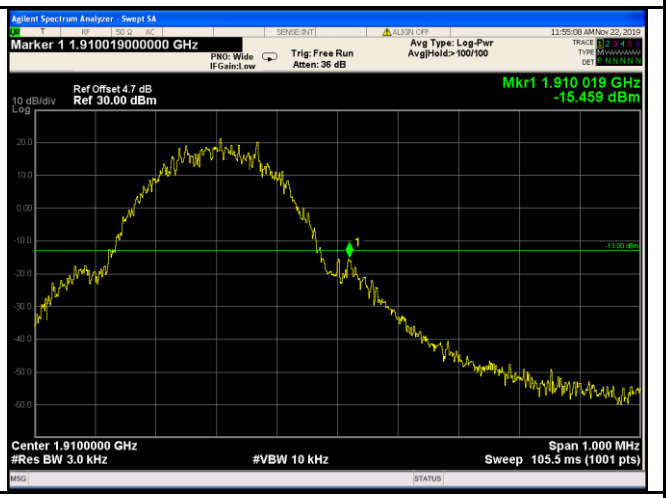
Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log (3.146/3)=4.0+0.2=4.2dB



PCS Band - Low Channel

Note: Offset=Cable loss (4.5) + 10log (3.069/3)=4.5+0.2=4.7dB



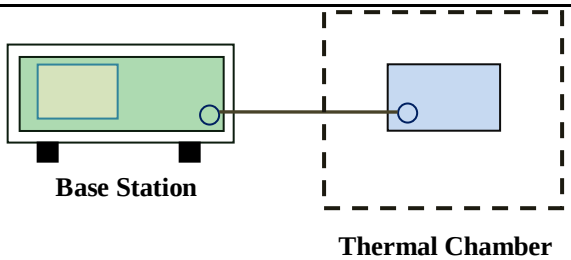
PCS Band - High Channel

Note: Offset=Cable loss (4.5) + 10log (3.143/3)=4.5+0.2=4.7dB

6.8 Frequency Stability

Temperature	27℃
Relative Humidity	35%
Atmospheric Pressure	1013mbar
Test date :	Nov. 22,2019
Tested By :	Aaron Liang

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>§2.1055, §22.355 & §24.235</td><td>a)</td><td>According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:
Frequency Tolerance for Transmitters in the Public Mobile Services
<table>
<tr><th>Frequency Range (MHz)</th><th>Base, fixed (ppm)</th><th>Mobile ≥ 3 watts (ppm)</th><th>Mobile ≤ 3 watts (ppm)</th></tr>
<tr><td>25 to 50</td><td>20.0</td><td>20.0</td><td>50.0</td></tr>
<tr><td>50 to 450</td><td>5.0</td><td>5.0</td><td>50.0</td></tr>
<tr><td>45 to 512</td><td>2.5</td><td>5.0</td><td>5.0</td></tr>
<tr><td>821 to 896</td><td>1.5</td><td>2.5</td><td>2.5</td></tr>
<tr><td>928 to 929</td><td>5.0</td><td>N/A</td><td>N/A</td></tr>
<tr><td>929 to 960.</td><td>1.5</td><td>N/A</td><td>N/A</td></tr>
<tr><td>2110 to 2220</td><td>10.0</td><td>N/A</td><td>N/A</td></tr>
</table>
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency block.</td><td>☑</td></tr>
<tr><td>Test setup</td><td colspan="3"> 
</td></tr>
</table>

Procedure	A communication link was established between EUT and base station. The frequency error was monitored and measured by base station under variation of ambient temperature and variation of primary supply voltage. Limit: The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

GSM Voice:

Cellular Band (Part 22H) result

Middle Channel, f_o = 836.6 MHz				
Temperature (℃)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	12	0.0128	2.5
0		12	0.0128	2.5
10		19	0.0203	2.5
20		13	0.0139	2.5
30		18	0.0193	2.5
40		10	0.0107	2.5
50		13	0.0139	2.5
55		19	0.0203	2.5
25	4.2	10	0.0107	2.5
	3.5	14	0.0150	2.5

PCS Band (Part 24E) result

Middle Channel, f_o = 1880 MHz				
Temperature (℃)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	15	0.0160	2.5
0		16	0.0171	2.5
10		17	0.0182	2.5
20		13	0.0139	2.5
30		18	0.0193	2.5
40		12	0.0128	2.5
50		11	0.0118	2.5
55		12	0.0128	2.5
25	4.2	13	0.0139	2.5
	3.5	12	0.0128	2.5

Annex A. TEST INSTRUMENT

RE& RSE

Frequency Range Below 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESL6	1300.5001K06-100262-eQ	Apr. 04, 19	Apr. 03, 20
Bilog Antenna	Sunol Sciences	JB6	A110712	Apr. 08, 19	Apr. 07, 20
Active Antenna	CMO-POWER	AL-130	121031	Mar. 27, 19	Mar. 26, 20
Signal Amplifier	HP	8447E	443008	Mar. 28, 19	Mar. 27, 20
3m Semi-anechoic Chamber	SAEMC	9m*6m*6m	N/A	Oct. 18,18	Oct. 17,21
Test Software	EZ-EMC	ICP-03A1	N/A	N/A	N/A
Universal Radio Communication	ROHDE&SCHWARZ	CMU200	112012	Mar. 28,19	Mar. 27,20
Universal Radio Communication	ROHDE&SCHWARZ	CMU200	121393	Mar. 28,19	Mar. 27,20
Wireless Communication Test Set	ROHDE&SCHWARZ	CMW500	1201.0002K500-155842-Gd	Aug. 06, 19	Aug. 05, 20

RE& RSE

Frequency Range Above 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum	Agilent	E4446A	MY46180622	May. 08,19	Mar. 07, 20
MXA signal analyzer	Agilent	N9020A	MY49100060	Mar. 28, 19	Mar. 27, 20
Horn Antenna	COM-POWER	HAH-118	71259	Mar. 22, 19	Mar. 21, 20
Horn Antenna	COM-POWER	HAH-118	71283	Mar. 20, 19	Mar. 19, 20
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170147	Jun. 30, 19	Jun. 29, 20
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170242	Jun. 30, 19	Jun. 29, 20
AMPLIFIER	EM Electornic Corporation	EM01G26G	60613	Mar. 28, 19	Mar. 27, 20

AMPLIFIER	Emc Instruments Corporation	Emc012645	980077	Jan. 04, 19	Jan. 03,20
3m Semi-anechoic Chamber	SAEMC	9m*6m*6m	N/A	Oct. 18,18	Oct. 17,21
Test Software	EZ-EMC	ICP-03A1	N/A	N/A	N/A
Universal Radio Communication	ROHDE&SCHWARZ	CMU200	112012	Mar. 28,19	Mar. 27,20
Universal Radio Communication	ROHDE&SCHWARZ	CMU200	121393	Mar. 28,19	Mar. 27,20
Wireless Communication Test Set	ROHDE&SCHWARZ	CMW500	1201.0002K50 0-155842-Gd	Aug. 06, 19	Aug. 05, 20

Antenna Port Conducted RF measurement

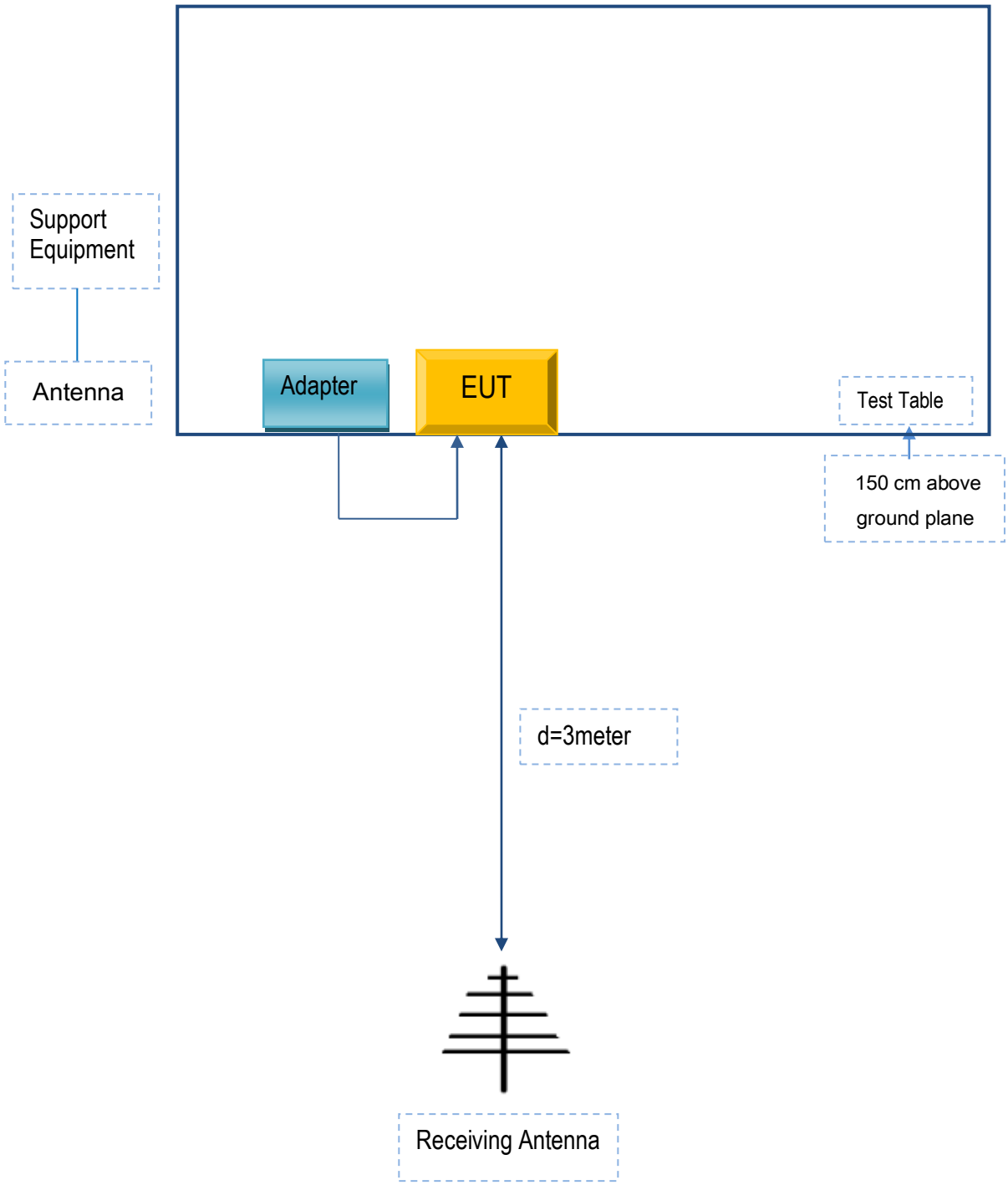
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Wireless Connectivity	R&S	CMW270	1201.0002K75	Nov. 29, 18	Nov. 28, 19
MXA VEXTOR SIGNAL	Agilent	n5182a	MY50140530	Mar. 28,19	Mar. 27,20
MXA signal analyzer	Agilent	n9020a	MY49100060	Mar. 28,19	Mar. 27,20
RF Control Unit	Tonscend	JS0806-2	188060112	Mar. 28,19	Mar. 27,20
Signal Generation	Agilent	E4421B	US40051152	Nov. 29, 18	Nov. 28, 19
DC Power Supply	Agilent	E3640A	MY40004013	Mar. 28,19	Mar. 27,20
Programmable Temperature & Humidity	Hongjin	HYC-TH-225DH	DG-180746	Mar. 28,19	Mar. 27,20
Test System	Tonscend	JS 1120-3	N/A	N/A	N/A
Power Splitter	Weinschel	1580-1	TL177	Mar. 20,19	Mar. 19,20
Universal Radio Communication	ROHDE&SCHWARZ	CMU200	112012	Mar. 28,19	Mar. 27,20
Universal Radio Communication	ROHDE&SCHWARZ	CMU200	121393	Mar. 28,19	Mar. 27,20

Wireless Communication Test Set	ROHDE&SCHWARZ	CMW500	1201.0002K50 0-155842-Gd	Aug. 06, 19	Aug. 05, 20

Annex B. TEST SETUP AND SUPPORTING EQUIPMENT

Annex B.i. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions



Annex C. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
N/A	N/A	N/A	N/A

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
N/A	N/A	N/A	N/A	N/A

Annex C. User Manual / Block Diagram / Schematics / Partlist/ DECLARATION OF SIMILARITY

Please see the attachment