Product Name: Smart Phone	**Report No: FCC022023-00284RF5**
Product Model: N60Pro	**Security Classification: Open**
Version: V1.0	**Total Page: 63**

TIRT Testing Report

Prepared By:	Checked By:	Approved By:	
Stone Tang	Randy Lv	Daniel Chen	
Stone Tang	Randy LV	Daniel chen	

RF TEST REPORT

FCC ID: 2AX4YN60PRO

According to

FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 22 Subpart H
FCC CFR Title 47 Part 24 Subpart E
FCC CFR Title 47 Part 27

Equipment	:	Smart Phone
Model No.	:	N60Pro
Trademark	:	DOOGEE
Applicant	:	Shenzhen DOOGEE Hengtong Technology CO.,LTD B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No. 22, Longhua New District, Shenzhen, China

- The test result referred exclusively to the presented test model /sample.
- Without written approval of TIRT Inc. the test report shall not reproduced except in full.
- Test date: 2023/02/01~2023/02/14

Lab: Beijing TIRT Technology Service Co.,Ltd Shenzhen

Add: 101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China

TEL: +86-0755-27087573

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History of this test report

Original Report Issue Date: 2023.02.17

● No additional attachment

○ Additional attachments were issued following record

Attachment No.	Issue Date	Description

1 Test Summary

Test Item	Section in CFR 47	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)(2) Part 24.232 (c) Part 27.50(d)	Pass
Peak-to-Average Ratio	Part 2.1046 Part 24.232 (d) Part 27.50(d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a) Part 27.53(g)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a) Part 27.53(g)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a) Part 27.53(g)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b) Part 27.54	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2) Part 27.54	Pass

Note: 1. Pass: The EUT complies with the essential requirements in the standard.

2. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.

2 General Information

2.1 General Description of EUT

EUT Name	:	Smart Phone
Model No.	:	N60Pro
DIFF.	:	N/A
Power supply	:	DC 9V from adapter, DC 3.7V from battery
Support Networks	:	GSM, GPRS, EGPRS, WCDMA
Support Bands	:	GSM850, PCS1900, WCDMA Band V, WCDMA Band IV, WCDMA Band II
TX Frequency	:	GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz WCDMA Band V: 826.40MHz -846.60MHz WCDMA Band II: 1852.40MHz -1907.60MHz WCDMA Band IV: 1712.4 MHz -1752.6MHz
GPRS Class	:	12
EGPRS Class	:	12
Modulation type	:	GSM/GPRS: GMSK EGPRS: GMSK/8PSK WCDMA Band II/IV/V: QPSK
Antenna type	:	Internal antenna
Antenna gain	:	Maximum Gain is 0.15dBi for GSM 850 Maximum Gain is 0.75dBi for PCS1900 Maximum Gain is 0.15dBi for WCDMA Band V Maximum Gain is 0.59dBi for WCDMA Band IV Maximum Gain is 0.68dBi for WCDMA Band II Antenna information is provided by applicant. There is WWAN diversity antenna inside the product, which is only for receiving function.
Software version	:	DOOGEE-N60Pro-EEA-Android12.0-20230220
Hardware version	:	TF978_MAIN_PCB_V1.0

Remark: 1.The worst-case simultaneous transmission configuration was evaluated with no non-compliance found. Results in this report are only for 2G and 3G function, and there is no other transmitter involved.
2. The product contains two SIM card slots, both of which have been tested and only reflect the data of SIM card slot 1.

Operation Frequency List:

GSM 850		PCS1900		WCDMA Band V		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20	4132	826.40	9262	1852.40
129	824.40	513	1850.40	4133	826.60	9263	1852.60
· ⋮	· ⋮	· ⋮	· ⋮	· ⋮	· ⋮	· ⋮	· ⋮
189	836.40	660	1879.80	4181	836.20	9399	1879.80
190	836.60	661	1880.00	4182	836.40	9400	1880.00
191	836.80	662	1880.20	4183	836.60	9401	1880.20
· ⋮	· ⋮	· ⋮	· ⋮	· ⋮	· ⋮	· ⋮	· ⋮
250	848.60	809	1909.60	4232	846.40	9537	1907.40
251	848.80	810	1909.80	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:

Final test channel:

GSM 850		PCS1900		WCDMA Band V		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20	4132	826.40	9262	1852.40
190	836.60	661	1880.00	4183	836.60	9400	1880.00
251	848.80	810	1909.80	4233	846.60	9538	1907.60

WCDMA Band IV	
Channel	Frequency (MHz)
1312	1712.4
1450	1740.0
1513	1752.6

2.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 subpart H and Part 24 subpart E of the FCC CFR 47 Rules.

2.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

2.4 Test Facility

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Designation Number:	CN1309
Test Firm Registration Number:	825524
Telephone:	+86-0755-27087573

2.5 Measurement Uncertainty

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	±142.12 KHz
RF power conducted	±0.74 dB
RF power radiated	±3.25dB
Spurious emissions, conducted	±1.78dB
Spurious emissions, radiated (9KHz~30MHz)	±2.56dB
Spurious emissions, radiated (30MHz～1GHz)	±4.6dB
Spurious emissions, radiated (Above 1GHz)	±4.9dB
Conduction Emissions(150kHz~30MHz)	±3.1 dB
Humidity	±4.6%
Temperature	±0.7°C
Time	±1.25%

3 Test Instruments list

No.	Equipment	Manufacturer	Type No.	Serial No.	Cal. date (yyyy/mm/dd)	Cal. Due date (yyyy/mm/dd)
1	EMI Receiver	Rohde&Schwarz	ESCI	100718	2022/11/09	2023/11/10
2	AMN	Rohde&Schwarz	ENV216	100075	2022/11/09	2023/11/10
3	AMN	Schwarzbeck	NSLK8127	#829	2022/11/09	2023/11/10
4	ECSI RF IN RF Cable	Rohde&Schwarz	RP-X1	\	2022/11/17	2023/11/16
5	ECSI RF IN RF Cable	Rohde&Schwarz	Sapre sm	\	2022/11/09	2023/11/10
6	EMI Receiver	Rohde&Schwarz	ESR7	102013	2022/11/09	2023/11/10
7	Spectrum analyzer	Rohde&Schwarz	FSV30	103741	2022/11/09	2023/11/10
8	Spectrum analyzer	KEYSIGHT	N9010A	MY51440158	2022/11/09	2023/11/10
9	Integral Antenna	Schwarzbeck	VULB 9163	9163-868	2022/12/25	2023/12/24
10	Integral Antenna	Schwarzbeck	BBHA 9120D	BBHA 9120D 1201	2022/11/09	2023/11/10
11	Integral Antenna	Schwarzbeck	BBHA 9170	9170#685	2022/11/06	2023/11/10
12	Preamplifier	CD Systems Inc	PAP-03036-30	85060000	2022/11/09	2023/11/10
13	Preamplifier	Schwarzbeck	BBV9721	9721-019	2022/11/09	2023/11/10
14	Preamplifier	emci	EMC012645 SE	980417	2022/11/09	2023/11/10
15	ECSI RF IN RF Cable	Rohde&Schwarz	AP-X1	\	2022/11/09	2023/11/10
16	Spectrum Analyzer	Agilent	N9010A	MY52221119	2022/11/09	2023/11/10
17	Power Collection Unit	Tonscend	JS0806-2	188060134	2022/09/12	2023/09/11
18	Tonscend Test System	Tonscend	2.6.77.0518	NA	NA	NA
19	Power Sensor	Agilent	U2021XA	MY55410011	2022/09/12	2023/09/11
20	Power Sensor	Agilent	U2021XA	MY55410012	2022/09/12	2023/09/11
21	Power Sensor	Agilent	U2021XA	MY55410018	2022/09/12	2023/09/11
22	Power Sensor	Agilent	U2021XA	MY55410019	2022/09/12	2023/09/11
23	Temp&Humidity Recorder	Anymetre	JR900	NA	2022/11/03	2023/11/02
24	Temp&Humidity Chamber	ETOMA	NTH1100-30A	16080628	2022/09/01	2023/08/30

4 System test configuration

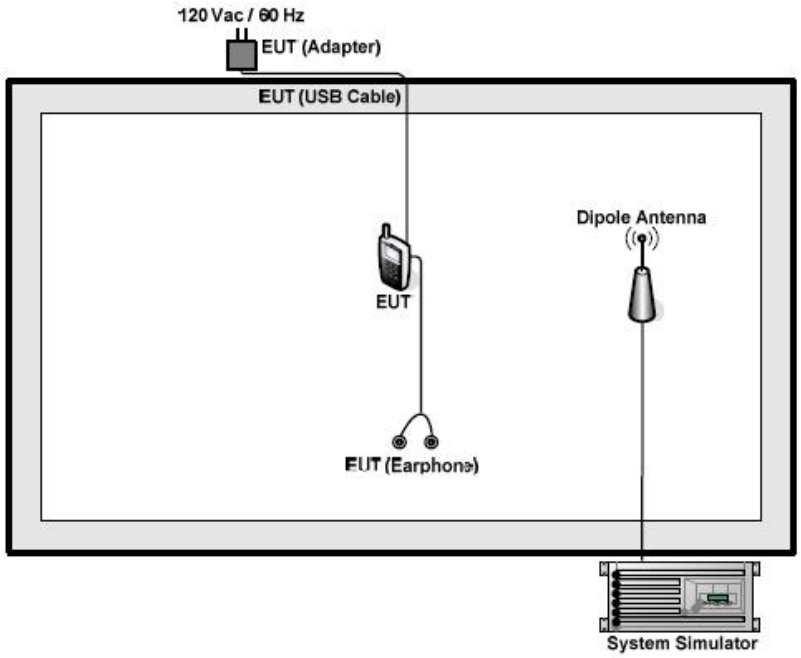
4.1 Test mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

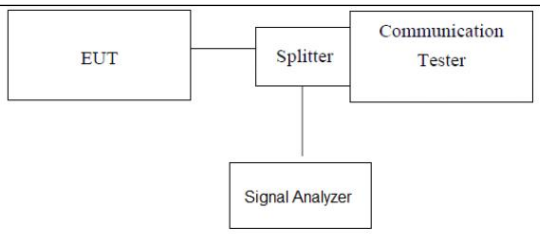
Test modes		
Band	Radiated	Conducted
GSM 850	■ GSM link ■ GPRS 1 link ■ EPRS 1 link	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link
PCS 1900	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link
WCDMA II	■ RMC 12.2Kbps link	■ RMC 12.2Kbps link
WCDMA Band IV	■ RMC 12.2Kbps link	■ RMC 12.2Kbps link
WCDMA Band V	■ RMC 12.2Kbps link	■ RMC 12.2Kbps link

Note: The maximum power levels are GSM mode for GMSK link, GPRS multi-slot class 8 mode for GMSK link, EGPRS multi-slot class 8 mode for 8PSK link, RMC12.2Kbps mode for WCDMA Band V/II. Only these modes were used for all tests.

4.2 Configuration of Tested System



4.3 Conducted AV Output Power

Test Requirement:	FCC part22.913(a) and FCC part24.232(b), FCC part 27.50 (d)(4)
Test Method:	FCC part2.1046
Limit:	GSM850, WCDMA Band V: 7W(38.45dbm) PCS1900, WCDMA Band II: 2W(33.01dbm) WCDMA Band IV: 1W(30.00dbm)
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the Signal Analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

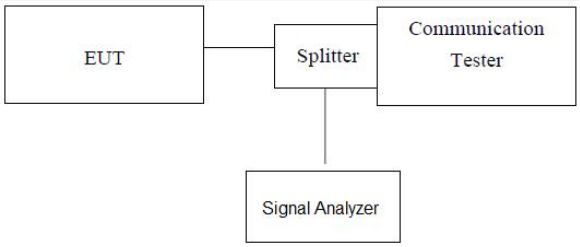
Measurement Data

Conducted Burst Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM (GMSK, 1 TX slot)	33.33	**33.91**	33.24	29.22	**29.50**	29.40
GPRS (GMSK, 1 TX slot)	32.12	32.45	32.52	28.31	28.58	28.52
GPRS (GMSK, 2 TX slot)	30.63	31.47	31.42	28.04	28.52	27.70
GPRS (GMSK, 3 TX slot)	31.12	31.84	31.51	27.99	28.29	28.22
GPRS (GMSK, 4 TX slot)	32.56	**33.77**	33.57	29.03	**29.28**	28.83
EGPRS (8PSK, 1 TX slot)	31.61	31.03	31.64	27.94	27.62	27.21
EGPRS (8PSK, 2 TX slot)	30.85	31.37	**31.86**	27.94	28.32	26.98
EGPRS (8PSK, 3 TX slot)	31.54	31.63	31.28	27.79	28.31	**28.41**
EGPRS (8PSK, 4 TX slot)	31.36	31.81	31.76	27.53	27.43	27.69

Burst Average Power (dBm)						
Band	WCDMA Band II			WCDMA Band V		
Channel	9262	9400	9538	4132	4183	4233
Frequency	1852.4	1880.0	1907.6	826.4	836.6	846.6
RMC 12.2Kbps	23.20	**23.80**	23.79	**23.90**	23.86	23.48
HSDPA Subtest-1	23.35	23.75	22.35	23.24	23.46	23.04
HSDPA Subtest-2	23.23	22.76	22.18	23.28	23.22	22.83
HSDPA Subtest-3	22.49	22.72	22.20	23.70	23.39	22.77
HSDPA Subtest-4	23.08	23.17	22.92	23.67	23.30	23.60
HSUPA Subtest-1	22.50	22.74	23.03	23.17	23.27	23.27
HSUPA Subtest-2	23.00	23.57	22.44	23.93	23.66	22.96
HSUPA Subtest-3	22.84	23.10	22.41	22.78	22.98	23.34
HSUPA Subtest-4	23.20	22.83	22.07	23.72	23.61	23.23
HSUPA Subtest-5	22.50	22.84	22.34	23.59	23.36	23.39

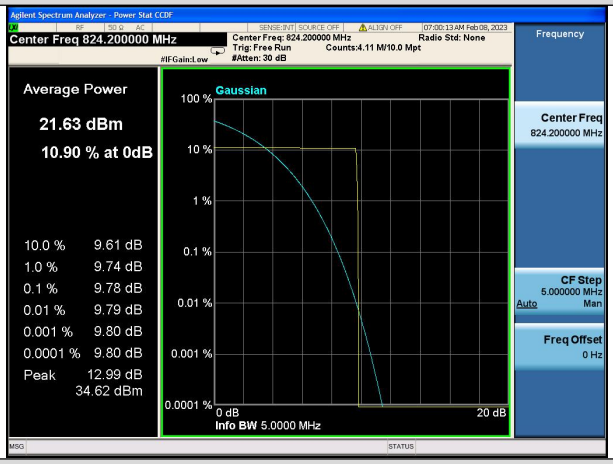
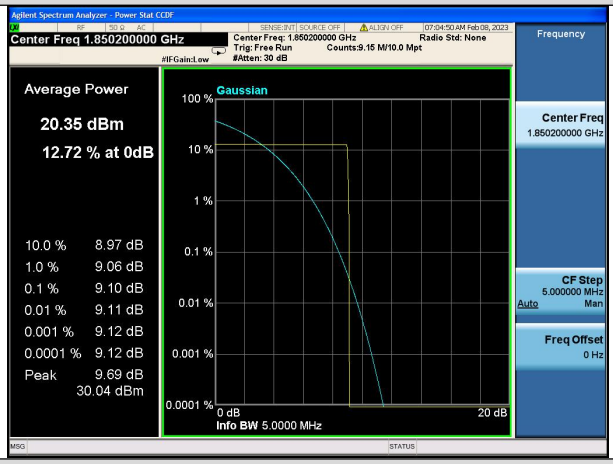
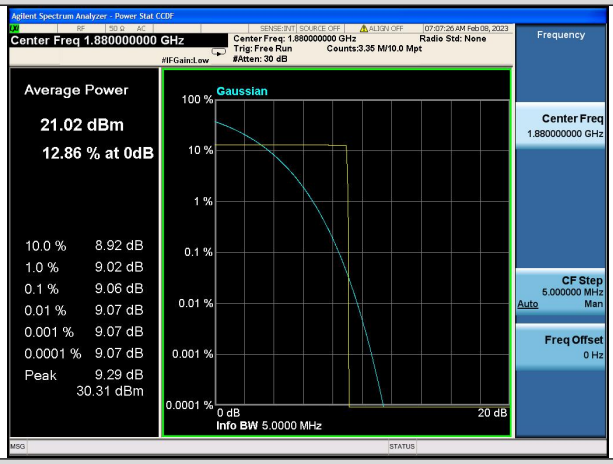
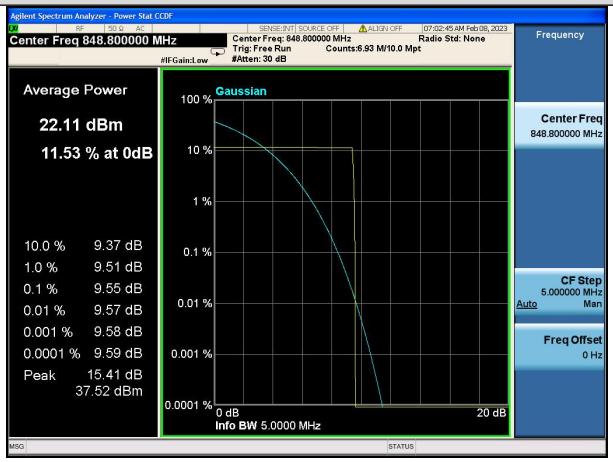
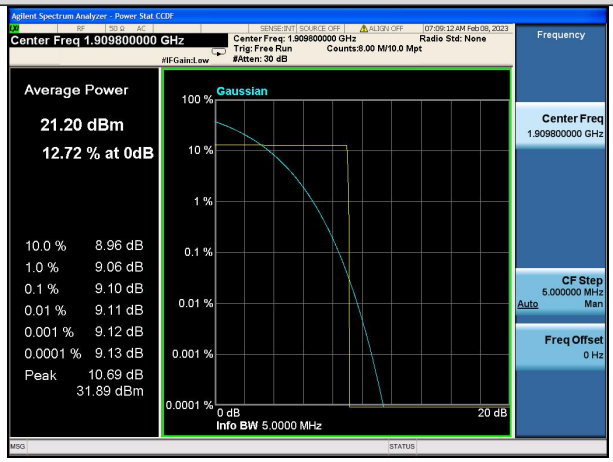
Burst Average Power (dBm)			
Band	WCDMA Band IV		
Channel	1312	1450	1513
Frequency	1712.4	1740.0	1752.6
RMC 12.2Kbps	24.73	**24.90**	24.63
HSDPA Subtest-1	24.41	24.49	23.74
HSDPA Subtest-2	23.78	24.48	24.05
HSDPA Subtest-3	24.00	24.40	24.10
HSDPA Subtest-4	24.23	24.74	24.29
HSUPA Subtest-1	24.57	24.55	24.23
HSUPA Subtest-2	24.50	24.76	23.98
HSUPA Subtest-3	23.77	24.70	24.30
HSUPA Subtest-4	23.97	24.47	24.02
HSUPA Subtest-5	24.29	24.54	24.22

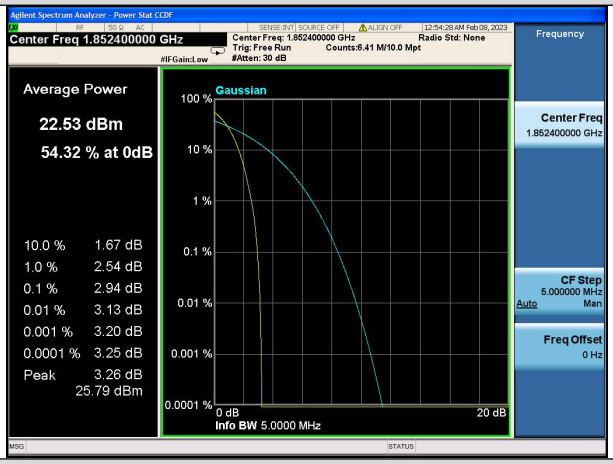
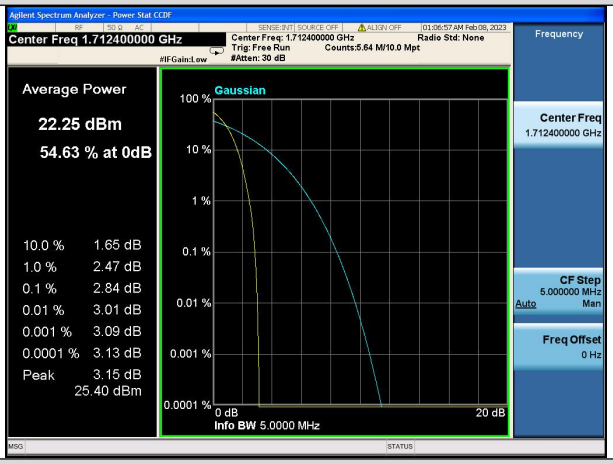
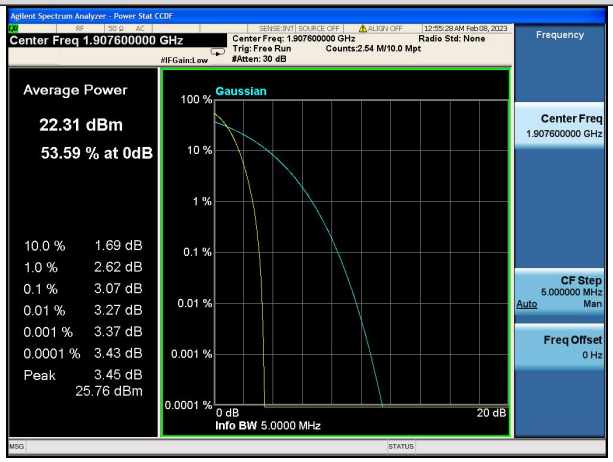
4.4 Peak-to-Average Ratio

Test Requirement:	FCC part24.232(d)
Test Method:	FCC part2.1046
Limit:	13db
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the Signal Analyzer by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power. 6. Record the maximum peak-to-average ratio value.
Test Instruments:	Refer to section 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

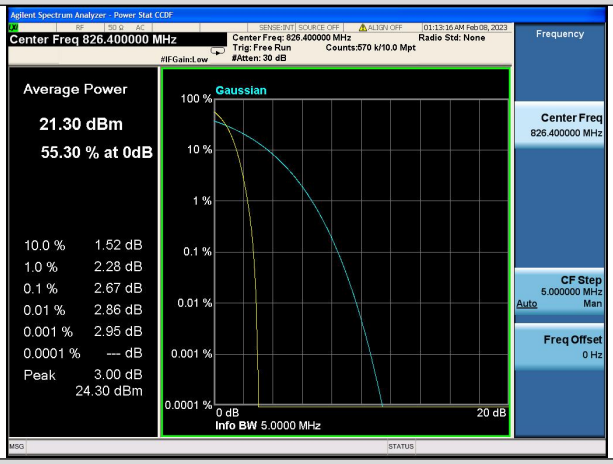
Measurement data

Test mode	Peak to Average Ratio (dB)			Limit (dB)	Result
	Low Ch.	Middle Ch.	High Ch.		
GSM/TM1/GSM850	9.78	9.23	9.55	13	PASS
GSM/TM1/GSM1900	9.10	9.06	9.10	13	PASS
WCDMA Band II	2.94	3.06	3.07	13	PASS
WCDMA Band IV	2.84	3.01	3.06	13	PASS
WCDMA Band V	2.67	3.29	3.13	13	PASS

Test Mode: GSM/TM1/GSM850 Low Ch.	Test Mode: GSM/TM1/GSM1900 Low Ch.
	
Middle Ch.	Middle Ch.
	
High Ch.	High Ch.
	

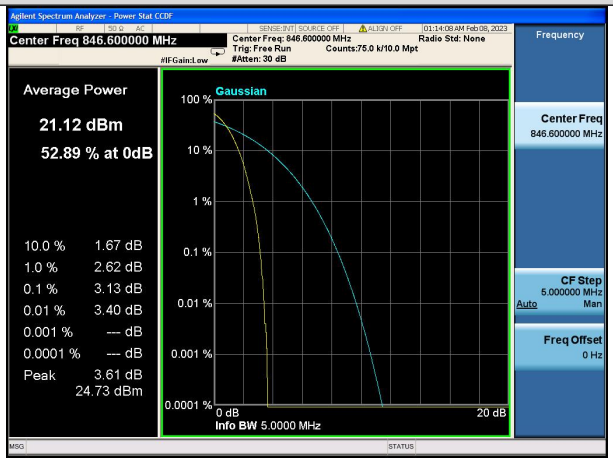
Test Mode: WCDMA Band II Low Ch.	Test Mode: WCDMA Band IV Low Ch.
	
Middle Ch.	Middle Ch.
	
High Ch.	High Ch.
	

Test Mode: WCDMA Band V
Low Ch.

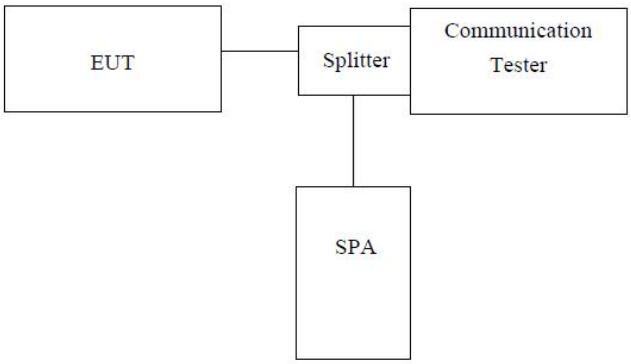


Middle Ch.

High Ch.



4.5 Occupy Bandwidth

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1049
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
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 5.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

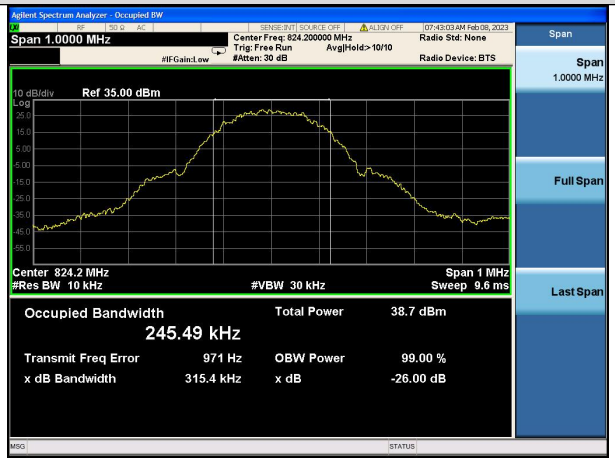
Measurement Data

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM 850 (GSM link)	128	824.20	242.14	301.7
	190	836.60	240.85	315.8
	251	848.80	243.65	312.2
GSM 850 (GPRS 1 link)	128	824.20	245.49	315.4
	190	836.60	247.27	312.4
	251	848.80	248.03	317.3
GSM 850 (EGPRS 1 link)	128	824.20	250.63	318.4
	190	836.60	238.84	308.8
	251	848.80	236.53	314.6
PCS 1900 (GSM link)	512	1850.20	240.35	305.4
	661	1880.00	238.64	313.5
	810	1909.80	240.33	316.4
PCS 1900 (GPRS 1 link)	512	1850.20	245.32	319.9
	661	1880.00	244.43	315.5
	810	1909.80	248.05	324.1
PCS 1900 (EGPRS 1 link)	512	1850.20	240.91	323.6
	661	1880.00	237.79	301.9
	810	1909.80	238.14	311.9
WCDMA Band V (RMC 12.2Kbps link)	4132	826.40	4126.5	4733.0
	4183	836.60	4116.9	4716.0
	4233	846.60	4148.6	4748.0
WCDMA Band II (RMC 12.2Kbps link)	9262	1852.4	4124.4	4708.0
	9400	1880.0	4109.9	4690.0
	9538	1907.6	4113.7	4701.0
WCDMA Band IV (RMC 12.2Kbps link)	1312	1712.4	4124.9	4709.0
	1450	1740.0	4122.3	4702.0
	1513	1752.6	4126.3	4694.0

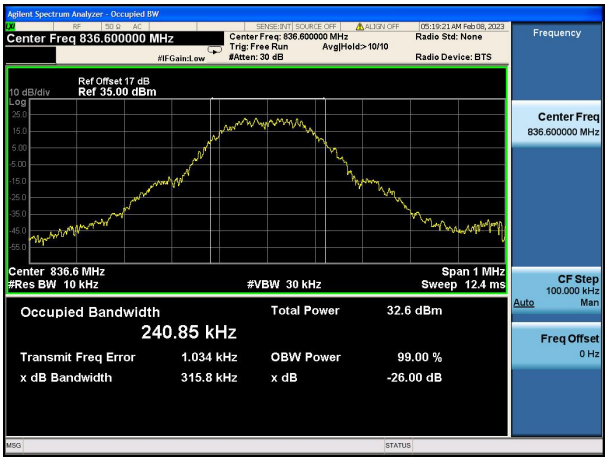
Test plot as follows:

GSM 850 (GSM link)	GSM 850 (GPRS 1 link)

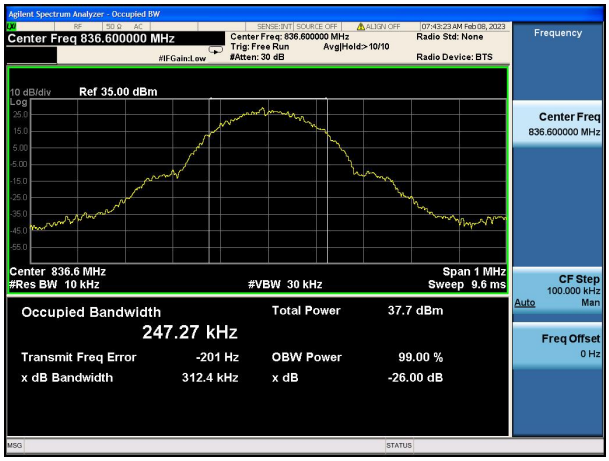
Lowest channel



Lowest channel

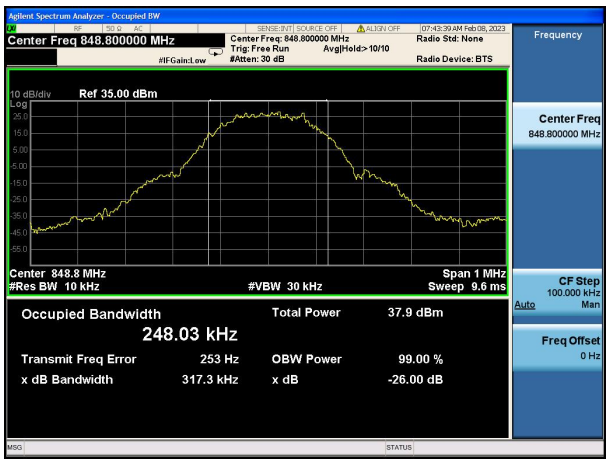


Middle channel



Middle channel

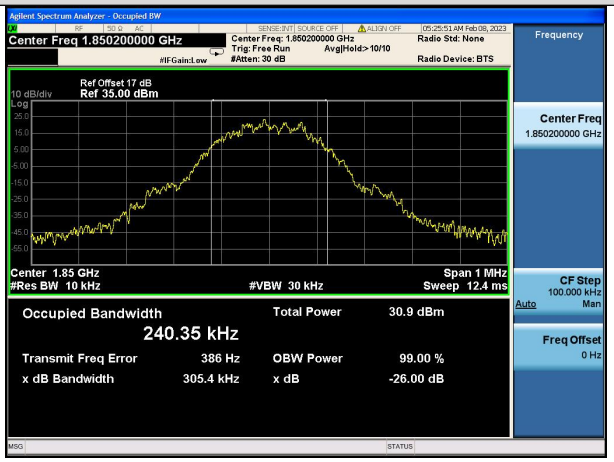
Highest channel



Highest channel

GSM 850 (EGPRS 1 link)	PCS 1900 (GSM link)

Lowest channel



Lowest channel

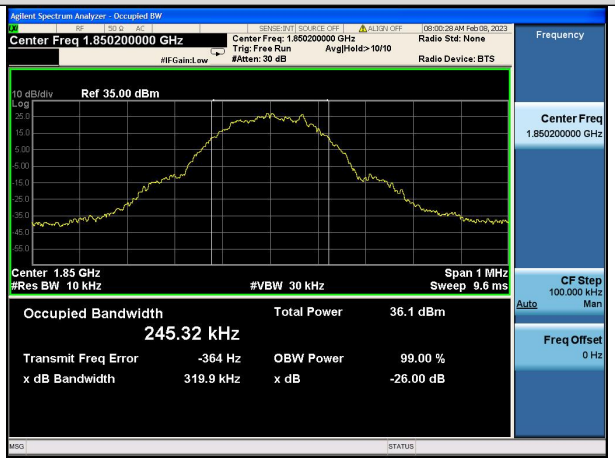
Middle channel

Middle channel

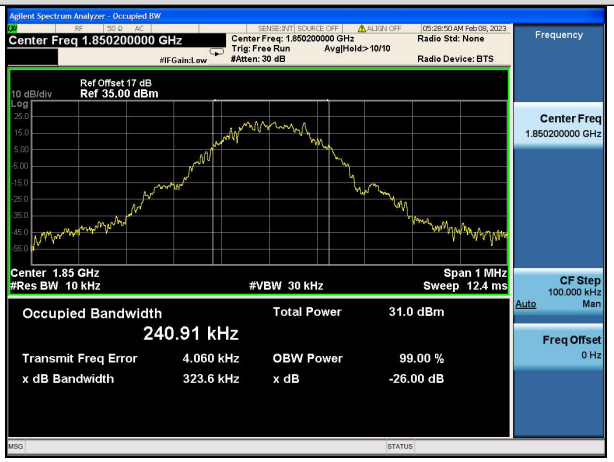
Highest channel

Highest channel

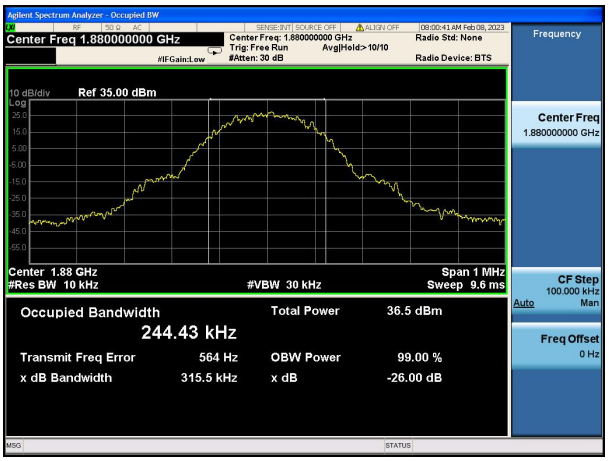
PCS 1900 (GPRS 1 link)	PCS 1900 (EGPRS 1 link)



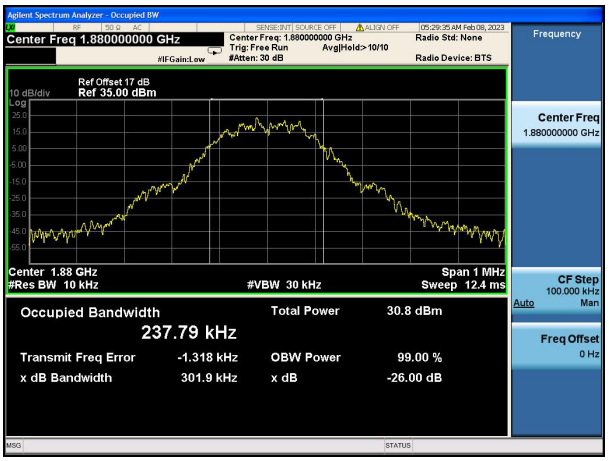
Lowest channel



Lowest channel



Middle channel

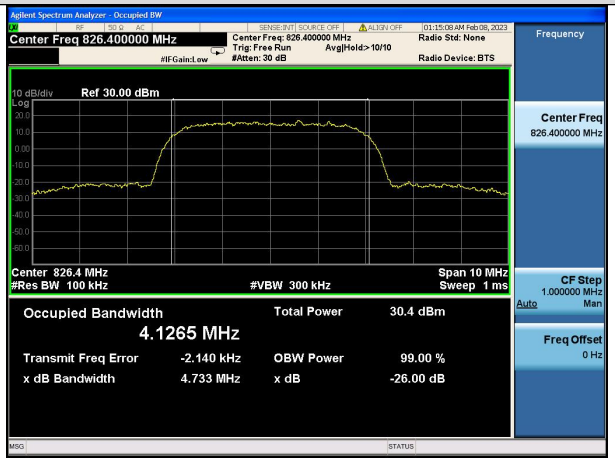


Middle channel

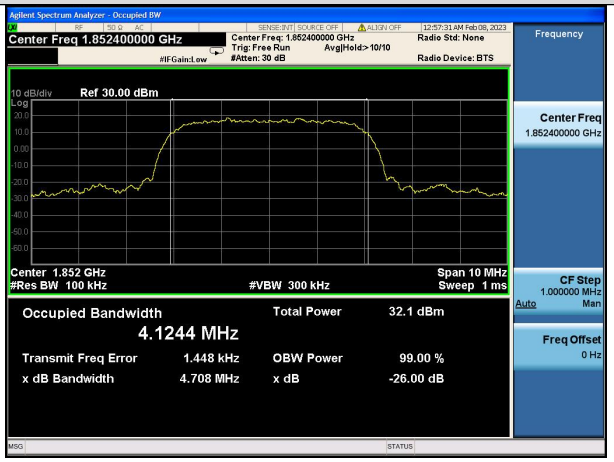
Highest channel

Highest channel

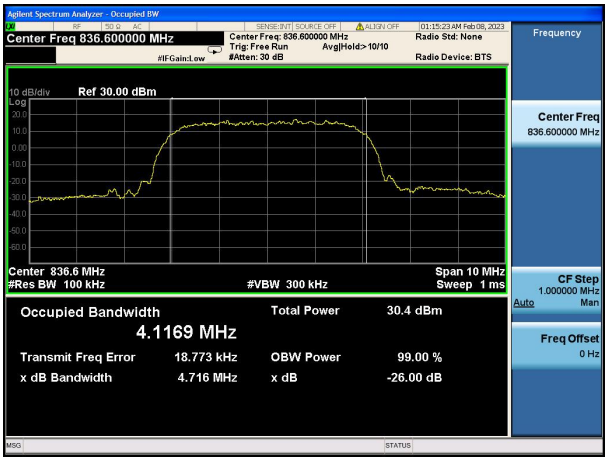
WCDMA Band V (RMC 12.2Kbps link)	WCDMA Band II (RMC 12.2Kbps link)



Lowest channel



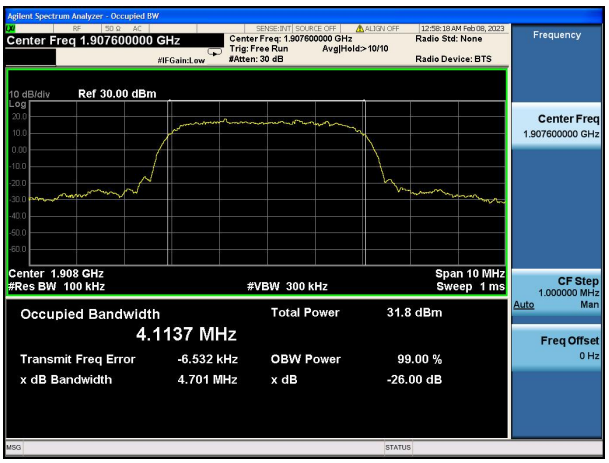
Lowest channel



Middle channel

Middle channel

Highest channel



Highest channel