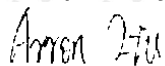


TEST REPORT

Product Name: Portable reader
FCC ID: VUJ-AT911
Product Name: N/A
Model Number: AT911 PLUS
Prepared For: ATID Co. Ltd
Address: #1211 Byuksan/Kyungin Digitalvalley, 11, 184, Gasan digital 2-ro, Geumcheon-gu, Seoul, South Korea
Manufacturer: ATID Co. Ltd
Address: #1211 Byuksan/Kyungin Digitalvalley, 11, 184, Gasan digital 2-ro, Geumcheon-gu, Seoul, South Korea
Prepared By: Shenzhen CTB Testing Technology Co., Ltd.
Address: Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Street, Baoan District, Shenzhen China
Sample Received Date: Jun. 24, 2020
Sample tested Date: Jun. 24, 2020 to Oct. 10, 2020
Issue Date: Oct. 10, 2020
Report No.: CTB200917013RFX
Test Standards: FCC Part 22H & 24E
Test Results: PASS
Remark: This is GSM radio test report.

Compiled by:

Arron Liu

Reviewed by:

Rita Xiao

Approved by:

Sherwin Qian/ Director

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.

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(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
CTB200917013RFX	Oct. 10, 2020	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℃
frequency	1×10 ⁻⁷

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	AT911 PLUS
Model Description:	N/A
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz WCDMA Band 2: 1850~1910MHz WCDMA Band 5: 824~849MHz
Max. RF output power:	GSM850: 33.71dBm, GSM1900: 29.31dBm WCDMA Band 2: 24.46dBm, WCDMA Band 5: 22.38dBm
Type of Modulation:	GMSK, BPSK
Antenna installation:	SMA connect Antenna
Antenna Gain:	4dBi
Ratings:	DC 3.8V 9000mAh form battery DC 5V, 2A, charging from adapter
Adapter:	MODEL:PSAA10R-050 INPUT:100-240V AC50/60Hz OUTPUT:5V $\overline{\sim}$ 2A

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
GSM 850	GSM/GPRS/EDGE	824.2 MHz	128
		836.6 MHz	190
		848.8 MHz	251
PCS 1900	GSM/GPRS/EDGE	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	EDGE 850	Low, Middle, High Channels
TM4	GSM 1900	Low, Middle, High Channels
TM5	GPRS 1900	Low, Middle, High Channels
TM6	EDGE 1900	Low, Middle, High Channels
TM7	WCDMA Band 5	Low, Middle, High Channels
TM8	HSDPA Band 5	Low, Middle, High Channels
TM9	HSUPA Band 5	Low, Middle, High Channels
TM10	WCDMA Band 2	Low, Middle, High Channels
TM11	HSDPA Band 2	Low, Middle, High Channels

TM12	HSUPA Band 2	Low, Middle, High Channels
------	--------------	----------------------------

4.6 Test Environment

Humidity(%):	55
Atmospheric Pressure(kPa):	101.1
Normal Voltage(DC):	3.8V
Normal Temperature(°C)	25
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 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

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	Oct. 17, 2019	Oct. 16, 2020
2	Power Sensor	Agilent	U2021XA	MY56120032	Nov. 02, 2019	Nov. 01, 2020
3	Power Sensor	Agilent	U2021XA	MY56120034	Nov. 02, 2019	Nov. 01, 2020
4	Communication test set	R&S	CMW500	118735	Nov. 02, 2019	Nov. 01, 2020
5	Spectrum Analyzer	R&S	FSP40	100550	Nov. 02, 2019	Nov. 01, 2020
6	Signal Generator	Agilent	N5181A	MY49060920	Nov. 03, 2019	Nov. 02, 2020
7	Signal Generator	Agilent	N5182A	MY47420195	Nov. 03, 2019	Nov. 02, 2020
8	Communication test set	R&S	CMU200	119978	Nov. 02, 2019	Nov. 01, 2020
9	band rejection filter	Shenxiang	MSF2400-24 83.5MS-1154	20181015001	Nov. 02, 2019	Nov. 01, 2020
10	band rejection filter	Shenxiang	MSF5150-58 50MS-1155	20181015001	Nov. 02, 2019	Nov. 01, 2020
11	band rejection filter	Xingbo	XBLBQ-DZA 120	190821-1-1	Nov. 02, 2019	Nov. 01, 2020
12	BT&WI-FI Automatic test software	Microwave	MTS8310	Ver. 2.0.0.0	\	\
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	Nov. 02, 2019	Nov. 01, 2020
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	Nov. 02, 2019	Nov. 01, 2020
15	234G Automatic test software	Microwave	MTS8200	Ver. 2.0.0.0	\	\
16	966 chamber	C.R.T.	966 Room	966	Nov. 10, 2019	Nov. 09, 2020
17	Receiver	R&S	ESPI	100362	Nov. 02, 2019	Nov. 01, 2020
18	Amplifier	HP	8447E	2945A02747	Nov. 03, 2019	Nov. 02, 2020

19	Amplifier	Agilent	8449B	3008A01838	Nov. 03, 2019	Nov. 02, 2020
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	869	Nov. 02, 2019	Nov. 01, 2020
21	Horn Antenna	Schwarzbeck	BBHA9120D	1911	Nov. 02, 2019	Nov. 01, 2020
22	Software	Fala	EZ-EMC	FA-03A2 RE	\	\
23	3-Loop Antenna	Daze	ZN30401	17014	Nov. 02, 2019	Nov. 01, 2020
24	loop antenna	ZHINAN	ZN30900A	/	Nov. 02, 2019	Nov. 01, 2020
25	Horn antenna	A/H/System	SAS-574	588	Nov. 02, 2019	Nov. 01, 2020
26	Amplifier	AEROFLEX	/	S/N/ 097	Nov. 02, 2019	Nov. 01, 2020

6. RF OUTPUT POWER

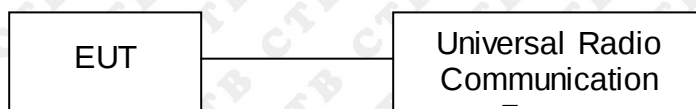
6.1 Standard Applicable

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:	24 °C
Relative Humidity:	54%
ATM Pressure:	1011 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	31.76	1.5	0	H	1.5	0	30.26	38.45
824.2	31.99	1.5	0	V	1.5	0	30.49	38.45
Middle Channel								
836.4	31.63	1.5	0	H	1.5	0	30.13	38.45
836.4	32.35	1.5	0	V	1.5	0	30.85	38.45
High Channel								
848.8	32.37	1.5	0	H	1.5	0	30.87	38.45
848.8	32.13	1.5	0	V	1.5	0	30.63	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	20.51	1.5	0	H	1.9	7.7	26.31	33.00
1850.2	20.32	1.5	0	V	1.9	7.7	26.12	33.00
Middle Channel								
1880.0	20.35	1.5	0	H	1.9	7.7	26.15	33.00
1880.0	21.14	1.5	0	V	1.9	7.7	26.94	33.00
High Channel								
1909.8	20.23	1.5	0	H	1.9	7.7	26.03	33.00
1909.8	20.48	1.5	0	V	1.9	7.7	26.28	33.00

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	32.15	1.5	0	H	1.5	0	30.65	38.45
824.2	32.44	1.5	0	V	1.5	0	30.94	38.45
Middle Channel								
836.6	31.75	1.5	0	H	1.5	0	30.23	38.45
836.6	32.11	1.5	0	V	1.5	0	30.61	38.45
High Channel								
848.8	32.06	1.5	0	H	1.5	0	30.56	38.45
848.8	31.91	1.5	0	V	1.5	0	30.41	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	20.74	1.5	0	H	1.9	7.7	26.54	33.00
1850.2	20.39	1.5	0	V	1.9	7.7	26.19	33.00
Middle Channel								
1880.0	20.55	1.5	0	H	1.9	7.7	26.35	33.00
1880.0	21.12	1.5	0	V	1.9	7.7	26.92	33.00
High Channel								
1909.8	20.57	1.5	0	H	1.9	7.7	26.37	33.00
1909.8	20.74	1.5	0	V	1.9	7.7	26.54	33.00

ERP For EDGE 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	23.66	1.5	0	H	1.5	0	22.16	38.45
824.2	23.64	1.5	0	V	1.5	0	22.14	38.45
Middle Channel								
836.6	23.85	1.5	0	H	1.5	0	22.35	38.45
836.6	23.91	1.5	0	V	1.5	0	22.41	38.45
High Channel								
848.8	23.95	1.5	0	H	1.5	0	22.45	38.45
848.8	23.79	1.5	0	V	1.5	0	22.29	38.45

EIRP For EDGE 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	18.58	1.5	0	H	1.9	7.7	24.38	33.00
1850.2	18.84	1.5	0	V	1.9	7.7	24.64	33.00
Middle Channel								
1880.0	18.73	1.5	0	H	1.9	7.7	24.53	33.00
1880.0	17.55	1.5	0	V	1.9	7.7	24.31	33.00
High Channel								
1909.8	18.51	1.5	0	H	1.9	7.7	24.35	33.00
1909.8	18.43	1.5	0	V	1.9	7.7	24.23	33.00

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	23.03	1.5	0	H	1.5	0	21.53	38.45
826.4	22.84	1.5	0	V	1.5	0	21.34	38.45
Middle Channel								
836.6	23.35	1.5	0	H	1.5	0	21.85	38.45
836.6	23.09	1.5	0	V	1.5	0	21.59	38.45
High Channel								
846.6	22.63	1.5	0	H	1.5	0	21.13	38.45
846.6	22.89	1.5	0	V	1.5	0	21.39	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	21.91	1.5	0	H	1.5	0	20.41	38.45
826.4	21.86	1.5	0	V	1.5	0	20.36	38.45
Middle Channel								
836.6	22.29	1.5	0	H	1.5	0	20.79	38.45
836.6	22.08	1.5	0	V	1.5	0	20.58	38.45
High Channel								
846.6	21.94	1.5	0	H	1.5	0	20.44	38.45
846.6	21.88	1.5	0	V	1.5	0	20.38	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	21.01	1.5	0	H	1.5	0	20.55	38.45
826.4	21.87	1.5	0	V	1.5	0	20.77	38.45
Middle Channel								
836.6	20.65	1.5	0	H	1.5	0	20.16	38.45
836.6	22.07	1.5	0	V	1.5	0	20.75	38.45
High Channel								
846.6	20.46	1.5	0	H	1.5	0	20.95	38.45
846.6	21.85	1.5	0	V	1.5	0	20.45	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	13.74	1.5	0	H	1.9	7.7	19.54	33
1852.4	13.77	1.5	0	V	1.9	7.7	19.57	33
Middle Channel								
1880.0	13.82	1.5	0	H	1.9	7.7	19.72	33
1880.0	13.92	1.5	0	V	1.9	7.7	19.86	33
High Channel								
1907.6	13.28	1.5	0	H	1.9	7.7	19.08	33
1907.6	14.07	1.5	0	V	1.9	7.7	19.87	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	12.76	1.5	0	H	1.9	7.7	18.56	33
1852.4	12.64	1.5	0	V	1.9	7.7	18.44	33
Middle Channel								
1880.0	12.76	1.5	0	H	1.9	7.7	18.56	33
1880.0	13.07	1.5	0	V	1.9	7.7	18.87	33
High Channel								
1907.6	12.38	1.5	0	H	1.9	7.7	18.18	33
1907.6	12.67	1.5	0	V	1.9	7.7	18.47	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	11.97	1.5	0	H	1.9	7.7	17.77	33
1852.4	11.65	1.5	0	V	1.9	7.7	17.45	33
Middle Channel								
1880.0	11.86	1.5	0	H	1.9	7.7	17.66	33
1880.0	12.06	1.5	0	V	1.9	7.7	17.86	33
High Channel								
1907.6	11.71	1.5	0	H	1.9	7.7	17.51	33
1907.6	11.44	1.5	0	V	1.9	7.7	17.24	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	33.71	38.45
	Middle Channel	836.6	33.46	38.45
	High Channel	848.8	33.56	38.45
GPRS(1 Slot)	Low Channel	824.2	33.33	38.45
	Middle Channel	836.6	33.48	38.45
	High Channel	848.8	33.55	38.45
EDGE(1 Slot)	Low Channel	824.2	25.43	38.45
	Middle Channel	836.6	25.40	38.45
	High Channel	848.8	25.28	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	29.31	33.0
	Middle Channel	1880.0	29.29	33.0
	High Channel	1909.8	29.18	33.0
GPRS(1 Slot)	Low Channel	1850.2	29.25	33.0
	Middle Channel	1880.0	29.28	33.0
	High Channel	1909.8	29.13	33.0
EDGE(1 Slot)	Low Channel	1850.2	27.22	33.0
	Middle Channel	1880.0	27.22	33.0
	High Channel	1909.8	27.17	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	24.40	38.45
	Middle Channel	836.6	24.38	38.45
	High Channel	846.6	24.46	38.45
HSDPA	Low Channel	826.4	23.40	38.45
	Middle Channel	836.6	23.39	38.45
	High Channel	846.6	23.46	38.45
HSUPA	Low Channel	826.4	21.53	38.45
	Middle Channel	836.6	23.20	38.45
	High Channel	846.6	23.23	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	22.16	33.00
	Middle Channel	1880.0	22.38	33.00
	High Channel	1907.6	22.37	33.00
HSDPA	Low Channel	1852.4	21.17	33.00
	Middle Channel	1880.0	21.35	33.00
	High Channel	1907.6	21.29	33.00
HSUPA	Low Channel	1852.4	20.59	33.00
	Middle Channel	1880.0	20.87	33.00
	High Channel	1907.6	20.72	33.00

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

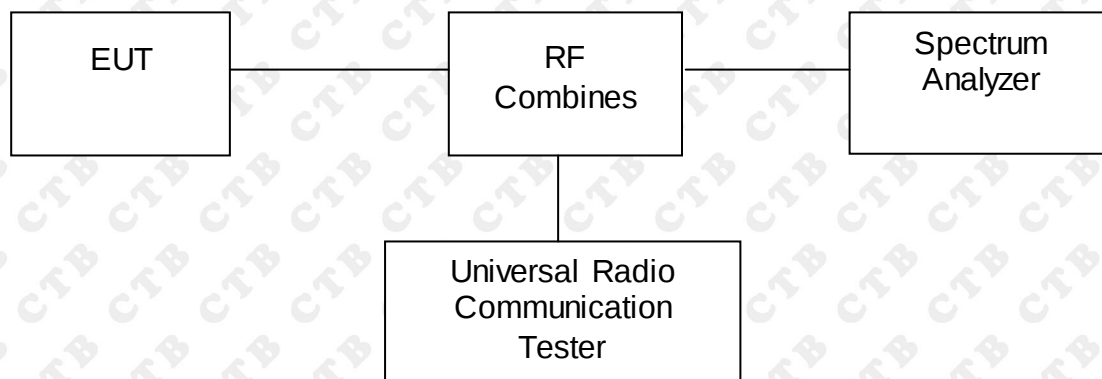
7.1 Standard Applicable

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:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

7.4 Summary of Test Results

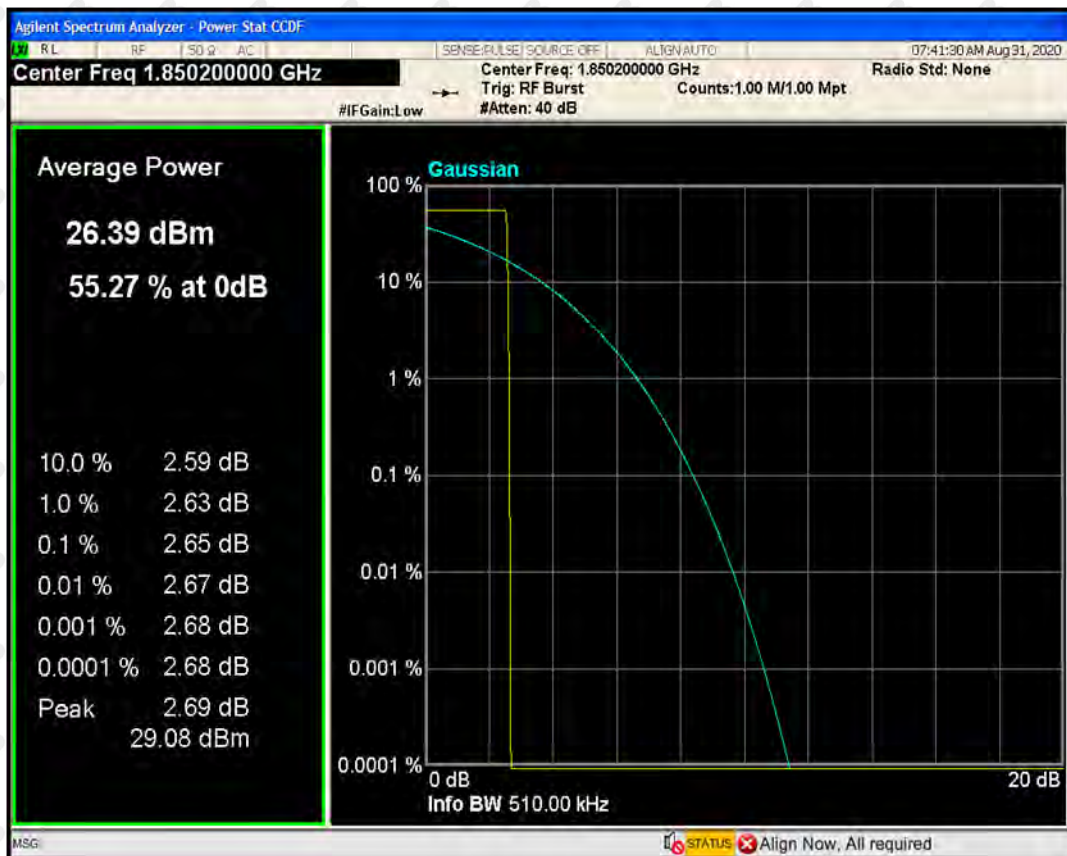
Only the worst case was selected to record
For PCS Band

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	512	1850.2	2.65	13
GPRS(1 Slot)	512	1850.2	2.68	13
EDGE(1 Slot)	512	1850.2	5.38	13

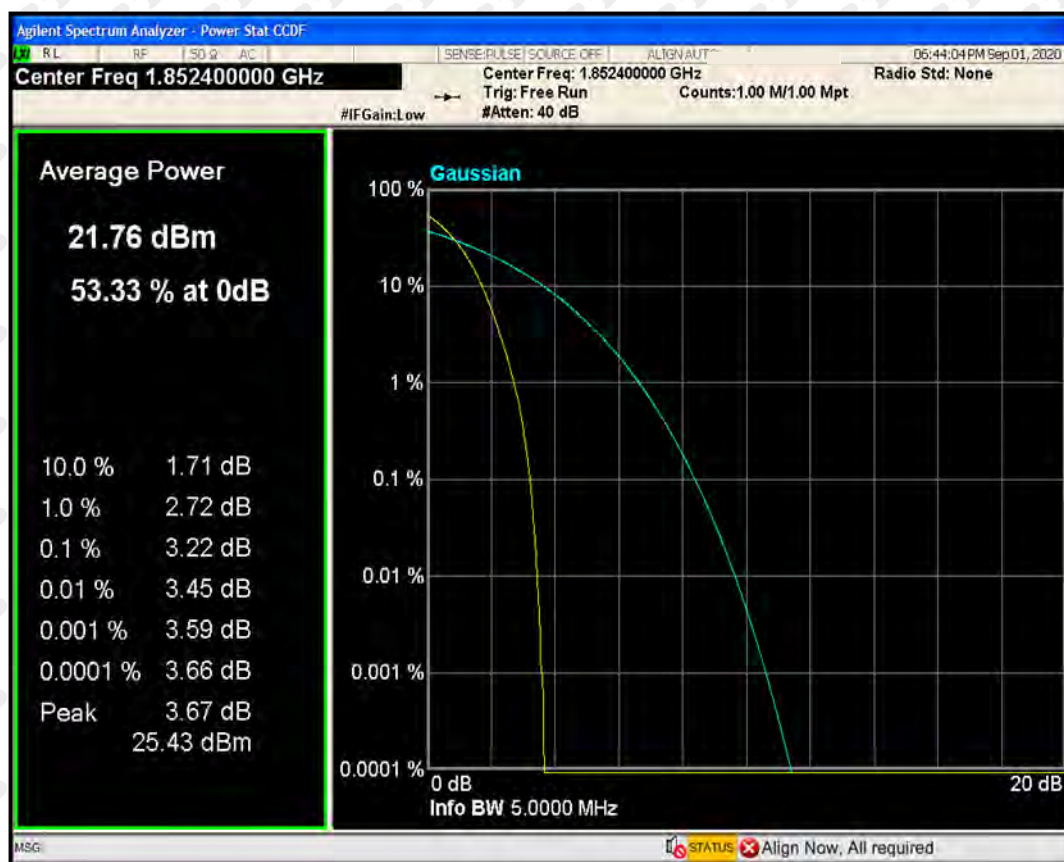
For WCDMA Band 2

Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9262	1852.4	3.22	13
HSDPA	9400	1852.4	3.31	13
HSUPA	9400	1852.4	3.46	13

GSM :



WCDMA:



8. EMISSION BANDWIDTH

8.1 Standard Applicable

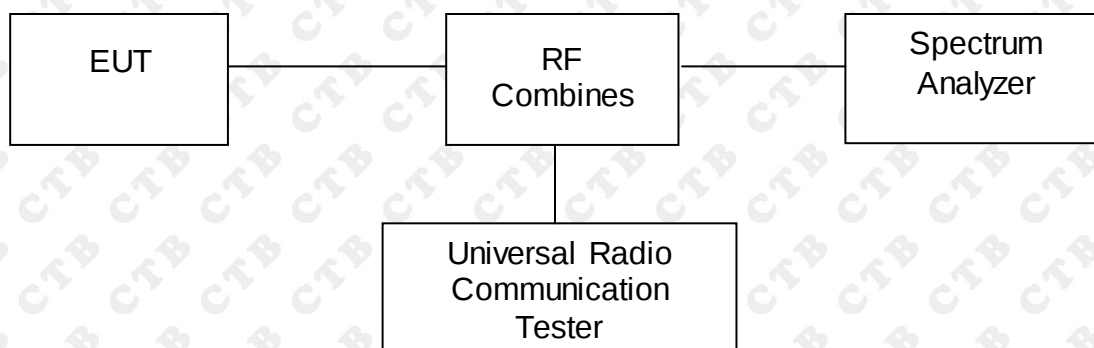
According to §22.917(b), The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 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	245.642	318.300
	190	836.6	248.016	316.165
	251	848.8	238.359	317.387
GPRS	128	824.2	243.732	308.732
	190	836.6	237.858	316.661
	251	848.8	240.525	314.317
EDGE	128	824.2	242.246	288.569
	190	836.6	254.878	326.550
	251	848.8	238.104	283.903

For PCS Band

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM	512	1850.2	242.024	316.126
	661	1880.0	247.693	309.822
	810	1909.8	245.179	305.369
GPRS	512	1850.2	235.948	307.300
	661	1880.0	237.052	309.352
	810	1909.8	242.173	307.914
EDGE	512	1850.2	254.132	320.885
	661	1880.0	245.908	323.105
	810	1909.8	250.005	317.332

For Band 5

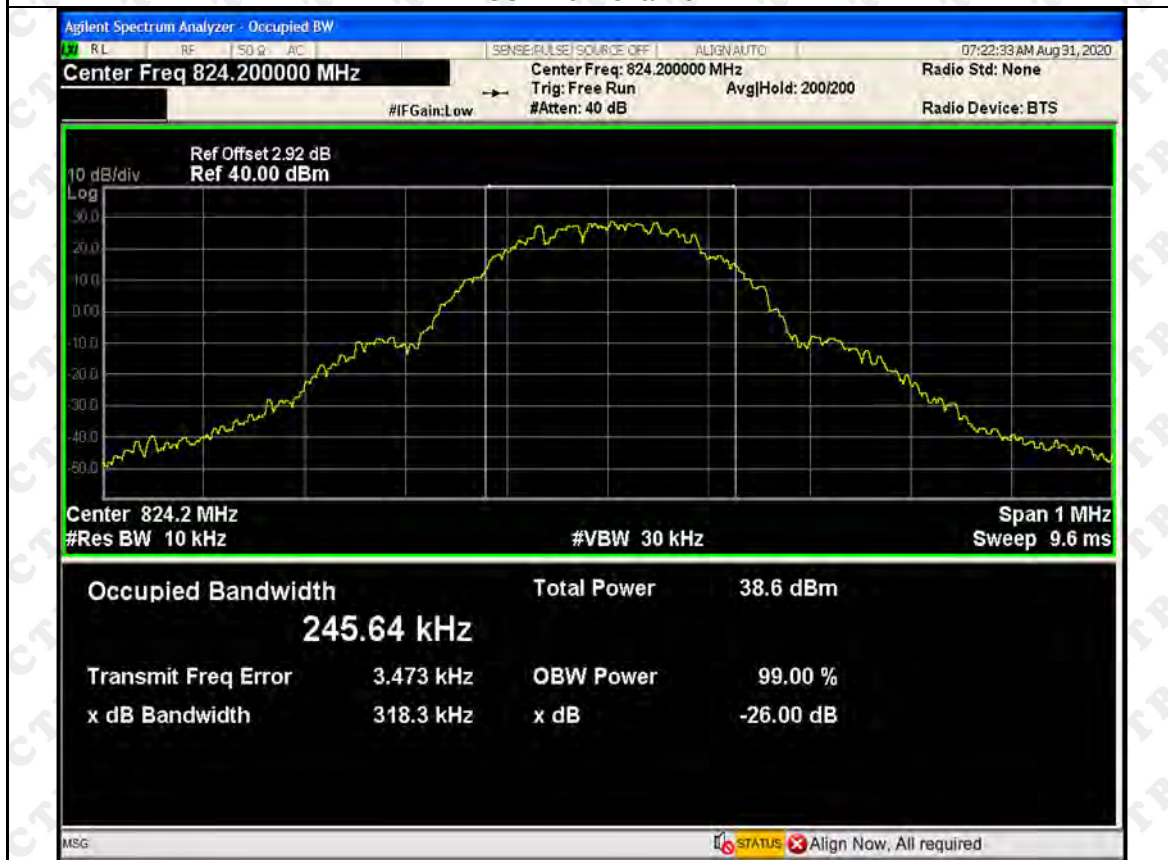
Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA	4132	826.4	4185.249	4716.157
	4183	836.6	4177.754	4747.667
	4233	846.6	4194.856	4771.829
HSDPA	4132	826.4	4185.664	4730.532
	4183	836.6	4174.389	4712.136
	4233	846.6	4164.263	4671.915
HSUPA	4132	826.4	4179.425	4718.207
	4183	836.6	4168.378	4686.201
	4233	846.6	4181.666	4702.056

For Band 2

Test Mode	Channel	Frequency (MHz)	99% Emission Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA	9262	1852.4	4124.889	4660.850
	9400	1880.0	4118.928	4690.419
	9538	1907.6	4120.230	4665.113
HSDPA	9262	1852.4	4175.355	4680.599
	9400	1880.0	4179.891	4701.109
	9538	1907.6	4162.964	4700.496
HSUPA	9262	1852.4	4174.086	4694.893
	9400	1880.0	4177.375	4725.508
	9538	1907.6	4176.451	4878.050

For Cellular Band

GSM Low Channel



GSM Middle Channel





GPRS Low Channel



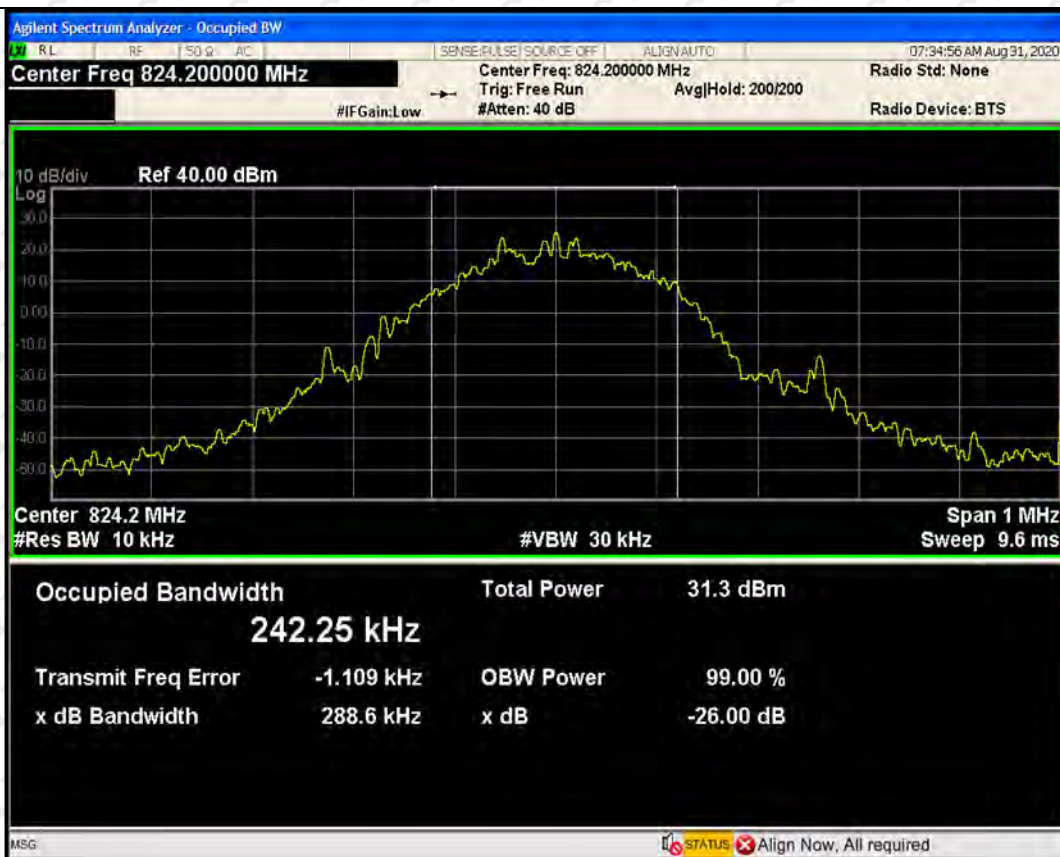
GPRS Middle Channel



GPRS High Channel



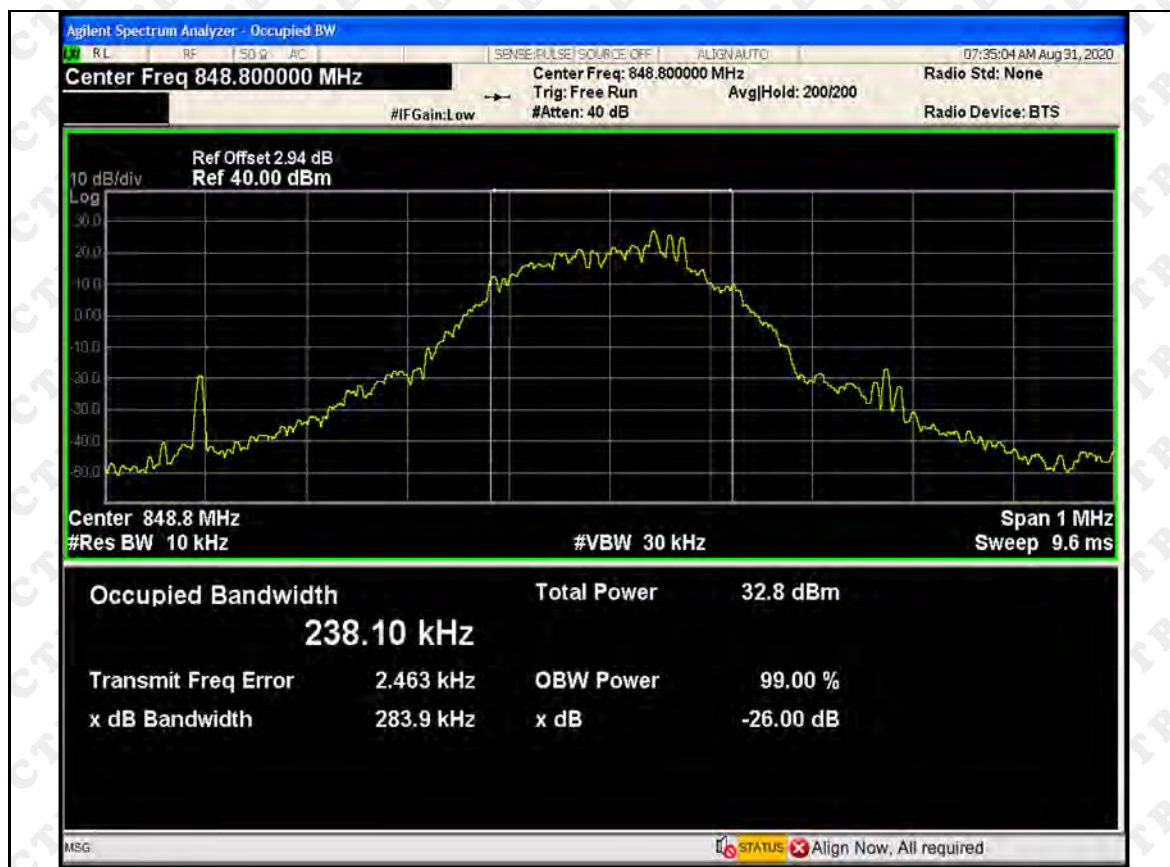
EDGE Low Channel



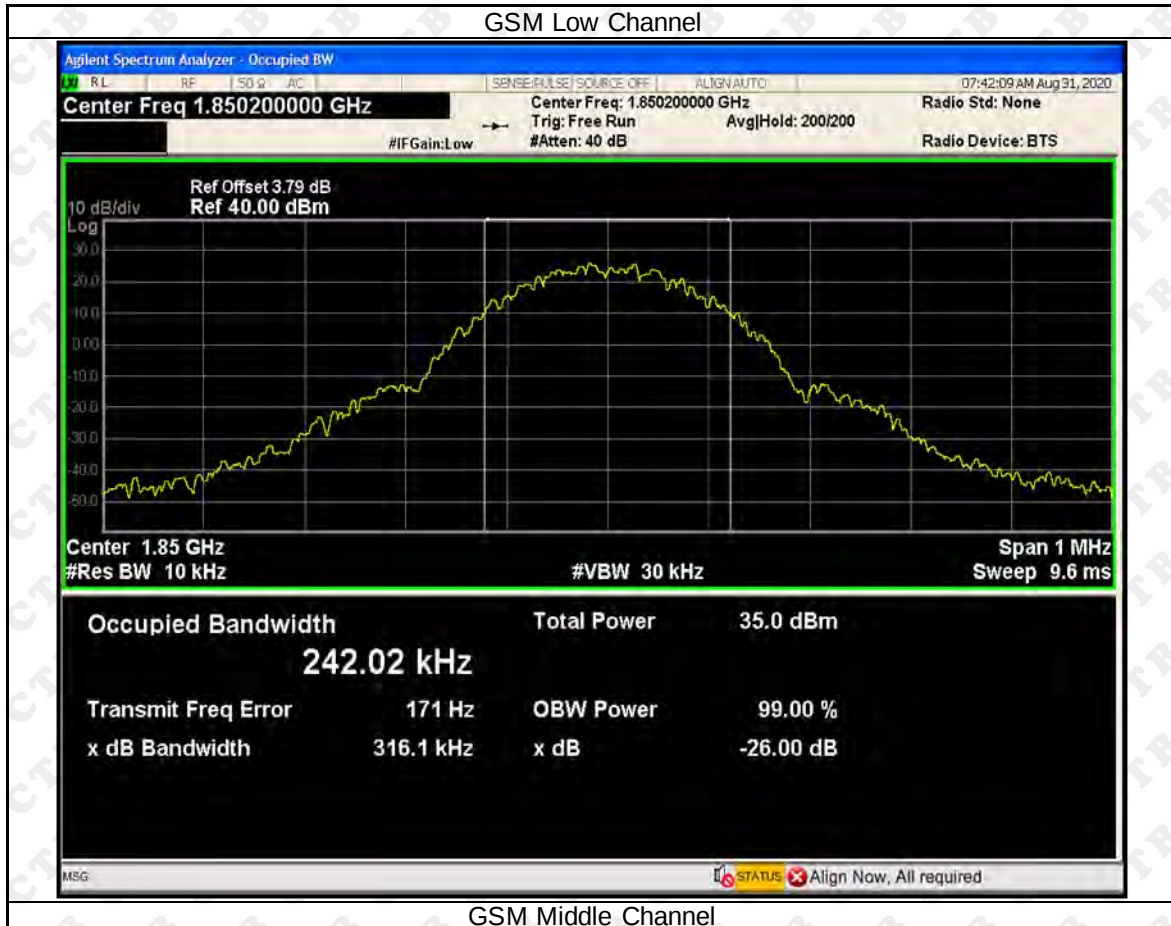
EDGE Middle Channel



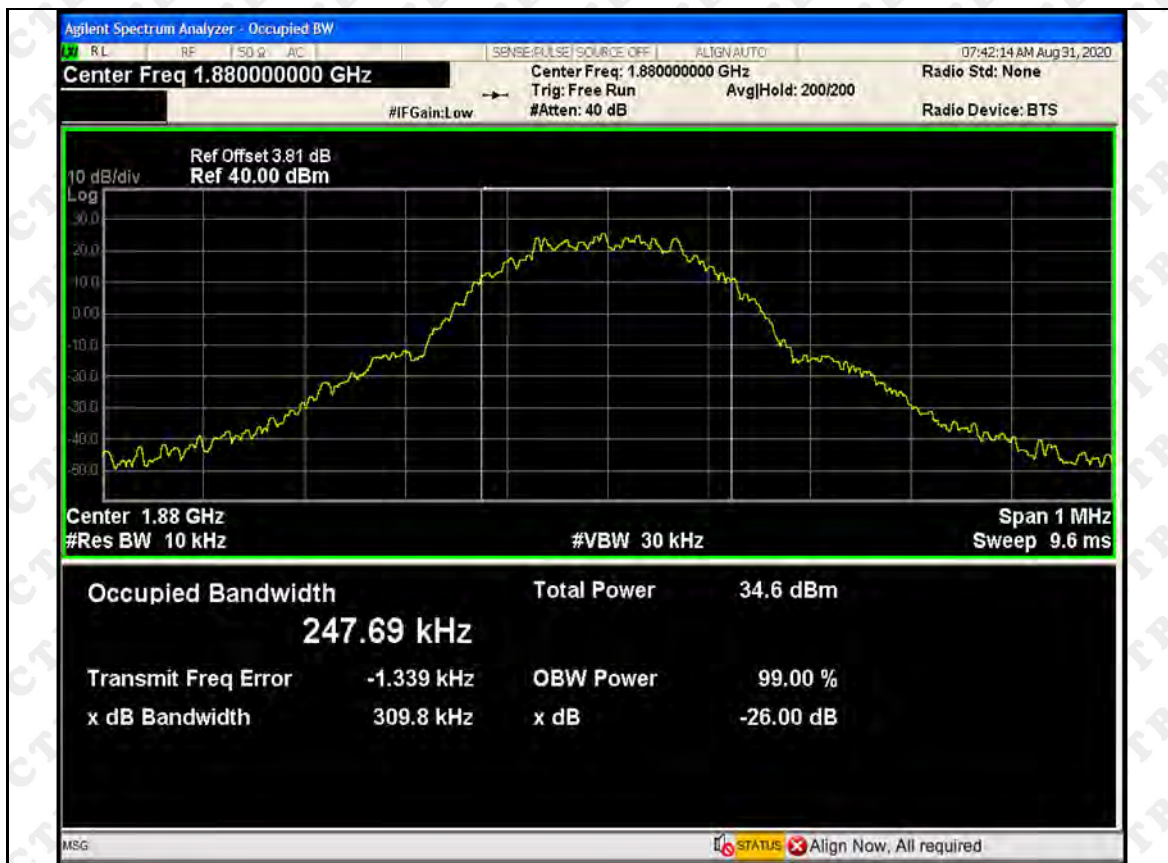
EDGE High Channel



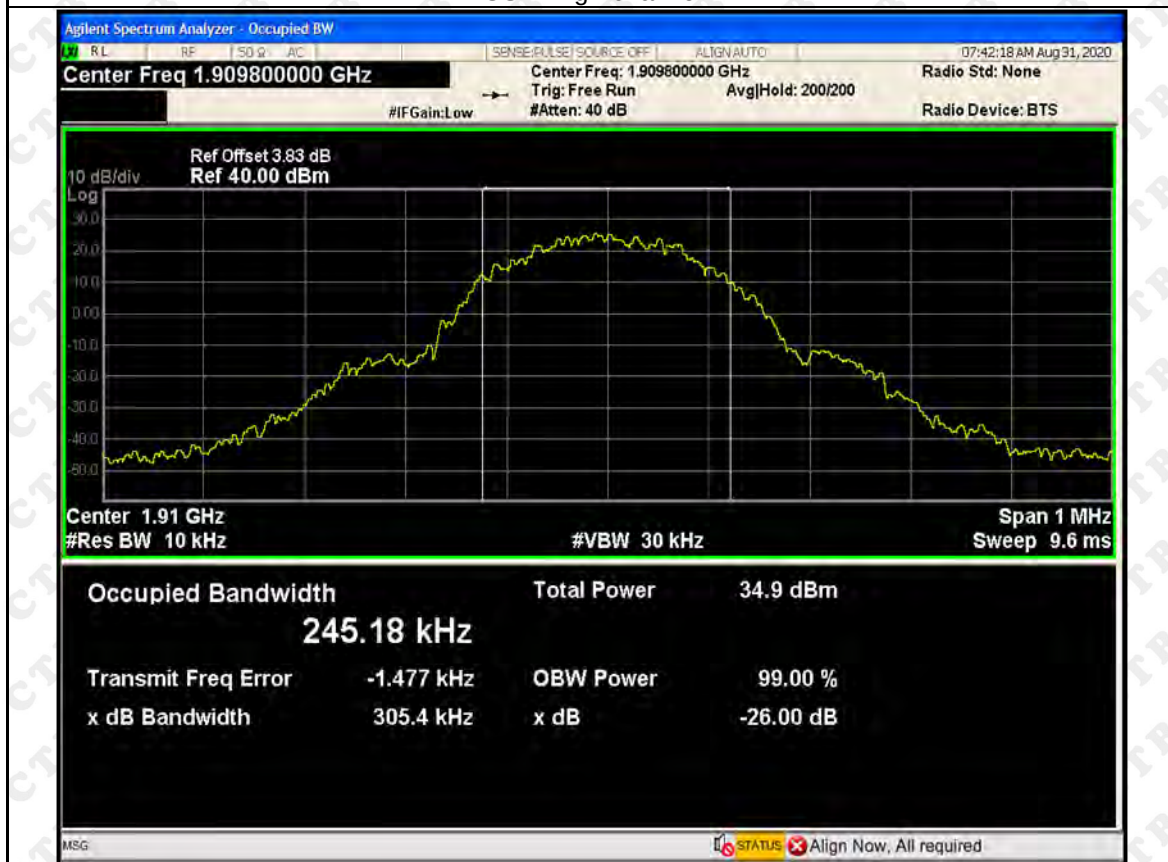
For PCS Band



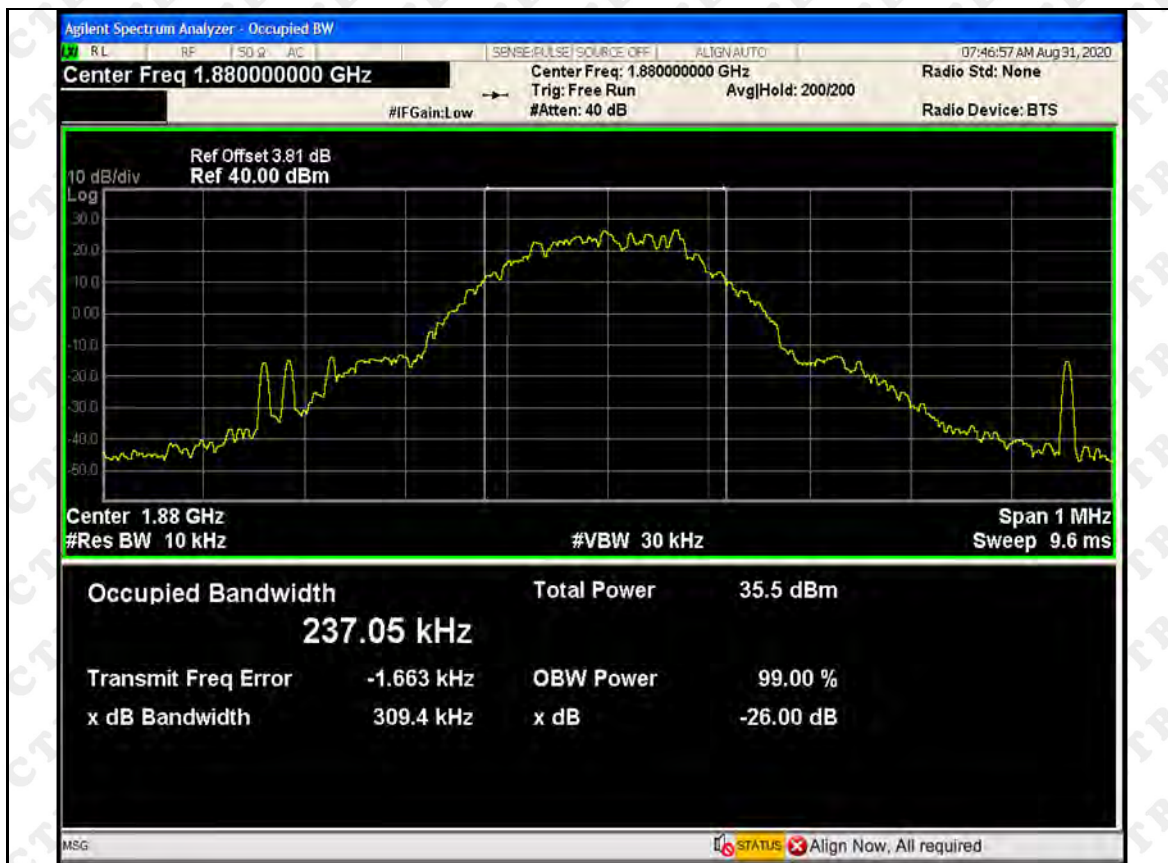
GSM Middle Channel



GSM High channel

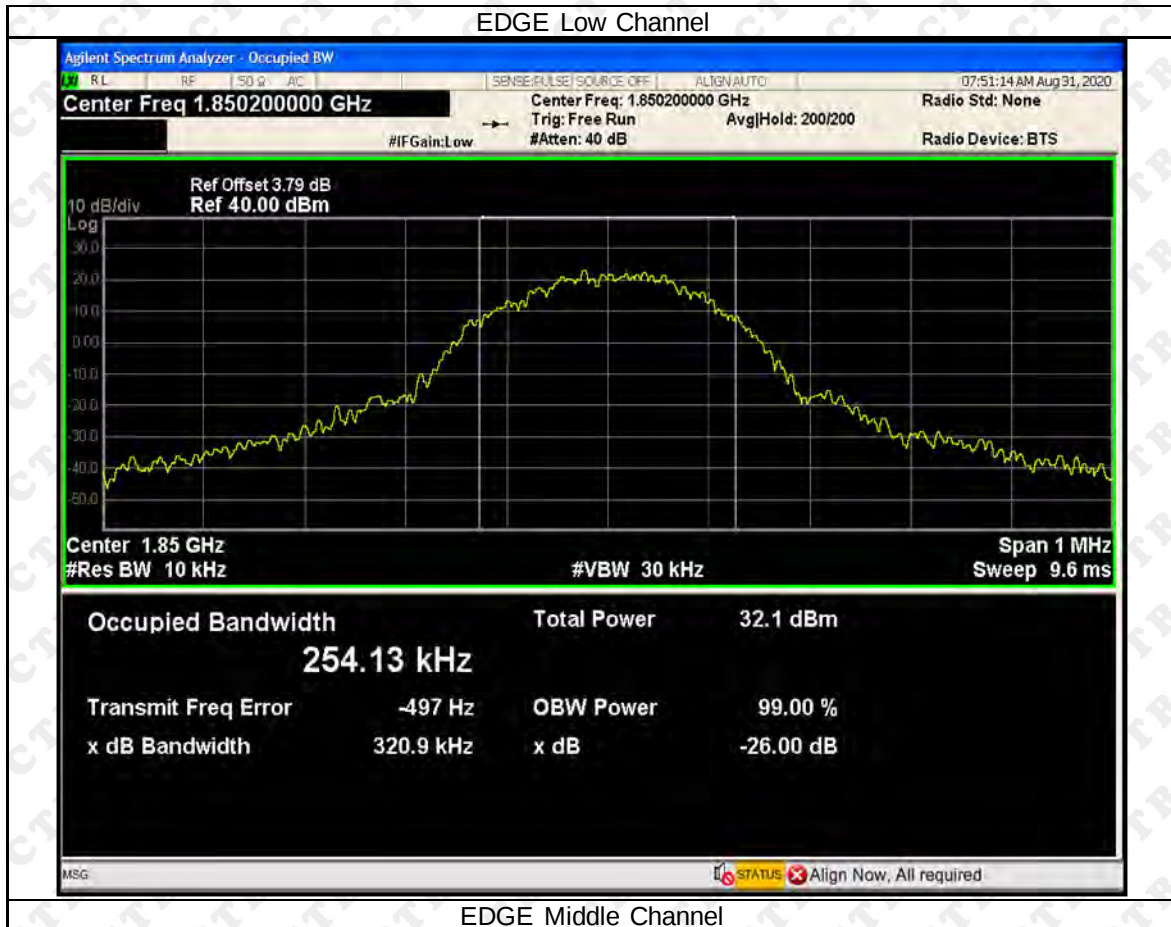


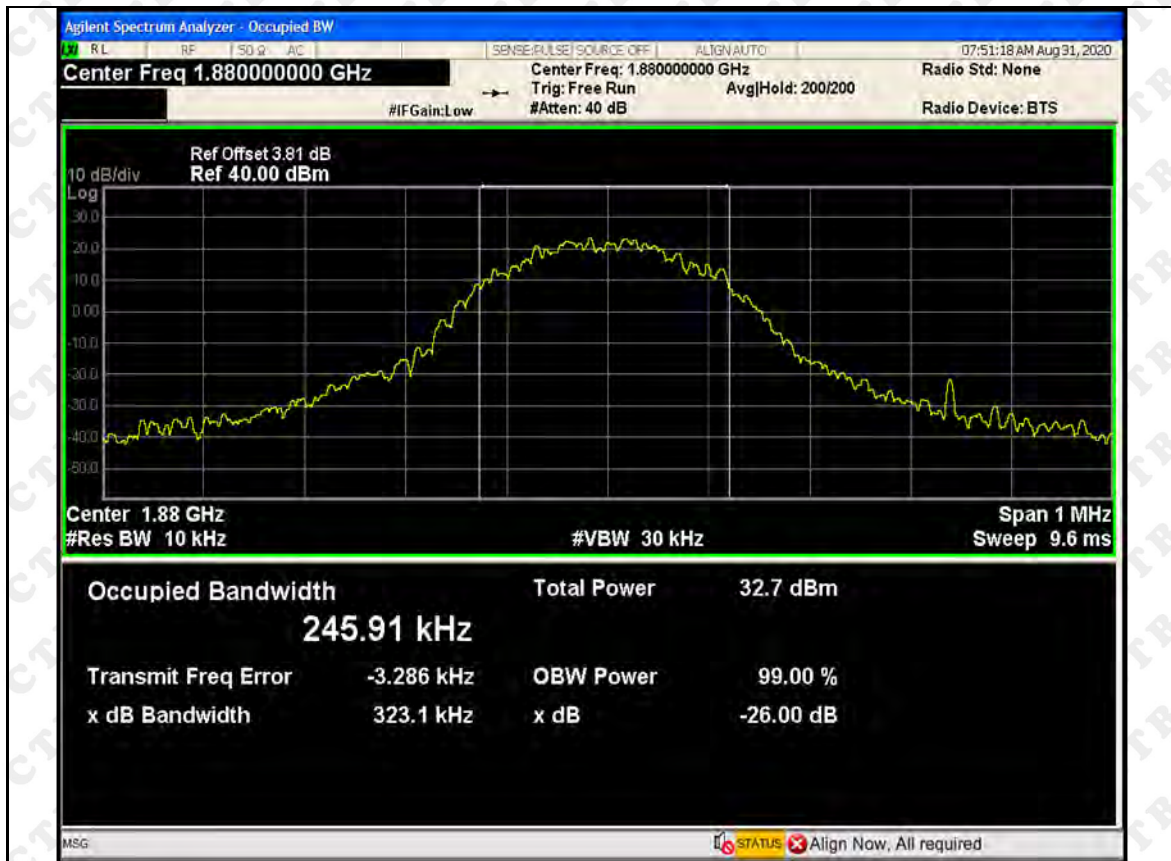




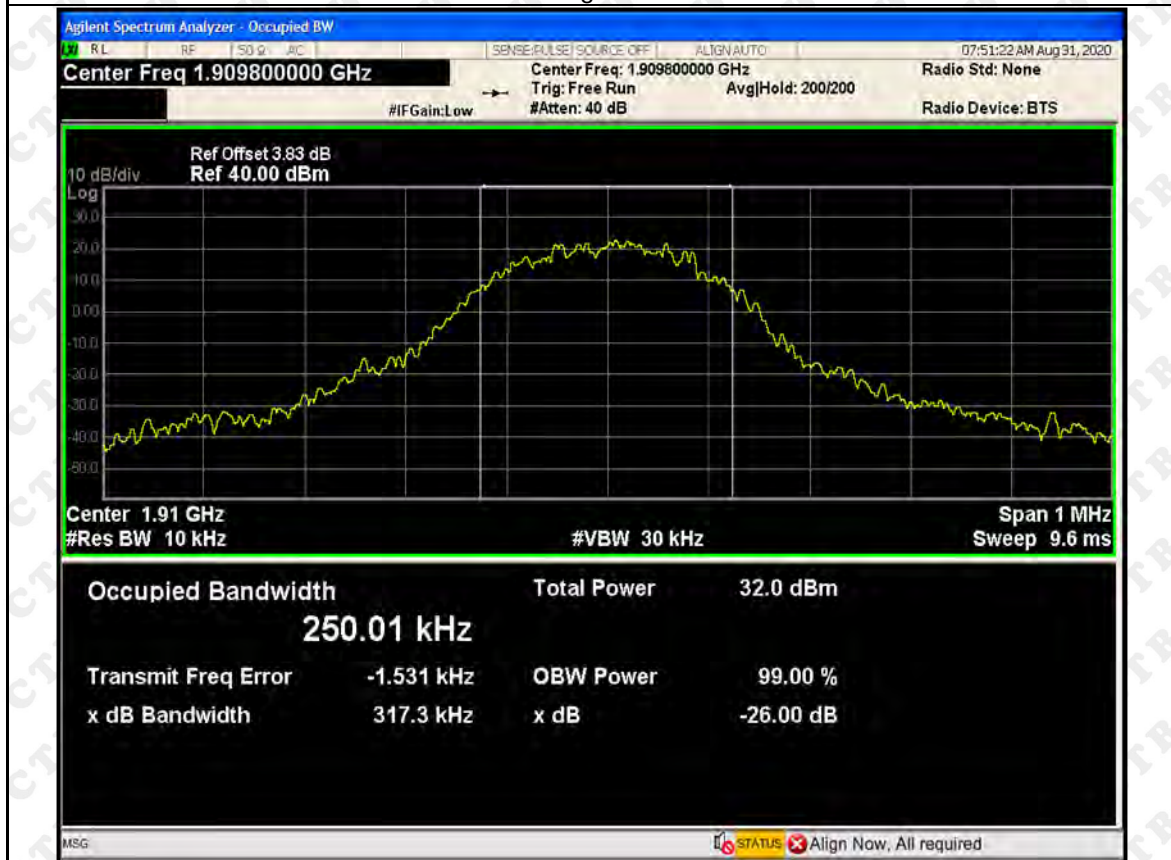
GPRS High Channel



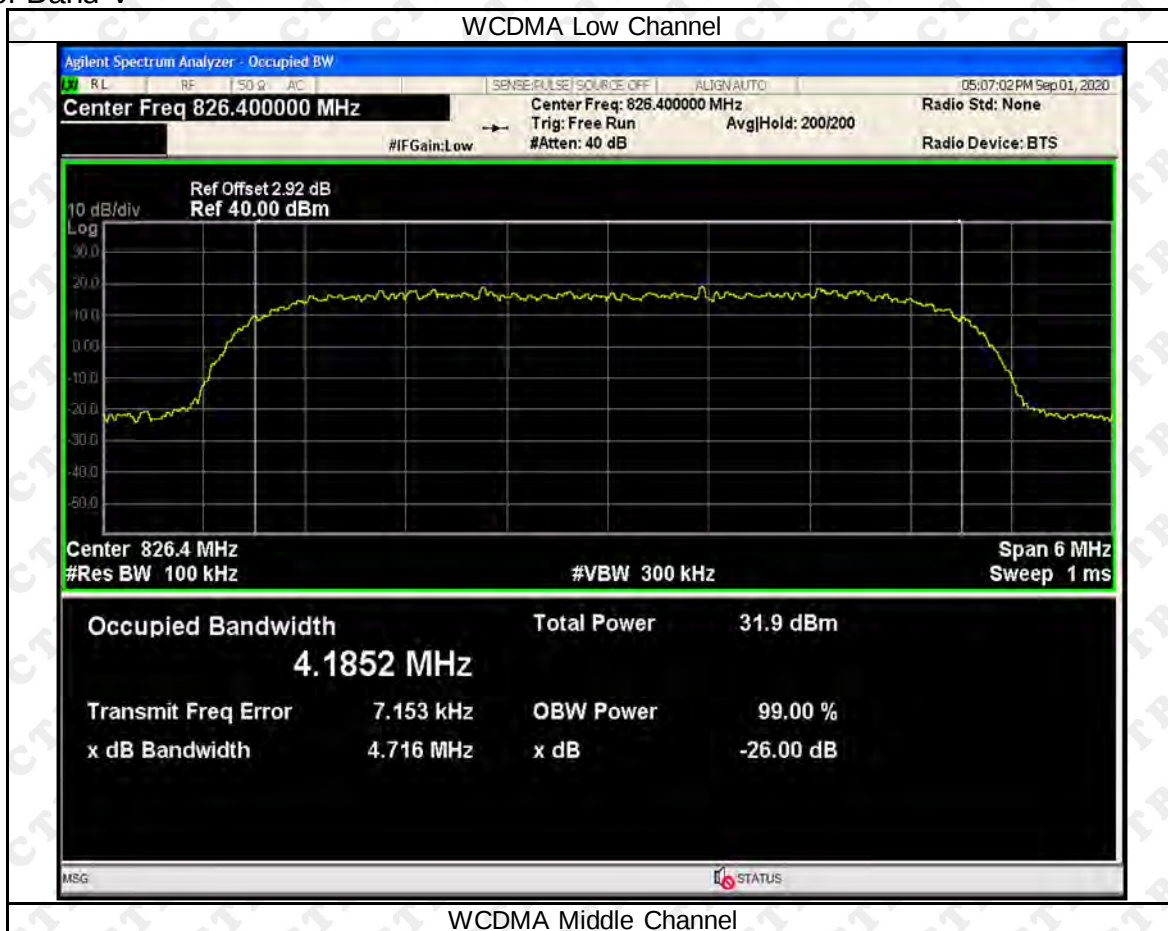


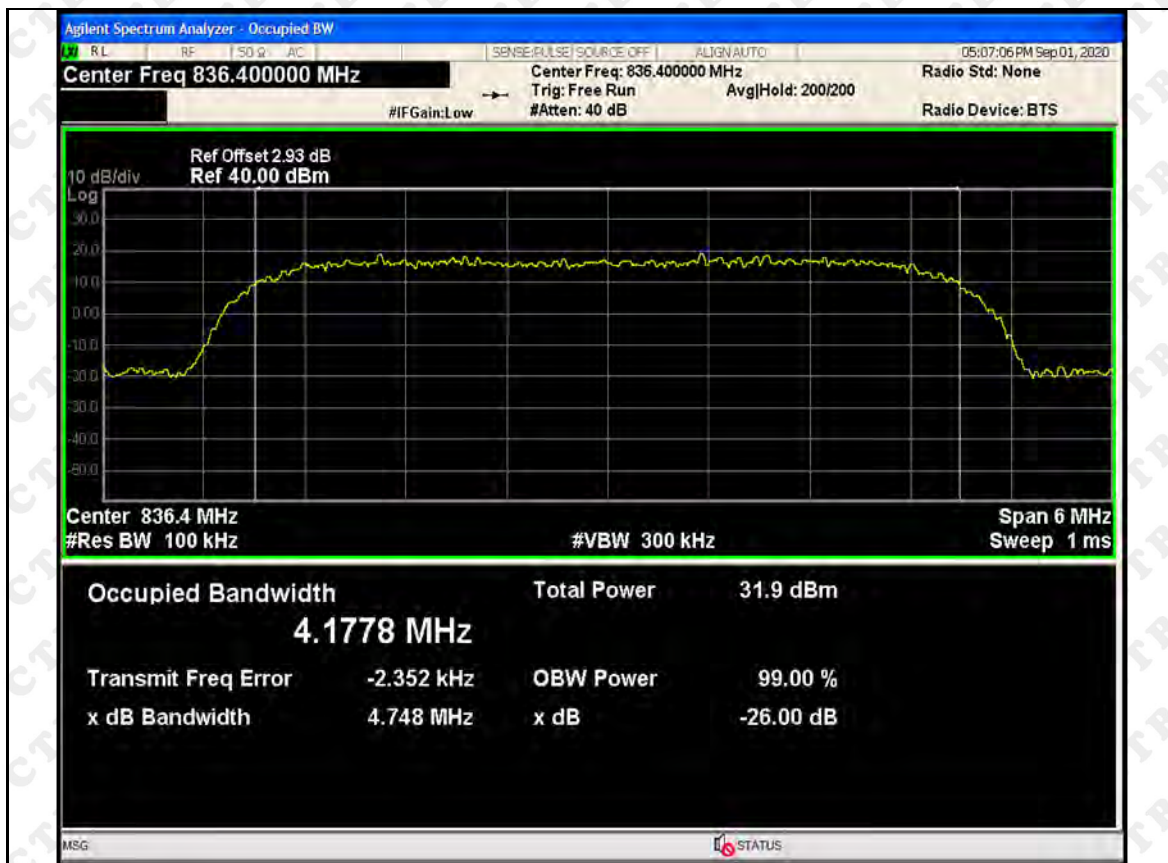


EDGE High Channel

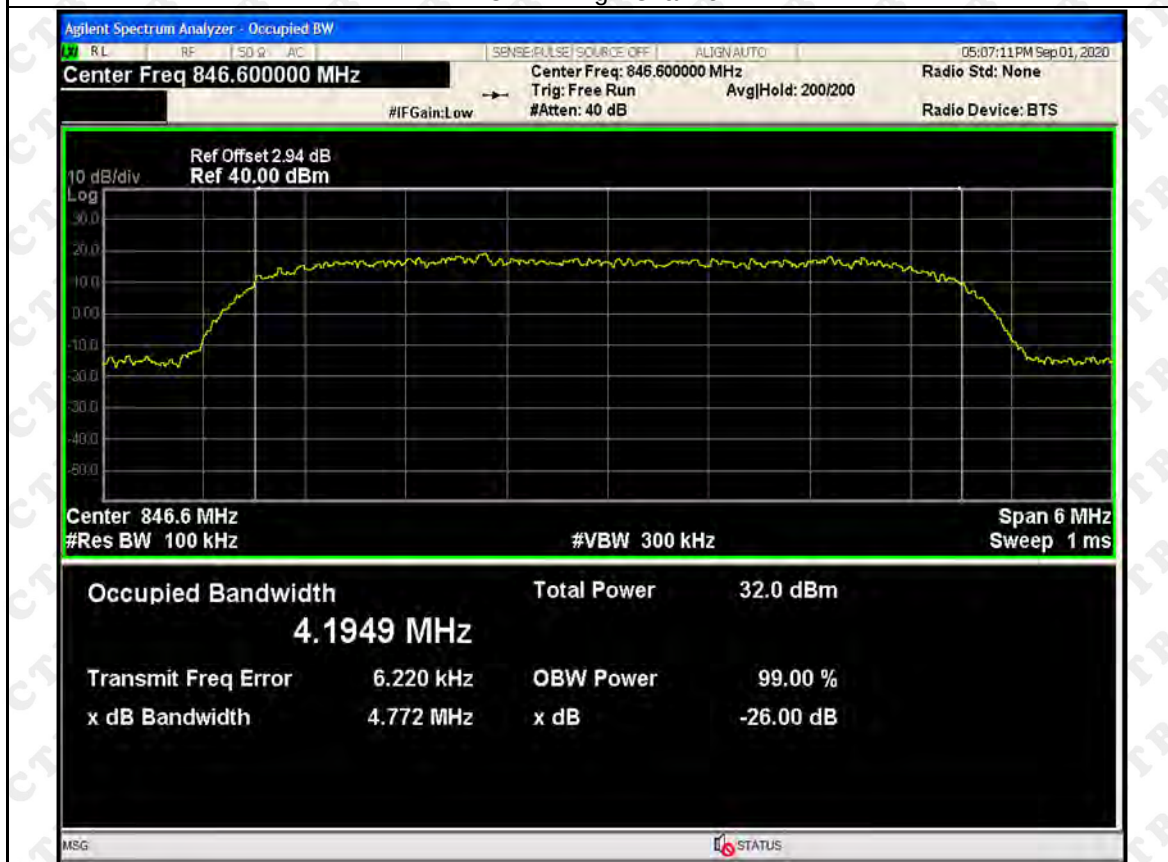


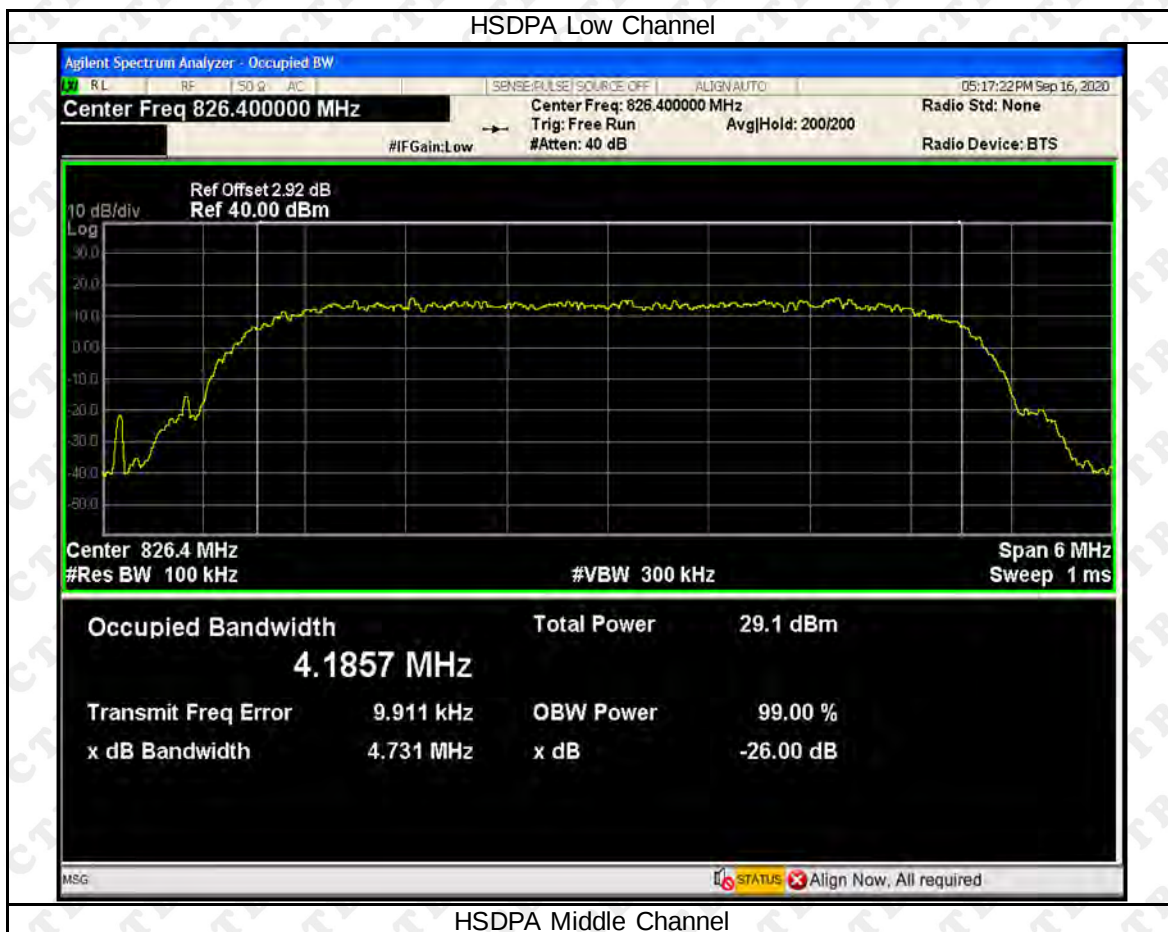
For Band V

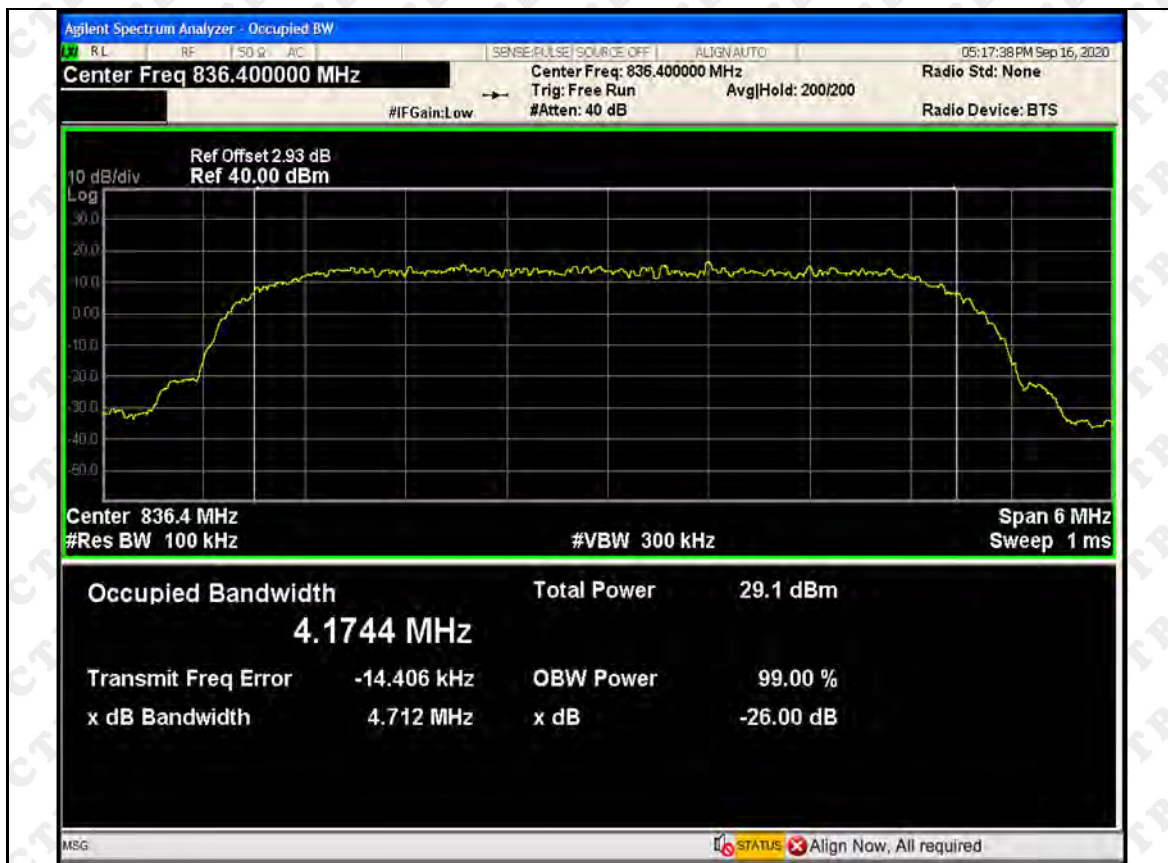




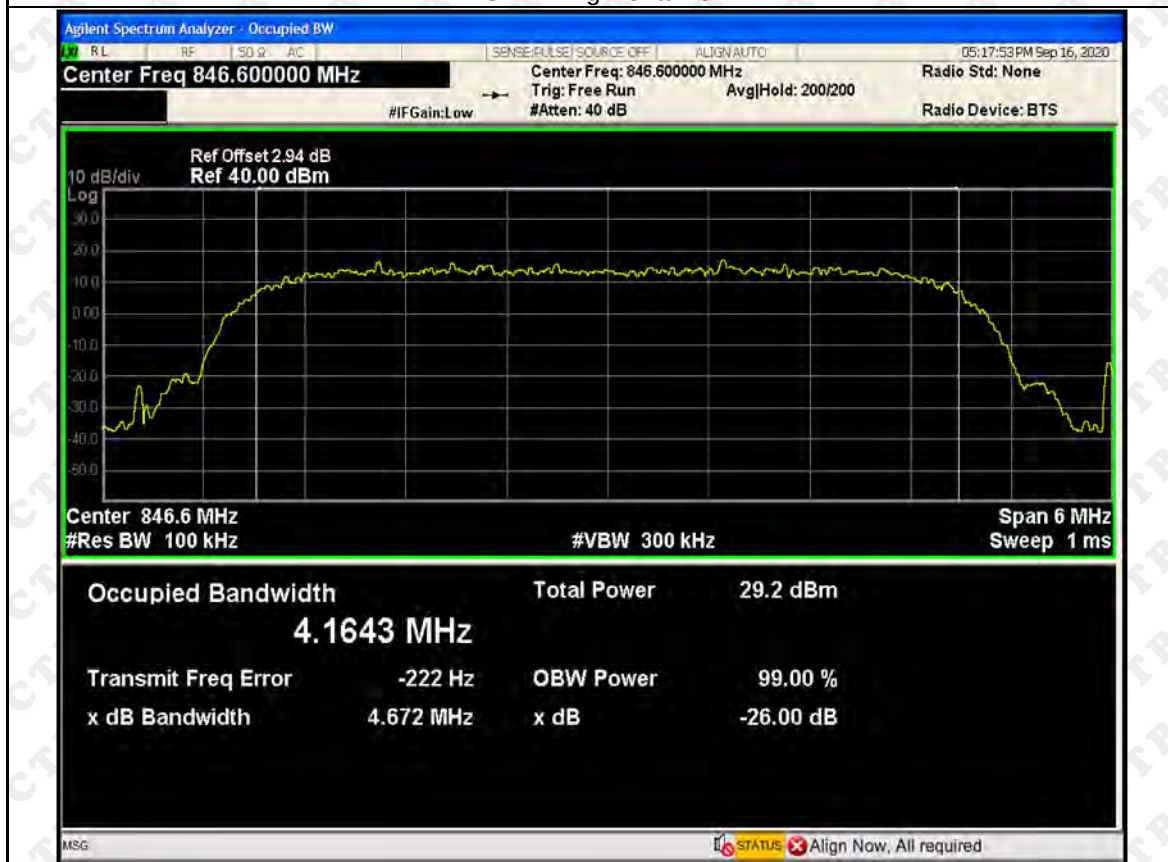
WCDMA High Channel



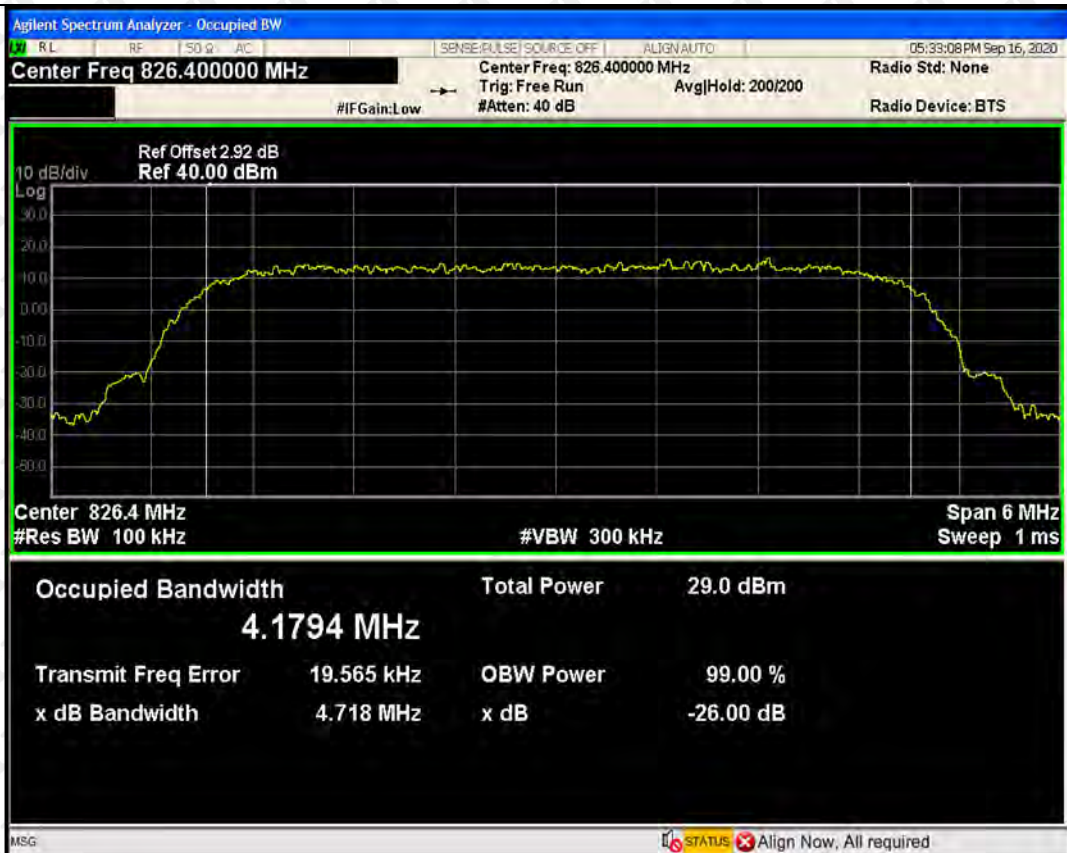




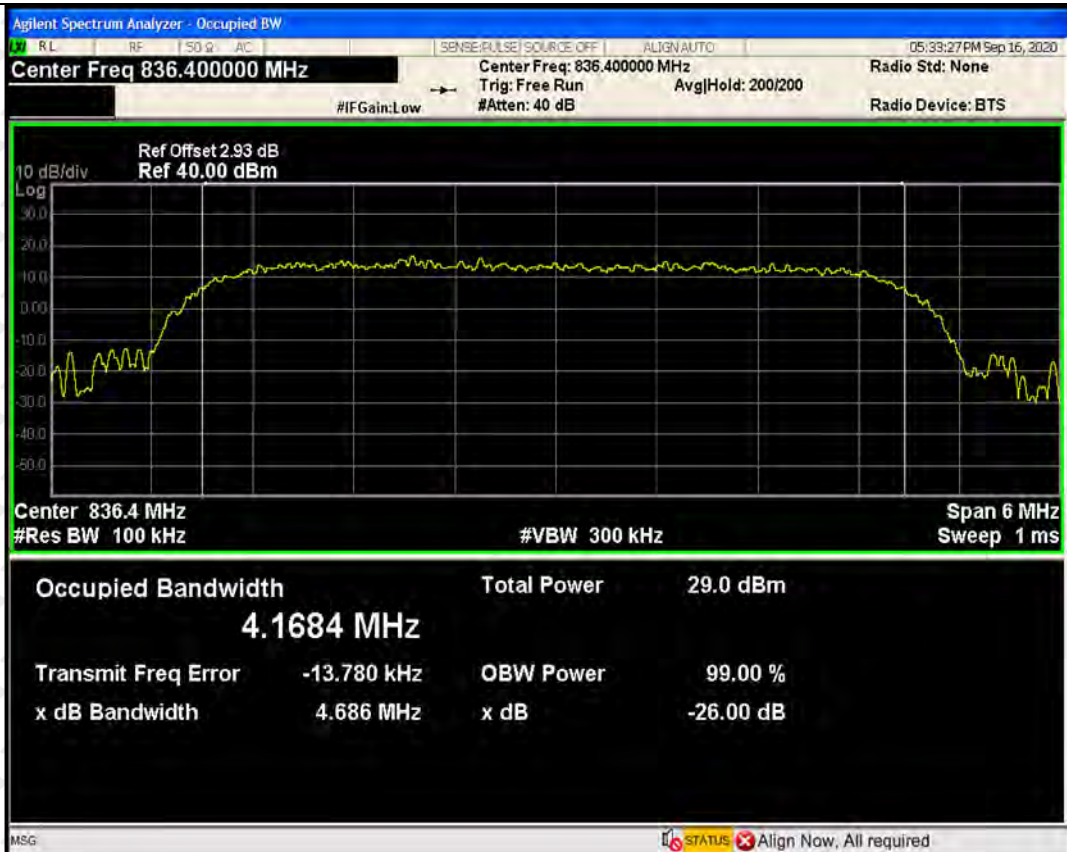
HSDPA High Channel



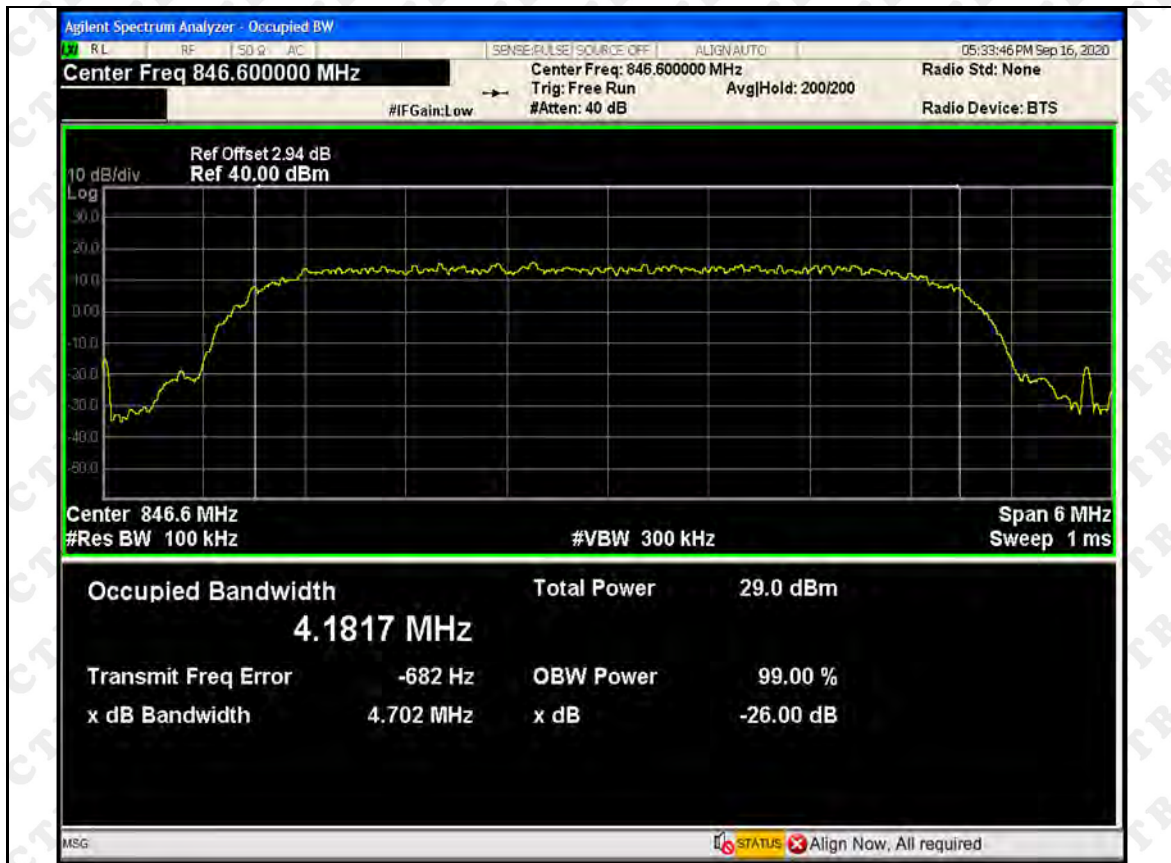
HSUPA Low Channel



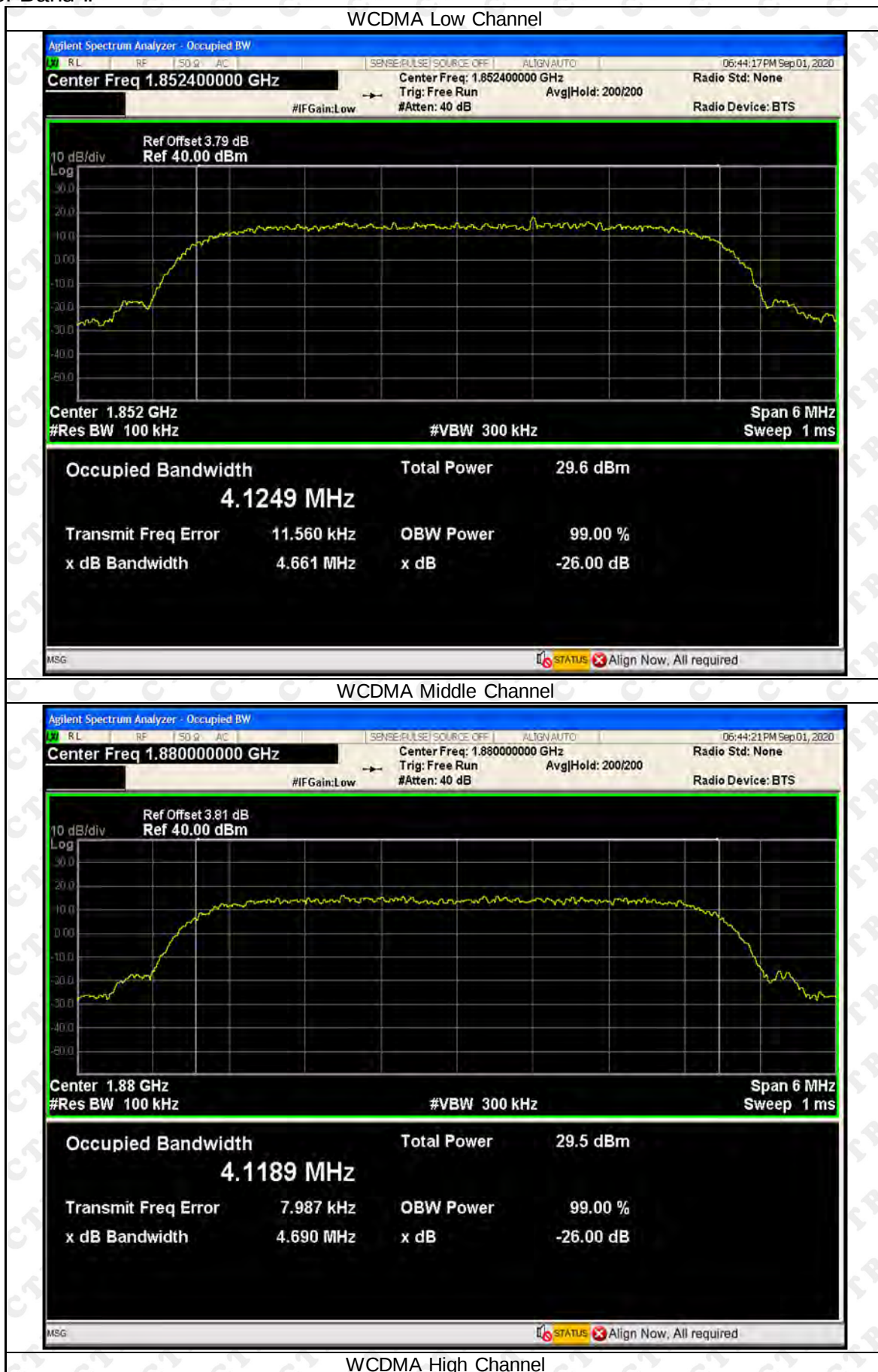
HSUPA Middle Channel

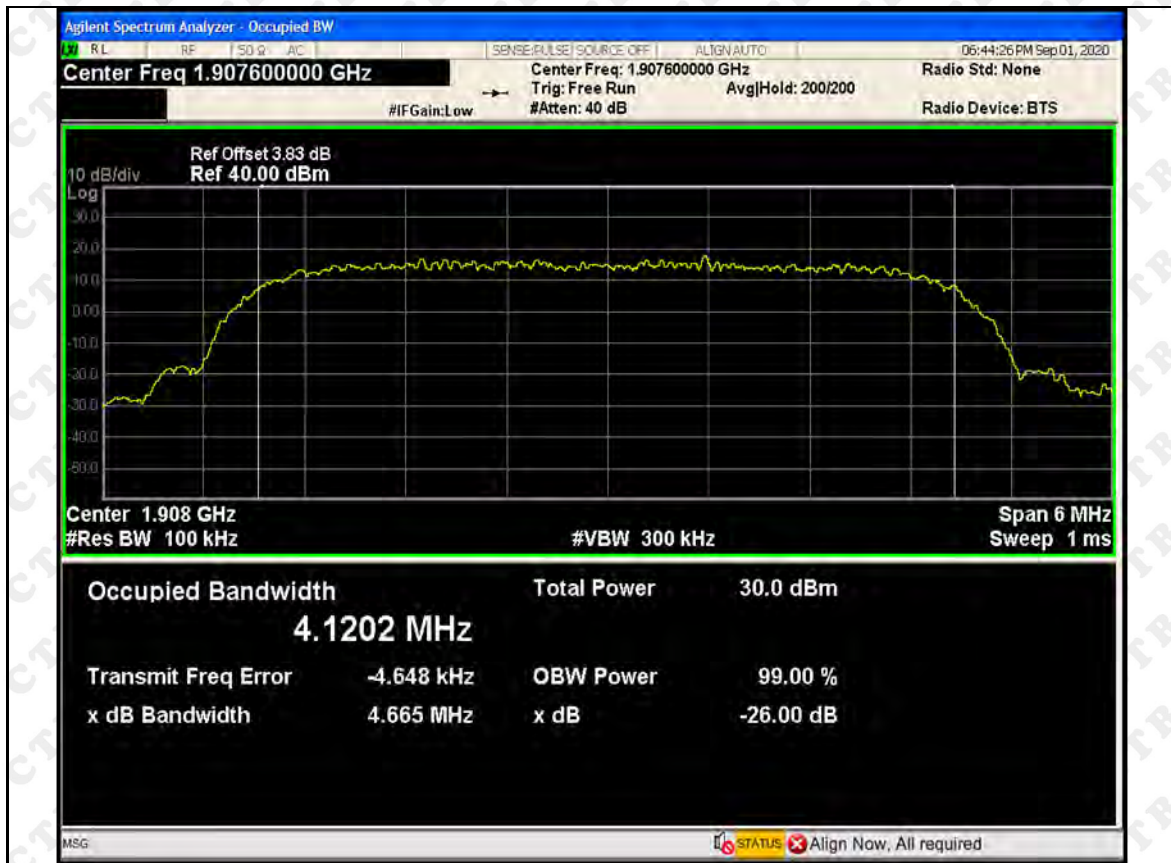


HSUPA High Channel

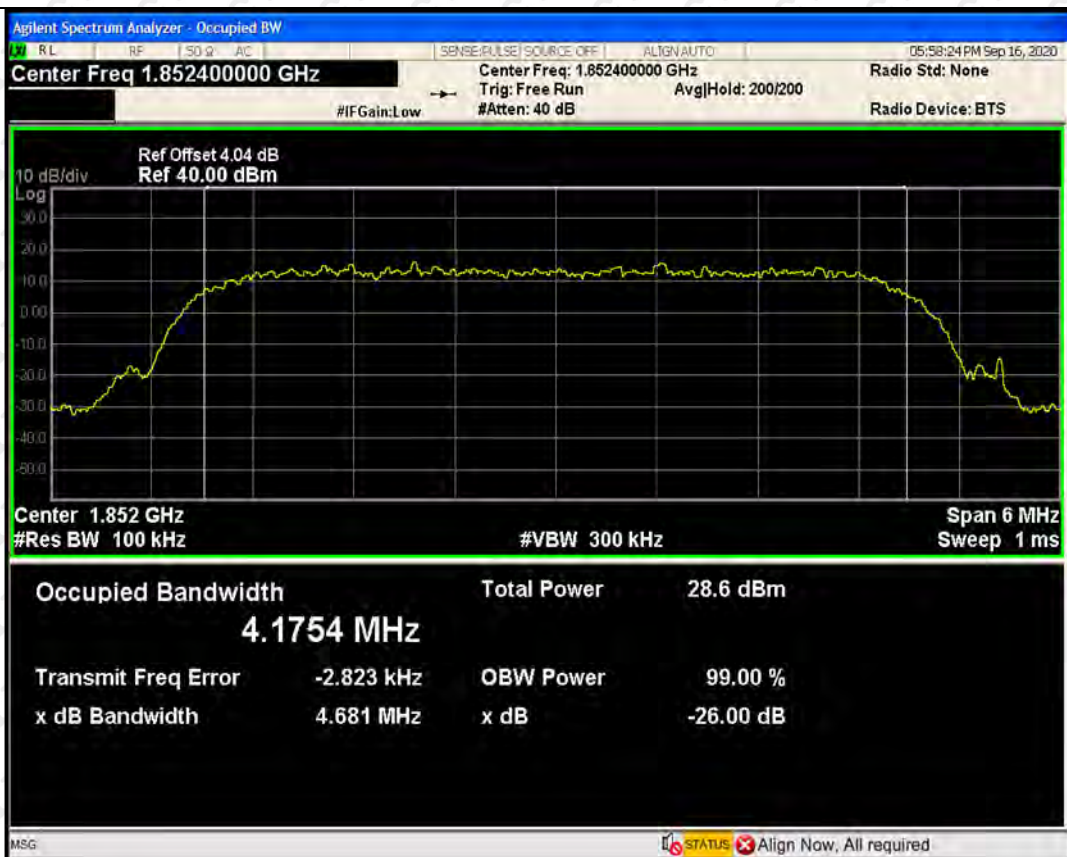


For Band II

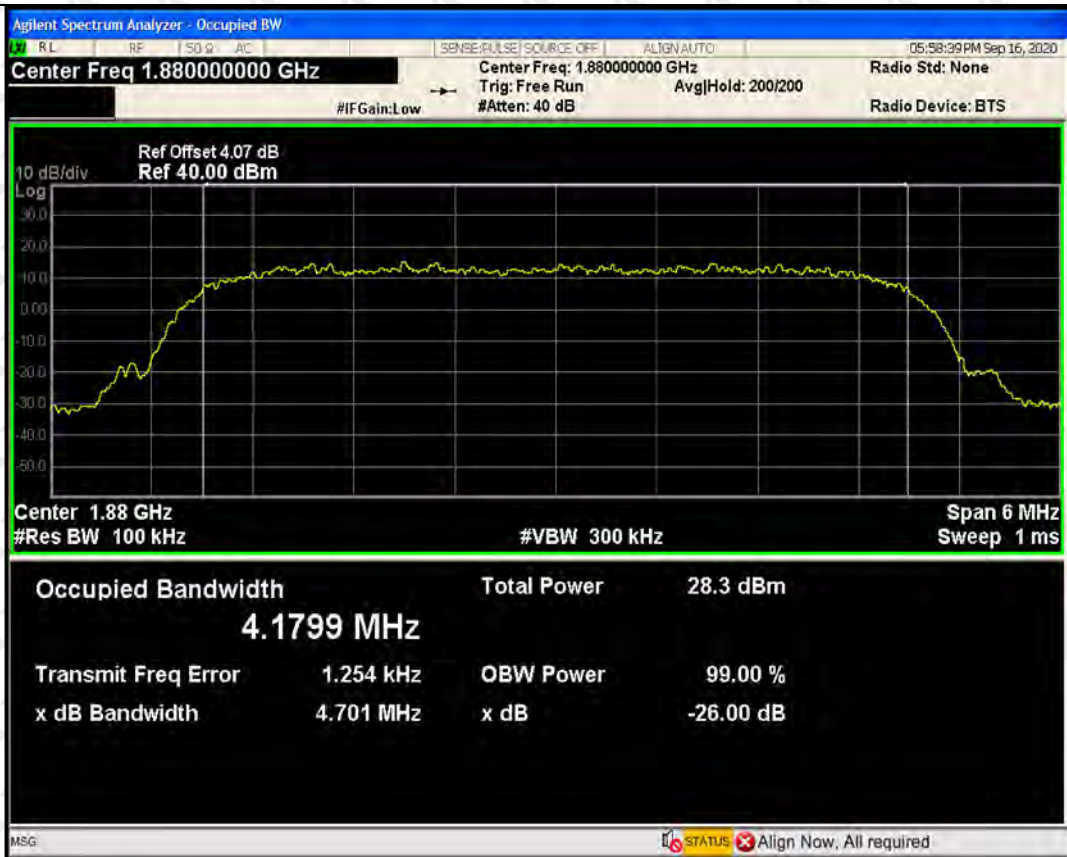




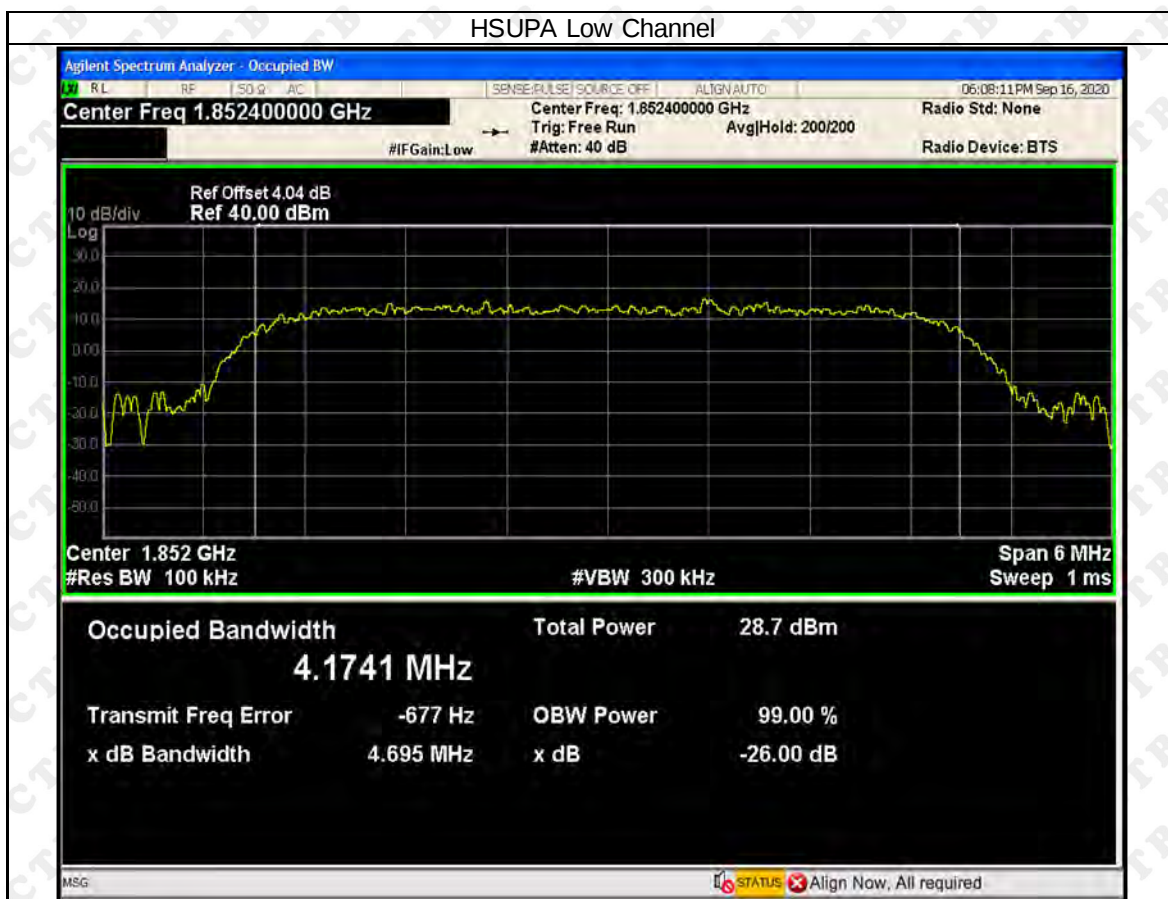
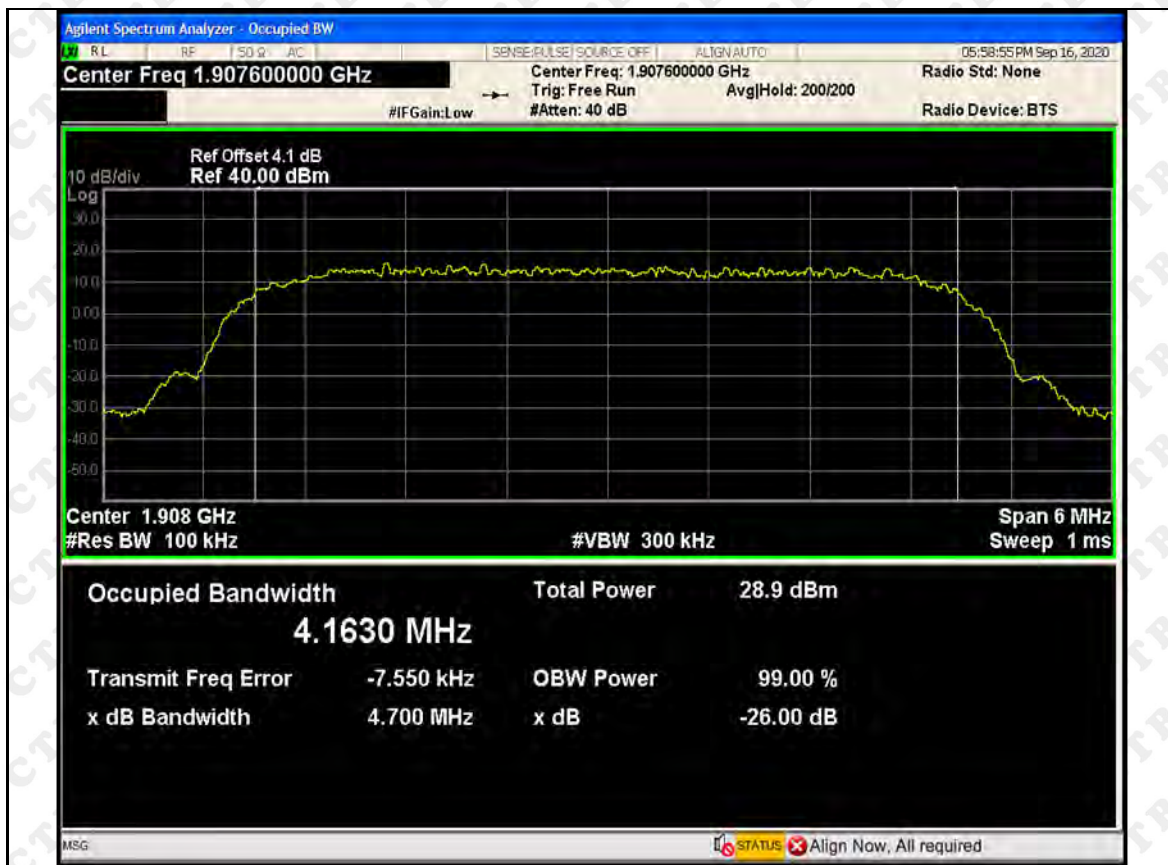
HSDPA Low Channel



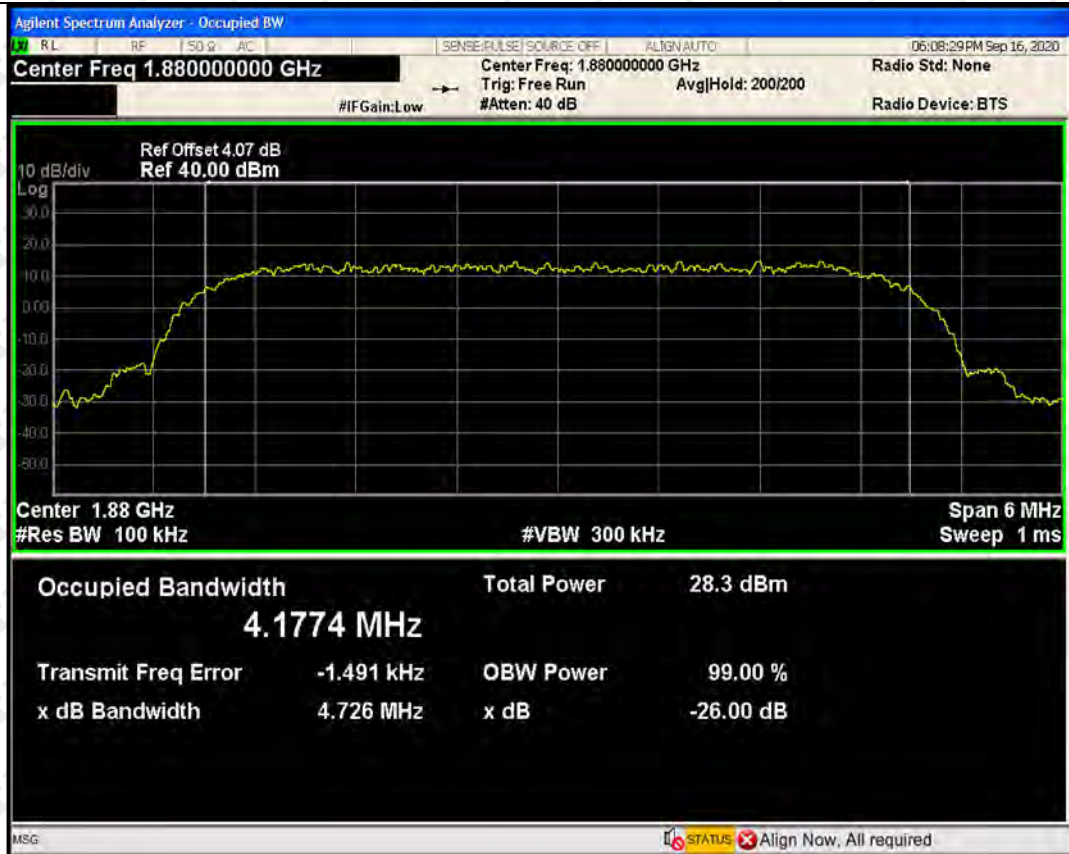
HSDPA Middle Channel



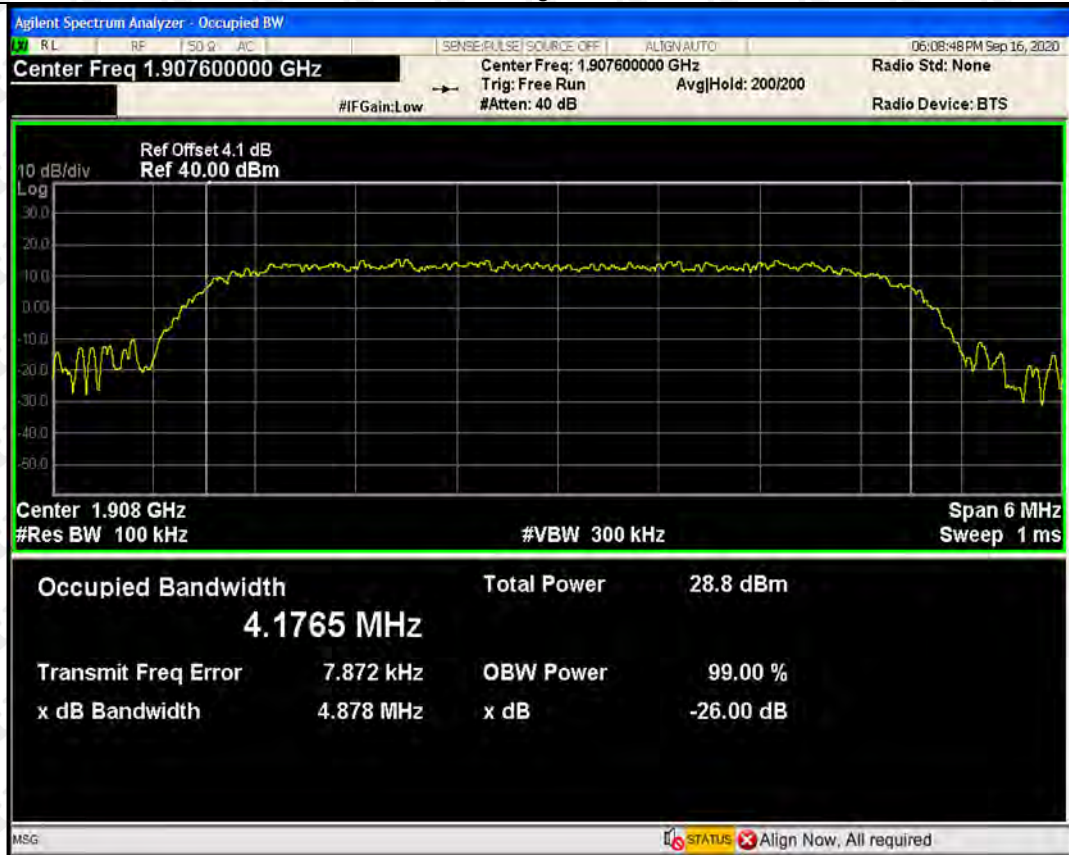
HSDPA High Channel



HSUPA Middle Channel



HSUPA High Channel



9. OUT OF BAND EMISSIONS AT ANTENNA TERMINAL

9.1 Standard Applicable

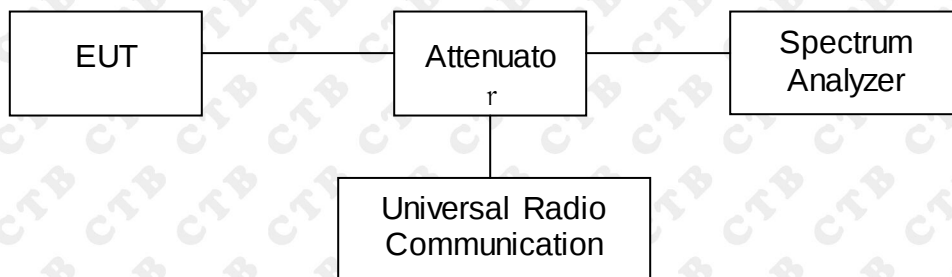
According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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:



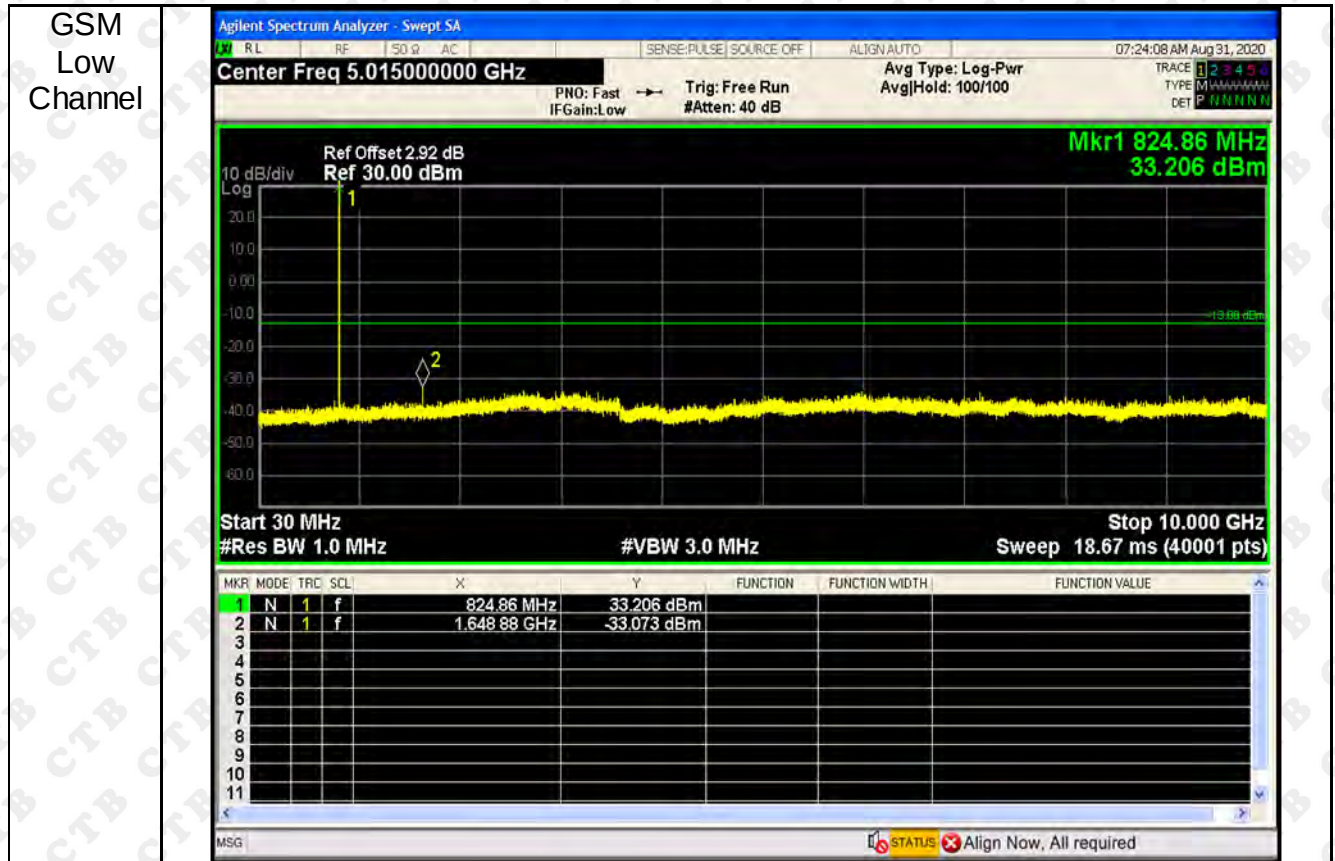
9.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

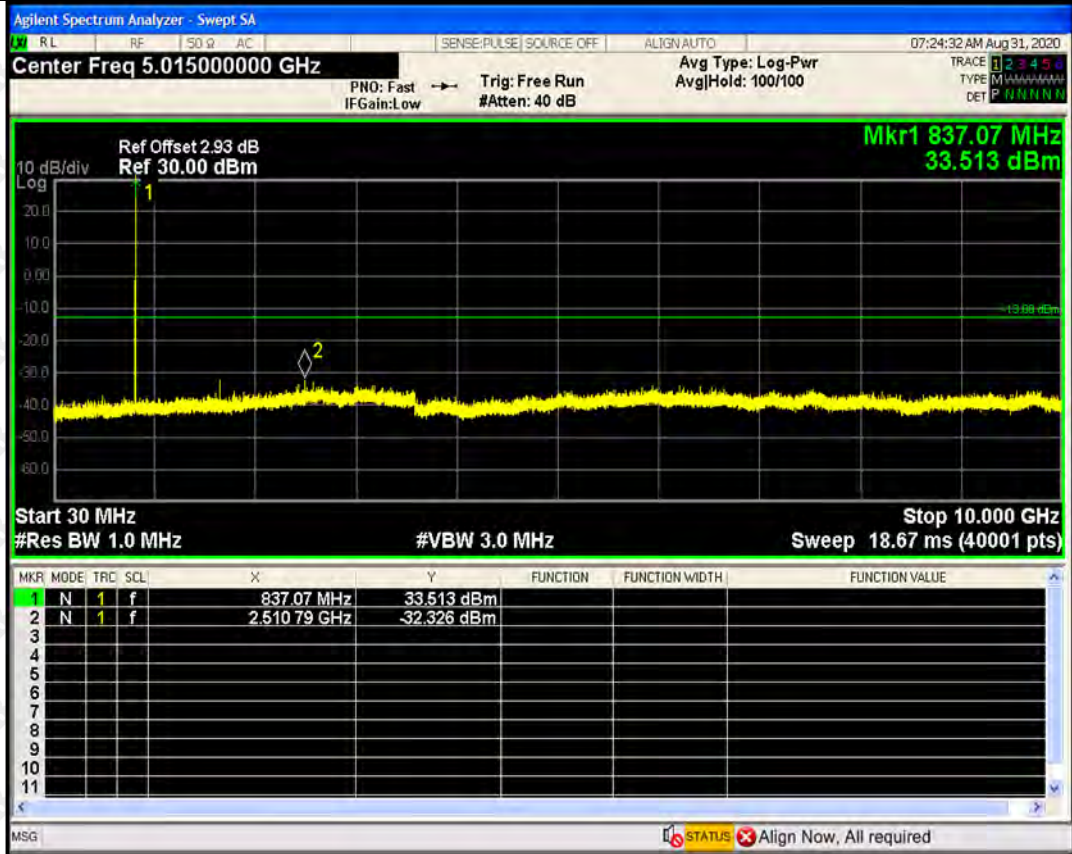
9.4 Summary of Test Results/Plots

Please refer to the following test plots

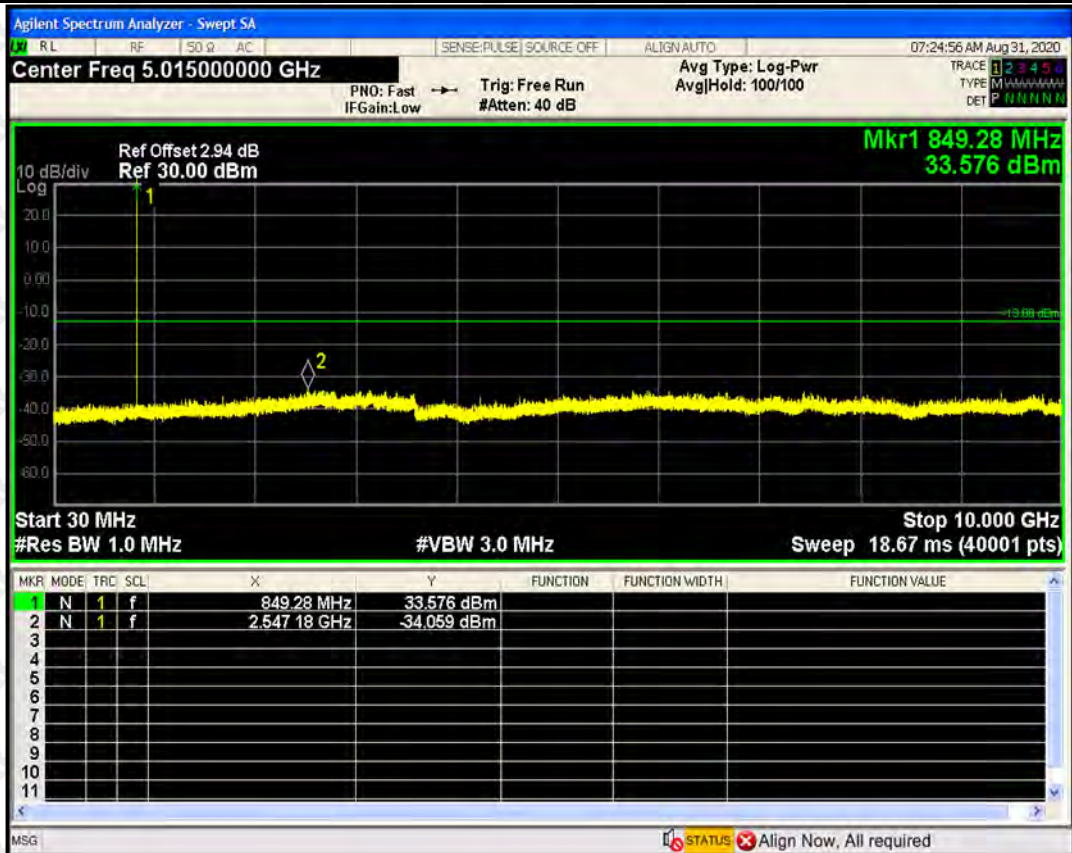
For Cellular Band



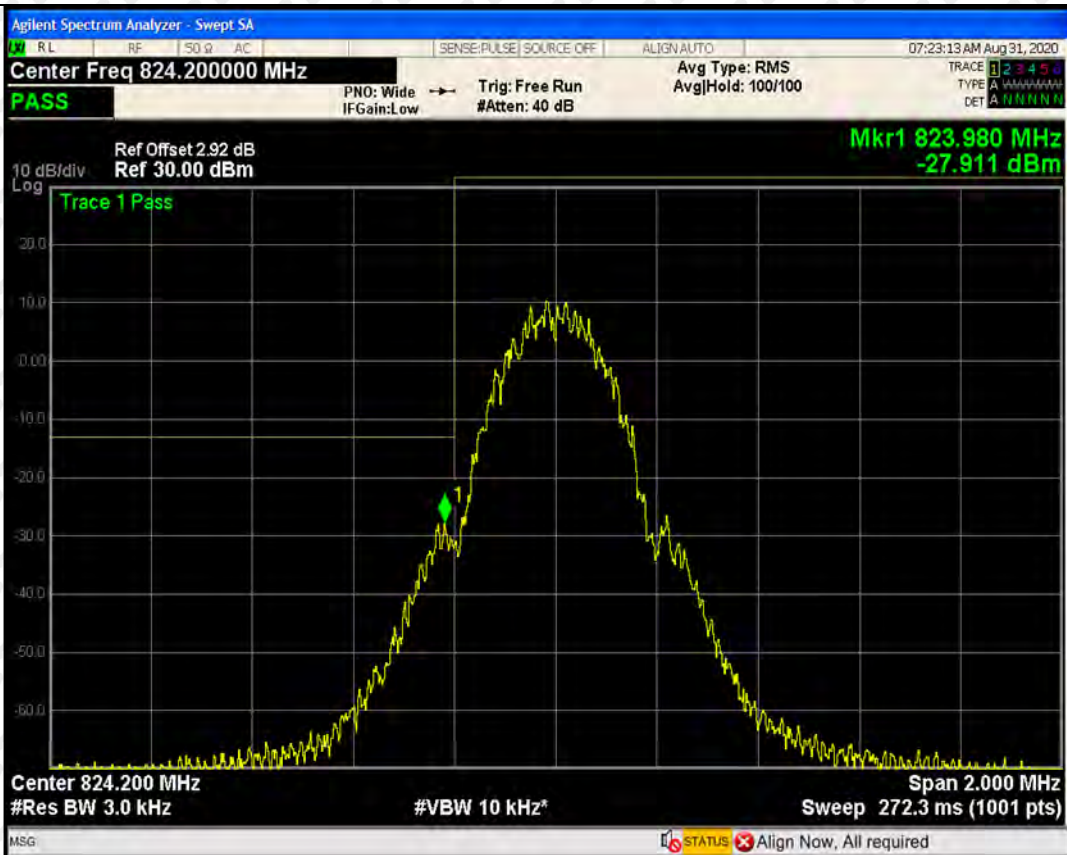
GSM
Middle
Channel



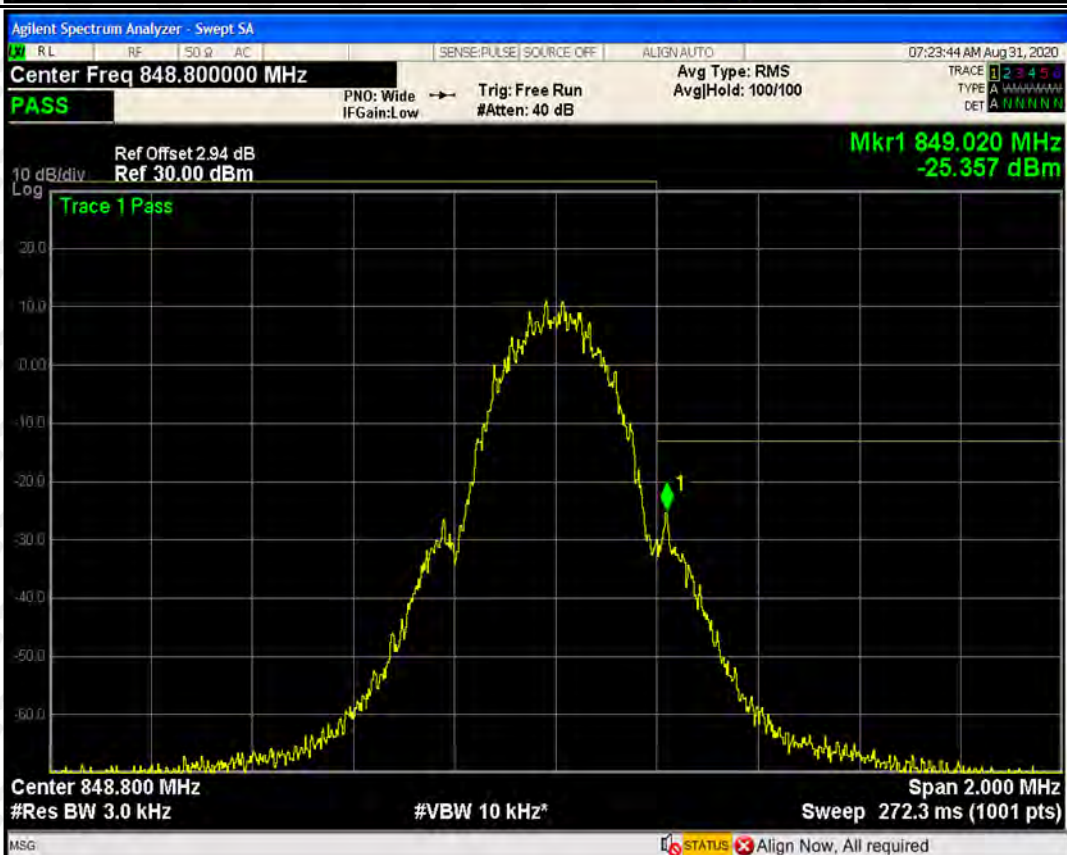
GSM
High
Channel



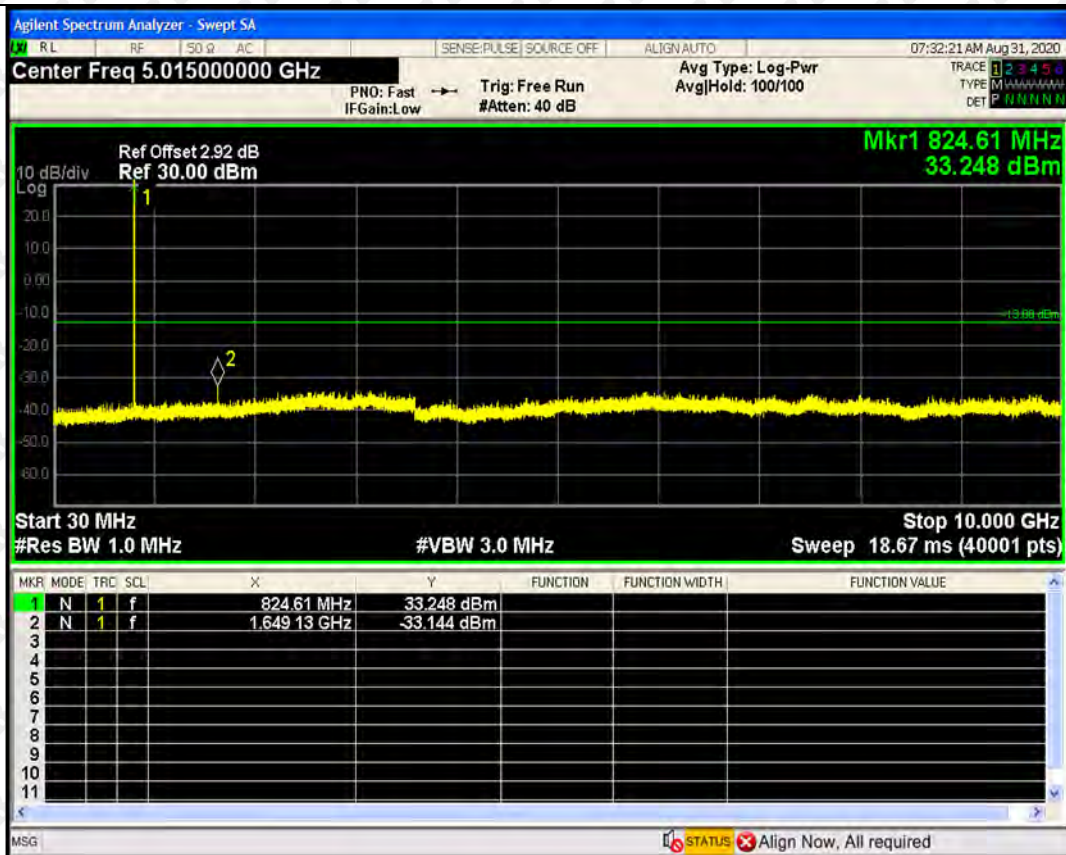
GSM Low Band Emission



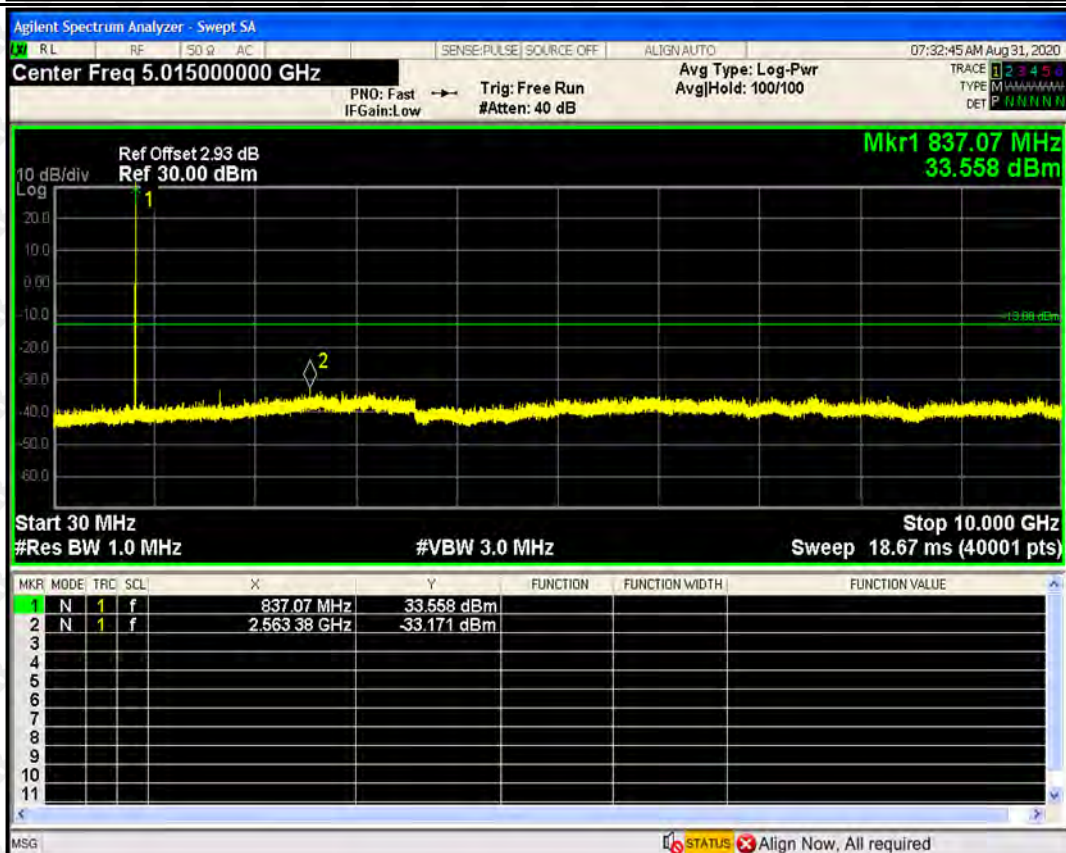
GSM High Band Emission



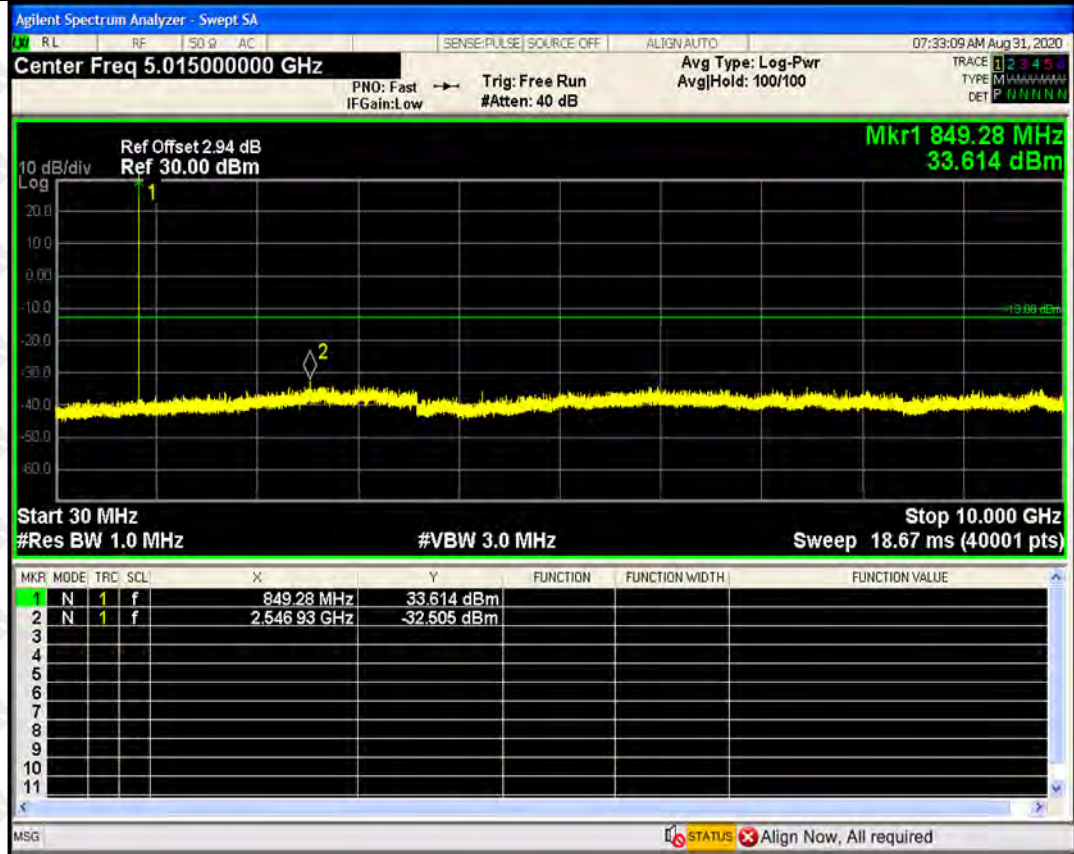
GPRS Low Channel



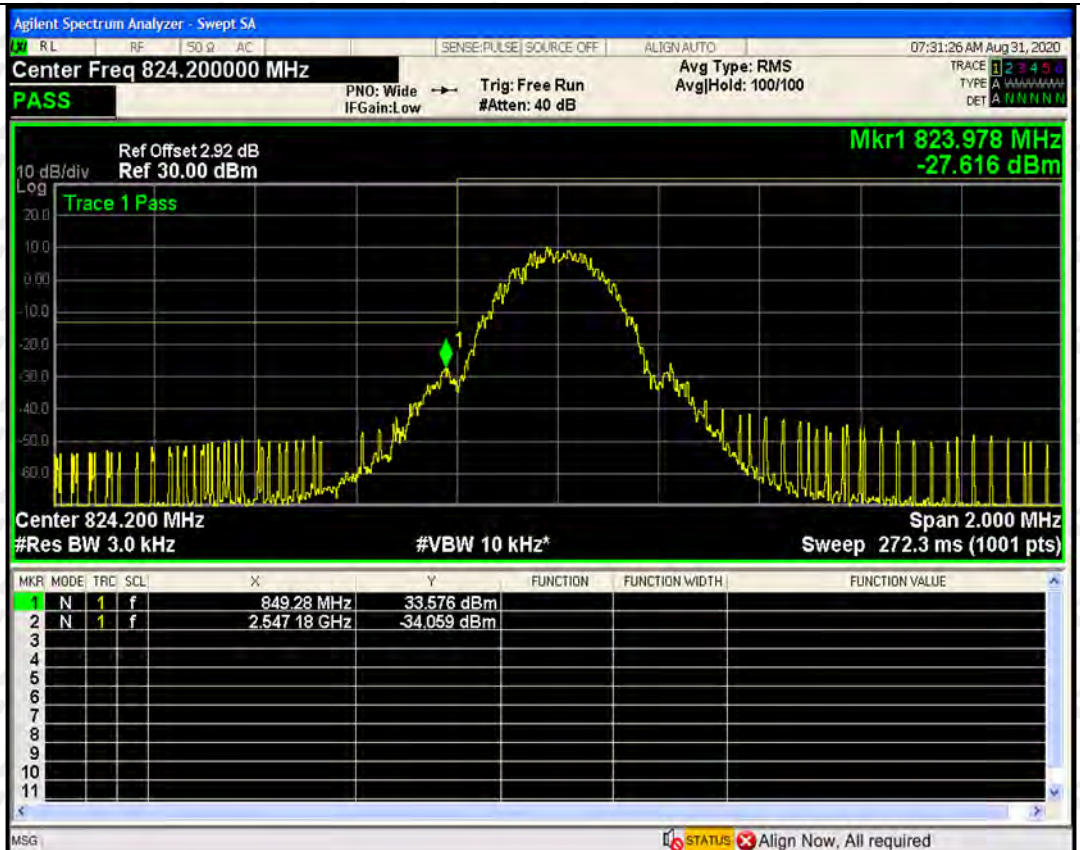
GPRS Middle Channel



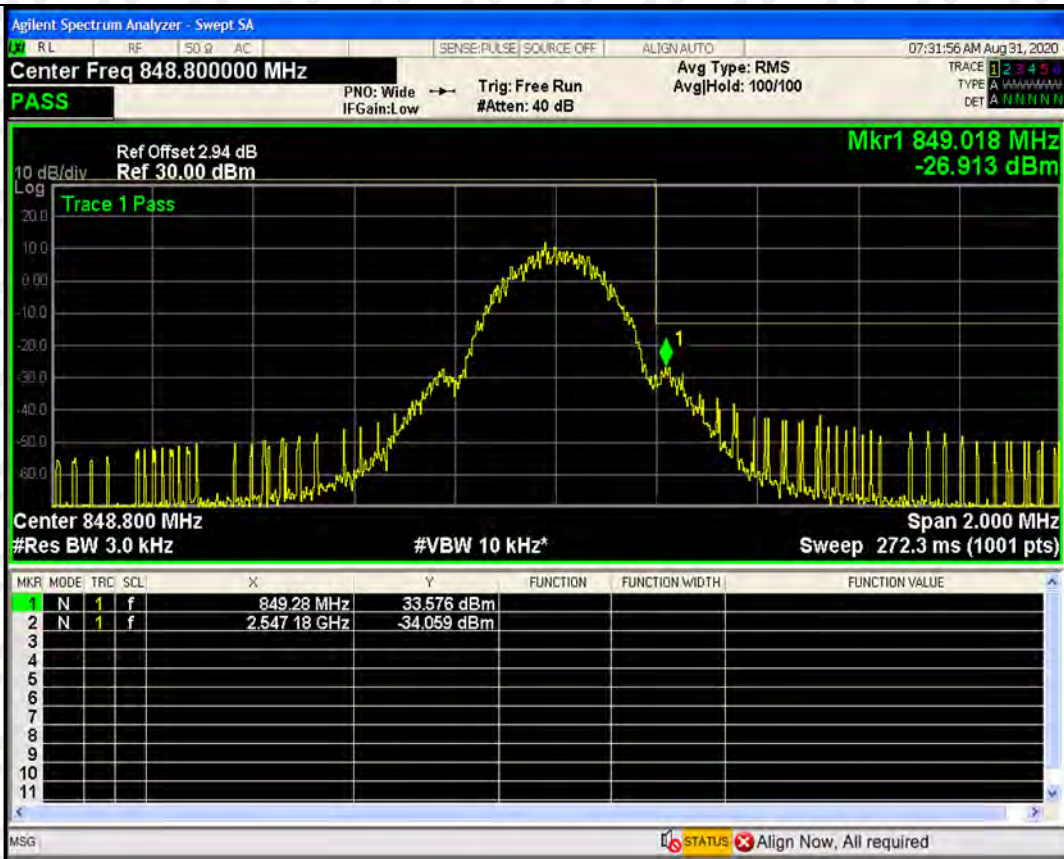
GPRS High Channel



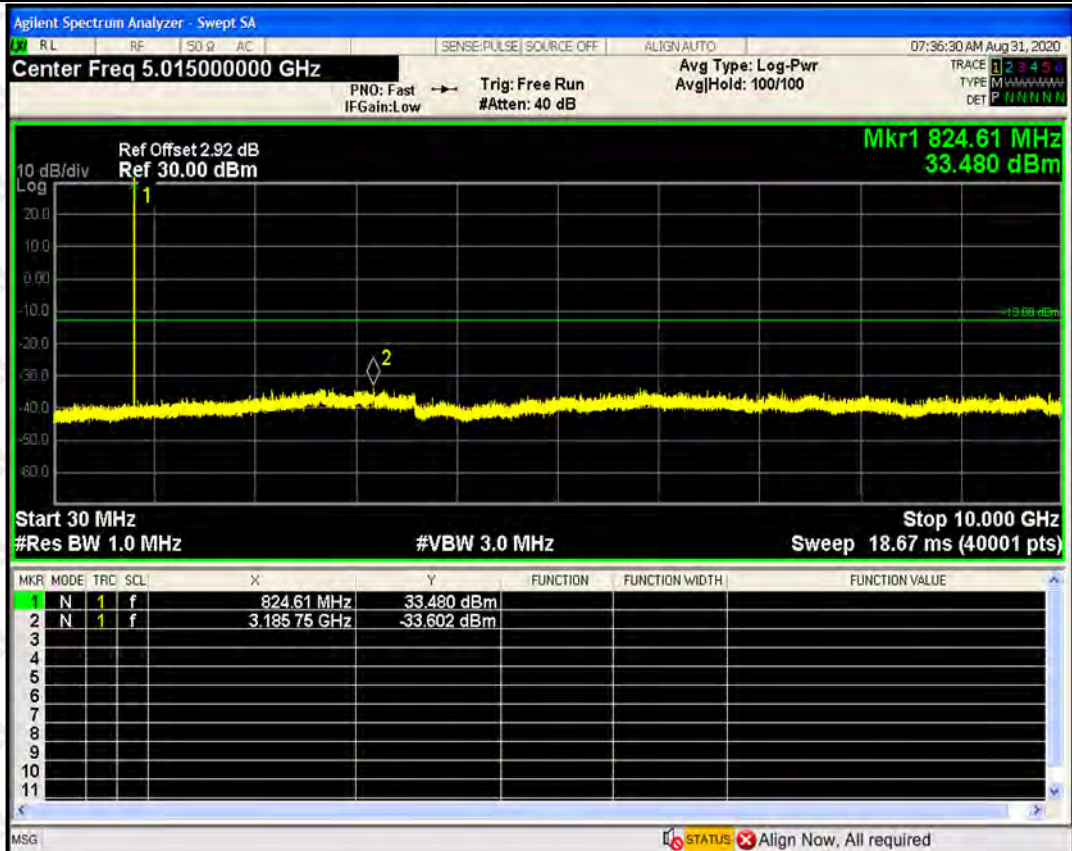
GPRS Low Band Emission



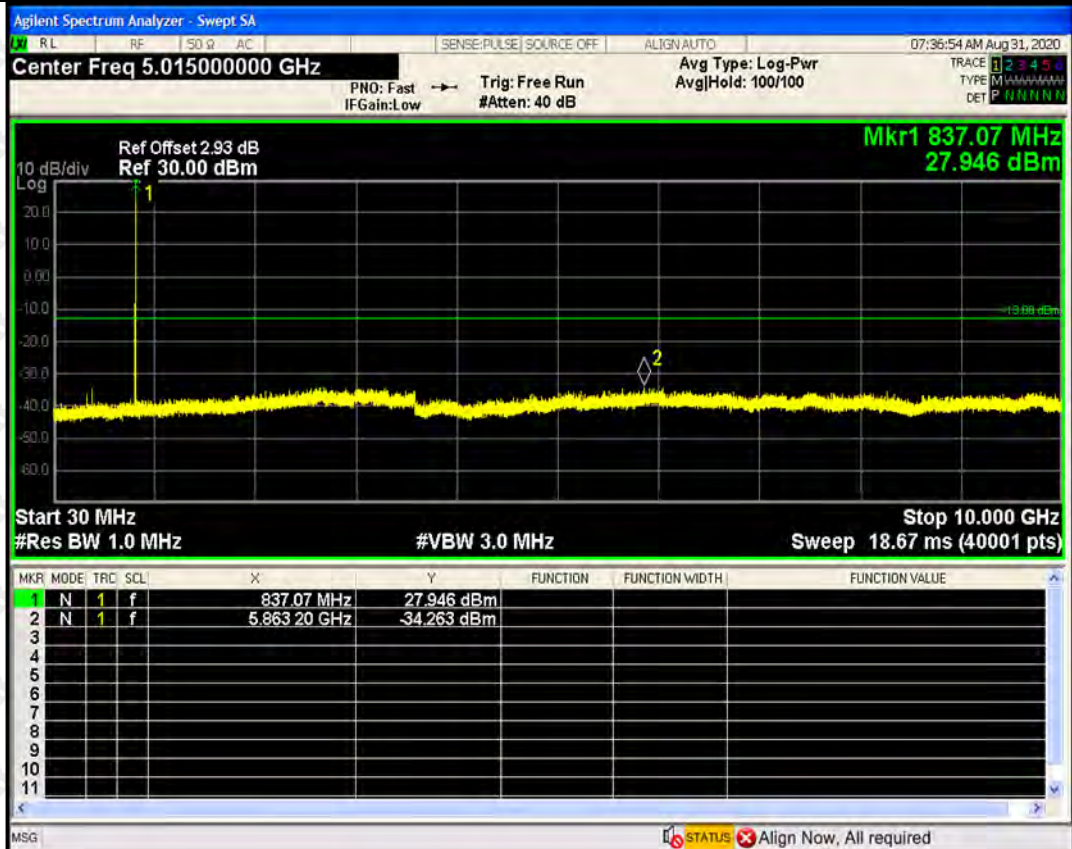
GPRS
High
Band
Emission



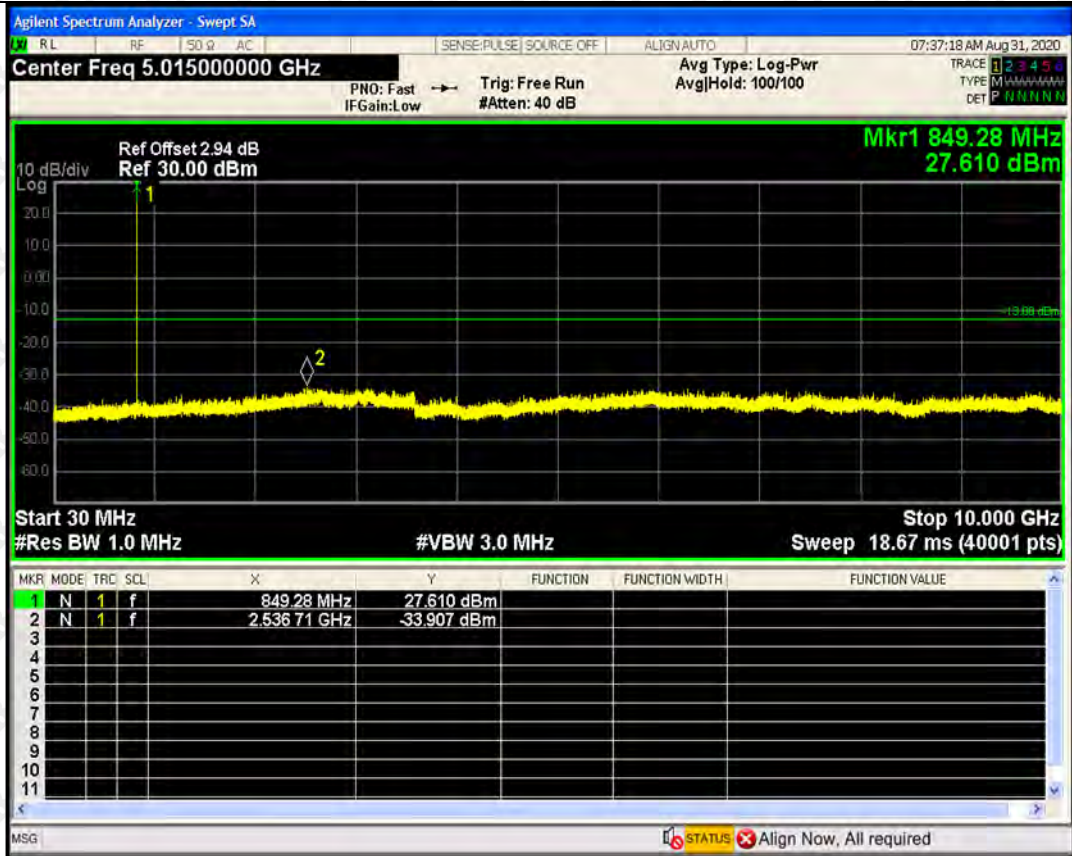
EDGE Low Channel



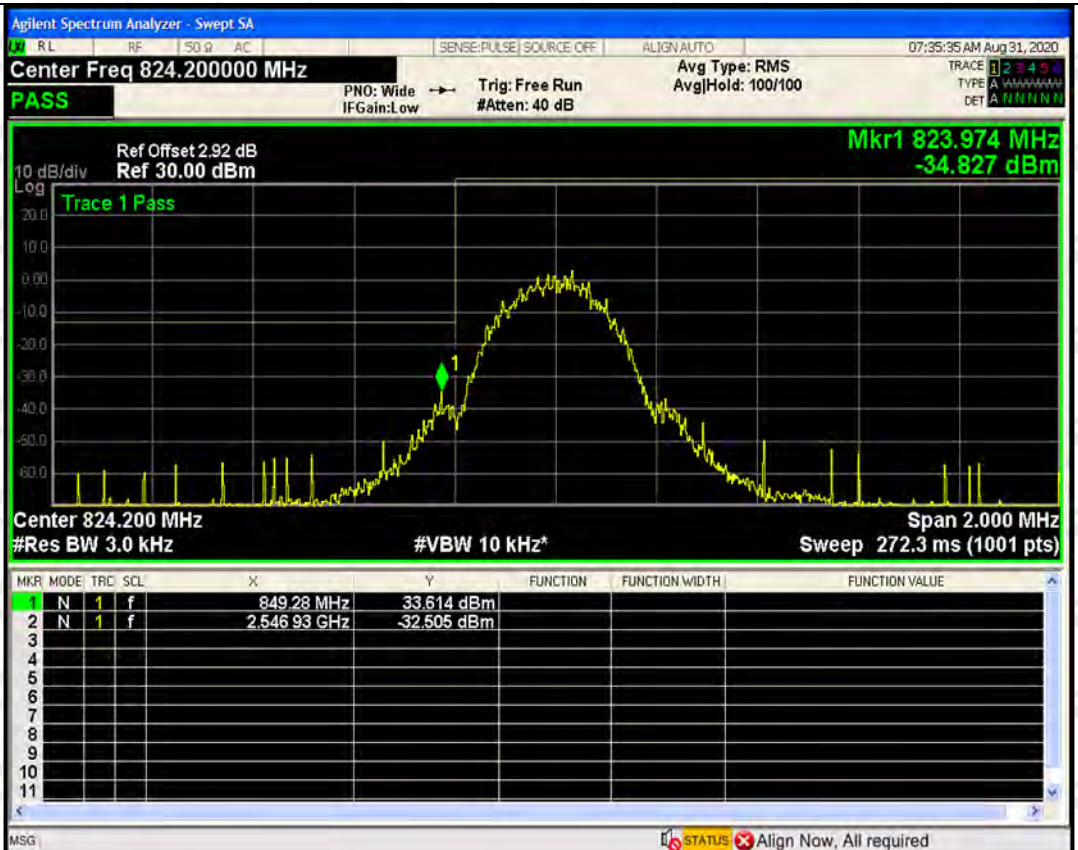
EDGE Middle Channel



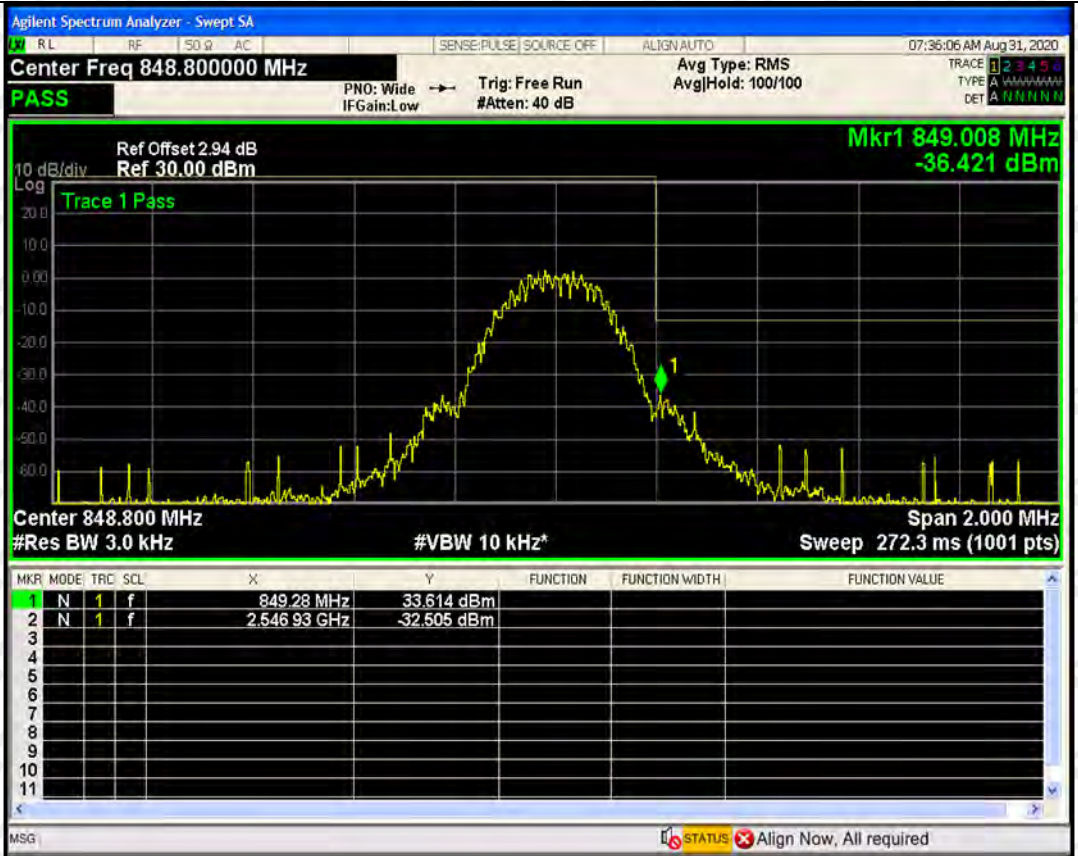
EDGE High Channel



EDGE Low Band Emission

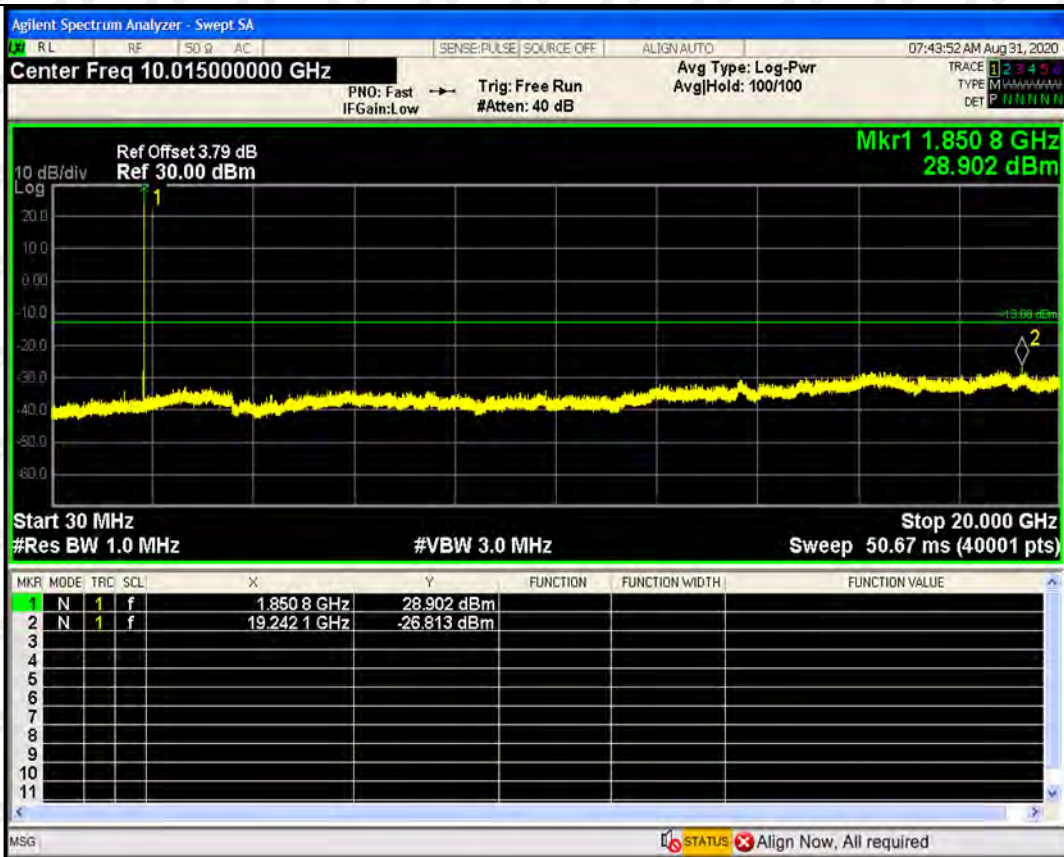


EDGE High Band Emission

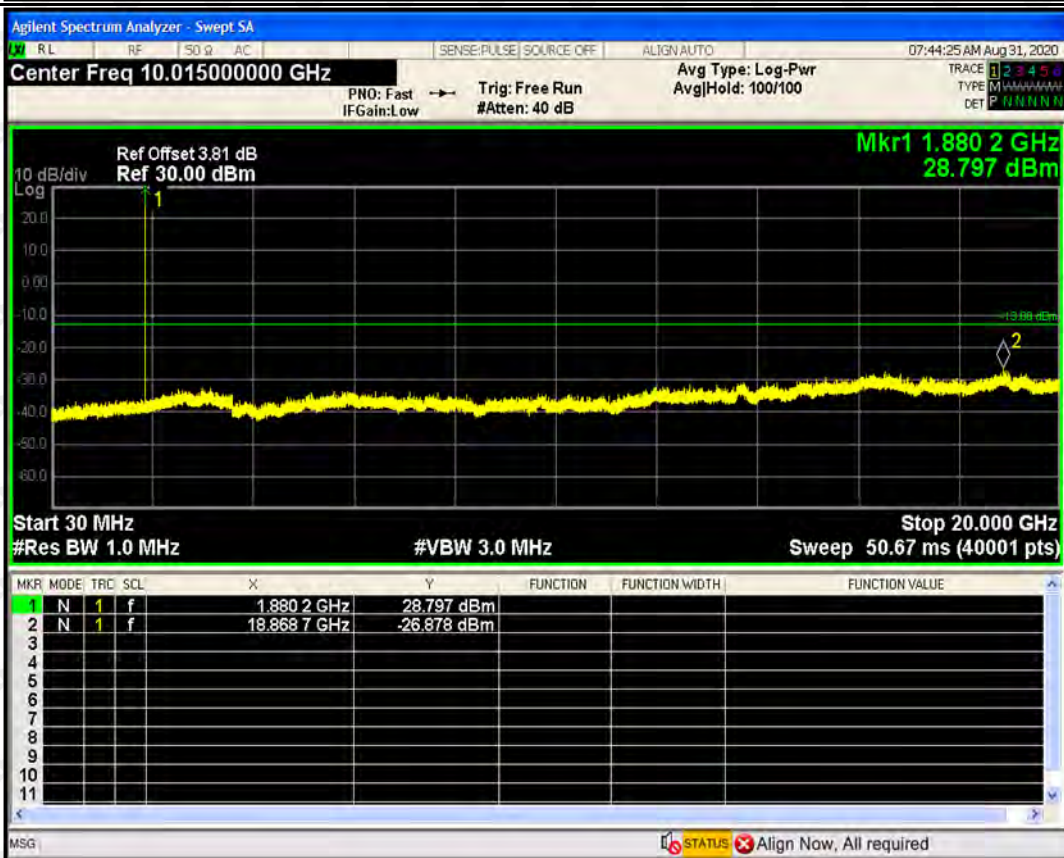


For PCS Band

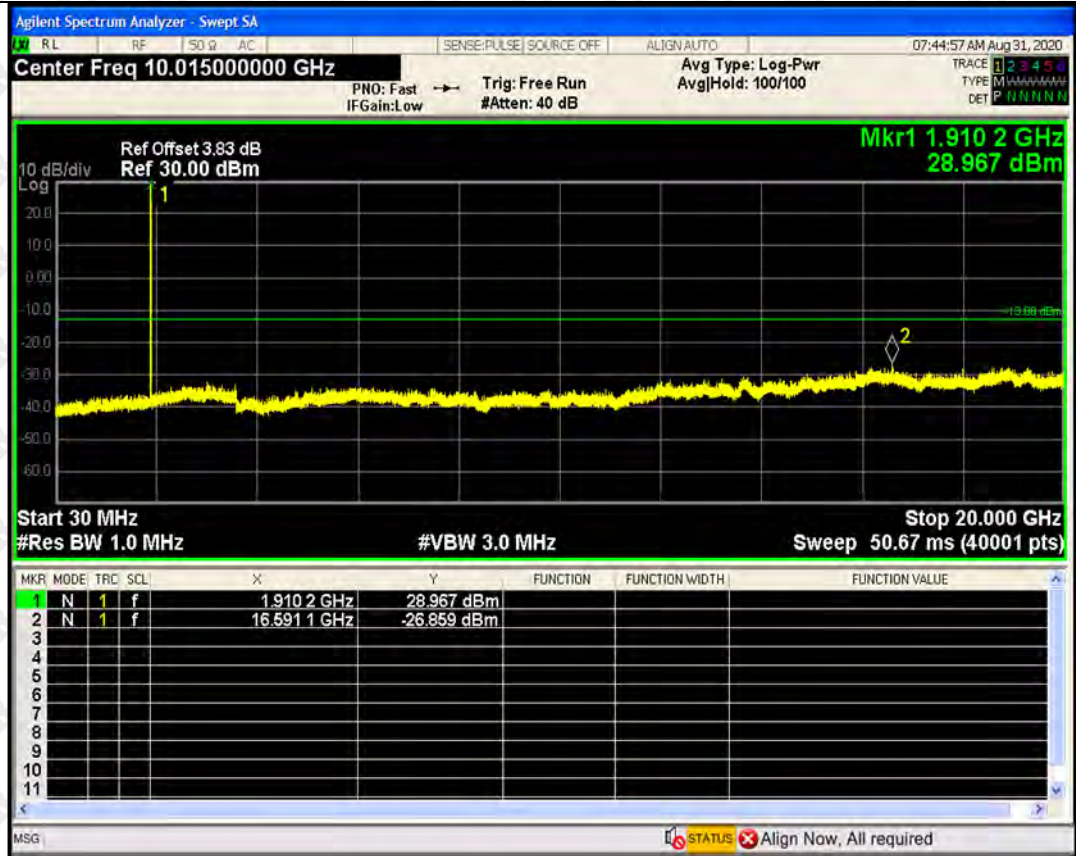
GSM
Low
Channel



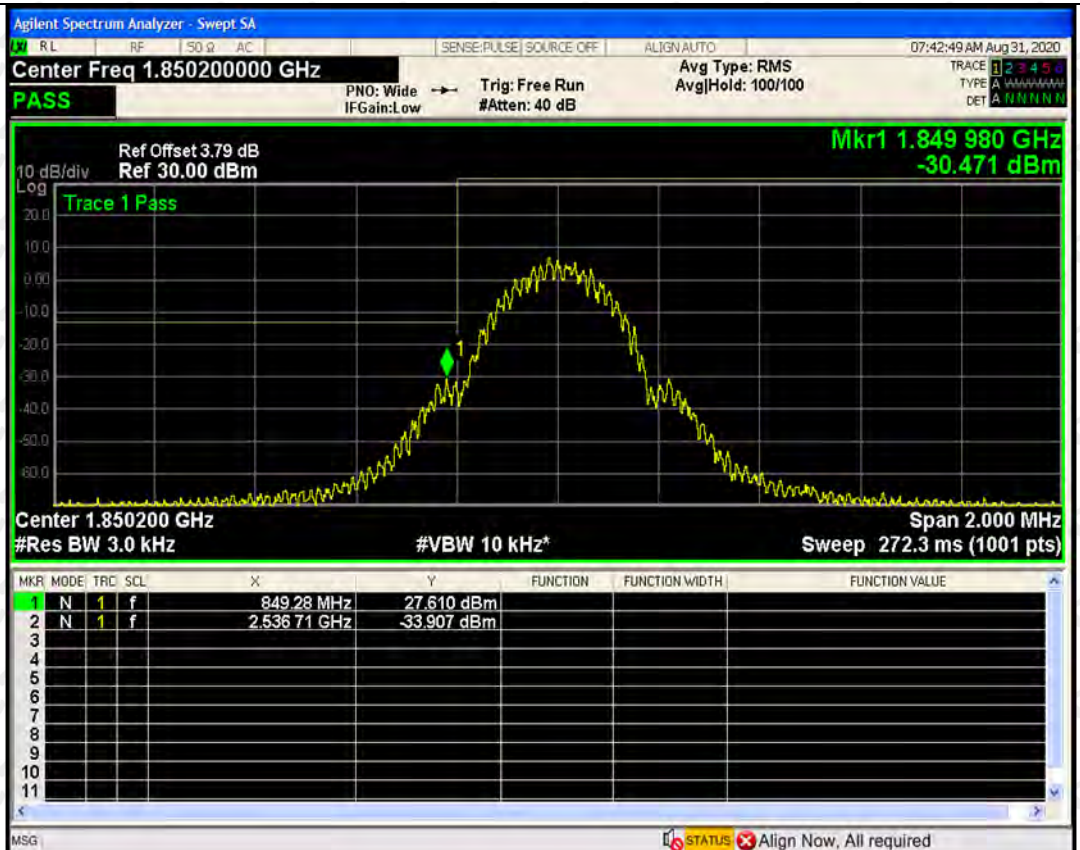
GSM
Middle
Channel



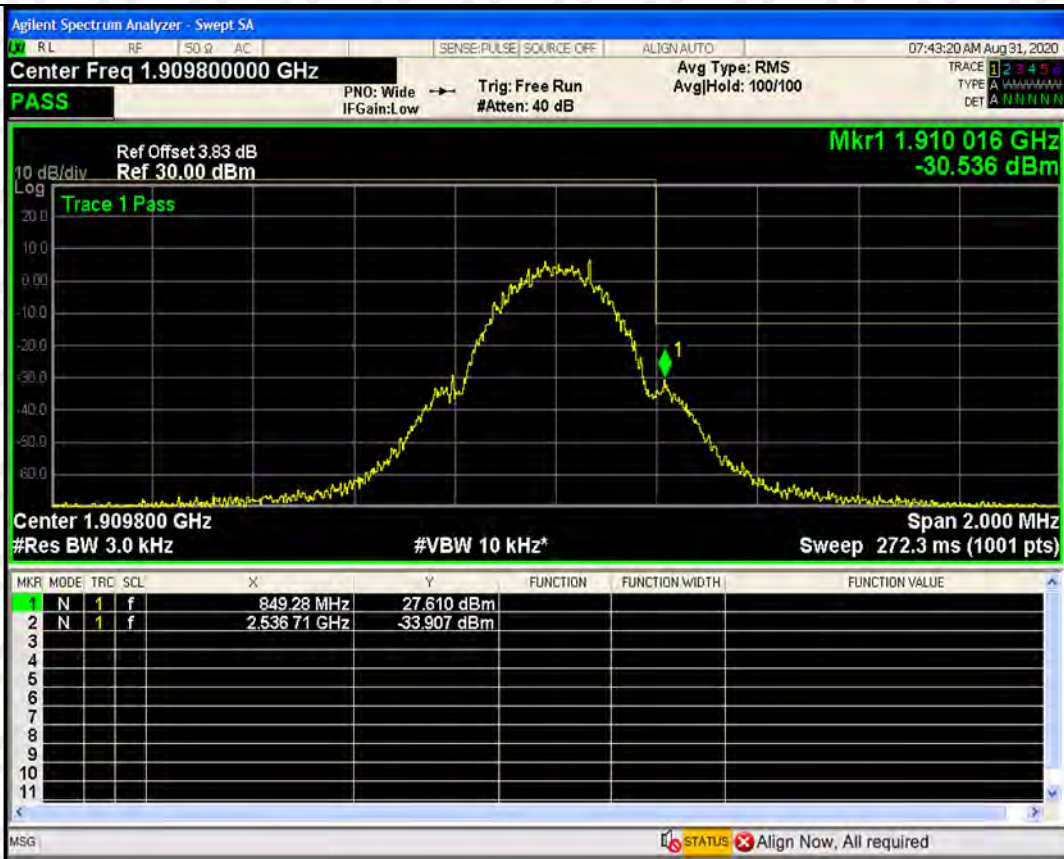
GSM High Channel



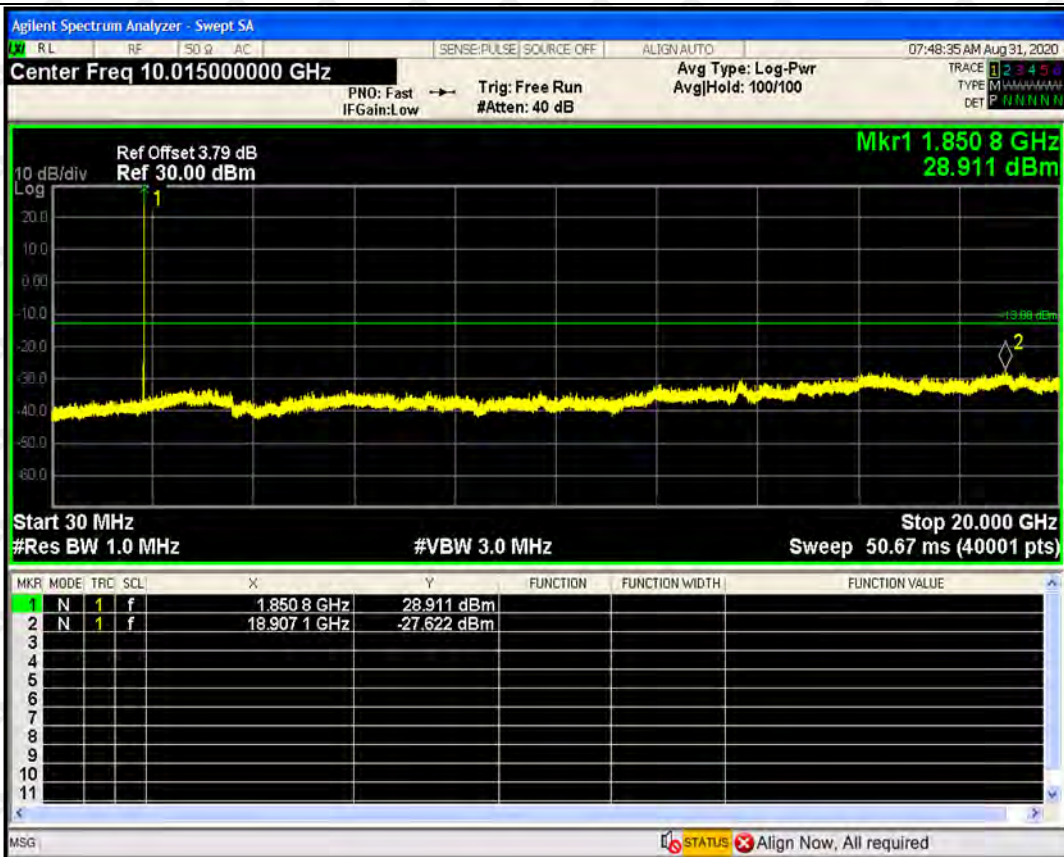
GSM Low Band Emission



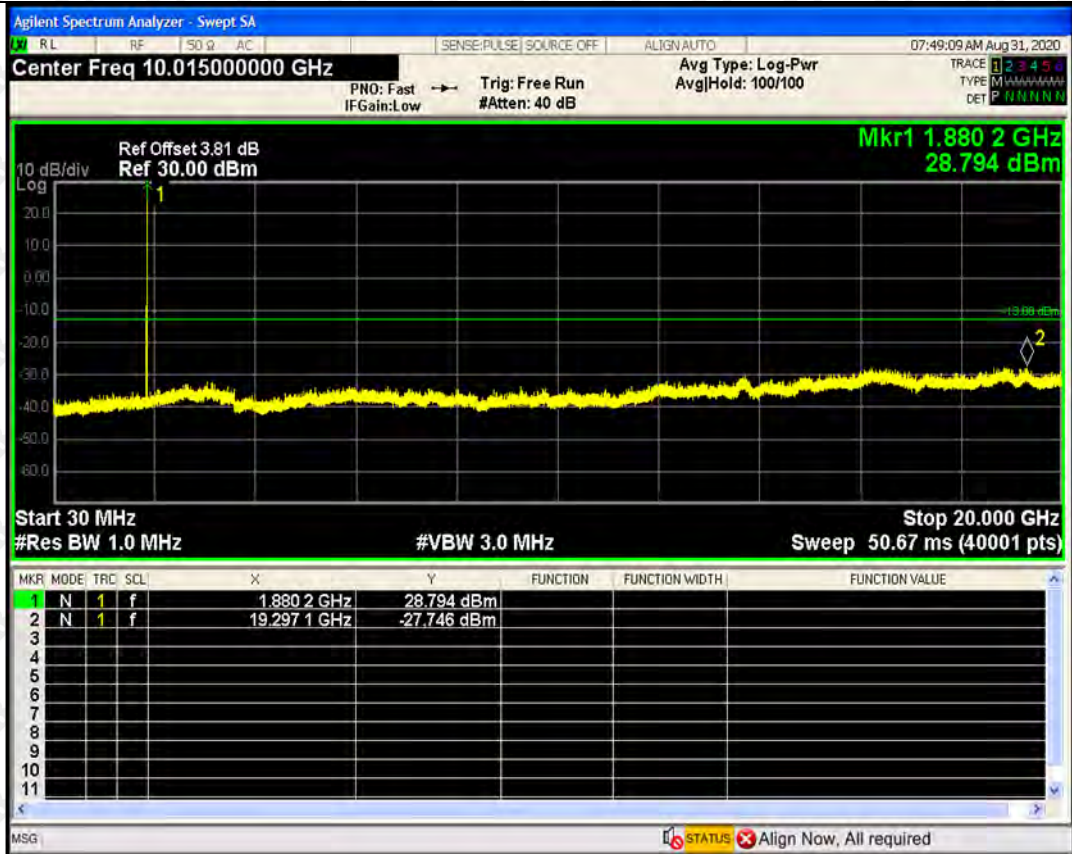
GSM High Band Emission



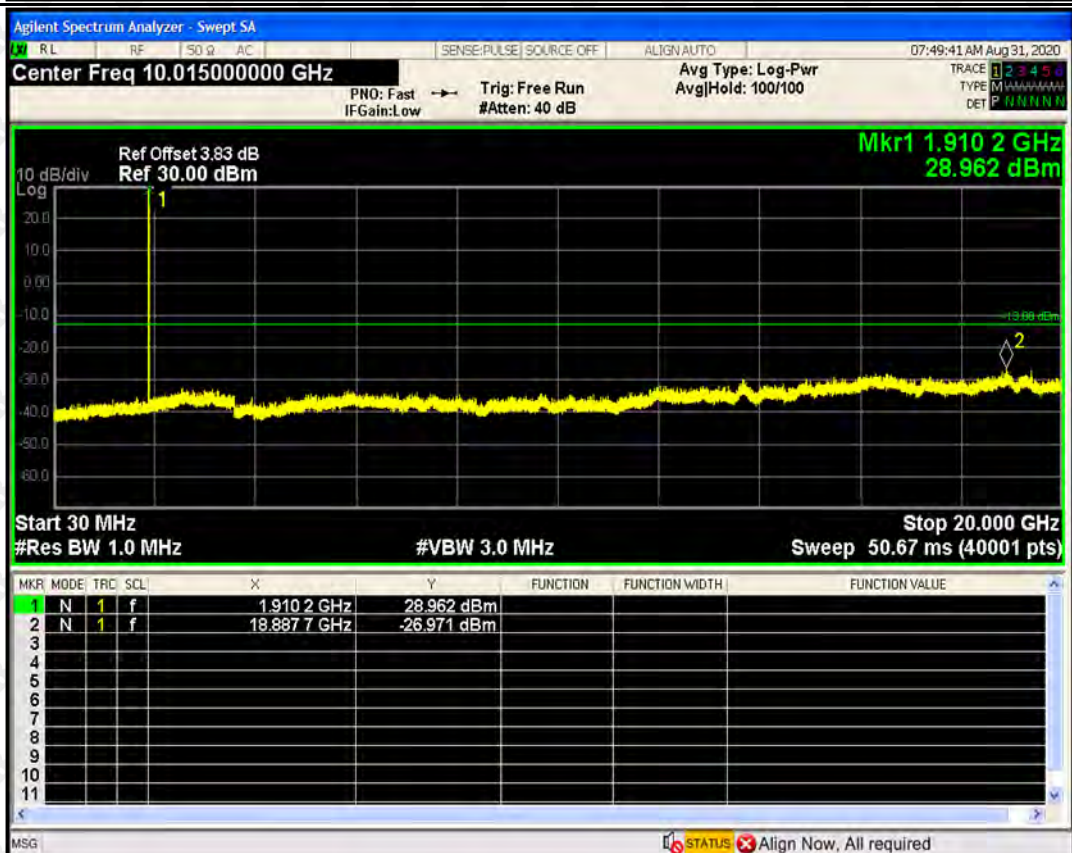
GPRS Low Channel



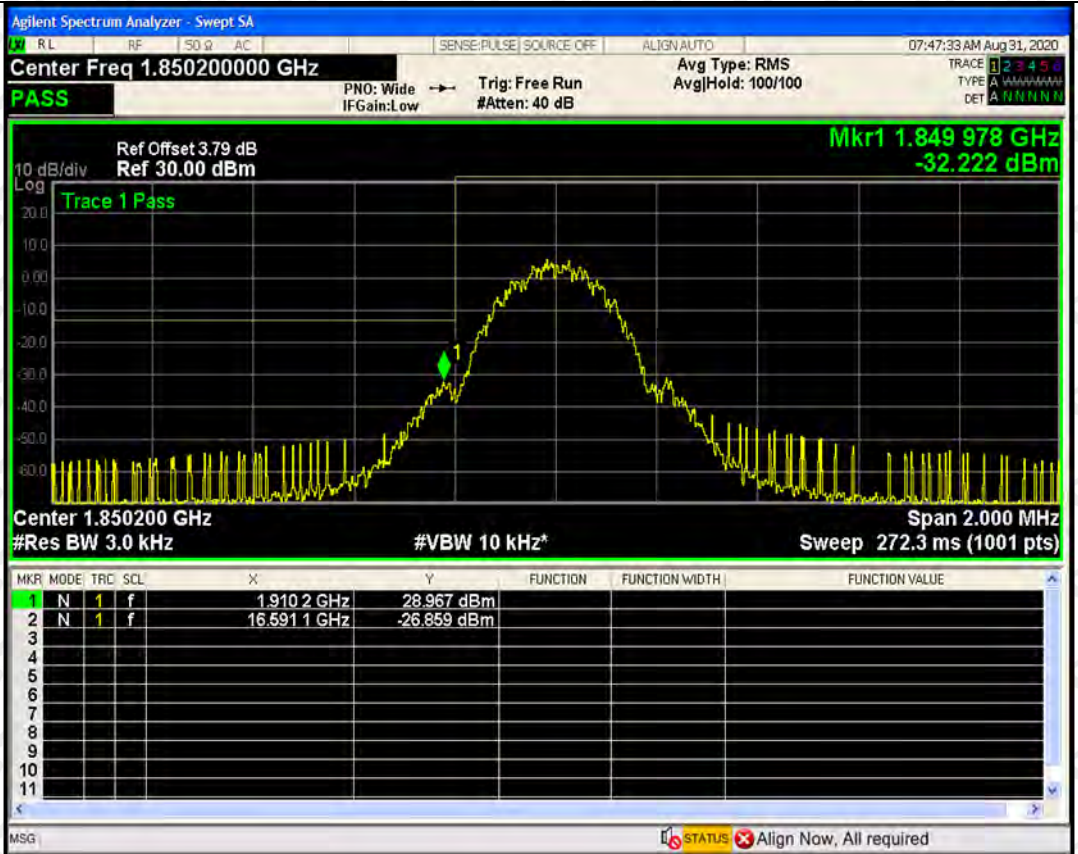
GPRS Middle Channel



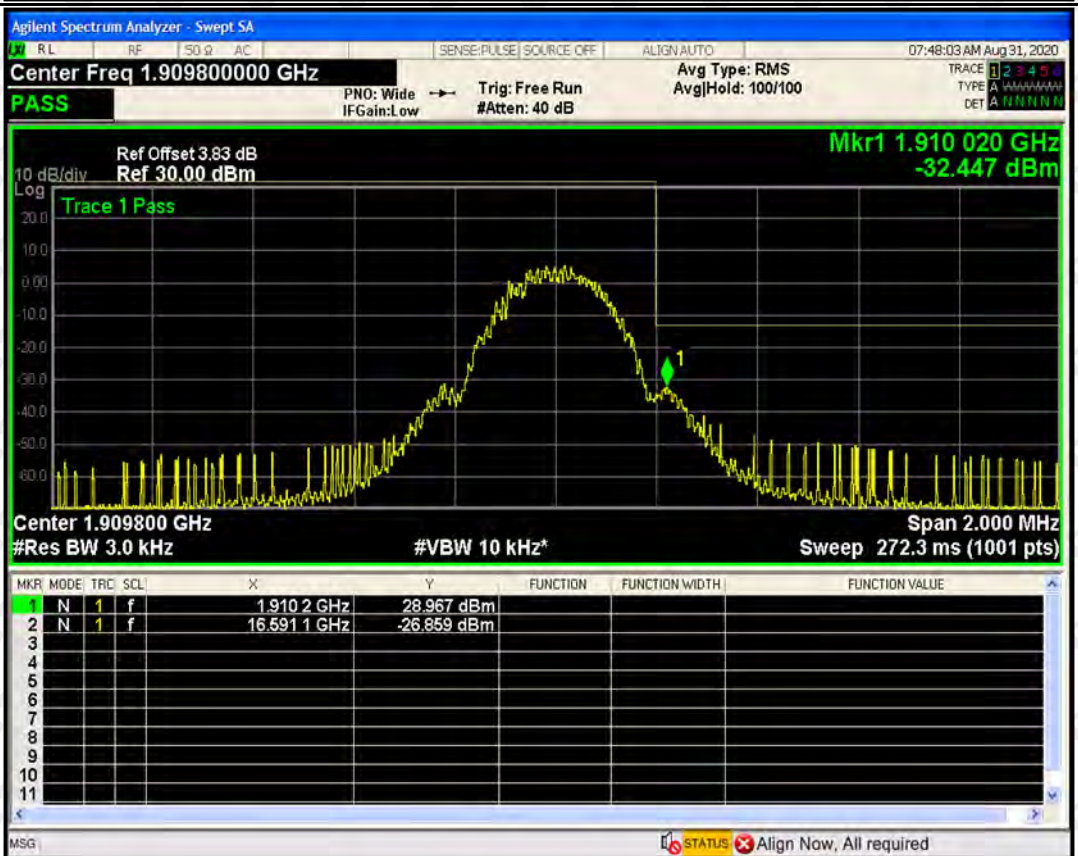
GPRS High Channel



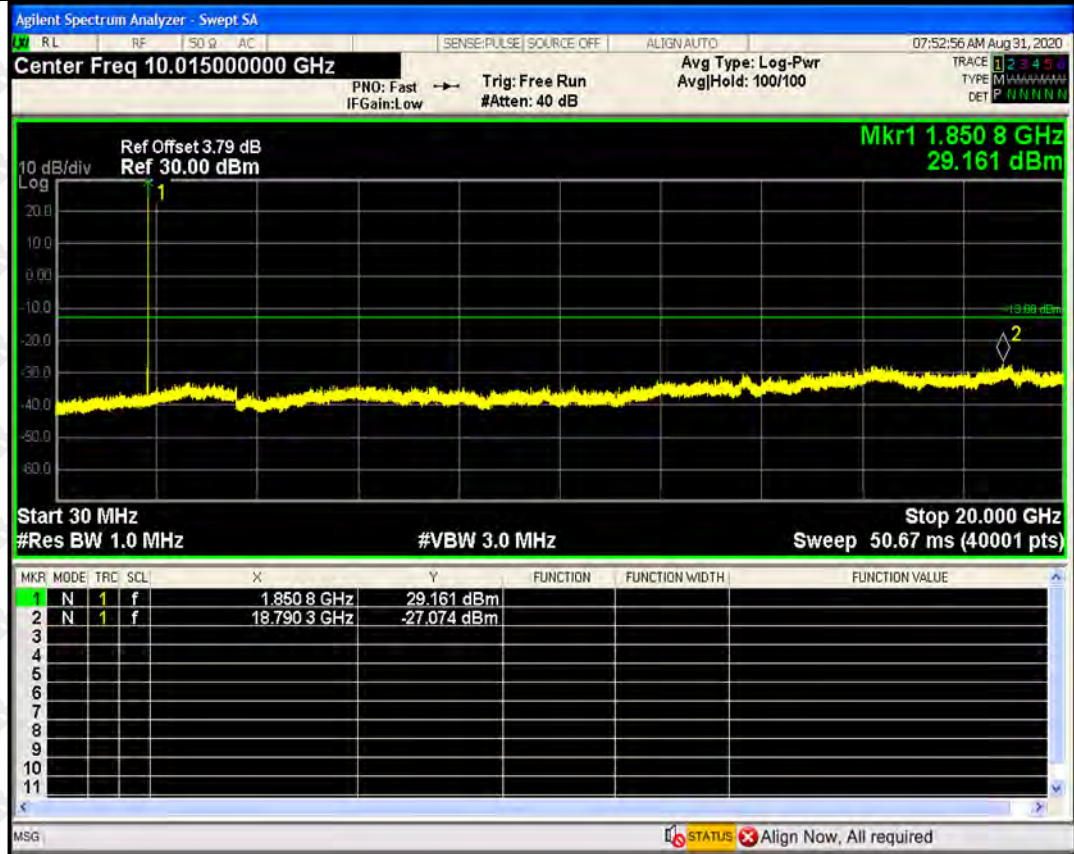
GPRS Low Band Emission



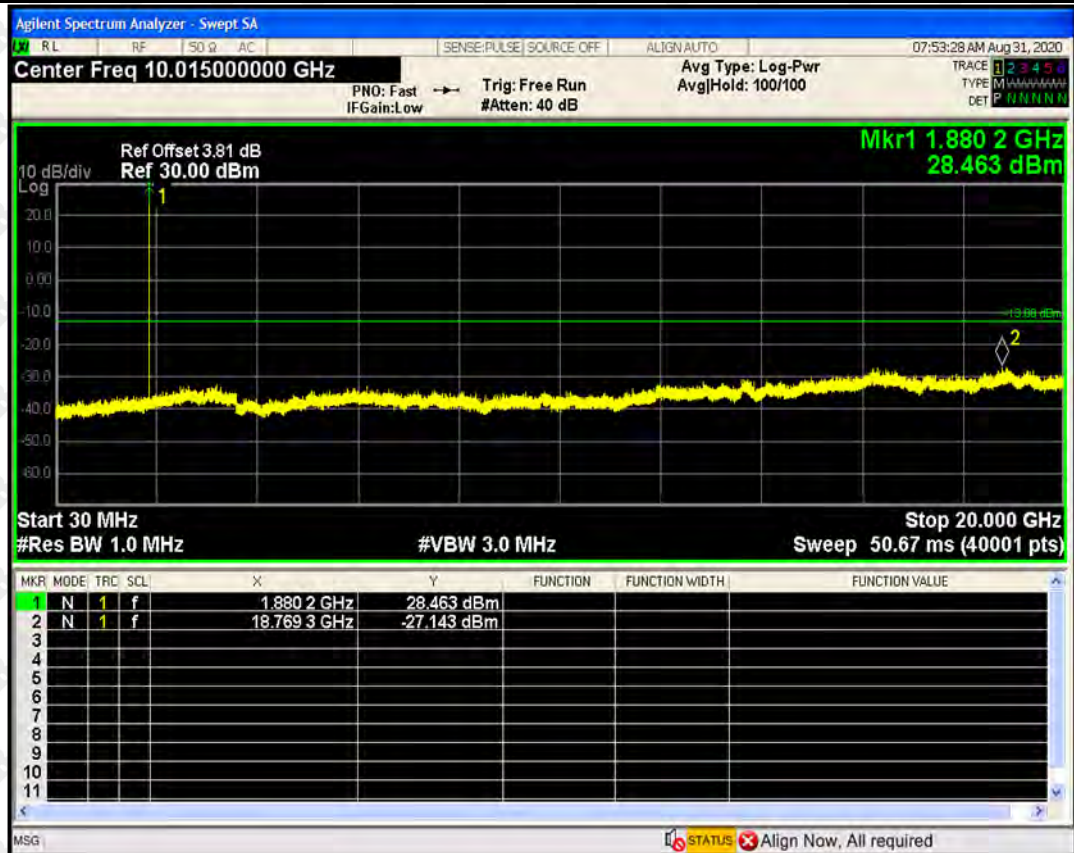
GPRS High Band Emission



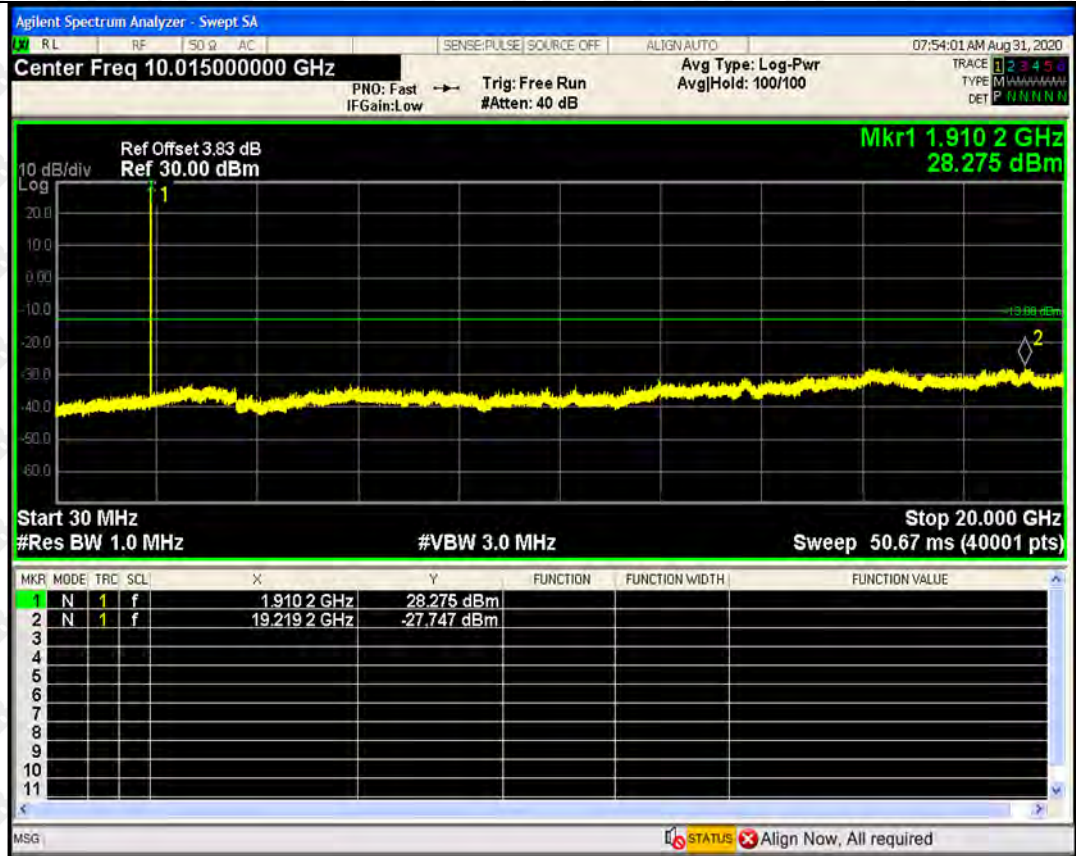
EDGE Low Channel



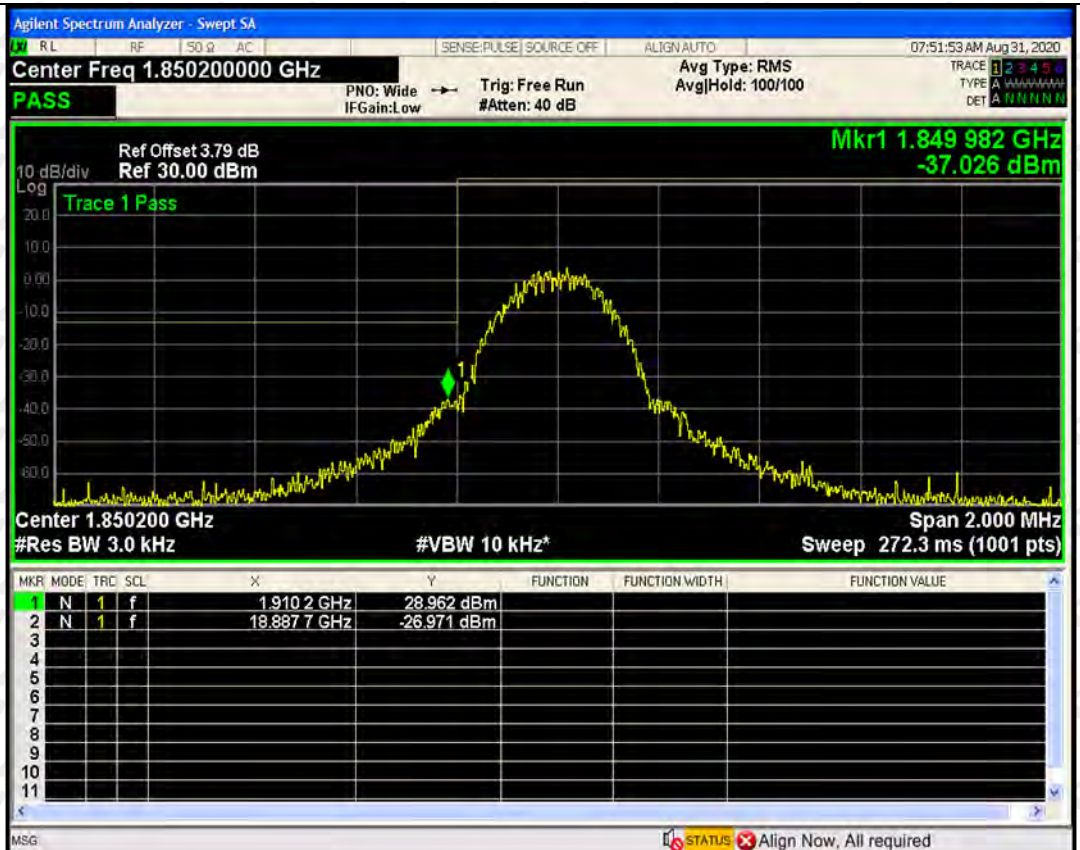
EDGE Middle Channel



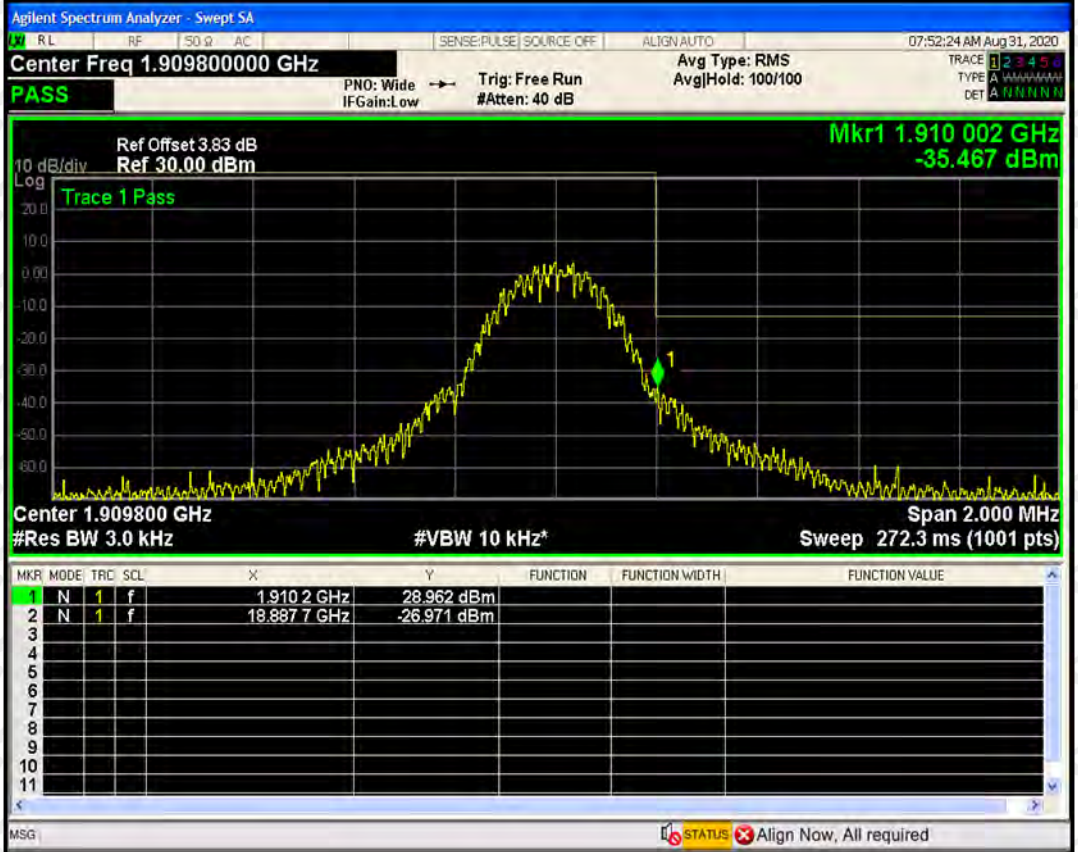
EDGE High Channel



EDGE Low Band Emission

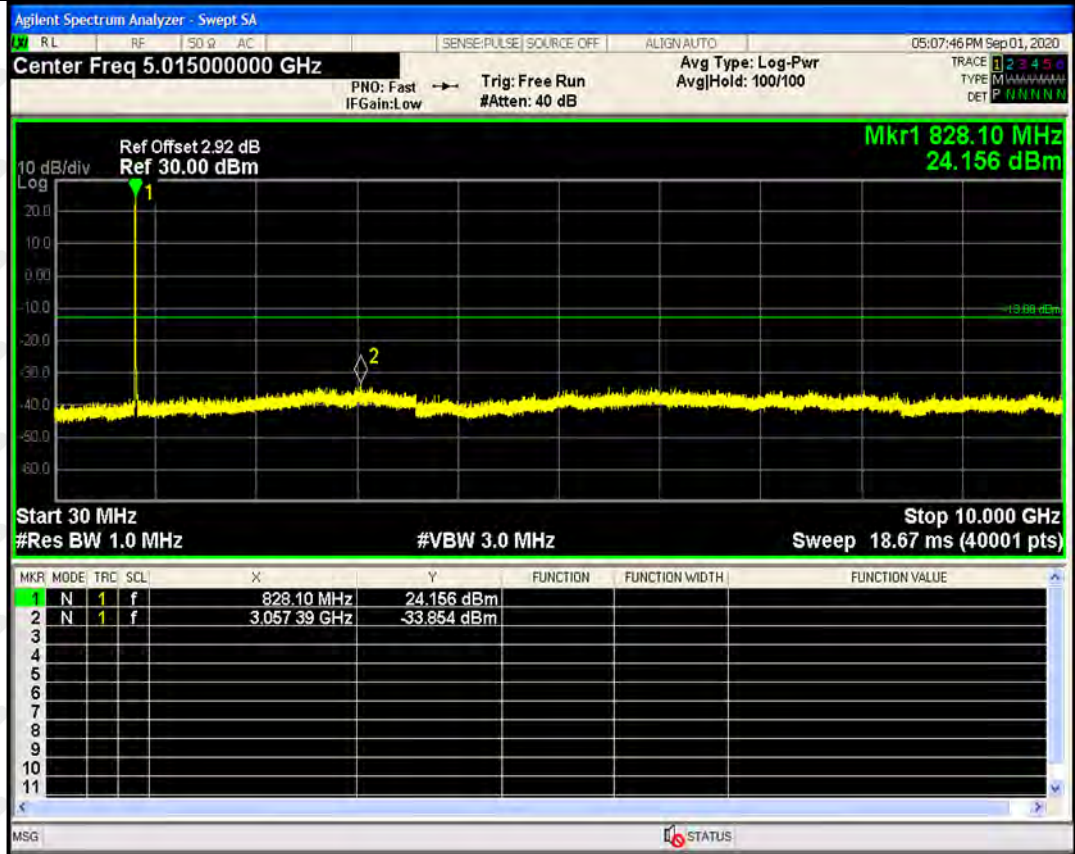


EDGE High Band Emission

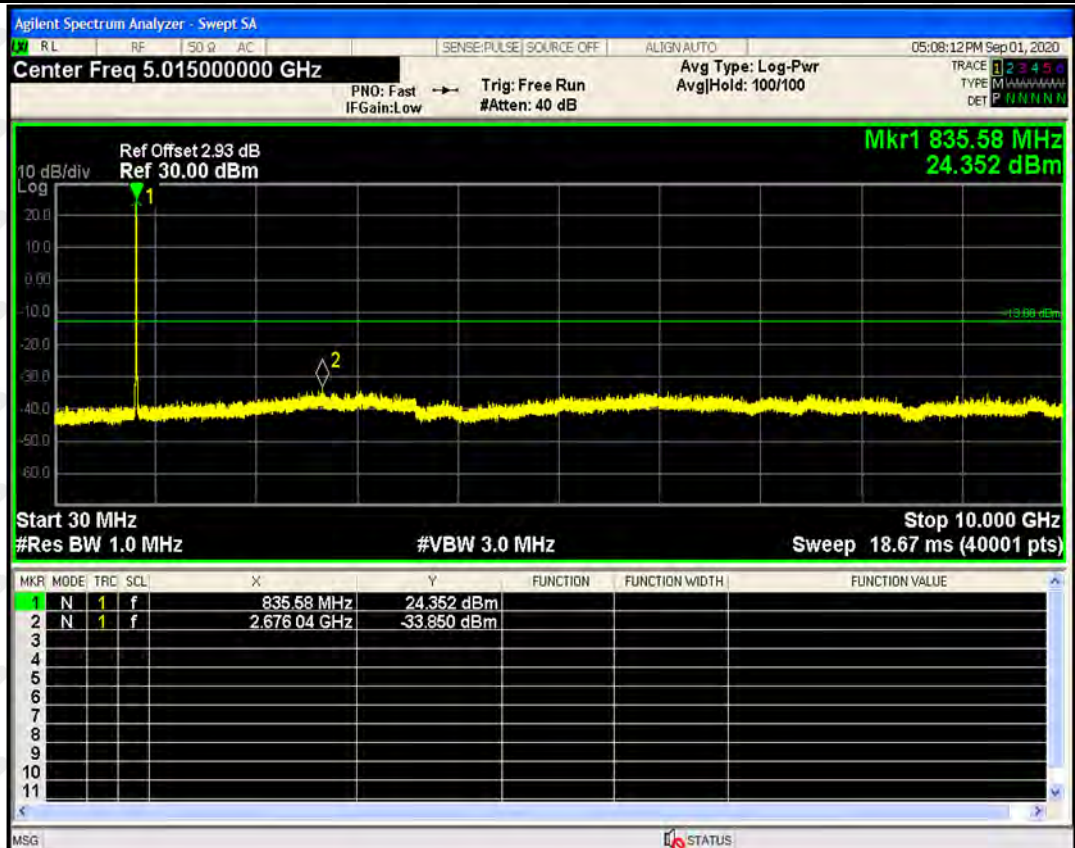


For Band V

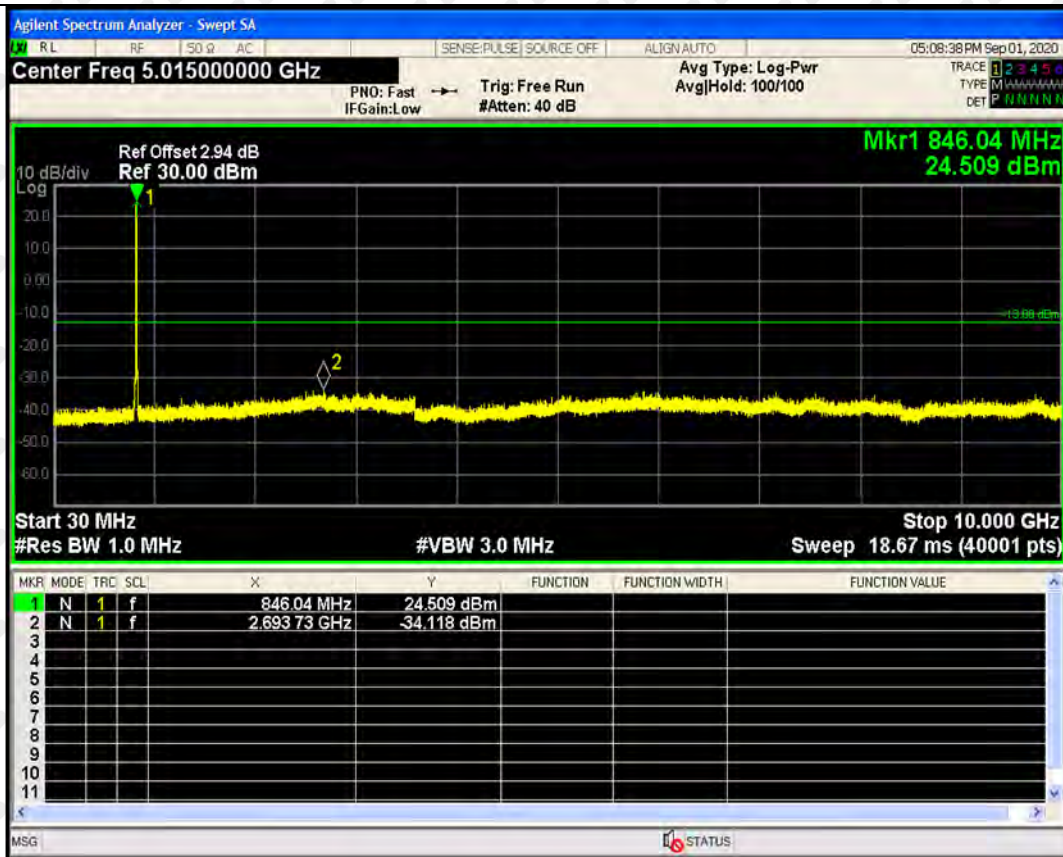
WCDMA Low Channel



WCDMA Middle Channel



WCDMA High Channel



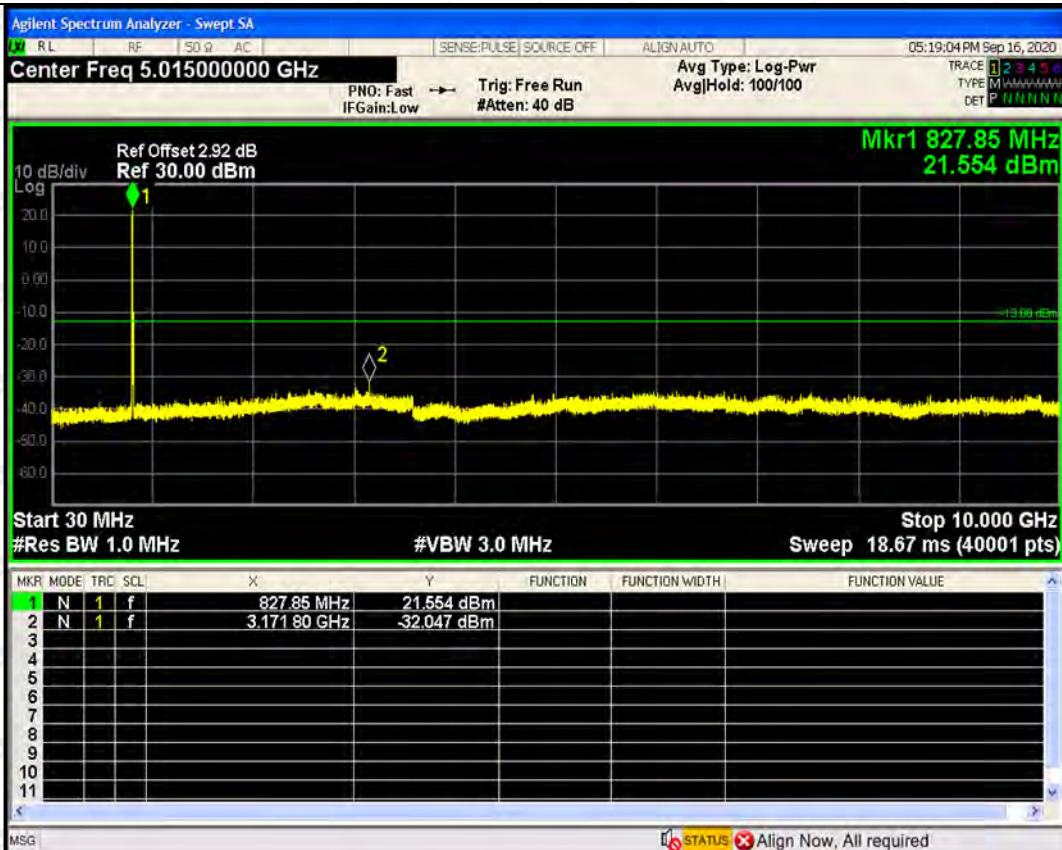
WCDMA Low Band Spurious Emission

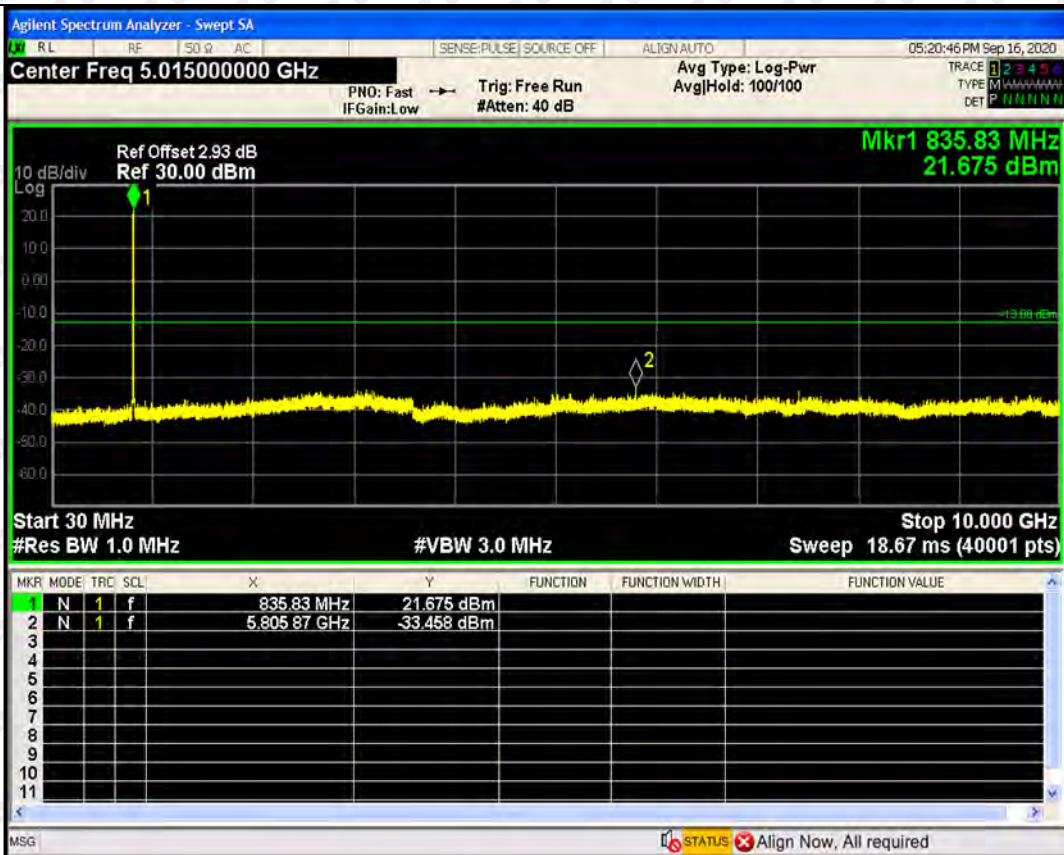
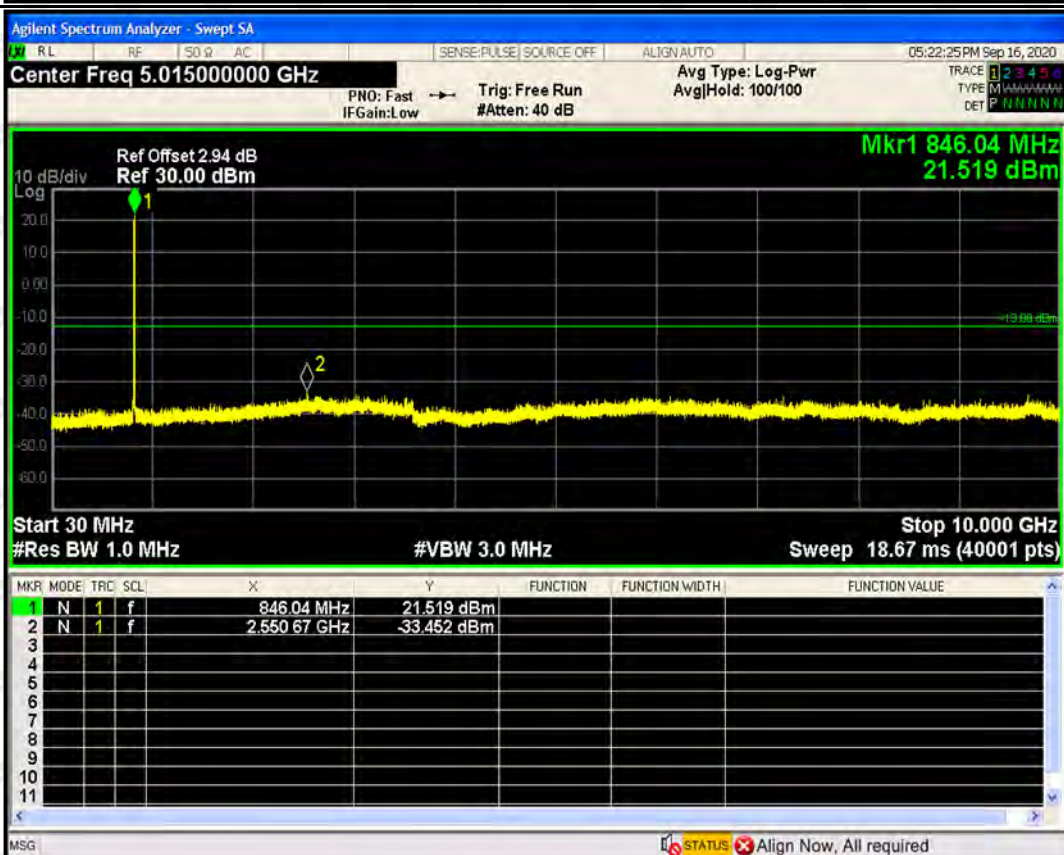


WCDMA High Band Spurious Emission

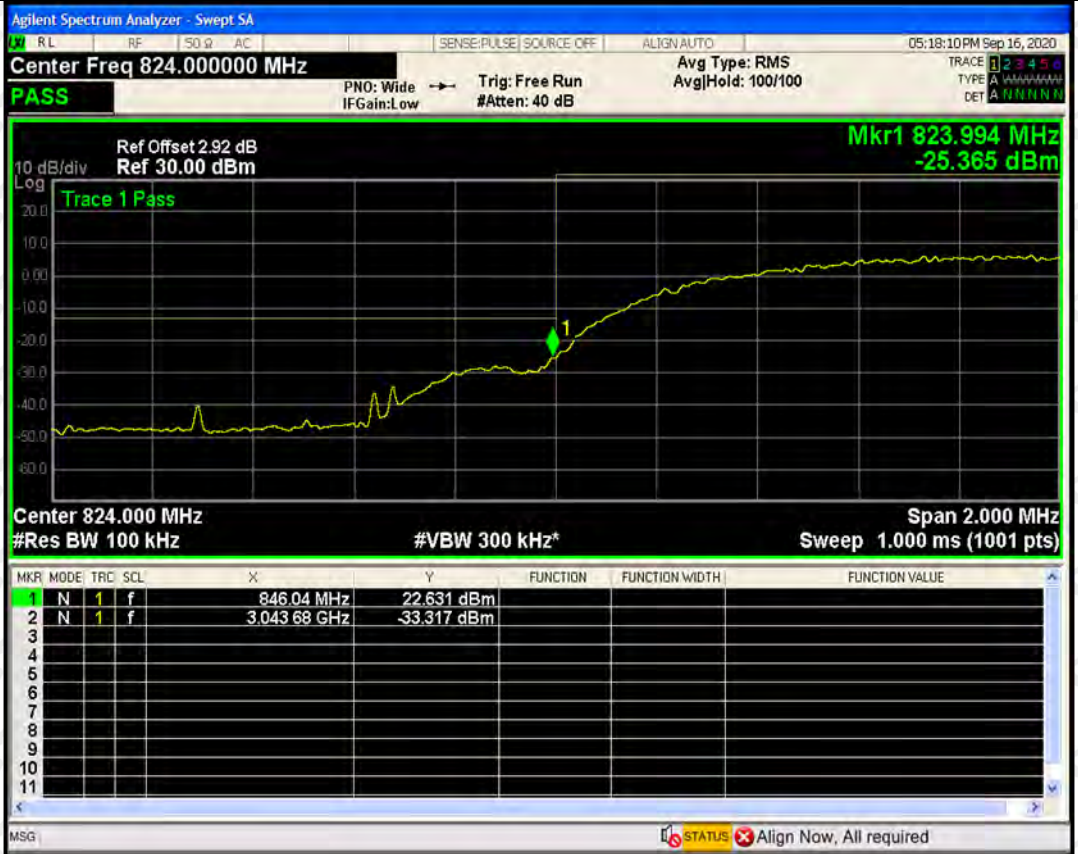


HSDPA Low Channel



HSDPA
Middle
Channel

HSDPA
High
Channel


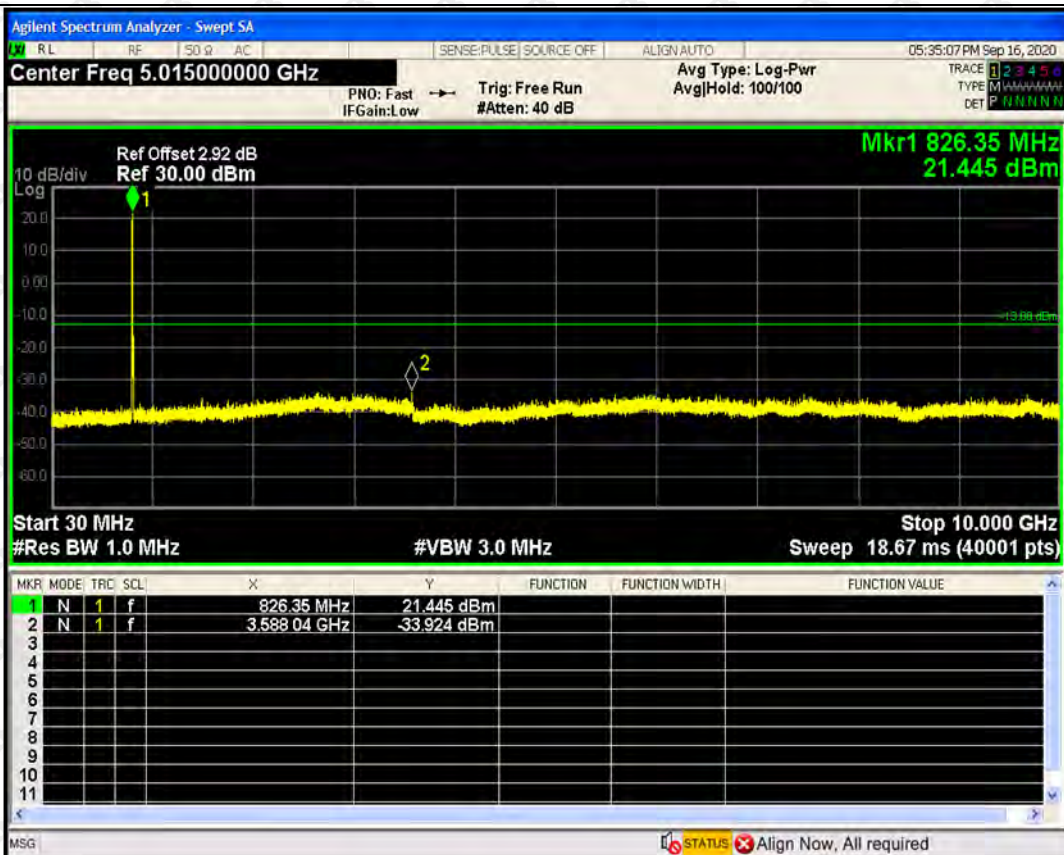
HSDPA Low Band Spurious Emission



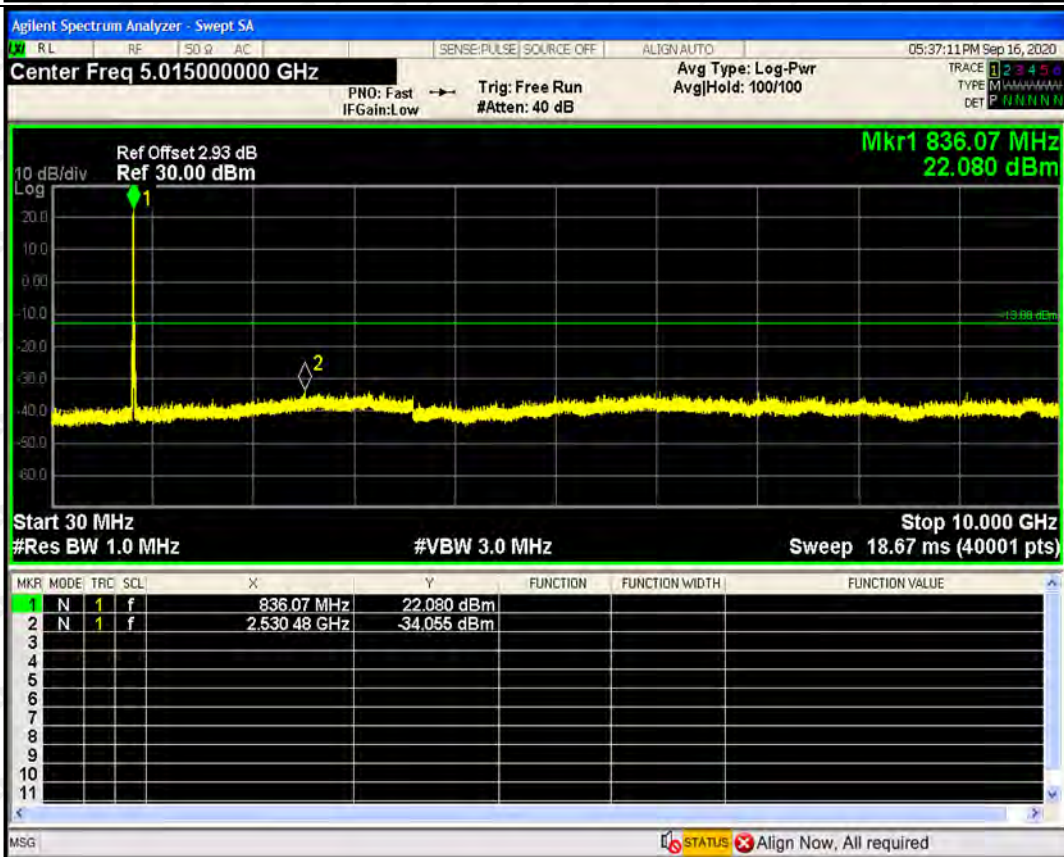
HSDPA High Band Spurious Emission



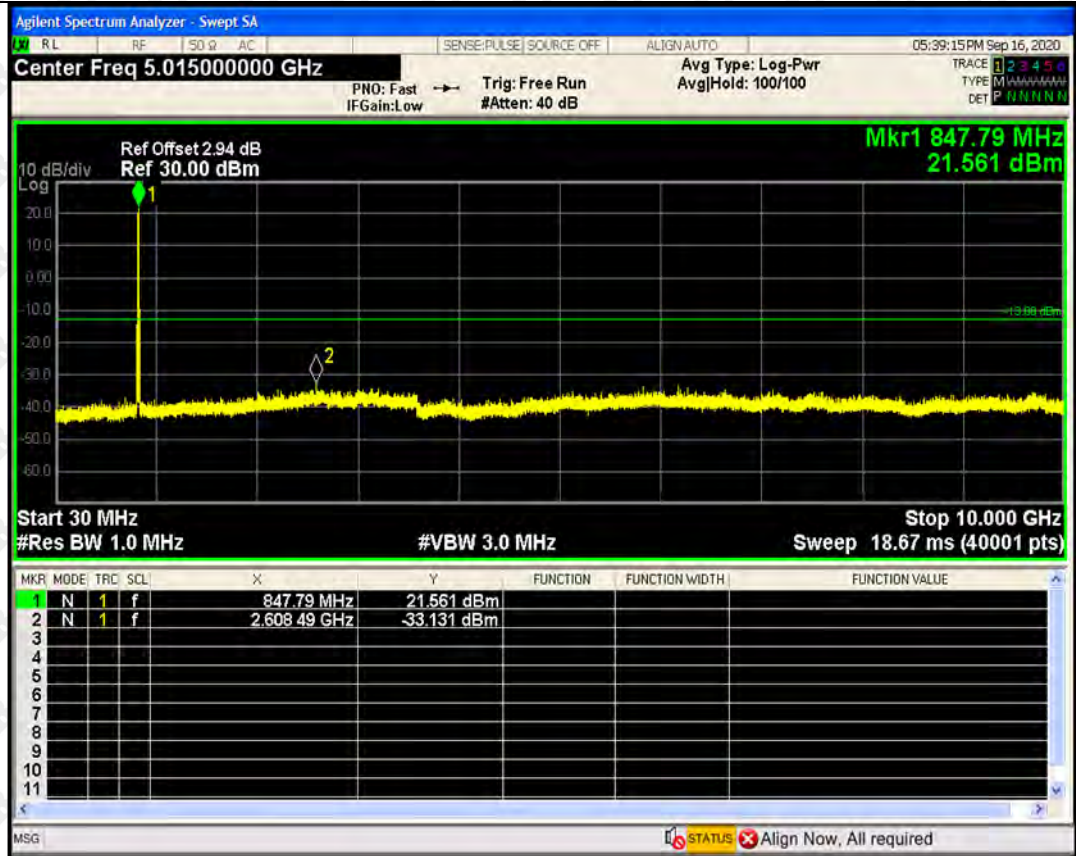
HSUPA Low Channel



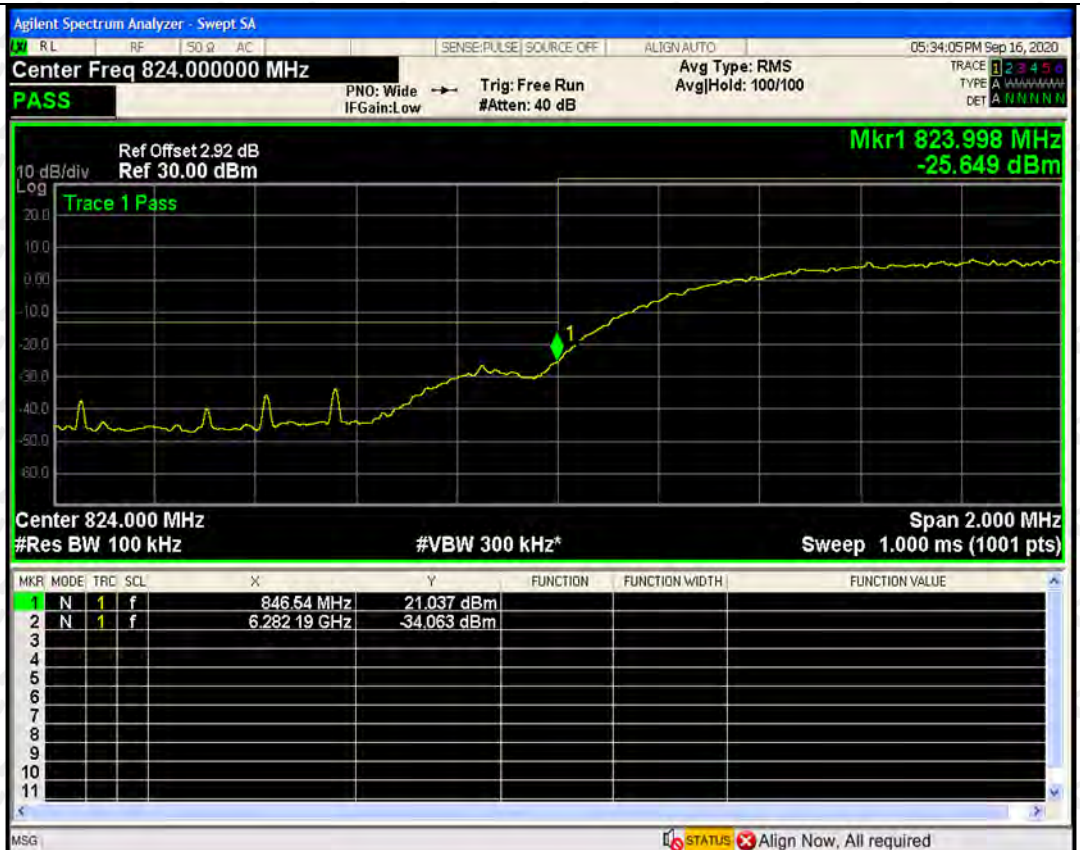
HSUPA Middle Channel



HSUPA High Channel



HSUPA Low Band Spurious Emission

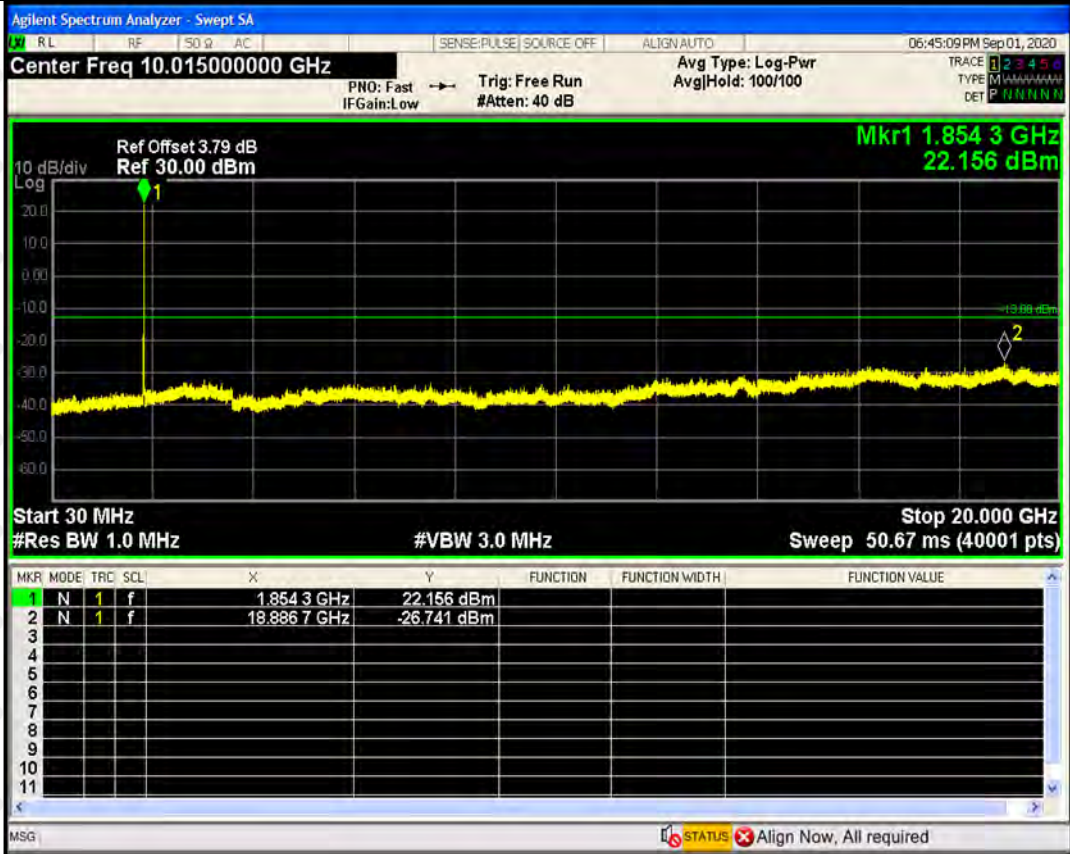


HSUPA
High
Band
Spurious
Emission

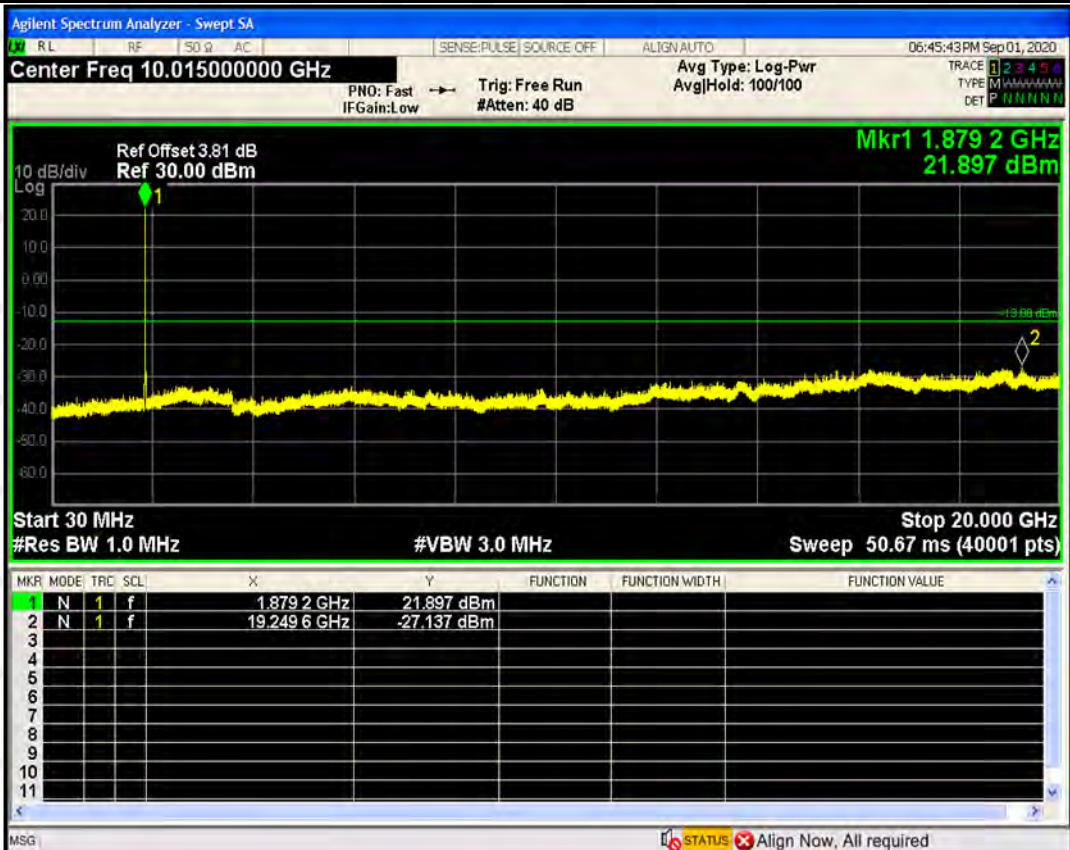


For Band II

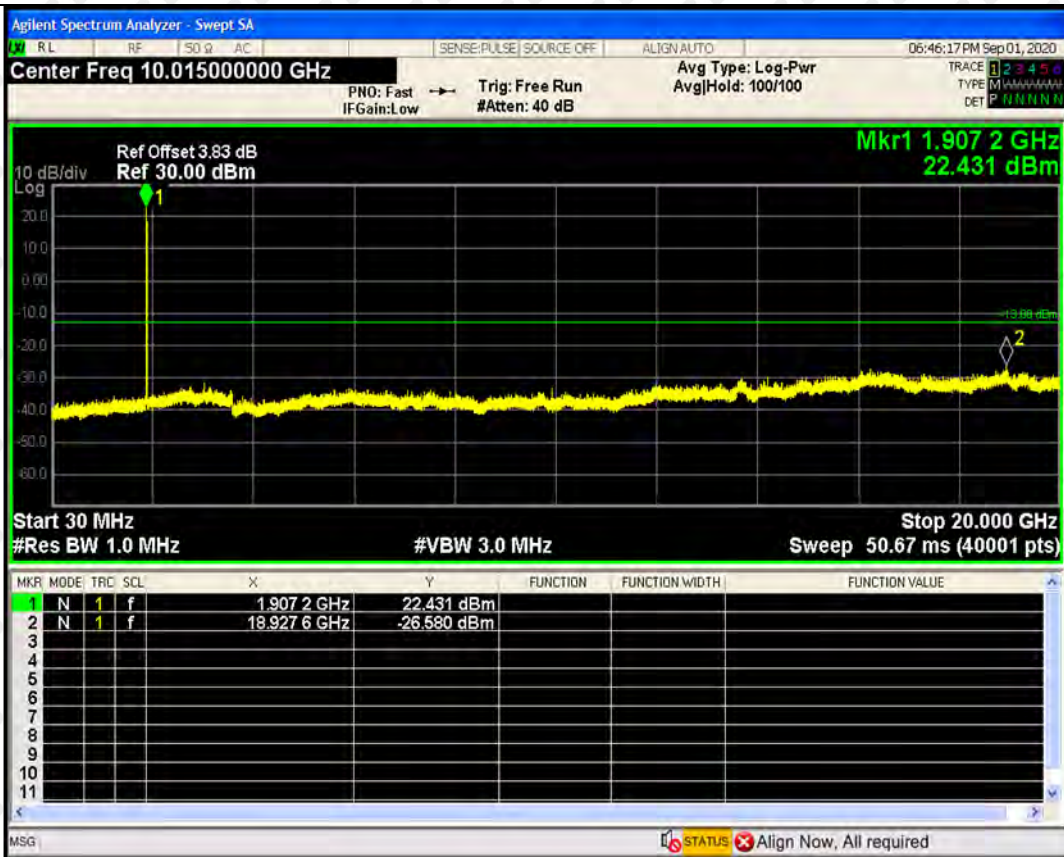
WCDMA Low Channel



WCDMA Middle Channel



WCDMA High Channel

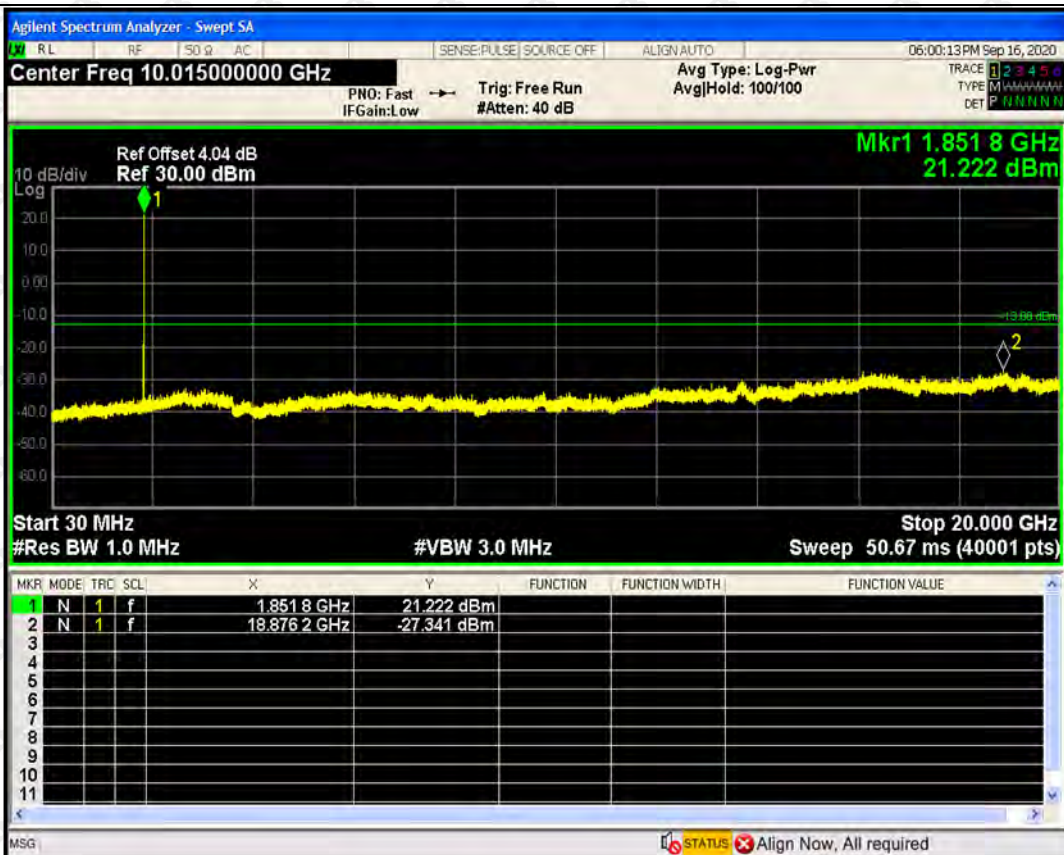
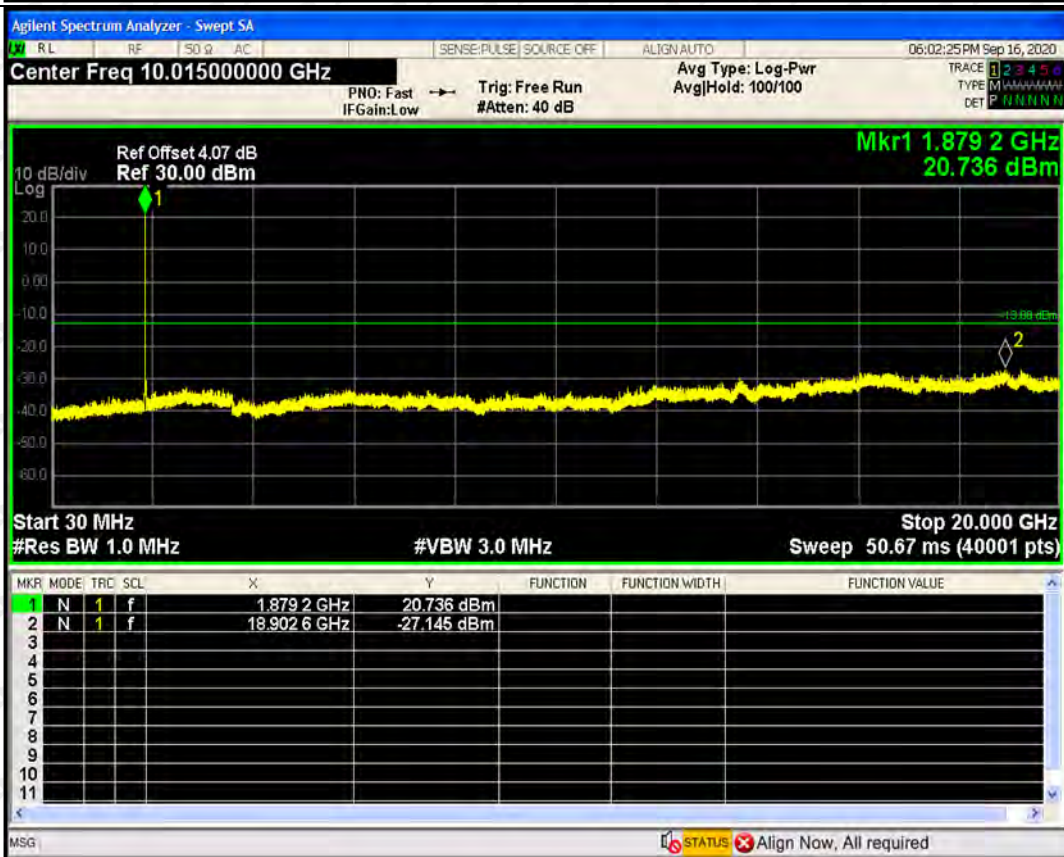


WCDMA Low Band Spurious Emission

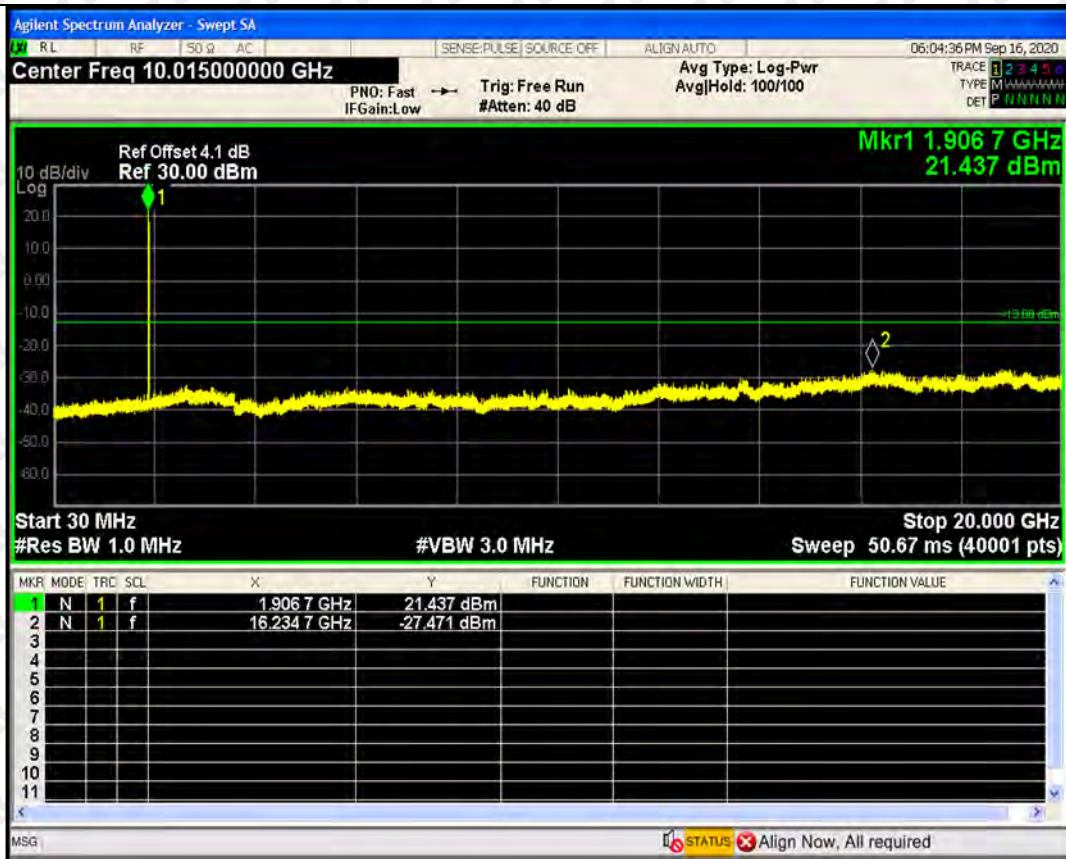


WCDMA High Band Spurious Emission



HSDPA
Low
Channel

HSDPA
Middle
Channel


HSDPA High Channel



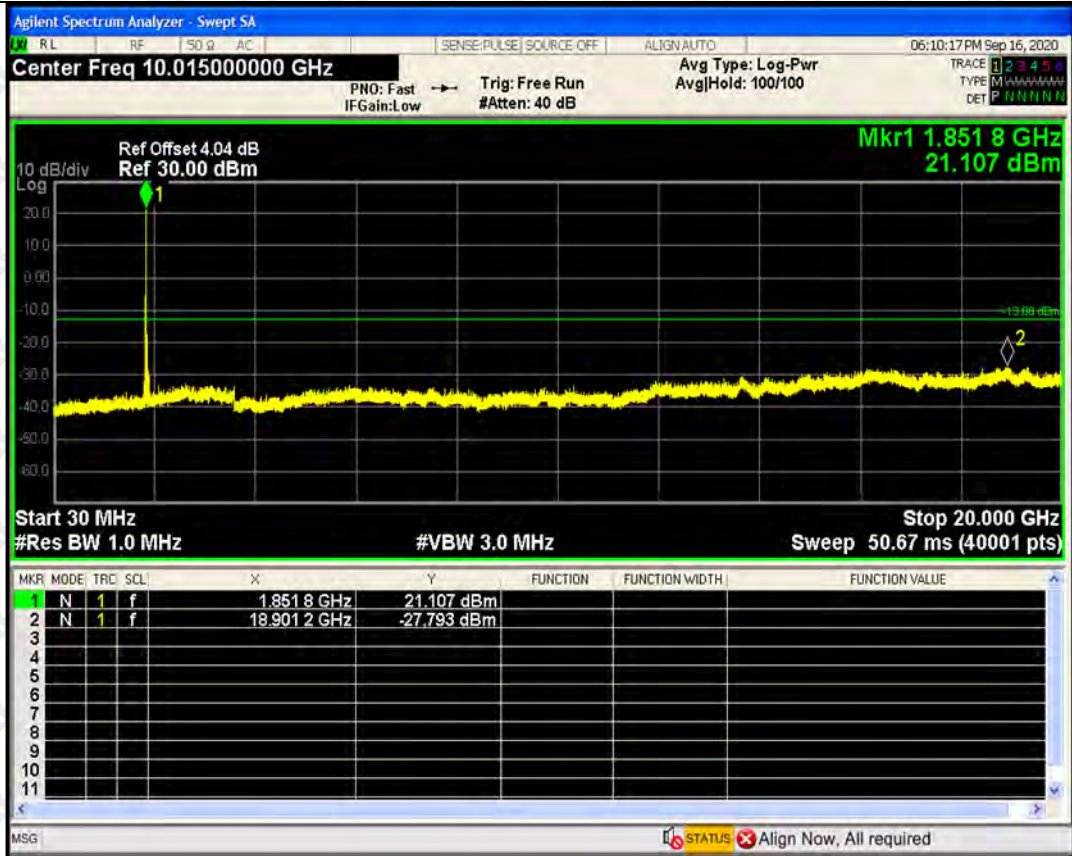
HSDPA Low Band Spurious Emission



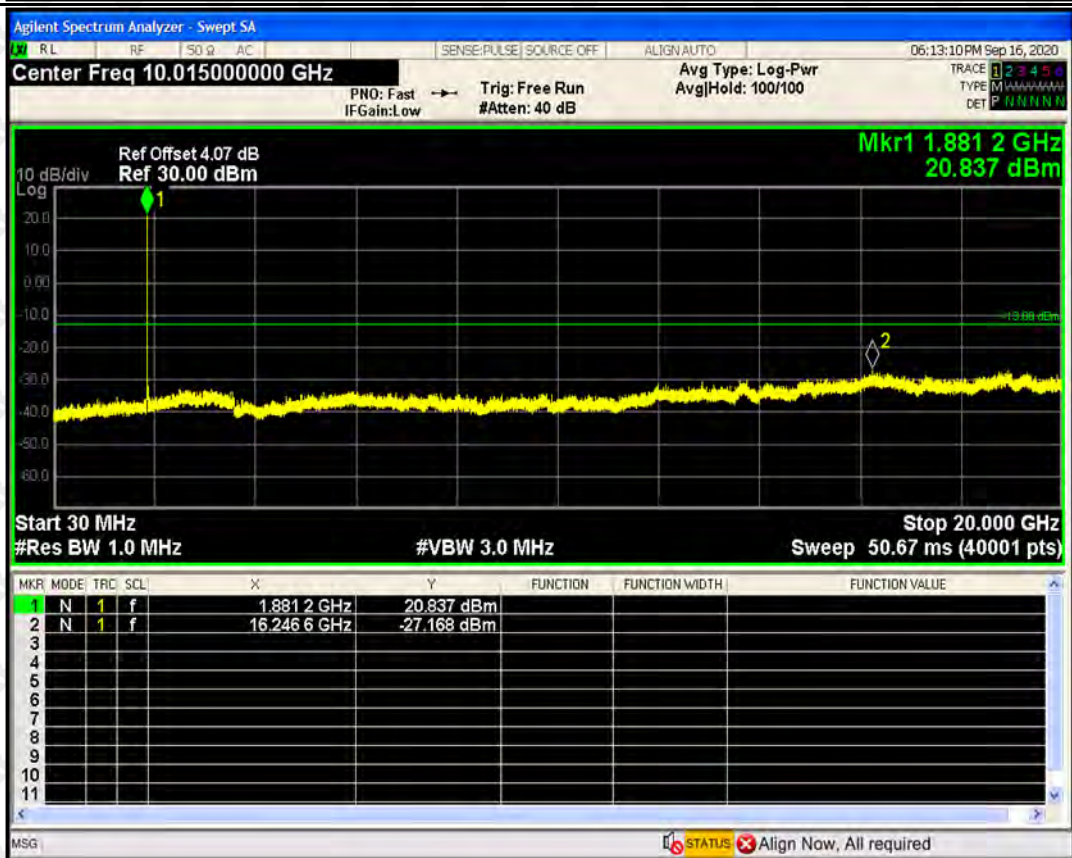
HSDPA
High
Band
Spurious
Emission



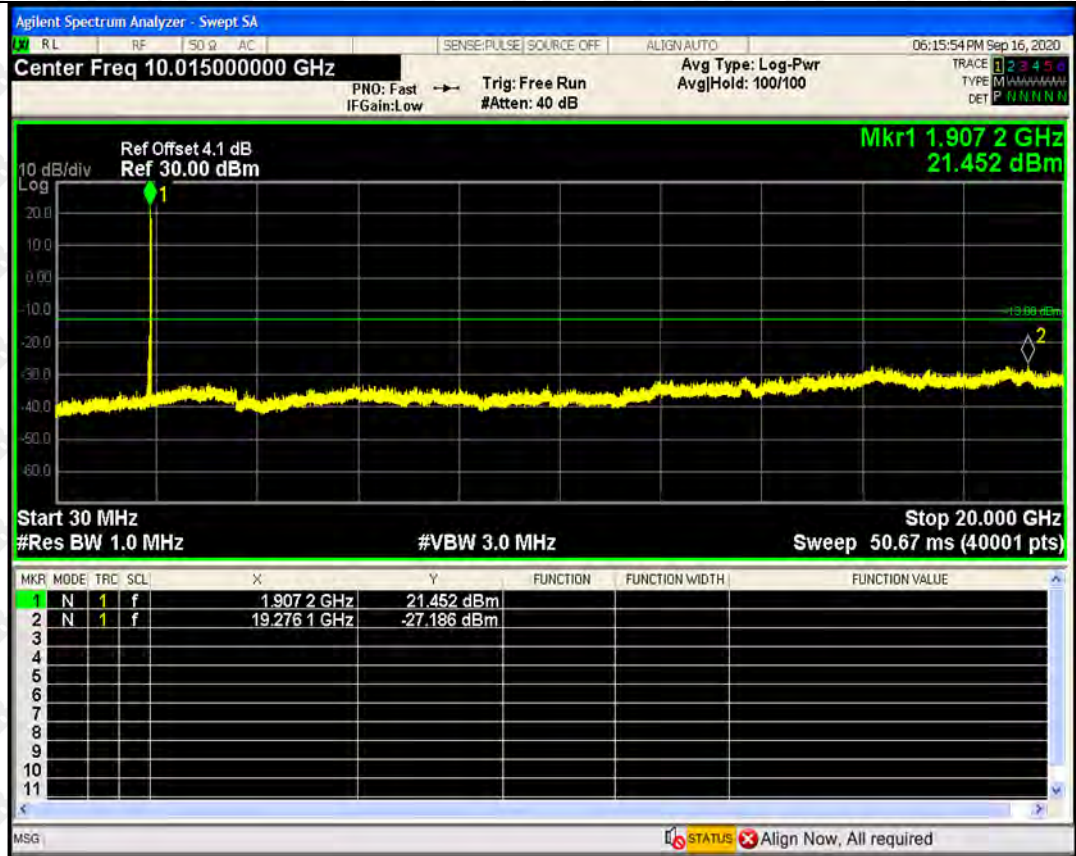
HSUPA Low Channel



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

10.3 Environmental Conditions

Temperature:	26 °C
Relative Humidity:	54%
ATM Pressure:	101 kPa
Test Voltage	DC6.4V

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)						
46.34	-69.29	4.34	-64.95	-13.00	-51.95	H
1648.4	-54.15	4.94	-49.21	-13.00	-36.21	H
2472.6	-52.93	8.46	-44.47	-13.00	-31.47	H
46.34	-69.17	4.34	-64.83	-13.00	-51.83	V
1648.4	-50.38	4.94	-45.44	-13.00	-32.44	V
2472.6	-50.94	8.46	-42.48	-13.00	-29.48	V
Middle Channel (836.6MHz)						
46.34	-68.61	4.34	-64.27	-13.00	-51.27	H
1673.2	-54.16	5.11	-49.05	-13.00	-36.05	H
2509.8	-52.93	8.54	-44.39	-13.00	-31.39	H
46.34	-68.72	4.34	-64.38	-13.00	-51.38	V
1673.2	-50.38	5.11	-45.27	-13.00	-32.27	V
2509.8	-50.99	8.54	-42.45	-13.00	-29.45	V
High Channel (848.8MHz)						
46.34	-69.15	4.34	-64.81	-13.00	-51.81	H
1697.6	-49.13	5.29	-43.84	-13.00	-30.84	H
2546.4	-51.42	8.59	-42.83	-13.00	-29.83	H
46.34	-69.20	4.34	-64.86	-13.00	-51.86	V
1697.6	-49.36	5.29	-44.07	-13.00	-31.07	V
2546.4	-51.73	8.59	-43.14	-13.00	-30.14	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)						
46.34	-69.22	4.34	-64.88	-13.00	-51.88	H
3700.4	-53.35	10.54	-42.81	-13.00	-29.81	H
5550.6	-56.25	13.37	-42.88	-13.00	-29.88	H
46.34	-68.54	4.34	-64.20	-13.00	-51.20	V
3700.4	-52.76	10.54	-42.22	-13.00	-29.22	V
5550.6	-56.32	13.37	-42.95	-13.00	-29.95	V
Middle Channel (1880MHz)						
46.34	-68.81	4.34	-64.47	-13.00	-51.47	H
3760.0	-51.45	10.64	-40.81	-13.00	-27.81	H
5640.0	-56.51	13.54	-42.97	-13.00	-29.97	H
46.34	-69.14	4.34	-64.80	-13.00	-51.80	V
3760.0	-51.32	10.64	-40.68	-13.00	-27.68	V
5640.0	-56.14	13.54	-42.6	-13.00	-29.60	V
High Channel (1909.8MHz)						
46.34	-69.50	4.34	-65.16	-13.00	-52.16	H
3819.6	-53.18	10.74	-42.44	-13.00	-29.44	H
5729.4	-56.65	13.71	-42.94	-13.00	-29.94	H
46.34	-68.88	4.34	-64.54	-13.00	-51.54	V
3819.6	-53.25	10.74	-42.51	-13.00	-29.51	V
5729.4	-56.11	13.71	-42.4	-13.00	-29.40	V

For Band 5 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (826.4MHz)						
46.34	-69.19	4.34	-64.85	-13.00	-51.85	H
1652.8	-58.43	4.94	-53.49	-13.00	-40.49	H
2479.2	-58.45	8.46	-49.99	-13.00	-36.99	H
46.34	-69.24	4.34	-64.90	-13.00	-51.90	V
1652.8	-57.12	4.94	-52.18	-13.00	-39.18	V
2479.2	-58.53	8.46	-50.07	-13.00	-37.07	V
Middle Channel (836.6MHz)						
46.34	-69.47	4.34	-65.13	-13.00	-52.13	H
1672.8	-57.47	5.11	-52.36	-13.00	-39.36	H
2509.2	-57.54	8.54	-49.00	-13.00	-36.00	H
46.34	-69.17	4.34	-64.83	-13.00	-51.83	V
1672.8	-58.32	5.11	-53.21	-13.00	-40.21	V
2509.2	-59.47	8.54	-50.93	-13.00	-37.93	V
High Channel (846.6MHz)						
46.34	-69.45	4.34	-65.11	-13.00	-52.11	H
1693.2	-56.43	5.29	-51.14	-13.00	-38.14	H
2539.8	-59.23	8.59	-50.64	-13.00	-37.64	H
46.34	-68.81	4.34	-64.47	-13.00	-51.47	V
1693.2	-57.11	5.29	-51.82	-13.00	-38.82	V
2539.8	-58.32	8.59	-49.73	-13.00	-36.73	V

For Band 2 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1852.4MHz)						
46.34	-69.29	4.34	-64.95	-13.00	-51.95	H
3704.8	-57.43	10.17	-47.26	-13.00	-34.26	H
5557.2	-58.17	14.69	-43.48	-13.00	-30.48	H
46.34	-68.83	4.34	-64.49	-13.00	-51.49	V
3704.8	-58.54	10.17	-48.37	-13.00	-35.37	V
5557.2	-58.56	14.69	-43.87	-13.00	-30.87	V
Middle Channel (1880MHz)						
46.34	-68.94	4.34	-64.60	-13.00	-51.60	H
3760.8	-58.46	10.26	-48.20	-13.00	-35.20	H
5640.0	-57.46	14.78	-42.68	-13.00	-29.68	H
46.34	-68.72	4.34	-64.38	-13.00	-51.38	V
3760.8	-57.87	10.26	-47.61	-13.00	-34.61	V
5640.0	-58.12	14.78	-43.34	-13.00	-30.34	V
High Channel (1907.6MHz)						
46.34	-69.42	4.34	-65.08	-13.00	-52.08	H
3815.2	-58.25	10.59	-47.66	-13.00	-34.66	H
5722.8	-58.14	15.03	-43.11	-13.00	-30.11	H
46.34	-69.15	4.34	-64.81	-13.00	-51.81	V
3815.2	-58.38	10.59	-47.79	-13.00	-34.79	V
5722.8	-57.62	15.03	-42.59	-13.00	-29.59	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:	26°C
Relative Humidity:	54%
ATM Pressure:	101kPa

11.4 Summary of Test Results/Plots

For Cellular Band GSM 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	6.52	0.0078
40	NV	6.73	0.0080
30	NV	6.44	0.0078
20	NV	6.32	0.0076
10	NV	6.71	0.0080
0	NV	6.65	0.0079
-10	NV	6.50	0.0078
-20	NV	6.61	0.0079
-30	NV	6.58	0.0079

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	15.05	0.0080
40	NV	16.21	0.0086
30	NV	15.94	0.0085
20	NV	15.38	0.0082
10	NV	16.32	0.0087
0	NV	15.46	0.0082
-10	NV	15.09	0.0080
-20	NV	15.58	0.0083
-30	NV	15.64	0.0083

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	26.18	0.0313
40	NV	27.59	0.0330
30	NV	26.54	0.0317
20	NV	26.73	0.0320
10	NV	28.01	0.0335
0	NV	27.05	0.0323
-10	NV	26.96	0.0322
-20	NV	28.13	0.0336
-30	NV	26.44	0.0316

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	24.63	0.0131
40	NV	24.69	0.0131
30	NV	25.32	0.0135
20	NV	24.99	0.0133
10	NV	24.70	0.0131
0	NV	25.74	0.0137
-10	NV	25.69	0.0137
-20	NV	24.80	0.0132
-30	NV	24.58	0.0131

For Cellular Band EDGE 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	21.27	0.0254
40	NV	21.61	0.0258
30	NV	22.56	0.0270
20	NV	21.54	0.0257
10	NV	21.59	0.0258
0	NV	22.53	0.0269
-10	NV	22.38	0.0268
-20	NV	21.51	0.0257
-30	NV	22.46	0.0268

For PCS Band EDGE 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	15.10	0.0080
40	NV	15.64	0.0083
30	NV	15.90	0.0085
20	NV	14.69	0.0078
10	NV	14.65	0.0078
0	NV	15.39	0.0082
-10	NV	15.70	0.0084
-20	NV	14.55	0.0077
-30	NV	15.96	0.0085

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	1.27	0.0015
40	NV	1.56	0.0019
30	NV	1.60	0.0019
20	NV	2.58	0.0031
10	NV	1.63	0.0019
0	NV	1.57	0.0019
-10	NV	2.42	0.0029
-20	NV	1.53	0.0018
-30	NV	1.50	0.0018

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	-10.17	-0.0054
40	NV	-10.51	-0.0056
30	NV	-10.47	-0.0056
20	NV	-10.56	-0.0056
10	NV	-10.42	-0.0055
0	NV	-10.31	-0.0055
-10	NV	-10.77	-0.0057
-20	NV	-10.60	-0.0056
-30	NV	-10.50	-0.0056

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	-14.00	-0.0167
40	NV	-12.54	-0.0150
30	NV	-11.07	-0.0132
20	NV	-15.05	-0.0180
10	NV	-15.69	-0.0188
0	NV	-14.62	-0.0175
-10	NV	-14.40	-0.0172
-20	NV	-15.53	-0.0186
-30	NV	-15.48	-0.0185

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	-7.78	-0.0041
40	NV	-5.87	-0.0031
30	NV	-6.31	-0.0034
20	NV	-7.96	-0.0042
10	NV	-7.49	-0.0040
0	NV	-7.26	-0.0039
-10	NV	-6.72	-0.0036
-20	NV	-6.55	-0.0035
-30	NV	-7.43	-0.0040

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	-7.50	-0.0089
40	NV	-4.96	-0.0059
30	NV	-5.96	-0.0071
20	NV	-6.72	-0.0080
10	NV	-7.69	-0.0092
0	NV	-6.62	-0.0079
-10	NV	-7.40	-0.0088
-20	NV	-6.53	-0.0078
-30	NV	-5.48	-0.0066

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	-12.60	-0.0067
40	NV	-10.23	-0.0054
30	NV	-14.94	-0.0079
20	NV	-13.56	-0.0072
10	NV	-12.49	-0.0066
0	NV	-11.26	-0.0060
-10	NV	-12.72	-0.0068
-20	NV	-13.55	-0.0072
-30	NV	-12.43	-0.0066

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	6.70	0.0080
	NV	6.32	0.0076
	HV	6.67	0.0080
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	15.51	0.0083
	NV	15.38	0.0082
	HV	15.52	0.0083
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	26.47	0.0316
	NV	26.73	0.0320
	HV	26.51	0.0141
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	24.73	0.0132
	NV	24.99	0.0133
	HV	24.74	0.0132

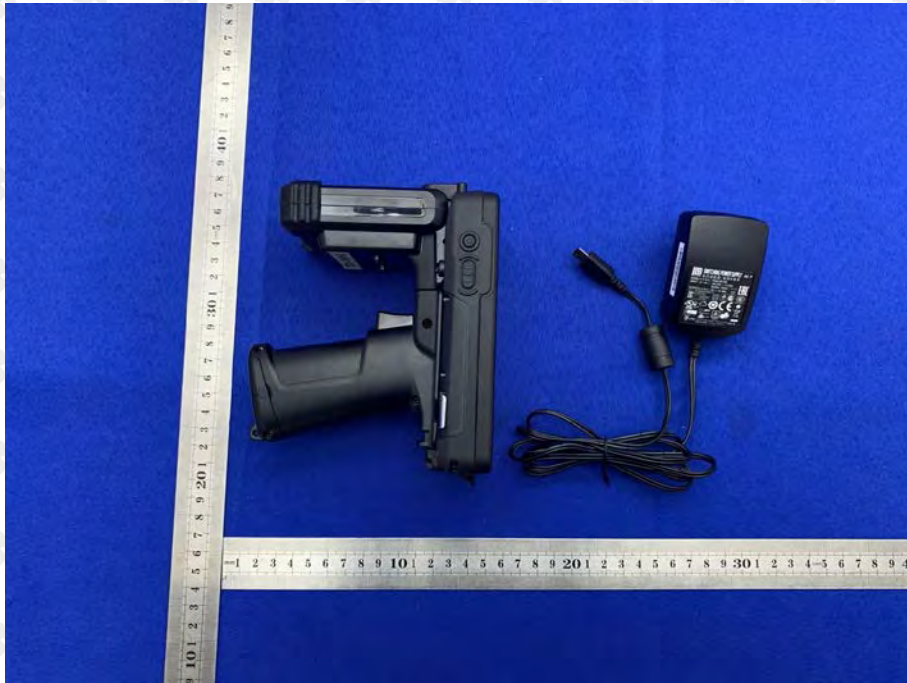
Reference Frequency(Middle Channel): EDGE 836.6MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	21.52	0.0257
	NV	21.54	0.0257
	HV	21.53	0.0257
Reference Frequency(Middle Channel): EDGE 1880 MHz, Limit: 2.5ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	LV	14.65	0.0078
	NV	14.69	0.0078
	HV	14.71	0.0078
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	2.21	0.0026
	NV	2.58	0.0031
	HV	2.69	0.0032
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	1.69	0.0009
	NV	1.27	0.0007
	HV	1.83	0.0001
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	-10.84	-0.0058
	NV	-10.56	-0.0056
	HV	-10.58	-0.0056

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	-15.54	-0.0185
	NV	-15.05	-0.0180
	HV	-15.57	-0.0186
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	-10.56	0.0061
	NV	-10.28	0.0059
	HV	-10.53	0.0061
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	-7.53	0.0040
	NV	-7.96	0.0042
	HV	-7.48	0.0040
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	-6.65	-0.0079
	NV	-6.72	-0.0080
	HV	-6.66	-0.0080
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	-9.67	0.0059
	NV	-9.46	0.0055
	HV	-9.62	0.0056

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	-13.64	-0.0073
	NV	-13.56	-0.0072
	HV	-13.68	-0.0073

12. EUT PHOTO

EUT Photo 1



EUT Photo 2



13. EUT TEST PHOTO

Radiated Emission

Below 1G



Above 1G



Conducted Emission



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