TEST REPORT

Product Name:	4G Trail Camera
FCC ID:	2A5ARHC810PRO
Trademark:	SUNTEKCAM
Model Number:	HC-810Pro, HC-940Pro, HC-900Pro, HC-801Pro, HC-910Pro, HC-812Pro
Prepared For:	Shenzhen Suntek Intelligent Technology Co., Ltd
Address:	10/F, Building2, Xinlikang Industrial Park, No.6 Lianli East Road, Xialilang Community, Longgang,Shenzhen, China
Manufacturer:	Shenzhen Suntek Intelligent Technology Co., Ltd
Address:	10/F, Building2, Xinlikang Industrial Park, No.6 Lianli East Road, Xialilang Community, Longgang,Shenzhen, China
Prepared By:	Shenzhen CTB Testing Technology Co., Ltd.
Address:	Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China.
Sample Received Date:	Jul. 07, 2022
Sample tested Date:	Jul. 07, 2022 to Jul. 22, 2022
Issue Date:	Jul. 22, 2022
Report No.:	CTB220722012RFX
Test Standards	FCC Part 22H & 24E
Test Results	PASS
Remark:	This is GSM radio test report.

Compiled by:	Reviewed by:	Approved by:
Chen Zheng	Arron Liu	Bin Liu/Director

Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client. "*" indicates the testing items were fulfilled by subcontracted lab. "#" indicates the items are not in CNAS accreditation scope.

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(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB220722012RFX	Jul. 22, 2022	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

FCC Rules	Description of Test Item	Result
§1.1307,§2.1091	RF Exposure	Compliant
§22.913 (a), §24.232 (c)	RF Output Power	Compliant
§24.51	Peak-to-average Ratio(PAR) of Transmitter	Compliant
§22.917 (b), §24.238 (b)	Emission Bandwidth	Compliant
§22.917 (a), §24.238 (a)	Spurious Emissions at Antenna Terminal	Compliant
§22.917 (a), §24.238 (a)	Spurious Radiation Emissions	Compliant
§22.917 (a), §24.238 (a)	Out of Band Emissions	Compliant
§22.355, §24.235	Frequency Stability	Compliant

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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.

Item	Uncertainty
Occupancy bandwidth	54.3kHz
Conducted output power Above 1G	0.9dB
Conducted output power below 1G	0.9dB
Power Spectral Density , Conduction	0.9dB
Conduction spurious emissions	2.0dB
Out of band emission	2.0dB
3m camber Radiated spurious emission(30MHz-1GHz)	4.6dB
3m chamber Radiated spurious emission(1GHz-18GHz)	5.1dB
3m chamber Radiated spurious emission(18GHz-40GHz)	3.4dB
Receiver Reference Sensitivity level	1.9dB
humidity uncertainty	5.5%
Temperature uncertainty	0.63℃
frequency	1×10-7

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	HC-810Pro, HC-940Pro, HC-900Pro, HC-801Pro, HC-910Pro, HC-812Pro
Model Description:	All the model are the same circuit and RF module, only for model name. Test sample model: HC-810Pro
Hardware Version:	Q05M001 B1-1 QT150
Software Version:	SQ806_Userdebug_20220218
Operation Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Max. RF output power:	WCDMA Band 2: 23.17dBm, WCDMA Band 5: 24.73dBm
Type of Modulation:	BPSK
Antenna installation:	Dipole antenna
Antenna Gain:	WCDMA Band 2: 1.0dBi WCDMA Band 5: 1.0 dBi
Ratings:	DC 12V

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
/	/	/	/	/	/

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.

4.4 Channel List

Testing Configure			
Support Band	Support Standard	Channel Frequency	Channel Number
WCDMA Band 5	WCDMA/HSDPA/HSUPA	826.4 MHz	4132
		836.6 MHz	4183
		846.6 MHz	4233
WCDMA Band 2	WCDMA/HSDPA/HSUPA	1852.4 MHz	9262
		1880.0 MHz	9400
		1907.6 MHz	9538
Note: the transmitter has been tested on the communications mode of GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA compliance test and record the worst case.			

4.5 Test Mode

Test Mode List		
Test Mode	Description	Remark
TM1	WCDMA Band 5	Low, Middle, High Channels
TM2	HSDPA Band 5	Low, Middle, High Channels
TM3	HSUPA Band 5	Low, Middle, High Channels
TM4	WCDMA Band 2	Low, Middle, High Channels
TM5	HSDPA Band 2	Low, Middle, High Channels
TM6	HSUPA Band 2	Low, Middle, High Channels

4.6 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(DC):	12V
Normal Temperature(℃)	23
Low Temperature(℃)	0
High Temperature(℃)	40

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Street, Baoan District, Shenzhen China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated date	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	2021.09.27	2022.08.05
2	Power Sensor	Agilent	U2021XA	MY56120032	2021.09.27	2022.08.05
3	Power Sensor	Agilent	U2021XA	MY56120034	2021.09.27	2022.08.05
4	Communication test set	R&S	CMW500	108058	2021.09.27	2022.08.05
5	Spectrum Analyzer	R&S	FSP40	100550	2021.09.27	2022.08.05
6	Signal Generator	Agilent	N5181A	MY49060920	2021.09.27	2022.08.16
7	Signal Generator	Agilent	N5182A	MY47420195	2021.09.27	2022.08.05
8	Communication test set	Agilent	E5515C	MY50102567	2021.09.27	2022.08.16
9	band rejection filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	2021.09.27	2022.08.05
10	band rejection filter	Shenxiang	MSF5150-5850MS-1155	20181015001	2021.09.27	2022.08.05
11	band rejection filter	Xingbo	XBLBQ-DZA120	190821-1-1	2021.09.27	2022.08.05
12	BT&WI-FI Automatic test software	Micowave	MTS8310	Ver. 2.0.0.0	2021.09.27	2022.08.05
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	2021.09.27	2022.08.05
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	2021.09.27	2022.08.05
15	234G Automatic test software	Micowave	MTS8200	Ver. 2.0.0.0	2021.09.27	2022.08.05
16	966 chamber	C.R.T.	966 Room	966	2021.09.27	2024.08.11

17	Receiver	R&S	ESPI	100362	2021.09.27	2022.08.05
18	Amplifier	HP	8447E	2945A02747	2021.09.27	2022.08.05
19	Amplifier	Agilent	8449B	3008A01838	2021.09.27	2022.08.05
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	869	2021.09.27	2022.08.07
21	Horn Antenna	Schwarzbeck	BBHA9120D	1911	2021.09.27	2022.08.08
22	Software	Fala	EZ-EMC	FA-03A2 RE	2021.09.27	2022.08.05
23	3-Loop Antenna	Daze	ZN30401	17014	2021.09.27	2022.08.05
24	loop antenna	ZHINAN	ZN30900A	/	2021.09.27	2022.08.05
25	Horn antenna	A/H/System	SAS-574	588	2021.09.27	2022.08.05
26	Amplifier	AEROFLEX	/	S/N/ 097	2021.09.27	2022.08.05

6. RF OUTPUT POWER

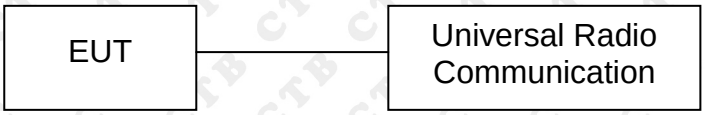
6.1 Standard Applicable

According to §22.913(a)(2),The ERP of mobileand 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.

6.2 Test Procedure

Conducted output power test method:



Radiated power test method:

1.The setup of EUT is according with per ANSI/TIA Standard 603D 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.

6.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	54%
ATM Pressure:	1010 mbar

6.4 Summary of Test Results/Plots

Max. Radiated Power

ERP For WCDMA Mode Band 5

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dBd	dBm	dBm
Low Channel								
826.4	23.17	1.5	0	H	1.5	0.5	22.07	38.45
826.4	19.85	1.5	0	V	1.5	0.5	18.75	38.45
Middle Channel								
836.6	22.84	1.5	0	H	1.5	0.5	21.74	38.45
836.6	19.94	1.5	0	V	1.5	0.5	18.84	38.45
High Channel								
846.6	22.60	1.5	0	H	1.5	0.5	21.50	38.45
846.6	20.18	1.5	0	V	1.5	0.5	19.08	38.45

ERP For HSDPA Mode Band 5

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dBd	dBm	dBm
Low Channel								
826.4	21.03	1.5	0	H	1.5	0.5	19.93	38.45
826.4	20.97	1.5	0	V	1.5	0.5	19.87	38.45
Middle Channel								
836.6	21.69	1.5	0	H	1.5	0.5	20.59	38.45
836.6	20.65	1.5	0	V	1.5	0.5	19.55	38.45
High Channel								
846.6	21.93	1.5	0	H	1.5	0.5	20.83	38.45
846.6	21.36	1.5	0	V	1.5	0.5	20.26	38.45

ERP For HSUPA Mode Band 5

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dBd	dBm	dBm
Low Channel								
826.4	20.39	1.5	0	H	1.5	0.5	19.29	38.45
826.4	20.46	1.5	0	V	1.5	0.5	19.36	38.45
Middle Channel								
836.6	21.47	1.5	0	H	1.5	0.5	20.37	38.45
836.6	19.37	1.5	0	V	1.5	0.5	18.27	38.45
High Channel								
846.6	20.60	1.5	0	H	1.5	0.5	19.50	38.45
846.6	19.63	1.5	0	V	1.5	0.5	18.53	38.45

EIRP For WCDMA Mode Band 2

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1852.4	23.27	1.5	0	H	1.9	2	23.37	33
1852.4	19.94	1.5	0	V	1.9	2	20.04	33
Middle Channel								
1880	24.63	1.5	0	H	1.9	2	24.73	33
1880	19.70	1.5	0	V	1.9	2	19.80	33
High Channel								
1907.6	23.94	1.5	0	H	1.9	2	24.04	33
1907.6	19.97	1.5	0	V	1.9	2	20.07	33

EIRP For HSDPA Mode Band 2

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1852.4	21.73	1.5	0	H	1.9	2	20.63	33
1852.4	21.59	1.5	0	V	1.9	2	20.49	33
Middle Channel								
1880	22.45	1.5	0	H	1.9	2	21.35	33
1880	20.35	1.5	0	V	1.9	2	19.25	33
High Channel								
1907.6	21.92	1.5	0	H	1.9	2	20.82	33
1907.6	21.41	1.5	0	V	1.9	2	20.31	33

EIRP For HSUPA Mode Band 2

Frequency	Substitude SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 24E Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
1852.4	20.91	1.5	0	H	1.9	2	19.81	33
1852.4	20.24	1.5	0	V	1.9	2	19.14	33
Middle Channel								
1880	20.98	1.5	0	H	1.9	2	19.88	33
1880	19.17	1.5	0	V	1.9	2	18.07	33
High Channel								
1907.6	21.13	1.5	0	H	1.9	2	20.03	33
1907.6	20.35	1.5	0	V	1.9	2	19.25	33

Note: Result = Substitude - Cable loss + Antenna Gain

Max. Conducted Output Power

For WCDMA Band 5

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 22.913 Limit (dBm)
WCDMA	Low Channel	826.4	23.17	38.45
	Middle Channel	836.6	22.84	38.45
	High Channel	846.6	22.60	38.45
HSDPA	Low Channel	826.4	21.03	38.45
	Middle Channel	836.6	21.69	38.45
	High Channel	846.6	21.93	38.45
HSUPA	Low Channel	826.4	20.46	38.45
	Middle Channel	836.6	21.47	38.45
	High Channel	846.6	20.60	38.45

For WCDMA Band 2

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 24.232 Limit (dBm)
WCDMA	Low Channel	1852.4	23.37	33.00
	Middle Channel	1880.0	24.73	33.00
	High Channel	1907.6	24.04	33.00
HSDPA	Low Channel	1852.4	21.73	33.00
	Middle Channel	1880.0	22.45	33.00
	High Channel	1907.6	21 .92	33.00
HSUPA	Low Channel	1852.4	20.91	33.00
	Middle Channel	1880.0	20.98	33.00
	High Channel	1907.6	21.13	33.00

7. PEAK-TO-AVERAGE RATIO(PAR) OF TRANSMITTER

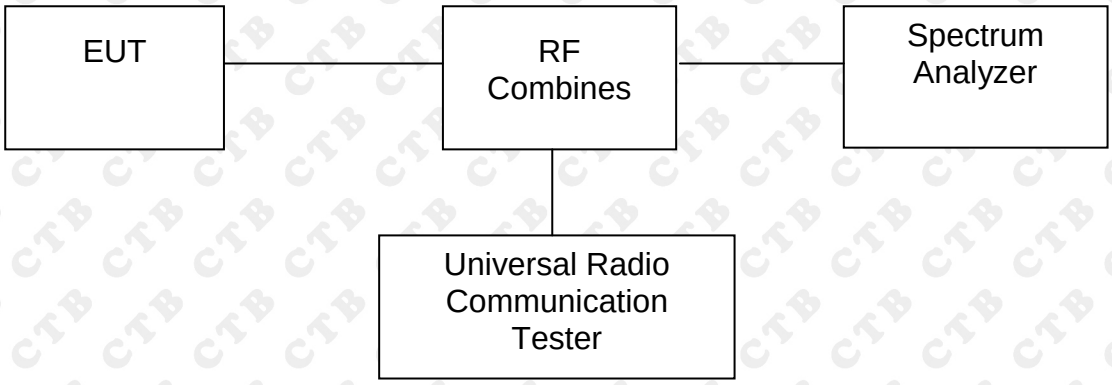
7.1 Standard Applicable

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.

7.2 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%.

Test Configuration for the emission bandwidth testing:



7.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	54%
ATM Pressure:	1010 mbar

7.4 Summary of Test Results

Only the worst case was selected to record

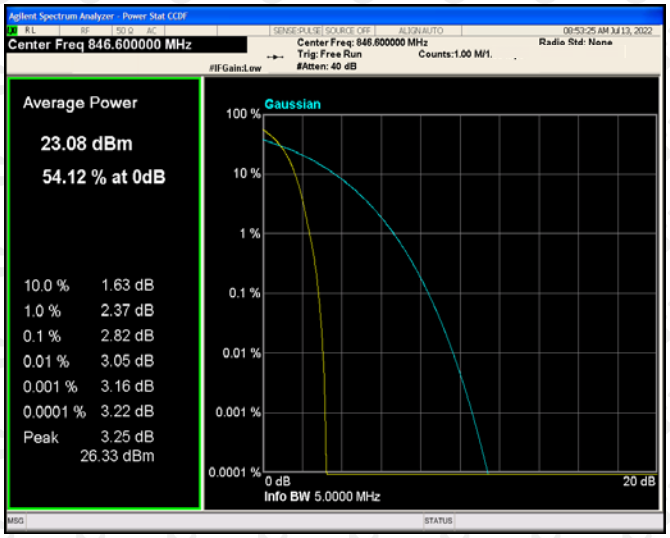
For WCDMA Band 5

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9400	1880	2.98	13
HSDPA	4182	836.4	3.06	13
HSUPA	4182	836.4	3.11	13

For WCDMA Band 2

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	4233	846.6	2.82	13
HSDPA	9400	1880	3.43	13
HSUPA	9400	1880	3.02	13

WCDMA:


Agilent Spectrum Analyzer - Power Stat CCDF
Center Freq 846.600000 MHz
Center Freq: 846.600000 MHz
Trig: Free Run
Counts:1.00 M/1.
#Atten: 40 dB
Radio Std: None
Average Power
23.08 dBm
54.12 % at 0dB
10.0 % 1.63 dB
1.0 % 2.37 dB
0.1 % 2.82 dB
0.01 % 3.05 dB
0.001 % 3.16 dB
0.0001 % 3.22 dB
Peak 3.25 dB
26.33 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 5.0000 MHz

8. EMISSION BANDWIDTH

8.1 Standard Applicable

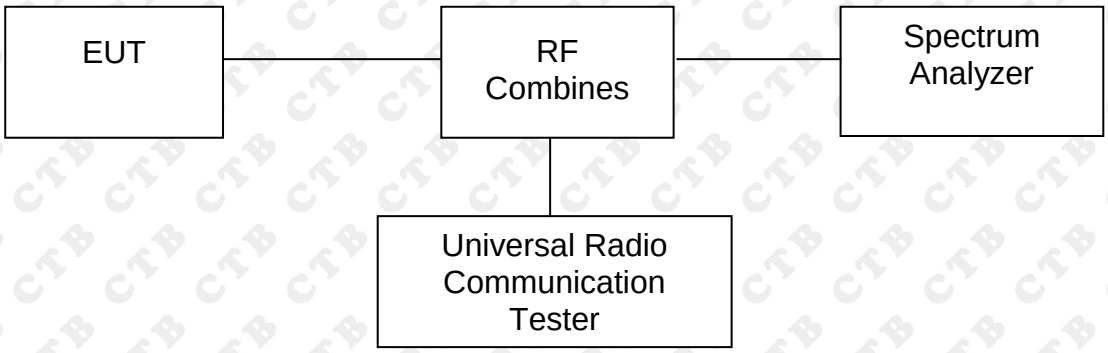
According to §22.917(b),The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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.

8.2 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 10kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

Test Configuration for the emission bandwidth testing:



8.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	54%
ATM Pressure:	1010 mbar

8.4 Summary of Test Results/Plots

For Band 5

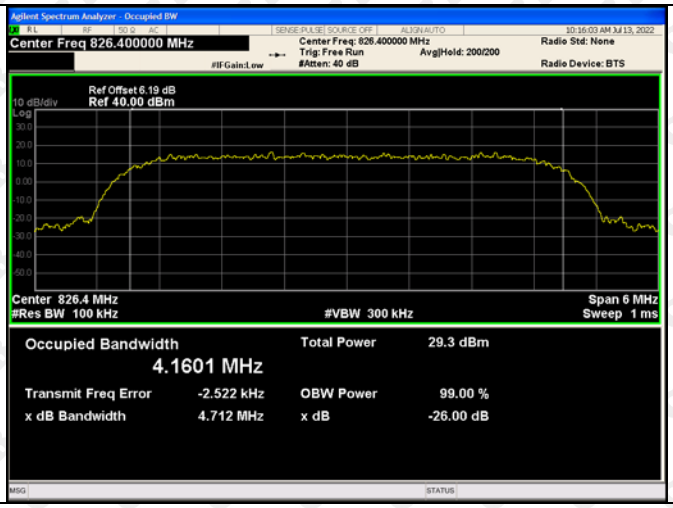
Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
WCDMA	4132	826.4	4160.058	4712.026
	4183	836.6	4144.575	4700.961
	4233	846.6	4150.069	5551.173
HSDPA	4132	826.4	4199.494	4733.978
	4183	836.6	4135.431	4713.160
	4233	846.6	4161.427	5553.037
HSUPA	4132	826.4	4160.142	4712.469
	4183	836.6	4144.555	4700.846
	4233	846.6	4154.956	5550.532

For Band 2

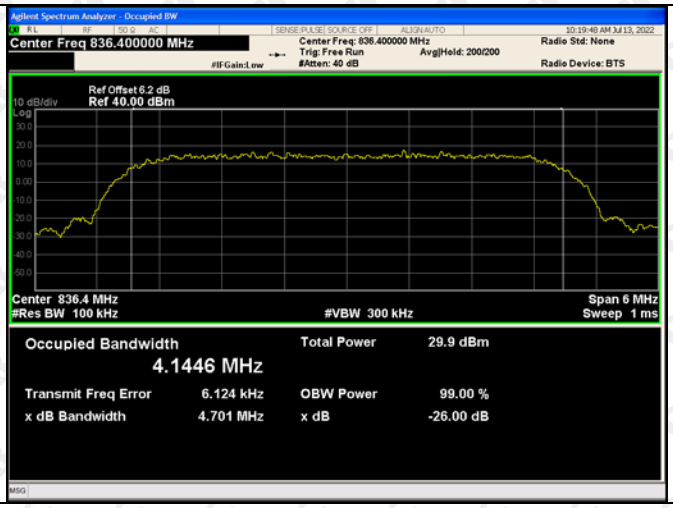
Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
WCDMA	9262	1852.4	4132.089	4713.200
	9400	1880.0	4136.621	4712.179
	9538	1907.6	4132.947	4702.828
HSDPA	9262	1852.4	4154.961	4714.547
	9400	1880.0	4131.966	4714.739
	9538	1907.6	4134.003	4680.431
HSUPA	9262	1852.4	4132.130	4713.116
	9400	1880.0	4136.559	4711.738
	9538	1907.6	4131.936	4703.433

For Cellular Band
For Band V

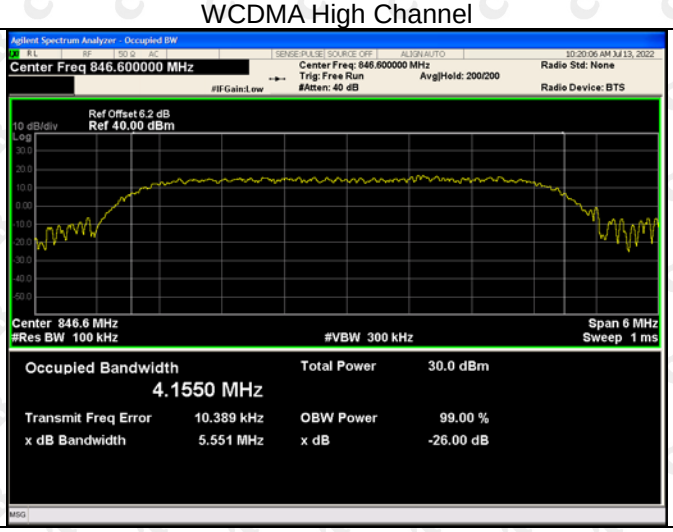
WCDMA Low Channel



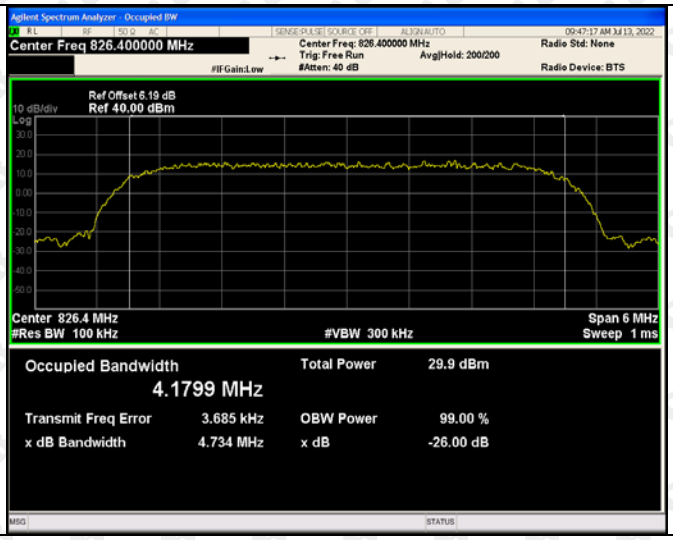
WCDMA Middle Channel



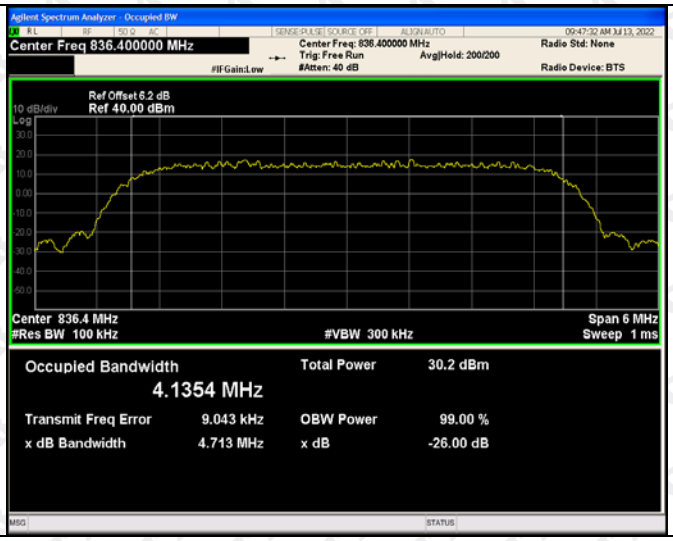
WCDMA High Channel



HSDPA Low Channel



HSDPA Middle Channel



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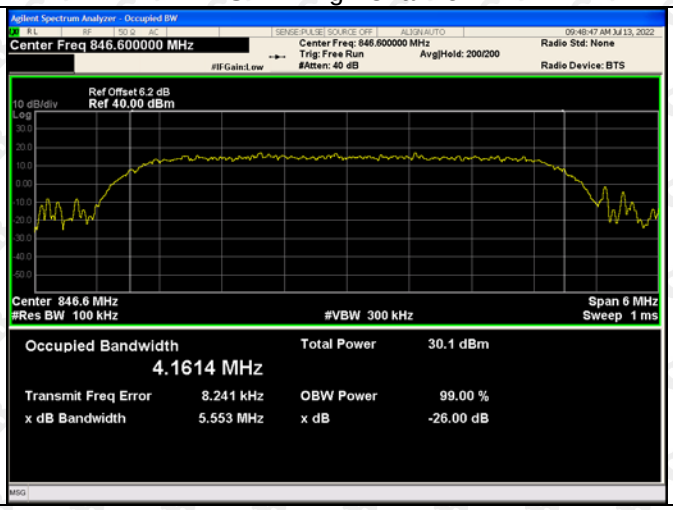
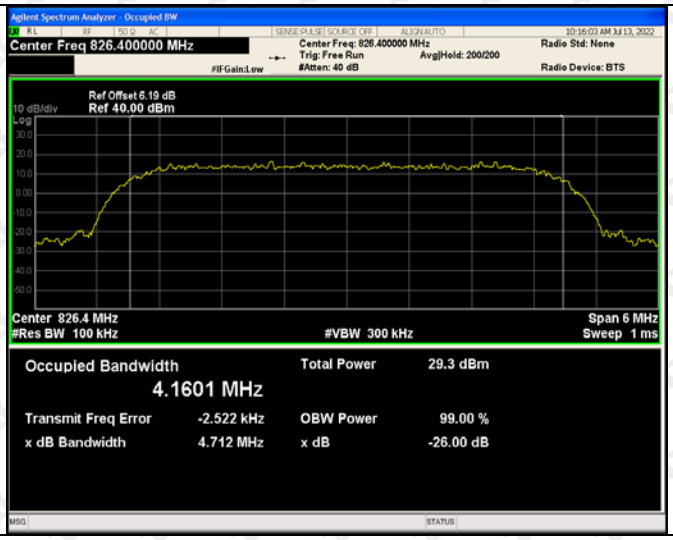
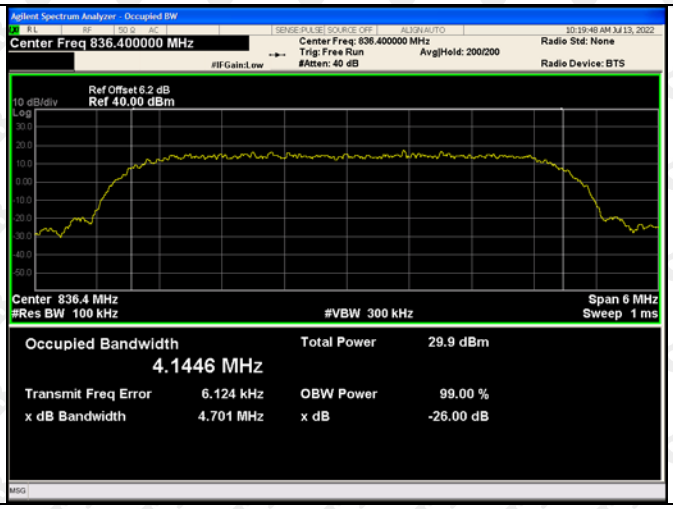


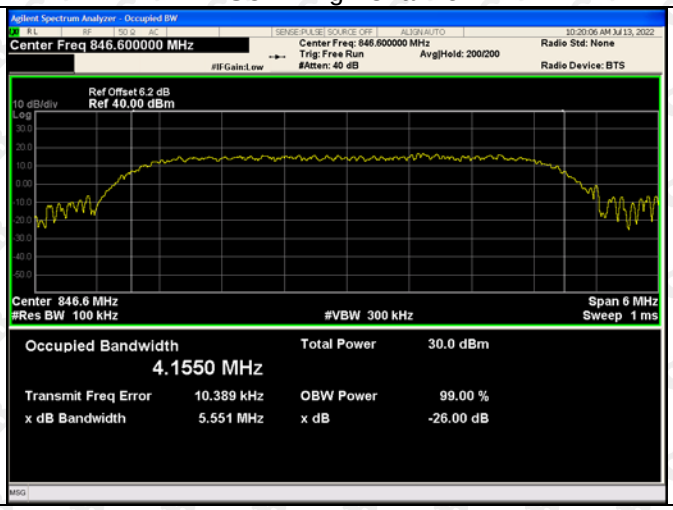
HSUPA Low Channel



HSUPA Middle Channel

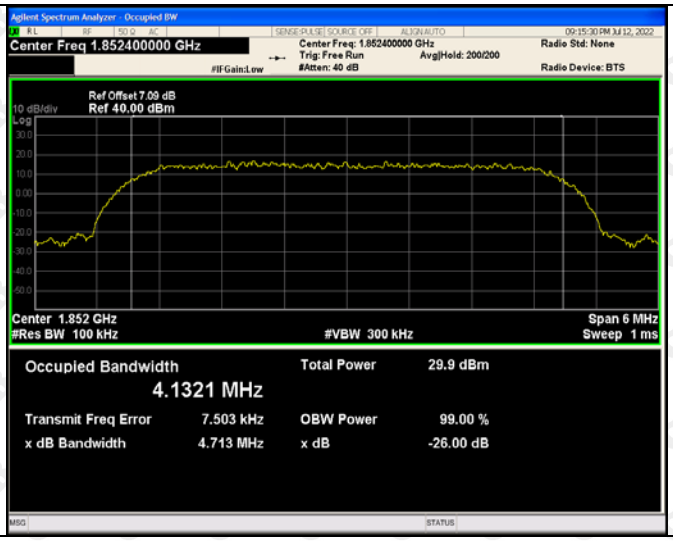


HSUPA High Channel

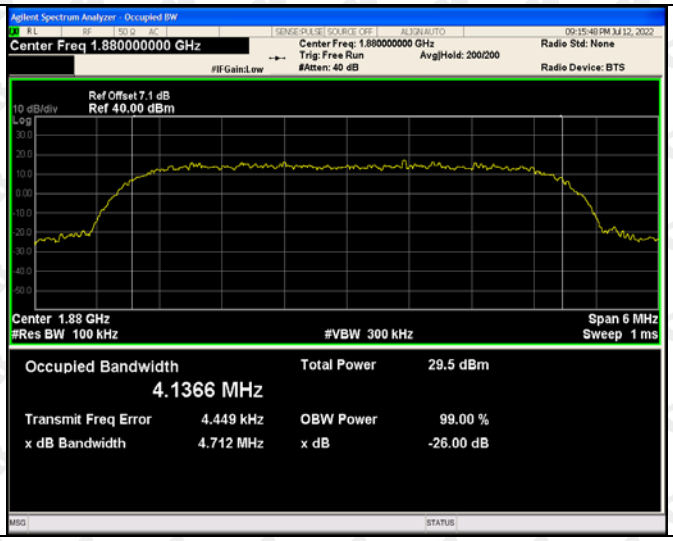


For Band II

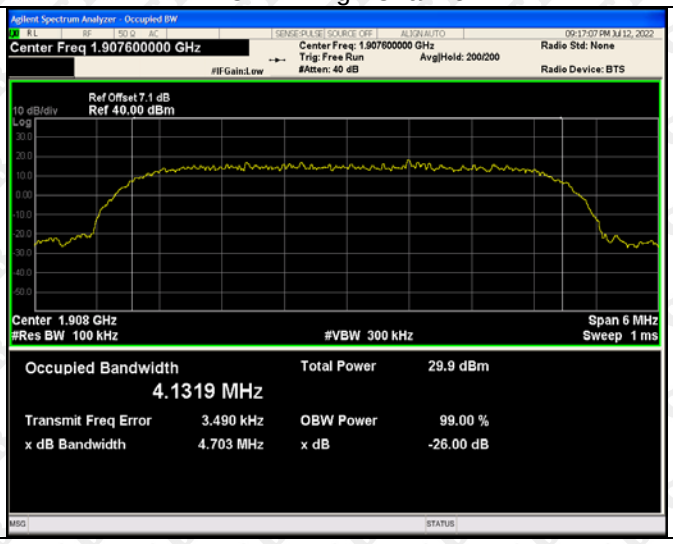
WCDMA Low Channel



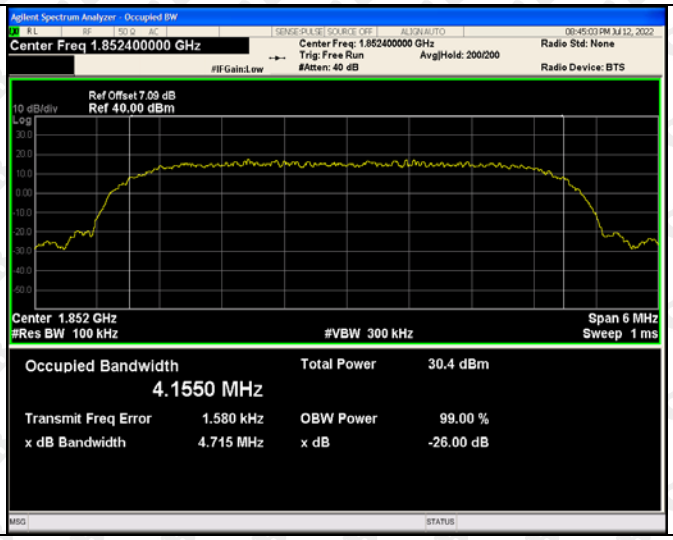
WCDMA Middle Channel



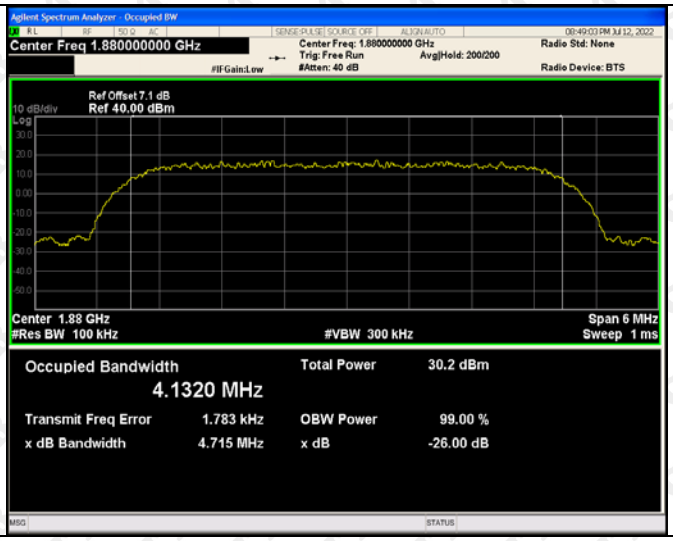
WCDMA High Channel



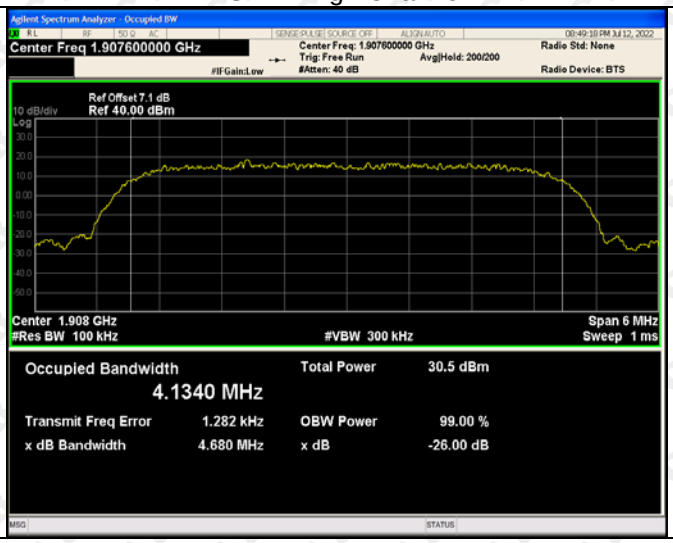
HSDPA Low Channel



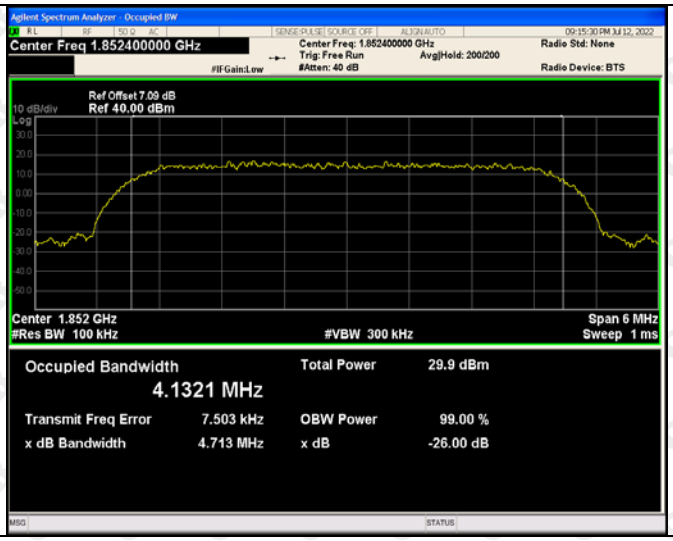
HSDPA Middle Channel



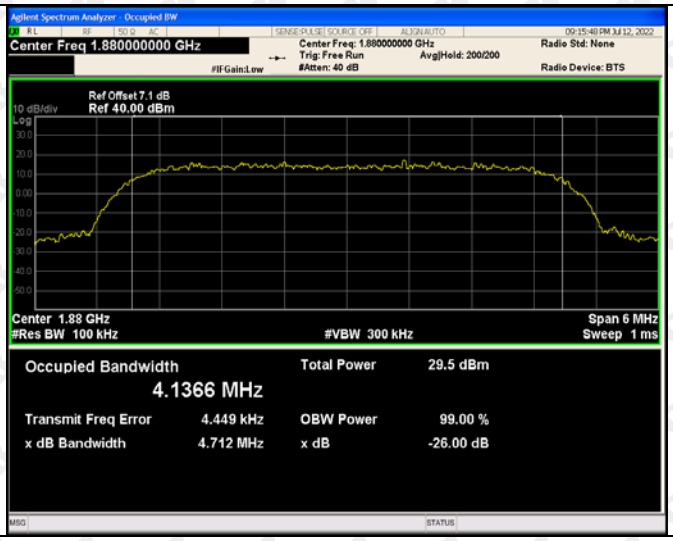
HSDPA High Channel



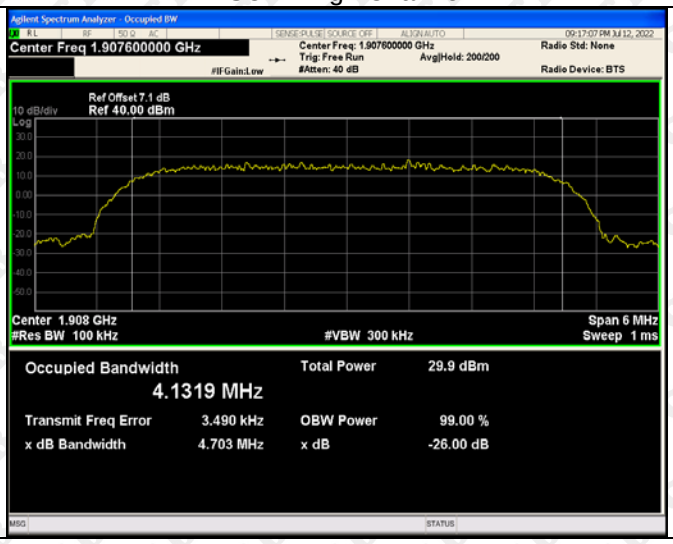
HSUPA Low Channel



HSUPA Middle Channel



HSUPA High Channel



9. OUT OF BAND EMISSIONS AT ANTENNA TERMINAL

9.1 Standard Applicable

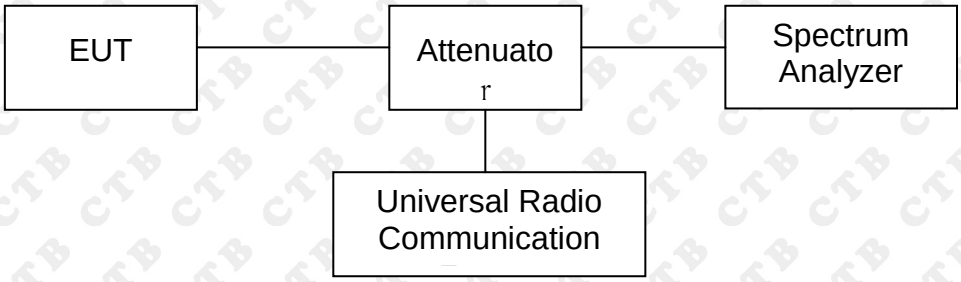
According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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.

9.2 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 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10th harmonic.

Test Configuration for the out of band emissions testing:



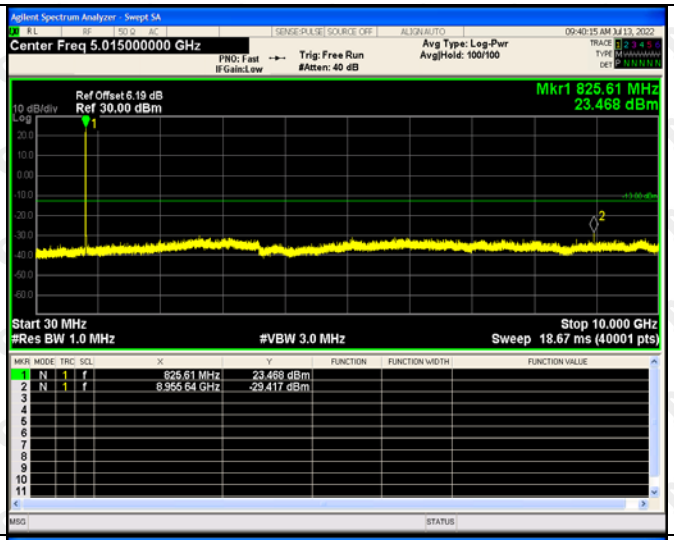
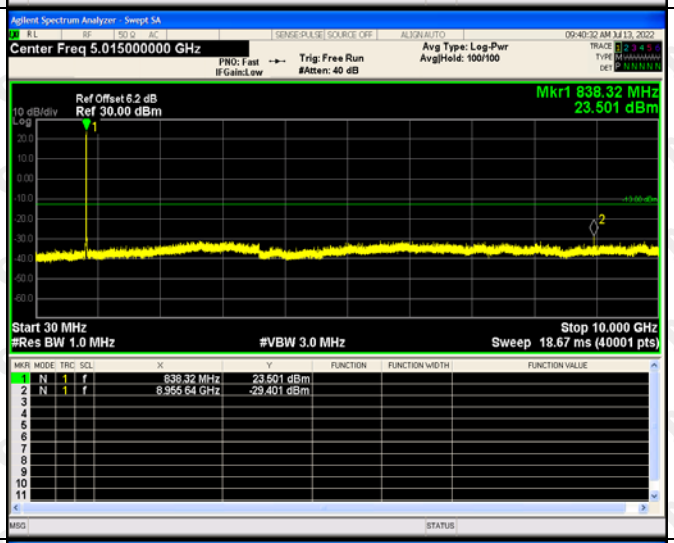
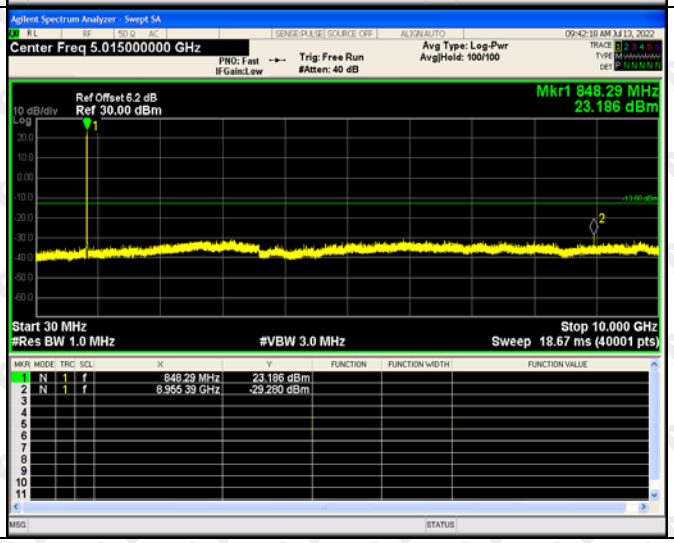
9.3 Environmental Conditions

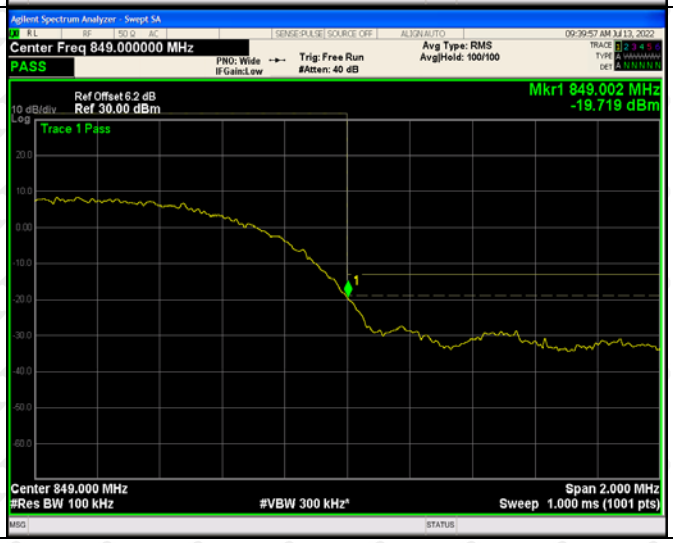
Temperature:	23 °C
Relative Humidity:	54%
ATM Pressure:	1010 mbar

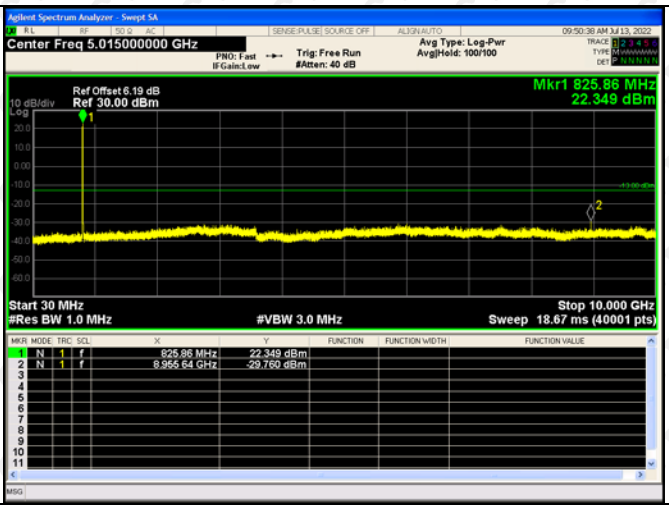
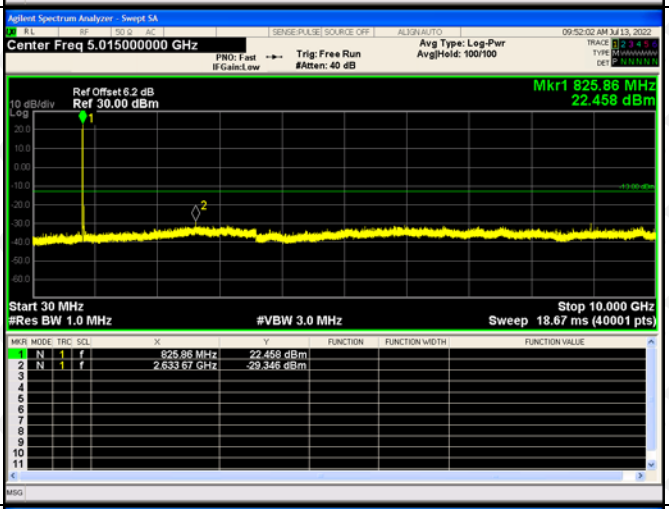
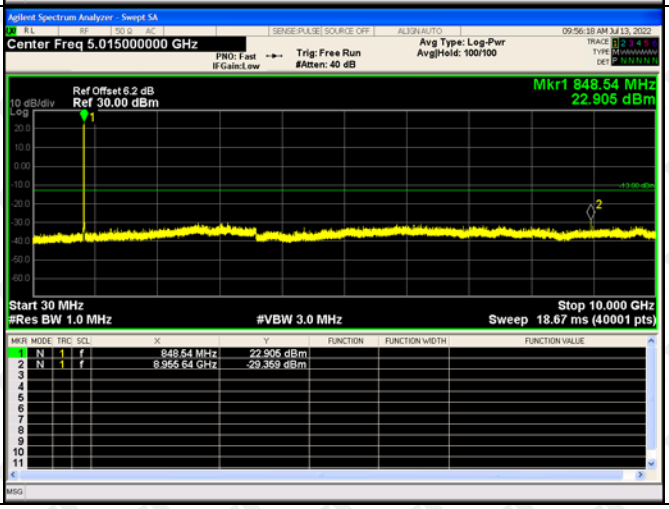
9.4 Summary of Test Results/Plots

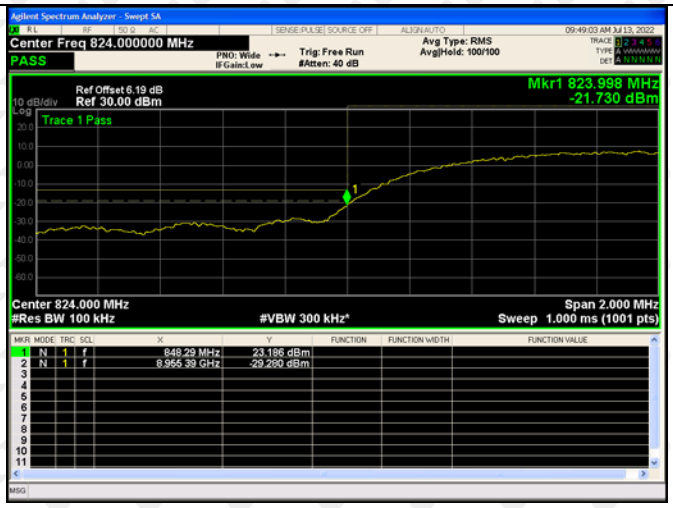
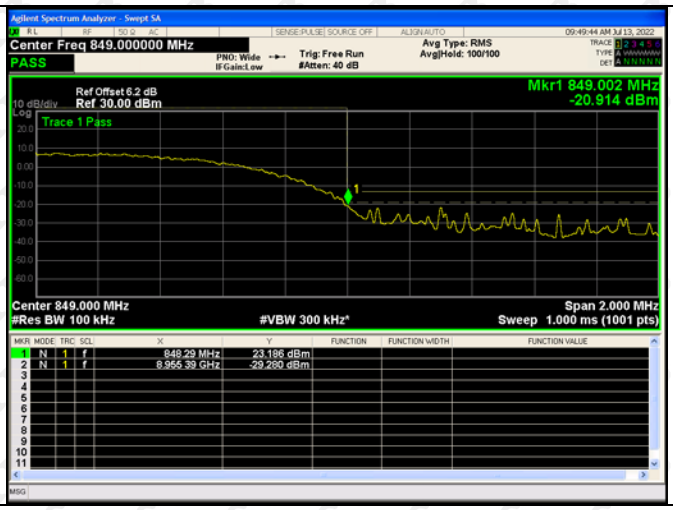
Please refer to the following test plots
For Cellular Band

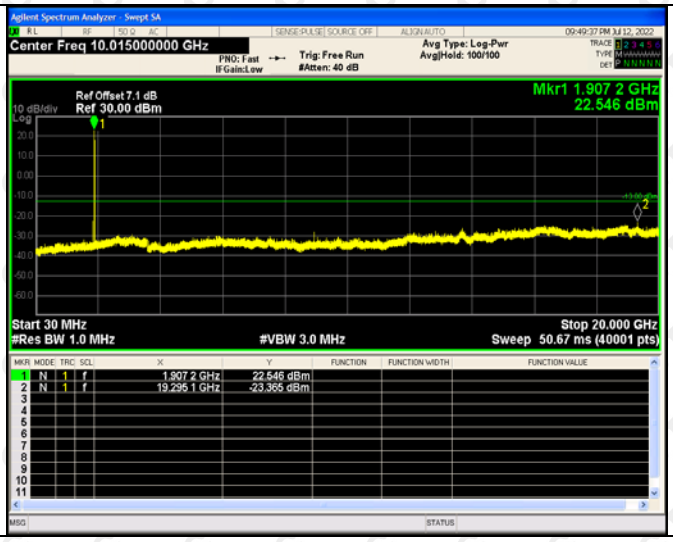
For Band V

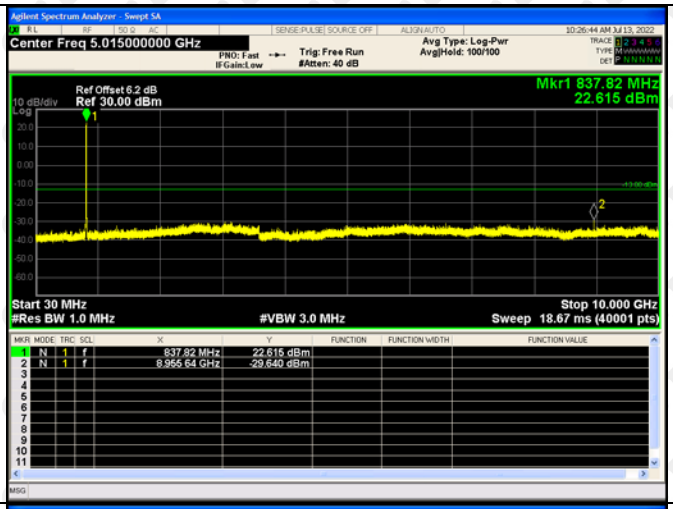
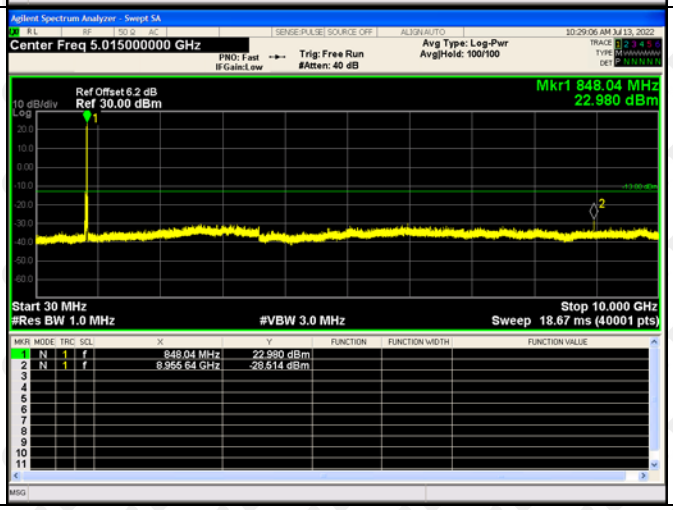
WCDMA Low Channel			
WCDMA Middle Channel			
WCDMA High Channel			

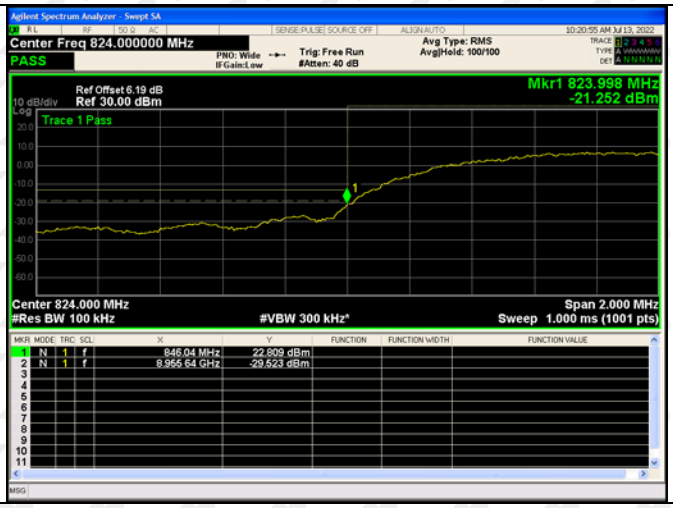
WCDMA Low Band Spurious Emission			
WCDMA High Band Spurious Emission			

HSDPA Low Channel			
HSDPA Middle Channel			
HSDPA High Channel			

HSDPA Low Band Spurious Emission			
HSDPA High Band Spurious Emission			

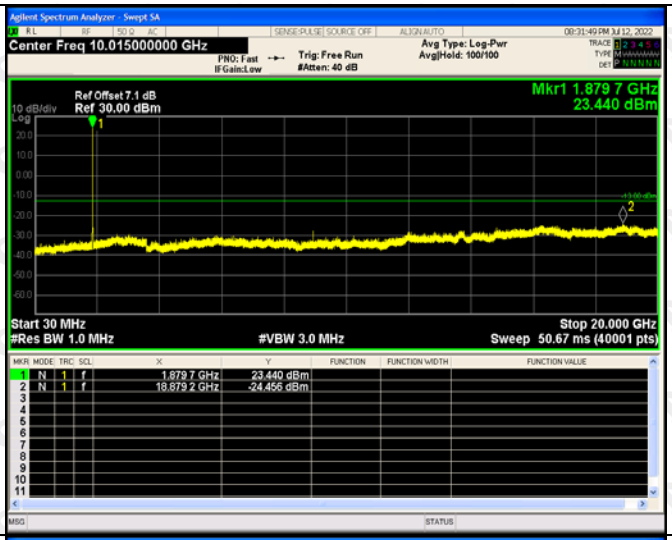
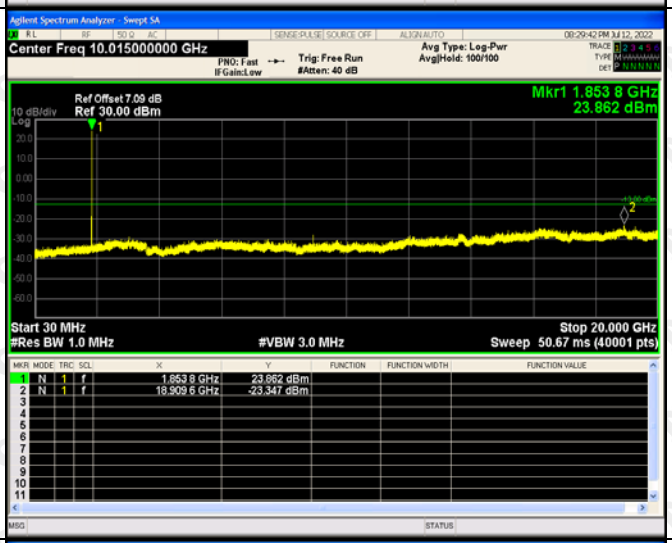
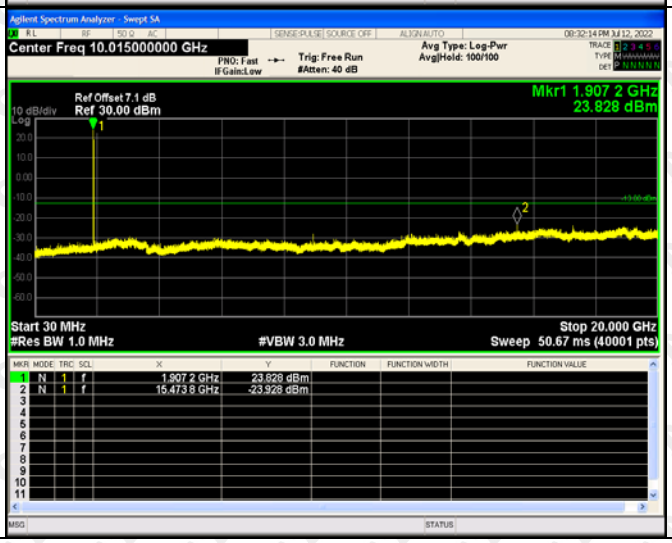
HSUPA Low Channel			

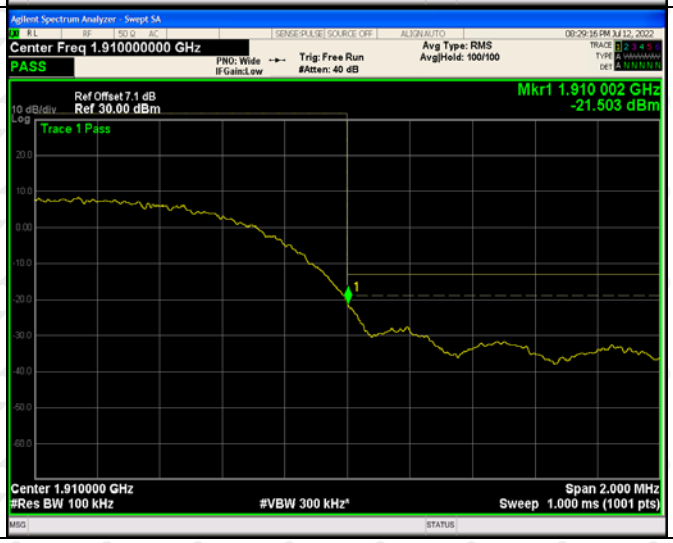
HSUPA Middle Channel			
HSUPA High Channel			

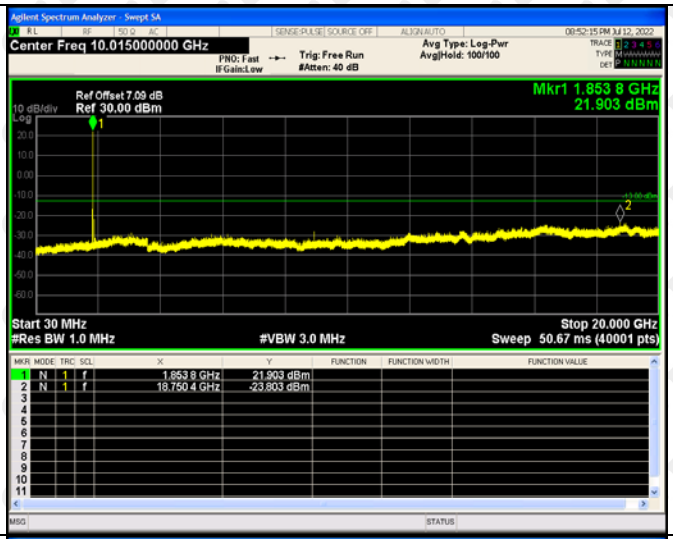
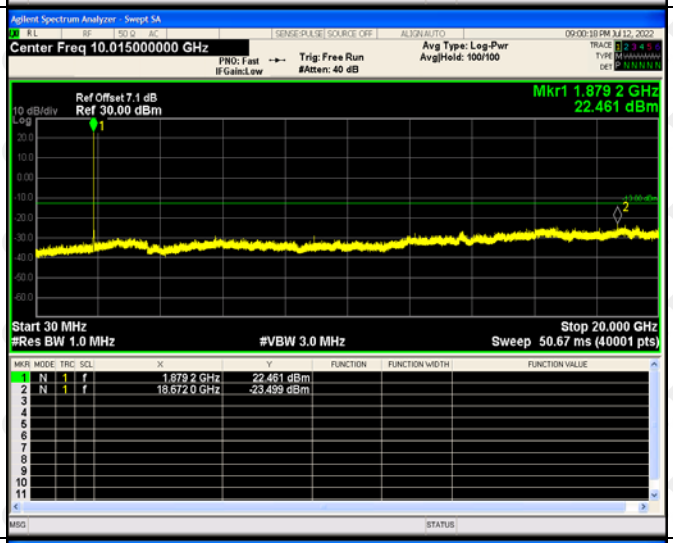
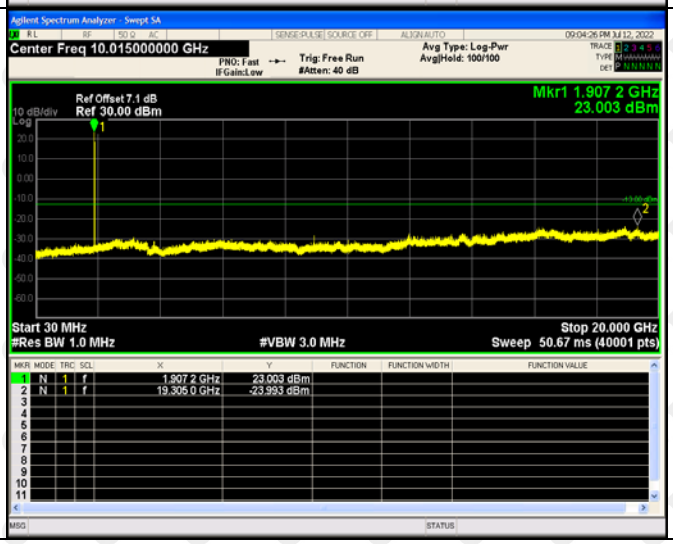
HSUPA Low Band Spurious Emission			

HSUPA High Band Spurious Emission			

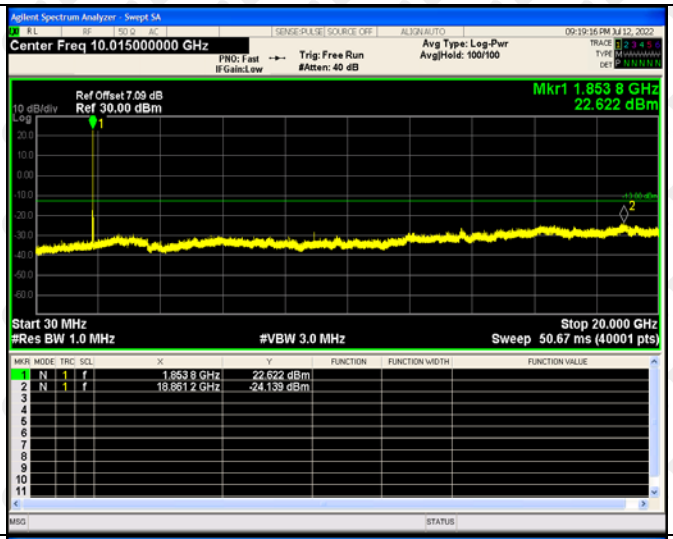
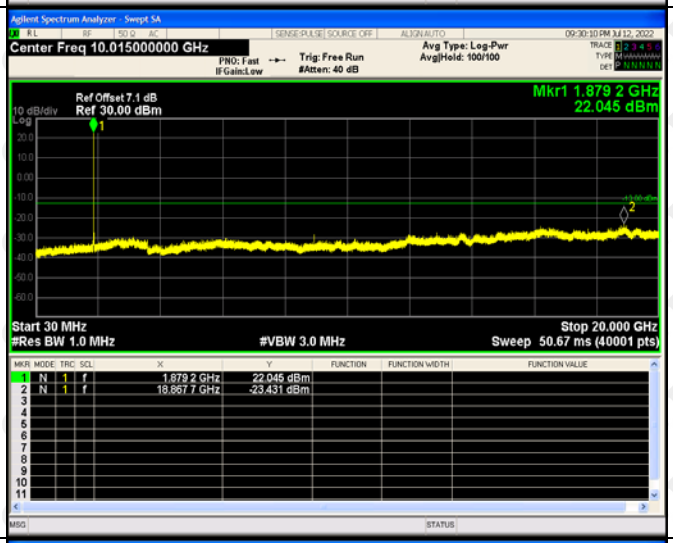
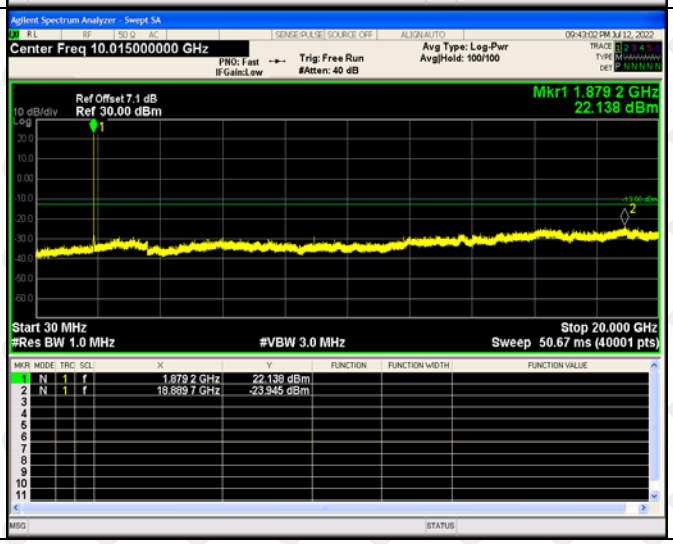
For Band II

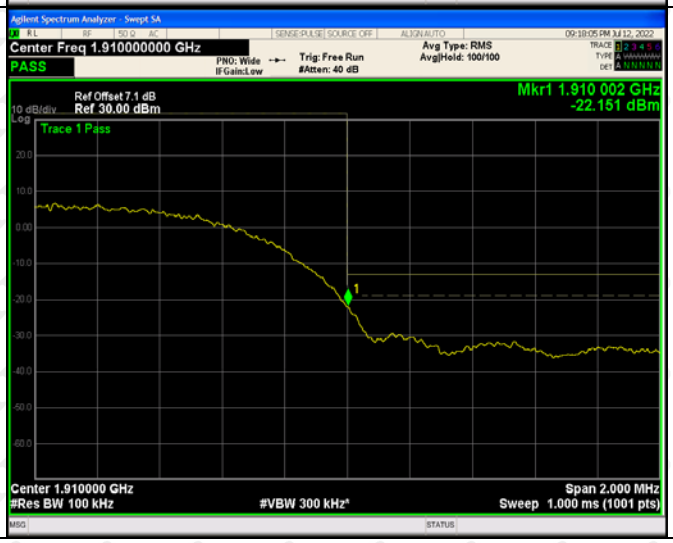
WCDMA Low Channel			
WCDMA Middle Channel			
WCDMA High Channel			

WCDMA Low Band Spurious Emission			
WCDMA High Band Spurious Emission			

HSDPA Low Channel			
HSDPA Middle Channel			
HSDPA High Channel			

HSDPA Low Band Spurious Emission			
HSDPA High Band Spurious Emission			

HSUPA Low Channel			
HSUPA Middle Channel			
HSUPA High Channel			

HSUPA Low Band Spurious Emission			
HSUPA High Band Spurious Emission			

10. SPURIOUS RADIATED EMISSIONS

10.1 Standard Applicable

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.

10.2 Test Procedure

1. The setup of EUT is according with per ANSI/TIA Standard 603D 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)

10.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	54%
ATM Pressure:	101 kPa
Test Voltage	DC12V

10.4 Summary of Test Results/Plots

According to the data below, the FCC Part22.917 and 24.238 standards, and had the worst margin of:

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

All test modes are performed, but only the worst case is recorded in this report.

For Band 5 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (826.4MHz)						
40.30	-70.09	3.91	-66.18	-13	-53.18	H
1645.67	-57.85	10.56	-47.29	-13	-34.29	H
2477.46	-57.95	13.5	-44.45	-13	-31.45	H
42.91	-70.70	3.93	-66.77	-13	-53.77	V
1642.89	-57.68	10.41	-47.27	-13	-34.27	V
2476.04	-58.22	13.16	-45.06	-13	-32.06	V
Middle Channel (836.6MHz)						
39.54	-68.70	4.02	-64.68	-13	-51.68	H
1669.22	-56.47	4.66	-51.81	-13	-38.81	H
2501.69	-49.21	8.34	-40.87	-13	-27.87	H
44.80	-63.60	4.17	-59.43	-13	-46.43	V
1666.82	-57.78	4.94	-52.84	-13	-39.84	V
2500.92	-65.21	8.19	-57.02	-13	-44.02	V
High Channel (846.6MHz)						
46.06	-66.81	3.87	-62.94	-13	-49.94	H
1683.78	-62.90	4.89	-58.01	-13	-45.01	H
2530.51	-50.11	8.42	-41.69	-13	-28.69	H
45.69	-60.00	3.95	-56.05	-13	-43.05	V
1685.37	-62.67	4.99	-57.68	-13	-44.68	V
2534.66	-61.26	8.12	-53.14	-13	-40.14	V

For Band 2 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1852.4MHz)						
38.05	-66.81	3.91	-62.90	-13	-49.90	H
1645.70	-51.44	10.56	-40.88	-13	-27.88	H
2478.85	-57.04	13.5	-43.54	-13	-30.54	H
45.42	-71.26	3.93	-67.33	-13	-54.33	V
1649.88	-53.13	10.41	-42.72	-13	-29.72	V
2473.34	-60.53	13.16	-47.37	-13	-34.37	V
Middle Channel (1880MHz)						
38.89	-70.72	4.02	-66.70	-13	-53.70	H
1667.21	-56.89	4.66	-52.23	-13	-39.23	H
2506.63	-44.16	8.34	-35.82	-13	-22.82	H
44.28	-58.65	4.17	-54.48	-13	-41.48	V
1664.82	-63.53	4.94	-58.59	-13	-45.59	V
2499.55	-62.41	8.19	-54.22	-13	-41.22	V
High Channel (1907.6MHz)						
40.67	-73.00	3.87	-69.13	-13	-56.13	H
1685.79	-55.11	4.89	-50.22	-13	-37.22	H
2539.15	-48.60	8.42	-40.18	-13	-27.18	H
37.53	-53.91	3.95	-49.96	-13	-36.96	V
1688.71	-54.79	4.99	-49.80	-13	-36.80	V
2538.12	-55.60	8.12	-47.48	-13	-34.48	V

Note: Result=Reading+ Correct, Margin= Result- Limit
Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listedin the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

11. FREQUENCY STABILITY

11.1 Standard Applicable

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Cellular Band

Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	N/A	N/A
929 to 960	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

According to §27.54 The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

11.2 Test Procedure

According to §2.1055, the following test procedure was performed.
The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.
The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode

11.3 Environmental Conditions

Temperature:	23°C
Relative Humidity:	54%
ATM Pressure:	101kPa

11.4 Summary of Test Results/Plots

For WCDMA Band 5 Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	0.44	0.0004
40	NV	0.6	0.0006
30	NV	0.9	0.0011
20	NV	1.2	0.0015
10	NV	1.3	0.0016
0	NV	1.4	0.0018
-10	NV	1.4	0.0016
-20	NV	1.5	0.0019
-30	NV	1.6	0.0020

For WCDMA Band 2 Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	0.39	0.0002
40	NV	0.4	0.0002
30	NV	0.7	0.0004
20	NV	0.9	0.0006
10	NV	1.3	0.0007
0	NV	1.4	0.0005
-10	NV	1.9	0.0010
-20	NV	2.2	0.0013
-30	NV	2.7	0.0014

For HSDPA Band 5 Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	0.34	0.0004
40	NV	0.4	0.0003
30	NV	0.8	0.0009
20	NV	0.9	0.0011
10	NV	1.3	0.0015
0	NV	1.4	0.0018
-10	NV	1.5	0.0018
-20	NV	2.0	0.0025
-30	NV	2.2	0.0027

For HSDPA Band 2 Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	5.33	0.0029
40	NV	5.3	0.0028
30	NV	5.8	0.0031
20	NV	6.3	0.0034
10	NV	6.5	0.0035
0	NV	6.9	0.0039
-10	NV	7.1	0.0038
-20	NV	7.3	0.0039
-30	NV	7.4	0.0037

For HSUPA Band 5 Mode

Reference Frequency(Middle Channel): 836.6 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	1.02	0.0012
40	NV	1.2	0.0013
30	NV	1.3	0.0015
20	NV	1.4	0.0018
10	NV	1.8	0.0021
0	NV	2.1	0.0025
-10	NV	2.2	0.0026
-20	NV	2.6	0.0031
-30	NV	2.9	0.0034

For HSUPA Band 2 Mode

Reference Frequency(Middle Channel): 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	6.88	0.0036
40	NV	7.2	0.0038
30	NV	7.5	0.0041
20	NV	7.8	0.0042
10	NV	8.1	0.0043
0	NV	8.5	0.0042
-10	NV	8.7	0.0047
-20	NV	9.0	0.0049
-30	NV	9.4	0.0050

So, Frequency Stability Versus Input Voltage is:

Reference Frequency(Middle Channel): WCDMA 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	0.98	0.00118
	NV	1.85	0.00221
	HV	1.30	0.00156
Reference Frequency(Middle Channel): WCDMA 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	1.17	0.00140
	NV	1.07	0.00128
	HV	1.97	0.00236

Reference Frequency(Middle Channel): HSDPA 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	2.00	0.00240
	NV	1.71	0.00205
	HV	1.86	0.00223

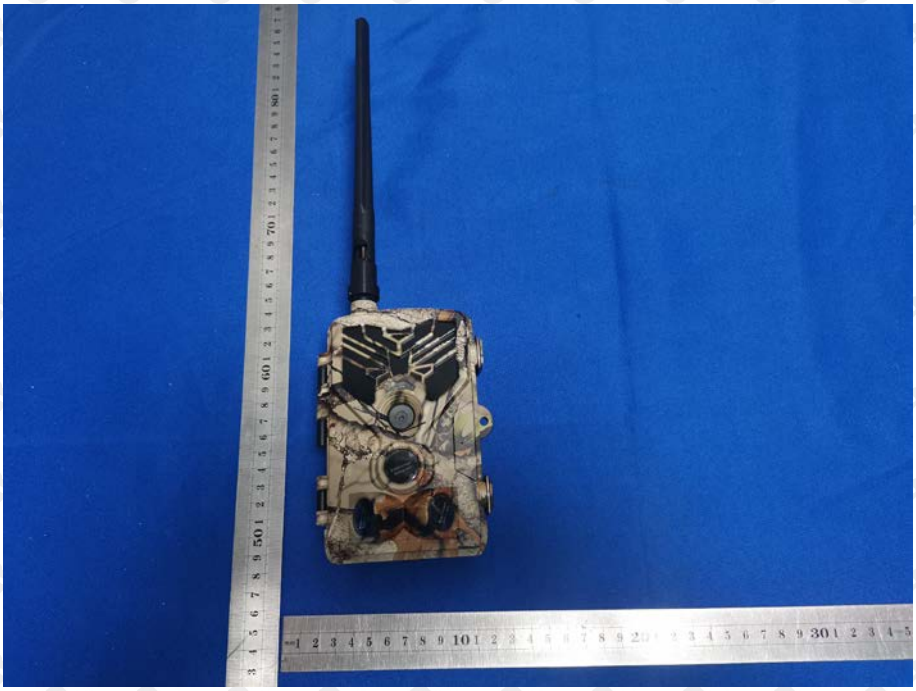
Reference Frequency(Middle Channel): HSDPA 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	7.5	0.0041
	NV	7.6	0.0040
	HV	7.7	0.0042

Reference Frequency(Middle Channel): HSUPA 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	2.8	0.0036
	NV	3.5	0.0041
	HV	3.6	0.0042

Reference Frequency(Middle Channel): HSUPA 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	9.7	0.0052
	NV	9.5	0.0053
	HV	9.9	0.0055

12. EUT PHOTO

EUT Photo 1



EUT Photo 2

13. EUT TEST PHOTO

Radiated Emission

※※※※※ **END OF REPORT** ※※※※※