

FCC RADIO TEST REPORT

FCC ID: 2A12O-OC32

Product : Sharing bike smart lock

Trade Name : Omni

Model Name : OC32

Additional Model : N/A

Report No. : UNIA21032411ER-11

Prepared for

Shenzhen Omni Intelligent Technology Co., Ltd.

11th Floor Block 31, Lianchuang Technical Zone, Bulan Road, Longgang
District, Shenzhen, P.R. China

Prepared by

Shenzhen United Testing Technology Co., Ltd.

2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang
Community, Xixiang Str, Bao'an District, Shenzhen, China

TEST RESULT CERTIFICATION

Applicant.....: Shenzhen Omni Intelligent Technology Co., Ltd.
Address.....: 11th Floor Block 31, Lianchuang Technical Zone, Bulan Road, Longgang District, Shenzhen, P.R. China
Manufacturer.....: Shenzhen Omni Intelligent Technology Co., Ltd.
Address.....: 11th Floor Block 31, Lianchuang Technical Zone, Bulan Road, Longgang District, Shenzhen, P.R. China

Product description

Product name.....: Sharing bike smart lock
Trade Mark.....: Omni
Model and/or type reference : OC32

FCC CFR Title 47 Part 2

Test Methods.....: FCC CFR Title 47 Part 22 Subpart H
FCC CFR Title 47 Part 24 Subpart E

This device described above has been tested by Shenzhen United Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of UNI, this document may be altered or revised by Shenzhen United Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document.

Date of Test.....:

Date (s) of performance of tests.....: Mar. 21, 2021 ~ Jul. 11, 2021

Date of Issue.....: Aug. 24, 2021

Test Result.....: Pass

Prepared by:

Bob Liao

Bob liao/Editor

Reviewer:

Kahn Yang

Kahn yang/Supervisor

Approved & Authorized Signer:

Liuze

Liuze/Manager

Table of Contents

Page

1 . TEST SUMMARY	4
2 . GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 Carrier Frequency of Channels	7
2.3 Test environment and mode	7
2.4 DESCRIPTION OF TEST SETUP	8
2.5 MEASUREMENT INSTRUMENTS LIST	9
3 . Conducted Output Power, ERP and EIRP	10
3.1 Test Result	11
4 Peak-to-Average Power Ratio	14
4.1 Test Result	15
5 Occupy Bandwidth	16
5.1 Test Result	17
6 Modulation Characteristic	19
7 Out of band emission at antenna terminals	20
7.1 Test Result	21
8 Field strength of spurious radiation measurement	24
8.1 Test Result	25
9 Frequency stability V.S. Temperature measurement	27
9.1 Test Result	28
10 Frequency stability V.S. Voltage measurement	30
10.1 Test Result	30
11 PHOTO OF TEST	31
11.1 RADIATED EMISSION	31

1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	STANDARD	RESULT
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(5) Part 24.232 (c)	COMPLIANT
Peak-to-Average Power Ratio	Part 24.232 (d)	COMPLIANT
Modulation Characteristics	Part 2.1047	COMPLIANT
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b)	COMPLIANT
Out of band emission at antenna terminals	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	COMPLIANT
Field strength of spurious radiation	Part 22.917 (a) Part 24.238 (a)	COMPLIANT
Frequency stability vs. temperature	Part 22.355 Part 24.235 Part 2.1055(a)(1)(b)	COMPLIANT
Frequency stability vs. voltage	Part 22.355 Part 24.235 Part 2.1055(d)(2)	COMPLIANT

1.2 TEST FACILITY

Test Firm : Shenzhen United Testing Technology Co., Ltd.

Address : 2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19. The testing quality system of our laboratory meets with ISO/IEC-17025 requirements. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

A2LA Certificate Number: 4747.01

The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 674885

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 21947

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty(9kHz-30MHz) = 3.08dB, k=2

Radiated emission expanded uncertainty(30MHz-1000MHz) = 4.42dB, k=2

Radiated emission expanded uncertainty(Above 1GHz) = 4.06dB, k=2

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Sharing bike smart lock
Trade Mark	Omni
Model Name	OC32
Additional Model	N/A
Model Difference	N/A
FCC ID	2AI2O-OC32
Antenna Type	FPCB Antenna
Antenna Gain	WCDMA Band V: -0.70dBi; WCDMA Band II:1.5dBi
Frequency Range	WCDMA Band V: 826.4MHz-846.6MHz WCDMA Band II: 1852.4MHz-1907.6MHz
Modulation Type	3G: ☐ RMC(QPSK) ☒ HSUPA(QPSK) ☒ HSDPA(QPSK,16QAM)
Battery	DC 3.7V, 8000mAh
Power Source	DC 3.7V from battery or DC 6.0V from adapter with AC 120(240)V/60Hz
Adapter	N/A

2.2 Carrier Frequency of Channels

Description of Channel:			
WCDMA Band V		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
4132	826.40	9262	1852.40
4133	826.60	9263	1852.60
....			
4182	836.40	9399	1879.80
4183	836.60	9400	1880.00
4184	836.80	9401	1880.20
....			
4232	846.40	9537	1907.40
4233	846.60	9538	1907.60

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

WCDMA Band V			WCDMA Band II		
Channel	Frequency (MHz)		Channel	Frequency (MHz)	
Lowest	4132	826.40	Lowest	9262	1852.40
Middle	4183	836.60	Middle	9400	1880.00
Highest	4233	846.60	Highest	9538	1907.60

2.3 Test environment and mode

Operating Environment:	
Temperature:	Normal: 15°C ~ 35°C , Extreme: -30°C ~ +50°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 3.7Vdc, Extreme: Low 3.25 Vdc, High 4.25 Vdc
Test mode:	
GPRS mode	Keep the EUT communication with simulated station in GPRS mode
HSDPA	Keep the EUT communication with simulated station in HSDPA mode
Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report.	

2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during Conducted testing:

N/A

Operation of EUT during Radiation and Above1GHz Radiation testing:



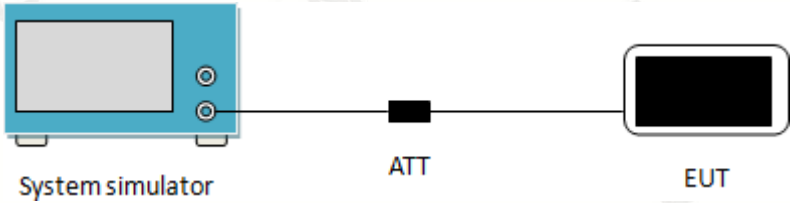
Table for auxiliary equipment:

Equipment Description	Manufacturer	Model	Calibration Due Date
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Conduction Emissions Measurement					
1	Conducted Emission Test Software	EZ-EMC	Ver.CCS-3A1-CE	N/A	N/A
2	AMN	Schwarzbeck	NNLK8121	8121370	2021.10.12
3	AAN	TESEQ	T8-Cat6	38888	2021.10.12
4	Pulse Limiter	CYBRTEK	EM5010	E115010056	2022.05.17
5	EMI Test Receiver	Rohde&Schwarz	ESCI	101210	2021.10.12
Radiated Emissions Measurement					
1	Radiated Emission Test Software	EZ-EMC	Ver.CCS-03A1	N/A	N/A
2	Horn Antenna	Sunol	DRH-118	A101415	2021.10.18
3	Broadband Hybrid Antenna	Sunol	JB1	A090215	2022.03.01
4	PREAMP	HP	8449B	3008A00160	2021.10.18
5	PREAMP	HP	8447D	2944A07999	2022.05.17
6	EMI TEST RECEIVER	Rohde&Schwarz	ESR3	101891	2021.10.12
7	VECTOR Signal Generator	Rohde&Schwarz	SMU200A	101521	2021.10.12
8	Signal Generator	Agilent	E4421B	MY4335105	2021.11.11
9	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2021.10.12
10	MXA Signal Analyzer	Keysight	N9020A	MY51110104	2021.10.12
11	RF Power sensor	DARE	RPR3006W	15I00041SNO88	2022.05.17
12	RF Power sensor	DARE	RPR3006W	15I00041SNO89	2022.05.17
13	RF power divider	Anritsu	K241B	992289	2021.10.12
14	Wideband radio communication tester	Rohde&Schwarz	CMW500	154987	2021.10.12
15	Active Loop Antenna	Com-Power	AL-130R	10160009	2022.05.17
16	Broadband Hybrid Antennas	Schwarzbeck	VULB9163	VULB9163#958	2022.05.17
17	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2022.05.17
18	Horn Antenna	A-INFOMW	LB-180400-KF	J211060660	2021.11.04
19	Microwave Broadband Preamplifier	Schwarzbeck	BBV 9721	100472	2022.05.17
20	Signal Generator	Agilent	N5183A	MY47420153	2022.05.17
21	Spectrum Analyzer	Rohde&Schwarz	FSP 40	100501	2022.05.17
22	Power Meter	KEYSIGHT	N1911A	MY50520168	2022.05.17
23	Frequency Meter	VICTOR	VC2000	997406086	2022.05.17
24	DC Power Source	HYELEC	HY5020E	055161818	2022.05.17

3. Conducted Output Power, ERP and EIRP

Test Requirement:	FCC part 22.913(a)(5), FCC part 24.232(c)
Limit:	WCDMA Band V: 7W, WCDMA Band II: 2W
Test setup:	 The diagram illustrates the test setup. On the left is a blue 'System simulator' with a screen and two ports. A line connects it to a black 'ATT' (attenuator) block. Another line connects the 'ATT' to a black 'EUT' (Equipment Under Test) on the right.
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the simulated station. Transmitter output power was read off in dBm.
Test Instruments:	Refer to section 2.5 for details
Test mode:	Refer to section 2.3 for details
Test results:	Passed

3.1 Test Result

Band	Type	Channel	Slot	Average Power (dBm)	Antenna Gain (dBi)	ERP(dBm)	ERP/EIRP Limit (dBm)
Band2	HSDPA	9262	1	19.98	1.50	21.48	33.00
Band2	HSDPA	9262	2	19.83	1.50	21.33	33.00
Band2	HSDPA	9262	3	18.72	1.50	20.22	33.00
Band2	HSDPA	9262	4	19.29	1.50	20.79	33.00
Band2	HSDPA	9400	1	19.57	1.50	21.07	33.00
Band2	HSDPA	9400	2	19.11	1.50	20.61	33.00
Band2	HSDPA	9400	3	18.01	1.50	19.51	33.00
Band2	HSDPA	9400	4	18.39	1.50	19.89	33.00
Band2	HSDPA	9538	1	20.48	1.50	21.98	33.00
Band2	HSDPA	9538	2	19.88	1.50	21.38	33.00
Band2	HSDPA	9538	3	19.26	1.50	20.76	33.00
Band2	HSDPA	9538	4	19.45	1.50	20.95	33.00
Band5	HSDPA	4132	1	20.40	-0.70	17.55	38.45
Band5	HSDPA	4132	2	19.14	-0.70	16.29	38.45
Band5	HSDPA	4132	3	20.11	-0.70	17.26	38.45
Band5	HSDPA	4132	4	20.38	-0.70	17.53	38.45
Band5	HSDPA	4183	1	20.83	-0.70	17.98	38.45
Band5	HSDPA	4183	2	20.63	-0.70	17.78	38.45
Band5	HSDPA	4183	3	20.68	-0.70	17.83	38.45
Band5	HSDPA	4183	4	20.63	-0.70	17.78	38.45
Band5	HSDPA	4233	1	20.54	-0.70	17.69	38.45
Band5	HSDPA	4233	2	19.91	-0.70	17.06	38.45
Band5	HSDPA	4233	3	20.25	-0.70	17.4	38.45
Band5	HSDPA	4233	4	20.18	-0.70	17.33	38.45
Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). (For WCDMA Band 2) ERP (dBm) = EIRP (dBm) - 2.15 (dB). (For WCDMA Band 5)							

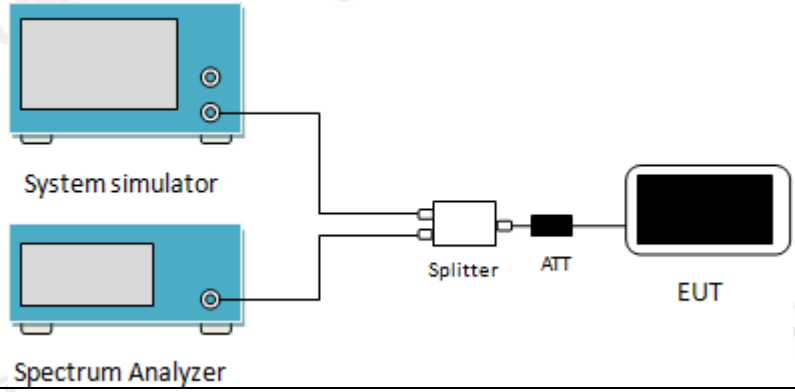
Band	Type	Channel	Slot	Average Power (dBm)	Antenna Gain (dBi)	ERP(dBm)	ERP/EIRP Limit (dBm)
Band2	HSUPA	9262	1	16.36	1.50	21.48	33.00
Band2	HSUPA	9262	2	16.83	1.50	21.33	33.00
Band2	HSUPA	9262	3	16.34	1.50	20.22	33.00
Band2	HSUPA	9262	4	16.67	1.50	20.79	33.00
Band2	HSUPA	9400	1	18.76	1.50	21.07	33.00
Band2	HSUPA	9400	2	15.29	1.50	20.61	33.00
Band2	HSUPA	9400	3	15.75	1.50	19.51	33.00
Band2	HSUPA	9400	4	15.24	1.50	19.89	33.00
Band2	HSUPA	9538	1	15.58	1.50	21.98	33.00
Band2	HSUPA	9538	2	17.74	1.50	21.38	33.00
Band2	HSUPA	9538	3	15.85	1.50	20.76	33.00
Band2	HSUPA	9538	4	16.30	1.50	20.95	33.00
Band2	HSUPA	9262	1	16.36	1.50	17.86	33.00
Band2	HSUPA	9262	2	16.83	1.50	18.33	33.00
Band2	HSUPA	9262	3	16.34	1.50	17.84	33.00
Band2	HSUPA	9262	4	16.67	1.50	18.17	33.00
Band2	HSUPA	9262	5	18.76	1.50	20.26	33.00
Band2	HSUPA	9400	1	15.29	1.50	16.79	33.00
Band2	HSUPA	9400	2	15.75	1.50	17.25	33.00
Band2	HSUPA	9400	3	15.24	1.50	16.74	33.00
Band2	HSUPA	9400	4	15.58	1.50	17.08	33.00
Band2	HSUPA	9400	5	17.74	1.50	19.24	33.00
Band2	HSUPA	9538	1	15.85	1.50	17.35	33.00
Band2	HSUPA	9538	2	16.30	1.50	17.80	33.00
Band2	HSUPA	9538	3	15.77	1.50	17.27	33.00
Band2	HSUPA	9538	4	16.10	1.50	17.60	33.00
Band2	HSUPA	9538	5	18.18	1.50	19.68	33.00

Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). (For WCDMA Band 2)

ERP (dBm) = EIRP (dBm) - 2.15 (dB). (For WCDMA Band 5)

Band	Type	Channel	Slot	Average Power (dBm)	Antenna Gain (dBi)	ERP(dBm)	ERP/EIRP Limit (dBm)
Band5	HSUPA	4132	1	19.62	-0.70	16.77	38.45
Band5	HSUPA	4132	2	19.66	-0.70	16.81	38.45
Band5	HSUPA	4132	3	19.18	-0.70	16.33	38.45
Band5	HSUPA	4132	4	19.00	-0.70	16.15	38.45
Band5	HSUPA	4132	5	21.17	-0.70	18.32	38.45
Band5	HSUPA	4183	1	20.02	-0.70	17.17	38.45
Band5	HSUPA	4183	2	20.13	-0.70	17.28	38.45
Band5	HSUPA	4183	3	19.71	-0.70	16.86	38.45
Band5	HSUPA	4183	4	19.54	-0.70	16.69	38.45
Band5	HSUPA	4183	5	21.39	-0.70	18.54	38.45
Band5	HSUPA	4233	1	19.49	-0.70	16.64	38.45
Band5	HSUPA	4233	2	19.56	-0.70	16.71	38.45
Band5	HSUPA	4233	3	19.12	-0.70	16.27	38.45
Band5	HSUPA	4233	4	18.97	-0.70	16.12	38.45
Band5	HSUPA	4233	5	20.95	-0.70	18.1	38.45
Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). (For WCDMA Band 2) ERP (dBm) = EIRP (dBm) - 2.15 (dB). (For WCDMA Band 5)							

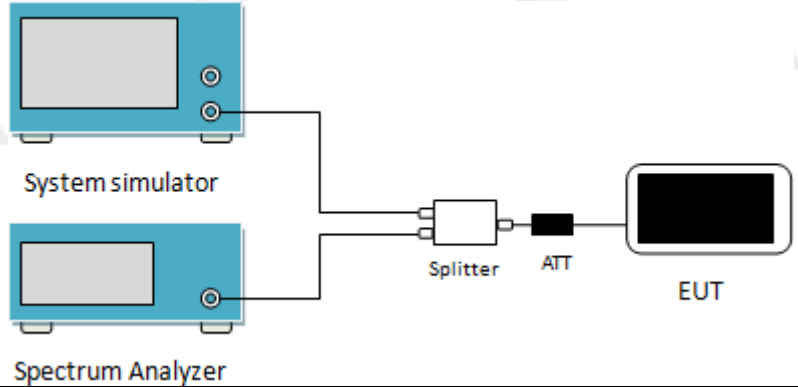
4 Peak-to-Average Power Ratio

Test Requirement:	FCC part 24.232(d)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	 The diagram illustrates the test setup. A 'System simulator' (represented by a blue box with a screen) is connected to a 'Splitter'. The 'Splitter' is connected to an 'ATT' (Attenuator) and then to the 'EUT' (Equipment Under Test, represented by a black box). The 'EUT' is also connected to the 'Spectrum Analyzer' (represented by a blue box with a screen). The 'Spectrum Analyzer' is also connected to the 'Splitter'.
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 Set the CCDF option in spectrum analyzer, $RBW \geq OBW$, 3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. 4 Repeat step 1~3 at other frequency and modulations.
Test Instruments:	Refer to section 2.5 for details
Test mode:	Refer to section 2.3 for details
Test results:	Passed

4.1 Test Result

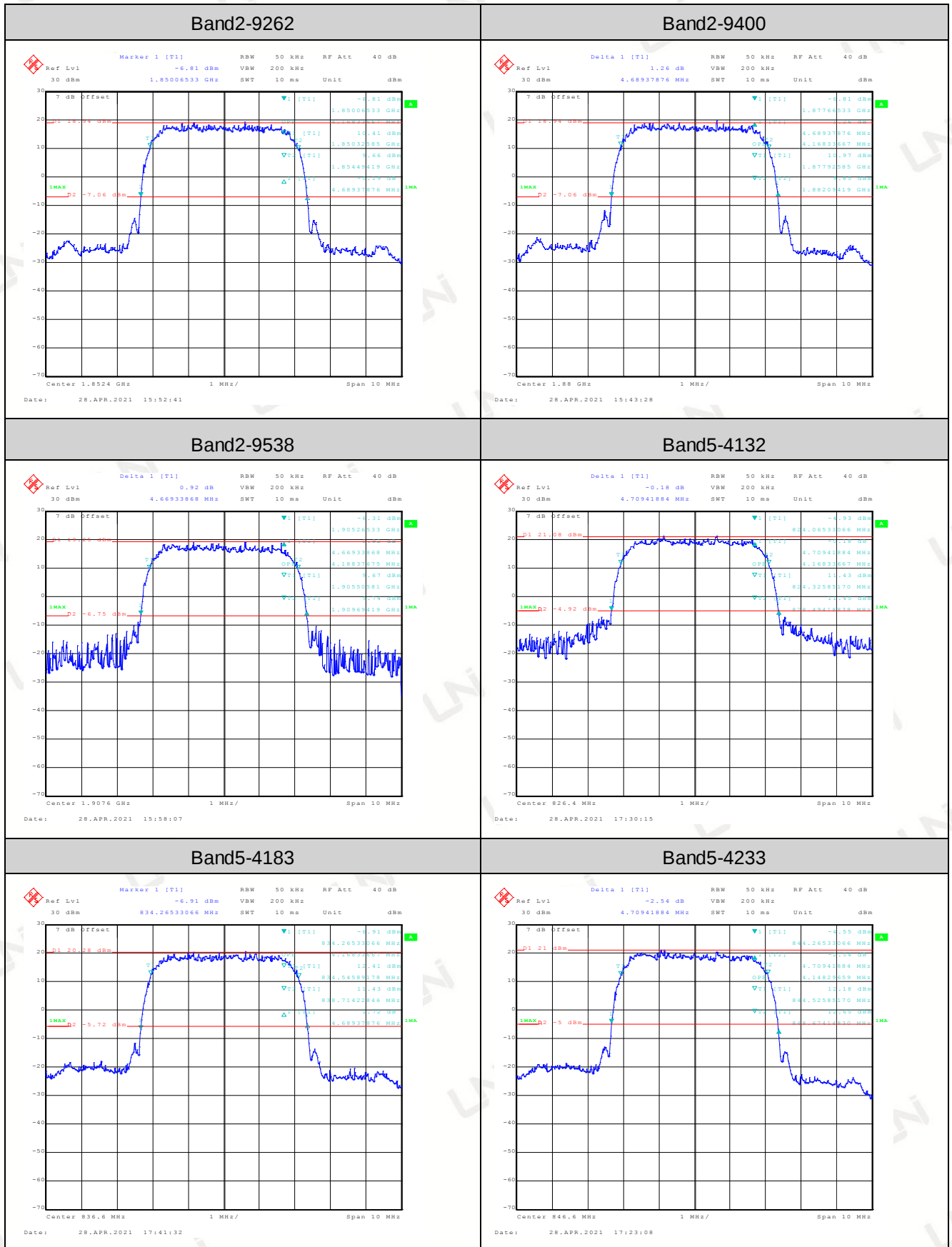
and	Channel	Peak-to-Average Ratio(dB)	Limit(dB)	Verdict
Band2	9400	3.04	13	PASS
Band5	4183	2.84	13	PASS

5 Occupy Bandwidth

Test Requirement:	FCC part 22.917(b), FCC part 24.238(b)
Test setup:	 The diagram illustrates the test setup. A System simulator and a Spectrum Analyzer are connected to a Splitter. The Splitter is connected to an ATT (Attenuator), which is then connected to the EUT (Equipment Under Test).
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 2.5 for details
Test mode:	Refer to section 2.3 for details
Test results:	Passed

5.1 Test Result

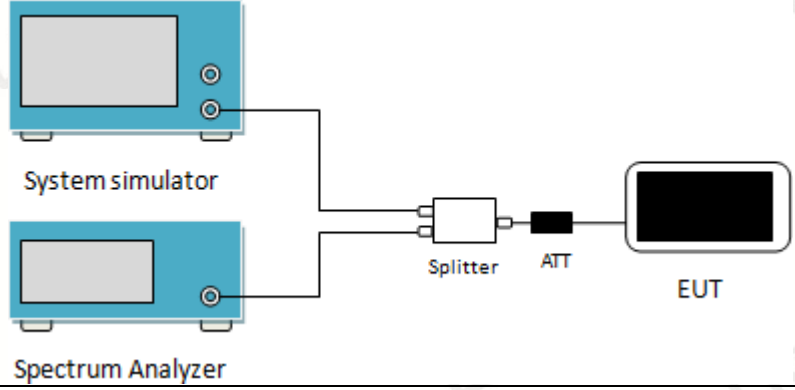
Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(kHz)	Verdict
Band2	9262	4.1683	4.689	---	PASS
Band2	9400	4.1683	4.689	---	PASS
Band2	9538	4.1884	4.669	---	PASS
Band5	4132	4.1683	4.709	---	PASS
Band5	4183	4.1683	4.689	---	PASS
Band5	4233	4.1483	4.709	---	PASS



6 Modulation Characteristic

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

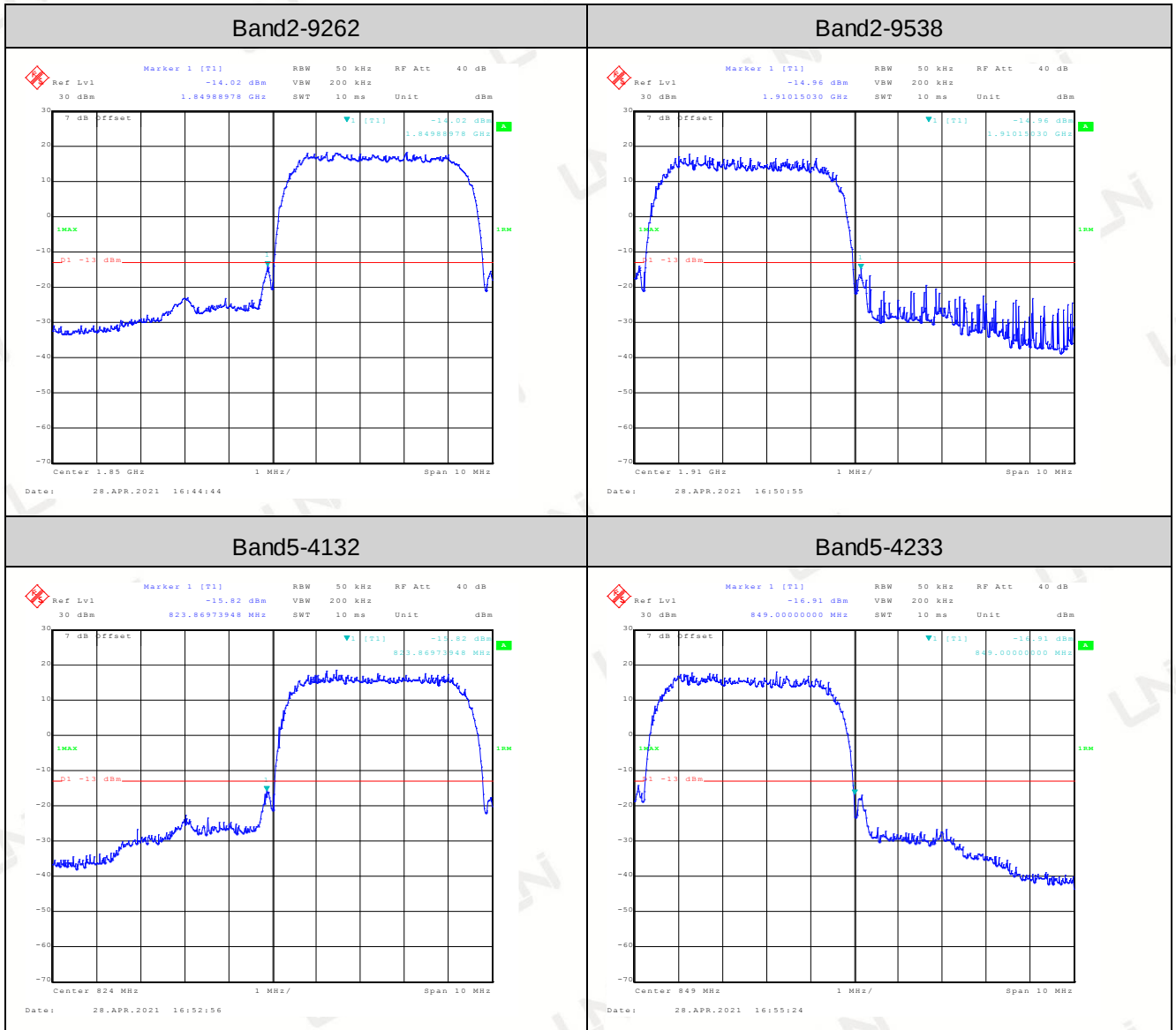
7 Out of band emission at antenna terminals

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a)
Limit:	-13dBm
Test setup:	 The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a single output port. These two ports are connected to a central 'Splitter' unit. From the Splitter, one line goes to an 'ATT' (Attenuator) unit, and another line goes to the 'EUT' (Equipment Under Test), which is represented by a black rectangular device.
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 For the out of band: For GSM850&WCDMA850 set the RBW=100 kHz, VBW=300 kHz and for PCS1900 & WCDMA1900 set the RBW=1MHz, VBW=3MHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. 3 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 2.5 for details
Test mode:	Refer to section 2.3 for details
Test results:	Passed

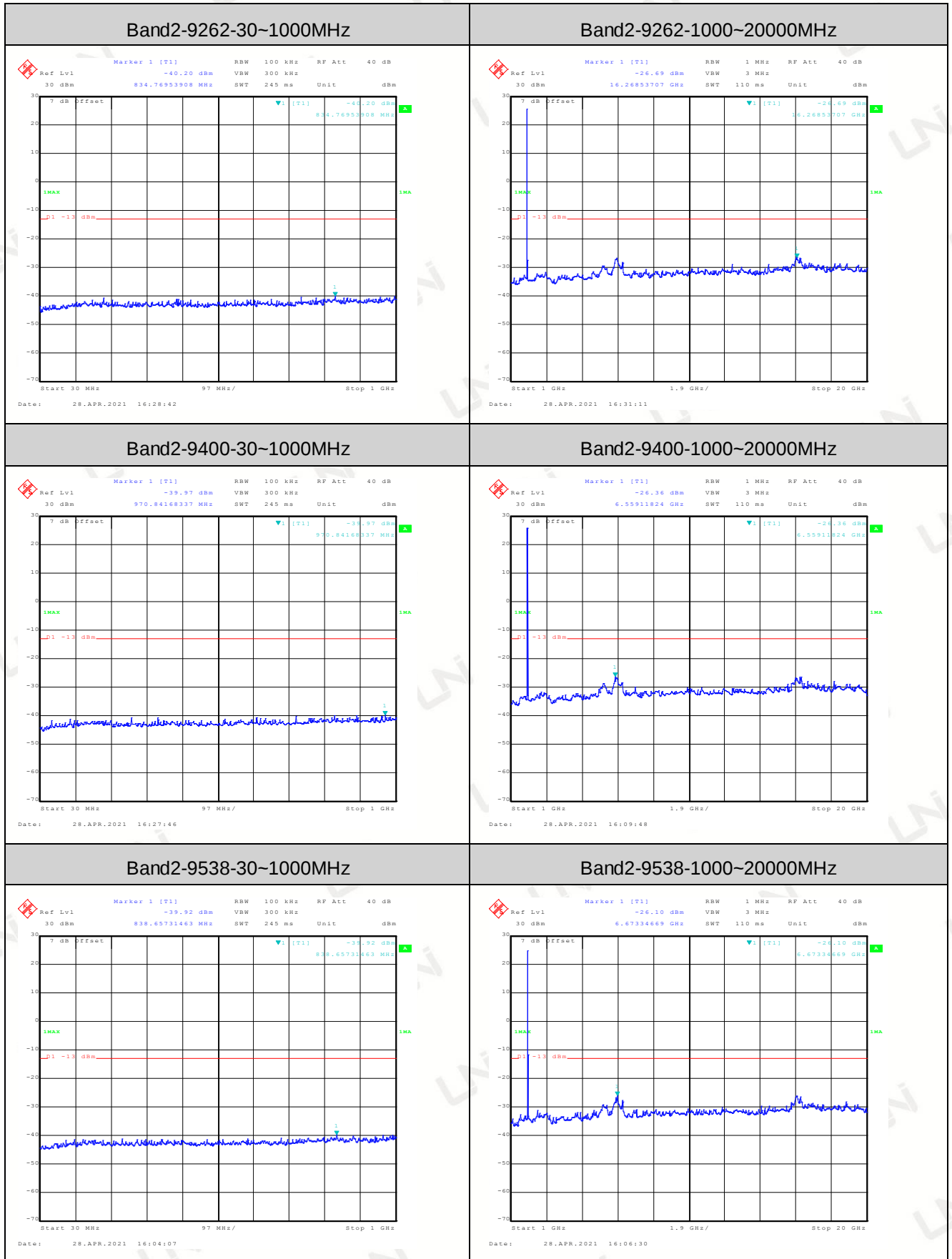
7.1 Test Result

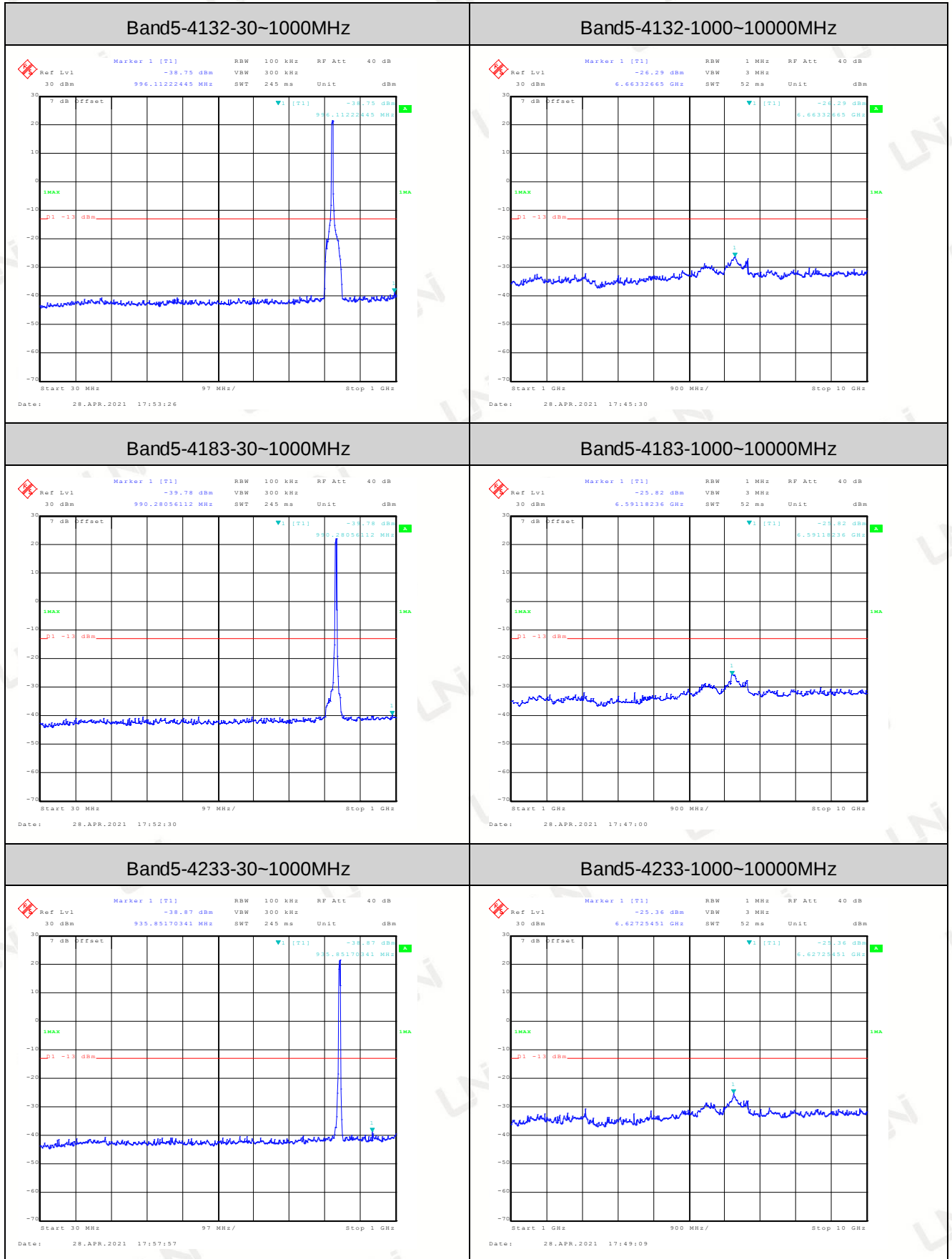
BAND EDGE

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1849.89	-14.03	-13	PASS
Band2	9538	1910.15	-14.96	-13	PASS
Band5	4132	823.87	-15.82	-13	PASS
Band5	4233	849.00	-16.91	-13	PASS

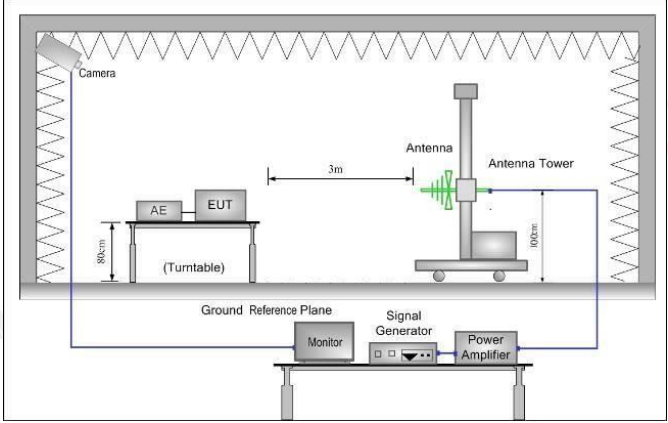
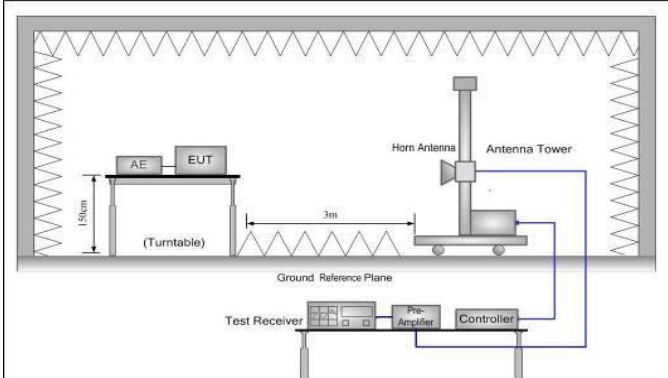


CONDUCTED SPURIOUS EMISSION





8 Field strength of spurious radiation measurement

Test Requirement:	FCC part 22.917(a), FCC part 24.238(a)
Limit:	-13dBm
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter camber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $ERP / EIRP = S.G. \text{ output (dBm) } + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$

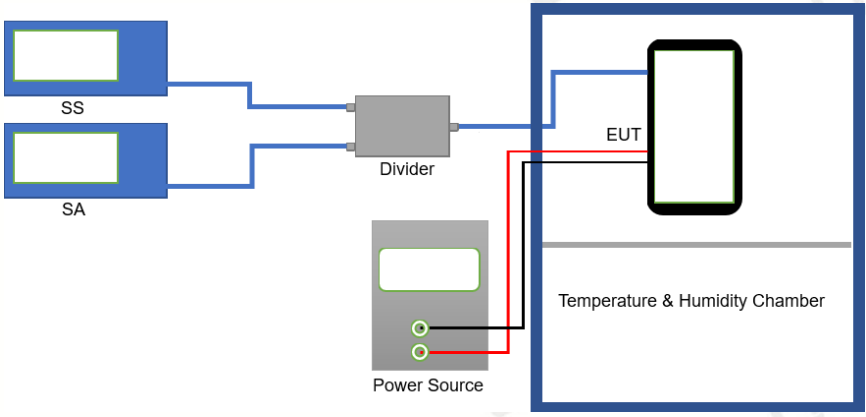
Test Instruments:	Refer to section 2.5 for details
Test mode:	Refer to section 2.3 for details
Test results:	Passed

8.1 Test Result

WCDMA BAND V						
Lowest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1652.80	-48.44	-10.81	-59.25	-13.00	46.25	Vertical
2479.20	-47.37	-9.32	-56.69	-13.00	43.69	Vertical
3305.60	-46.74	-7.95	-54.69	-13.00	41.69	Vertical
1652.80	-48.76	-10.81	-59.57	-13.00	46.57	Horizontal
2479.20	-47.85	-9.32	-57.17	-13.00	44.17	Horizontal
3305.60	-47.08	-7.95	-55.03	-13.00	42.03	Horizontal
Middle channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1673.20	-48.26	-10.28	-58.54	-13.00	45.54	Vertical
2509.80	-47.27	-9.24	-56.51	-13.00	43.51	Vertical
3346.40	-46.87	-7.80	-54.67	-13.00	41.67	Vertical
1673.20	-48.48	-10.28	-58.76	-13.00	45.76	Horizontal
2509.80	-47.75	-9.24	-56.99	-13.00	43.99	Horizontal
3346.40	-47.33	-7.80	-55.13	-13.00	42.13	Horizontal
Highest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
1697.60	-48.35	-10.55	-58.90	-13.00	45.90	Vertical
2546.40	-47.75	-9.08	-56.83	-13.00	43.83	Vertical
3395.20	-46.45	-7.36	-53.81	-13.00	40.81	Vertical
1697.60	-48.47	-10.55	-59.02	-13.00	46.02	Horizontal
2546.40	-47.81	-9.08	-56.89	-13.00	43.89	Horizontal
3395.20	-47.30	-7.36	-54.66	-13.00	41.66	Horizontal
Remark:						
1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

WCDMA Band II						
Lowest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3704.80	-46.49	-6.13	-52.62	-13.00	39.62	Vertical
5557.20	-41.26	-0.21	-41.47	-13.00	28.47	Vertical
3704.80	-46.92	-6.13	-53.05	-13.00	40.05	Horizontal
5557.20	-42.33	-0.21	-42.54	-13.00	29.54	Horizontal
Middle channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3760.00	-46.08	-5.81	-51.89	-13.00	38.89	Vertical
5640.00	-41.42	0.06	-41.36	-13.00	28.36	Vertical
3760.00	-46.81	-5.81	-52.62	-13.00	39.62	Horizontal
5640.00	-41.94	0.06	-41.88	-13.00	28.88	Horizontal
Highest channel						
Frequency (MHz)	Level at antenna terminals (dBm)	Factor (dB)	Spurious Emission level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
3815.20	-46.26	-5.48	-51.74	-13.00	38.74	Vertical
5722.80	-41.68	0.32	-41.36	-13.00	28.36	Vertical
3815.20	-46.59	-5.48	-52.07	-13.00	39.07	Horizontal
5722.80	-41.93	0.32	-41.61	-13.00	28.61	Horizontal
Remark:						
1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

9 Frequency stability V.S. Temperature measurement

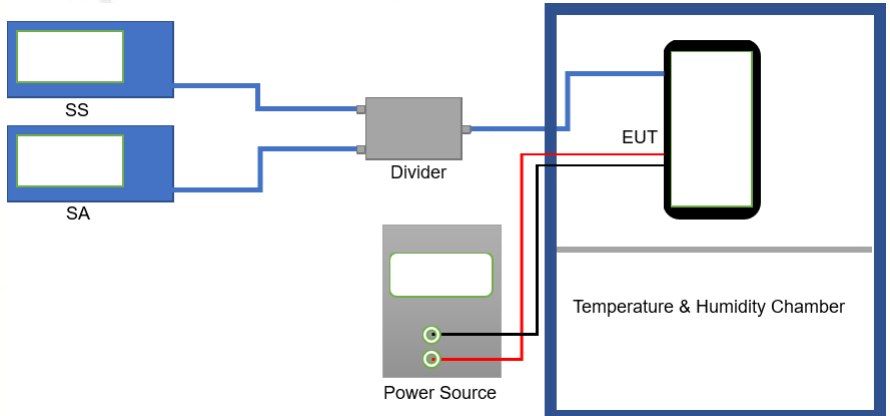
Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 2.1055(a)(1)(b)
Limit:	±2.5 ppm for GPRS 850 and WCDMA 850 Within authorized band for PCS 1900 and WCDMA 1900
Test setup:	
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached
Test Instruments:	Refer to section 2.5 for details
Test mode:	Refer to section 2.3 for details
Test results:	Passed

9.1 Test Result

Reference Frequency: WCDMA BAND V Middle channel=4183 Frequency=836.6MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
6.0	-30	-0.71	-0.000849	±2.5	Pass
	-20	-0.64	-0.000765		
	-10	-2.43	-0.002905		
	0	-0.51	-0.000610		
	10	0.10	0.000120		
	20	-2.74	-0.003275		
	30	-1.02	-0.001219		
	40	-1.63	-0.001948		
	50	-0.18	-0.000215		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	5.4	-0.34	-0.000406	±2.5	Pass
	6.0	-0.48	-0.000574		
	6.6	-0.59	-0.000705		
Note: Only the worst case shown in the report.					

Reference Frequency: WCDMA BAND II Middle Frequency=9400 channel=1880MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
6.0	-30	2.39	0.001271	Within authorized band for BAND II	Pass
	-20	-4.74	-0.002521		
	-10	-5.11	-0.002718		
	0	5.40	0.002872		
	10	-3.65	-0.001941		
	20	0.43	0.000229		
	30	-0.31	-0.000165		
	40	-2.87	-0.001527		
	50	5.34	0.002840		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	5.4	0.04	0.000021	Within authorized band for BAND II	Pass
	6.0	4.80	0.002553		
	6.6	-4.78	-0.002543		
Note: Only the worst case shown in the report.					

10 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part 22.355, FCC Part 24.235, FCC Part 2.1055(d)(2)
Limit:	± 2.5 ppm for GPRS 850 and WCDMA 850 Within authorized band for PCS 1900 and WCDMA 1900
Test setup:	
Test procedure:	1. Set chamber temperature to 25°C . Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 2.5 for details
Test mode:	Refer to section 2.3 for details
Test results:	Passed

10.1 Test Result

Refer to 9.1

11 PHOTO OF TEST

11.1 RADIATED EMISSION



End of Report