



TEST REPORT

Product Name: Kids Smart Watch
FCC ID: 2BHYW-LT49
Trademark: N/A
Model Number: LT49, LT30, LT46, LT47, LT48, LT50, LT51, LT53, LT55, A20, A22, A23, A25, X30, X38, X50, X53, X60, X61, X62, X63, X65, X66, X67, X68, T41, T41-PINK, LT31, LT41, G41, LT52, LT56, 4G S07, 4G 2021, 4G S02
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Sample Received Date: Jun. 05, 2024
Sample tested Date: Jun. 05, 2024 to Jun. 28, 2024
Issue Date: Jun. 28, 2024
Report No.: CTB240628056RFX
Test Standards: FCC Part 22H & 24E
Test Results: PASS
Remark: This is GSM radio test report.

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Bin Mei / 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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<i>(NOTE: N/A MEANS NOT APPLICABLE)</i>		



1. **VERSION**

Report No.	Issue Date	Description	Approved
CTB240628056RFX	Jun. 28, 2024	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

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°C
frequency	1×10 ⁻⁷



4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	LT49, LT30, LT46, LT47, LT48, LT50, LT51, LT53, LT55, A20, A22, A23, A25, X30, X38, X50, X53, X60, X61, X62, X63, X65, X66, X67, X68, T41, T41-PINK, LT31, LT41, G41, LT52, LT56, 4G S07, 4G 2021, 4G S02
Model Description:	All models only have different names and appearances, everything else is the same. Test model: LT49
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	GSM/GPRS 850: 824~849MHz GSM/GPRS 1900: 1850~1910MHz WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Max. RF output power:	GSM850: 33.67dBm GSM1900: 29.99dBm WCDMA Band 2: 21.03dBm WCDMA Band 5: 22.35dBm
Type of Modulation:	GMSK, BPSK
Antenna installation:	Internal antenna
Antenna Gain:	GSM850: -17.07dBi, GSM1900: -3.54dBi WCDMA Band 2: -3.54dBi WCDMA Band 5: -17.07dBi
Ratings:	DC 5V charging from adapter DC 3.85V by battery

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
1.	Adapter	JIYIN	JY-05100C	/	/

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
GSM 850	GSM/GPRS	824.2 MHz	128
		836.6 MHz	190
		848.8 MHz	251
PCS 1900	GSM/GPRS	1850.2 MHz	512
		1880.0 MHz	661
		1909.8 MHz	810
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	GSM 850	Low, Middle, High Channels
TM2	GPRS 850	Low, Middle, High Channels
TM3	GSM 1900	Low, Middle, High Channels
TM4	GPRS 1900	Low, Middle, High Channels
TM5	WCDMA Band 5	Low, Middle, High Channels
TM6	HSDPA Band 5	Low, Middle, High Channels
TM7	HSUPA Band 5	Low, Middle, High Channels
TM8	WCDMA Band 2	Low, Middle, High Channels
TM9	HSDPA Band 2	Low, Middle, High Channels
TM10	HSUPA Band 2	Low, Middle, High Channels

4.6 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(DC):	3.85V
Normal Temperature(°C)	23
Low Temperature(°C)	0
High Temperature(°C)	40

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at 1&2F., Building A, No. 26, Xinghe Road, Xinqiao, Xinqiao Street, 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.

5.2 Test Instrument Used

No.	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	A.14.16	2024.07.05
2	Power Sensor	Agilent	U2021XA	MY56120032	/	2024.07.05
3	Power Sensor	Agilent	U2021XA	MY56120034	/	2024.07.05
4	Communication test set	R&S	CMW500	108058	V3.5.80	2024.07.05
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2024.07.05
6	Signal Generator	Agilent	N5181A	MY50140365	A.01.60	2024.07.05
7	Vector signal generator	Agilent	N5182A	MY47420195	A.01.87	2024.07.05
8	Communication test set	Agilent	E5515C	MY50102567	B.19.07 (E1962B)	2024.07.06
9	2.4 GHz Filter	Shenxiang	MSF2400-24 83.5MS-1154	20181015001	/	2024.07.05
10	5 GHz Filter	Shenxiang	MSF5150-58 50MS-1155	20181015001	/	2024.07.06
11	Filter	Xingbo	XBLBQ-DZA 120	190821-1-1	/	2024.07.06
12	BT&WI-FI Automatic test software	Microwave	MTS8000	Ver. 2.0.0.0	/	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	/	2024.10.30
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	/	2024.07.05
15	234G Automatic test software	Microwave	MTS8200	Ver. 2.0.0.0	/	/
16	966 chamber	C.R.T.	966	/	/	2024.08.11
17	Receiver	R&S	ESPI	100362	RF_ATTEN_7 (104489/003)	2024.07.05
18	Amplifier	HP	8447E	2945A02747	/	2024.07.05
19	Amplifier	Agilent	8449B	3008A01838	/	2024.07.05
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2024.07.08



21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	/	2024.07.08
22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2024.07.08
24	loop antenna	ZHINAN	ZN30900A	GTS534	/	/
25	40G Horn antenna	A/H/System	SAS-574	588	/	2024.10.30
26	Amplifier	AEROFLEX	Aeroflex	097	/	2024.07.05

6. RF OUTPUT POWER

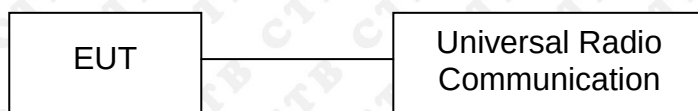
6.1 Standard Applicable

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.

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 GSM Mode GSM850

Frequency	Substitute SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
824.2	32.32	1.5	0	H	1.5	-17.07	13.75	38.45
824.2	32.70	1.5	0	V	1.5	-17.07	14.13	38.45
Middle Channel								
836.6	33.01	1.5	0	H	1.5	-17.07	14.44	38.45
836.6	33.00	1.5	0	V	1.5	-17.07	14.43	38.45
High Channel								
848.8	33.66	1.5	0	H	1.5	-17.07	15.09	38.45
848.8	33.62	1.5	0	V	1.5	-17.07	15.05	38.45

EIRP For GSM Mode PCS1900

Frequency	Substitute 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								
1850.2	27.39	1.5	0	H	1.9	-3.54	21.95	33
1850.2	27.67	1.5	0	V	1.9	-3.54	22.23	33
Middle Channel								
1880	26.77	1.5	0	H	1.9	-3.54	21.33	33
1880	27.08	1.5	0	V	1.9	-3.54	21.64	33
High Channel								
1909.8	26.39	1.5	0	H	1.9	-3.54	20.95	33
1909.8	26.84	1.5	0	V	1.9	-3.54	21.40	33



ERP For GPRS Mode GSM850

Frequency	Substitute SG	Height	Table	Polar	Cable loss	Antenna Gain	Result	FCC Part 22H Limit
MHz	dBm	Meter	Degree	H / V	dB	dB	dBm	dBm
Low Channel								
824.2	32.43	1.5	0	H	1.5	-17.07	13.86	38.45
824.2	32.25	1.5	0	V	1.5	-17.07	13.68	38.45
Middle Channel								
836.6	32.95	1.5	0	H	1.5	-17.07	14.38	38.45
836.6	33.19	1.5	0	V	1.5	-17.07	14.62	38.45
High Channel								
848.8	33.52	1.5	0	H	1.5	-17.07	14.95	38.45
848.8	32.97	1.5	0	V	1.5	-17.07	14.40	38.45

EIRP For GPRS Mode PCS1900

Frequency	Substitute 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								
1850.2	27.82	1.5	0	H	1.9	-3.54	22.38	33
1850.2	27.89	1.5	0	V	1.9	-3.54	22.45	33
Middle Channel								
1880	26.94	1.5	0	H	1.9	-3.54	21.50	33
1880	26.58	1.5	0	V	1.9	-3.54	21.14	33
High Channel								
1909.8	26.99	1.5	0	H	1.9	-3.54	21.55	33
1909.8	26.73	1.5	0	V	1.9	-3.54	21.29	33



ERP For WCDMA Mode Band 5

Frequency	Substitute 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	22.20	1.5	0	H	1.5	-17.07	3.63	38.45
826.4	21.30	1.5	0	V	1.5	-17.07	2.73	38.45
Middle Channel								
836.6	22.07	1.5	0	H	1.5	-17.07	3.50	38.45
836.6	21.76	1.5	0	V	1.5	-17.07	3.19	38.45
High Channel								
846.6	21.20	1.5	0	H	1.5	-17.07	2.63	38.45
846.6	21.23	1.5	0	V	1.5	-17.07	2.66	38.45

ERP For HSDPA Mode Band 5

Frequency	Substitute 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	21.65	1.5	0	H	1.5	-17.07	3.08	38.45
826.4	20.90	1.5	0	V	1.5	-17.07	2.33	38.45
Middle Channel								
836.6	21.51	1.5	0	H	1.5	-17.07	2.94	38.45
836.6	22.06	1.5	0	V	1.5	-17.07	3.49	38.45
High Channel								
846.6	20.70	1.5	0	H	1.5	-17.07	2.13	38.45
846.6	20.69	1.5	0	V	1.5	-17.07	2.12	38.45

ERP For HSUPA Mode Band 5

Frequency	Substitute 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	20.75	1.5	0	H	1.5	-17.07	2.18	38.45
826.4	21.06	1.5	0	V	1.5	-17.07	2.49	38.45
Middle Channel								
836.6	21.81	1.5	0	H	1.5	-17.07	3.24	38.45
836.6	21.25	1.5	0	V	1.5	-17.07	2.68	38.45
High Channel								
846.6	21.32	1.5	0	H	1.5	-17.07	2.75	38.45
846.6	20.89	1.5	0	V	1.5	-17.07	2.32	38.45



EIRP For WCDMA Mode Band 2

Frequency	Substitute 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	22.03	1.5	0	H	1.9	-3.54	16.59	33
1852.4	20.23	1.5	0	V	1.9	-3.54	14.79	33
Middle Channel								
1880	20.75	1.5	0	H	1.9	-3.54	15.31	33
1880	20.69	1.5	0	V	1.9	-3.54	15.25	33
High Channel								
1907.6	20.62	1.5	0	H	1.9	-3.54	15.18	33
1907.6	21.36	1.5	0	V	1.9	-3.54	15.92	33

EIRP For HSDPA Mode Band 2

Frequency	Substitute 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	20.60	1.5	0	H	1.9	-3.54	15.16	33
1852.4	19.72	1.5	0	V	1.9	-3.54	14.28	33
Middle Channel								
1880	19.82	1.5	0	H	1.9	-3.54	14.38	33
1880	20.17	1.5	0	V	1.9	-3.54	14.73	33
High Channel								
1907.6	18.79	1.5	0	H	1.9	-3.54	13.35	33
1907.6	20.31	1.5	0	V	1.9	-3.54	14.87	33

EIRP For HSUPA Mode Band 2

Frequency	Substitute 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	20.53	1.5	0	H	1.9	-3.54	15.09	33
1852.4	20.78	1.5	0	V	1.9	-3.54	15.34	33
Middle Channel								
1880	19.43	1.5	0	H	1.9	-3.54	13.99	33
1880	20.36	1.5	0	V	1.9	-3.54	14.92	33
High Channel								
1907.6	18.95	1.5	0	H	1.9	-3.54	13.51	33
1907.6	19.97	1.5	0	V	1.9	-3.54	14.53	33

Note: Result = Substitute - Cable loss + Antenna Gain

**Max. Conducted Output Power**

For Cellular Band (GSM850)

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 22.913 Limit (dBm)
GSM	Low Channel	824.2	33.30	38.45
	Middle Channel	836.6	33.62	38.45
	High Channel	848.8	33.67	38.45
GPRS(1 Slot)	Low Channel	824.2	33.20	38.45
	Middle Channel	836.6	33.58	38.45
	High Channel	848.8	33.66	38.45

For PCS Band (GSM1900)

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 24.232 Limit (dBm)
GSM	Low Channel	1850.2	27.83	33.0
	Middle Channel	1880.0	27.18	33.0
	High Channel	1909.8	26.96	33.0
GPRS(1 Slot)	Low Channel	1850.2	27.99	33.0
	Middle Channel	1880.0	27.34	33.0
	High Channel	1909.8	27.14	33.0



For WCDMA Band 5

Test Mode	Channel	Frequency (MHz)	Average Power (dBm)	FCC Part 22.913 Limit (dBm)
WCDMA	Low Channel	826.4	22.24	38.45
	Middle Channel	836.6	22.35	38.45
	High Channel	846.6	22.13	38.45
HSDPA	Low Channel	826.4	21.65	38.45
	Middle Channel	836.6	22.19	38.45
	High Channel	846.6	21.58	38.45
HSUPA	Low Channel	826.4	21.71	38.45
	Middle Channel	836.6	22.10	38.45
	High Channel	846.6	21.57	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	21.03	33.00
	Middle Channel	1880.0	20.47	33.00
	High Channel	1907.6	20.43	33.00
HSDPA	Low Channel	1852.4	20.58	33.00
	Middle Channel	1880.0	19.94	33.00
	High Channel	1907.6	19.78	33.00
HSUPA	Low Channel	1852.4	20.46	33.00
	Middle Channel	1880.0	19.91	33.00
	High Channel	1907.6	19.70	33.00

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

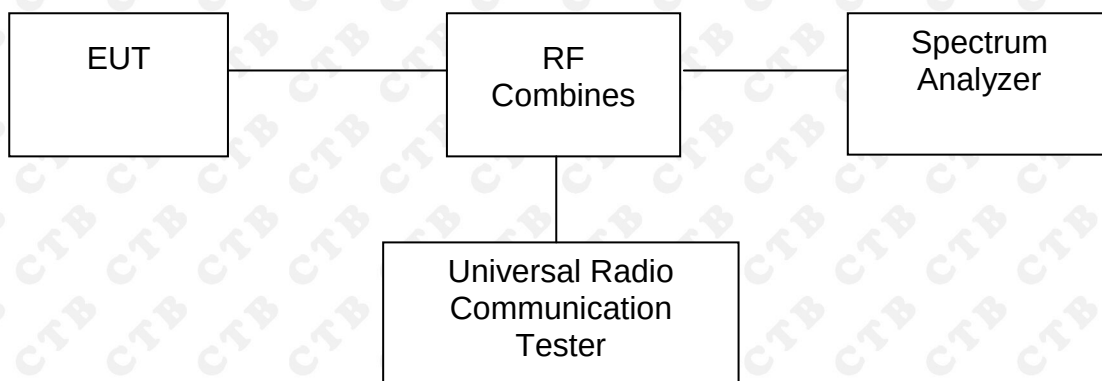
7.1 Standard Applicable

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 GSM850

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	190	836.6	2.66	13
GPRS(1 Slot)	190	836.6	2.66	13

For PCS 1900

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	512	1850.2	2.67	13
GPRS(1 Slot)	512	1850.2	2.71	13

For WCDMA Band 5

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	4182	836.4	3.08	13
HSDPA	4182	836.4	4.49	13
HSUPA	4182	836.4	4.15	13

For WCDMA Band 2

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9262	1852.4	2.97	13
HSDPA	9400	1852.4	4.55	13
HSUPA	9400	1852.4	4.10	13

GSM :



WCDMA:



8. EMISSION BANDWIDTH

8.1 Standard Applicable

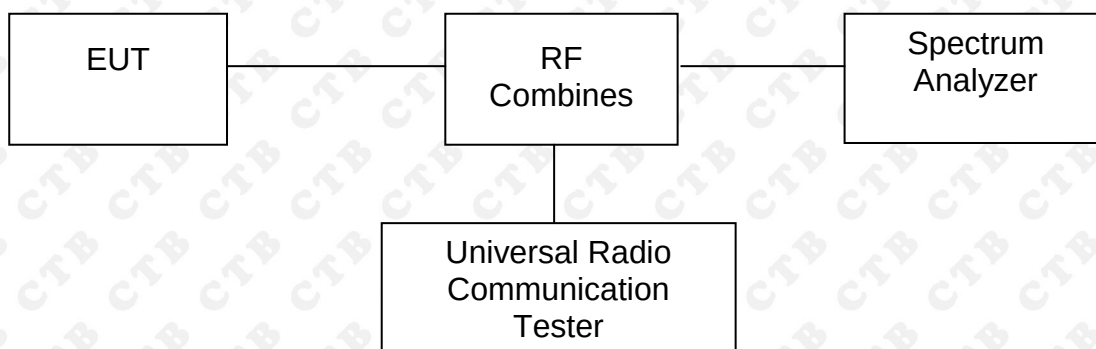
According to §22.917(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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 Cellular Band

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	128	824.2	249.457	317.644
	190	836.6	243.203	312.298
	251	848.8	248.615	326.850
GPRS	128	824.2	246.689	315.518
	190	836.6	244.065	310.187
	251	848.8	240.830	317.370

For PCS Band

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	512	1850.2	243.370	311.157
	661	1880.0	247.789	317.802
	810	1909.8	248.778	313.551
GPRS	512	1850.2	245.797	314.272
	661	1880.0	245.741	322.698
	810	1909.8	250.406	322.523

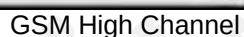
For Band 5

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
WCDMA	4132	826.4	4157.160	4662.644
	4183	836.6	4133.113	4693.314
	4233	846.6	4176.563	4691.969
HSDPA	4132	826.4	4146.308	4663.814
	4183	836.6	4146.304	4674.773
	4233	846.6	4155.815	4654.825
HSUPA	4132	826.4	4157.840	4675.156
	4183	836.6	4158.920	4661.649
	4233	846.6	4159.657	4658.194

For Band 2

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
WCDMA	9262	1852.4	4141.477	4663.901
	9400	1880.0	4137.417	4667.863
	9538	1907.6	4151.023	4670.780
HSDPA	9262	1852.4	4148.607	4684.189
	9400	1880.0	4149.242	4660.375
	9538	1907.6	4151.867	4689.726
HSUPA	9262	1852.4	4149.198	4660.969
	9400	1880.0	4157.285	4674.655
	9538	1907.6	4136.694	4659.349

GSM Low Channel



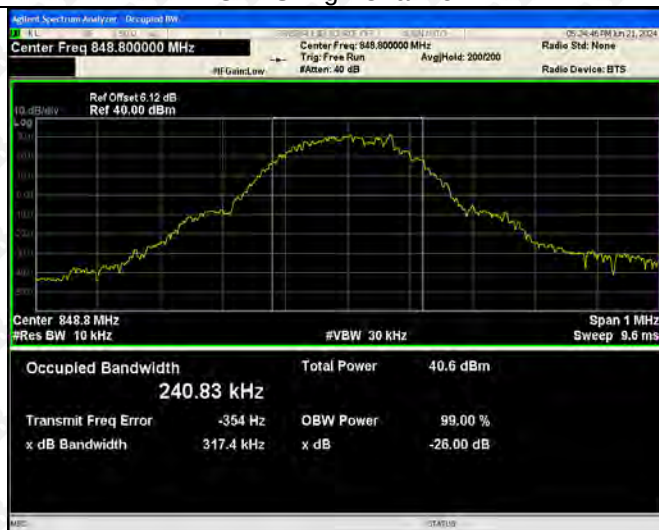
GPRS Low Channel



GPRS Middle Channel



GPRS High Channel



For PCS Band

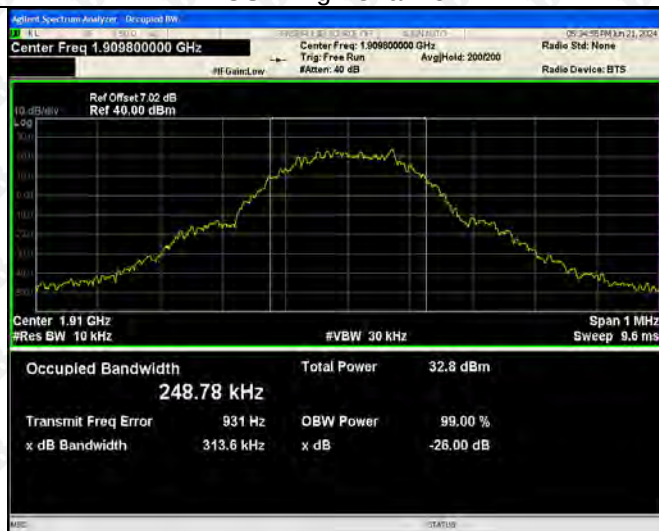
GSM Low Channel



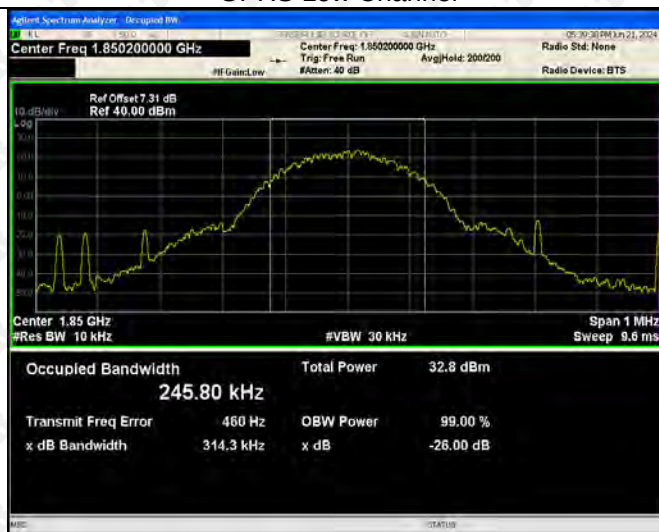
GSM Middle Channel



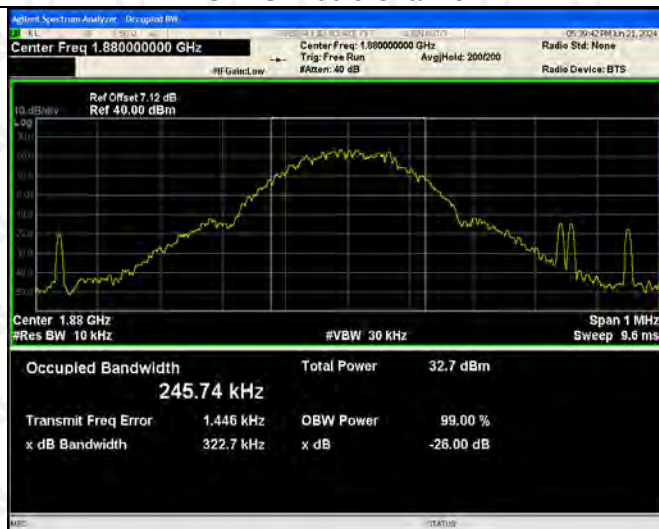
GSM High Channel



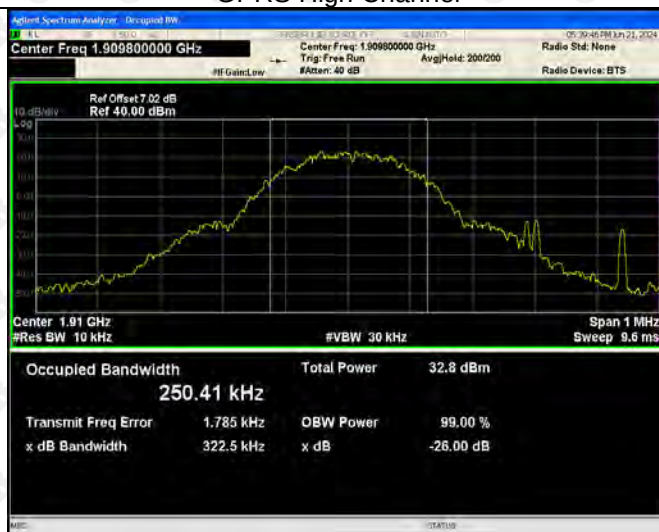
GPRS Low Channel



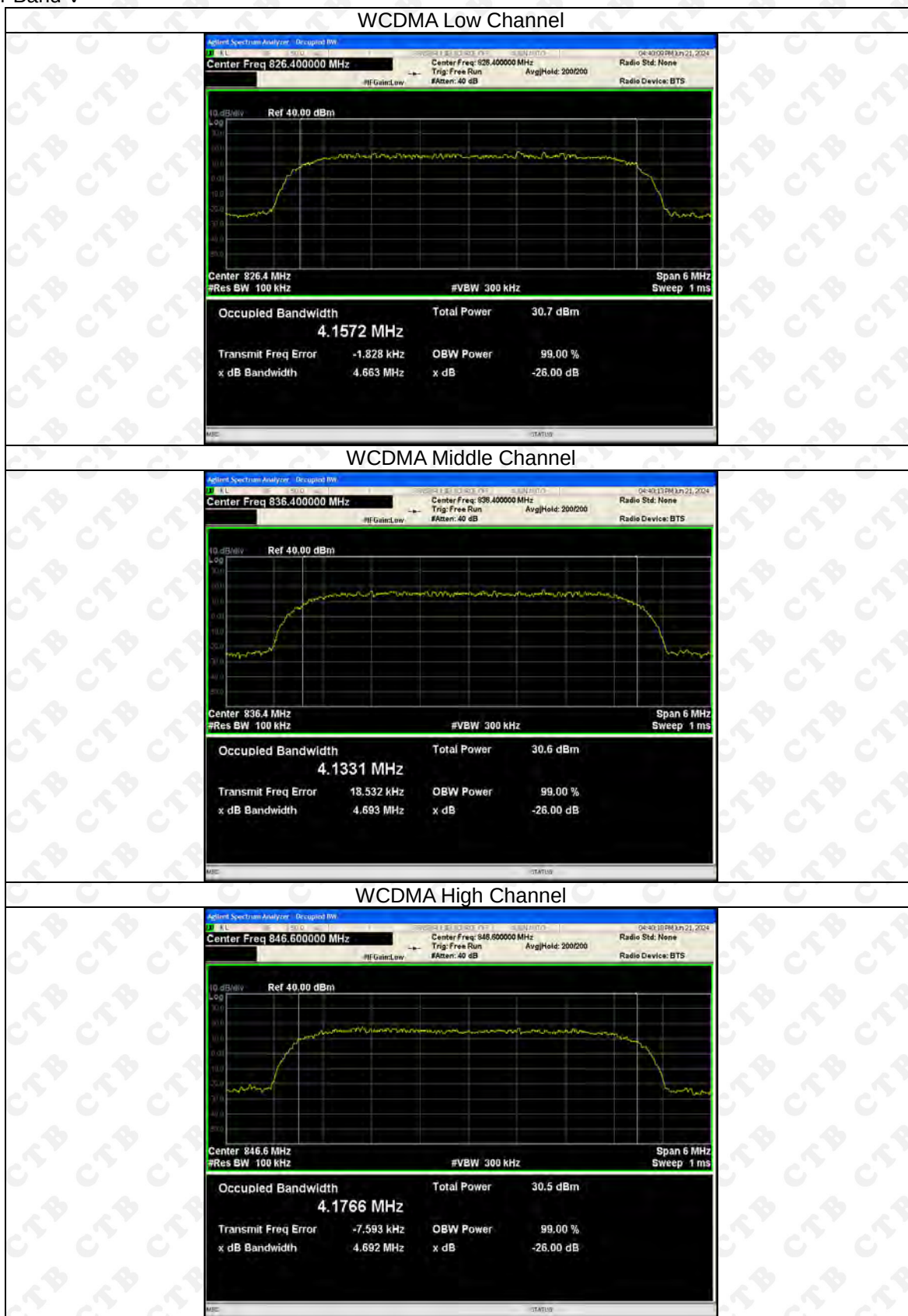
GPRS Middle Channel



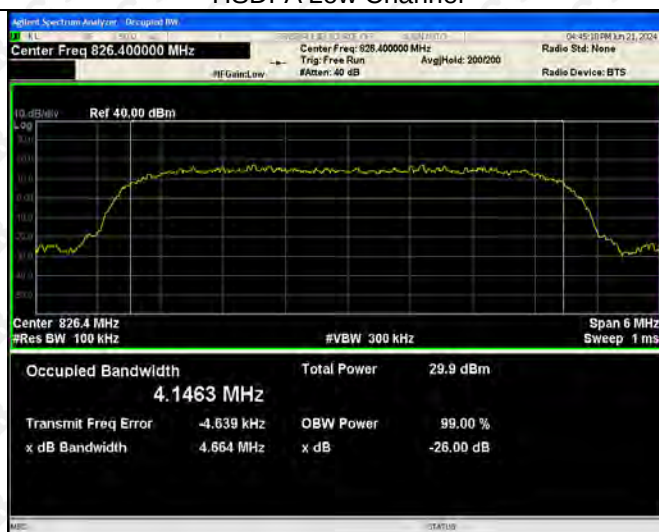
GPRS High Channel



For Band V



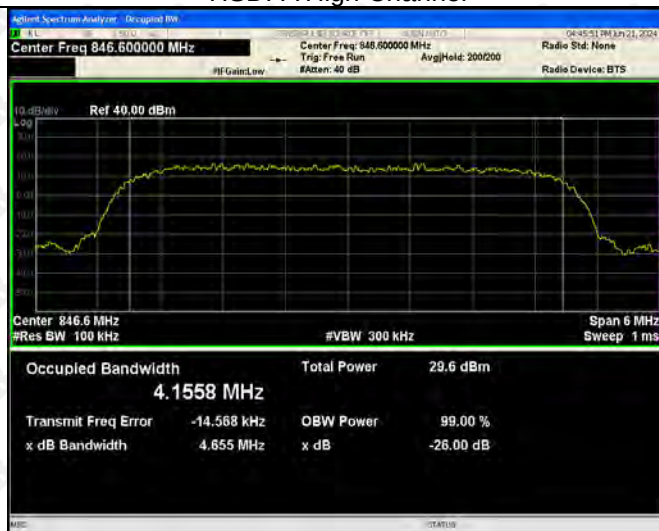
HSDPA Low Channel



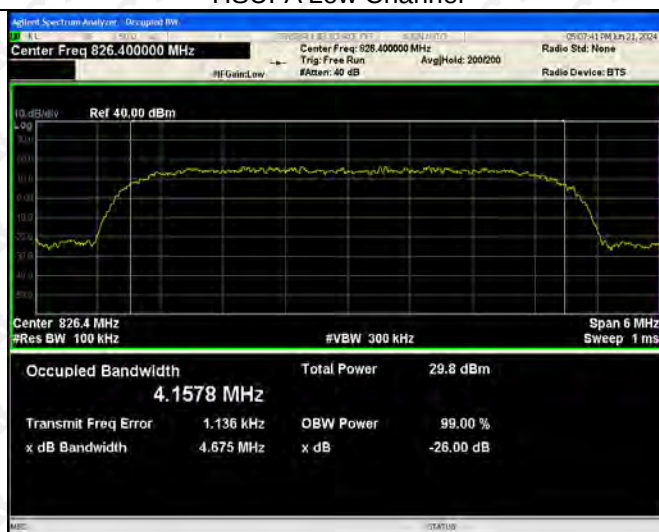
HSDPA Middle Channel



HSDPA High Channel



HSUPA Low Channel



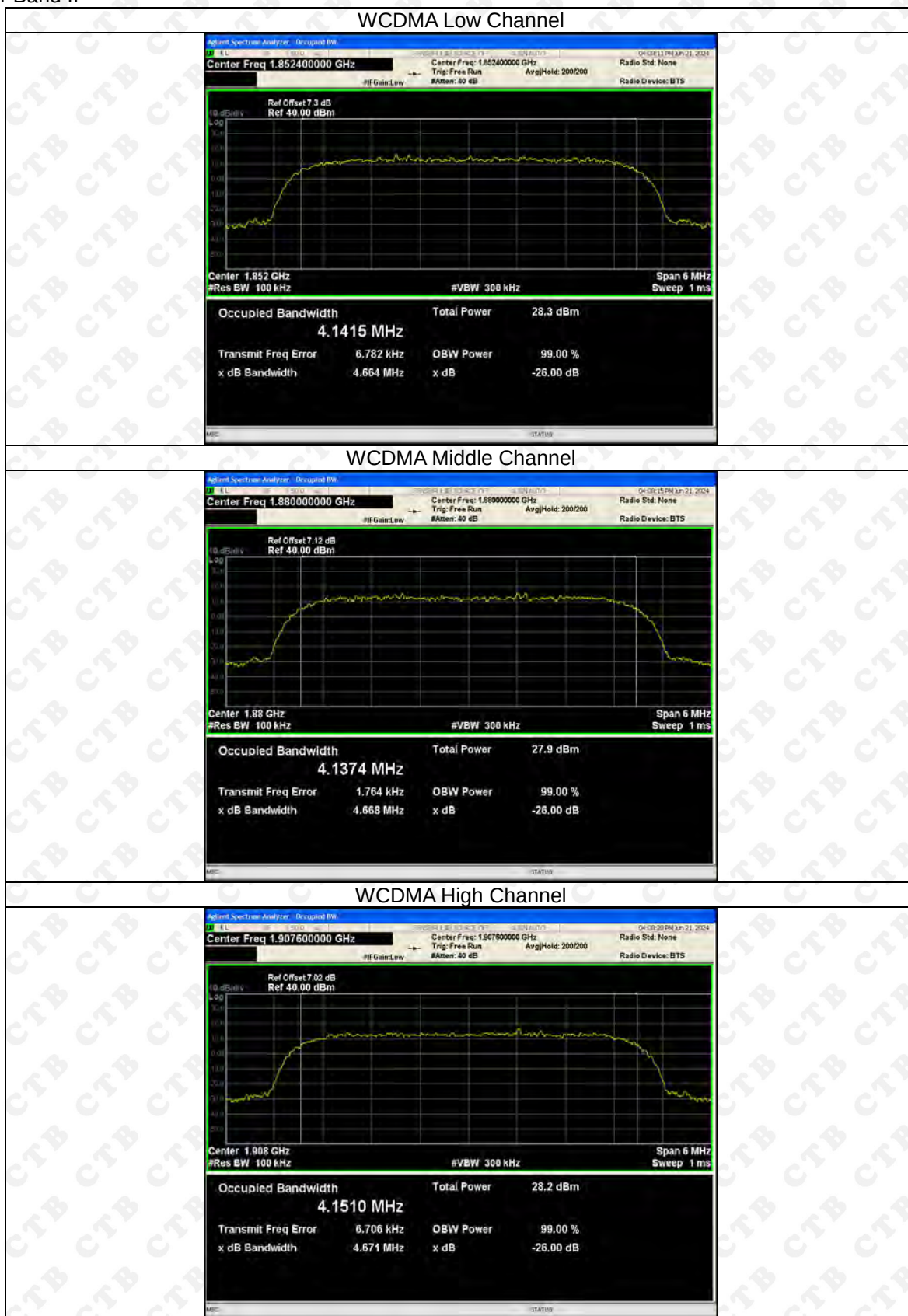
HSUPA Middle Channel



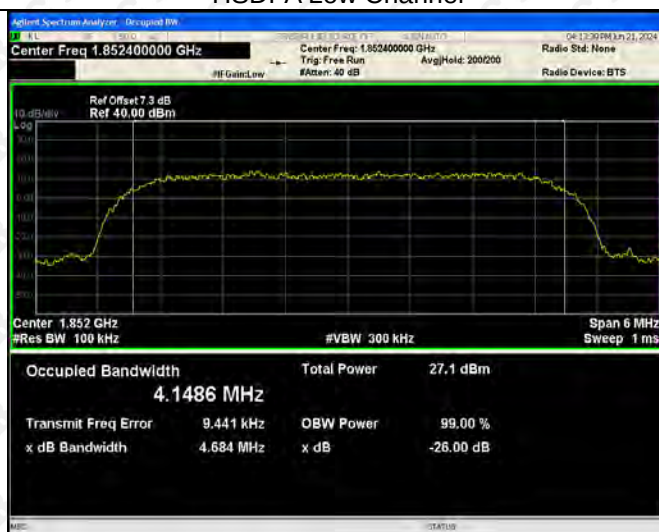
HSUPA High Channel



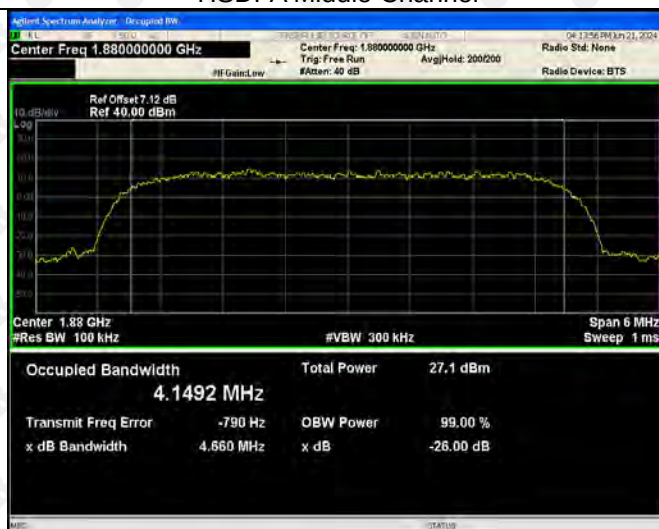
For Band II



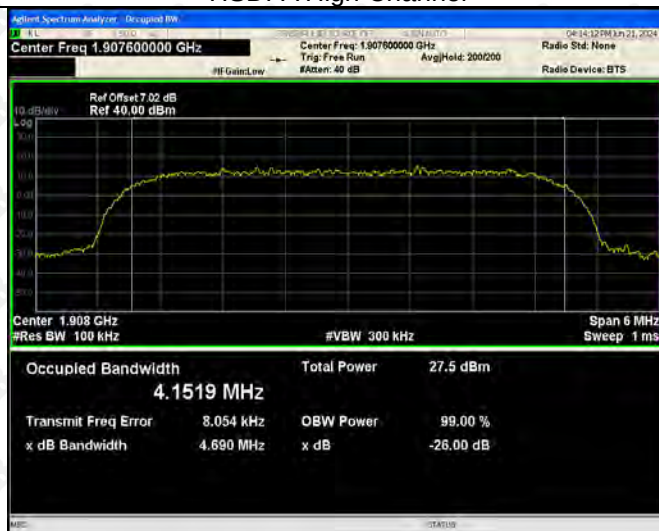
HSDPA Low Channel



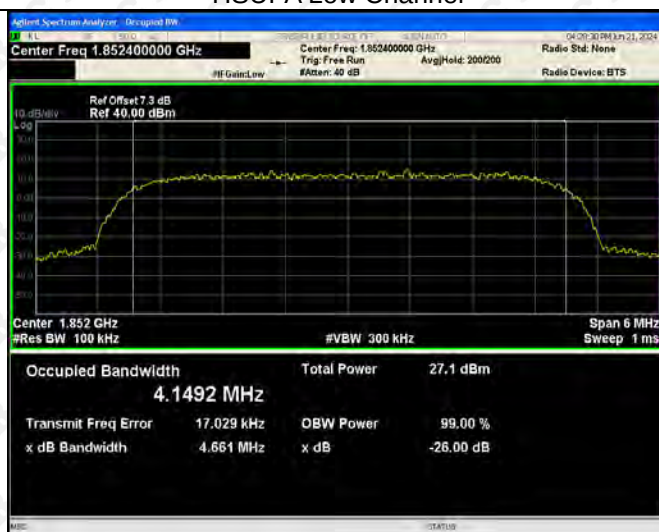
HSDPA Middle Channel



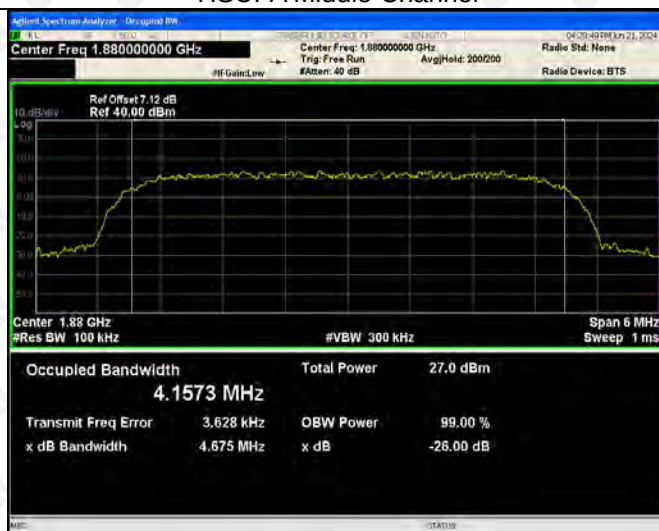
HSDPA High Channel



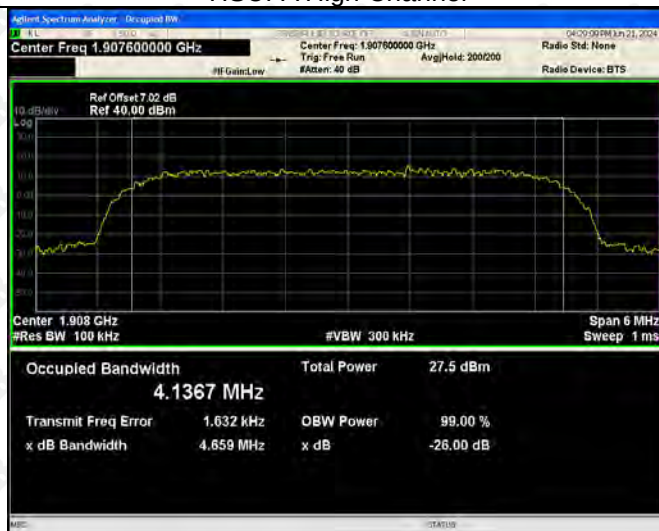
HSUPA Low Channel



HSUPA Middle Channel



HSUPA High Channel



9. OUT OF BAND EMISSIONS AT ANTENNA TERMINAL

9.1 Standard Applicable

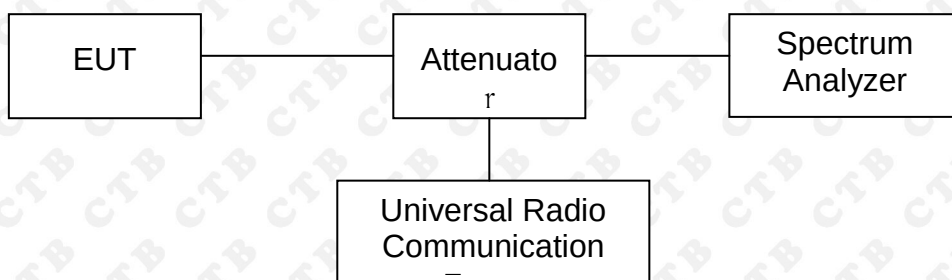
According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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 10^{th} harmonic.

Test Configuration for the out of band emissions testing:



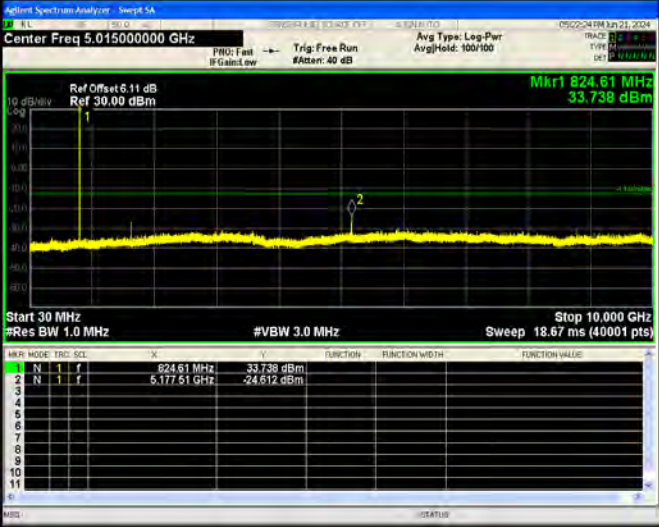
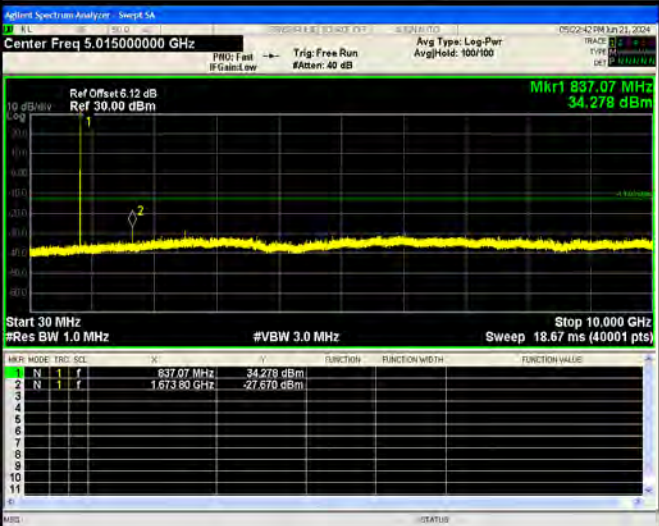
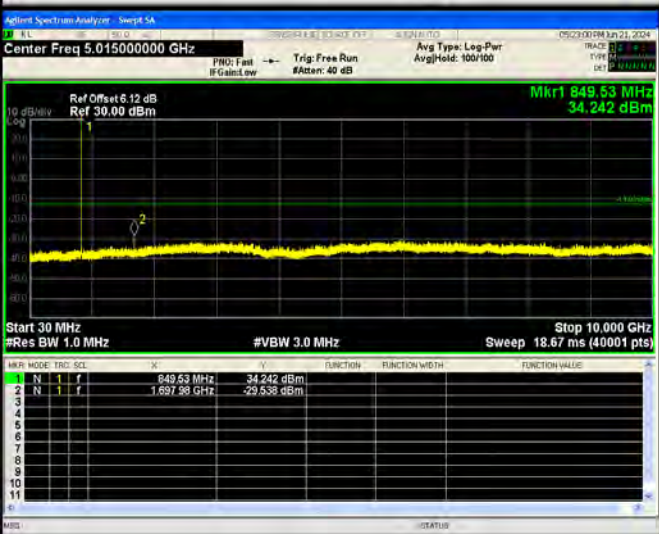
9.3 Environmental Conditions

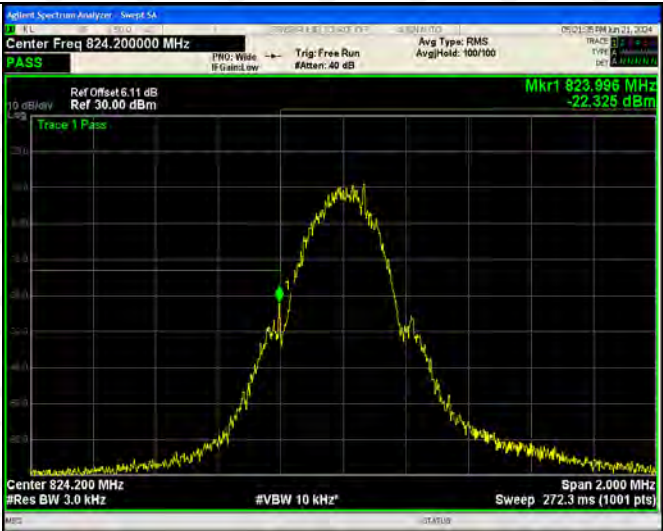
Temperature:	23 °C
Relative Humidity:	54%
ATM Pressure:	1010 mbar

9.4 Summary of Test Results/Plots

Please refer to the following test plots

For Cellular Band

GSM Low Channel	
GSM Middle Channel	
GSM High Channel	

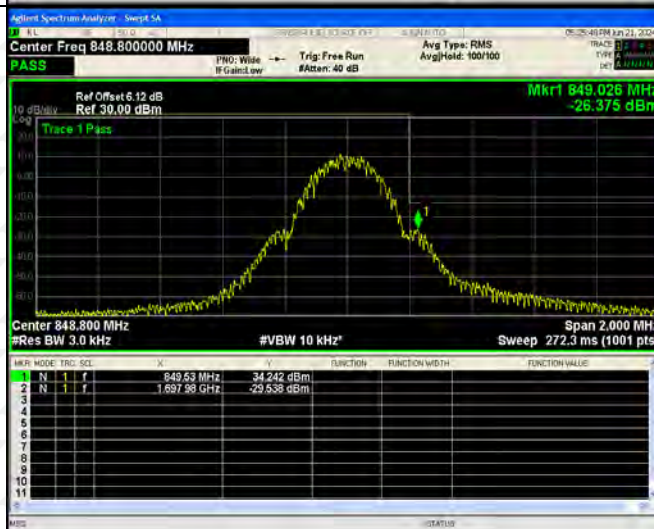
GSM Low Band Emission	
GSM High Band Emission	

GPRS Low Channel	Agilent Spectrum Analyzer - Sweep SA Center Freq 5.015000000 GHz Ref Offset 6.11 dB Ref 30.00 dBm Mkr1 824.86 MHz 33.744 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><thead><tr><th>MARK</th><th>MODE</th><th>FREQ</th><th>POWER</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>824.86 MHz</td><td>33.744 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1.649.13 GHz</td><td>-26.994 dBm</td><td></td><td></td><td></td></tr></tbody></table>	MARK	MODE	FREQ	POWER	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	824.86 MHz	33.744 dBm				2	N	1.649.13 GHz	-26.994 dBm			
MARK	MODE	FREQ	POWER	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																
1	N	824.86 MHz	33.744 dBm																			
2	N	1.649.13 GHz	-26.994 dBm																			
GPRS Middle Channel	Agilent Spectrum Analyzer - Sweep SA Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 837.07 MHz 34.272 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><thead><tr><th>MARK</th><th>MODE</th><th>FREQ</th><th>POWER</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>837.07 MHz</td><td>34.272 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1.673.80 GHz</td><td>-28.321 dBm</td><td></td><td></td><td></td></tr></tbody></table>	MARK	MODE	FREQ	POWER	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	837.07 MHz	34.272 dBm				2	N	1.673.80 GHz	-28.321 dBm			
MARK	MODE	FREQ	POWER	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																
1	N	837.07 MHz	34.272 dBm																			
2	N	1.673.80 GHz	-28.321 dBm																			
GPRS High Channel	Agilent Spectrum Analyzer - Sweep SA Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 849.28 MHz 34.256 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><thead><tr><th>MARK</th><th>MODE</th><th>FREQ</th><th>POWER</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>849.28 MHz</td><td>34.256 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1.697.98 GHz</td><td>-28.242 dBm</td><td></td><td></td><td></td></tr></tbody></table>	MARK	MODE	FREQ	POWER	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	849.28 MHz	34.256 dBm				2	N	1.697.98 GHz	-28.242 dBm			
MARK	MODE	FREQ	POWER	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																
1	N	849.28 MHz	34.256 dBm																			
2	N	1.697.98 GHz	-28.242 dBm																			

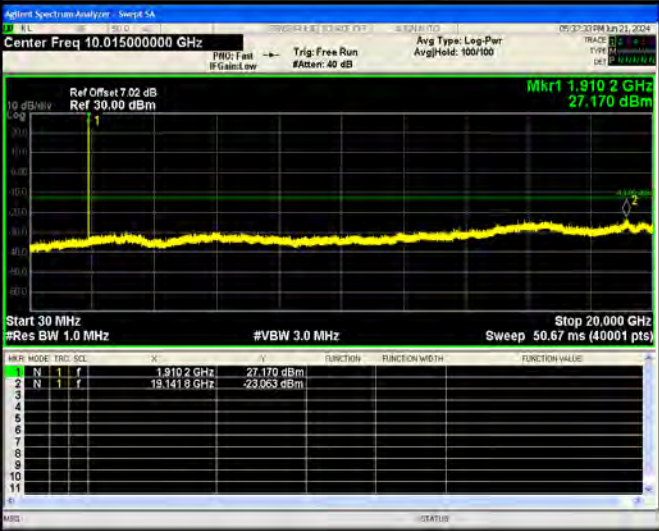
GPRS
Low
Band
Emission



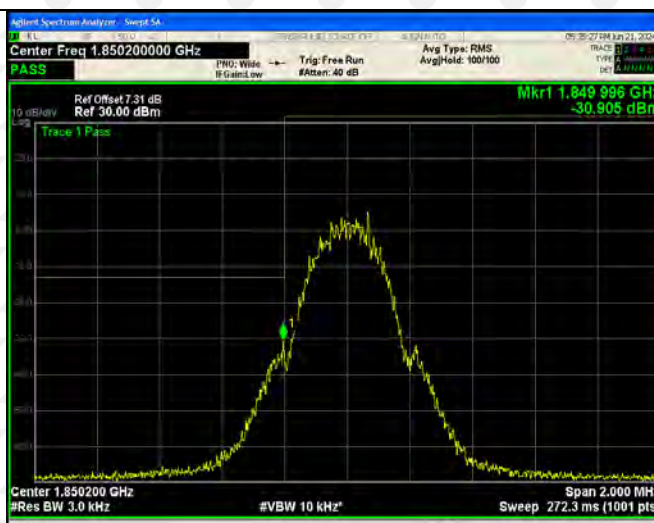
GPRS
High
Band
Emission



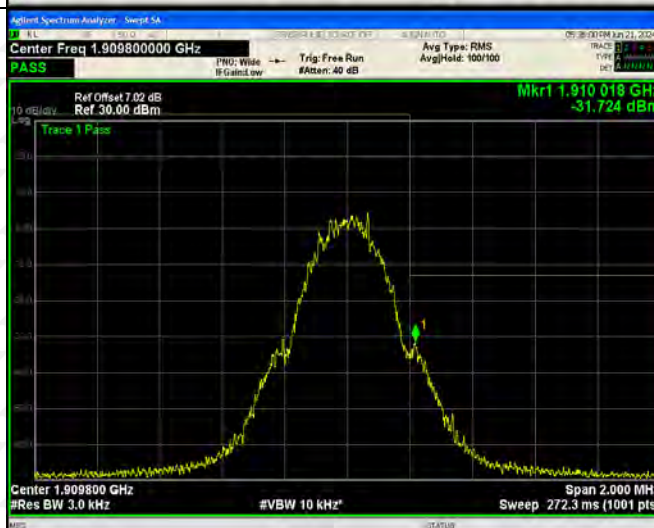
For PCS Band

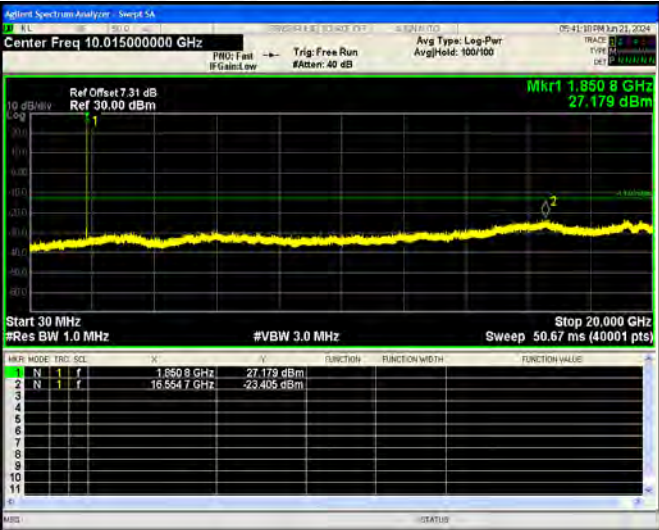
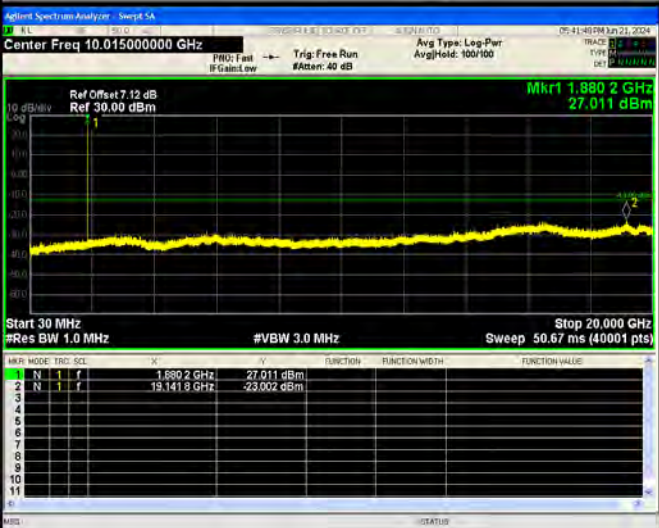
GSM Low Channel		
GSM Middle Channel		
GSM High Channel		

GSM
Low
Band
Emission

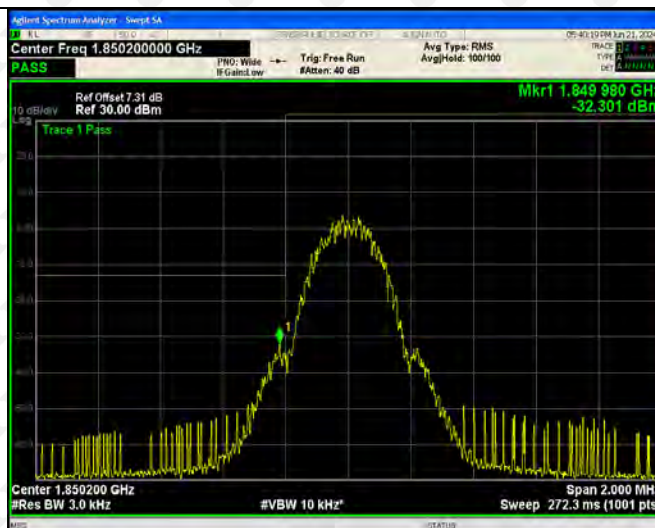


GSM
High
Band
Emission

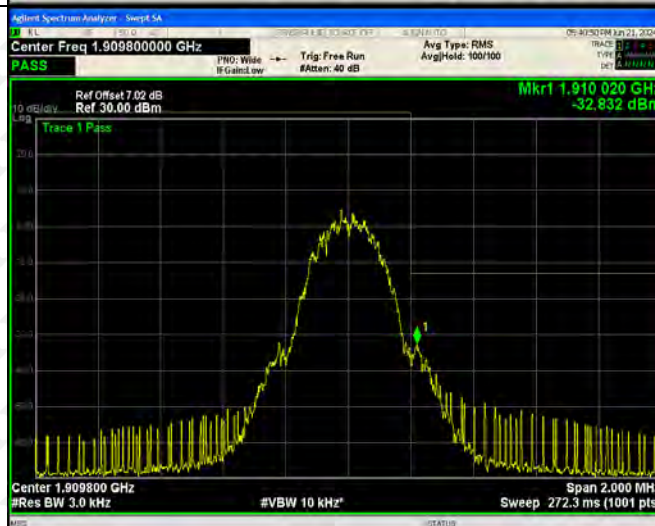


GPRS Low Channel	
GPRS Middle Channel	
GPRS High Channel	

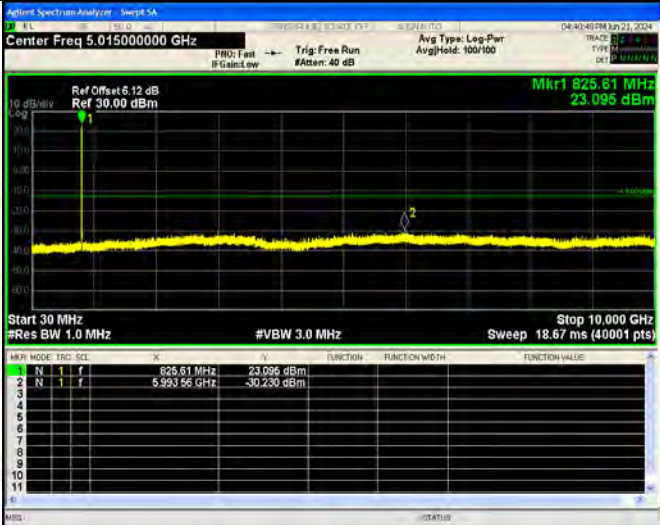
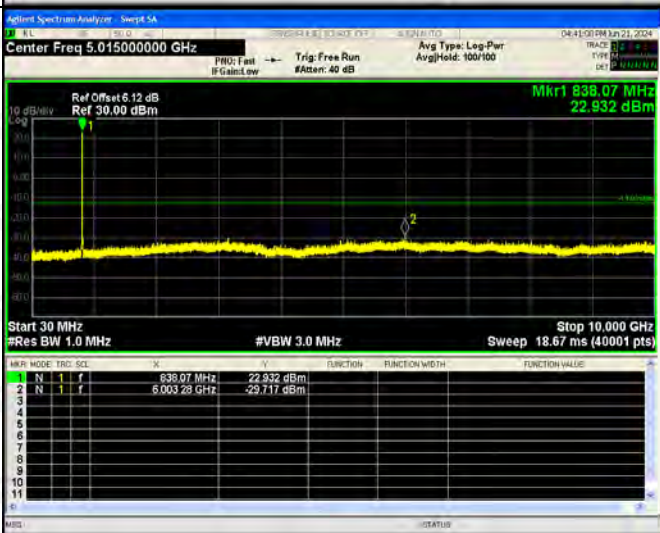
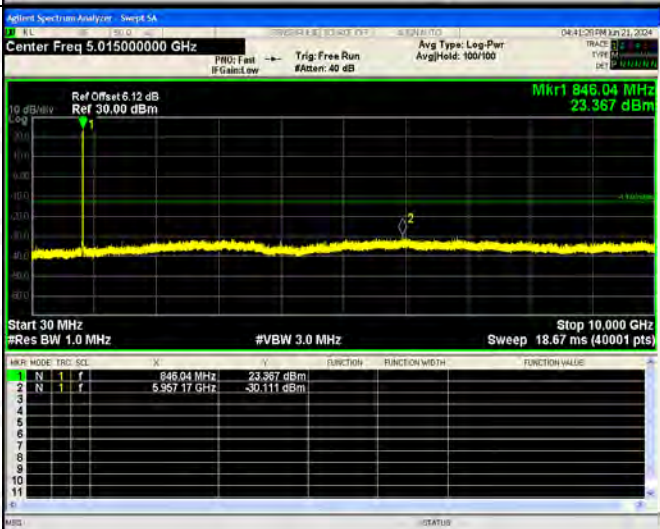
GPRS
Low
Band
Emission



GPRS
High
Band
Emission



For Band V

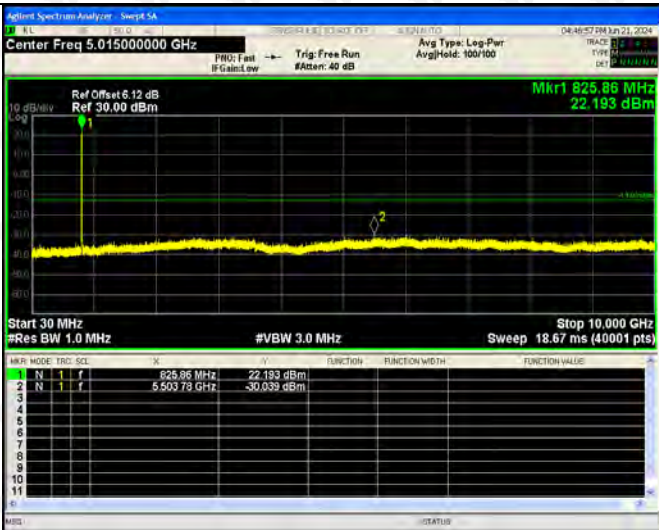
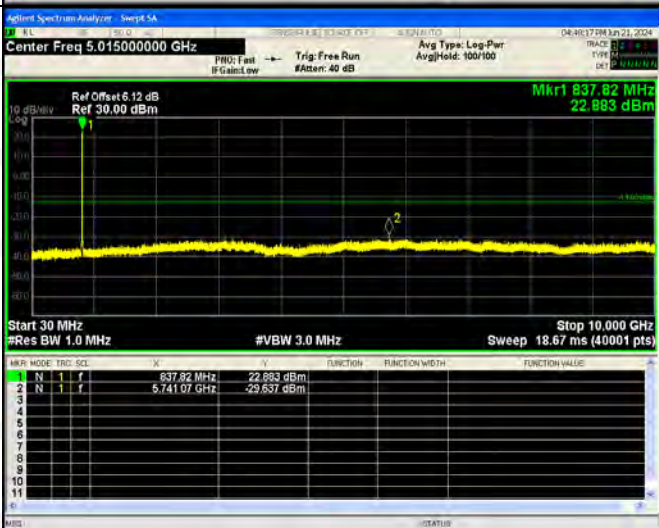
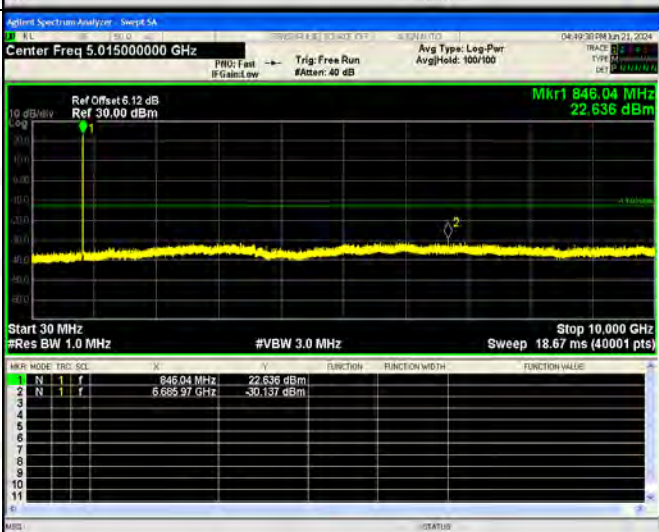
WCDMA Low Channel		
WCDMA Middle Channel		
WCDMA High Channel		

WCDMA
Low
Band
Spurious
Emission



WCDMA
High
Band
Spurious
Emission



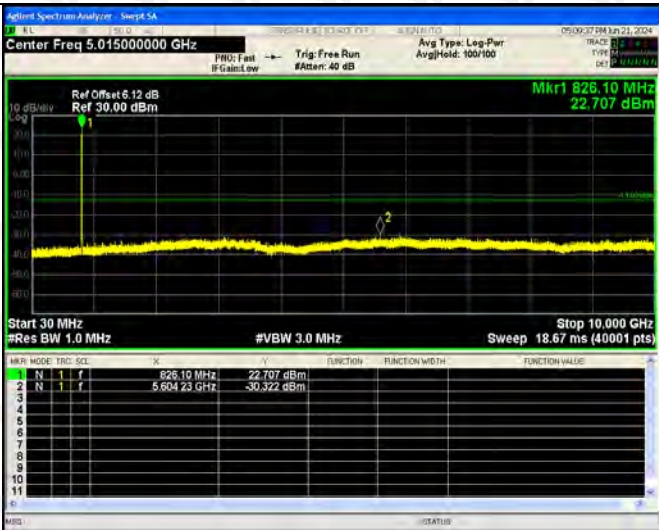
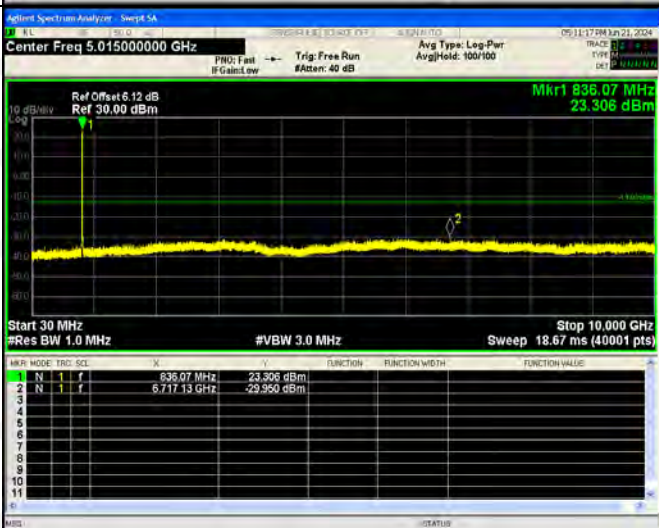
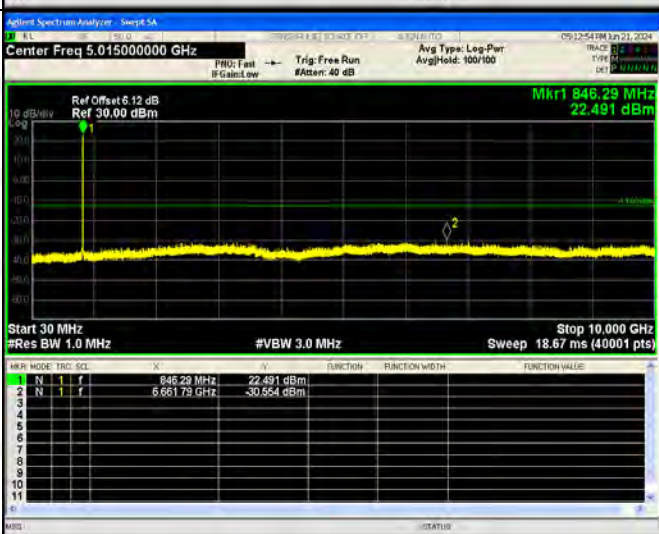
HSDPA Low Channel	 Agilent Spectrum Analyzer - Sweep 5A Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 825.86 MHz 22.193 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><tr><th>MARK</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>F</th><th>dBm</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>825.86 MHz</td><td>22.193 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>5.50379 GHz</td><td>-30.039 dBm</td><td></td><td></td><td></td></tr></table>	MARK	MODE	TRIG	SOL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	825.86 MHz	22.193 dBm				2	N	1	f	5.50379 GHz	-30.039 dBm			
MARK	MODE	TRIG	SOL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	825.86 MHz	22.193 dBm																							
2	N	1	f	5.50379 GHz	-30.039 dBm																							
HSDPA Middle Channel	 Agilent Spectrum Analyzer - Sweep 5A Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 837.82 MHz 22.883 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><tr><th>MARK</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>F</th><th>dBm</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>837.82 MHz</td><td>22.883 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>5.74107 GHz</td><td>-29.637 dBm</td><td></td><td></td><td></td></tr></table>	MARK	MODE	TRIG	SOL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	837.82 MHz	22.883 dBm				2	N	1	f	5.74107 GHz	-29.637 dBm			
MARK	MODE	TRIG	SOL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	837.82 MHz	22.883 dBm																							
2	N	1	f	5.74107 GHz	-29.637 dBm																							
HSDPA High Channel	 Agilent Spectrum Analyzer - Sweep 5A Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 846.04 MHz 22.636 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><tr><th>MARK</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>F</th><th>dBm</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>846.04 MHz</td><td>22.636 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>5.68597 GHz</td><td>-30.137 dBm</td><td></td><td></td><td></td></tr></table>	MARK	MODE	TRIG	SOL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	846.04 MHz	22.636 dBm				2	N	1	f	5.68597 GHz	-30.137 dBm			
MARK	MODE	TRIG	SOL	F	dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	846.04 MHz	22.636 dBm																							
2	N	1	f	5.68597 GHz	-30.137 dBm																							

HSDPA
Low
Band
Spurious
Emission



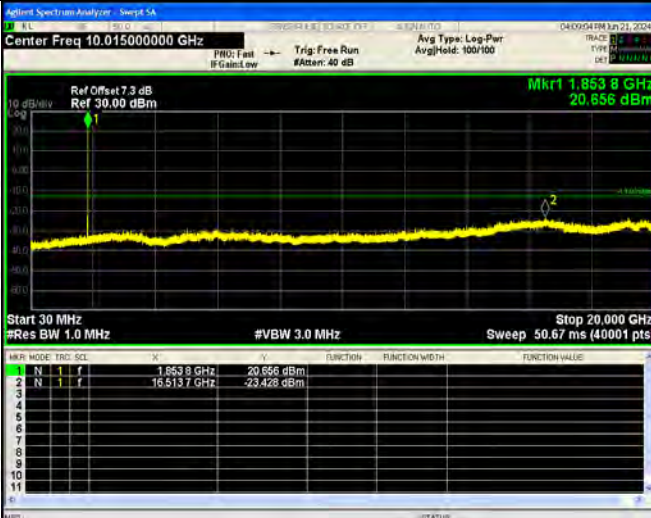
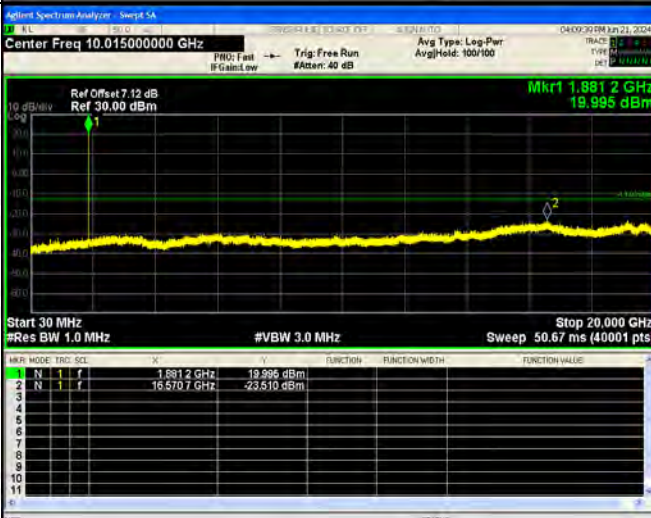
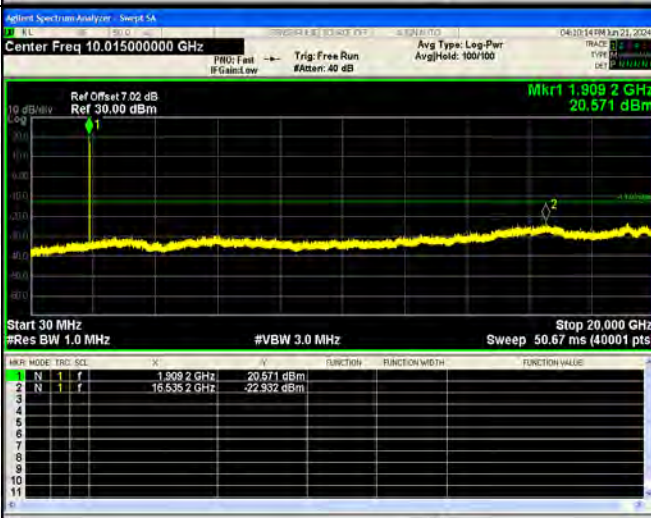
HSDPA
High
Band
Spurious
Emission



HSUPA Low Channel	 Agilent Spectrum Analyzer - Sweep 5A Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 826.10 MHz 22.707 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><tr><th>MARK</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>F</th><th>P</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>826.10 MHz</td><td>22.707 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>5.60423 GHz</td><td>-30.322 dBm</td><td></td><td></td><td></td></tr></table>	MARK	MODE	TRIG	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	826.10 MHz	22.707 dBm				2	N	1	f	5.60423 GHz	-30.322 dBm			
MARK	MODE	TRIG	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	826.10 MHz	22.707 dBm																							
2	N	1	f	5.60423 GHz	-30.322 dBm																							
HSUPA Middle Channel	 Agilent Spectrum Analyzer - Sweep 5A Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 836.07 MHz 23.306 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><tr><th>MARK</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>F</th><th>P</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>836.07 MHz</td><td>23.306 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>5.71713 GHz</td><td>-29.950 dBm</td><td></td><td></td><td></td></tr></table>	MARK	MODE	TRIG	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	836.07 MHz	23.306 dBm				2	N	1	f	5.71713 GHz	-29.950 dBm			
MARK	MODE	TRIG	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	836.07 MHz	23.306 dBm																							
2	N	1	f	5.71713 GHz	-29.950 dBm																							
HSUPA High Channel	 Agilent Spectrum Analyzer - Sweep 5A Center Freq 5.015000000 GHz Ref Offset 6.12 dB Ref 30.00 dBm Mkr1 846.28 MHz 22.491 dBm Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 10.000 GHz Sweep 18.67 ms (40001 pts) <table><tr><th>MARK</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>F</th><th>P</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>846.28 MHz</td><td>22.491 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>5.66179 GHz</td><td>-30.554 dBm</td><td></td><td></td><td></td></tr></table>	MARK	MODE	TRIG	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	846.28 MHz	22.491 dBm				2	N	1	f	5.66179 GHz	-30.554 dBm			
MARK	MODE	TRIG	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	846.28 MHz	22.491 dBm																							
2	N	1	f	5.66179 GHz	-30.554 dBm																							

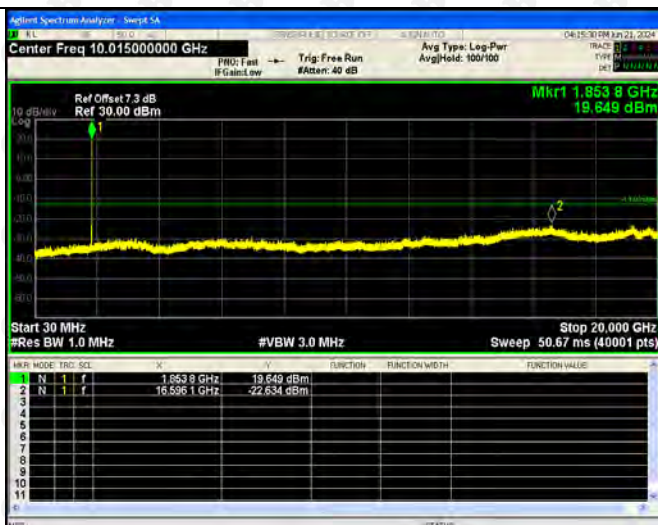
HSUPA Low Band Spurious Emission	
HSUPA High Band Spurious Emission	

For Band II

WCDMA Low Channel		
WCDMA Middle Channel		
WCDMA High Channel		

WCDMA Low Band Spurious Emission		
WCDMA High Band Spurious Emission		

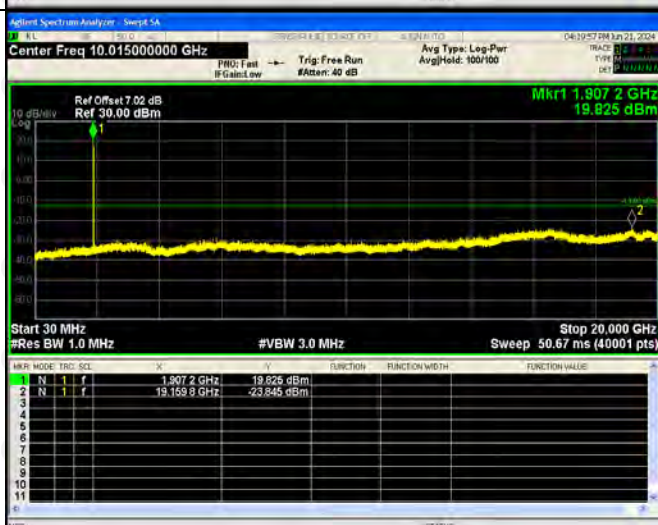
HSDPA
Low
Channel



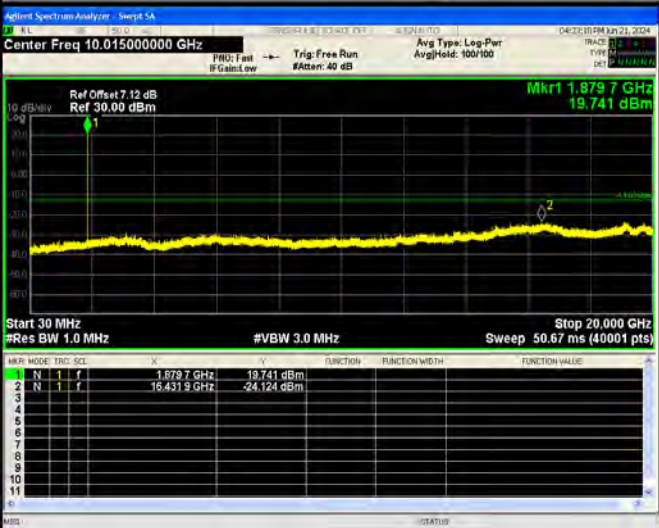
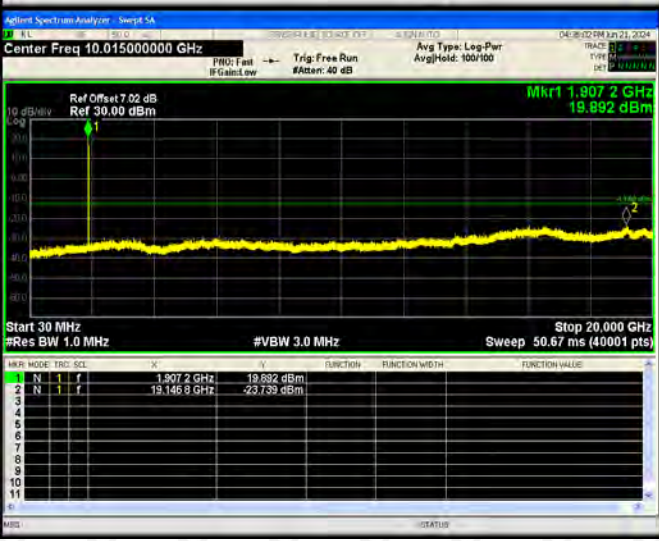
HSDPA
Middle
Channel



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 = $43 + 10 \log_{10}(\text{power out in Watts})$

10.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	54%
ATM Pressure:	101 kPa
Test Voltage	DC 5V

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 Cellular Band GSM850 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (824.2MHz)						
41.86	-67.62	3.9	-63.72	-13	-50.72	H
1643.62	-59.07	4.83	-54.24	-13	-41.24	H
2464.67	-53.42	8.08	-45.34	-13	-32.34	H
40.47	-70.43	4.02	-66.41	-13	-53.41	V
1646.54	-56.32	4.48	-51.84	-13	-38.84	V
2469.80	-55.74	8.2	-47.54	-13	-34.54	V
Middle Channel (836.6MHz)						
43.45	-69.05	3.84	-65.21	-13	-52.21	H
1672.20	-56.68	4.62	-52.06	-13	-39.06	H
2502.78	-54.38	8.25	-46.13	-13	-33.13	H
36.83	-71.10	4.25	-66.85	-13	-53.85	V
1672.31	-52.70	4.54	-48.16	-13	-35.16	V
2501.03	-52.28	8.35	-43.93	-13	-29.75	V
High Channel (848.8MHz)						
39.70	-67.90	4.22	-72.12	-13	-59.12	H
1693.60	-52.07	4.87	-56.94	-13	-43.94	H
2546.38	-50.86	8.38	-59.24	-13	-46.24	H
45.19	-67.37	4.02	-71.39	-13	-58.39	V
1693.58	-51.28	4.56	-55.84	-13	-42.84	V
2536.50	-56.18	8.41	-64.59	-13	-51.59	V

For PCS Band GSM1900 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1850.2MHz)						
39.51	-71.41	4.34	-67.07	-13	-54.07	H
3697.92	-50.14	10.54	-39.60	-13	-26.60	H
5542.05	-60.93	13.37	-47.56	-13	-34.56	H
42.28	-70.40	4.34	-66.06	-13	-53.06	V
3697.57	-56.90	10.54	-46.36	-13	-33.36	V
5544.78	-55.20	13.37	-41.83	-13	-28.83	V
Middle Channel (1880MHz)						
39.44	-65.58	4.02	-61.56	-13	-48.56	H
3758.27	-52.15	10.71	-41.44	-13	-28.44	H
5639.81	-58.63	13.73	-44.90	-13	-31.90	H
36.51	-65.86	4.14	-61.72	-13	-48.72	V
3758.41	-50.88	10.22	-40.66	-13	-27.66	V
5630.24	-62.30	13.16	-49.14	-13	-36.14	V
High Channel (1909.8MHz)						
45.29	-70.70	4.02	-66.68	-13	-53.68	H
3816.04	-58.71	4.9	-53.81	-13	-40.81	H
5726.49	-48.52	8.09	-40.43	-13	-27.43	H
42.29	-59.13	4.25	-54.88	-13	-41.88	V
3813.87	-58.21	4.93	-53.28	-13	-40.28	V
5720.58	-65.43	8.43	-57.00	-13	-44.00	V

For Band 5 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (826.4MHz)						
45.64	-74.55	3.91	-70.64	-13	-57.64	H
1646.79	-58.15	10.56	-47.59	-13	-34.59	H
2477.06	-53.61	13.5	-40.11	-13	-27.11	H
44.60	-65.02	3.93	-61.09	-13	-48.09	V
1646.42	-52.92	10.41	-42.51	-13	-29.51	V
2471.83	-61.40	13.16	-48.24	-13	-35.24	V
Middle Channel (836.6MHz)						
44.07	-66.11	4.02	-62.09	-13	-49.09	H
1671.57	-63.77	4.66	-59.11	-13	-46.11	H
2508.94	-48.79	8.34	-40.45	-13	-27.45	H
39.70	-62.20	4.17	-58.03	-13	-45.03	V
1668.00	-59.27	4.94	-54.33	-13	-41.33	V
2503.68	-60.91	8.19	-52.72	-13	-39.72	V
High Channel (846.6MHz)						
40.85	-68.29	3.87	-64.42	-13	-51.42	H
1686.64	-62.23	4.89	-57.34	-13	-44.34	H
2538.36	-50.14	8.42	-41.72	-13	-28.72	H
44.20	-54.79	3.95	-50.84	-13	-37.84	V
1691.78	-55.19	4.99	-50.20	-13	-37.20	V
2531.24	-59.00	8.12	-50.88	-13	-37.88	V

For Band 2 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1852.4MHz)						
43.18	-74.41	3.91	-70.50	-13	-57.50	H
1645.00	-58.23	10.56	-47.67	-13	-34.67	H
2477.37	-54.96	13.5	-41.46	-13	-28.46	H
38.47	-68.99	3.93	-65.06	-13	-52.06	V
1645.19	-55.78	10.41	-45.37	-13	-32.37	V
2478.56	-61.65	13.16	-48.49	-13	-35.49	V
Middle Channel (1880MHz)						
44.47	-69.12	4.02	-65.10	-13	-52.10	H
1667.96	-61.74	4.66	-57.08	-13	-44.08	H
2505.36	-48.80	8.34	-40.46	-13	-27.46	H
42.89	-62.66	4.17	-58.49	-13	-45.49	V
1668.51	-63.53	4.94	-58.59	-13	-45.59	V
2501.42	-61.64	8.19	-53.45	-13	-40.45	V
High Channel (1907.6MHz)						
44.60	-74.90	3.87	-71.03	-13	-58.03	H
1691.79	-58.53	4.89	-53.64	-13	-40.64	H
2532.07	-46.45	8.42	-38.03	-13	-25.03	H
45.70	-62.32	3.95	-58.37	-13	-45.37	V
1691.19	-55.33	4.99	-50.34	-13	-37.34	V
2537.58	-59.02	8.12	-50.90	-13	-37.90	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.

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 Cellular Band GSM Mode

Reference Frequency(Middle Channel): 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	8.51	0.01017
40	NV	8.82	0.01054
30	NV	9.39	0.01122
20	NV	9.99	0.01195
10	NV	9.91	0.01184
0	NV	10.29	0.01230
-10	NV	10.01	0.01197
-20	NV	10.22	0.01221
-30	NV	11.07	0.01323

For PCS Band GSM 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	12.14	0.00646
40	NV	12.60	0.00670
30	NV	12.62	0.00671
20	NV	12.82	0.00682
10	NV	13.66	0.00727
0	NV	13.79	0.00734
-10	NV	14.04	0.00747
-20	NV	14.40	0.00766
-30	NV	14.66	0.00780

For Cellular Band GPRS Mode

Reference Frequency(Middle Channel): 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	NV	8.47	0.01012
40	NV	9.55	0.01142
30	NV	9.84	0.01176
20	NV	9.24	0.01105
10	NV	9.81	0.01173
0	NV	9.84	0.01177
-10	NV	10.68	0.01276
-20	NV	10.95	0.01308
-30	NV	11.37	0.01359

For PCS Band GPRS 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	12.19	0.00649
40	NV	13.09	0.00697
30	NV	12.83	0.00682
20	NV	12.90	0.00686
10	NV	13.51	0.00719
0	NV	13.19	0.00702
-10	NV	13.66	0.00727
-20	NV	13.70	0.00728
-30	NV	14.69	0.00781

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	-0.13	-0.00016
40	NV	-0.23	-0.00027
30	NV	-0.09	-0.00011
20	NV	1.20	0.00143
10	NV	0.62	0.00074
0	NV	0.52	0.00063
-10	NV	0.53	0.00063
-20	NV	0.84	0.00100
-30	NV	0.78	0.00094

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	-0.23	-0.00012
40	NV	0.28	0.00015
30	NV	-0.06	-0.00003
20	NV	0.79	0.00042
10	NV	0.41	0.00022
0	NV	0.48	0.00026
-10	NV	1.26	0.00067
-20	NV	2.15	0.00115
-30	NV	1.75	0.00093

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	-0.36	-0.00043
40	NV	-0.18	-0.00021
30	NV	0.54	0.00065
20	NV	0.14	0.00017
10	NV	0.46	0.00055
0	NV	0.78	0.00093
-10	NV	1.31	0.00157
-20	NV	1.36	0.00162
-30	NV	1.63	0.00195

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	4.81	0.00256
40	NV	4.62	0.00246
30	NV	5.58	0.00297
20	NV	5.68	0.00302
10	NV	5.81	0.00309
0	NV	6.26	0.00333
-10	NV	6.15	0.00327
-20	NV	6.40	0.00340
-30	NV	6.99	0.00372

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	0.66	0.00078
40	NV	0.52	0.00062
30	NV	0.36	0.00044
20	NV	1.24	0.00148
10	NV	1.80	0.00215
0	NV	1.99	0.00237
-10	NV	1.25	0.00150
-20	NV	1.89	0.00226
-30	NV	1.97	0.00235

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	6.17	0.00328
40	NV	6.89	0.00367
30	NV	7.38	0.00392
20	NV	7.09	0.00377
10	NV	7.19	0.00382
0	NV	7.69	0.00409
-10	NV	8.18	0.00435
-20	NV	8.01	0.00426
-30	NV	9.34	0.00497

So, Frequency Stability Versus Input Voltage is:

Reference Frequency(Middle Channel): GSM 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	10.99	0.013135
	NV	11.37	0.013586
	HV	11.87	0.014188
Reference Frequency(Middle Channel): GSM 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	14.48	0.00770
	NV	14.97	0.00796
	HV	14.21	0.00756
Reference Frequency(Middle Channel): GPRS 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	11.30	0.013506
	NV	10.96	0.013100
	HV	11.79	0.014099
Reference Frequency(Middle Channel): GPRS 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	14.86	0.00790
	NV	14.54	0.00774
	HV	14.37	0.00764

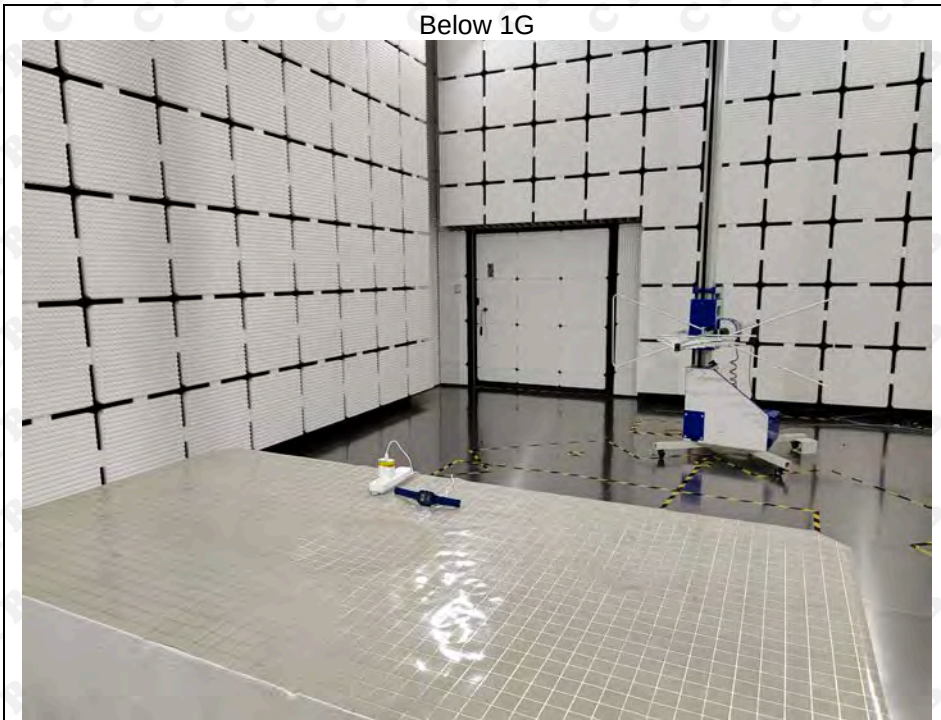
Reference Frequency(Middle Channel): WCDMA 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	1.44	0.001721
	NV	1.21	0.001446
	HV	1.32	0.001578
Reference Frequency(Middle Channel): WCDMA 1732.4MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	1.21	0.00070
	NV	0.89	0.00051
	HV	1.44	0.00083
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	1.97	0.00105
	NV	2.60	0.00138
	HV	2.85	0.00152
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	1.41	0.001683
	NV	2.16	0.002583
	HV	2.43	0.002910
Reference Frequency(Middle Channel): HSDPA 1732.4MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	6.43	0.003711
	NV	6.32	0.003649
	HV	6.96	0.004017
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	6.65	0.00354
	NV	6.66	0.00354
	HV	6.89	0.00366

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	2.10	0.002504
	NV	3.26	0.003900
	HV	2.93	0.003507
Reference Frequency(Middle Channel): HSUPA 1732.4MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	5.21	0.00301
	NV	5.45	0.00314
	HV	6.29	0.00363
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	8.78	0.00467
	NV	8.71	0.00464
	HV	9.45	0.00503

12. EUT TEST PHOTO

Radiated Emission

Below 1G



Above 1G



***** END OF REPORT *****