

# FCC Test Report

Product Name : WCDMA/LTE Mobile Phone  
Trade Name : FIH  
Model No. : EA211002, EC211002, EC211003  
FCC ID : RYQEA211002

Applicant : FIH CO., LTD.  
Address : No.4, Minsheng St., Tu-Cheng Dist.,  
New Taipei City 23679, Taiwan

Date of Receipt : May. 18, 2021  
Issued Date : Jul. 12, 2021  
Report No. : 2150987R-E3042110011  
Report Version : V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

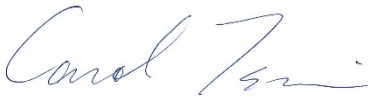
The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd..


# Test Report Certification



Product Name : WCDMA/LTE Mobile Phone  
 Applicant : FIH CO., LTD.  
 Address : No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan  
 Manufacturer : FIH CO., LTD.  
 Address : No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan  
 Trade Name : FIH  
 Model No. : EA211002, EC211002, EC211003  
 FCC ID : RYQEA211002  
 EUT Voltage : DC 5V (adapter or host equipment)  
 DC 3.85V for battery  
 Testing Voltage : DC 5V  
 Applicable Standard : FCC CFR Title 47 Part 22 Subpart H  
 FCC CFR Title 47 Part 24 Subpart E  
 FCC CFR Title 47 Part 27 Subpart M  
 ANSI/TIA-603  
 Test Lab : Hsin Chu Laboratory  
 Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C.  
 TEL: +886-3-582-8001 / FAX: +886-3-582-8958  
 Test Result : Complied

Documented By :   
 \_\_\_\_\_  
 ( Carol Tsai / Senior Engineering Adm. Specialist )

Tested By :   
 \_\_\_\_\_  
 ( Scott Chang / Senior Engineer )

Approved By :   
 \_\_\_\_\_  
 ( Louis Hsu / Deputy Manager )

The test results relate only to the samples tested.  
 The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd.

### Revision History

<b>Version</b>	<b>Description</b>	<b>Issued Date</b>
V1.0	Initial issue of report	Jul. 12, 2021

## TABLE OF CONTENTS

Description	Page
1. General Information .....	6
1.1. EUT Description .....	6
1.2. Mode of Operation .....	8
1.3. Tested System Details .....	9
1.4. Configuration of Tested System .....	9
1.5. EUT Exercise Software .....	9
1.6. Comments and Remarks .....	10
2. Technical Test .....	11
2.1. Summary of Test Result .....	11
2.2. Test Environment .....	14
2.3. List of Test Equipment .....	15
2.4. Measurement Uncertainty .....	16
3. RF Output Power .....	17
3.1. Test Setup .....	17
3.2. Test Procedure .....	17
3.3. Test Method .....	17
3.4. Test Result .....	18
4. Occupied Bandwidth .....	21
4.1. Test Setup .....	21
4.2. Test Procedure .....	21
4.3. Test Method .....	21
4.4. Test Result .....	22
5. Peak To Average Ratio .....	25
5.1. Test Setup .....	25
5.2. Test Procedure .....	25
5.3. Test Method .....	25
5.4. Test Result .....	26
6. Conducted Band Edge .....	29
6.1. Test Setup .....	29
6.2. Test Procedure .....	29
6.3. Test Method .....	29
6.4. Test Result .....	30
7. Spurious Emission .....	33
7.1. Test Setup .....	33
7.2. Test Procedure .....	34

---

7.3. Test Method .....	34
7.4. Test Result .....	35
8. Frequency Stability .....	44
8.1. Test Setup .....	44
8.2. Test Procedure .....	44
8.3. Test Method .....	44
8.4. Test Result .....	45
Attachment .....	51
Test Setup Photograph .....	51

## 1. General Information

### 1.1. EUT Description

Product Name	WCDMA/LTE Mobile Phone
Trade Name	FIH
Model No.	EA211002, EC211002, EC211003
Tx Frequency Range	WCDMA Band 2: 1852.4-1907.6 MHz WCDMA Band 4: 1712.4-1752.6 MHz WCDMA Band 5: 826.4-846.6 MHz
Rx Frequency Range	WCDMA Band 2: 1932.4-1987.6 MHz WCDMA Band 4: 2112.4-2152.6 MHz WCDMA Band 5: 871.4-891.6 MHz
Function	WCDMA / HSDPA / HSUPA
Type of Modulation	BPSK / QPSK / 16QAM
IMEI No.	350025200008863

Accessories Information	
Type C USB Cable	1pcs, Shielded, 1m
Microphone & Earphone Cable	1pcs, Non-Shielded, 1.5m
Power Adapter	MFR: Shenzhen Baijunda Electronic, M/N: UT-592A-5200ZY I/P: AC 100~240V, 50/60Hz, 0.35A O/P: DC 5V, 2.0A 10W

The difference for each model is shown as below:

Model No.	Operator Variant	Camera Feature		Hardware Version	Software Version
		Rear Camera	Front Camera		
EA211002	AT&T	8MP	5MP	2.0	EA211002_1090U
EC211002	Cricket	8MP	5MP	2.0	EC211002_1090
EC211003	Cricket	8MP	2MP	2.0	EC211003_1090

Note:

- From the above models, model: EA211002 was selected as representative model for the test and its data was recorded in this report.
- The EUT description is from the customer declaration.

Antenna Information						
Ant. No.	Manufacturer	Model No.	Ant. Type	Ant. Gain (dBi)		
				WCDMA Band 2	WCDMA Band 4	WCDMA Band 5
0	INPAQ	MEBFL01007A	PIFA/LDS	1.0	-1.3	-4.8

**Note:**

1. This WCDMA/LTE Mobile Phone including WLAN 2.4GHz, WLAN 5GHz, Bluetooth and WWAN (WCDMA and LTE) transmitting and receiving functions.
2. Regards to the frequency band operation; the lowest , middle and highest frequency of channel were selected to perform the test, and then shown on this report.
3. The EUT description is from the customer declaration.
4. The device was tested under all bandwidths, RB configurations and modulations, and the worst case was found in RMC mode and show in the test report.

## 1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: WCDMA Band 2
Mode 2: WCDMA Band 4
Mode 3: WCDMA Band 5

Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The EUT was performed at X axis, Y axis and Z axis position for radiated emission test. The worst case was found at X axis, so the measurement will follow this same test configuration.

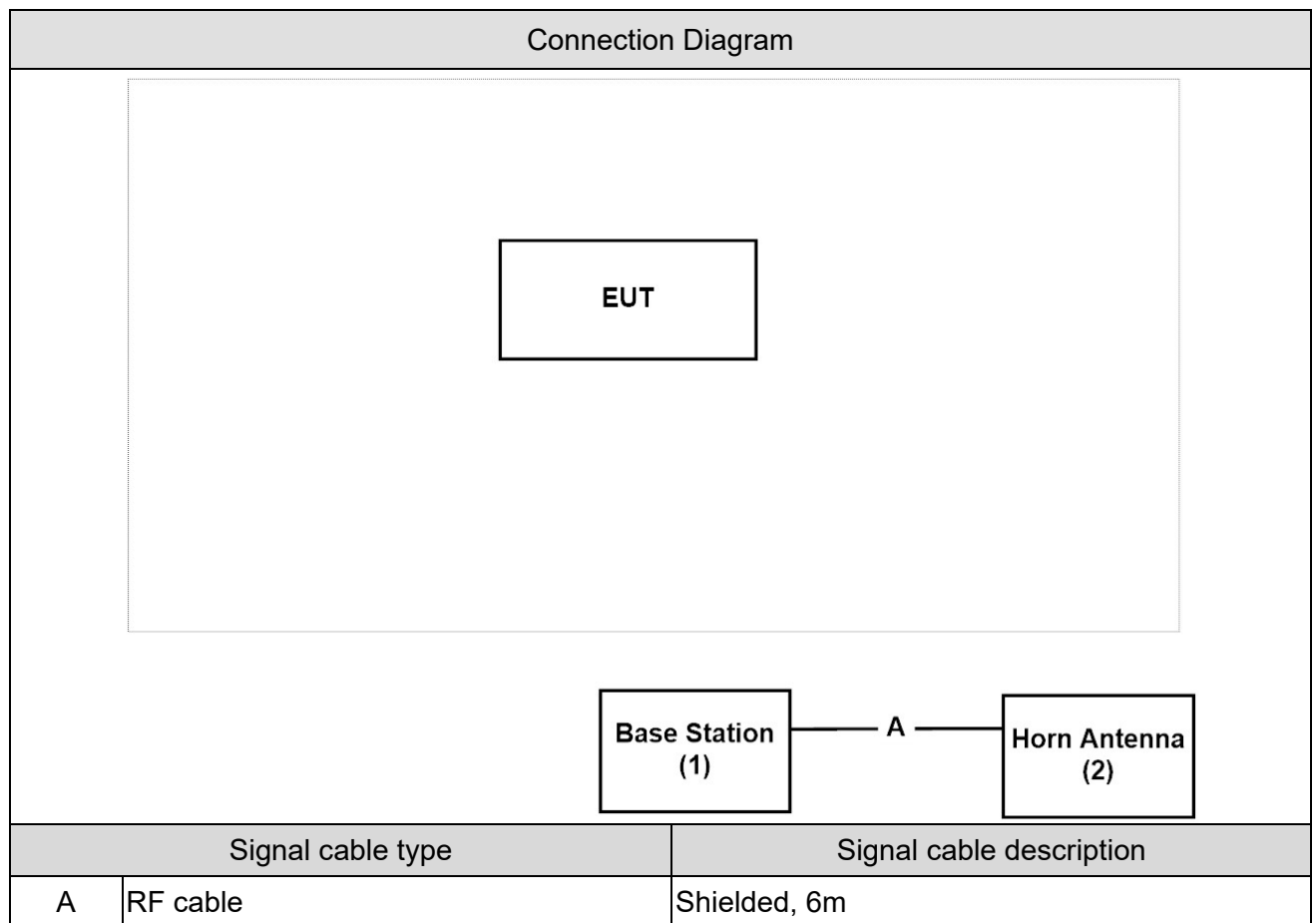


### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord	
1	Base Station	R&S	CMW500	157118	Non-Shielded, 2m
2	Horn Antenna	Schwarzbeck	BBHA 9120D	1640	--

### 1.4. Configuration of Tested System



### 1.5. EUT Exercise Software

1	Set the EUT as shown.
2	EUT is connected through the base station.
3	Configure test mode, test channel and data rate.
4	Let the EUT start sending transmit or receiving continuously.
5	Verify that device is working properly.

## 1.6. Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

## 2. Technical Test

### 2.1. Summary of Test Result

- No deviations from the test standards  
 Deviations from the test standards as below description:

WCDMA Band 2			
FCC Part 24 Subpart E)			
Performed Item	FCC Rule	Limit	Result
Maximum Output Power	§2.1033	< 2 Watts	Pass
	§2.1046		
	§24.232		
Occupied Bandwidth	§2.1049	N/A	Pass
Peak To Average Ratio	§24.232(d)	≤ 13dB	Pass
Conducted Band Edge	§27.238	< -13dBm	Pass
Spurious Emission	§2.1053	< -13dBm	Pass
	§24.238		
Frequency Stability	§2.1055	< 2.5 ppm	Pass
	§24.235		

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

<b>WCDMA Band 4</b>			
<b>FCC Part 27 Subpart M</b>			
Performed Item	FCC Rule	Limit	Result
Maximum Output Power	FCC PART 2.1046 and PART 27.50(h)(2)	< 1 Watts EIRP	Pass
Occupied Bandwidth	FCC PART 2.1049 and PART 27.53(l)(6)	N/A	Pass
Peak To Average Ratio	§27.50(b)	≤ 13dB	Pass
Conducted Band Edge	FCC PART 2.1051 and PART 27.53(l)(4)(6)	< -13 dBm	Pass
Spurious Emission	FCC PART 2.1051 and PART 27.53(l)(4)(6)	< -25 dBm	Pass
Frequency Stability	FCC PART 2.1055(a)(l) and PART 27.54	< 2.5 ppm	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

<b>WCDMA Band 5</b>			
<b>FCC Part 22 Subpart H</b>			
Performed Item	FCC Rule	Limit	Result
Maximum Output Power	§2.1033	< 7 Watts	Pass
	§2.1046		
	§22.913		
Occupied Bandwidth	§2.1049	N/A	Pass
Peak To Average Ratio	§22.913(d)	≤ 13dB	Pass
Conducted Band Edge	§22.917	< -13dBm	Pass
Spurious Emission	§2.1053	< -13dBm	Pass
	§22.917		
Frequency Stability	§2.1055	< 2.5 ppm	Pass
	§22.335		

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

## 2.2. Test Environment

Items	Required	Test Site
Temperature (°C)	15-35	2
Humidity (%RH)	25-75	

Note: Test site information refers to Laboratory Information.

## Laboratory Information

**USA** : FCC Registration Number: TW3024  
**Canada** : IC Registration Number: 22397-1 / 22397-2 / 22397-3

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
E mail address	<a href="mailto:info.tw@dekra.com">info.tw@dekra.com</a>
Website	<a href="http://www.dekra.com.tw">http://www.dekra.com.tw</a>

## 2.3. List of Test Equipment

### Radiated

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2020/10/12	2021/10/11
Signal & Spectrum Analyzer	R&S	FSV40	101049	2021/03/31	2022/03/30
Signal Analyzer	R&S	FSVA40	101435	2020/06/24	2021/06/23
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2021/01/25	2022/01/24
Bilog Antenna	Teseq	CBL6112D	23191	2021/02/26	2022/02/25
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2020/06/04	2021/06/03
Horn Antenna	Schwarzbeck	BBHA 9170	202	2020/12/16	2021/12/15
Pre-Amplifier	EMCI	EMC01820I	980365	2020/06/19	2021/06/18
Pre-Amplifier	EMEC	EM01G18GA	060741	2020/07/24	2021/07/23
Pre-Amplifier	DEKRA	AP-400C	201801231	2020/11/16	2021/11/15
Wideband Radio Communication Tester	R&S	CMW500	106071	2021/01/27	2022/01/26
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Coaxial Cable(13m)	Huber+Suhner	SF104	CB2-H	2020/07/25	2021/07/24
DEKRA Testing System	DEKRA	Version 2.0	CB2-H	NA	NA

### Conducted

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531043	2020/11/30	2021/11/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2021/01/25	2022/01/24
Pulse Power Sensor	Anritsu	MA2411B	1531044	2020/11/30	2021/11/29
Power Meter	Keysight	8990B	MY51000248	2021/05/21	2022/05/20
Power Sensor	Keysight	N1923A	MY57240005	2021/05/21	2022/05/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2021/05/14	2022/05/13
Spectrum Analyzer	Keysight	N9010B	MY57110159	2021/03/29	2022/03/28
Wideband Radio Communication Tester	R&S	CMW500	106071	2021/01/27	2022/01/26
Wireless Conn. Tseter	R&S	CMW500	157118	2020/07/23	2021/07/22
Spectrum Analyzer	Agilent	N9010A	US47140172	2020/06/18	2021/06/17

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

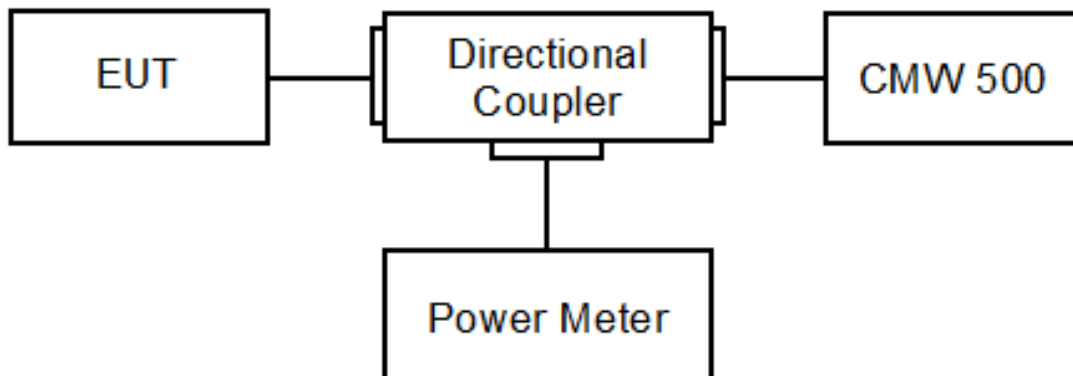
## 2.4. Measurement Uncertainty

Test Item	Uncertainty
RF Output Power	$\pm 1.27$ dB
Occupied Bandwidth	$\pm 10$ Hz
Peak To Average Ratio	Not exceed 13 dB
Conducted Band Edge	$\pm 3.2$ dB
Spurious Emissions	$\pm 1.27$ dB for Conducted Measurement $\pm 3.2$ dB for Radiated Measurement
Frequency Stability	$\pm 10$ Hz



### 3. RF Output Power

#### 3.1. Test Setup



#### 3.2. Test Procedure

- The RF output of the transmitter was connected to base station simulator.
- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- Set EUT at maximum average power by base station simulator.
- Measure lowest, middle, and highest channels for each bandwidth and different modulation.

Effective Isotropic Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi)

Effective Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi) - 2.15dB

#### 3.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.2.4

ANSI C63.26-2015 Sub-clause 5.2.4.2

### 3.4. Test Result

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

WCDMA Band 2						
Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi) (note2)	Measure Level (dBm)	Measure Level (W)	Limit (W) EIRP
RMC	1852.4	24.07	1	25.070	0.321	2
	1880	24.33	1	25.330	0.341	2
	1907.6	24.16	1	25.160	0.328	2
HSUPA Subtest 1	1852.4	23.18	1	24.180	0.262	2
	1880	23.25	1	24.250	0.266	2
	1907.6	23.17	1	24.170	0.261	2
HSUPA Subtest 2	1852.4	23.15	1	24.150	0.260	2
	1880	23.28	1	24.280	0.268	2
	1907.6	23.24	1	24.240	0.265	2
HSUPA Subtest 3	1852.4	22.83	1	23.830	0.242	2
	1880	22.90	1	23.900	0.245	2
	1907.6	22.71	1	23.710	0.235	2
HSUPA Subtest 4	1852.4	23.19	1	24.190	0.262	2
	1880	23.35	1	24.350	0.272	2
	1907.6	23.32	1	24.320	0.270	2
HSUPA Subtest 5	1852.4	22.35	1	23.350	0.216	2
	1880	22.41	1	23.410	0.219	2
	1907.6	22.26	1	23.260	0.212	2
HSDPA Subtest 1	1852.4	22.27	1	23.270	0.212	2
	1880	22.46	1	23.460	0.222	2
	1907.6	22.39	1	23.390	0.218	2
HSDPA Subtest 2	1852.4	22.32	1	23.320	0.215	2
	1880	22.38	1	23.380	0.218	2
	1907.6	22.25	1	23.250	0.211	2
HSDPA Subtest 3	1852.4	22.38	1	23.380	0.218	2
	1880	22.40	1	23.400	0.219	2
	1907.6	22.25	1	23.250	0.211	2
HSDPA Subtest 4	1852.4	22.45	1	23.450	0.221	2
	1880	22.51	1	23.510	0.224	2
	1907.6	22.43	1	23.430	0.220	2

Note: Measure Level (EIRP) = Reading Level + Antenna Gain 1 dBi

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

WCDMA Band 4						
Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi) (note2)	Measure Level (dBm)	Measure Level (W)	Limit (W) EIRP
RMC	1712.4	24.32	-1.3	23.020	0.200	1
	1732.6	24.41	-1.3	23.110	0.205	1
	1752.6	24.26	-1.3	22.960	0.198	1
HSUPA Subtest 1	1712.4	23.41	-1.3	22.110	0.163	1
	1732.6	23.58	-1.3	22.280	0.169	1
	1752.6	23.31	-1.3	22.010	0.159	1
HSUPA Subtest 2	1712.4	23.43	-1.3	22.130	0.163	1
	1732.6	23.53	-1.3	22.230	0.167	1
	1752.6	23.31	-1.3	22.010	0.159	1
HSUPA Subtest 3	1712.4	23.02	-1.3	21.720	0.149	1
	1732.6	23.16	-1.3	21.860	0.153	1
	1752.6	22.89	-1.3	21.590	0.144	1
HSUPA Subtest 4	1712.4	23.43	-1.3	22.130	0.163	1
	1732.6	23.60	-1.3	22.300	0.170	1
	1752.6	23.36	-1.3	22.060	0.161	1
HSUPA Subtest 5	1712.4	22.51	-1.3	21.210	0.132	1
	1732.6	22.64	-1.3	21.340	0.136	1
	1752.6	22.50	-1.3	21.200	0.132	1
HSDPA Subtest 1	1712.4	22.47	-1.3	21.170	0.131	1
	1732.6	22.60	-1.3	21.300	0.135	1
	1752.6	22.47	-1.3	21.170	0.131	1
HSDPA Subtest 2	1712.4	22.47	-1.3	21.170	0.131	1
	1732.6	22.60	-1.3	21.300	0.135	1
	1752.6	22.43	-1.3	21.130	0.130	1
HSDPA Subtest 3	1712.4	22.48	-1.3	21.180	0.131	1
	1732.6	22.54	-1.3	21.240	0.133	1
	1752.6	22.40	-1.3	21.100	0.129	1
HSDPA Subtest 4	1712.4	22.64	-1.3	21.340	0.136	1
	1732.6	22.81	-1.3	21.510	0.142	1
	1752.6	22.61	-1.3	21.310	0.135	1

Note: Measure Level (EIRP) = Reading Level + Antenna Gain -1.3 dBi

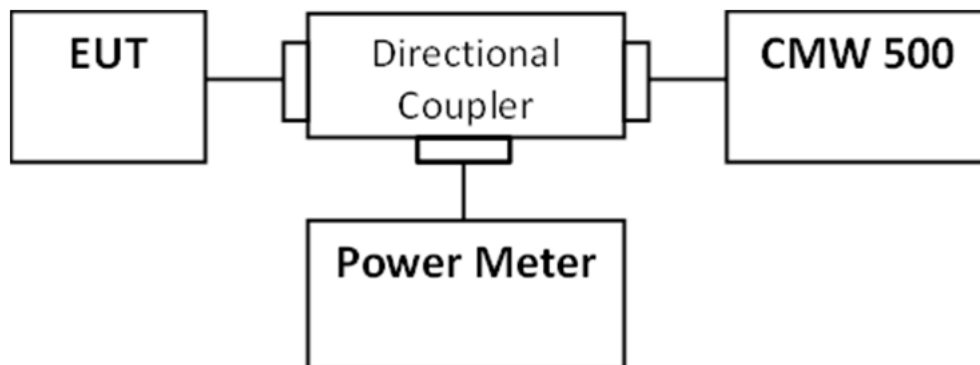
Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

WCDMA Band 5						
Test Mode	Frequency (MHz)	Reading Level (dBm)	Antenna Gain (dBi)	Measure Level (dBm)	Measure Level (W)	Limit (W) ERP
RMC	826.4	24.60	-4.8	17.650	0.058	7
	836.6	24.63	-4.8	17.680	0.059	7
	846.6	24.61	-4.8	17.660	0.058	7
HSUPA Subtest 1	826.4	23.74	-4.8	16.790	0.048	7
	836.6	23.78	-4.8	16.830	0.048	7
	846.6	23.77	-4.8	16.820	0.048	7
HSUPA Subtest 2	826.4	23.65	-4.8	16.700	0.047	7
	836.6	23.71	-4.8	16.760	0.047	7
	846.6	23.67	-4.8	16.720	0.047	7
HSUPA Subtest 3	826.4	23.25	-4.8	16.300	0.043	7
	836.6	23.26	-4.8	16.310	0.043	7
	846.6	23.23	-4.8	16.280	0.042	7
HSUPA Subtest 4	826.4	23.71	-4.8	16.760	0.047	7
	836.6	23.73	-4.8	16.780	0.048	7
	846.6	23.70	-4.8	16.750	0.047	7
HSUPA Subtest 5	826.4	22.69	-4.8	15.740	0.037	7
	836.6	22.74	-4.8	15.790	0.038	7
	846.6	22.73	-4.8	15.780	0.038	7
HSDPA Subtest 1	826.4	22.71	-4.8	15.760	0.038	7
	836.6	22.75	-4.8	15.800	0.038	7
	846.6	22.69	-4.8	15.740	0.037	7
HSDPA Subtest 2	826.4	22.76	-4.8	15.810	0.038	7
	836.6	22.78	-4.8	15.830	0.038	7
	846.6	22.76	-4.8	15.810	0.038	7
HSDPA Subtest 3	826.4	22.72	-4.8	15.770	0.038	7
	836.6	22.78	-4.8	15.830	0.038	7
	846.6	22.76	-4.8	15.810	0.038	7
HSDPA Subtest 4	826.4	22.77	-4.8	15.820	0.038	7
	836.6	22.88	-4.8	15.930	0.039	7
	846.6	22.86	-4.8	15.910	0.039	7

Note: Measure Level (EIRP) = Reading Level + Antenna Gain -4.8 dBi

## 4. Occupied Bandwidth

### 4.1. Test Setup



### 4.2. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 26 dB bandwidth and 99% occupied bandwidth of the low & middle & high channel for the highest RF powers were measured.

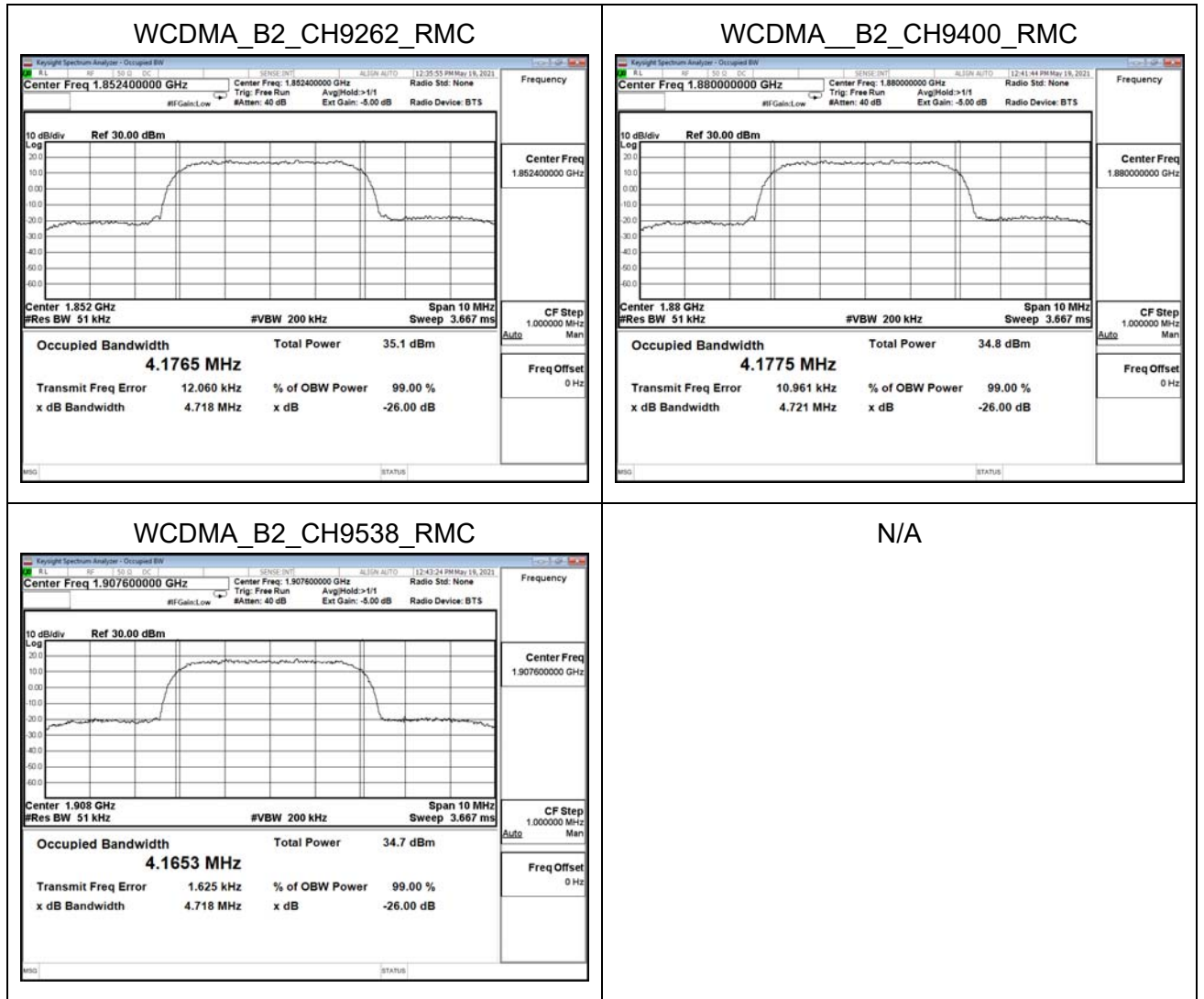
### 4.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 4.2 & 4.3  
ANSI C63.26-2015 Sub-clause 5.4.3 & 5.4.4

#### 4.4. Test Result

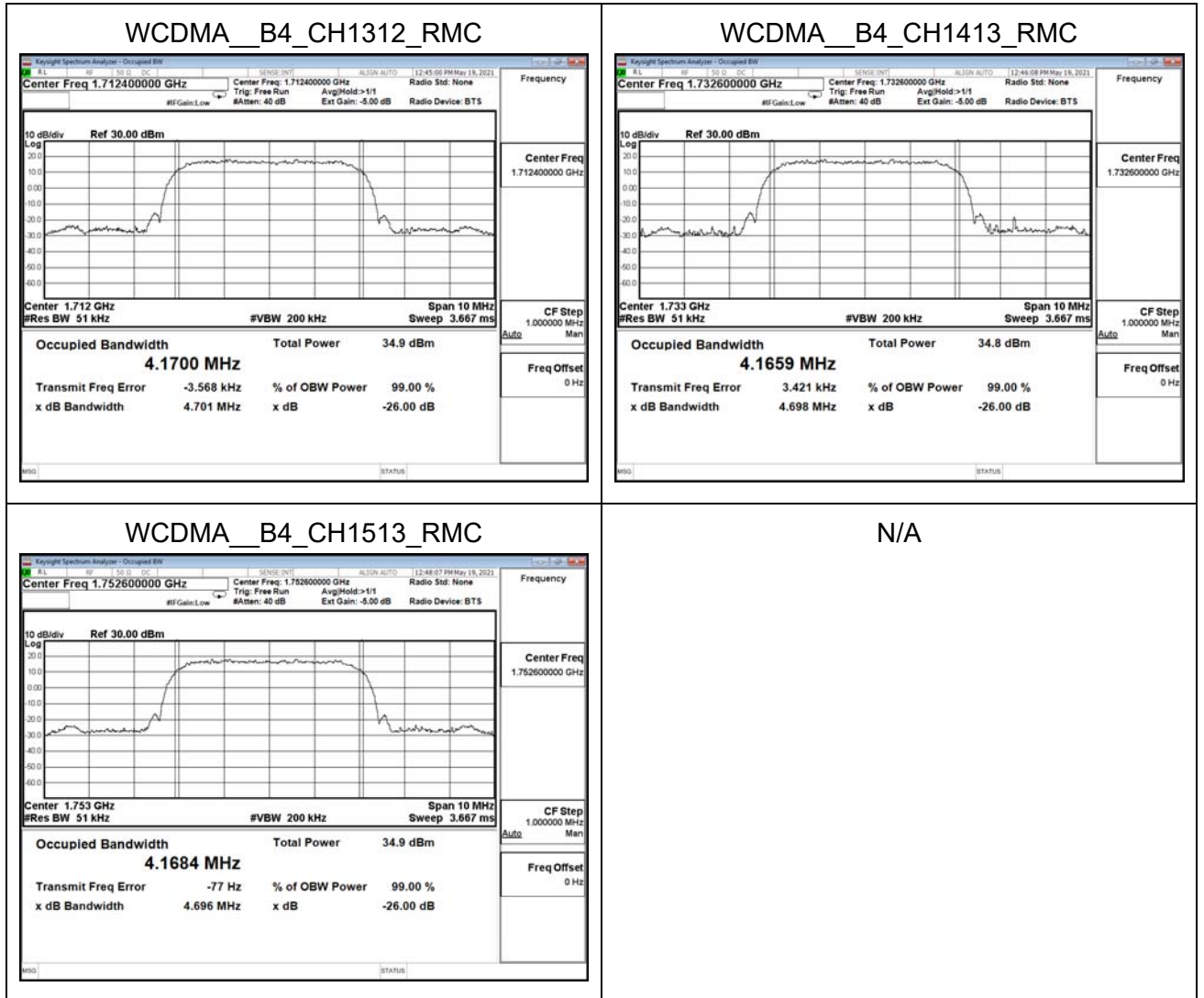
Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

Modulation	Channel Freq. (MHz)	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	9262	1852.4	4.718	4.1765	N/A
	9400	1880	4.721	4.1775	N/A
	9538	1907.6	4.718	4.1653	N/A



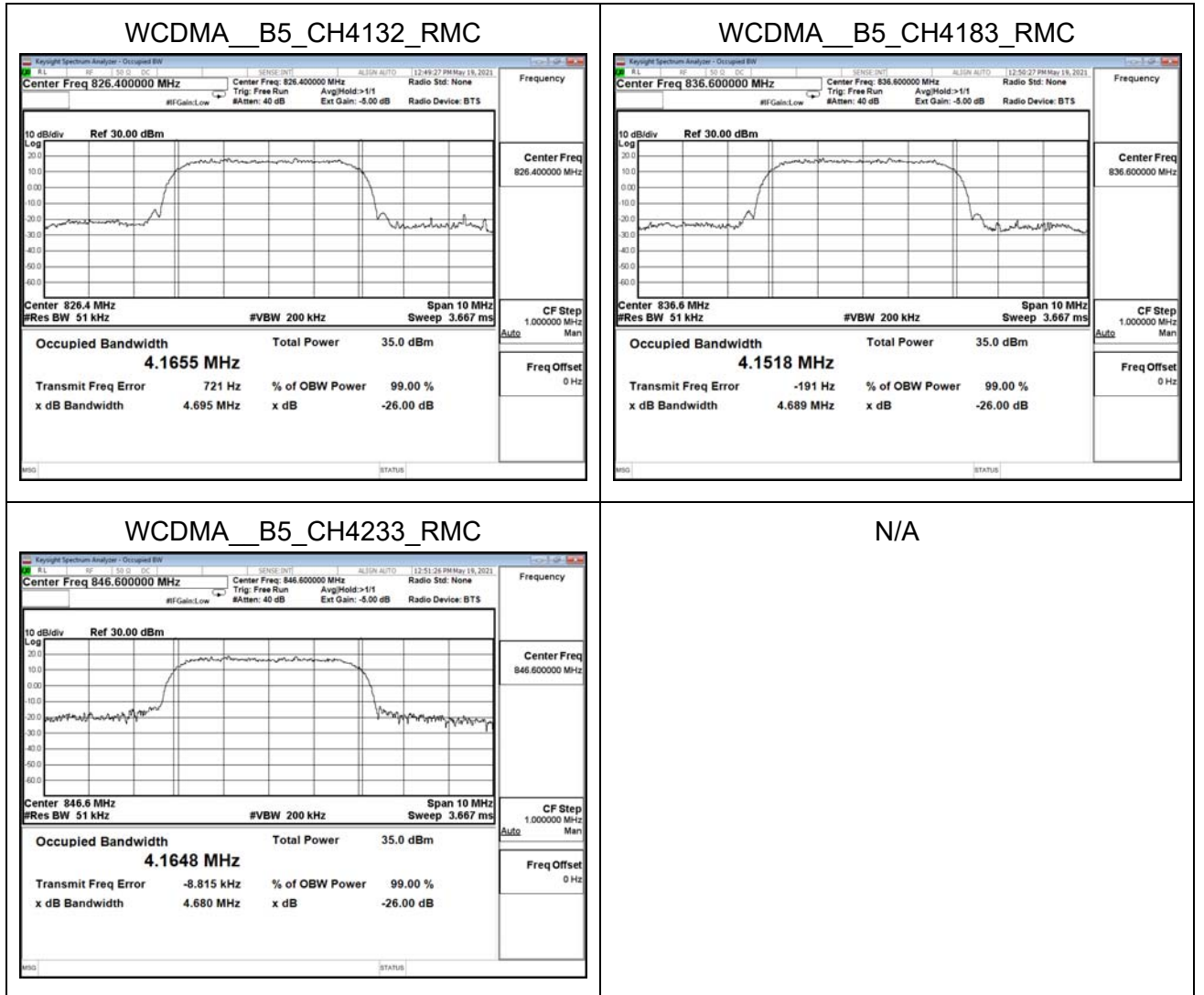
Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

Modulation	Channel Freq. (MHz)	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	1312	1712.4	4.701	4.1700	N/A
	1413	1732.6	4.698	4.1659	N/A
	1513	1752.6	4.696	4.1684	N/A



Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

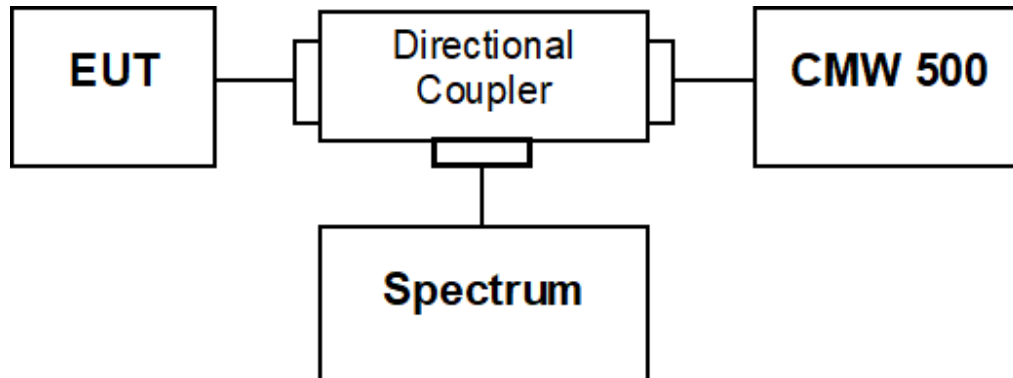
Modulation	Channel Freq. (MHz)	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
RMC	4132	826.4	4.695	4.1655	N/A
	4183	836.6	4.689	4.1518	N/A
	4233	846.6	4.680	4.1648	N/A





## 5. Peak To Average Ratio

### 5.1. Test Setup



### 5.2. Test Procedure

1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PAPR level associated with a probability of 0.1 %.

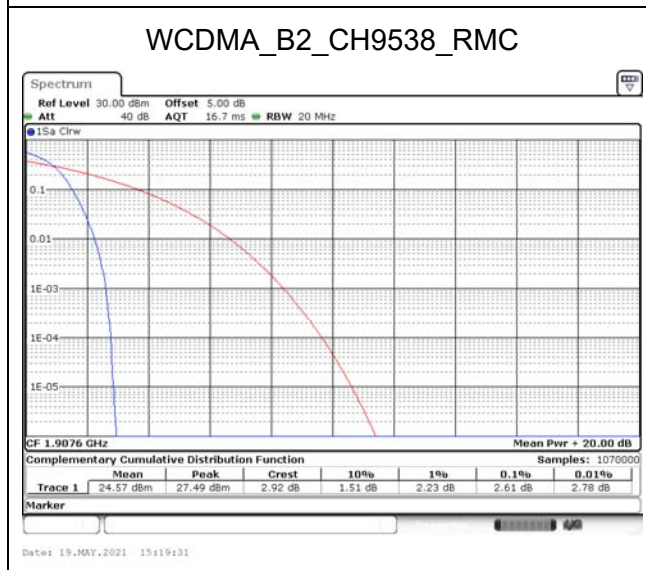
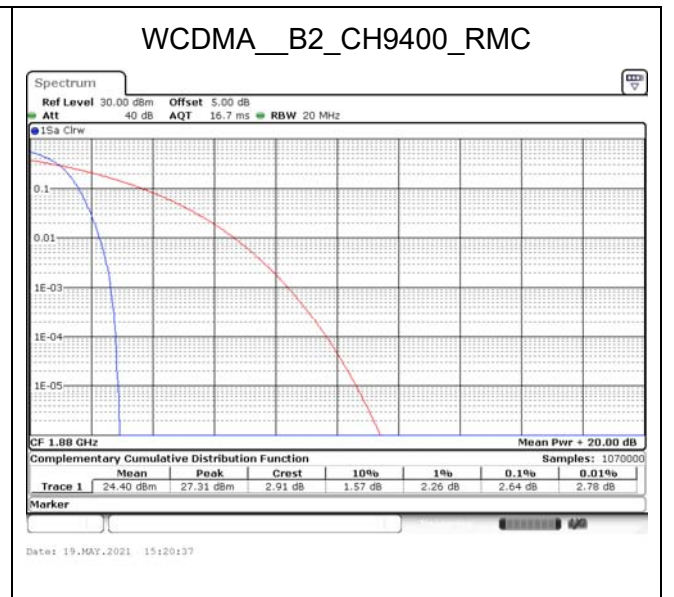
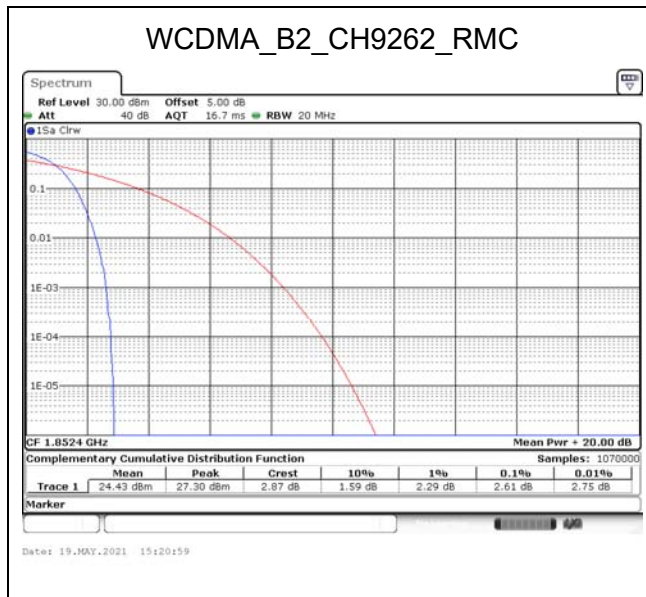
### 5.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.7.2  
ANSI C63.26-2015 Sub-clause 5.2.3.4

### 5.4. Test Result

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

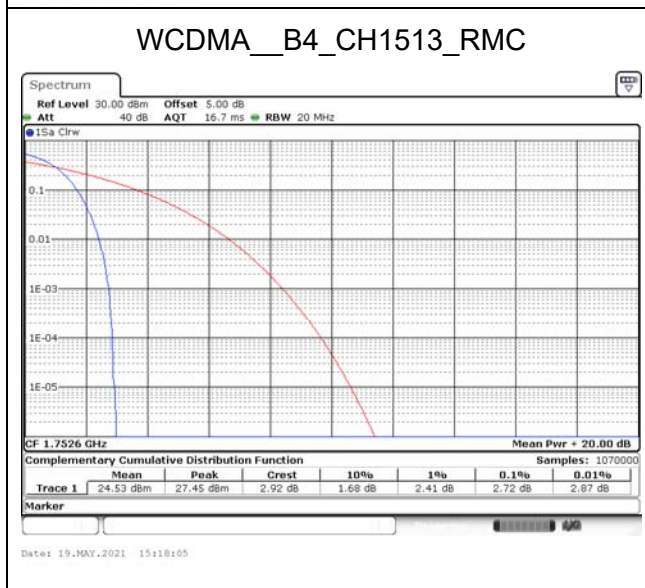
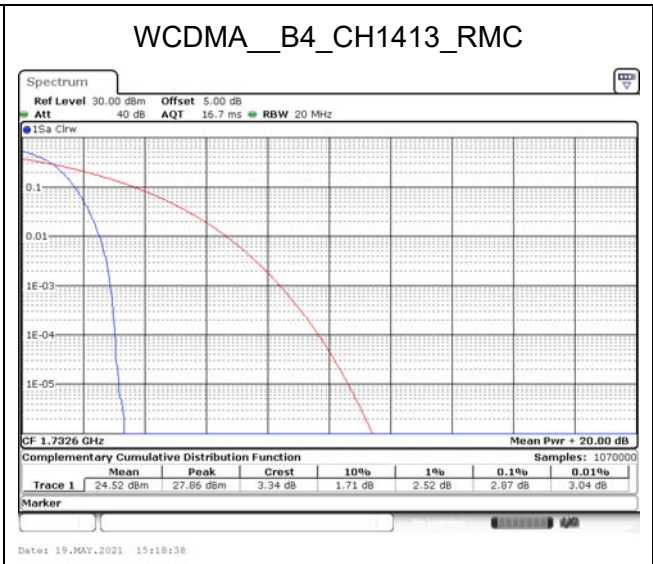
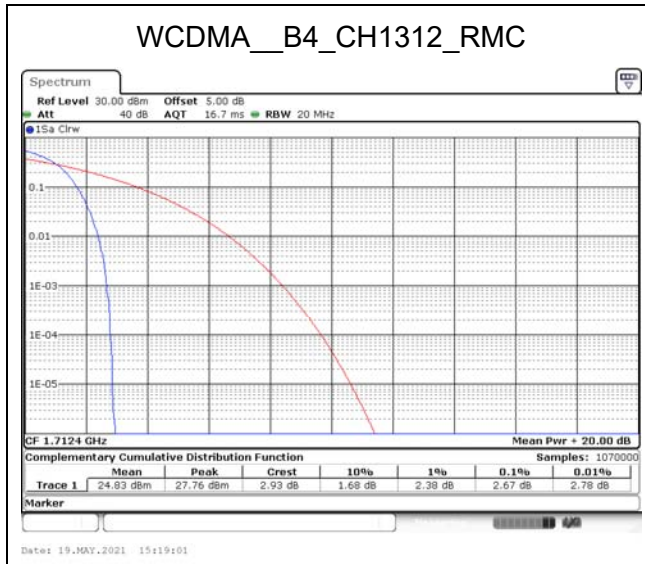
Ch	Freq. (MHz)	Modulation	Peak (dBm)	Average (dBm)	PAPR (dB)
9262	1852.4	RMC	27.30	24.43	2.61
9400	1880		27.31	24.40	2.64
9538	1907.6		27.49	24.57	2.61



N/A

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

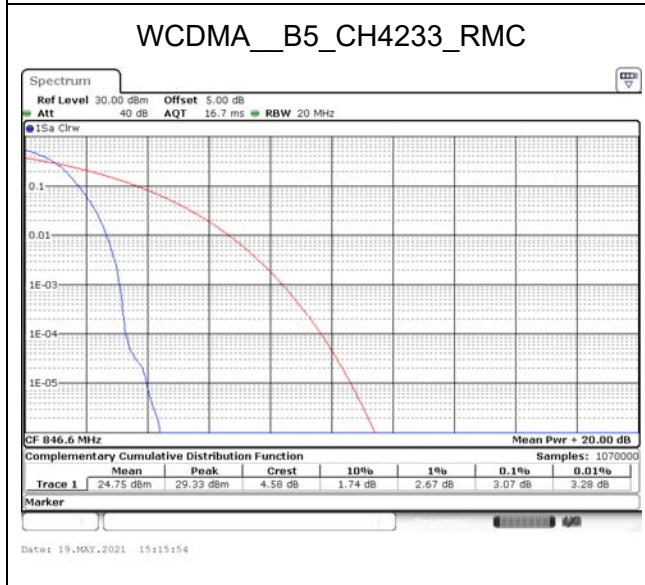
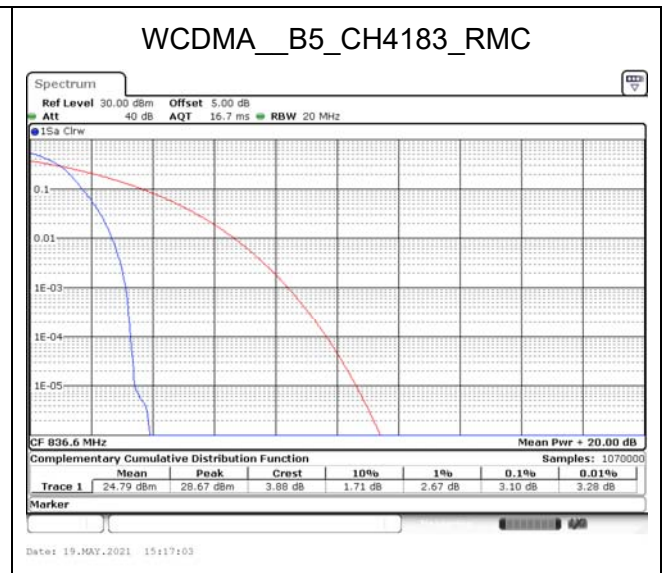
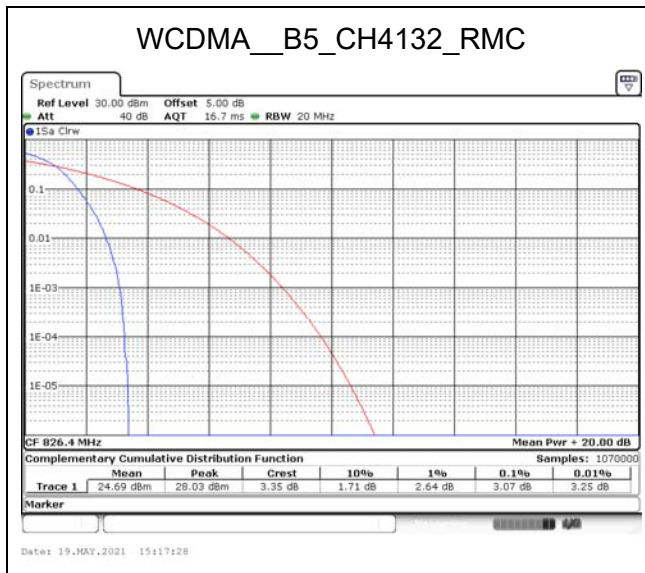
Ch	Freq. (MHz)	Modulation	Peak (dBm)	Average (dBm)	PAPR (dB)
1312	1712.4	RMC	27.76	24.83	2.67
1413	1732.6		27.86	24.52	2.87
1513	1752.6		27.45	24.53	2.72



N/A

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

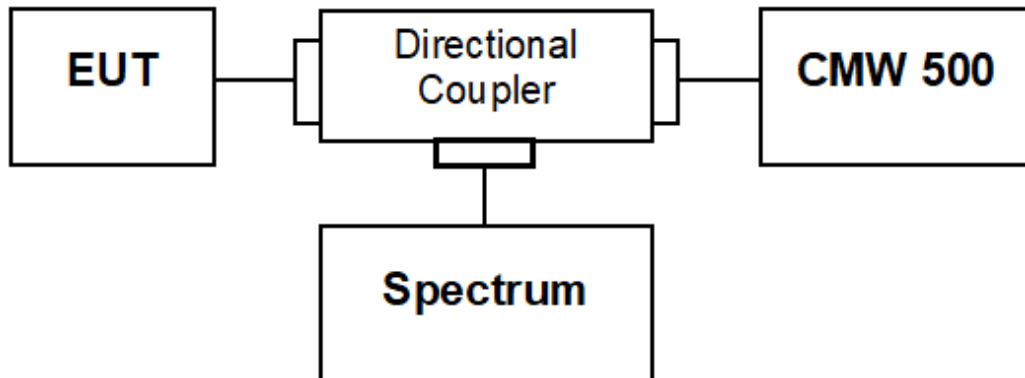
Ch	Freq. (MHz)	Modulation	Peak (dBm)	Average (dBm)	PAPR (dB)
4132	826.4	RMC	28.03	24.69	3.07
4183	836.6		28.67	24.79	3.10
4233	846.6		29.33	24.75	3.07



N/A

## 6. Conducted Band Edge

### 6.1. Test Setup



### 6.2. Test Procedure

1. The EUT was connected to spectrum analyzer and System Simulator via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The conducted spurious emission for the whole frequency range was taken.
4. In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

### 6.3. Test Method

#### **Conducted Spurious Measurement:**

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause6.1

ANSI C63.26: 2015 Sub-clause 5.7

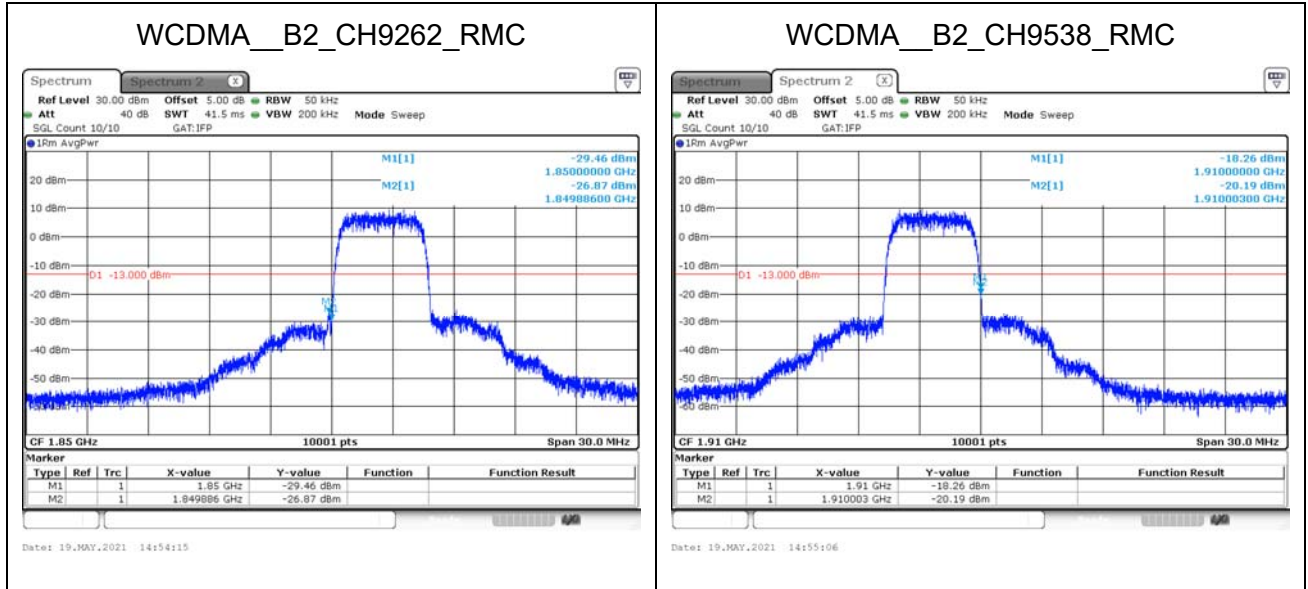
#### **Radiated Spurious Measurement:**

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.8

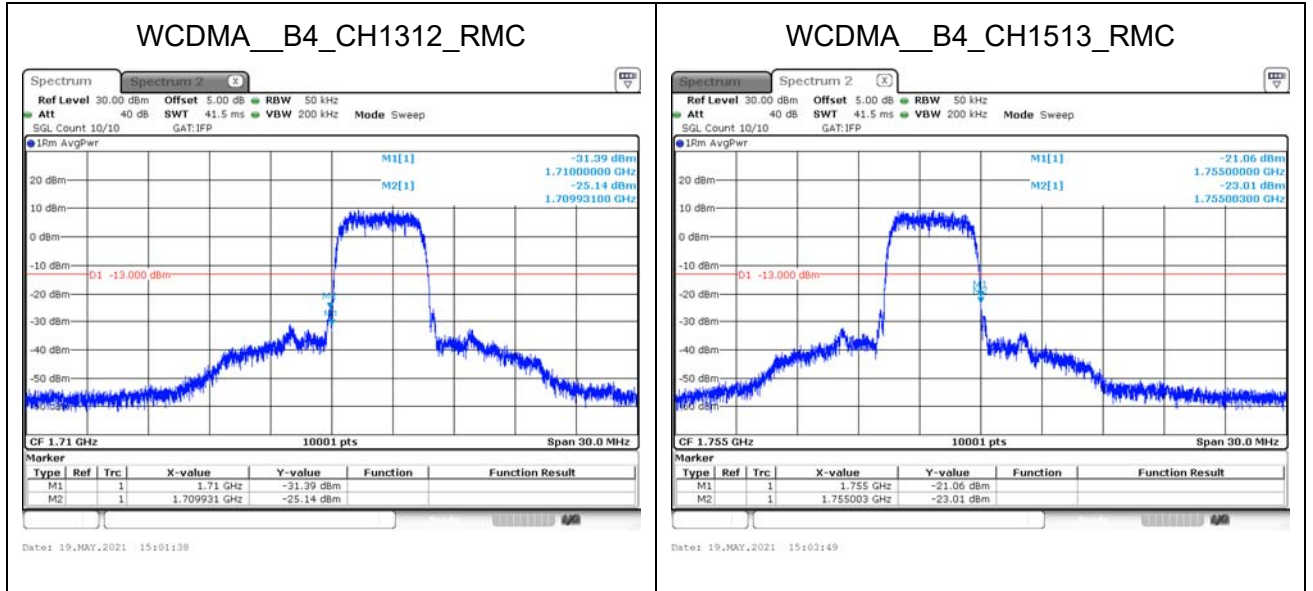
ANSI C63.26: 2015 Sub-clause 5.5.3.2

### 6.4. Test Result

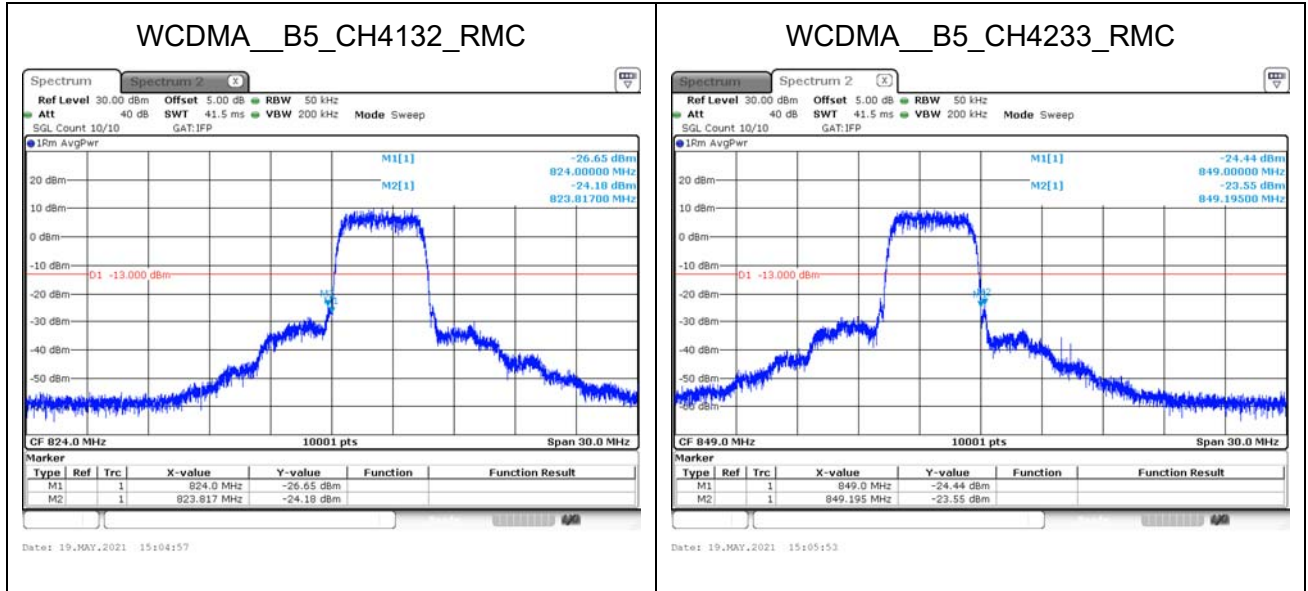
Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61



Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61



Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

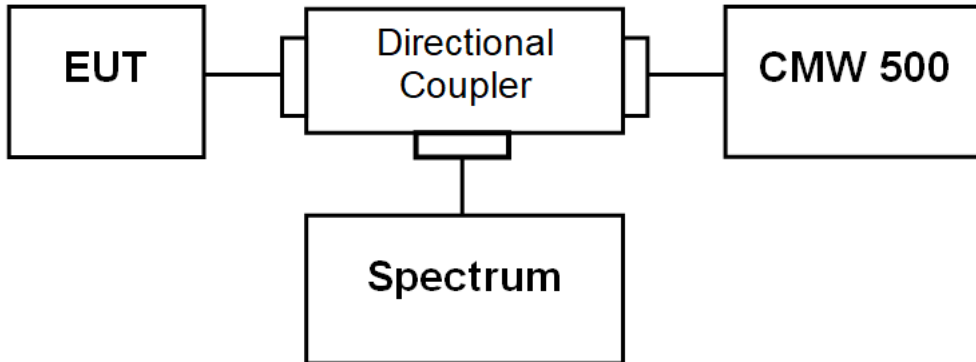




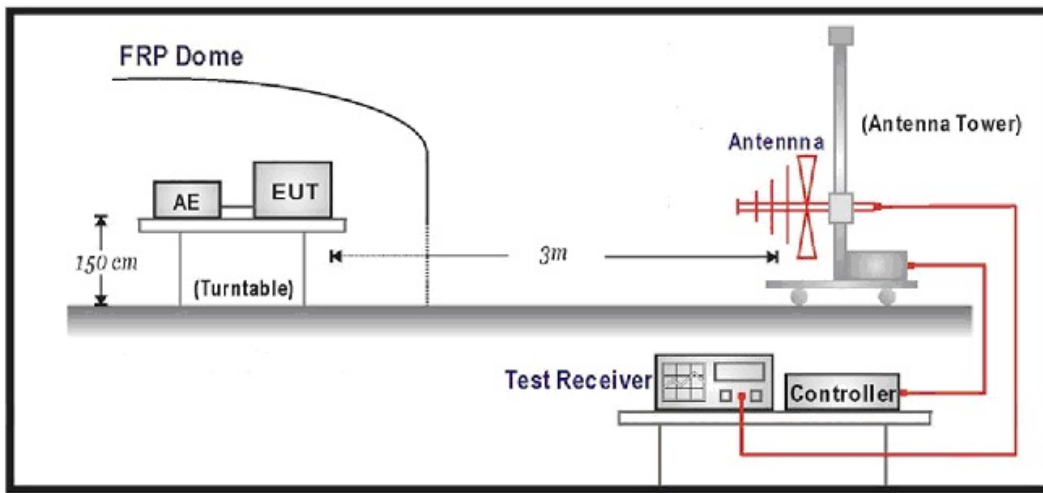
## 7. Spurious Emission

### 7.1. Test Setup

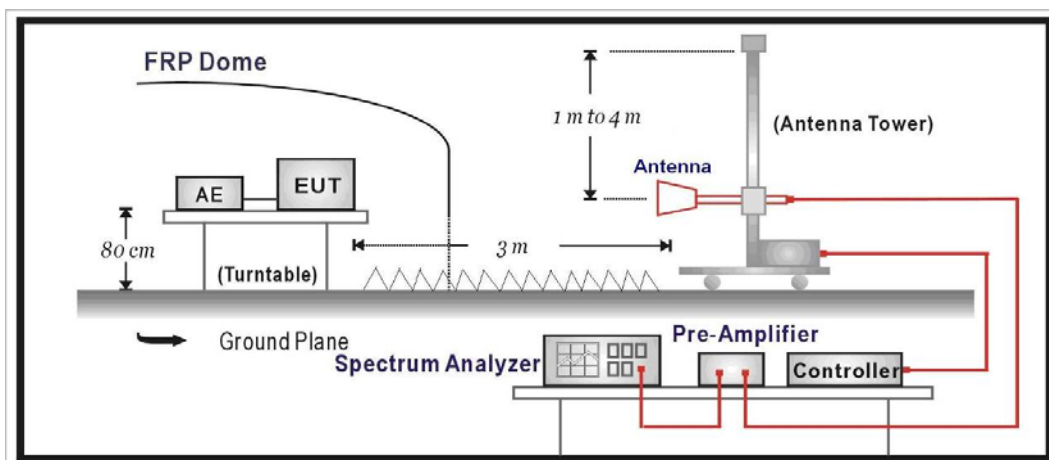
Conducted Spurious Measurement (below 1GHz)



Radiated Spurious Measurement (below 1GHz)



Radiated Spurious Measurement (above 1GHz)



## 7.2. Test Procedure

### Conducted Spurious Measurement:

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- c) EUT Communicate with CMU200, then select a channel for testing.
- d) Add a correction factor to the display of spectrum, and then test.
- e) The resolution bandwidth of the spectrum analyzer was set at 1 MHz, sufficient scans were taken to show the out of band Emission if any up to 10<sup>th</sup> harmonic.

### Radiated Spurious Measurement:

- a) The EUT was placed on a rotatable wooden table with 1.5 meter above ground.
- b) The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- c) The table was rotated 360 degrees to determine the position of the highest spurious emission.
- d) The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
- e) Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 1MHz, Sweep 500ms, Taking the record of maximum spurious emission.
- f) A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- g) Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- h) Taking the record of output power at antenna port
- i) Repeat step 7 to step 8 for another polarization.
- j)  $EIRP = SG - \text{Cable loss} + \text{Antenna Gain}$

## 7.3. Test Method

### Conducted Spurious Measurement:

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause6.1  
ANSI C63.26-2015 Sub-clause 5.7

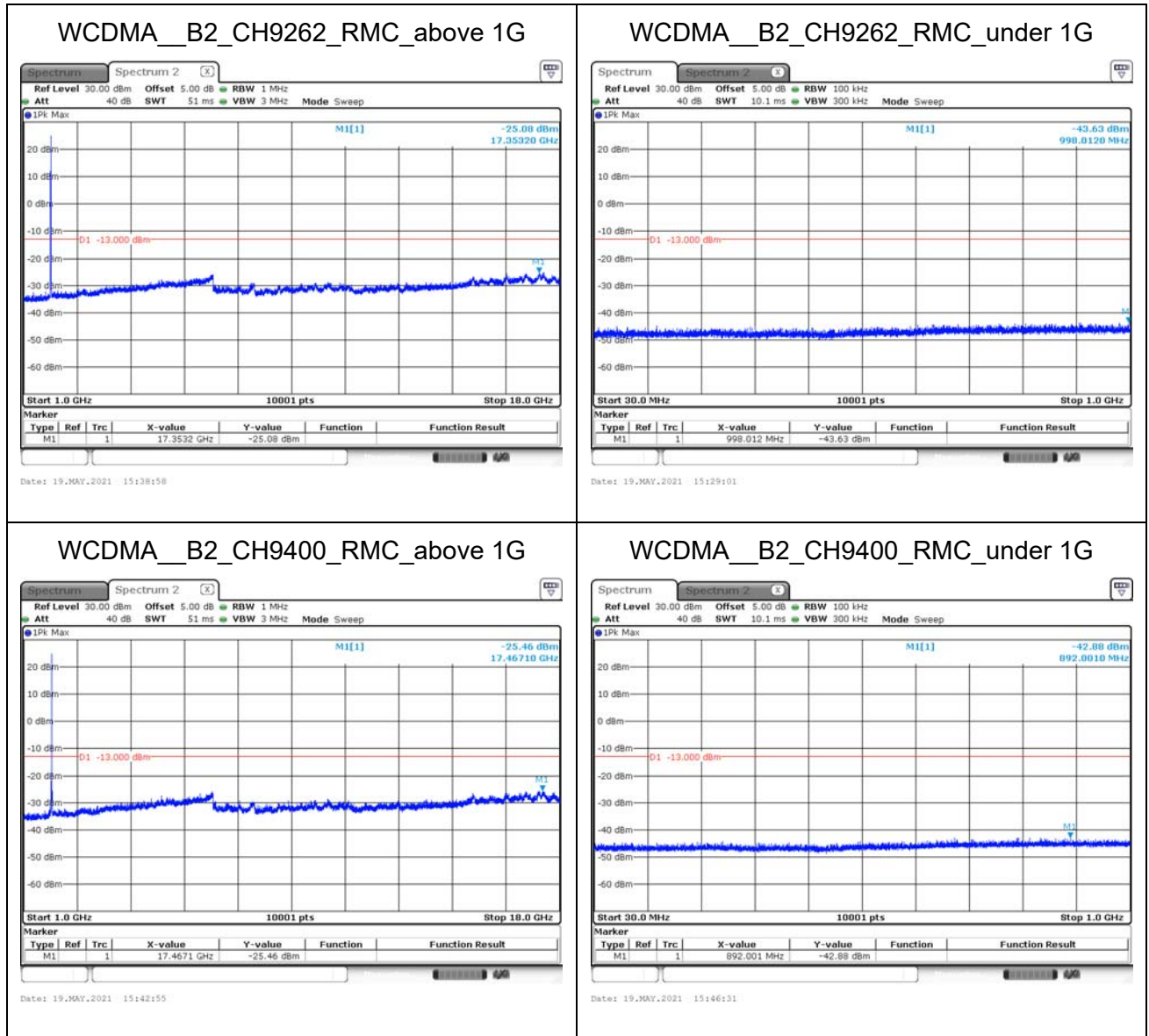
### Radiated Spurious Measurement:

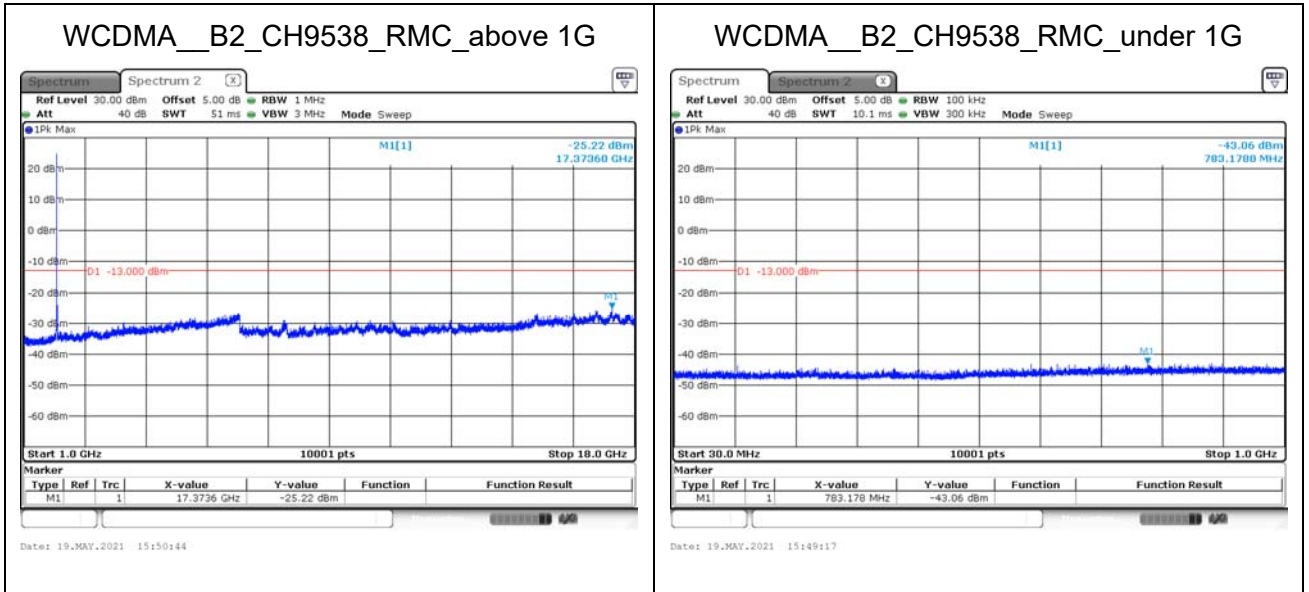
KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause5.8  
ANSI C63.26-2015 Sub-clause 5.5.3.2

### 7.4. Test Result

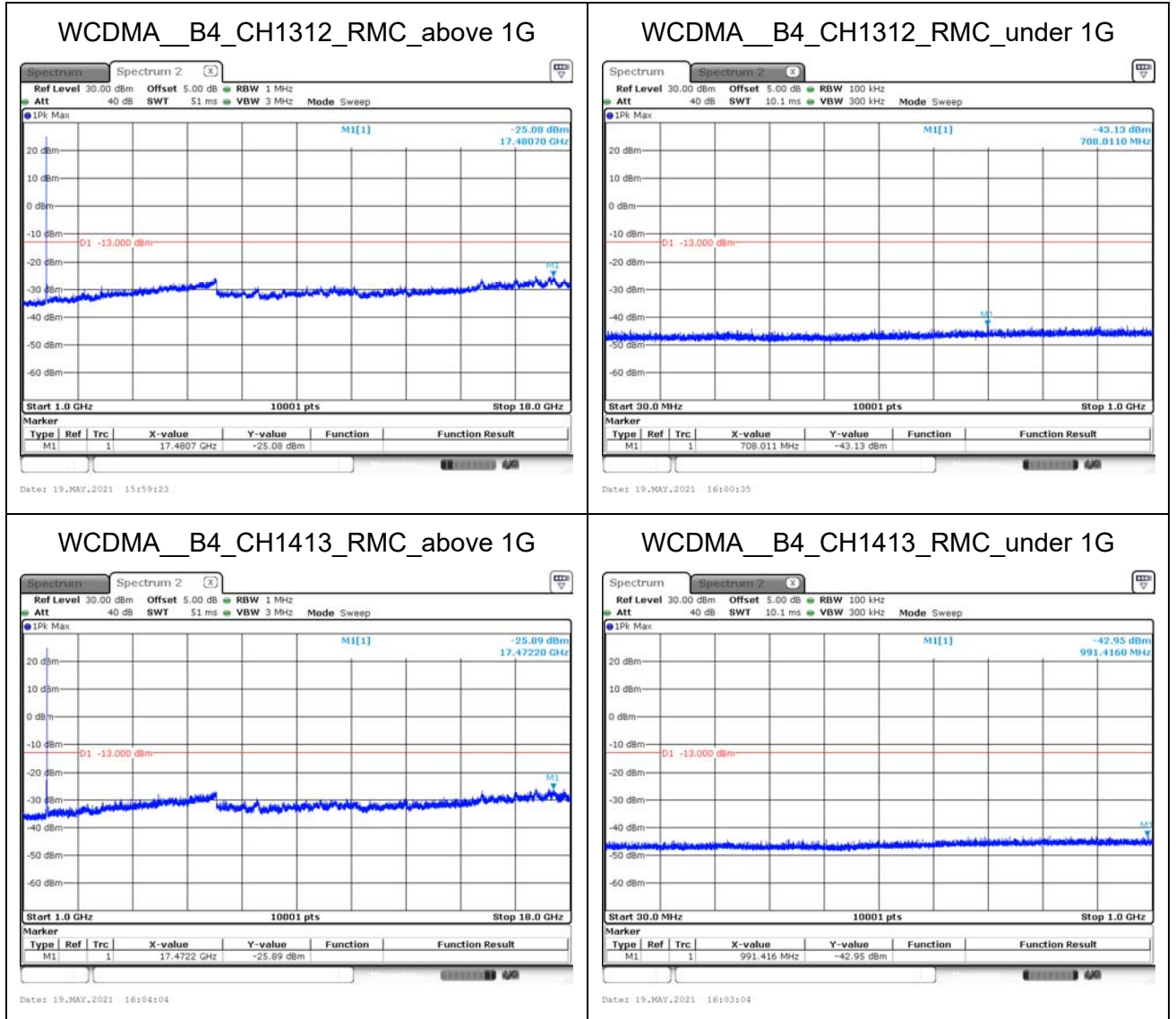
#### Conducted Spurious Emission

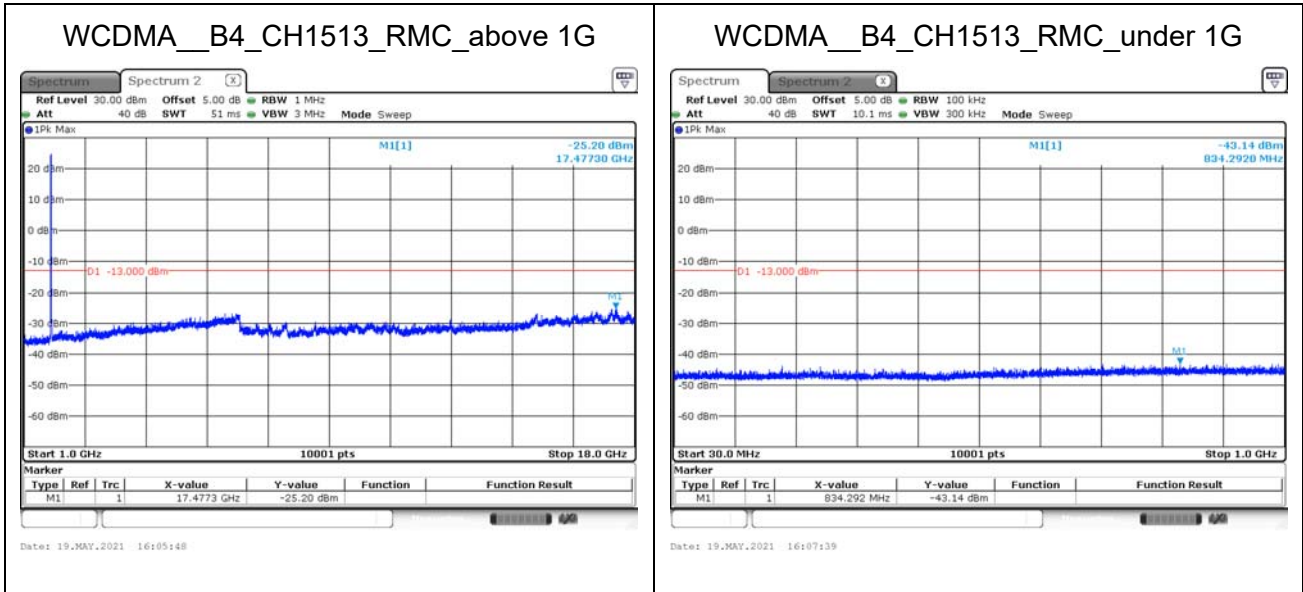
Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61



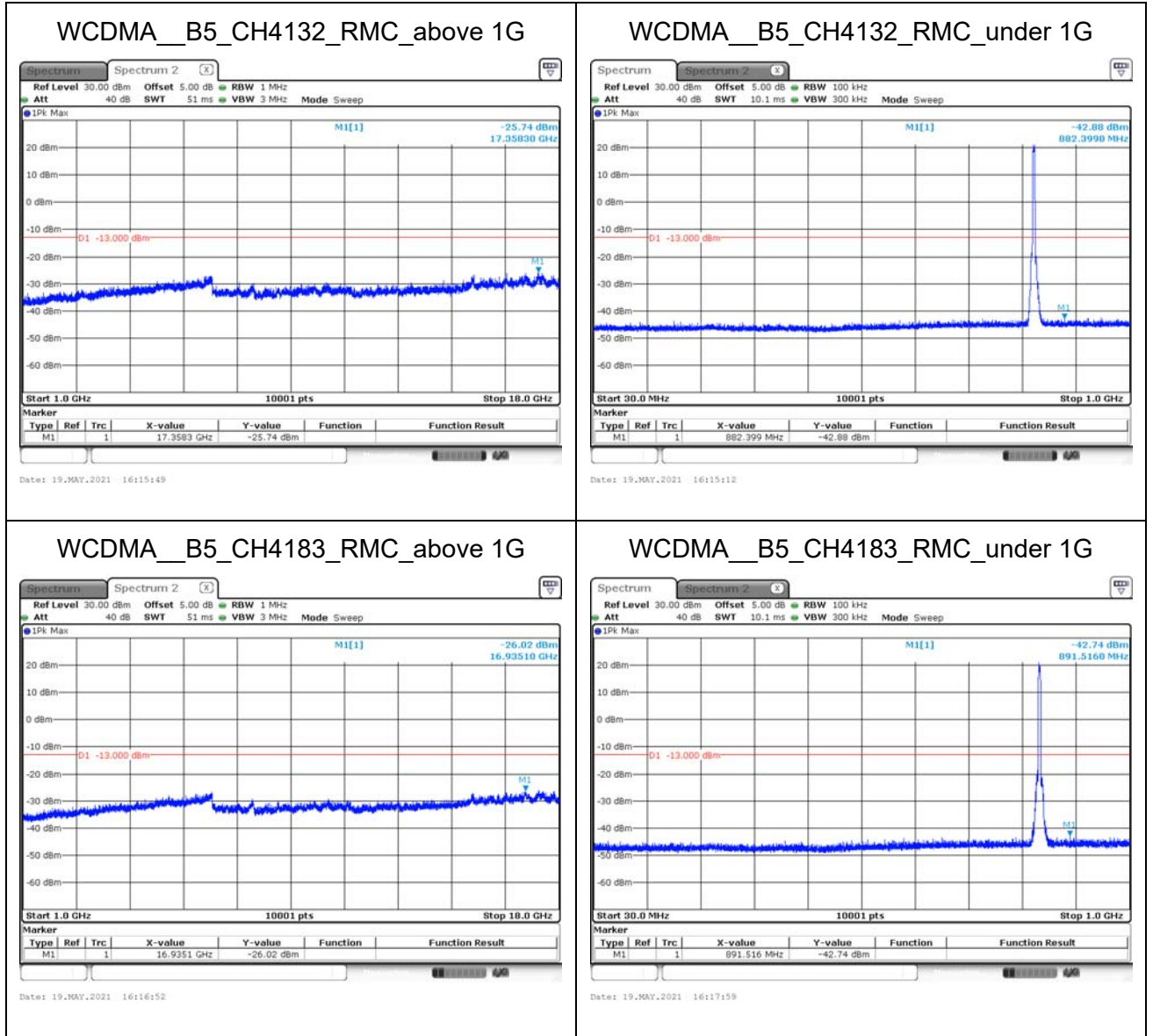


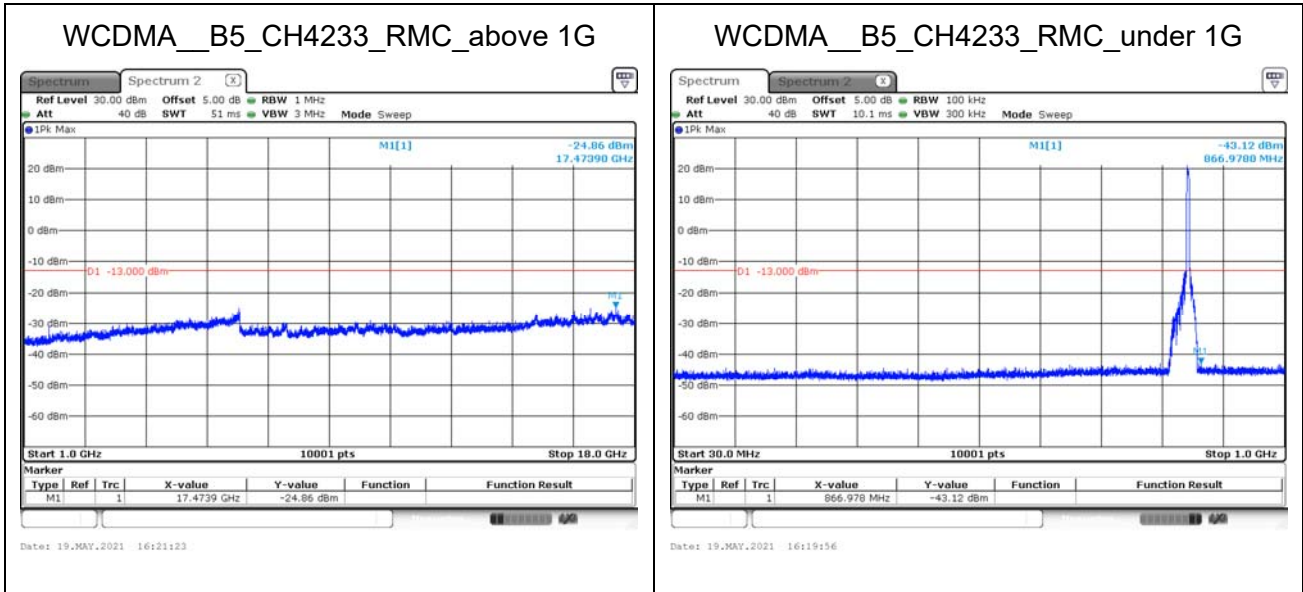
Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61





Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61







**Radiated Spurious Emission**

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2021/05/19	Test Site	CB2-H
Temperature(°C)	25.5	Humidity (%RH)	58

**Ch 9262\_Band2\_RMC**

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3704.800	-47.17	-13	-34.17	-55.26	12.61	4.51
	5557.200	-46.91	-13	-33.91	-54.36	13.12	5.67
	7409.600	-42.74	-13	-29.74	-47.45	11.31	6.60
V	3704.800	-49.08	-13	-36.08	-57.17	12.61	4.51
	5557.200	-46.67	-13	-33.67	-54.12	13.12	5.67
	7409.600	-42.77	-13	-29.77	-47.48	11.31	6.60

**Ch 9400\_Band2\_RMC**

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3760.000	-46.26	-13	-33.26	-54.33	12.60	4.54
	5640.000	-43.70	-13	-30.70	-51.10	13.10	5.70
	7520.000	-41.01	-13	-28.01	-45.63	11.24	6.61
V	3704.800	-48.24	-13	-35.24	-56.33	12.61	4.51
	5640.000	-44.63	-13	-31.63	-52.03	13.10	5.70
	7520.000	-41.46	-13	-28.46	-46.08	11.24	6.61

**Ch 9538\_Band2\_RMC**

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3815.200	-44.88	-13	-31.88	-52.92	12.60	4.57
	5722.800	-45.06	-13	-32.06	-52.41	13.08	5.73
	7630.400	-40.88	-13	-27.88	-45.52	11.24	6.60
V	3815.200	-47.92	-13	-34.92	-55.96	12.60	4.57
	5722.800	-45.11	-13	-32.11	-52.46	13.08	5.73
	7630.400	-42.01	-13	-29.01	-46.65	11.24	6.60

Note: Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2021/05/19	Test Site	CB2-H
Temperature(°C)	25.5	Humidity (%RH)	58

## Ch 1312\_Band4\_RMC

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3424.800	-34.37	-13	-21.37	-42.46	12.45	4.36
	5137.200	-47.78	-13	-34.78	-55.17	12.78	5.39
	6849.600	-38.12	-13	-25.12	-43.58	11.83	6.37
V	3424.800	-36.56	-13	-23.56	-44.65	12.45	4.36
	5137.200	-48.63	-13	-35.63	-56.02	12.78	5.39
	6849.600	-40.42	-13	-27.42	-45.88	11.83	6.37

## Ch 1413\_Band4\_RMC

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3465.200	-35.66	-13	-22.66	-43.81	12.53	4.38
	5197.800	-47.58	-13	-34.58	-54.99	12.84	5.43
	6930.400	-40.76	-13	-27.76	-46.03	11.73	6.46
V	3465.200	-41.22	-13	-28.22	-49.37	12.53	4.38
	5197.800	-47.61	-13	-34.61	-55.02	12.84	5.43
	6930.400	-40.11	-13	-27.11	-45.38	11.73	6.46

## Ch 1513\_Band4\_RMC

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	3505.200	-36.61	-13	-23.61	-44.81	12.61	4.41
	5257.800	-47.14	-13	-34.14	-54.57	12.90	5.48
	7010.400	-35.55	-13	-22.55	-40.65	11.64	6.54
V	3505.200	-41.26	-13	-28.26	-49.46	12.61	4.41
	5257.800	-47.23	-13	-34.23	-54.66	12.90	5.48
	7010.400	-37.66	-13	-24.66	-42.76	11.64	6.54

Note: Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2021/05/19	Test Site	CB2-H
Temperature(°C)	25.5	Humidity (%RH)	58

## Ch 4132\_Band5\_RMC

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	1653.100	-44.28	-13	-31.28	-50.59	9.30	2.99
	2479.800	-50.66	-13	-37.66	-57.56	10.59	3.69
	3306.500	-49.30	-13	-36.30	-57.22	12.19	4.27
V	1652.800	-40.72	-13	-27.72	-47.03	9.30	2.99
	2479.800	-50.73	-13	-37.73	-57.63	10.59	3.69
	3306.500	-48.25	-13	-35.25	-56.17	12.19	4.27

## Ch 4183\_Band5\_RMC

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	1673.000	-40.54	-13	-27.54	-46.89	9.36	3.01
	2509.800	-50.94	-13	-37.94	-57.85	10.62	3.71
	3346.400	-50.11	-13	-37.11	-58.09	12.28	4.30
V	1673.200	-38.62	-13	-25.62	-44.97	9.36	3.01
	2509.800	-50.33	-13	-37.33	-57.24	10.62	3.71
	3346.400	-49.61	-13	-36.61	-57.59	12.28	4.30

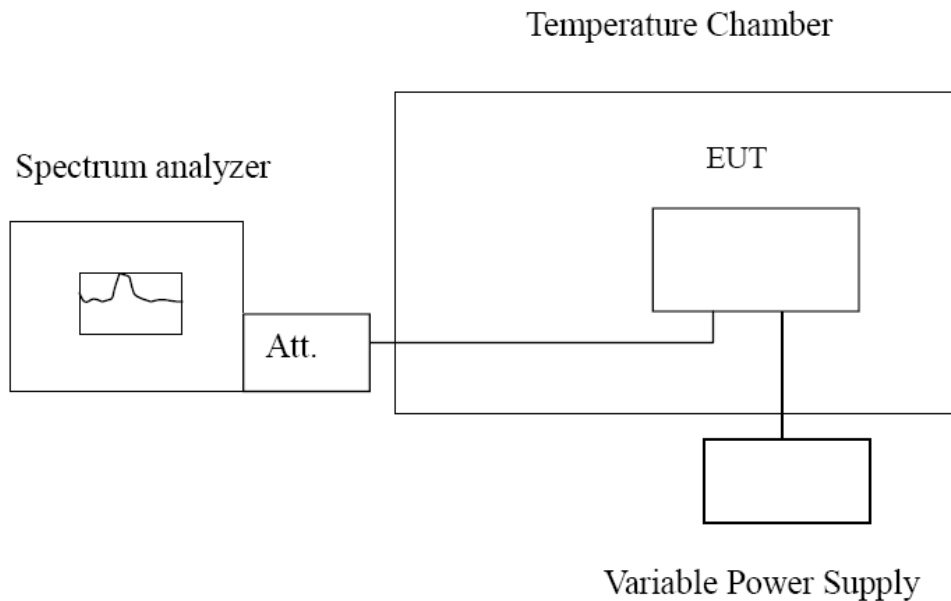
## Ch 4233\_Band5\_RMC

Antenna Polarity	Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	SG Level (dBm)	Antenna Gain (dBi)	Cable Loss (dB)
H	1693.200	-44.83	-13	-31.83	-51.22	9.42	3.03
	2539.800	-49.16	-13	-36.16	-56.10	10.67	3.73
	3386.400	-50.63	-13	-37.63	-58.67	12.36	4.33
V	1693.200	-43.27	-13	-30.27	-49.66	9.42	3.03
	2539.800	-50.73	-13	-37.73	-57.67	10.67	3.73
	3386.400	-49.66	-13	-36.66	-57.70	12.36	4.33

Note: Emission Level=SG(Signal Generator) Level+Antenna Gain-Cable Loss.

## 8. Frequency Stability

### 8.1. Test Setup



### 8.2. Test Procedure

#### Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

#### Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

### 8.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 9

ANSI C63.26-2015 Sub-clause 5.6

#### 8.4. Test Result

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 1: WCDMA Band 2		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature (°C)	26	Humidity (%RH)	61

WCDMA-Band 2 1852.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
5.5	2.74	0.0015
5	3.12	0.0017
4.25	3.09	0.0017

Temperature

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)
-30	3.32	0.0018
-20	2.78	0.0015
-10	3.05	0.0016
0	2.44	0.0013
10	2.08	0.0011
20	1.60	0.0009
30	2.13	0.0011
40	1.89	0.0010
50	2.57	0.0014

## WCDMA-Band 2 1907.6MHz

## Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
5.5	2.77	0.0015
5	2.99	0.0016
4.25	2.63	0.0014

## Temperature

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.21	0.0012
-20	2.51	0.0014
-10	3.09	0.0017
0	1.99	0.0011
10	2.20	0.0012
20	3.41	0.0018
30	1.54	0.0008
40	3.10	0.0017
50	1.59	0.0009

Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 2: WCDMA Band 4		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

## WCDMA-Band 4 1712.4MHz

## Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
5.5	1.55	0.0009
5	2.84	0.0017
4.25	3.19	0.0019

## Temperature

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.65	0.0015
-20	1.75	0.0010
-10	2.68	0.0016
0	3.08	0.0018
10	1.44	0.0008
20	1.82	0.0011
30	1.45	0.0008
40	2.36	0.0014
50	2.33	0.0014

## WCDMA-Band 4 1752.6MHz

## Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
5.5	2.78	0.0016
5	3.22	0.0019
4.25	1.51	0.0009

## Temperature

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)
-30	2.78	0.0016
-20	1.83	0.0011
-10	2.89	0.0017
0	2.32	0.0014
10	3.89	0.0023
20	2.88	0.0017
30	2.65	0.0015
40	2.67	0.0016
50	3.20	0.0019



Product Name	WCDMA/LTE Mobile Phone		
Test Mode	Mode 3: WCDMA Band 5		
Date of Test	2021/05/19	Test Site	SR10-H
Temperature(°C)	26	Humidity (%RH)	61

WCDMA-Band 5 826.4MHz

Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
5.5	2.94	0.0036
5	3.33	0.0040
4.25	3.03	0.0037

Temperature

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)
-30	1.54	0.0019
-20	3.23	0.0039
-10	4.00	0.0048
0	3.05	0.0037
10	3.11	0.0038
20	2.17	0.0026
30	2.64	0.0032
40	4.10	0.0050
50	2.66	0.0032

## WCDMA-Band 5 846.6 MHz

## Voltage

Voltage (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
5.5	1.44	0.0017
5	2.46	0.0030
4.25	1.55	0.0019

## Temperature

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)
-30	1.78	0.0022
-20	1.15	0.0014
-10	1.44	0.0017
0	2.47	0.0030
10	2.23	0.0027
20	1.35	0.0016
30	1.67	0.0020
40	1.84	0.0022
50	1.37	0.0017