FCC Radio Test Report

FCC ID: ZMOSU806EAU

This report concerns: Original Grant

Project No.	:	2104C157
Equipment	:	LTE Module
Brand Name	:	Fibocom
Test Model	:	SU806-EAU
Series Model	:	N/A
Applicant	:	Fibocom Wireless Inc.
Address	:	1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan,Shenzhen,China
Manufacturer	:	Fibocom Wireless Inc.
Address	:	1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan,Shenzhen,China
Factory	:	Fibocom Wireless Inc.
Address	:	1101,Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan,Shenzhen,China
Date of Receipt	:	Apr. 21, 2021
Date of Test	:	Apr. 21, 2021 ~ May 23, 2021
Issued Date	:	Jun. 08, 2021
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG20210425108 for conducted, DG20210425110 for radiated.
Standard(s)	:	47 CFR FCC Part 24 Subpart E 47 CFR FCC Part 2 ANSI/TIA/EIA-603-E-2016 FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Vegeta Li

Prepared by : Vegeta Li

Steven Lu

Approved by : Steven Lu

Certificate #5123.02

Add: No.3, Jinshagang 1st Road, Shixia, Dalang Town,Dongguan, Guangdong, China.

Tel: +86-769-8318-3000

Web: www.newbtl.com

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NIST, A2LA, or any agency of the U.S. Government.

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BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.
Please note that the measurement uncertainty is provided for informational purpose only and is not use in determining the Pass/Fail results.

Table of Contents Page

Table of Contents

REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Jun. 08, 2021

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 24 Subpart E & Part 2			
Standard(s) Section	**Test Item**	**Judgment**	**Remark**
2.1046 24.232(c)	Equivalent Isotropic Radiated Power	PASS	------
2.1049	Occupied Bandwidth	PASS	------
2.1051 24.238(a)	Conducted Spurious Emissions	PASS	------
2.1053 24.238(a)	Radiated Spurious Emissions	PASS	------
24.238(a)	Band Edge Measurements	PASS	------
24.232(d)	Peak To Average Ratio	PASS	------
2.1055 24.235	Frequency Stability	PASS	------

Note:

(1) “N/A” denotes test is not applicable in this test report.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.
BTL's Test Firm Registration Number for FCC: 357015
BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	H	4.14
		200MHz ~ 1,000MHz	V	4.62
		200MHz ~ 1,000MHz	H	4.80

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	4.58
		6GHz ~ 18GHz	5.18

B. Other Measurement:

Parameter	Uncertainty
Spectrum Bandwidth	±3.8 %
Maximum Output Power	±0.95 dB
Power Spectral Density	±0.86 dB
Frequency Stability	±0.16 dB
Temperature	±0.08 °C
Time	±0.58 %
Supply voltages	±0.3 %

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
Output Power & ERP	21.3°C	44%	AC 120V/60Hz	Tate Liu
Occupied Bandwidth	21.3°C	44%	AC 120V/60Hz	Tate Liu
Conducted Spurious Emissions	21.3°C	44%	AC 120V/60Hz	Tate Liu
Radiated Spurious Emissions	26°C	52%	AC 120V/60Hz	Laughing Zhang
Band Edge	21.3°C	44%	AC 120V/60Hz	Tate Liu
Peak to Average Ratio	21.3°C	44%	AC 120V/60Hz	Tate Liu
Frequency Stability	Normal & Extreme	44%	Normal & Extreme	Tate Liu

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE Module				
Brand Name	Fibocom				
Test Model	SU806-EAU				
Series Model	N/A				
Model Difference(s)	N/A				
Hardware Version	V1.0				
Software Version	SU806-EAU-Q31.00.104				
Power Source	DC voltage supplied from external power supply.				
Power Rating	DC 3.5V-4.2V				
IEMI No.	Radiated	863379050003114			
	Conducted	863379050003171			
Modulation Type	GSM		GMSK		
	EDGE/GPRS		GMSK, 8PSK		
	WCDMA/HSDPA/HSUPA		UL: QPSK DL: QPSK, 16QAM		
Max. EIRP	GSM 1900 / GPRS 1900		GMSK	30.26	dBm
	EDGE 1900		8PSK	26.28	dBm
	WCDMA Band II		QPSK	24.45	dBm
	HSDPA Band II		QPSK	24.62	dBm
	HSUPA Band II		QPSK	24.69	dBm

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

PCS 1900				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	512	1850.2	528	1930.2
Mid Range	661	1880	677	1960
High Range	810	1909.8	826	1989.8

WCDMA Band II				
Test Frequency ID	UARFCN	Frequency of Uplink (MHz)	UARFCN	Frequency of Downlink (MHz)
Low Range	9262	1852.4	9662	1932.4
Mid Range	9400	1880.0	9800	1960.0
High Range	9538	1907.6	9938	1987.6

3. Table for Filed Antenna:

Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
Fibocom	V1150-006	External	SMA	0.9	PCS 1900
Fibocom	V1150-006	External	SMA	0.9	WCDMA Band II

Note: The antenna gains are provided by the manufacturer.

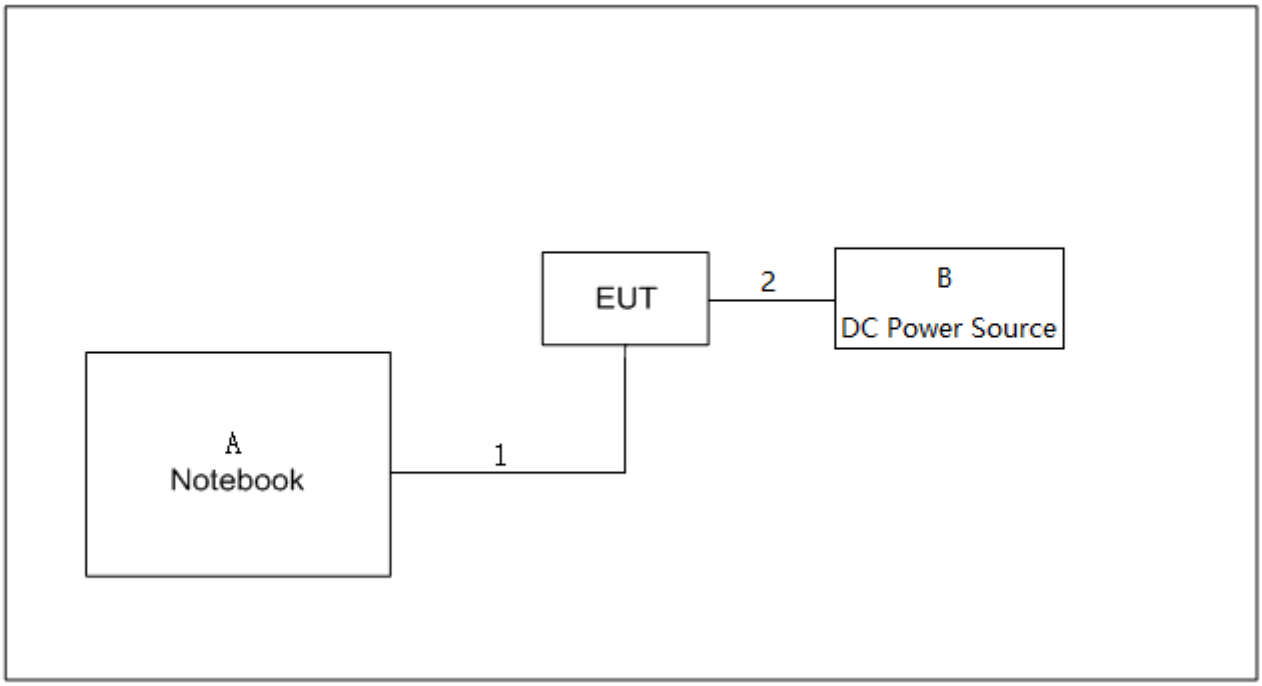
2.2 DESCRIPTION OF TEST MODES

Following mode(s) is (were) found to be the worst case(s) and selected for the final test.

GSM MODE			
Test Item	Available Channel	Tested Channel	Mode
Output Power & EIRP	512 to 810	512, 661, 810	GSM, GPRS, EDGE
Occupied Bandwidth	512 to 810	512, 661, 810	GSM, EDGE
Conducted Spurious Emissions	512 to 810	661	GSM, EDGE
Radiated Spurious Emissions	512 to 810	661	GSM
Band Edge	512 to 810	512, 810	GSM, EDGE
Peak to Average Ratio	512 to 810	512, 661, 810	GSM, EDGE
Frequency Stability	512 to 810	661	GSM

WCDMA BAND II MODE			
Test Item	Available Channel	Tested Channel	Mode
Output Power & EIRP	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA,HSUPA
Occupied Bandwidth	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA,HSUPA
Conducted Spurious Emissions	9262 to 9538	9400	WCDMA
Radiated Spurious Emissions	9262 to 9538	9400	WCDMA
Band Edge	9262 to 9538	9262, 9538	WCDMA, HSDPA, HSUPA
Peak to Average Ratio	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA, HSUPA
Frequency Stability	9262 to 9538	9400	WCDMA

2.3 BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED



2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model No.	Series No.
A	Notebook	Lenovo	G50-30	PF0BRC8R
B	DC Power Source	TRUE-POWER	GPC30300N	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	NO	NO	1m
2	DC Cable	NO	NO	1m

3. TEST RESULT

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMIT

Mobile / Portable station are limited to 2 watts e.i.r.p.

3.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP:

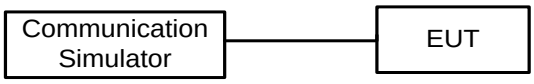
EIRP = Output Power + Antenan gain

Output Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP LAYOUT

Output Power Measurement



3.1.4 TEST DEVIATION

No deviation

3.1.5 TEST RESULTS

Please refer to the APPENDIX A.

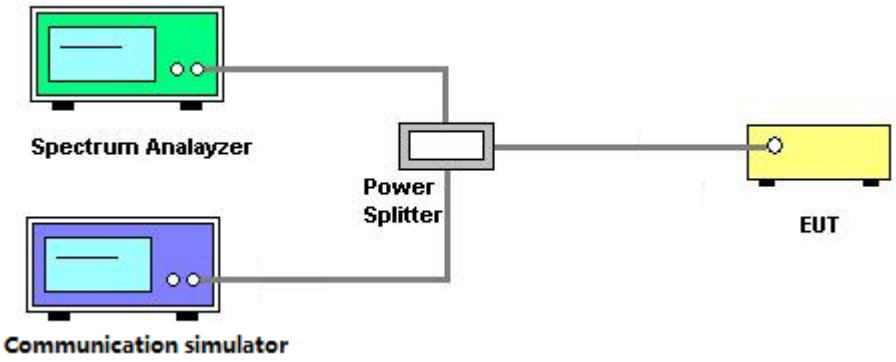
3.2 OCCUPIED BANDWIDTH MEASUREMENT

3.2.1 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 4.

1. The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. RBW=(1% ~ 5%)*EBW
   VBW⩾3* RBW
4. Set spectrum analyzer with Peak detector.

3.2.2 TEST SETUP LAYOUT



3.2.3 TEST DEVIATION

No deviation

3.2.4 TEST RESULTS

Please refer to the APPENDIX B.

3.3 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

3.3.1 LIMIT

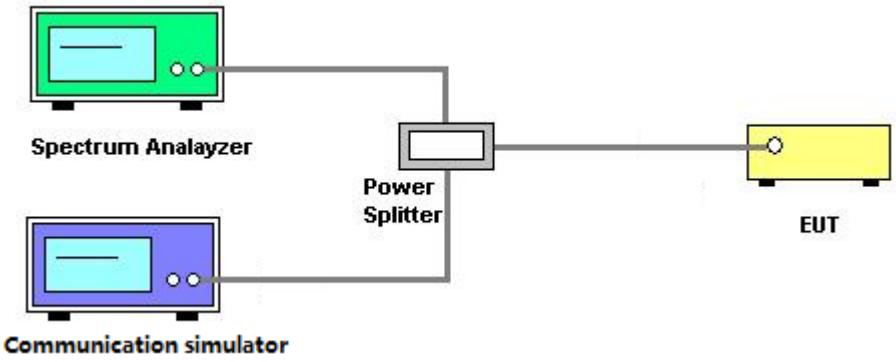
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

3.3.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW>=1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with Peak detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.3.3 TEST SETUP LAYOUT



3.3.4 TEST DEVIATION

No deviation

3.3.5 TEST RESULTS

Please refer to the APPENDIX C.

3.4 RADIATED SPURIOUS EMISSIONS MEASUREMENT

3.4.1 LIMIT

The power of any emission 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. The emission limit equal to -13dBm.

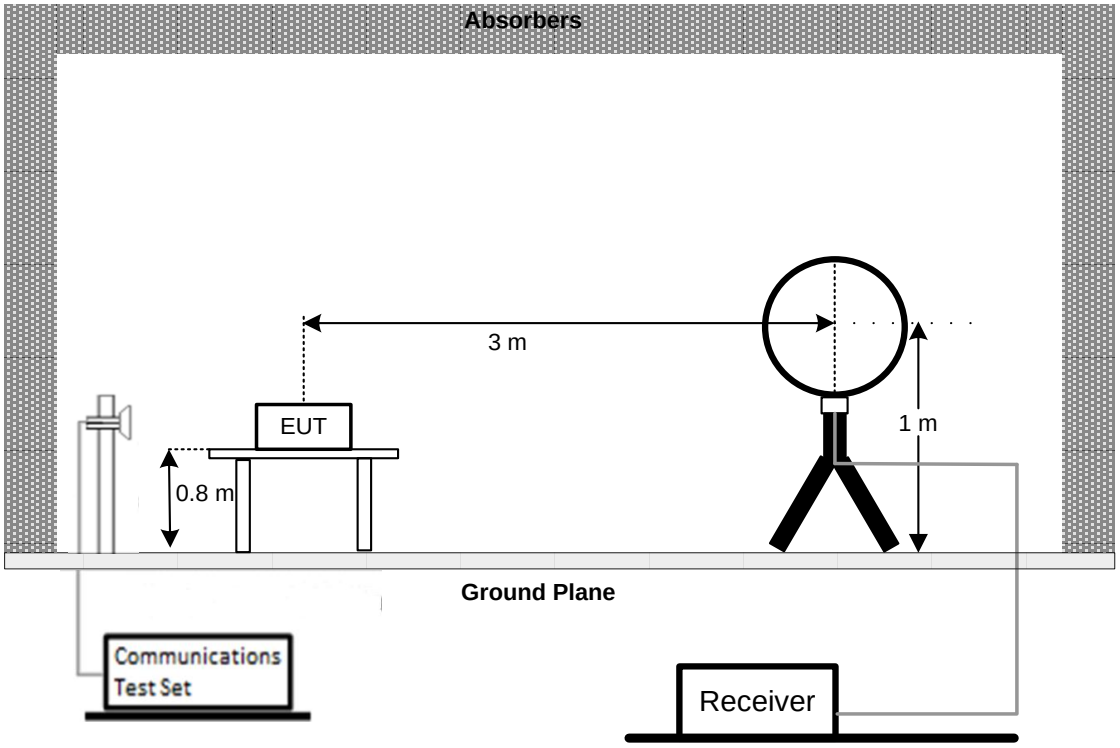
3.4.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.2.

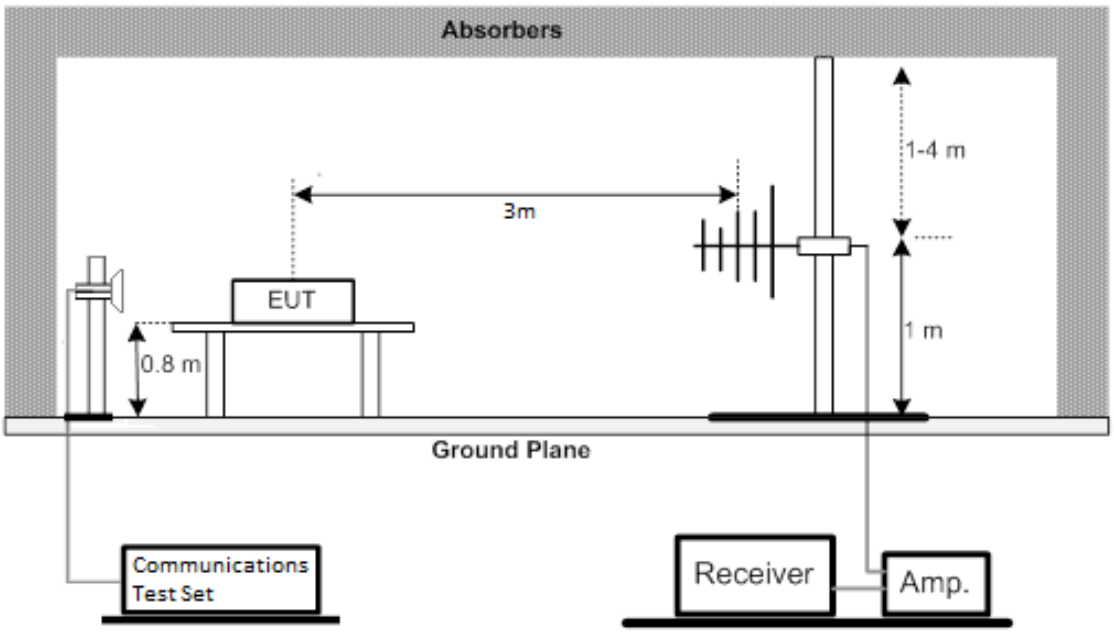
1. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
2. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G
3. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
4. ERP can be calculated form EIRP by subtracting the gain of dipole, ERP = EIPR - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.4.3 TEST SETUP LAYOUT

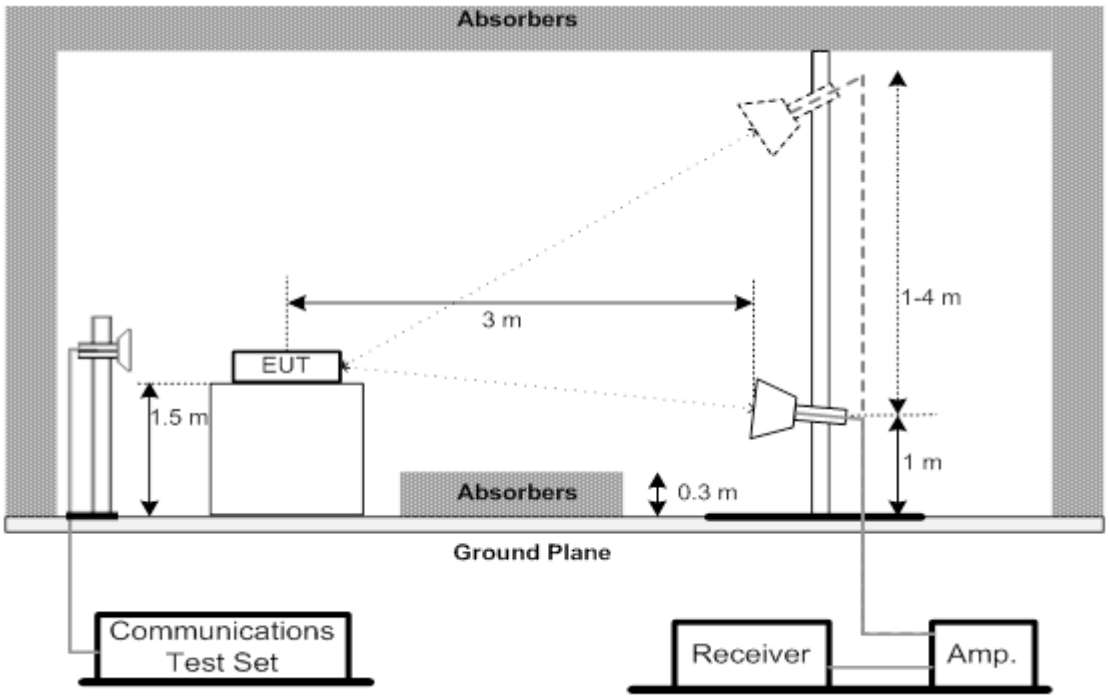
Below 30MHz



30MHz to 1000MHz



Above 1GHz



3.4.4 TEST DEVIATION

No deviation

3.4.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the APPENDIX D.

3.4.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the APPENDIX E.

3.4.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the APPENDIX F.

3.5 BAND EDGE MEASUREMENT

3.5.1 LIMIT

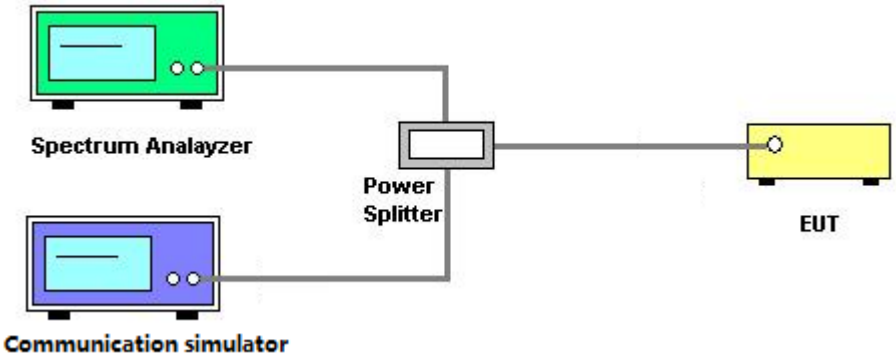
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.5.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. All measurements were done at low and high operational frequency range.
2. Record the max trace plot into the test report.

3.5.3 TEST SETUP LAYOUT



3.5.4 TEST DEVIATION

No deviation

3.5.5 TEST RESULTS

Please refer to the APPENDIX G.

3.6 PEAK TO AVERAGE RATIO MEASUREMENT

3.6.1 LIMIT

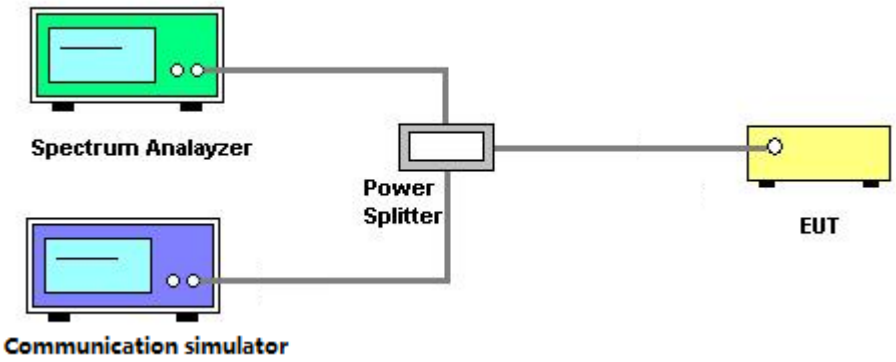
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.6.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 5.7.

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.6.3 TEST SETUP LAYOUT



3.6.4 TEST DEVIATION

No deviation

3.6.5 TEST RESULTS

Please refer to the APPENDIX H.

3.7 FREQUENCY STABILITY MEASUREMENT

3.7.1 LIMIT

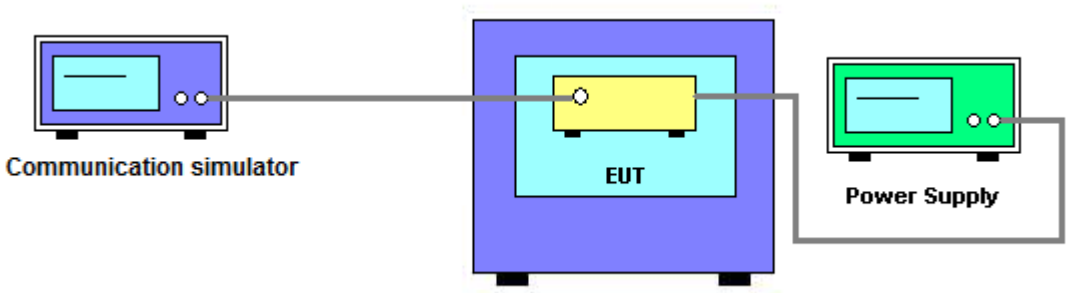
±1.5 ppm is for base and fixed station. ±2.5 ppm is for mobile station.

3.7.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 9.

1. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
2. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5°C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. The frequency error was recorded frequency error from the communication simulator.

3.7.3 TEST SETUP LAYOUT



3.7.4 TEST DEVIATION

No deviation

3.7.5 TEST RESULTS

Please refer to the APPENDIX I.

4. LIST OF MEASUREMENT EQUIPMENTS

Radiated Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3231	Apr. 14, 2022
2	Amplifier	Agilent	8449B	3008A02334	Feb. 27, 2022
3	High Pass Filter	Wairrwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Feb. 27, 2022
4	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 1710/1785-1690/1805-60/12SS	38	Feb. 27, 2022
5	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 824/849-810/863-60/9SS	7	Feb. 27, 2022
6	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 880/915-860/935-60/9SS	14	Feb. 27, 2022
7	Band Reject Filter	Wairrwright Instruments Gmbh	WRCG 1850/1910-1830/1930-60/10SS	17	Feb. 27, 2022
8	High Pass Filter	Wairrwright Instruments Gmbh	WHK3.1/18G-10SS	24	Feb. 27, 2022
9	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
10	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 28, 2022
11	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
12	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022
13	High pass filter	KANGMAIWEI	ZHPF-M3-12.75G-3869	B2015073763	Feb. 07, 2022
14	High pass filter	KANGMAIWEI	ZHPF-M1000-4000-1	B2015073762	Feb. 07, 2022
15	High pass filter	KANGMAIWEI	ZHPF-M6-186-1727	B2015073764	Feb. 07, 2022
16	Cable	emci	LMR-400(30MHz-1GHz) (8m+5m)	N/A	May 20, 2022
17	Cable	mitron	B10-01-01-12M	18072744	Jun. 28, 2021
18	Controller	ETS-Lindgren	2090	N/A	N/A
19	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
20	Loop Antenna	EM	EM-6876-1	230	Apr. 28, 2022
21	Double Ridged Guide Antenna	ETS	3115	75846	Mar. 17, 2022
22	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jul. 07, 2021

Conducted Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Feb. 28, 2022
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 27, 2022
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022

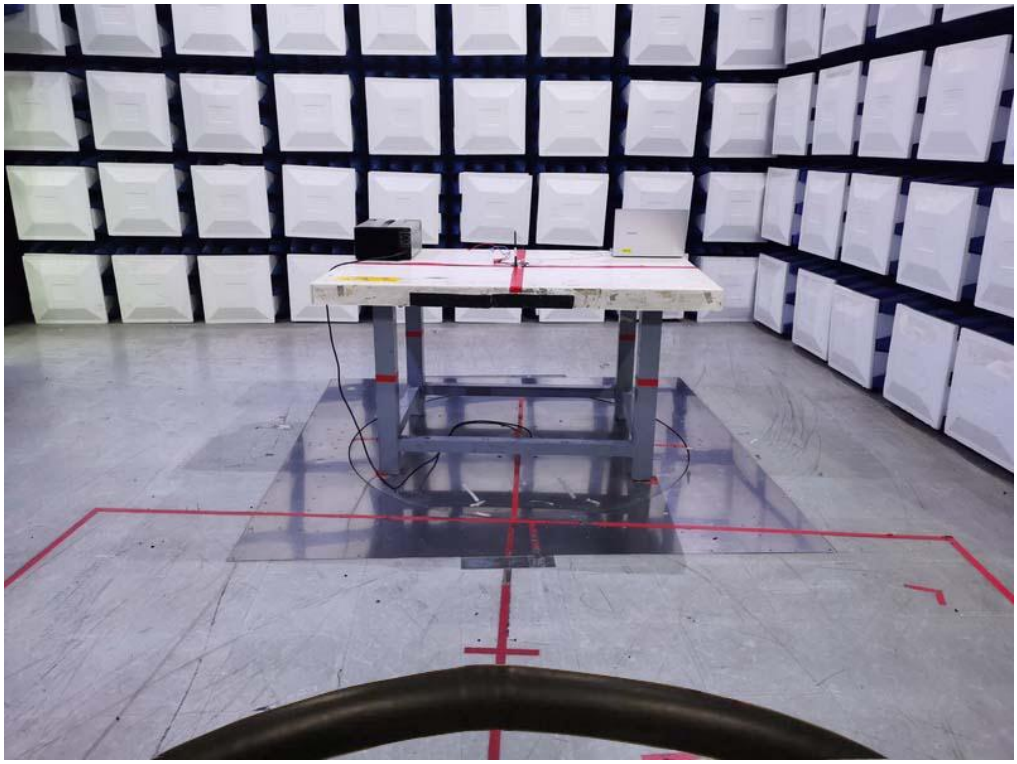
Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Feb. 28, 2022
2*	Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Jul. 25, 2023
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Feb. 27, 2022
4	wideband radio communication tester	R&S	CMW500	152372	Feb. 27, 2022
5	Const Temp,& Humidity Chamber	Bell	BTH-50C	20170306001	Feb. 27, 2022

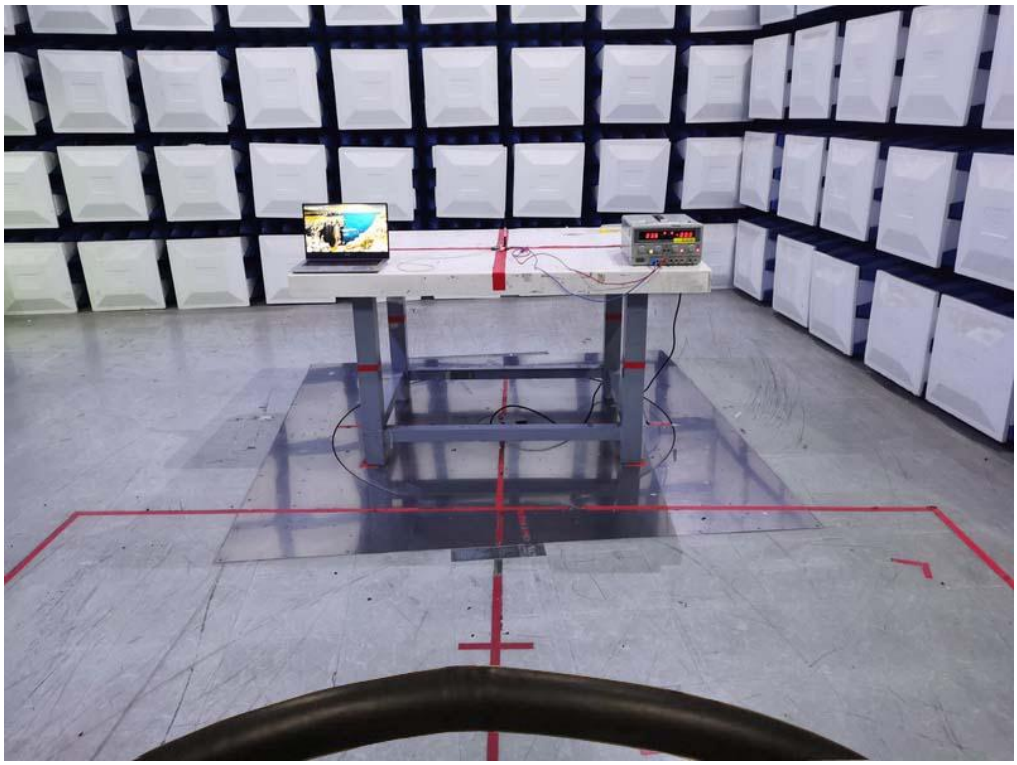
Remark: ”N/A” denotes no model name, serial no. or calibration specified.
“*” calibration period of equipment list is three year.
Except * item, all calibration period of equipment list is one year.

5. EUT TEST PHOTO

Radiated Emissions Test Photos

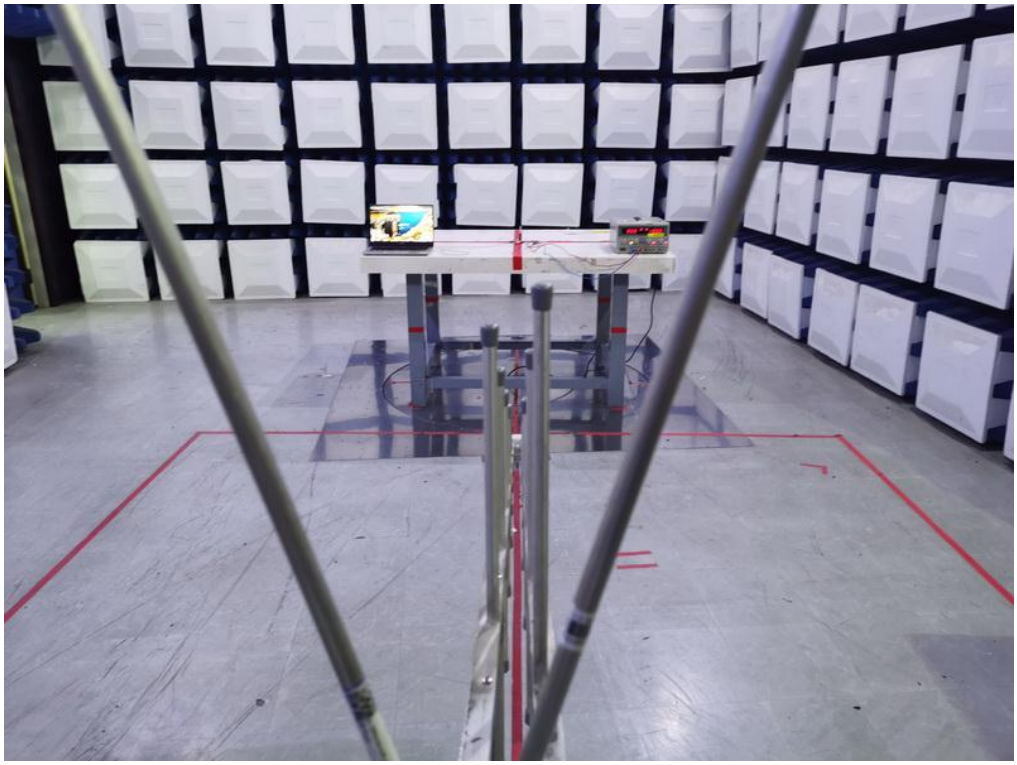
9 kHz to 30 MHz





Radiated Emissions Test Photos

30 MHz to 1 GHz



Radiated Emissions Test Photos

Above 1 GHz

APPENDIX A - OUTPUT POWER

Output Power (dBm):

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		29.36	29.10	28.95
GPRS/EDGE (GMSK)	1 Tx Slot	29.34	29.10	28.94
	2 Tx Slot	27.31	27.02	26.45
	3 Tx Slot	25.85	25.53	24.99
	4 Tx Slot	23.8	23.55	23.07
EDGE (8PSK)	1 Tx Slot	25.38	25.25	24.56
	2 Tx Slot	23.77	23.82	23.18
	3 Tx Slot	21.58	21.58	20.94
	4 Tx Slot	18.99	19.26	18.53

Modulation	Band	WCDMA Band II		
	Tx Channel	9262CH	9400CH	9538CH
	Frequency	1852.4MHz	1880MHz	1907.6MHz
QPSK	RMC 12.2K	23.49	23.34	23.54
	RMC 64K	23.48	23.33	23.55
	RMC 144K	23.49	23.33	23.55
	RMC 384K	23.49	23.34	23.55
	HSDPA Subtest-1	23.54	23.72	23.38
	HSDPA Subtest-2	23.34	23.67	23.35
	HSDPA Subtest-3	23.24	23.61	23.29
	HSDPA Subtest-4	22.84	23.15	22.77
	HSUPA Subtest-1	21.56	21.84	21.52
	HSUPA Subtest-2	21.19	21.31	21.16
	HSUPA Subtest-3	21.57	21.8	21.47
	HSUPA Subtest-4	21.62	21.86	21.55
	HSUPA Subtest-5	23.35	23.79	23.52

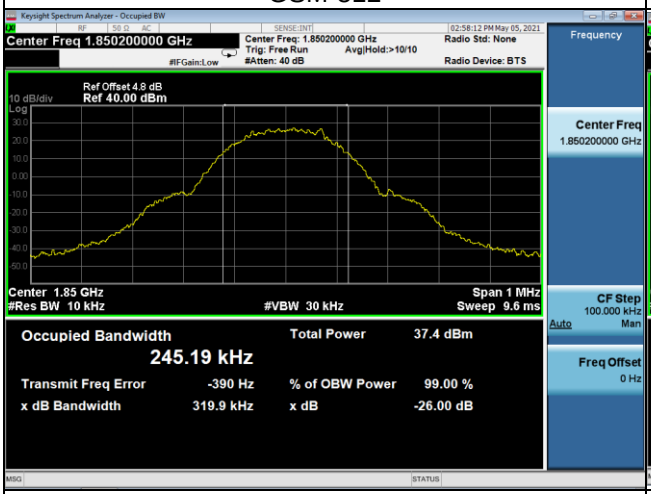
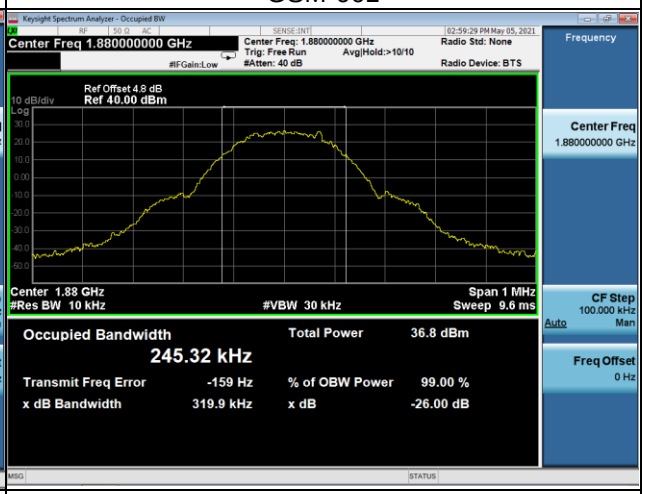
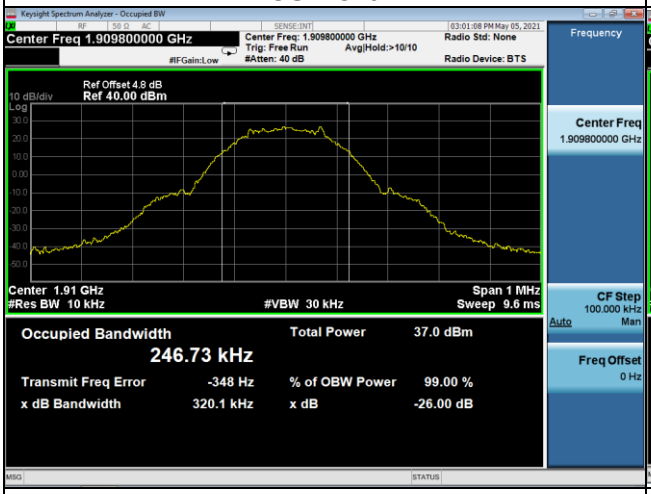
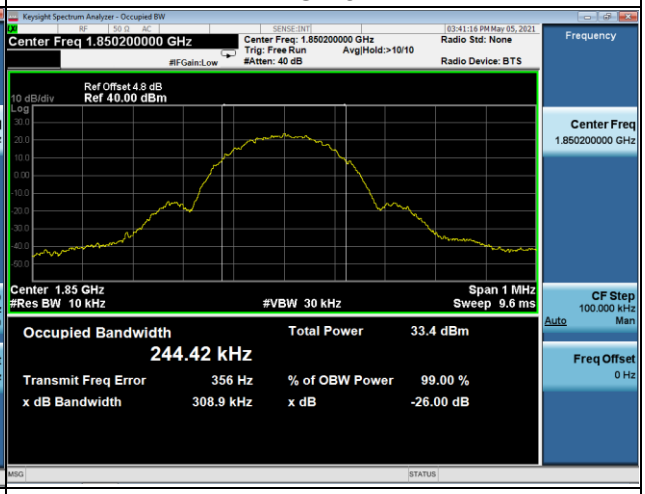
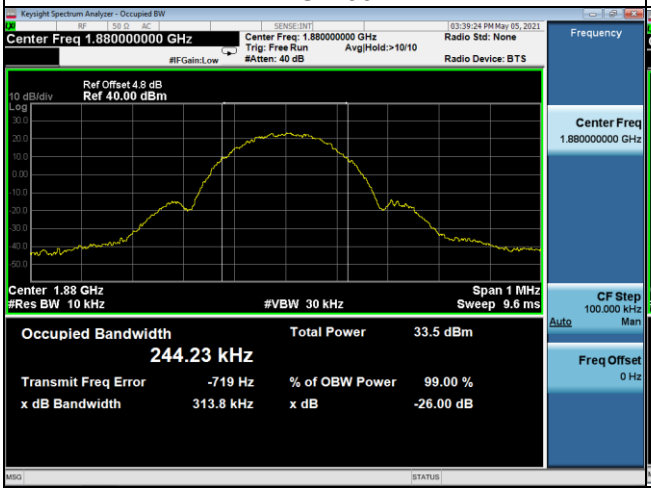
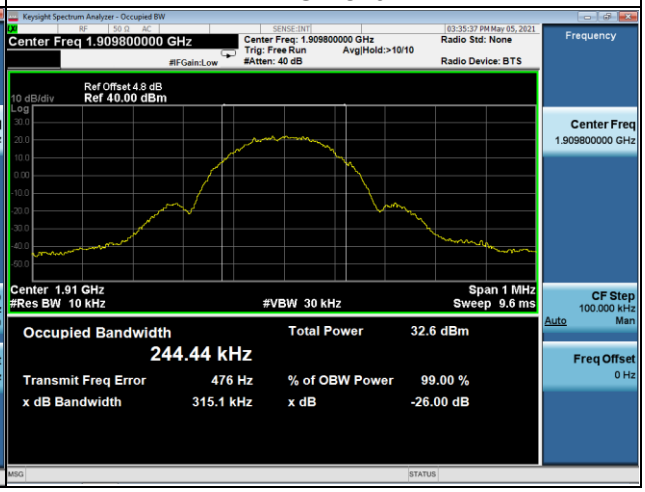
EIRP (dBm):

PCS1900		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		30.26	30.00	29.85
GPRS/EDGE (GMSK)	1 Tx Slot	30.24	30.00	29.84
	2 Tx Slot	28.21	27.92	27.35
	3 Tx Slot	26.75	26.43	25.89
	4 Tx Slot	24.70	24.45	23.97
EDGE (8PSK)	1 Tx Slot	26.28	26.15	25.46
	2 Tx Slot	24.67	24.72	24.08
	3 Tx Slot	22.48	22.48	21.84
	4 Tx Slot	19.89	20.16	19.43

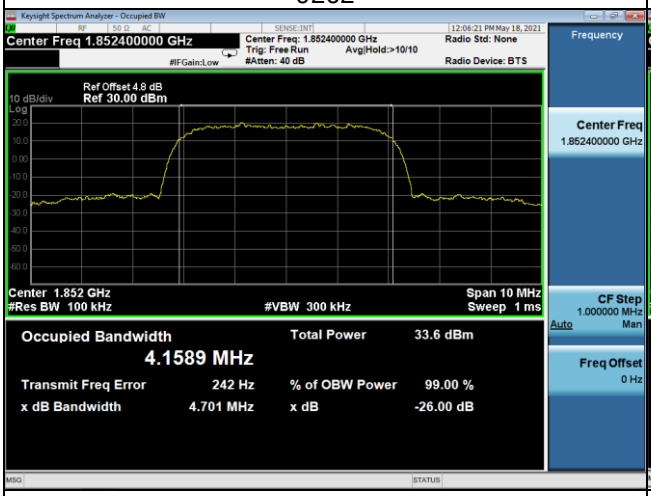
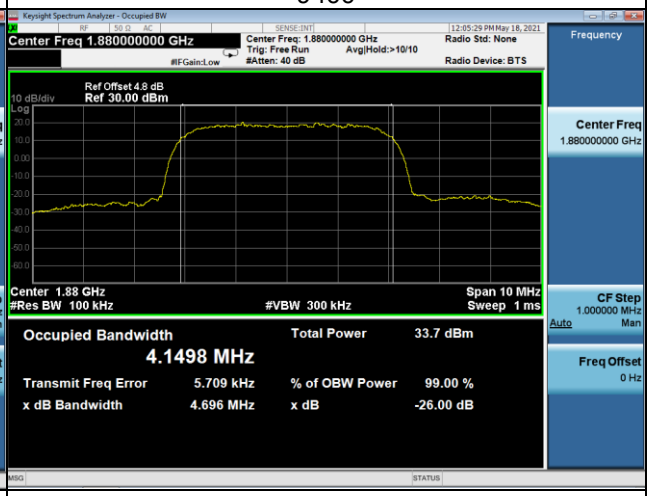
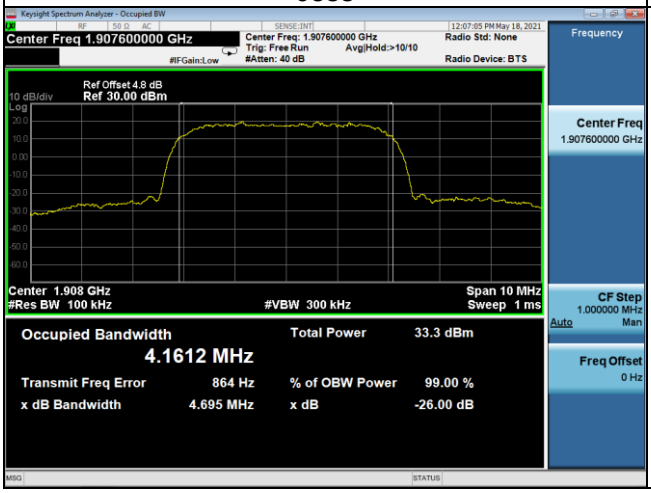
Modulation	Band	WCDMA Band II		
	Tx Channel	9262CH	9400CH	9538CH
	Frequency	1852.4MHz	1880MHz	1907.6MHz
QPSK	RMC 12.2K	24.39	24.24	24.44
	RMC 64K	24.38	24.23	24.45
	RMC 144K	24.39	24.23	24.45
	RMC 384K	24.39	24.24	24.45
	HSDPA Subtest-1	24.44	24.62	24.28
	HSDPA Subtest-2	24.24	24.57	24.25
	HSDPA Subtest-3	24.14	24.51	24.19
	HSDPA Subtest-4	23.74	24.05	23.67
	HSUPA Subtest-1	22.46	22.74	22.42
	HSUPA Subtest-2	22.09	22.21	22.06
	HSUPA Subtest-3	22.47	22.70	22.37
	HSUPA Subtest-4	22.52	22.76	22.45
	HSUPA Subtest-5	24.25	24.69	24.42

APPENDIX B - OCCUPIED BANDWIDTH

PCS1900					
GSM			EDGE		
CS			8PSK		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
512	1850.2	0.2452	512	1850.2	0.3199
661	1880	0.2453	661	1880	0.3199
810	1909.8	0.2467	810	1909.8	0.3201
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
512	1850.2	0.2444	512	1850.2	0.3089
661	1880	0.2442	661	1880	0.3138
810	1909.8	0.2444	810	1909.8	0.3151

Spectrum Plot	
GSM-512	GSM-661
	
GSM-810	EDGE-512
	
EDGE-661	EDGE-810
	

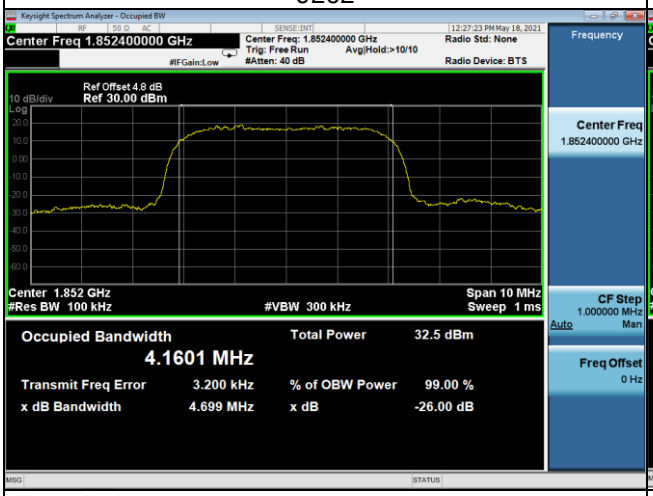
WCDMA Band II_WCDMA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.1589	9262	1852.4	4.701
9400	1880	4.1498	9400	1880	4.696
9538	1907.6	4.1612	9538	1907.6	4.695

Spectrum Plot	
9262	9400
	
9538	-
	-

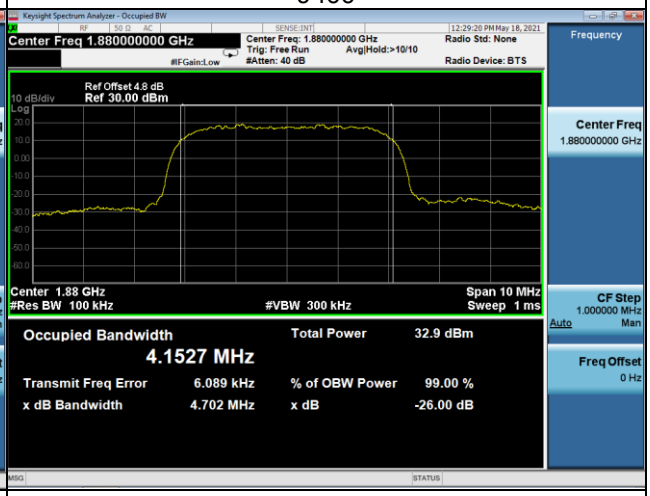
WCDMA Band II _HSDPA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.1601	9262	1852.4	4.699
9400	1880	4.1527	9400	1880	4.702
9538	1907.6	4.1584	9538	1907.6	4.705

Spectrum Plot

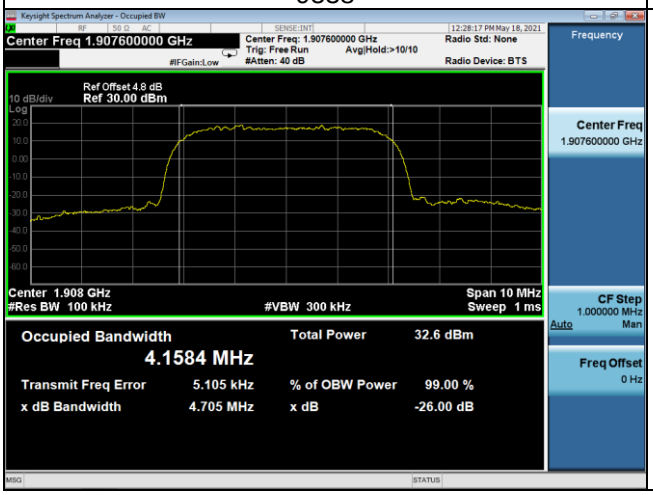
9262



9400



9538



-

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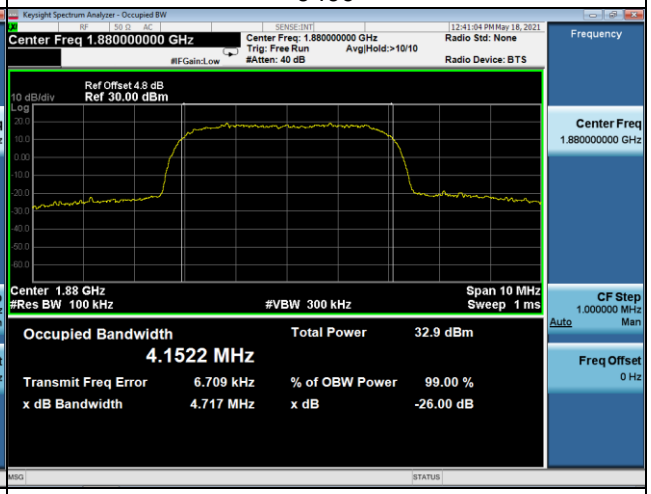
WCDMA Band II _HSUPA					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.1569	9262	1852.4	4.717
9400	1880	4.1522	9400	1880	4.717
9538	1907.6	4.1560	9538	1907.6	4.711

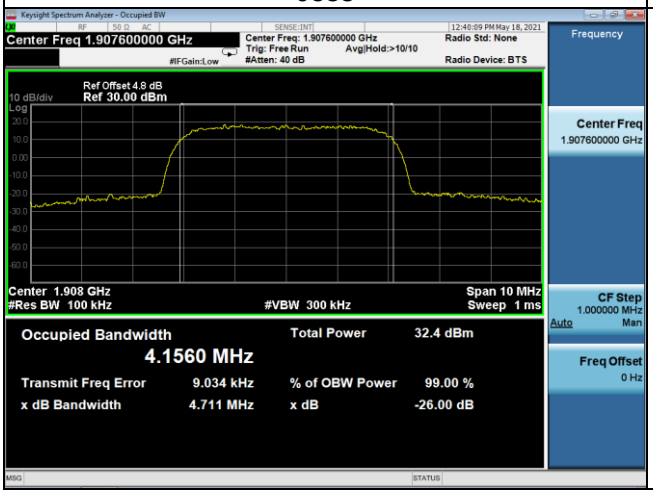
Spectrum Plot

9262

9400



9538



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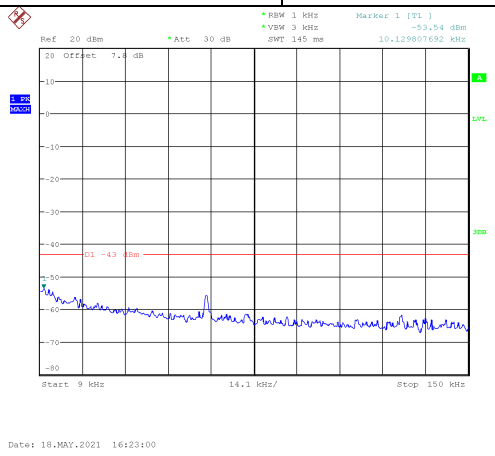
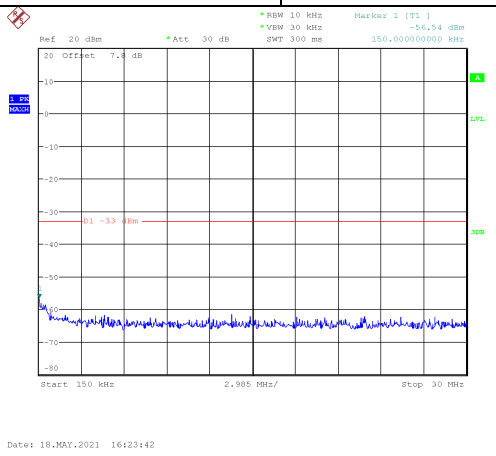
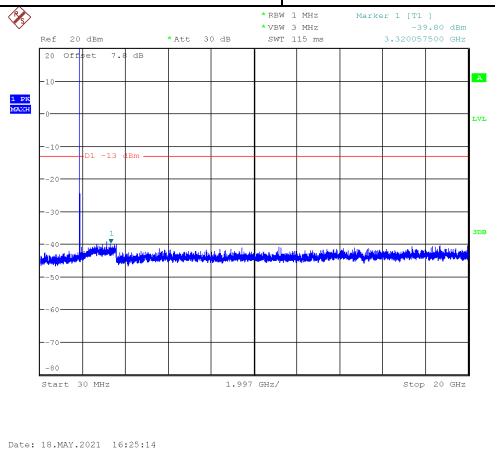
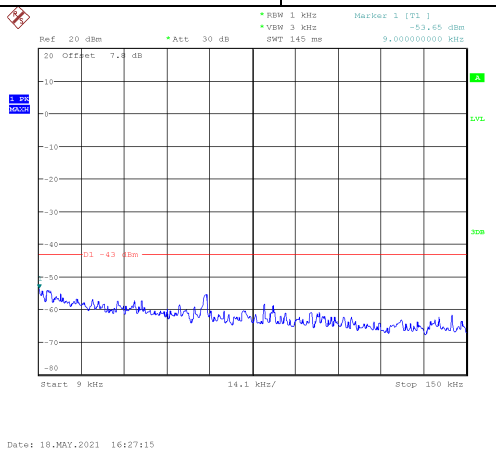
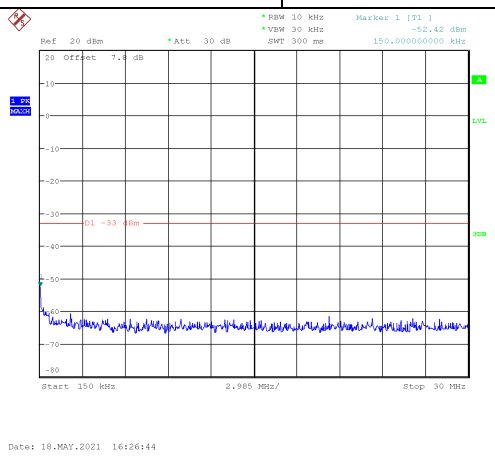
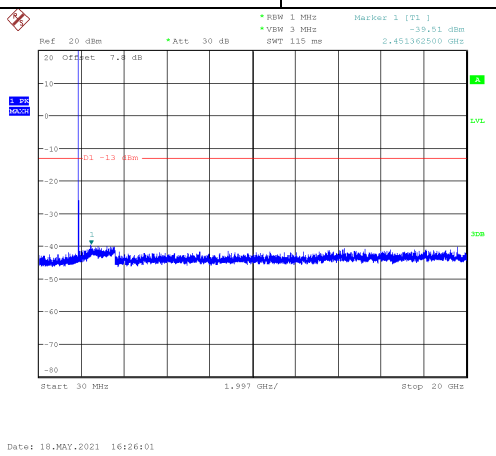
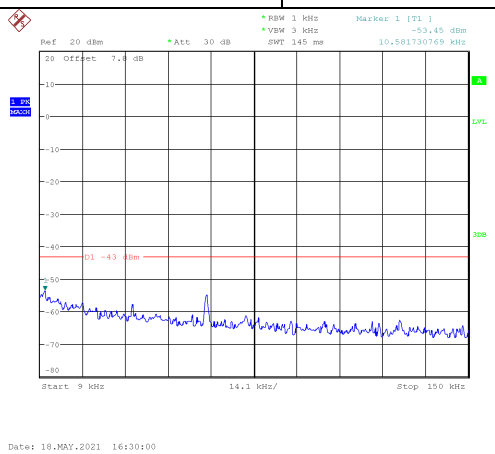
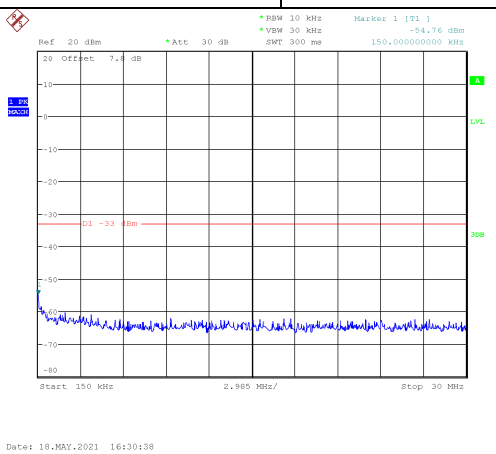
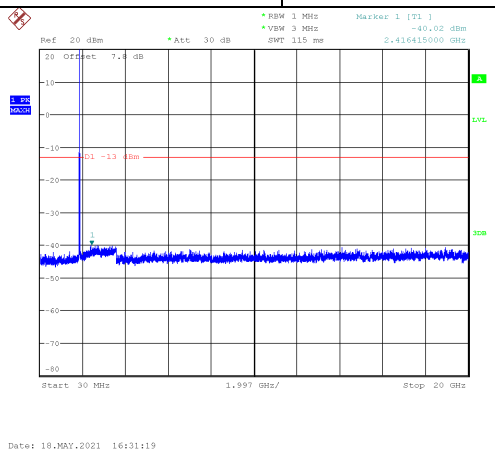
APPENDIX C - CONDUCTED SPURIOUS EMISSIONS

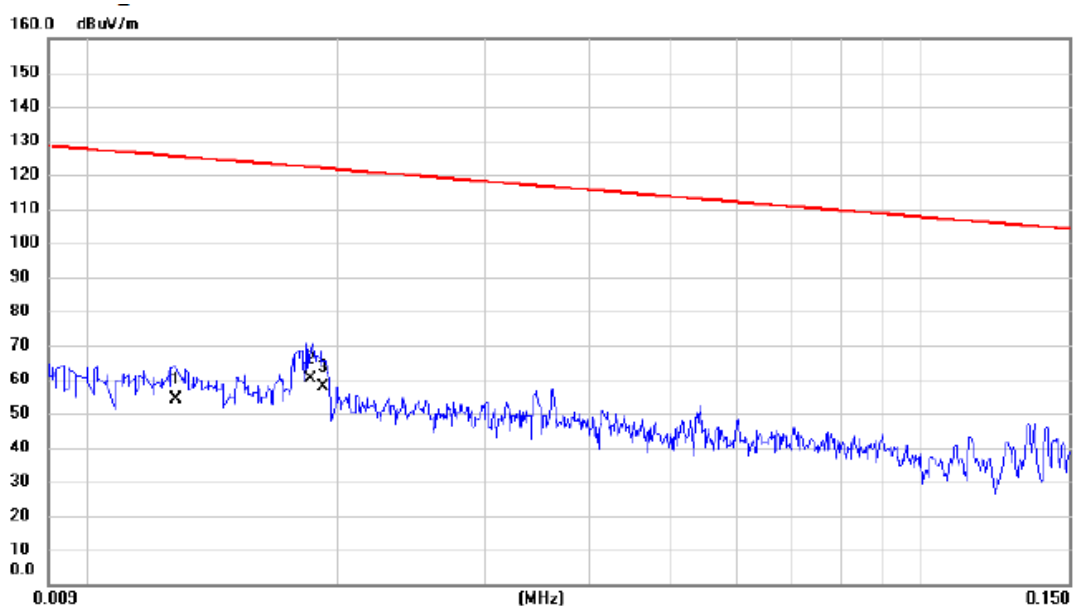
PCS1900 Spectrum Plot			
GSM		GSM	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
661	1880	661	1880
			
GSM		EDGE	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
661	1880	661	1880
			
EDGE		EDGE	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
661	1880	661	1880
			

WCDMA Band II_WCDMA Spectrum Plot			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
9400	1880	9400	1880
			
Channel	Frequency(MHz)	-	-
9400	1880	-	-
		-	

APPENDIX D - RADIATED SPURIOUS EMISSIONS (9KHZ TO 30MHZ)

Test Mode	TX Mode

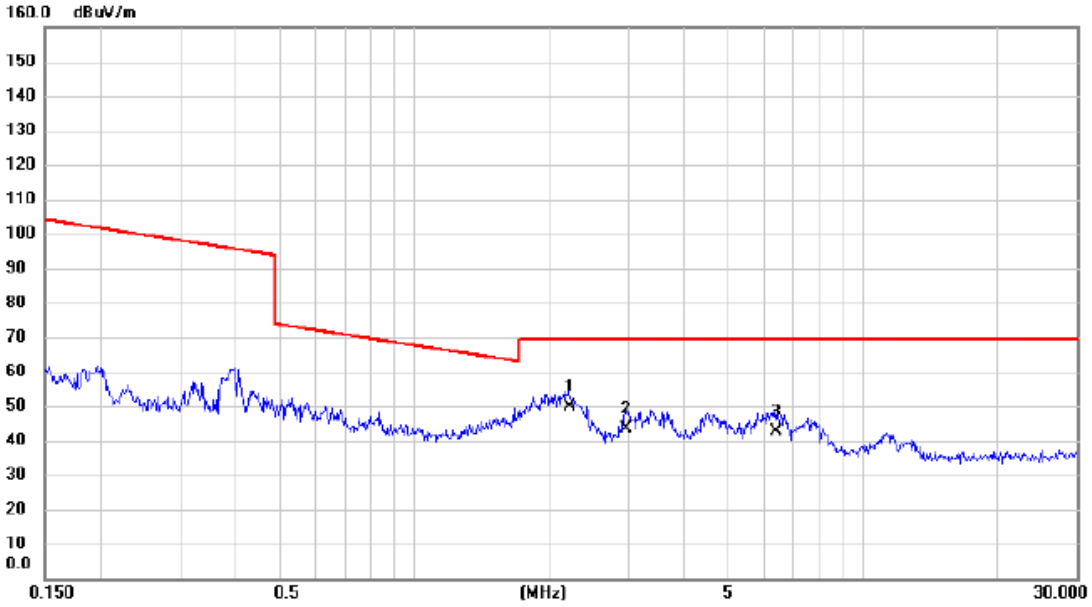
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0128	37.60	16.67	54.27	125.46	-71.19	AVG			
2	*	0.0185	45.50	14.88	60.38	122.26	-61.88	AVG			
3		0.0192	43.20	14.66	57.86	121.94	-64.08	AVG			

Test Mode	TX Mode

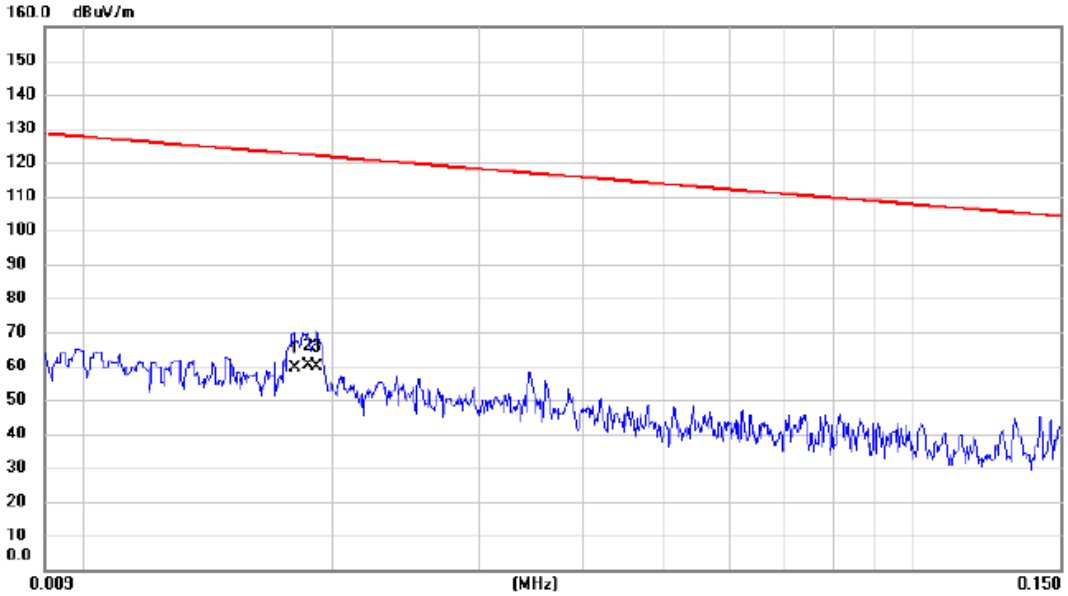
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	2.2132	37.50	12.18	49.68	69.54	-19.86	QP			
2		2.9776	31.50	11.96	43.46	69.54	-26.08	QP			
3		6.3860	30.60	12.13	42.73	69.54	-26.81	QP			

Test Mode	TX Mode

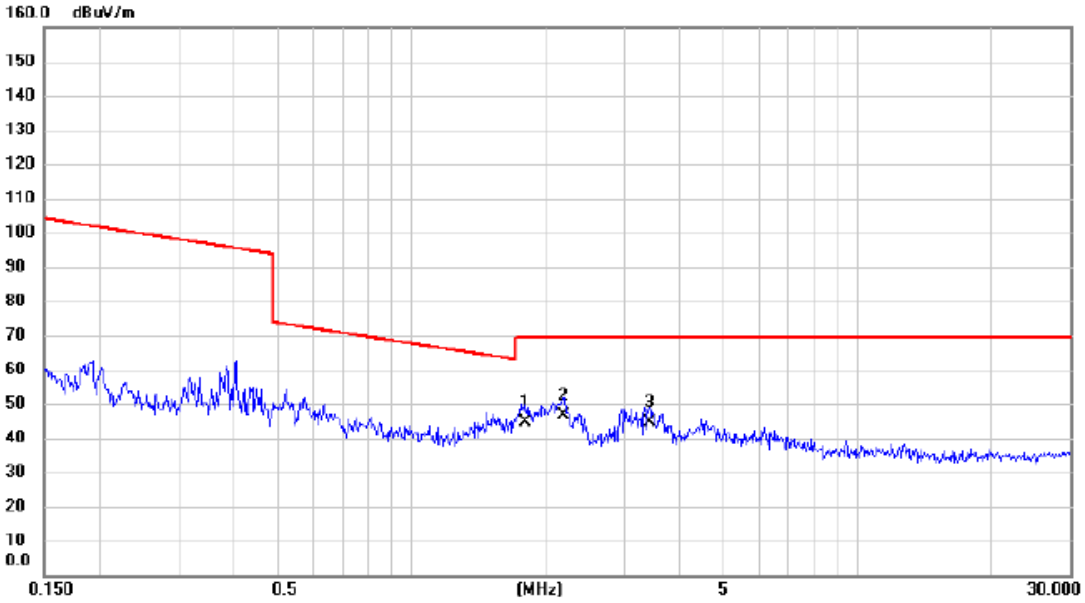
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0180	44.33	15.04	59.37	122.50	-63.13	AVG			
2	*	0.0187	45.20	14.82	60.02	122.17	-62.15	AVG			
3		0.0191	45.10	14.69	59.79	121.98	-62.19	AVG			

Test Mode	TX Mode

Ant 90°

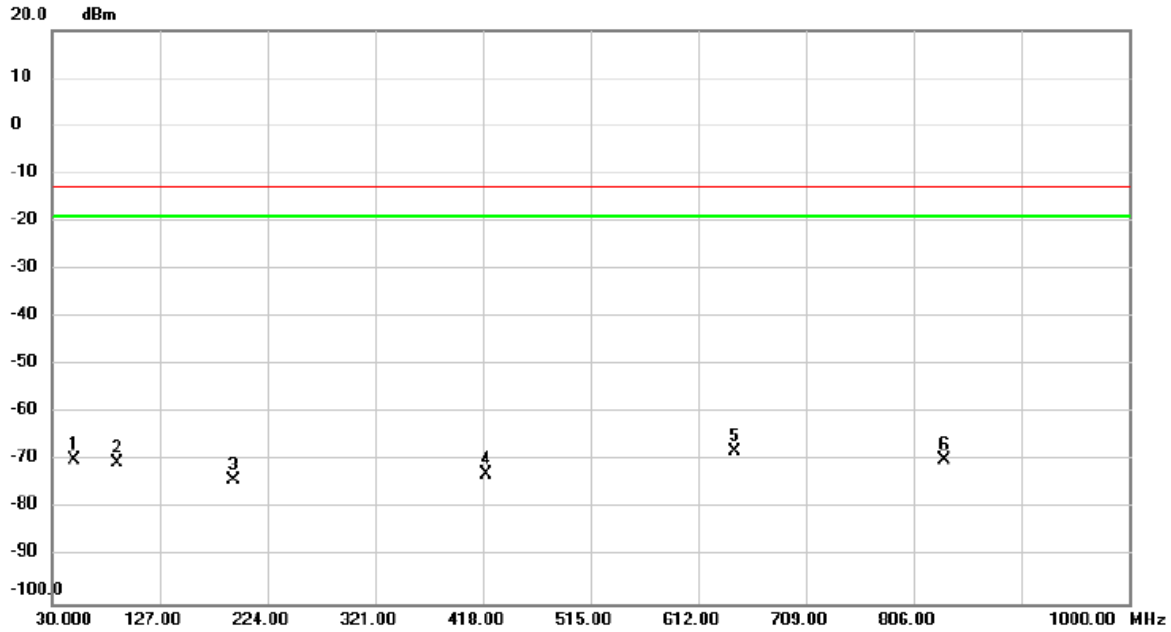


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1.8000	32.20	12.39	44.59	69.54	-24.95	QP			
2	*	2.1898	34.40	12.19	46.59	69.54	-22.95	QP			
3		3.4174	32.60	11.99	44.59	69.54	-24.95	QP			

APPENDIX E - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ)

Test Mode	PCS1900_TX CH661_GSM

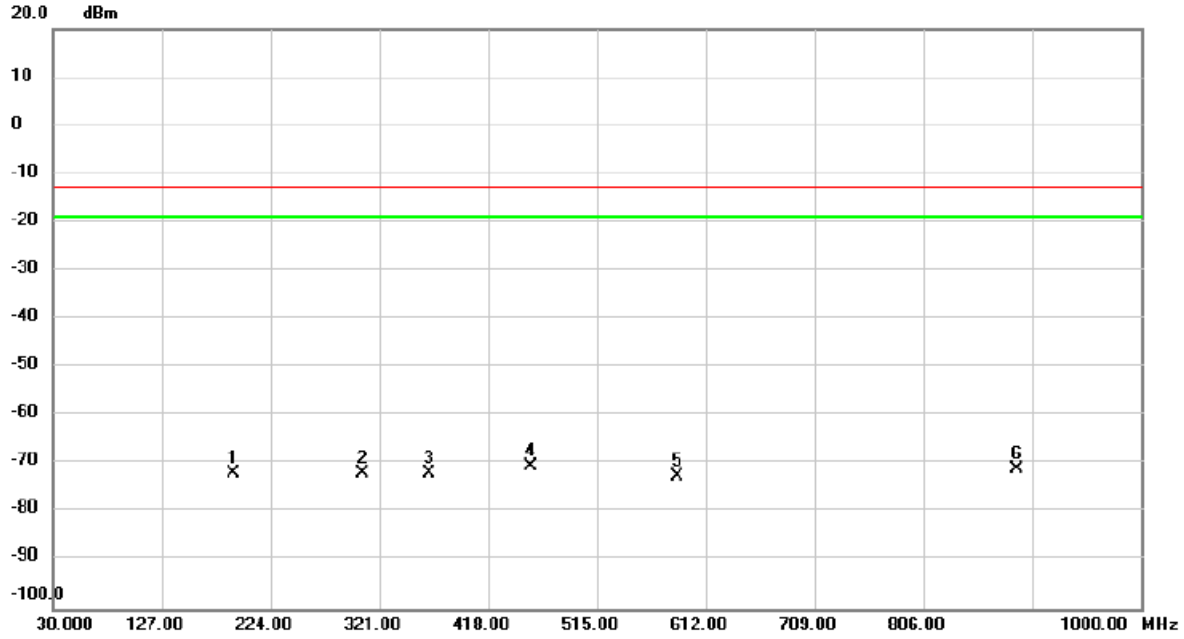
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		50.370	-56.19	-13.56	-69.75	-13.00	-56.75	peak	
2		89.170	-54.47	-15.90	-70.37	-13.00	-57.37	peak	
3		193.930	-59.71	-14.37	-74.08	-13.00	-61.08	peak	
4		421.395	-64.57	-8.41	-72.98	-13.00	-59.98	peak	
5	*	644.980	-63.65	-4.38	-68.03	-13.00	-55.03	peak	
6		833.160	-67.71	-2.01	-69.72	-13.00	-56.72	peak	

Test Mode	PCS1900_TX CH661_GSM

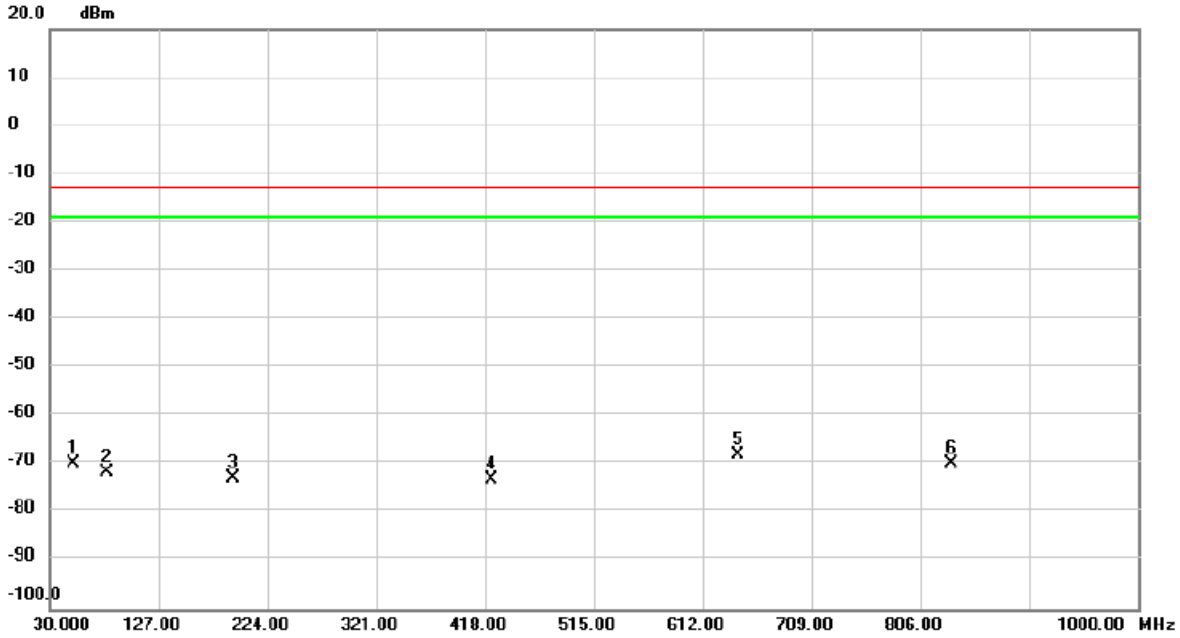
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		191.505	-57.82	-14.20	-72.02	-13.00	-59.02	peak	
2		305.480	-60.94	-10.92	-71.86	-13.00	-58.86	peak	
3		365.620	-62.24	-9.83	-72.07	-13.00	-59.07	peak	
4	*	456.315	-62.73	-7.58	-70.31	-13.00	-57.31	peak	
5		586.295	-66.84	-5.75	-72.59	-13.00	-59.59	peak	
6		889.420	-69.67	-1.27	-70.94	-13.00	-57.94	peak	

Test Mode	WCDMA Band II_TX CH9400

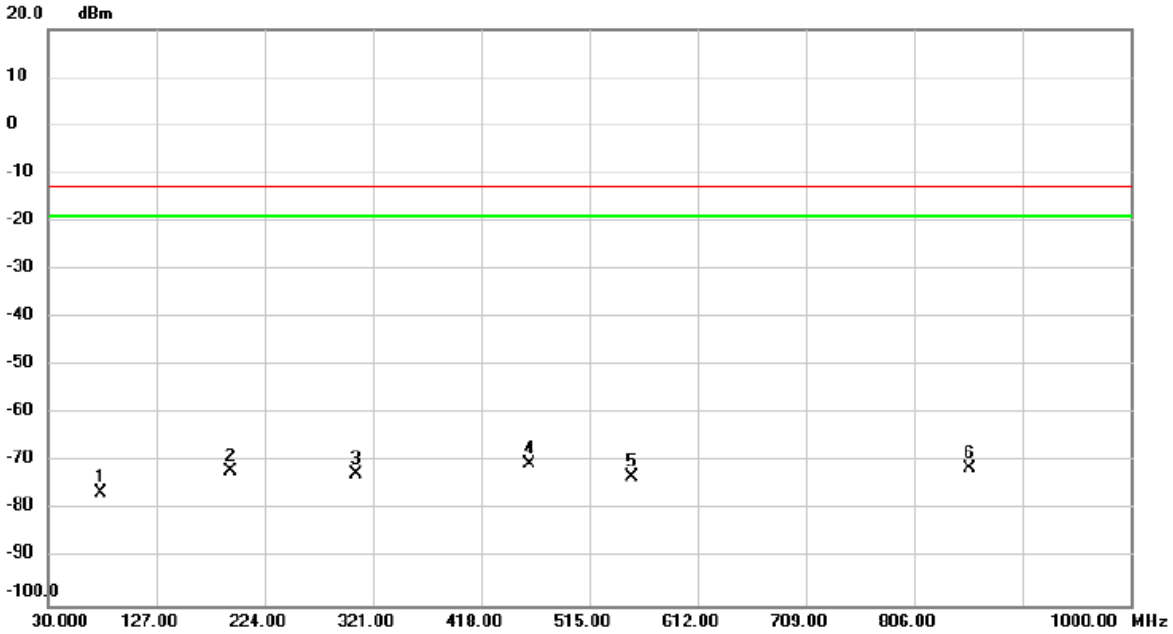
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		50.855	-56.12	-13.60	-69.72	-13.00	-56.72	peak	
2		80.440	-54.13	-17.62	-71.75	-13.00	-58.75	peak	
3		193.930	-58.36	-14.37	-72.73	-13.00	-59.73	peak	
4		423.335	-64.92	-8.37	-73.29	-13.00	-60.29	peak	
5	*	644.010	-63.73	-4.40	-68.13	-13.00	-55.13	peak	
6		833.645	-67.77	-2.00	-69.77	-13.00	-56.77	peak	

Test Mode	WCDMA Band II_TX CH9400

Horizontal

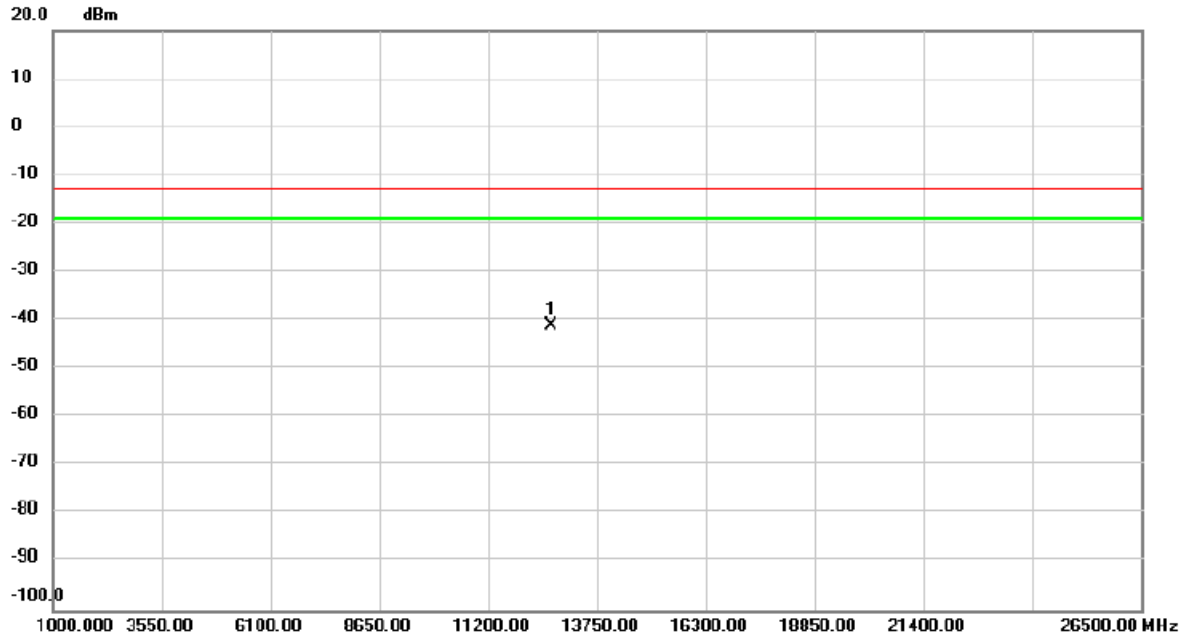


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		77.530	-59.03	-17.29	-76.32	-13.00	-63.32	peak	
2		193.930	-57.63	-14.37	-72.00	-13.00	-59.00	peak	
3		305.480	-61.76	-10.92	-72.68	-13.00	-59.68	peak	
4	*	461.650	-62.95	-7.55	-70.50	-13.00	-57.50	peak	
5		552.830	-66.30	-6.72	-73.02	-13.00	-60.02	peak	
6		855.470	-69.56	-1.68	-71.24	-13.00	-58.24	peak	

APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)

Test Mode	PCS1900_TX CH661_GSM

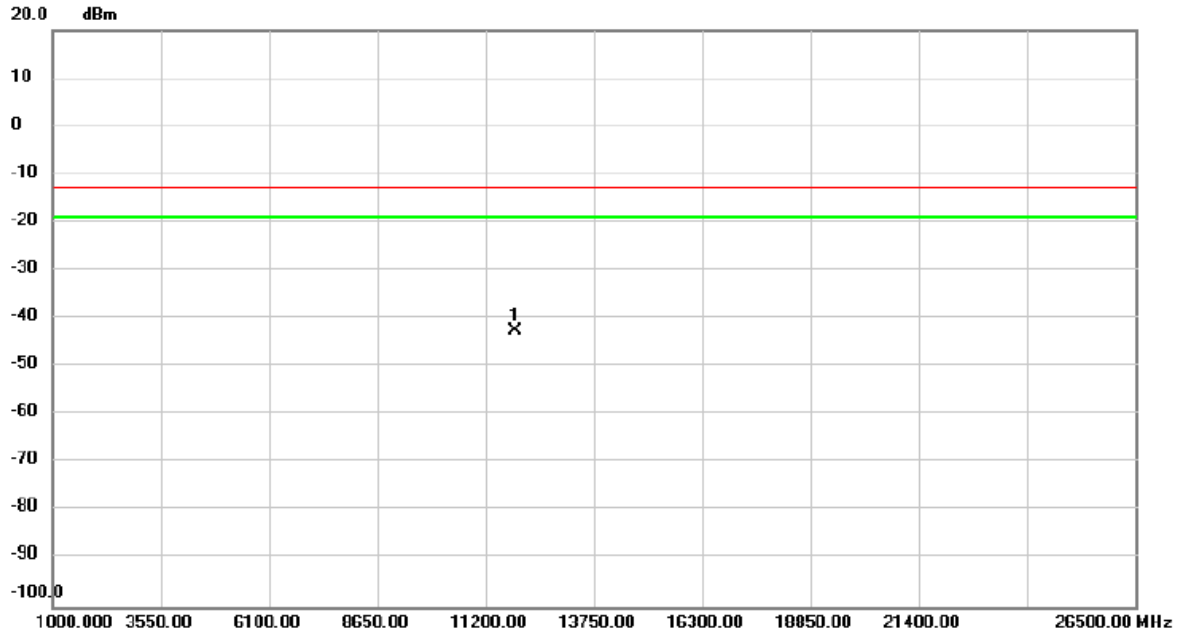
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	12691.750	-55.95	14.86	-41.09	-13.00	-28.09	peak	

Test Mode	PCS1900_TX CH661_GSM

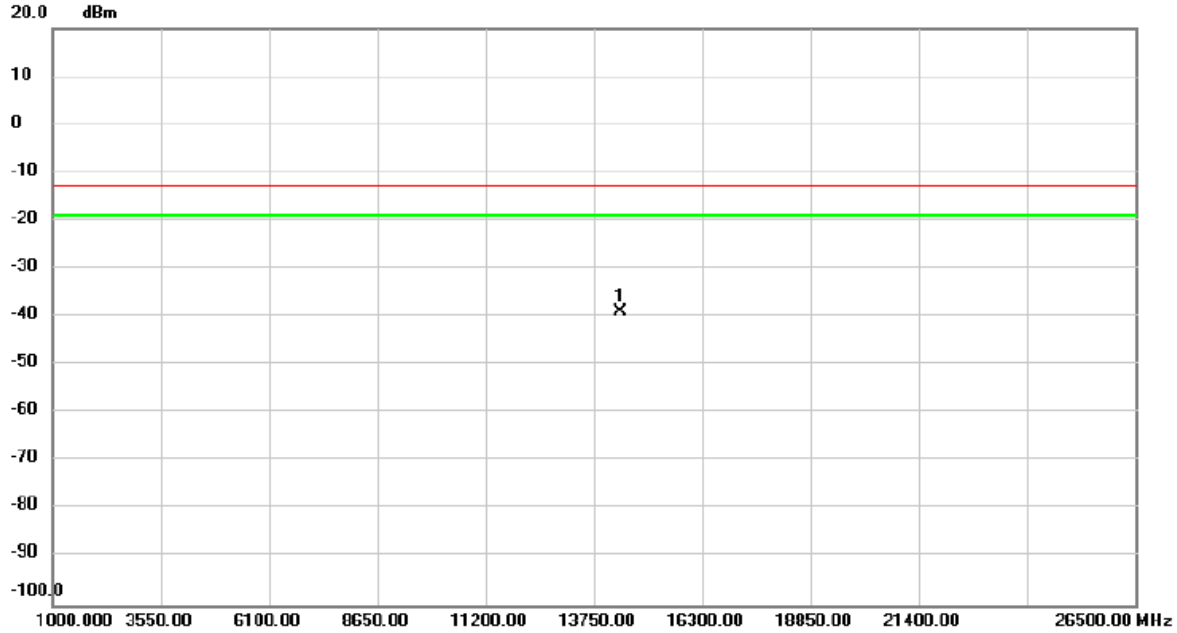
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	11901.250	-55.82	13.41	-42.41	-13.00	-29.41	peak	

Test Mode	WCDMA Band II_TX CH9400

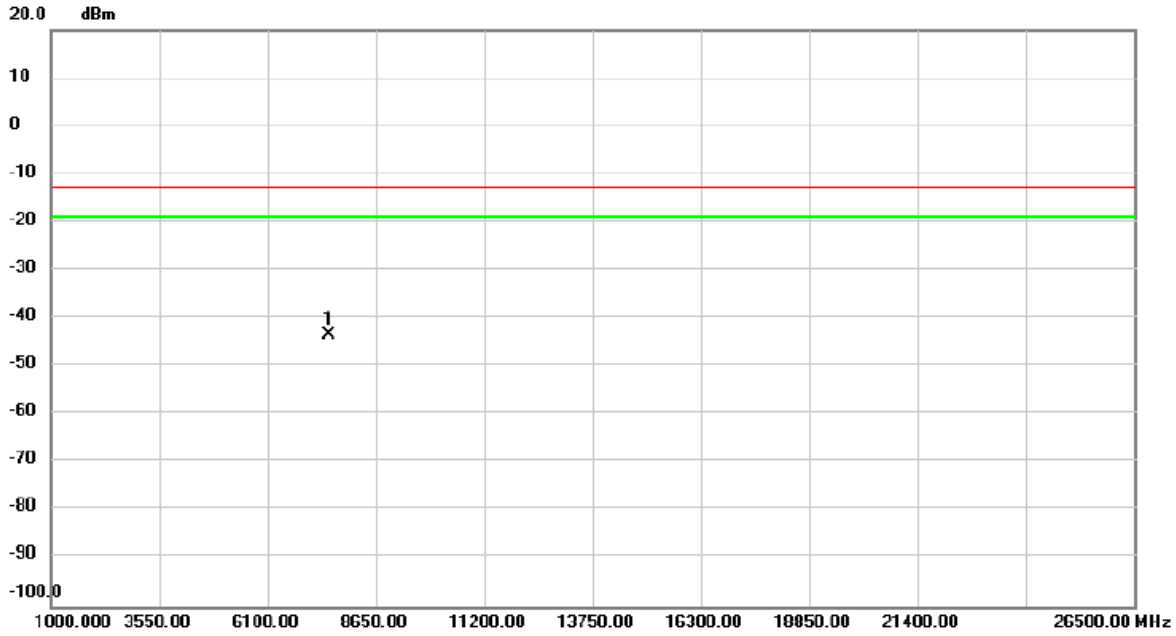
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	14387.500	-57.22	18.20	-39.02	-13.00	-26.02	peak	

Test Mode	WCDMA Band II_TX CH9400

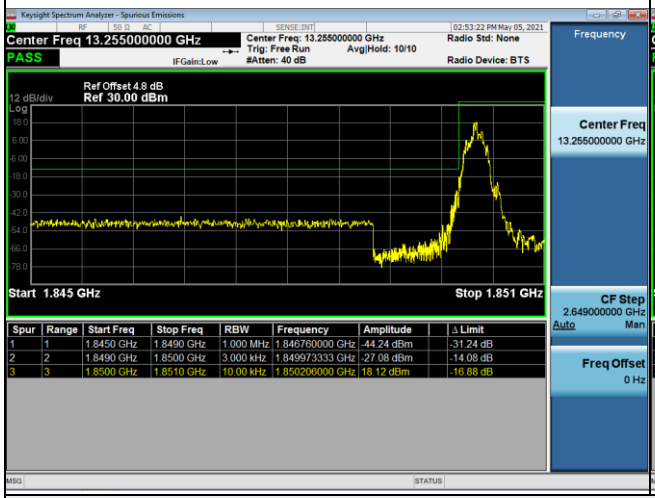
Horizontal

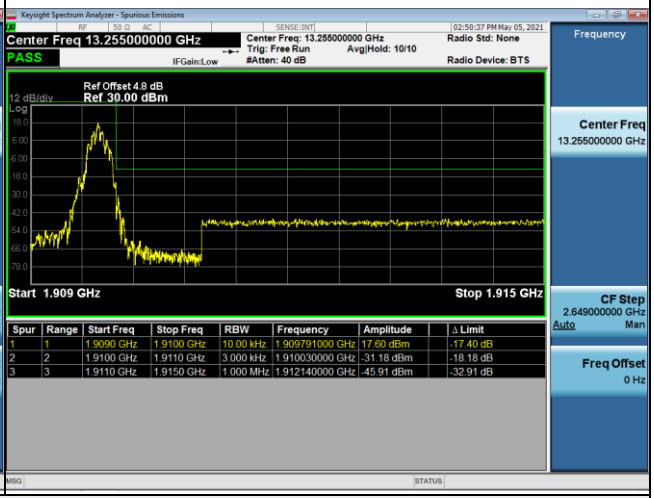


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1	*	7528.000	-53.94	10.62	-43.32	-13.00	-30.32	peak	

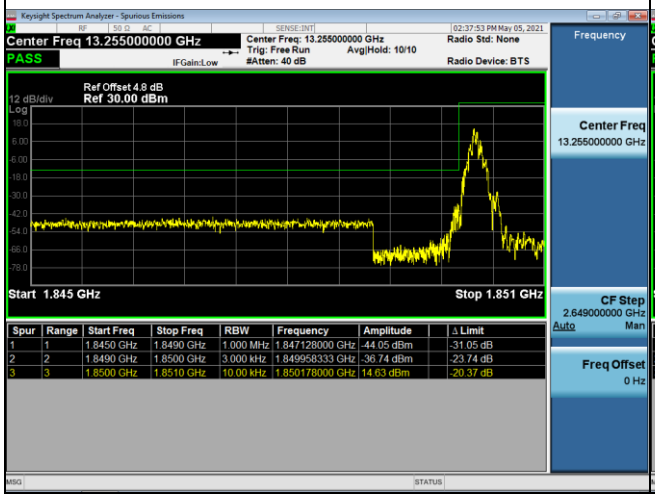
APPENDIX G - BAND EDGE

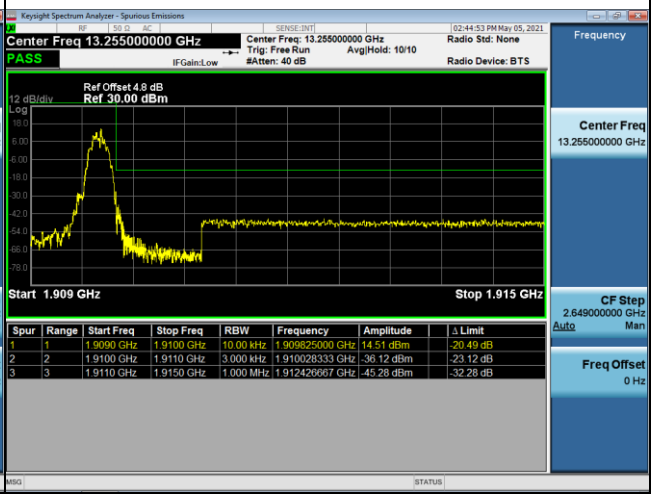
PCS1900_GSM Spectrum Plot			
Channel	512	Channel	810



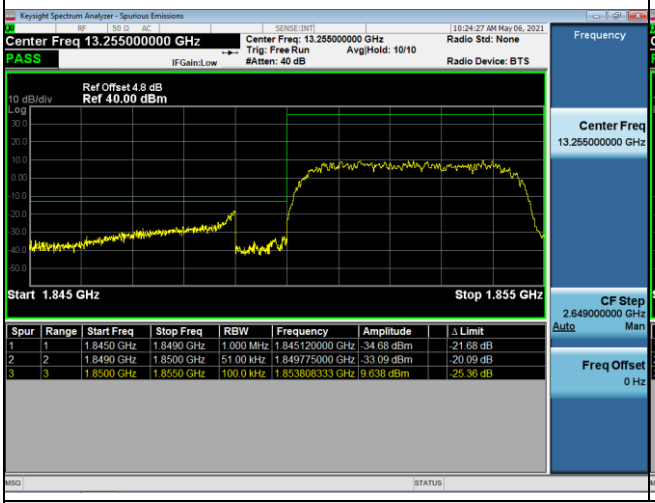


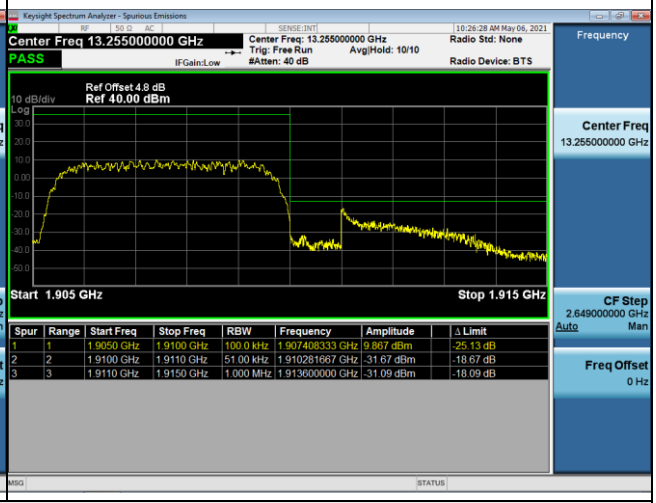
EDGE			
Channel	512	Channel	810



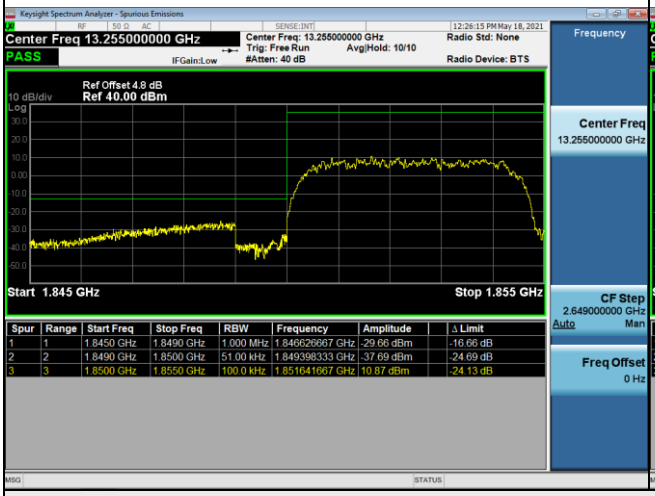


WCDMA Band II_WCDMA Spectrum Plot			
Channel	9262	Channel	9538

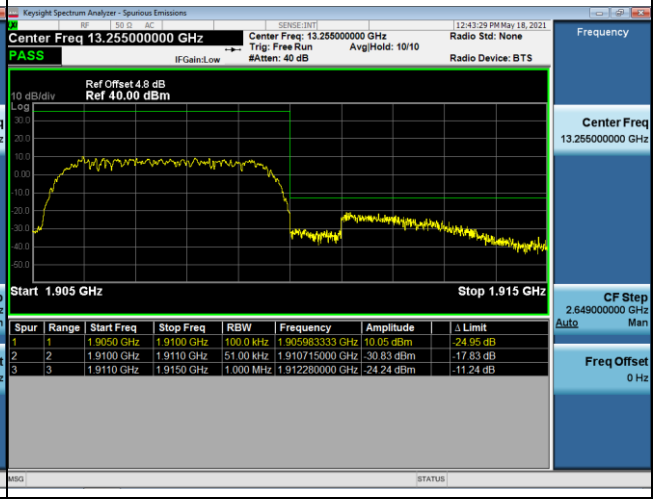




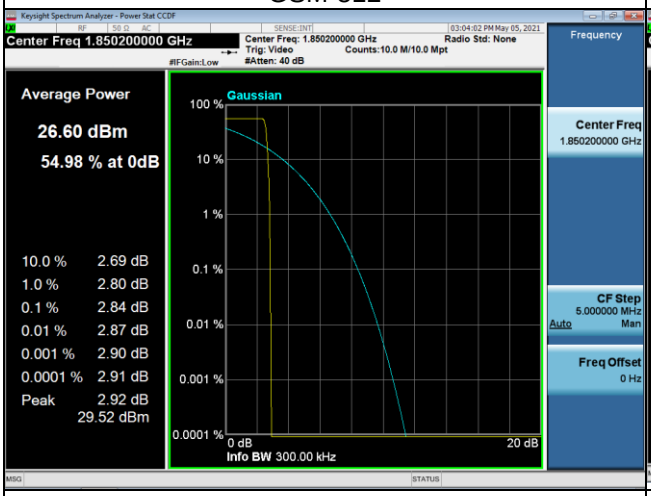
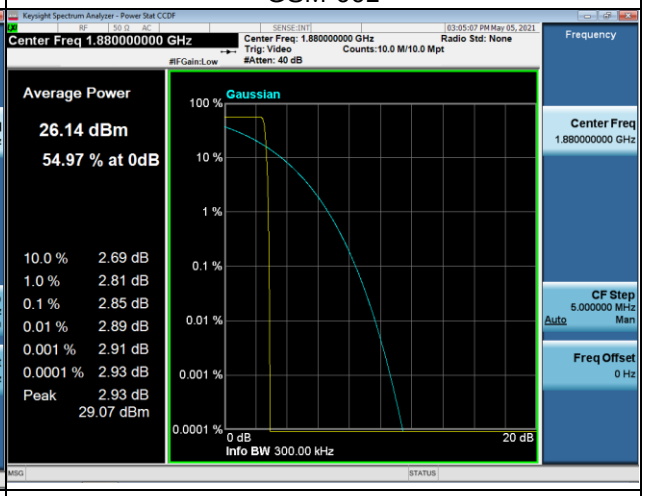
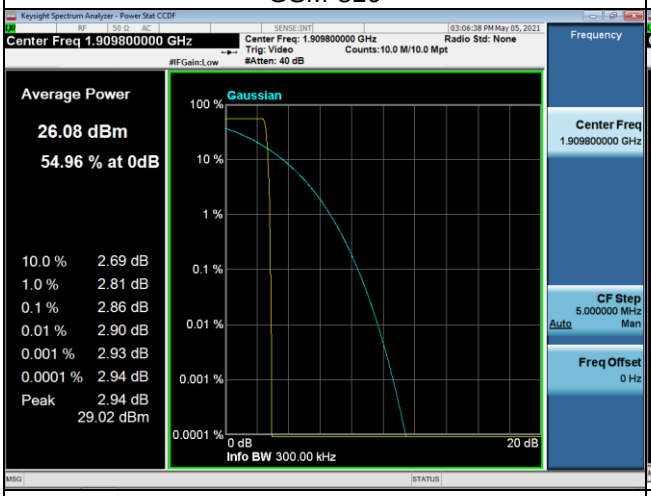
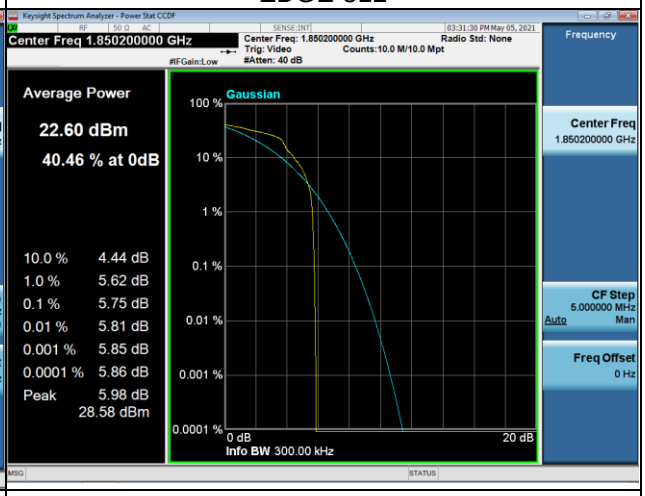
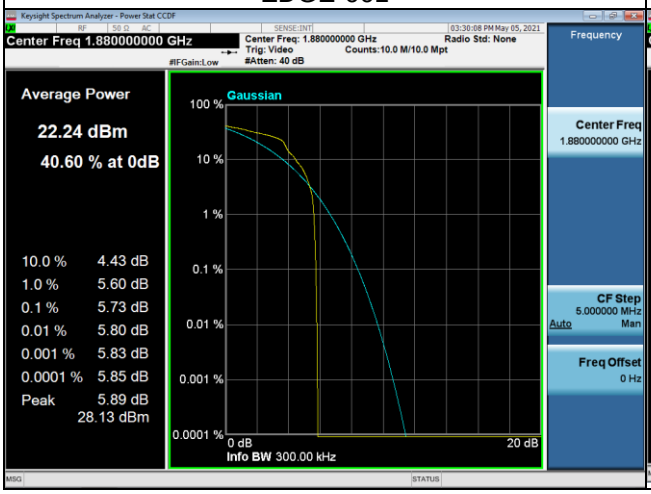
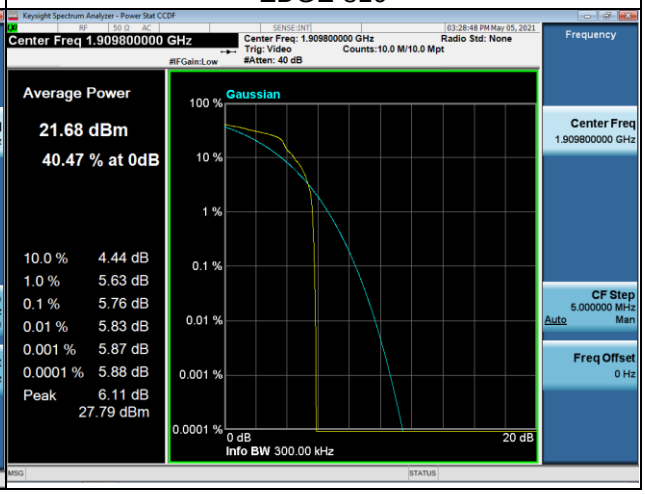
WCDMA Band II_HSDPA Spectrum Plot			
Channel	9262	Channel	9538

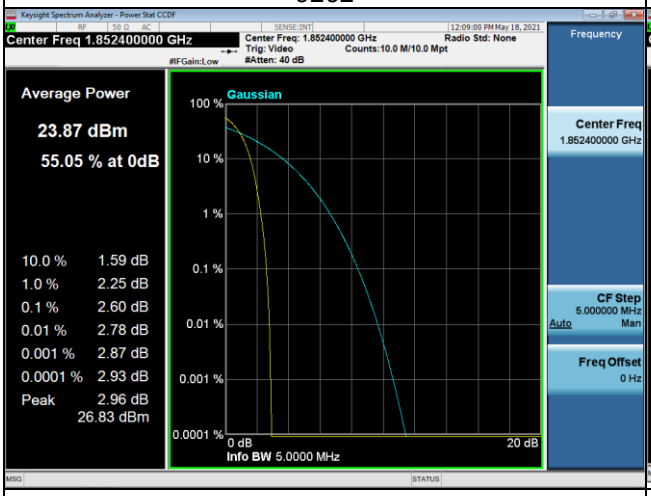
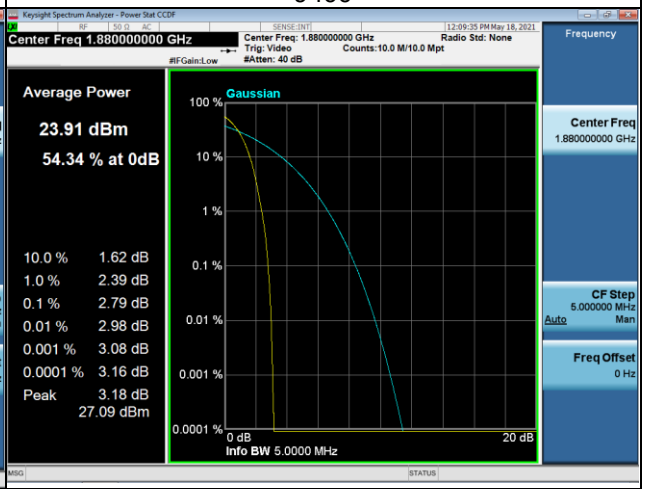
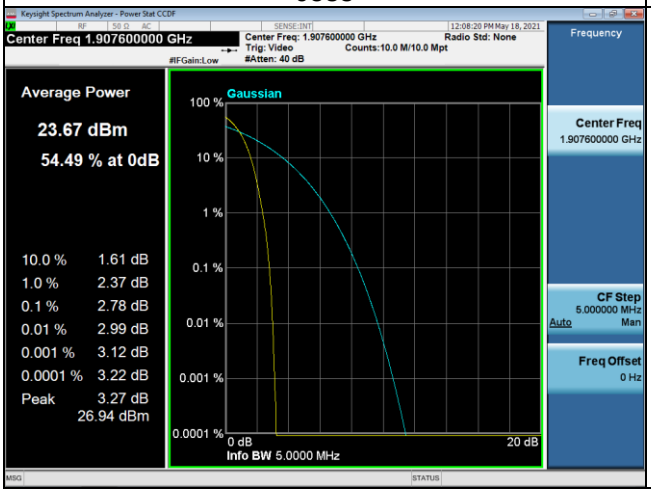


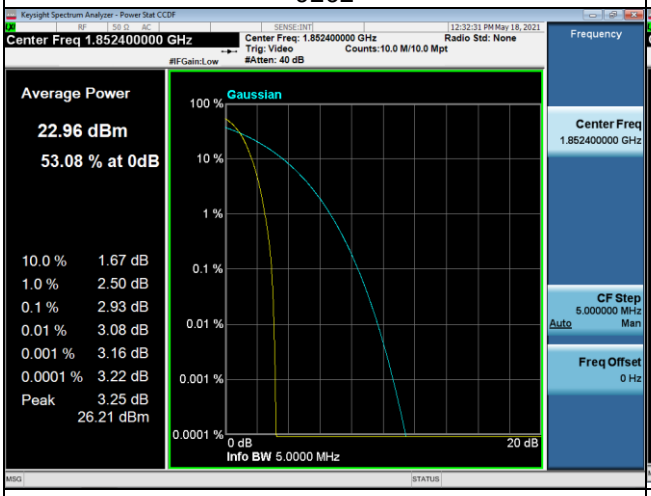
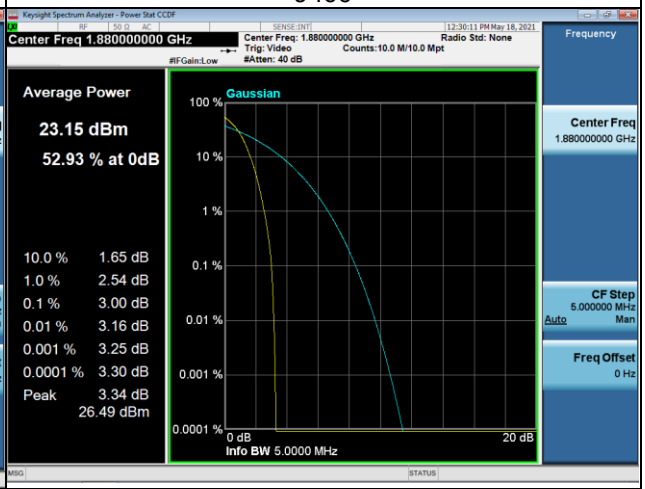
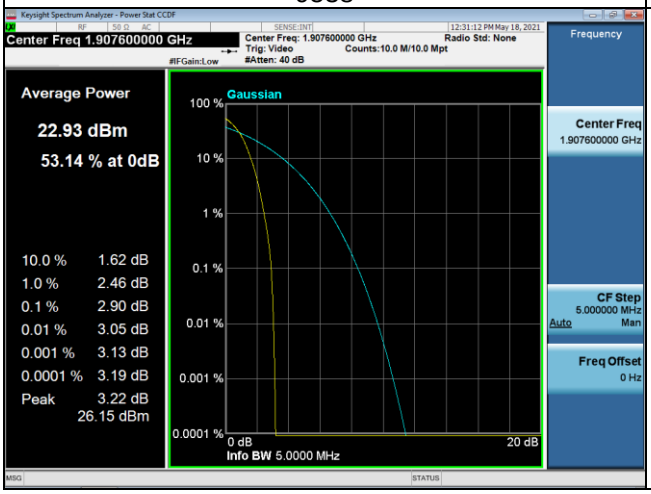
WCDMA Band II_HSUPA Spectrum Plot			
Channel	9262	Channel	9538

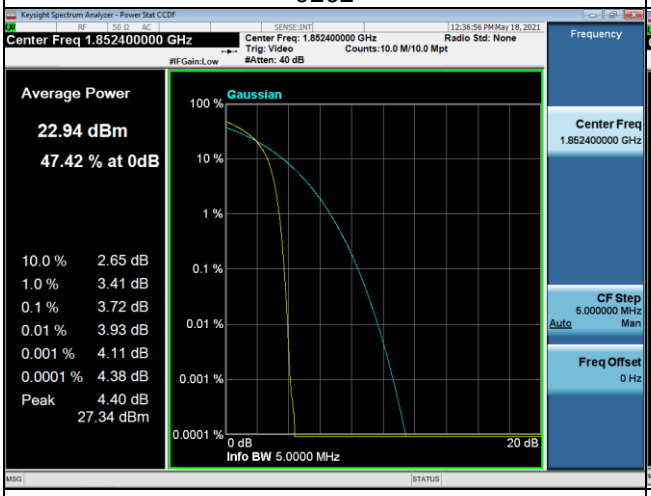
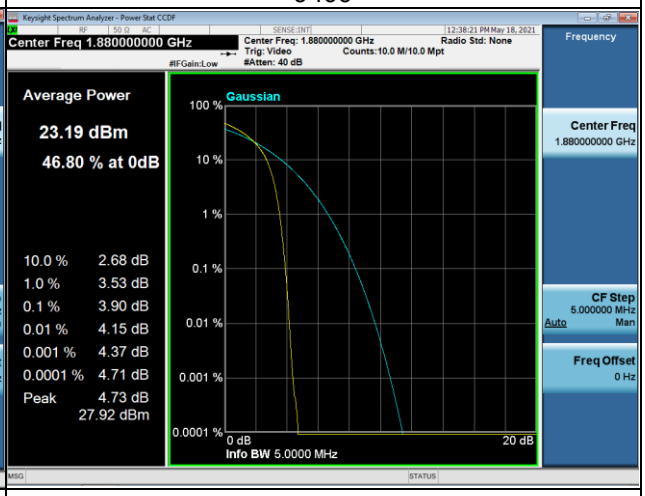
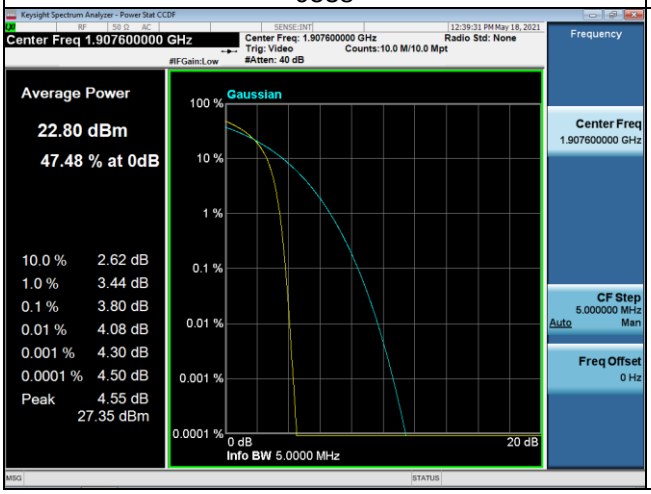


APPENDIX H - PEAK TO AVERAGE RATIO

PCS1900 Spectrum Plot	
GSM-512	GSM-661
	
GSM-810	EDGE-512
	
EDGE-661	EDGE-810
	

WCDMA Band II_WCDMA Spectrum Plot	
9262	9400
	
9538	-
	-

WCDMA Band II_HSDPA Spectrum Plot	
9262	9400
	
9538	-
	-

WCDMA Band II_HSUPA Spectrum Plot	
9262	9400
	
9538	-
	-

APPENDIX I - FREQUENCY STABILITY

Test Mode	PCS1900_CH661

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-20	2.91	0.001547872	±2.5
-10	5.72	0.003042553	
0	5.94	0.003159574	
10	3.67	0.001952128	
20	5.49	0.002920213	
30	5.52	0.00293617	
40	3.22	0.001712766	
50	5.77	0.003069149	
60	2.87	0.001526596	
70	5.97	0.003175532	
75	4.93	0.00262234	
Max. Deviation (ppm)	5.97	0.003175532	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
4.2	2.34	0.001244681	±2.5
3.8	1.54	0.000819149	
3.5	5.74	0.003053191	
Max. Deviation (ppm)	5.74	0.003053191	

Test Mode	WCDMA Band II_CH9400

Temperature vs. Frequency Stabiility

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-20	2.67	0.001420213	±2.5
-10	7.11	0.003781915	
0	2.68	0.001425532	
10	1.51	0.000803191	
20	1.81	0.000962766	
30	1.79	0.000952128	
40	4.82	0.00256383	
50	4.45	0.002367021	
60	2.07	0.001101064	
70	6.75	0.003590426	
75	4.84	0.002574468	
Max. Deviation (ppm)	7.11	0.003781915	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
4.2	3.93	0.002090426	±2.5
3.8	2.13	0.001132979	
3.5	5.24	0.002787234	
Max. Deviation (ppm)	5.24	0.002787234	

End of Test Report