

TEST REPORT

Report No.: **BCTC2504497774-4E**

Applicant: **Shenzhen Baseus Technology Co., Ltd.**

Product Name: **Mifi Power bank**

Test Model: **PPMF-2067**

Tested Date: **2025-04-27 to 2025-08-27**

Issued Date: **2025-08-27**

Shenzhen BCTC Testing Co., Ltd.



FCC ID: 2A482-PPMF2067

Product Name: Mifi Power bank
Trademark: baseus
Model/Type reference: PPMF-2067
Prepared For: Shenzhen Baseus Technology Co., Ltd.
Address: 2nd Floor, Building B, Baseus Intelligence Park, No.2008, Xuegang Rd, Gangtou Community, Bantian Street, Longgang District, Shenzhen, China
Manufacturer: Shenzhen Baseus Technology Co., Ltd.
Address: 2nd Floor, Building B, Baseus Intelligence Park, No.2008, Xuegang Rd, Gangtou Community, Bantian Street, Longgang District, Shenzhen, China
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2025-04-27
Sample tested Date: 2025-04-27 to 2025-08-27
Issue Date: 2025-08-27
Report No.: BCTC2504497774-4E
Test Standards: FCC CFR Title 47 Part22
FCC CFR Title 47 Part24
Test Results: PASS
Remark: This is GSM & WCDMA radio test report.

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

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(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2504497774-4E	2025-08-27	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
1	RF Exposure	§1.1307,§2.1093	PASS
2	RF Output Power	§22.913 (a), §24.232 (c), §27.50,§2.1046	PASS
3	Peak-to-average Ratio(PAR) of Transmitter	§24.232(d),§22.913, §27.50,§2.1046	PASS
4	Emission Bandwidth	§22.917 (b), §24.238(b), §27.53,§2.1049	PASS
5	Spurious Emissions at Antenna Terminal	§22.917 (a), §24.238 (a), §27.53,§2.1051	PASS
6	Spurious Radiation Emissions	§22.917 (a), §24.238 (a), §27.53,§2.1051	PASS
7	Out of Band Emissions	§22.917 (a), §24.238 (a), §27.53,§2.1051	PASS
8	Frequency Stability	§22.355, §24.235, §27.54, §2.1055	PASS

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	$U=4.3\text{dB}$
2	3m chamber Radiated spurious emission(9KHz-30MHz)	$U=3.7\text{dB}$
3	3m chamber Radiated spurious emission(1GHz-18GHz)	$U=4.5\text{dB}$
4	3m chamber Radiated spurious emission(18GHz-40GHz)	$U=3.34\text{dB}$
5	Conducted Emission (150kHz-30MHz)	$U=3.20\text{dB}$
6	Conducted Adjacent channel power	$U=1.38\text{dB}$
7	Conducted output power uncertainty Above 1G	$U=1.576\text{dB}$
8	Conducted output power uncertainty below 1G	$U=1.28\text{dB}$
9	humidity uncertainty	$U=5.3\%$
10	Temperature uncertainty	$U=0.59^{\circ}\text{C}$

4. Product Information And Test Setup

4.1 Product Information

Model/Type reference:	PPMF-2067
Model differences:	The product model names are the same, but the colors are different. The color of the test is black.
Hardware Version:	AB300-MB-V0.3
Software Version:	MOCOR_20A UIS8310_W24.48.7
Operation Frequency:	WCDMA Band II: TX: 1852.40~1907.60MHz; Rx: 1932.60~1987.40MHz; WCDMA Band V: TX: 826.40~846.60MHz; RX: 871.40~891.60MHz;
Max RF Output Power:	WCDMA Band II: 22.98 dBm WCDMA Band V: 23.37 dBm
Type of Modulation:	WCDMA Mode with BPSK Modulation HSDPA Mode with QPSK, 16QAM Modulation HSUPA Mode with QPSK, 16QAM Modulation
Type of Emission:	WCDMA Band II: 4M16F9W WCDMA Band V: 4M15F9W
Antenna installation:	Internal antenna
Antenna Gain:	WCDMA Band II: 1.95 dBi WCDMA Band V: -1.92 dBi
Connecting I/O Port(s)	Remark: <input checked="" type="checkbox"/> The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. <input type="checkbox"/> The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.
Ratings:	Please refer to the User's Manual USB-C1/USB-C2 Input: 5V=3A;9V=3A;12V=3A;15V=3A;20V=3.25A USB-C1/USB-C2 Output: 5V=3A;9V=3A;10V=2.25A;12V=3A;15V=3A;20V=3.35A;(MAX 45W) USB-A Output: 5V= 3A;9V= 2A;12V= 1.5A ; 10V=2.25A Total: 5V3A Battery: 5000mAh 14.6V/73Wh(4 sets of 5000mAh batteries connected in series)

4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	Mifi Power bank	baseus	PPMF-2067	N/A	EUT
E-2	N/A	N/A	N/A	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	N/A	N/A	0M	DC cable unshielded

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.5 Test Mode

Testing Configure			
Support Band	Support Standard	Channel Frequency	Channel Number
WCDMA Band II	RMC/HSDPA/ HSUPA	1852.4 MHz	9262
		1880.0 MHz	9400
		1907.6 MHz	9538
WCDMA Band V	RMC/HSDPA/ HSUPA	826.4 MHz	4132
		836.4 MHz	4182
		846.6 MHz	4233

Note 1: the transmitter has been tested on the communications mode of WCDMA, HSDPA, HSUPA compliance test and record the worst case.

Note 2: Both the SIM 1 and SIM 2 were tested, the worst mode is the SIM 1, the data recording in the report.

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/ Without Core
/	/	/	/
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/ Without Core
/	/	/	/

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

A2LA certificate registration number is: CN1212

ISED Registered No.: 23583

ISED CAB identifier: CN0017

5.2 Test Instrument Used

RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power meter	Keysight	E4419	\	May 16, 2024	May 15, 2025
Power Sensor (AV)	Keysight	E9300A	\	May 16, 2024	May 15, 2025
Signal Analyzer20kHz z-26.5GHz	Keysight	N9020A	MY49100060	May 16, 2024	May 15, 2025
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 16, 2024	May 15, 2025
Radio frequency control box	MAIWEI	MW100-RFCB	\	\	\
Software	MAIWEI	MTS 8310	\	\	\

RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power meter	Keysight	E4419	\	May 14, 2025	May 13, 2026
Power Sensor (AV)	Keysight	E9300A	\	May 14, 2025	May 13, 2026
Signal Analyzer20kHz z-26.5GHz	Keysight	N9020A	MY49100060	May 14, 2025	May 13, 2026
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 14, 2025	May 13, 2026
Radio frequency control box	MAIWEI	MW100-RFCB	\	\	\
Software	MAIWEI	MTS 8310	\	\	\

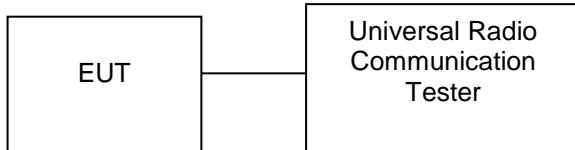
Radiated Emissions Test (966 Chamber01)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR	102075	May 16, 2024	May 15, 2025
Receiver	R&S	ESRP	101154	May 16, 2024	May 15, 2025
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 16, 2024	May 15, 2025
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 21, 2024	May 20, 2025
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 21, 2024	May 20, 2025
Amplifier	SKET	LAPA_01G18 G-45dB	SK202104090 1	May 16, 2024	May 15, 2025
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 21, 2024	May 20, 2025
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35- HG	2034381	May 16, 2024	May 15, 2025
Horn Antenna(18G Hz-40GHz)	Schwarzbeck	BBHA9170	00822	May 21, 2024	May 20, 2025
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40	100363	May 16, 2024	May 15, 2025
Communication test set	R&S	CMW500	126173	Nov. 11. 2024	Nov. 10, 2025
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Radiated Emissions Test (966 Chamber01)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR3	102075	May 08, 2025	May 07, 2026
Receiver	R&S	ESR3P	101154	May 14, 2025	May 13, 2026
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 14, 2025	May 13, 2026
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 18, 2025	May 17, 2026
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 18, 2025	May 17, 2026
Amplifier	SKET	LAPA_01G18 G-45dB	SK202104090 1	May 14, 2025	May 13, 2026
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 18, 2025	May 17, 2026
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35- HG	2034381	May 12, 2025	May 11, 2026
Horn Antenna(18G Hz-40GHz)	Schwarzbeck	BBHA9170	00822	May 12, 2025	May 11, 2026
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40	100363	May 14, 2025	May 13, 2026
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. RF Output Power

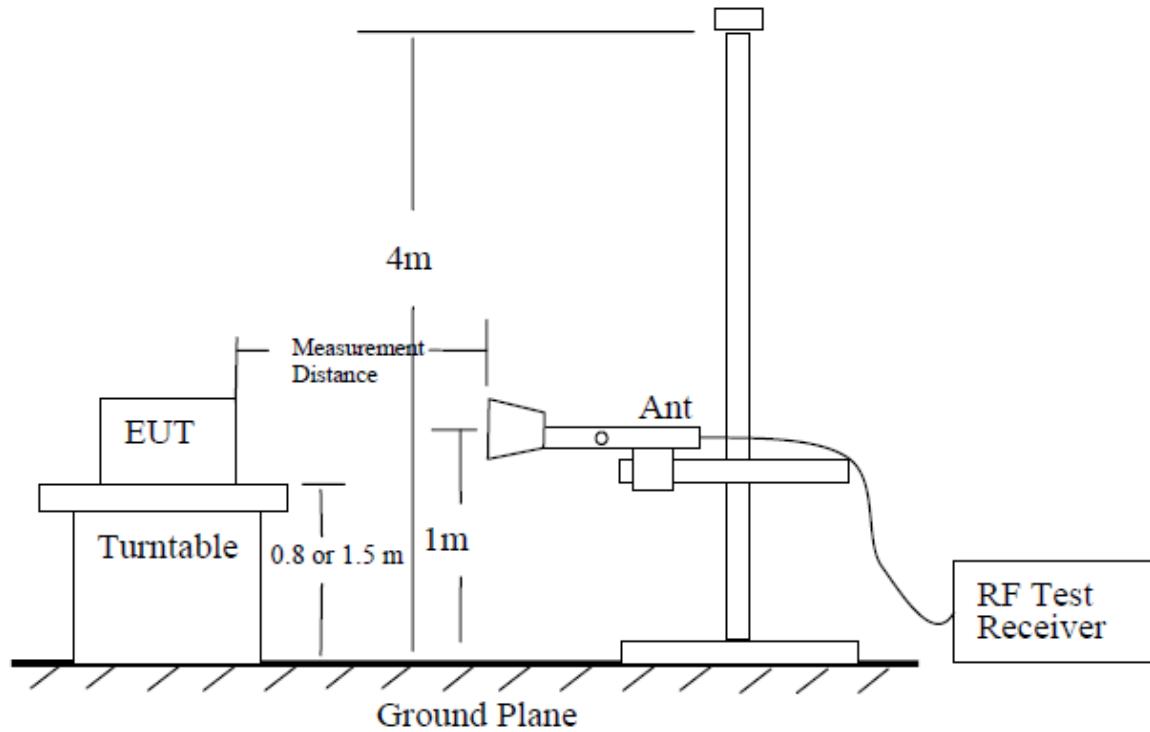
6.1 Block Diagram Of Test Setup

Conducted output power test method:

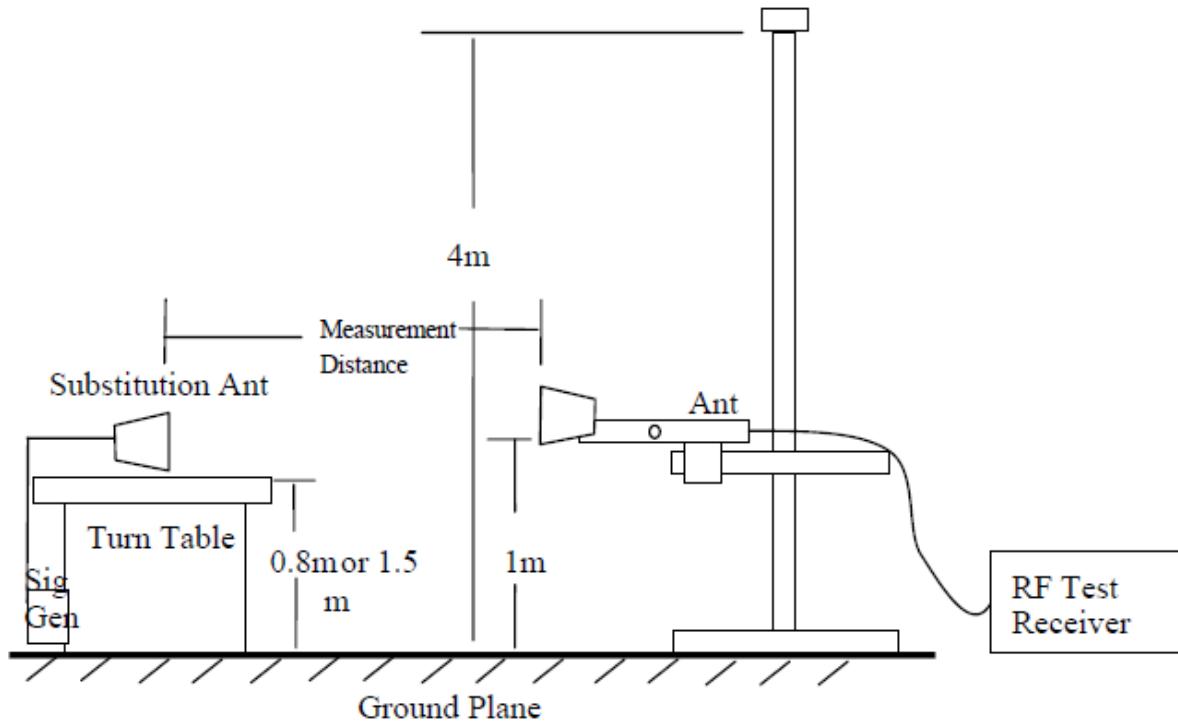


Radiated power test method:

(A) Test site-up for radiated ERP and/or EIRP measurements



(B) Substitution method set-up for radiated emission



6.2 Limit

According to §22.913(a)(2), The ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §24.232 (c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §27.50(d)(4), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

6.3 Test procedure

Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA-603-E-2016 and ANSI C63.26-2015 measurement procedure.
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. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. 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.

6.4 Test Result

EIRP For RMC 12.2Kbps Mode Band II

Frequency (MHz)	Polar (H/V)	Reading Level (dBm)	Correct Factor (dB)	Measurement (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel						
1852.4	H	50.19	-26.92	23.27	33.00	PASS
1852.4	V	48.78	-26.92	21.86	33.00	PASS
Middle Channel						
1880	H	49.51	-26.86	22.65	33.00	PASS
1880	V	48.43	-26.86	21.57	33.00	PASS
High Channel						
1907.6	H	48.90	-26.80	22.10	33.00	PASS
1907.6	V	48.58	-26.80	21.78	33.00	PASS

EIRP For HSDPA Mode Band II

Frequency (MHz)	Polar (H/V)	Reading Level (dBm)	Correct Factor (dB)	Measurement (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel						
1852.4	H	49.39	-26.92	22.47	33.00	PASS
1852.4	V	49.19	-26.92	22.27	33.00	PASS
Middle Channel						
1880	H	49.72	-26.86	22.86	33.00	PASS
1880	V	48.70	-26.86	21.84	33.00	PASS
High Channel						
1907.6	H	48.67	-26.80	21.87	33.00	PASS
1907.6	V	48.77	-26.80	21.97	33.00	PASS

EIRP For HSUPA Mode Band II

Frequency (MHz)	Polar (H/V)	Reading Level (dBm)	Correct Factor (dB)	Measurement (dBm)	FCC Part 24E Limits (dBm)	Result
Low Channel						
1852.4	H	50.14	-26.92	23.22	33.00	PASS
1852.4	V	49.13	-26.92	22.21	33.00	PASS
Middle Channel						
1880	H	48.82	-26.86	21.96	33.00	PASS
1880	V	49.14	-26.86	22.28	33.00	PASS
High Channel						
1907.6	H	49.53	-26.80	22.73	33.00	PASS
1907.6	V	48.69	-26.80	21.89	33.00	PASS

Note: The worst mode of HSDPA and HSUPA is Subtest1.

ERP For RMC 12.2Kbps Mode Band V

Frequency (MHz)	Polar (H/V)	Reading Level (dBm)	Correct Factor (dB)	Measurement (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel						
826.4	H	49.55	-26.29	23.26	38.45	PASS
826.4	V	48.76	-26.29	22.47	38.45	PASS
Middle Channel						
836.4	H	48.91	-26.35	22.56	38.45	PASS
836.4	V	48.89	-26.35	22.54	38.45	PASS
High Channel						
846.6	H	49.40	-26.42	22.98	38.45	PASS
846.6	V	48.67	-26.42	22.25	38.45	PASS

ERP For HSDPA Mode Band V

Frequency (MHz)	Polar (H/V)	Reading Level (dBm)	Correct Factor (dB)	Measurement (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel						
826.4	H	50.27	-26.29	23.98	38.45	PASS
826.4	V	48.62	-26.29	22.33	38.45	PASS
Middle Channel						
836.4	H	48.36	-26.35	22.01	38.45	PASS
836.4	V	48.97	-26.35	22.62	38.45	PASS
High Channel						
846.6	H	50.02	-26.42	23.60	38.45	PASS
846.6	V	48.63	-26.42	22.21	38.45	PASS

ERP For HSUPA Mode Band V

Frequency (MHz)	Polar (H/V)	Reading Level (dBm)	Correct Factor (dB)	Measurement (dBm)	FCC Part 22H Limits (dBm)	Result
Low Channel						
826.4	H	49.40	-26.29	23.11	38.45	PASS
826.4	V	48.54	-26.29	22.25	38.45	PASS
Middle Channel						
836.4	H	50.29	-26.35	23.94	38.45	PASS
836.4	V	48.73	-26.35	22.38	38.45	PASS
High Channel						
846.6	H	48.85	-26.42	22.43	38.45	PASS
846.6	V	48.52	-26.42	22.10	38.45	PASS

Note: The worst mode of HSDPA and HSUPA is Subtest1.

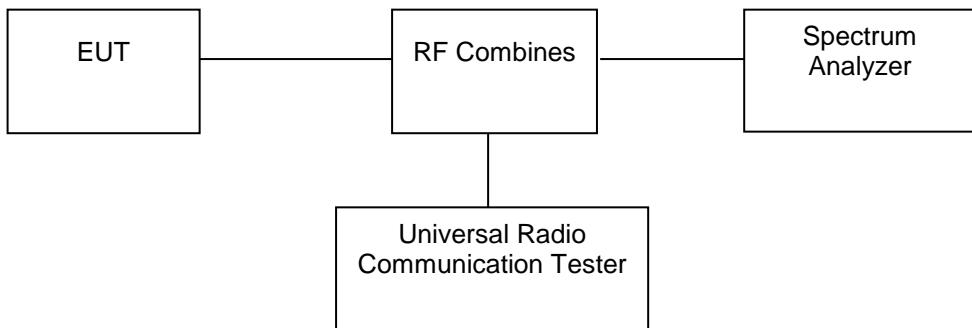
Max. Conducted Output Power

Band	WCDMA Band II		
Channel	9262	9400	9538
Frequency(MHz)	1852.4	1880.0	1907.6
WCDMA RMC 12.2K	22.64	22.98	22.98
HSDPA Subtest-1	22.41	22.52	22.45
HSDPA Subtest-2	22.01	22.32	21.94
HSDPA Subtest-3	21.66	21.74	21.96
HSDPA Subtest-4	21.62	22.00	21.83
HSUPA Subtest-1	22.34	22.28	22.23
HSUPA Subtest-2	22.20	22.53	22.35
HSUPA Subtest-3	21.96	21.92	22.09
HSUPA Subtest-4	22.25	22.51	22.42
HSUPA Subtest-5	21.99	22.14	22.23

Band	WCDMA Band V		
Channel	4132	4182	4233
Frequency(MHz)	826.4	836.4	846.6
WCDMA RMC 12.2K	23.37	23.22	23.17
HSDPA Subtest-1	22.89	22.66	22.73
HSDPA Subtest-2	22.62	22.51	22.53
HSDPA Subtest-3	22.50	22.06	22.10
HSDPA Subtest-4	22.18	22.11	21.93
HSUPA Subtest-1	22.94	22.75	22.53
HSUPA Subtest-2	22.89	22.65	22.77
HSUPA Subtest-3	22.44	22.43	22.39
HSUPA Subtest-4	22.86	22.69	22.71
HSUPA Subtest-5	22.76	22.53	22.68

7. Peak-to-average Ratio(PAR) of Transmitter

7.1 Block Diagram Of Test Setup



7.2 Limit

According to §24.232(d), Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

According to §22.913(d), The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

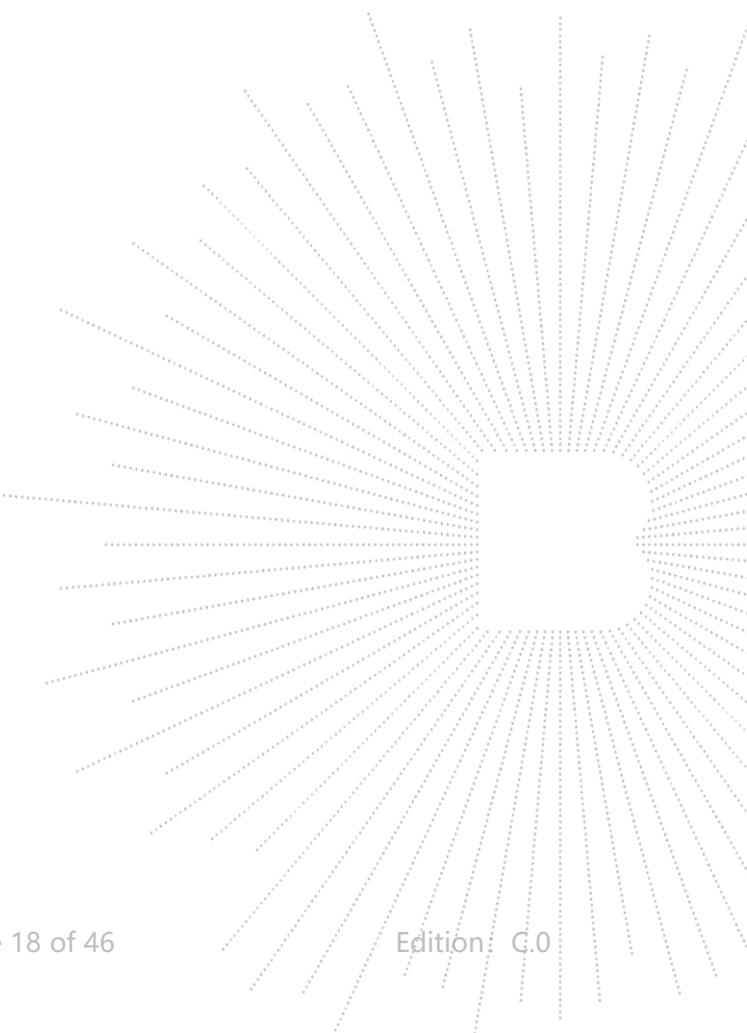
7.3 Test procedure

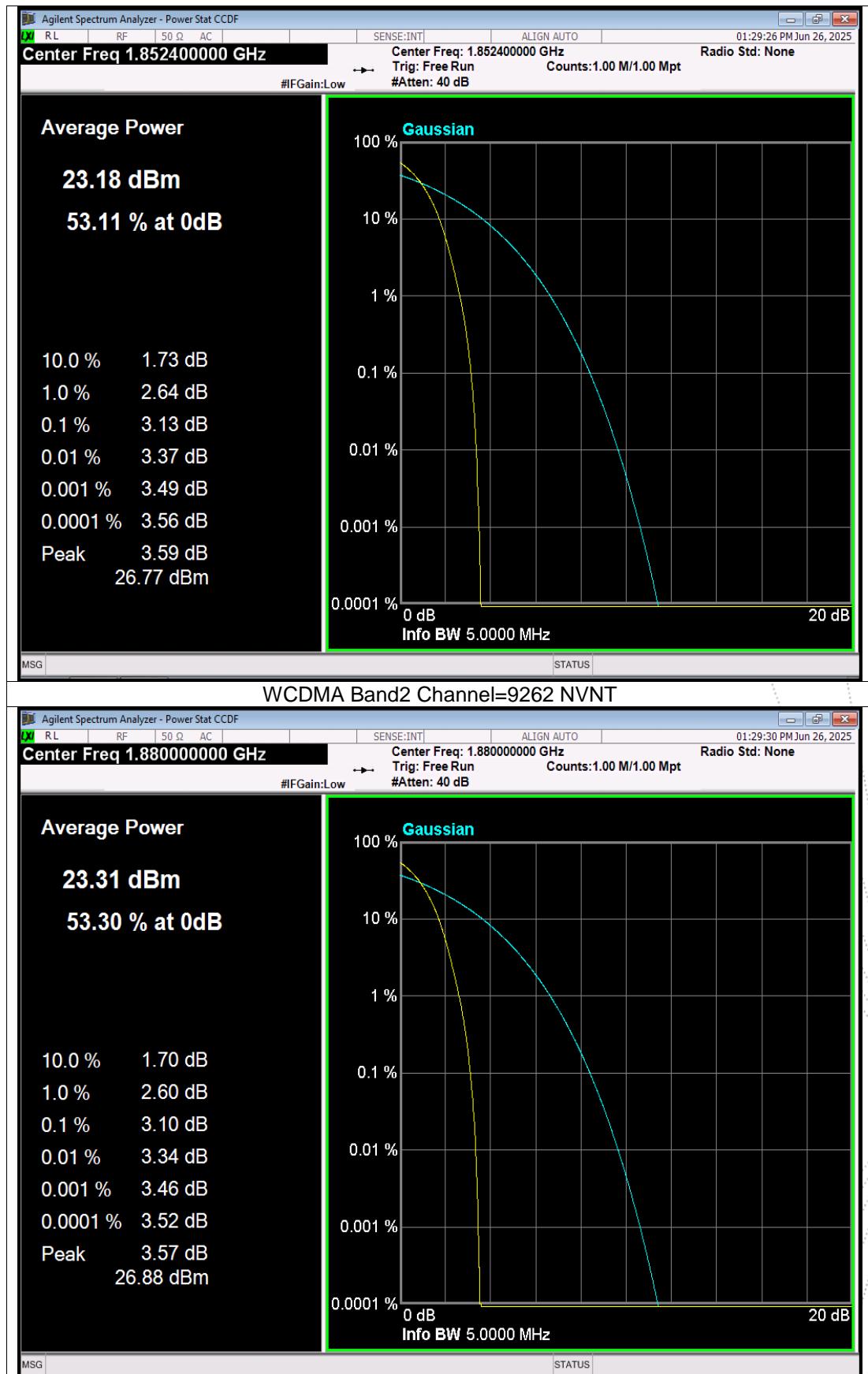
The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 30kHz and the peak-to-average ratio (PAR) of the transmission was recorded. Record the maximum PAPR level associated with a probability of 0.1%.

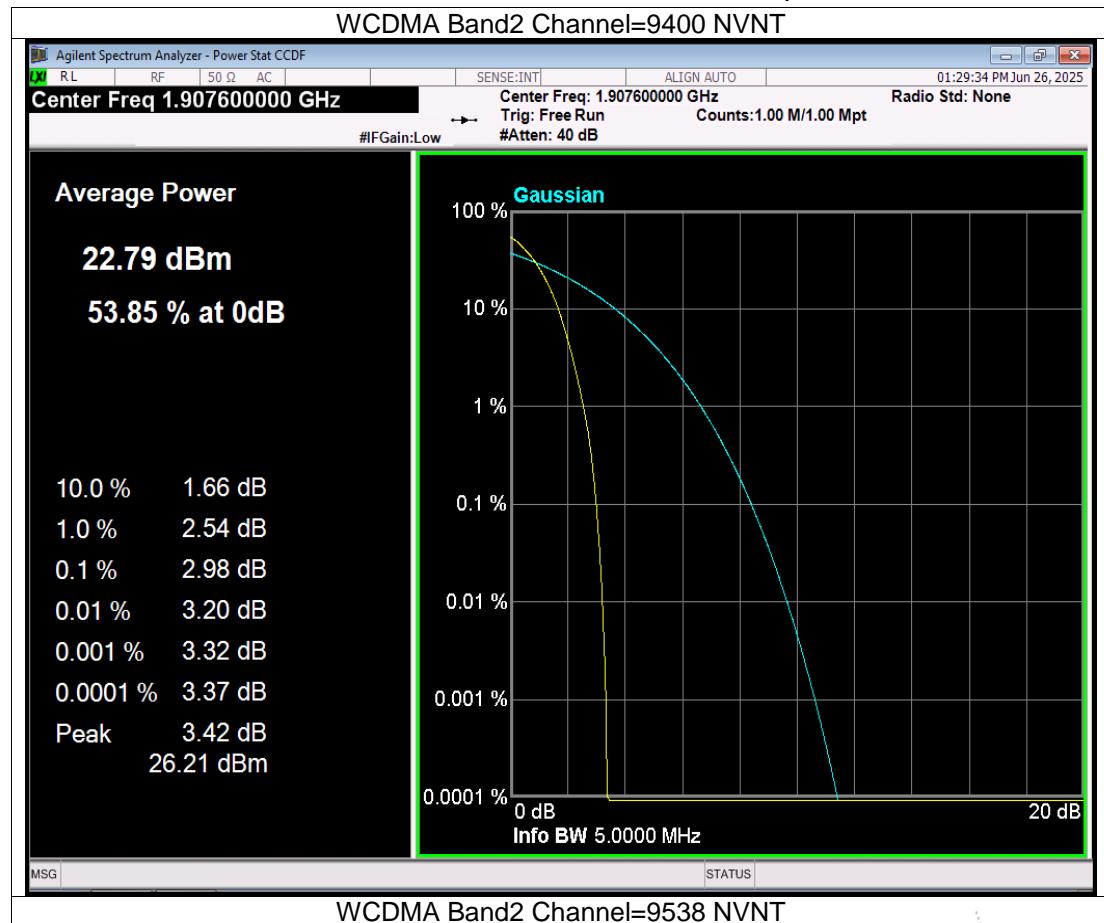
7.4 Test Result

Band	Channel	Frequency (MHz)	Result (dB)	high Limit (dB)	Verdict
WCDMA Band2	9262	1852.4	3.13	13	PASS
WCDMA Band2	9400	1880	3.10	13	PASS
WCDMA Band2	9538	1907.6	2.98	13	PASS
WCDMA Band5	4132	826.4	3.17	13	PASS
WCDMA Band5	4182	836.4	3.19	13	PASS
WCDMA Band5	4233	846.6	3.07	13	PASS

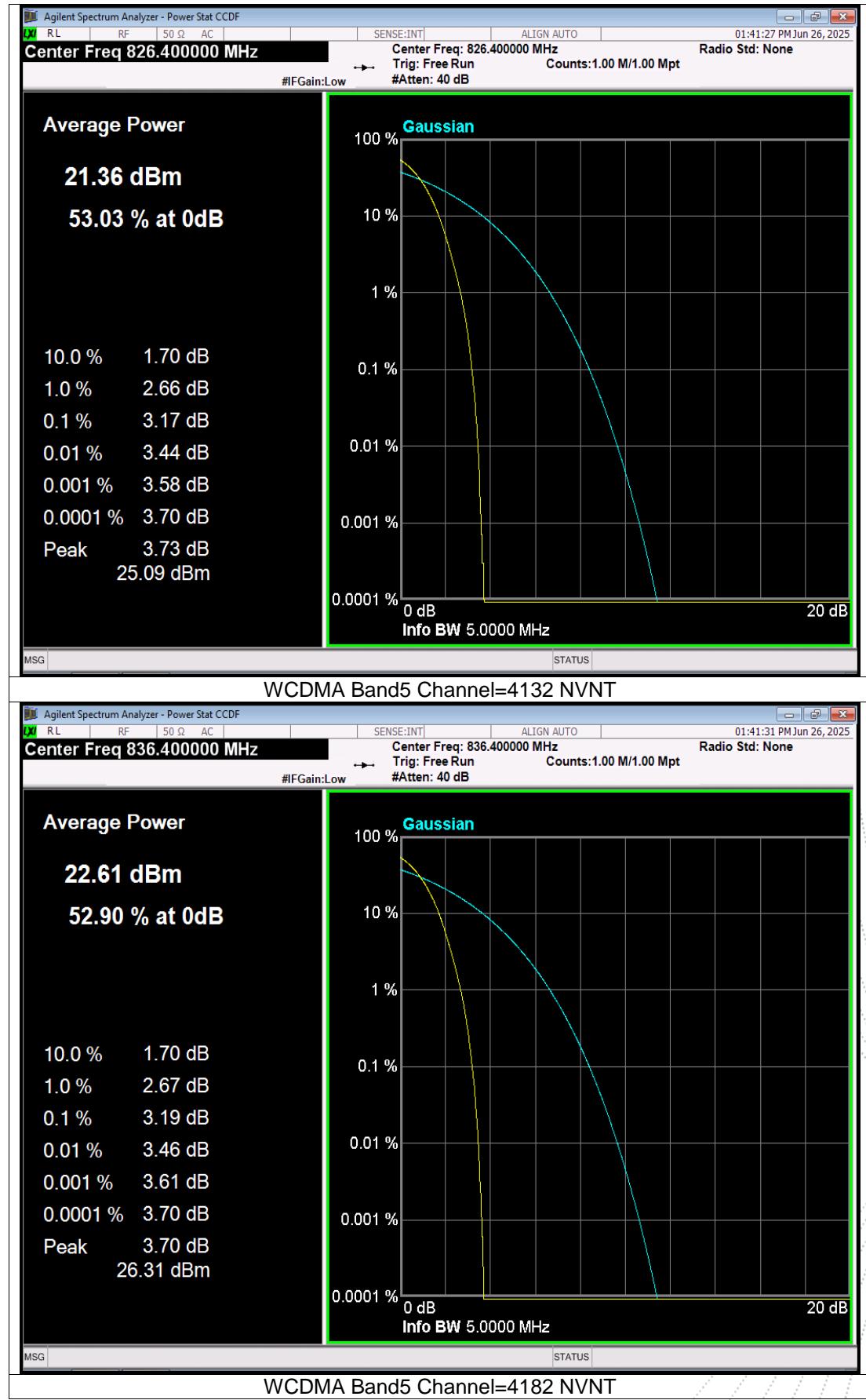
Note: In WCDMA, RMC, HSDPA and HSUPA all three tests only reflect the worst mode RMC.

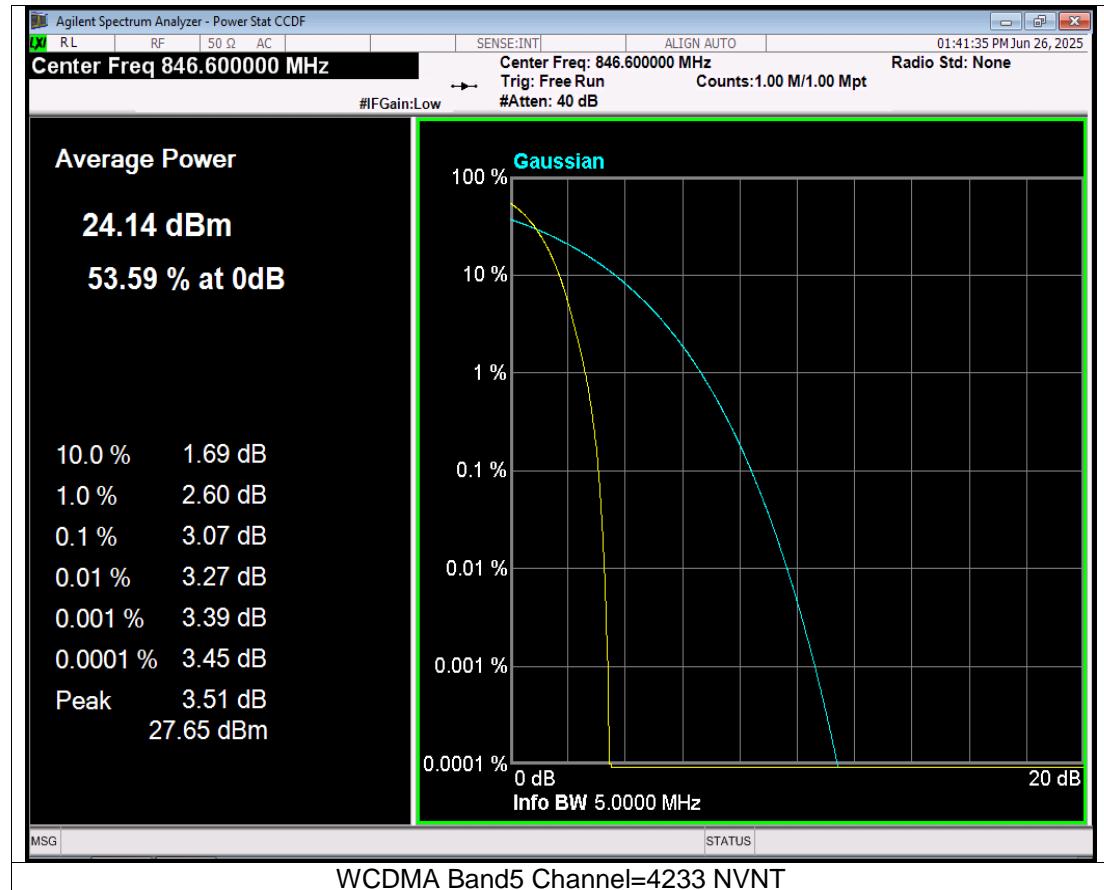






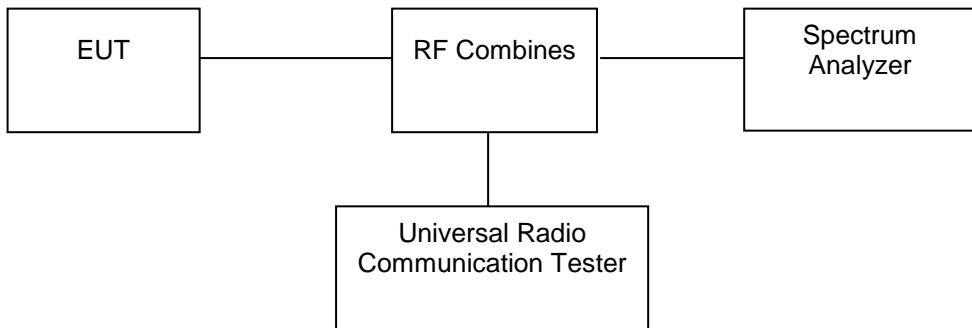
WCDMA Band2 Channel=9538 NVNT





8. Emission Bandwidth

8.1 Block Diagram Of Test Setup



8.2 Limit

According to §22.917(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §24.238(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §27.53, The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

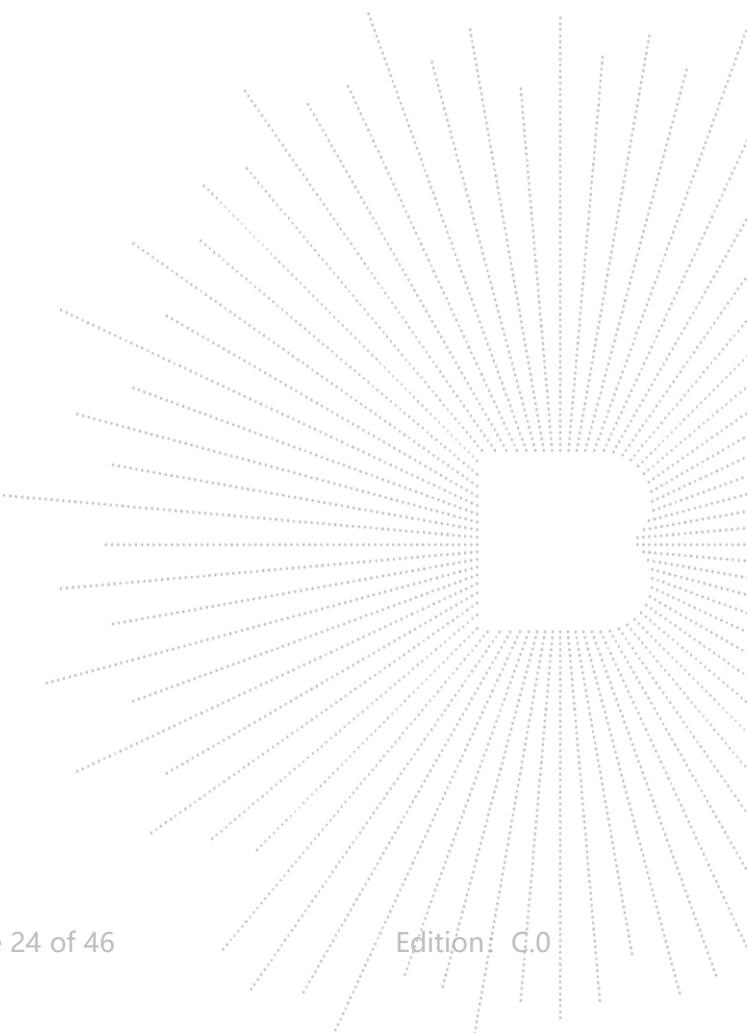
8.3 Test procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 10 kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

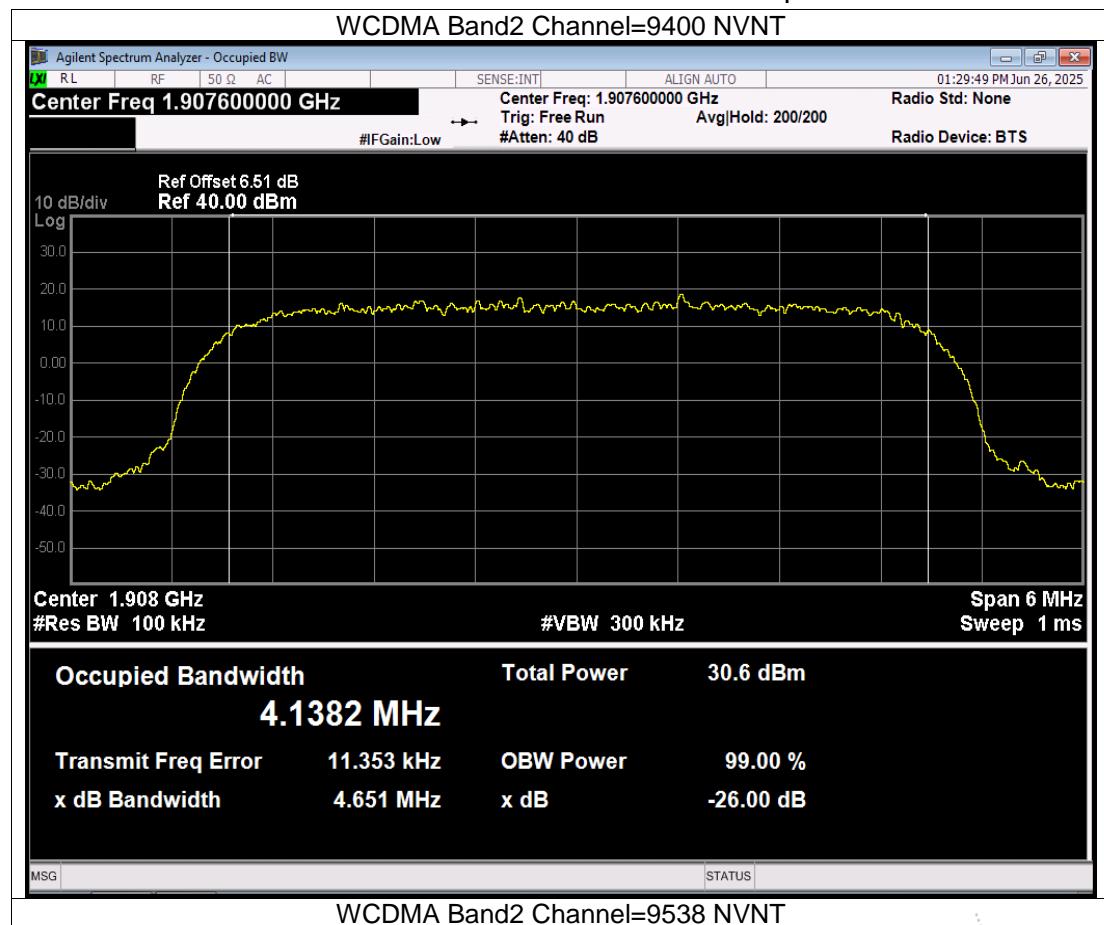
8.4 Test Result

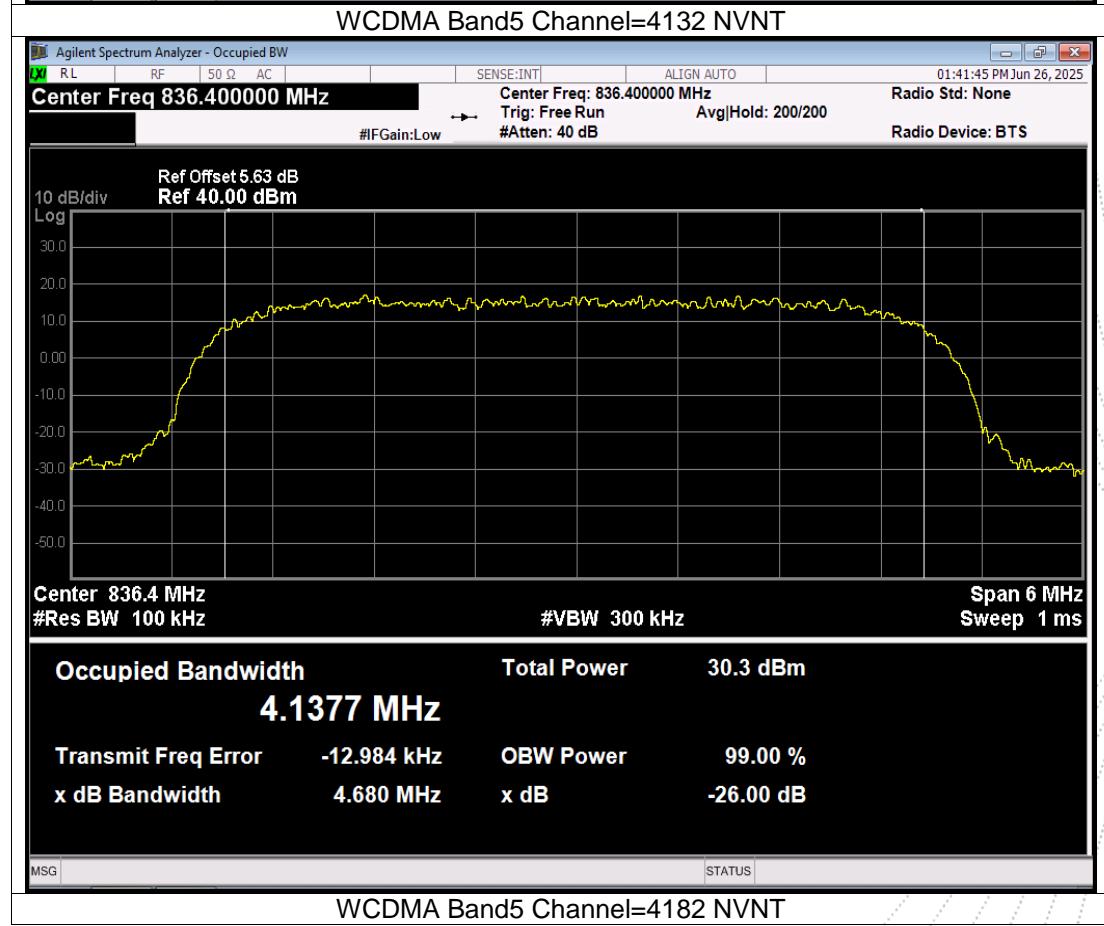
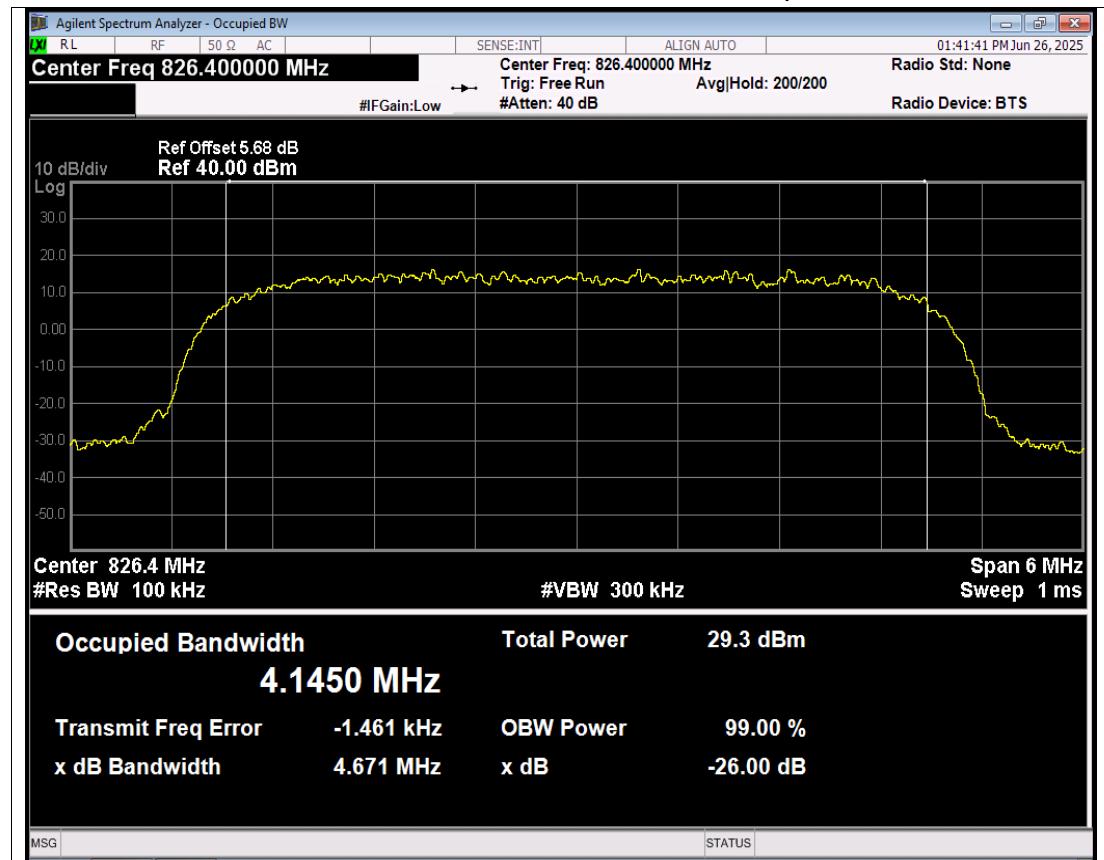
Band	Channel	Frequency (MHz)	99% OBW (kHz)	-26dB EBW (kHz)	Verdict
WCDMA Band2	9262	1852.4	4137.203	4652.356	PASS
WCDMA Band2	9400	1880	4162.132	4668.955	PASS
WCDMA Band2	9538	1907.6	4138.171	4651.425	PASS
WCDMA Band5	4132	826.4	4145.045	4671.259	PASS
WCDMA Band5	4182	836.4	4137.735	4680.158	PASS
WCDMA Band5	4233	846.6	4128.511	4663.148	PASS

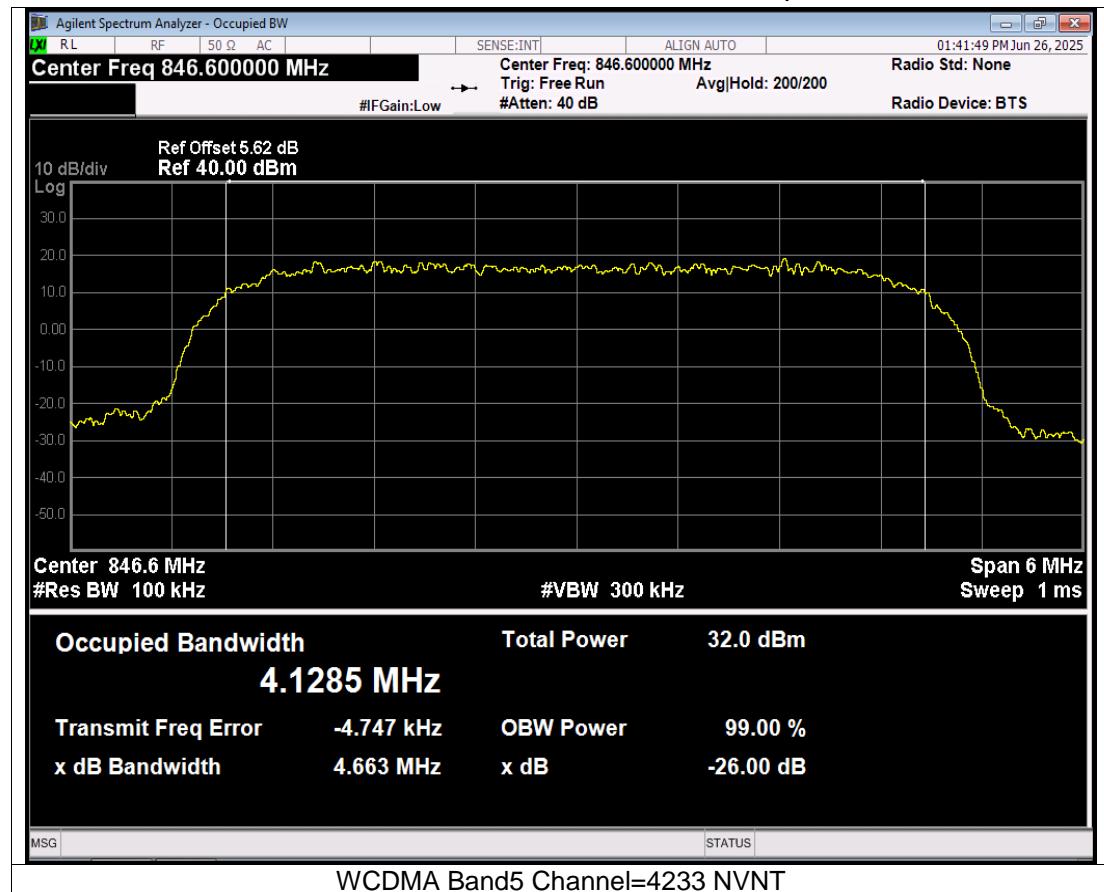
Note: In WCDMA, RMC, HSDPA and HSUPA all three tests only reflect the worst mode RMC.





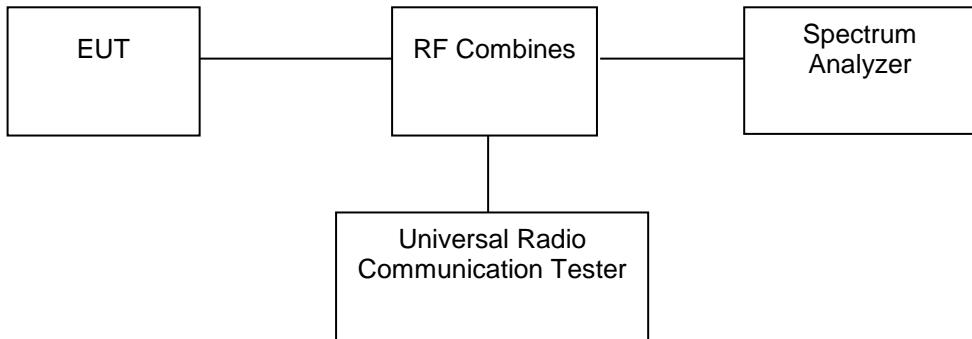






9. Out of Band Emissions at Antenna Terminal

9.1 Block Diagram Of Test Setup



9.2 Limit

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

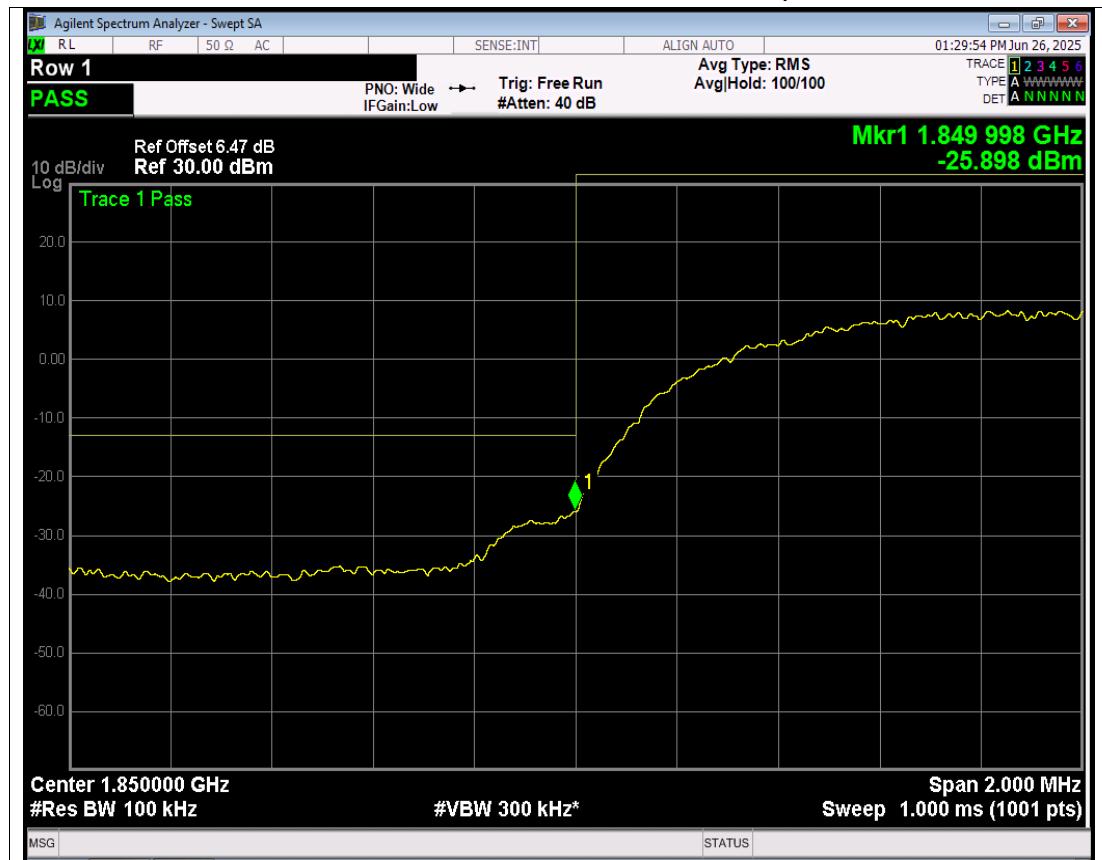
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

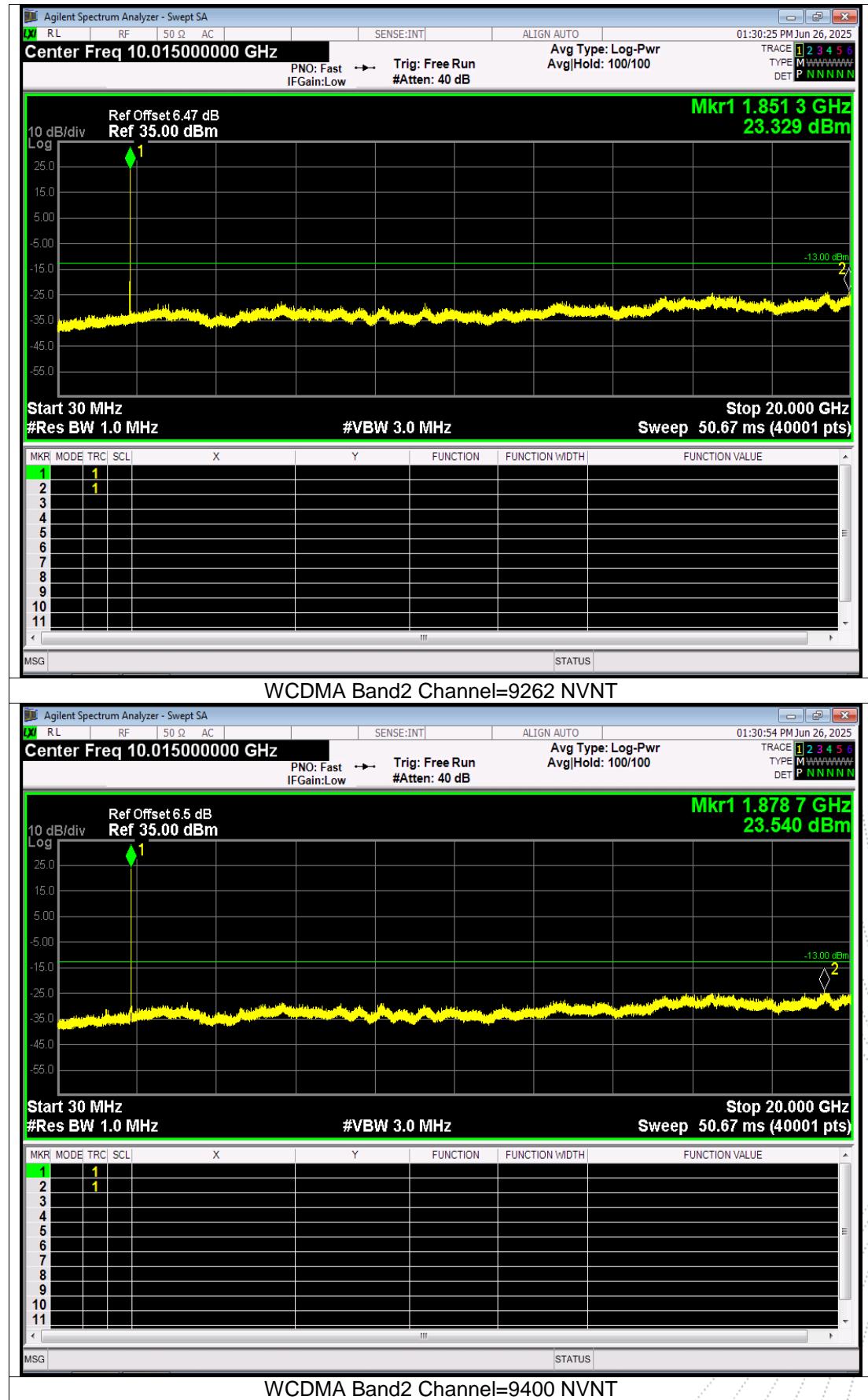
9.3 Test procedure

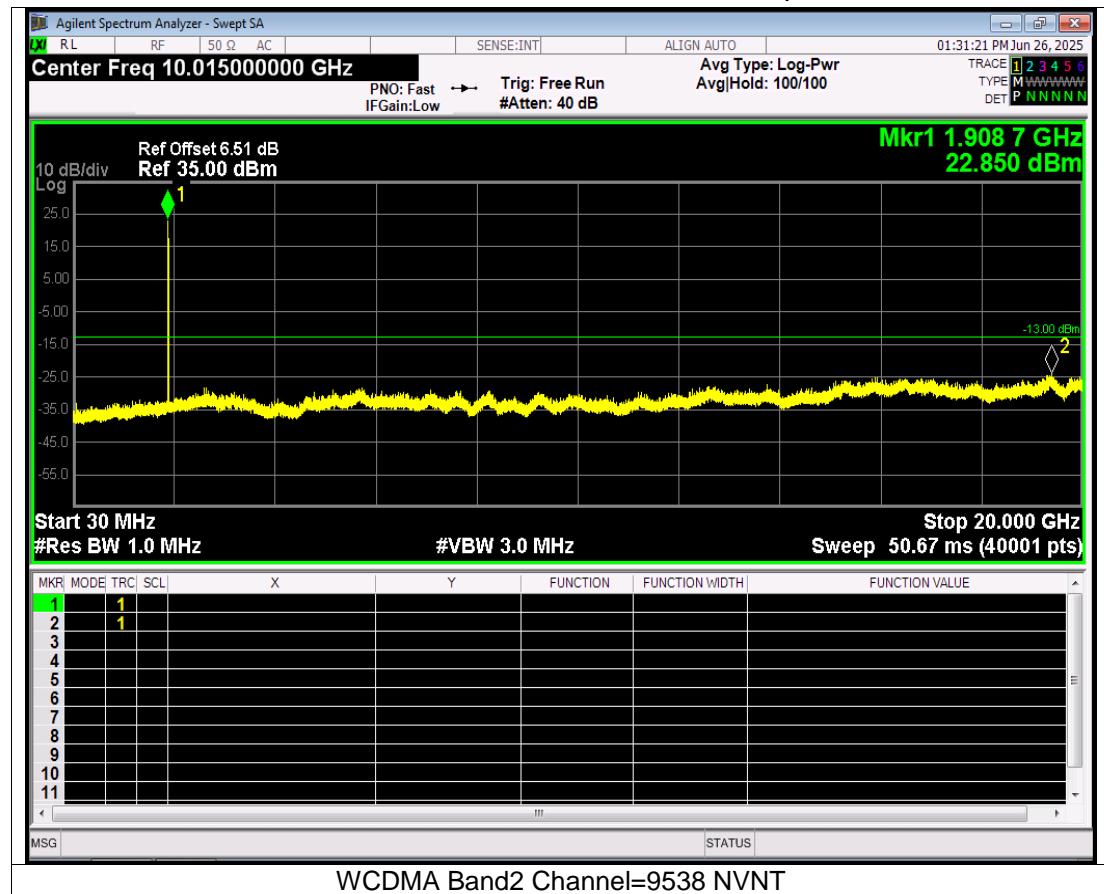
The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100 kHz and 1 MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10th harmonic. At the edge of the authorized Frequency block/band: RBW set 1%-5%OBW.

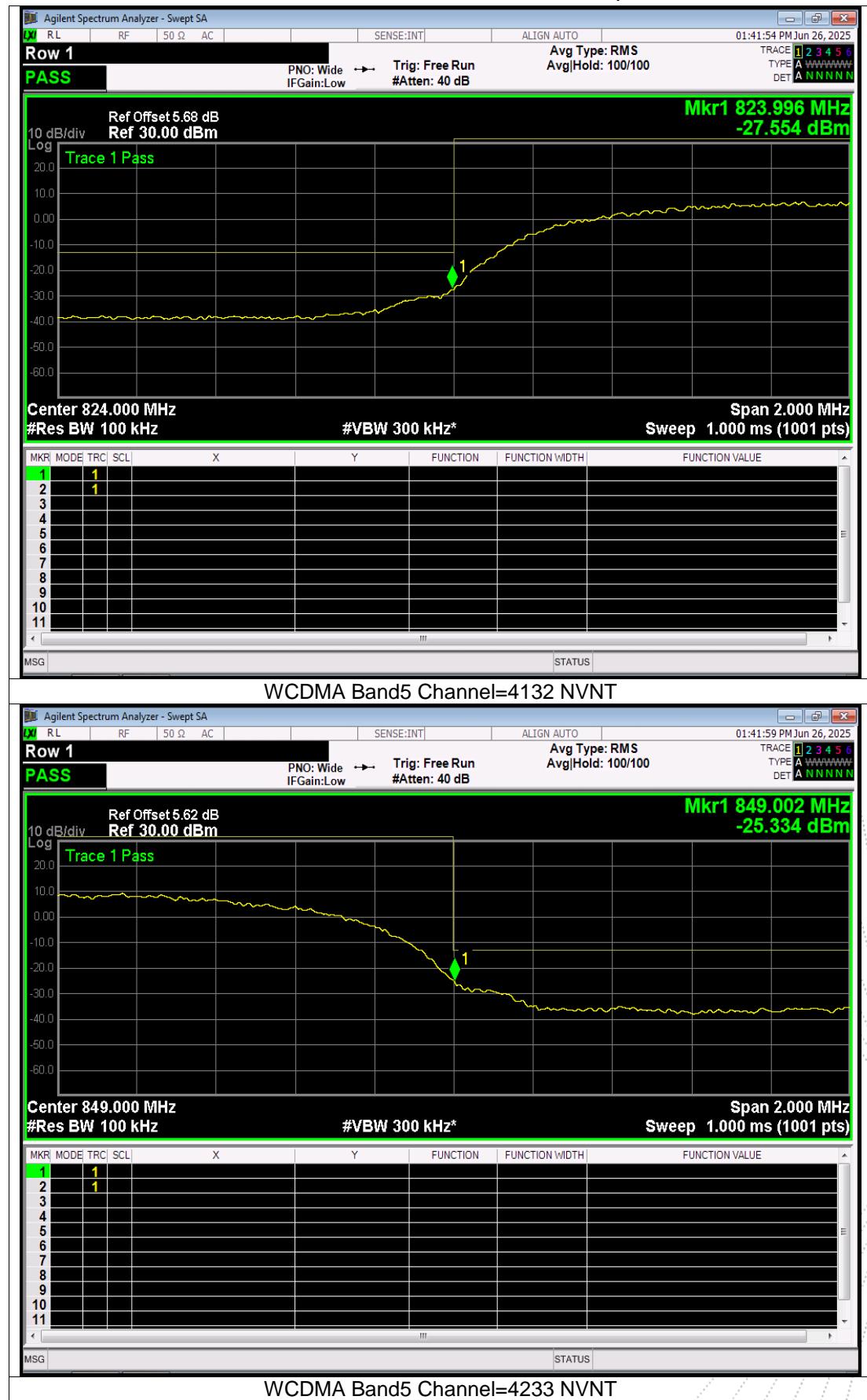
9.4 Test Result

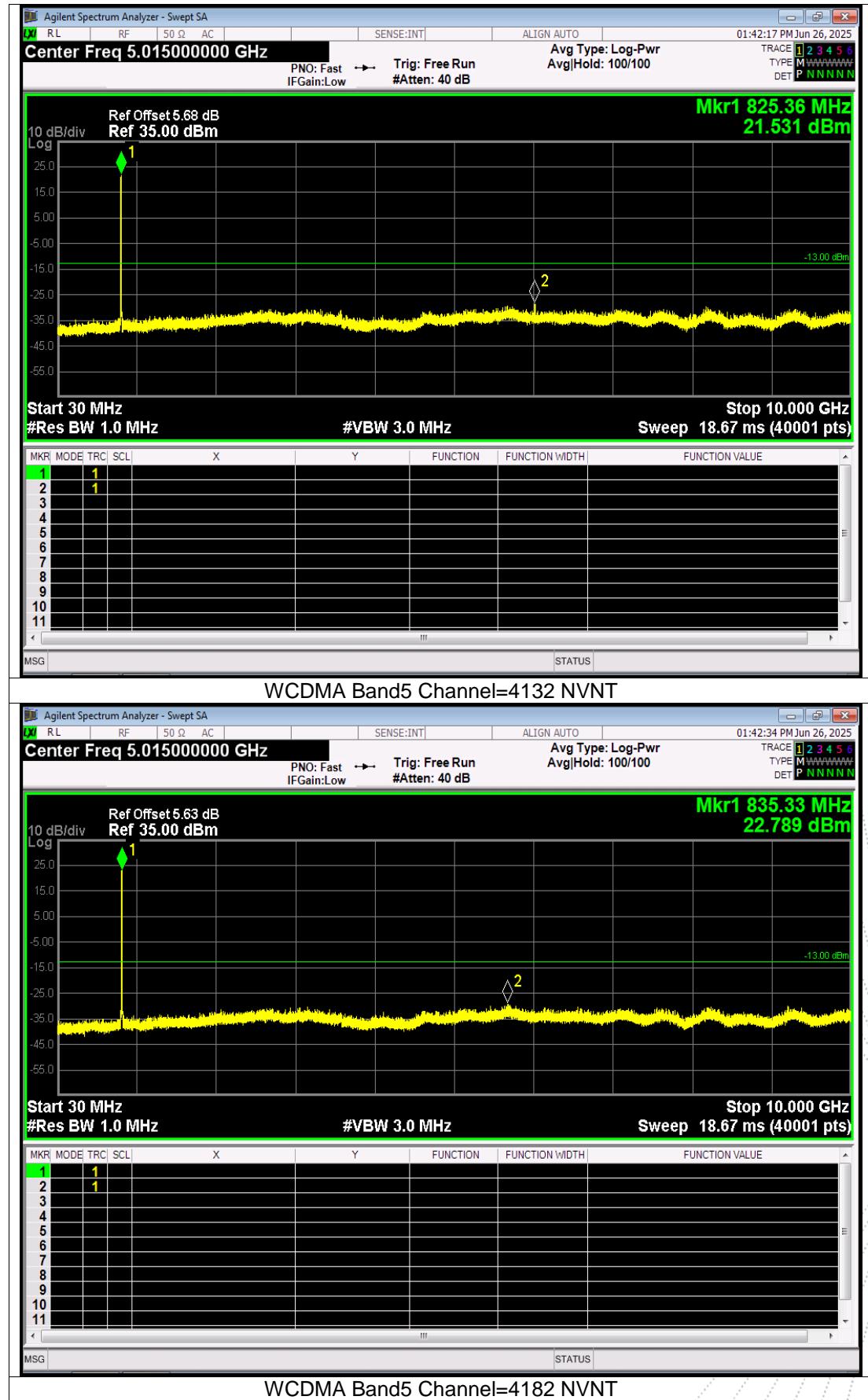


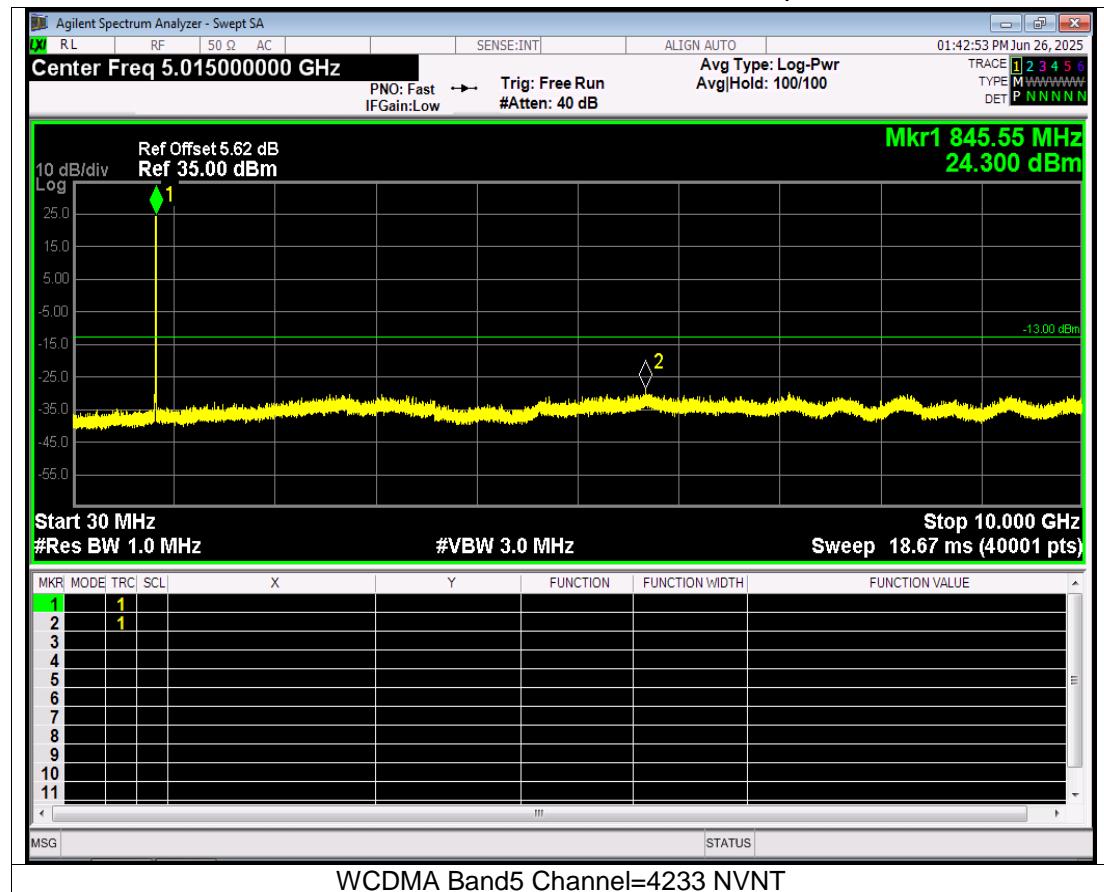
WCDMA Band2 Channel=9538 NVNT







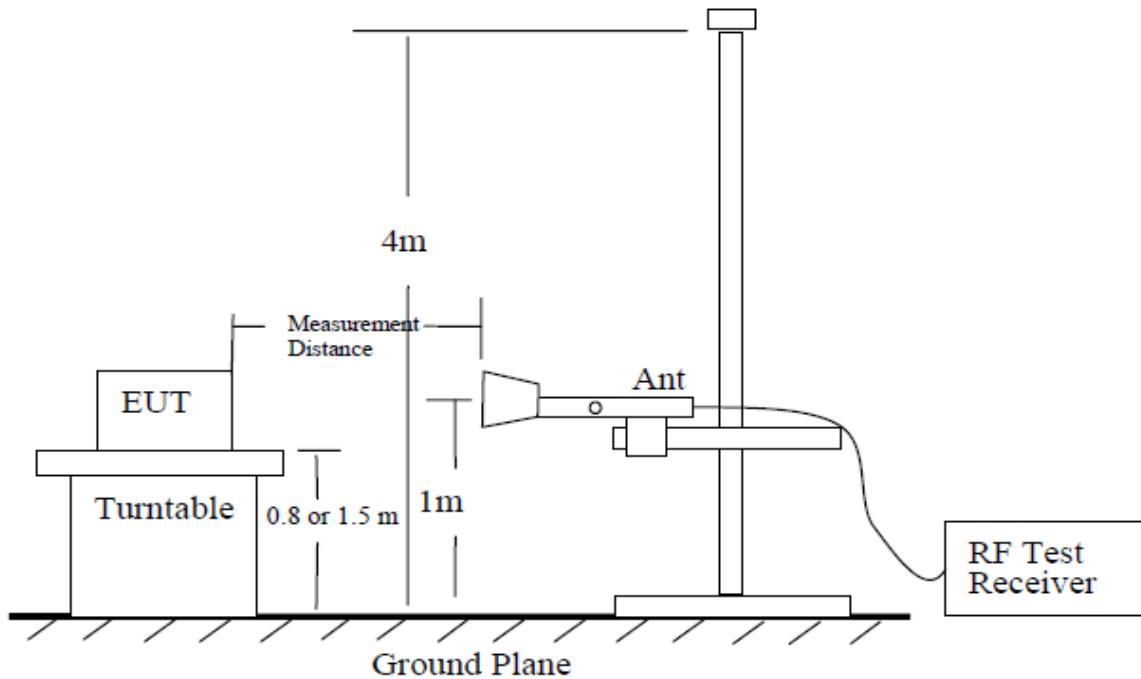




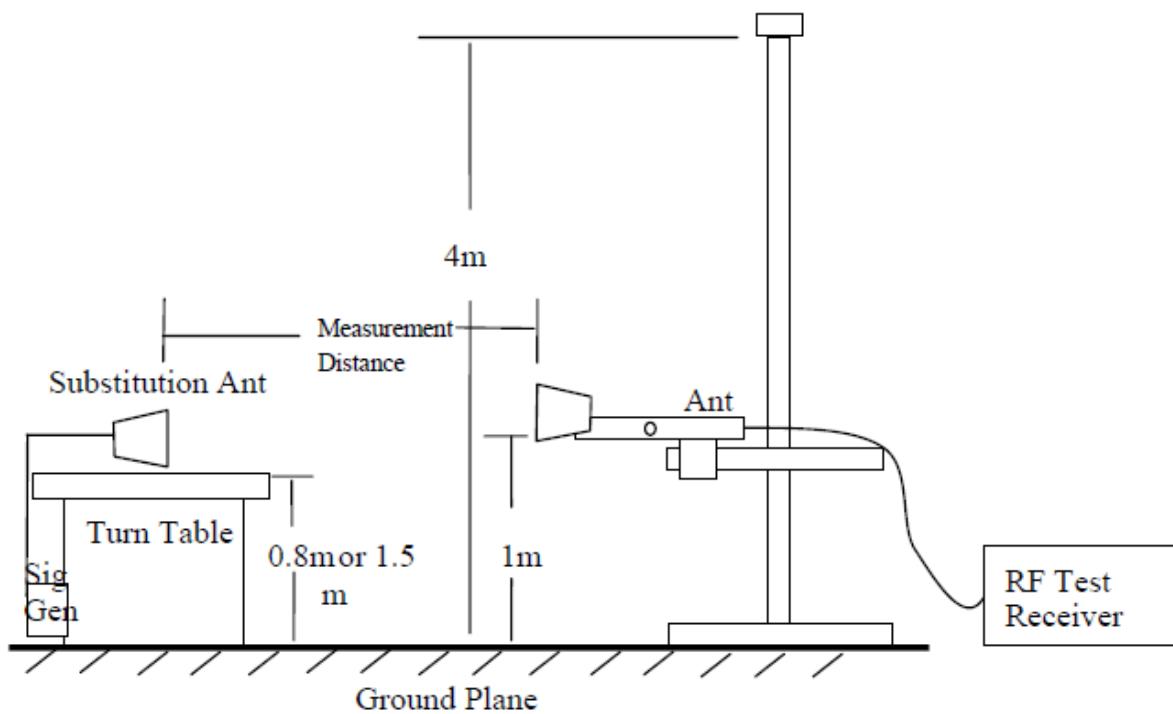
10. Spurious Radiated Emissions

10.1 Block Diagram Of Test Setup

(A) Test site-up for radiated ERP and/or EIRP measurements



(B) Substitution method set-up for radiated emission



10.2 Limit

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

10.3 Test procedure

1. The setup of EUT is according with per ANSI/TIA-603-E-2016 and ANSI C63.4-2014 measurement procedure.
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. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. 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 attenuation limit in dB = $43+10 \log_{10}$ (power out in Watts)

10.4 Test Result

For Band WCDMA Band II Mode(RMC)

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1852.4MHz)						
88.98	-14.78	-30.60	-45.38	-13.00	-32.38	H
3704.80	-13.19	-22.19	-35.38	-13.00	-22.38	H
5557.20	-13.20	-19.32	-32.52	-13.00	-19.52	H
88.98	-11.56	-30.60	-42.16	-13.00	-29.16	V
3704.80	-6.29	-22.19	-28.48	-13.00	-15.48	V
5557.20	-11.73	-19.32	-31.05	-13.00	-18.05	V
Middle Channel (1880MHz)						
88.98	-9.85	-30.60	-40.45	-13.00	-27.45	H
3760.00	-14.81	-22.08	-36.89	-13.00	-23.89	H
5640.00	-10.43	-19.28	-29.71	-13.00	-16.71	H
88.98	-13.11	-30.60	-43.71	-13.00	-30.71	V
3760.00	-7.20	-22.08	-29.28	-13.00	-16.28	V
5640.00	-8.39	-19.28	-27.67	-13.00	-14.67	V
High Channel (1907.6MHz)						
88.98	-11.98	-30.60	-42.58	-13.00	-29.58	H
3815.20	-10.26	-21.97	-32.23	-13.00	-19.23	H
5722.80	-11.57	-19.24	-30.81	-13.00	-17.81	H
88.98	-12.31	-30.60	-42.91	-13.00	-29.91	V
3815.20	-5.79	-21.97	-27.76	-13.00	-14.76	V
5722.80	-7.52	-19.24	-26.76	-13.00	-13.76	V

Note: Result=Reading+ Correct, Margin= Result- Limit

For Band WCDMA Band V Mode (RMC)

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (826.4MHz)						
88.98	-9.94	-30.60	-40.54	-13.00	-27.54	H
1652.80	-11.45	-27.36	-38.81	-13.00	-25.81	H
2479.20	-12.34	-25.16	-37.50	-13.00	-24.50	H
88.98	-11.83	-30.60	-42.43	-13.00	-29.43	V
1652.80	-4.38	-27.36	-31.74	-13.00	-18.74	V
2479.20	-8.68	-25.16	-33.84	-13.00	-20.84	V
Middle Channel (836.4MHz)						
88.98	-10.25	-30.60	-40.85	-13.00	-27.85	H
1672.80	-15.27	-27.32	-42.59	-13.00	-29.59	H
2509.20	-14.27	-25.07	-39.34	-13.00	-26.34	H
88.98	-9.12	-30.60	-39.72	-13.00	-26.72	V
1672.80	-9.28	-27.32	-36.60	-13.00	-23.60	V
2509.20	-11.56	-25.07	-36.63	-13.00	-23.63	V
High Channel (846.6MHz)						
88.98	-15.36	-30.60	-45.96	-13.00	-32.96	H
1693.20	-14.90	-27.27	-42.17	-13.00	-29.17	H
2539.80	-14.16	-24.98	-39.14	-13.00	-26.14	H
88.98	-10.62	-30.60	-41.22	-13.00	-28.22	V
1693.20	-5.18	-27.27	-32.45	-13.00	-19.45	V
2539.80	-11.11	-24.98	-36.09	-13.00	-23.09	V

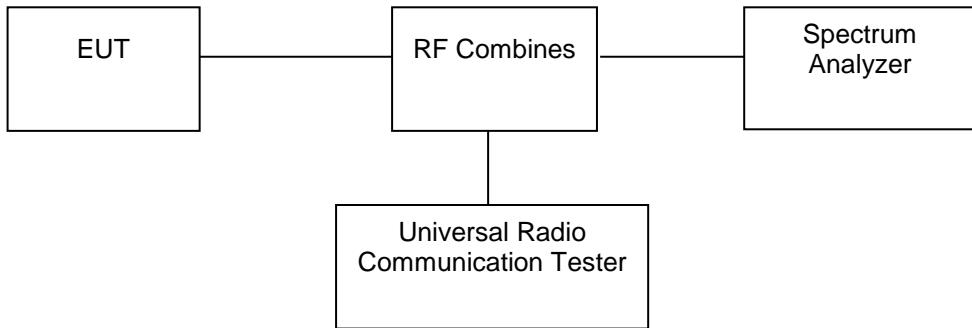
Note: Result=Reading+ Correct, Margin= Result- Limit

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Note: All modes have been tested and only the worst mode is represented, with the worst data being Subtest1.

11. Frequency Stability

11.1 Block Diagram Of Test Setup



11.2 Limit

FCC Part 22.355: ± 2.5 ppm

FCC Part 24.235:

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

FCC Part 27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

11.3 Test procedure

1. The testing follows FCC KDB 971168 D01v03r01 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C steps up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

Test Procedures for Voltage Variation

1. The testing follows FCC KDB 971168 D01v03r01 Section 9.0.
2. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the system simulator.
3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

11.4 Test Result

All modes have been tested, and the worst result recorded was report as below

Operation Mode	Channel Number	Test Condition		Channel Frequency (MHz)	Freq.Dev. (Hz)	Deviation (ppm)	Limit (ppm)
		Voltage (V)	Temp (°C)				
WCDMA8 50	4132	VN	-30	836.40	19.56	0.0234	2.5
			-20	836.40	12.53	0.0150	2.5
			-10	836.40	10.93	0.0131	2.5
			0	836.40	16.36	0.0196	2.5
			10	836.40	16.54	0.0198	2.5
			20	836.40	19.31	0.0231	2.5
			30	836.40	14.17	0.0169	2.5
			40	836.40	15.93	0.0190	2.5
			50	836.40	19.94	0.0238	2.5
		VL	20	836.40	15.64	0.0187	2.5
		VH	20	836.40	12.52	0.0150	2.5
VERDICT				PASS			

Operation Mode	Channel Number	Test Condition		Channel Frequency (MHz)	Freq.Dev. (Hz)	Deviation (ppm)	Limit (ppm)
		Voltage (V)	Temp (°C)				
WCDMA1 900	9262	VN	-30	1852.40	19.04	0.0103	Note 4
			-20	1852.40	15.75	0.0085	Note 4
			-10	1852.40	11.18	0.0060	Note 4
			0	1852.40	11.70	0.0063	Note 4
			10	1852.40	10.82	0.0058	Note 4
			20	1852.40	16.69	0.0090	Note 4
			30	1852.40	15.38	0.0083	Note 4
			40	1852.40	11.58	0.0062	Note 4
			50	1852.40	15.36	0.0083	Note 4
			VL	20	11.31	0.0061	Note 4
			VH	20	12.83	0.0069	Note 4
VERDICT				PASS			

Note 1: All modes have been tested with GSM.

Note 2: All modes have been tested, and the worst result recorded was report as below

Note 3: The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Note 4: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

12. EUT Photographs

EUT Photo 1



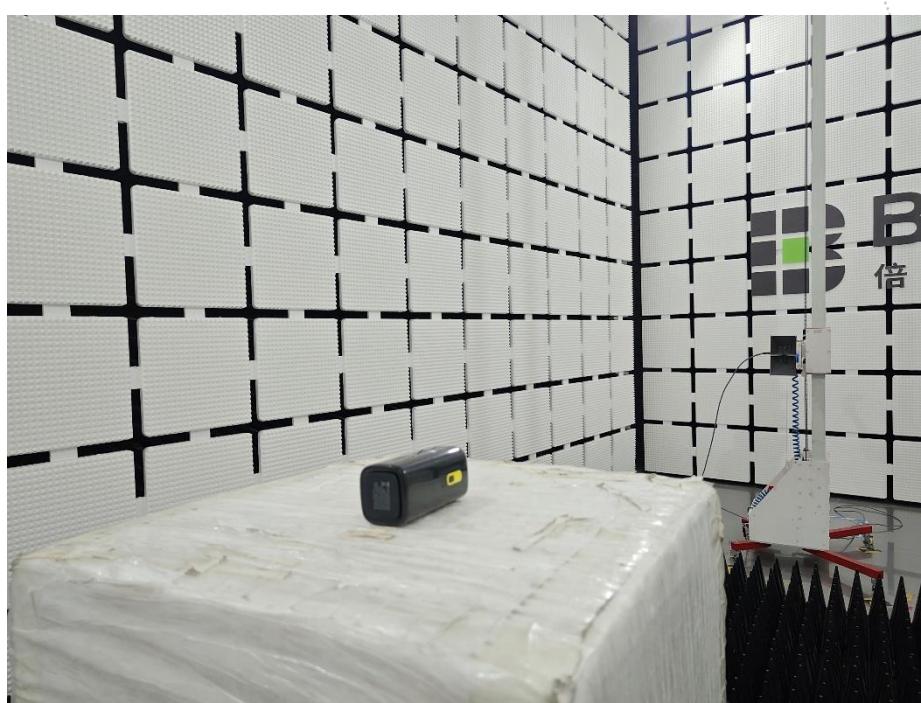
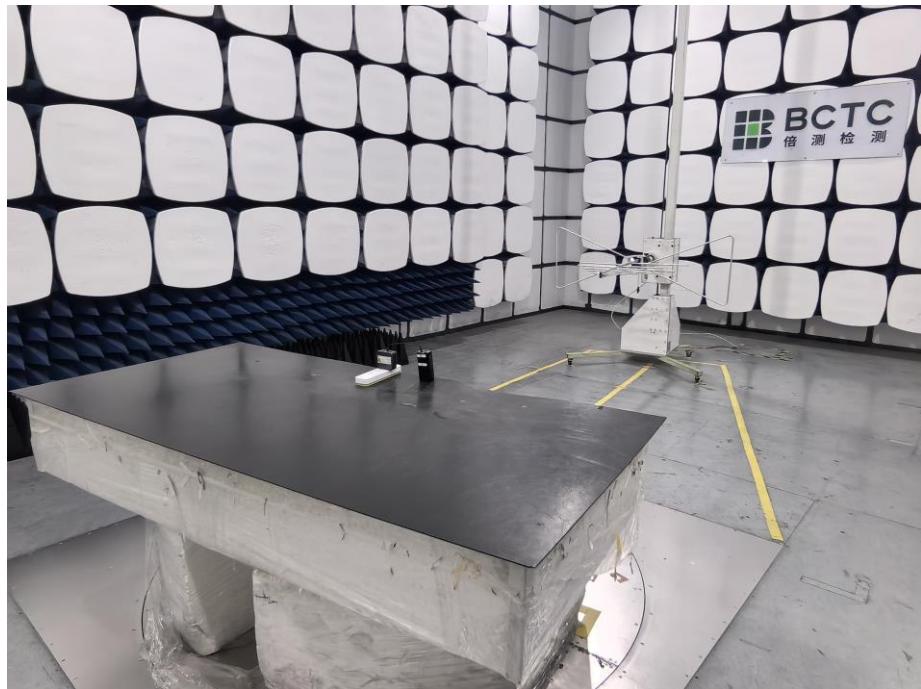
EUT Photo 2

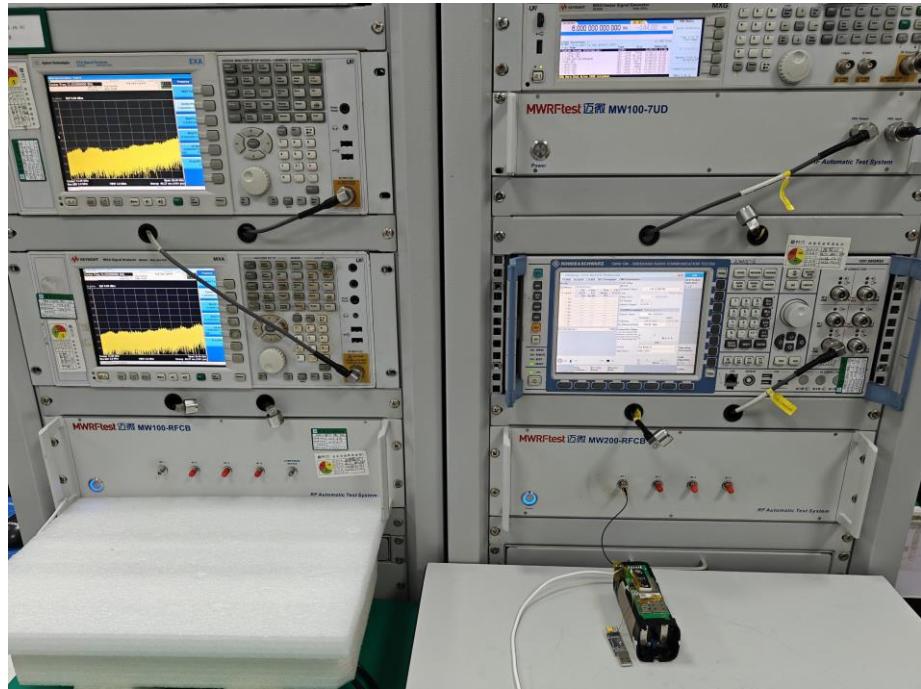


NOTE: Appendix-Photographs Of EUT Constructional Details.

13. EUT Test Setup Photographs

Radiated Measurement Photos





STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

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***** END *****