

FCC Radio Test Report

FCC ID: HFSQTA-LI7CS

Report No. : BTL-FCCP-2-2107T083A
Equipment : Notebook Computer
Model Name : NL72LTE, NL72CT-LTE, LI7, LI7XXXXXXXXXX, NL7XXXXXXXXXX(The "X" Can be 0-9,A-Z, a-z ,- or blank for the marketing purpose)
Brand Name : Quanta, CTL
Applicant : Quanta Computer Inc.
Address : No. 188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan


Radio Function : WCDMA Band II + LTE Band 2

FCC Rule Part(s) : 47 CRF FCC Part 24, Subpart E
47 CFR FCC Part 2
Measurement Procedure(s) : ANSI/TIA/EIA-603-E-2016
KDB 971168 D01 Power Meas License Digital Systems v03r01

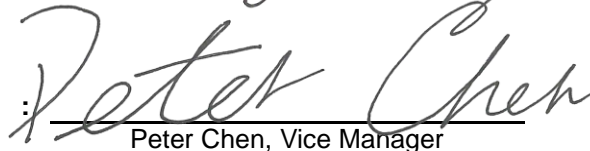
Date of Receipt : 2021/9/11
Date of Test : 2021/9/11 ~ 2021/10/4
Issued Date : 2021/11/1

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

Prepared by


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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.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

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 are not use in determining the Pass/Fail results.

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REVISION HISTORY

Report No.	Version	Description	Issued Date
BTL-FCCP-2-2107T083A	R00	Original Report.	2021/10/13
BTL-FCCP-2-2107T083A	R01	Added one brand name.	2021/11/1

1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

FCC Clause No	Description	Test Result	Judgement	Remark
15.207	AC Power Line Conducted Emissions	APPENDIX A	Pass	-----
2.1046 24.232(c)	RF Power Output	APPENDIX B	Pass	-----
2.1049	Occupied Bandwidth	APPENDIX C	Pass	-----
2.1051 24.238(a)	Conducted Spurious Emissions	APPENDIX D	Pass	-----
2.1053 24.238(a)	Radiated Spurious Emissions	APPENDIX E	Pass	-----
24.238(a)	Band Edge Measurements	APPENDIX F	Pass	-----
24.232(d)	Peak To Average Ratio	APPENDIX G	Pass	-----
2.1055 24.235	Frequency Stability	APPENDIX H	Pass	-----

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report.
- (2) The report format version is TP.1.1.1.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report:

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.

- C05 CB08 CB11 CB15 CB16
 SR05

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k = 2$, providing a level of confidence of approximately **95 %**.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C05	CISPR	150 kHz ~ 30MHz	3.44

B. Radiated Spurious Emissions test:

Test Site	Measurement Frequency Range	U,(dB)
CB15	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
	1 GHz ~ 6 GHz	5.21
	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

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	Environment Condition	Test Voltage	Tested by
AC Power Line Conducted Emissions	24 °C, 51 %	AC 120V	Tim Lian
RF Power Output & ERP	24.6 °C, 67 % 22~25 °C, 52~54 %	AC 120V	Paul Shen Vincent Lee
Occupied Bandwidth	24.6 °C, 67 %	AC 120V	Paul Shen
Conducted Spurious Emissions	24.6 °C, 67 %	AC 120V	Paul Shen
Radiated Spurious Emissions	22~25 °C, 52~54 %	AC 120V	Vincent Lee
Band Edge	24.6 °C, 67 %	AC 120V	Paul Shen
Peak to Average Ratio	24.6 °C, 67 %	AC 120V	Paul Shen
Frequency Stability	Normal and Extreme		Paul Shen

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

Equipment	Notebook Computer											
Model Name	NL72LTE, NL72CT-LTE, LI7, LI7XXXXXXXXXX, NL7XXXXXXXXXX(The "X" Can be 0-9,A-Z, a-z , - or blank for the marketing purpose)											
Brand Name	Quanta, CTL											
Model Difference	Brand Name	Model Name										
	Quanta	LI7, LI7XXXXXXXXXX (The "X" Can be 0-9,A-Z, a-z , - or blank for the marketing purpose)										
	CTL	NL72LTE, NL72CT-LTE, NL7XXXXXXXXXX(The "X" Can be 0-9,A-Z, a-z , - or blank for the marketing purpose)										
	Different model distribute to different area.											
Power Source	DC voltage supplied from AC/DC Adapter.											
Power Adapter	LITEON / PA-1450-50											
Power Adapter Power Rating	I/P: 100-240V~1.3A 50/60Hz O/P: 5.0V---3.0A, 9.0V---3.0A, 12.0V---3.0A, 15.0V---3.0A, 20.0V---2.25A											
WWAN Module	Fibocom / NL668-AM											
WCDMA IEMI No.	Call Setup Screen											
	Call Control	Active Cell Operating Mode										
	Operating Mode	UE Information										
	Active Cell	IMSI: 001012345678901 IMEI(SV): 867958050023747 (--) Power Class: 3										
	End Call	UE Expected Open Loop Transmit Power										
		Initial PRACH TX Power: -60.00 dBm Initial DPCC TX Power: 18.45 dBm										
	Paging Parameters	Call Processing Status										
		Current Service Type: RB Test Mode IMI Status: IMSI Attached GMM State: Attached Current DPCH Offset: 0 chips										
		<table border="1"> <tr> <th>HSUPA Information</th> <th>HSDPA Information</th> </tr> <tr> <td>Rep EDCH Cat/Ext: 6/Unrep</td> <td>Cur UE HS-DSCH Cat: 24</td> </tr> <tr> <td>Last received E-TFCI: ----</td> <td>Block Error Ratio: ---- Z</td> </tr> <tr> <td>Throughput: ---- kbps</td> <td>Throughput: ---- kbps</td> </tr> <tr> <td>Acks Transmitted: ----</td> <td>Blocks Transmitted: ----</td> </tr> </table>		HSUPA Information	HSDPA Information	Rep EDCH Cat/Ext: 6/Unrep	Cur UE HS-DSCH Cat: 24	Last received E-TFCI: ----	Block Error Ratio: ---- Z	Throughput: ---- kbps	Throughput: ---- kbps	Acks Transmitted: ----
	HSUPA Information	HSDPA Information										
	Rep EDCH Cat/Ext: 6/Unrep	Cur UE HS-DSCH Cat: 24										
	Last received E-TFCI: ----	Block Error Ratio: ---- Z										
	Throughput: ---- kbps	Throughput: ---- kbps										
	Acks Transmitted: ----	Blocks Transmitted: ----										
Handovers	Background Active Cell Sys Type: UTRA FDD Connected											
	IntRef Offset											
Clear UE Info	1 of 6											
	1 of 3											
LTE IEMI No.	2021/09/22 13:33 Connected Phone-2 Phone-1 <Fundamental Measurement> Output Main Continuous --- LTE											
	Parameter Fundamental UE Report											
	Measuring (Spectrum) UE Power : 21.4 dBm UE Report											
	UE Report											
	IMSI(DEC)	001010123456789										
	IMEI	867958050023740										
	UE Category	4										
	PDN Type	IPv4v6										
	PCC											
	RSRP	()										
	RSRQ	()										
	SCC-1											
	RSRP	()										
	RSRQ	()										
SCC-2												
RSRP	()											
RSRQ	()											
Neighbour Cell												
LTE												
Cell ID	()											
RSRP	()											
RSRQ	()											
W-CDMA/TD-SCDMA RAT Cell ID RSCP												
GSM	Band	ARFCN	NCC BCC RXLEV									

Test Model	NL72LTE			
Sample Status	Engineering Sample			
Operation Frequency	Mode	Band	UL Frequency (MHz)	DL Frequency (MHz)
	WCDMA	II	1850 ~ 1910	1930 ~ 1990
	LTE	2	1850 ~ 1910	1930 ~ 1990
EUT Modification(s)	N/A			

NOTE:

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

(2) Channel List:

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

LTE Band 2					
Test Frequency ID	Bandwidth (MHz)	N _{UL}	Frequency of Uplink (MHz)	N _{DL}	Frequency of Downlink (MHz)
Low Range	1.4	18607	1850.7	607	1930.7
	3	18615	1851.5	615	1931.5
	5	18625	1852.5	625	1932.5
	10	18650	1855	650	1935
	15	18675	1857.5	675	1937.5
	20	18700	1860	700	1940
Mid Range	1.4/3/5/10/15/20	18900	1880	900	1960
High Range	1.4	19193	1909.3	1193	1989.3
	3	19185	1908.5	1185	1988.5
	5	19175	1907.5	1175	1987.5
	10	19150	1905	1150	1985
	15	19125	1902.5	1125	1982.5
	20	19100	1900	1100	1980

(3) Table for Filed Antenna:

Antenna	Manufacturer	Part Number	Type	Gain (dBi)	Note
Main	WNC	DQ6615GAU00 (81EAA615.GAU)	PIFA	0.34	-
Aux	WNC	DQ6615GVU00 (81EAA615.GAV)	PIFA	-0.56	-

2.2 TEST MODES

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
Conducted Spurious Emissions	9262 to 9538	9400	WCDMA
Radiated Spurious Emissions	9262 to 9538	9400	WCDMA
Band Edge	9262 to 9538	9262, 9538	WCDMA
Peak to Average Ratio	9262 to 9538	9262, 9400, 9538	WCDMA
Frequency Stability	9262 to 9538	9400	WCDMA

LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB/50RB/100RB
EIRP	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Occupied Bandwidth	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	6RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	15RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	25RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	50RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	75 RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	100RB

LTE BAND 2 MODE					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Conducted Spurious Emissions	18607 to 19193	18900	1.4MHz	QPSK	1RB
	18615 to 19185	18900	3MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18650 to 19150	18900	10MHz	QPSK	1RB
	18675 to 19125	18900	15MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB
Radiated Spurious Emissions	18700 to 19100	18900	20MHz	QPSK	1RB
Band Edge	18607 to 19193	18607, 19193	1.4MHz	QPSK	1RB/6RB
	18615 to 19185	18615, 19185	3MHz	QPSK	1RB/15RB
	18625 to 19175	18625, 19175	5MHz	QPSK	1RB/25RB
	18650 to 19150	18650, 19150	10MHz	QPSK	1RB/50RB
	18675 to 19125	18675, 19125	15MHz	QPSK	1RB/75RB
	18700 to 19100	18700, 19100	20MHz	QPSK	1RB/100RB
Peak To Average Ratio	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM	1RB
	18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM	1RB
	18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM	1RB
	18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM	1RB
	18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM	1RB
	18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM	1RB
Frequency Stability	18607 to 19193	18900	1.4MHz	QPSK	1RB
	18615 to 19185	18900	3MHz	QPSK	1RB
	18625 to 19175	18900	5MHz	QPSK	1RB
	18650 to 19150	18900	10MHz	QPSK	1RB
	18675 to 19125	18900	15MHz	QPSK	1RB
	18700 to 19100	18900	20MHz	QPSK	1RB

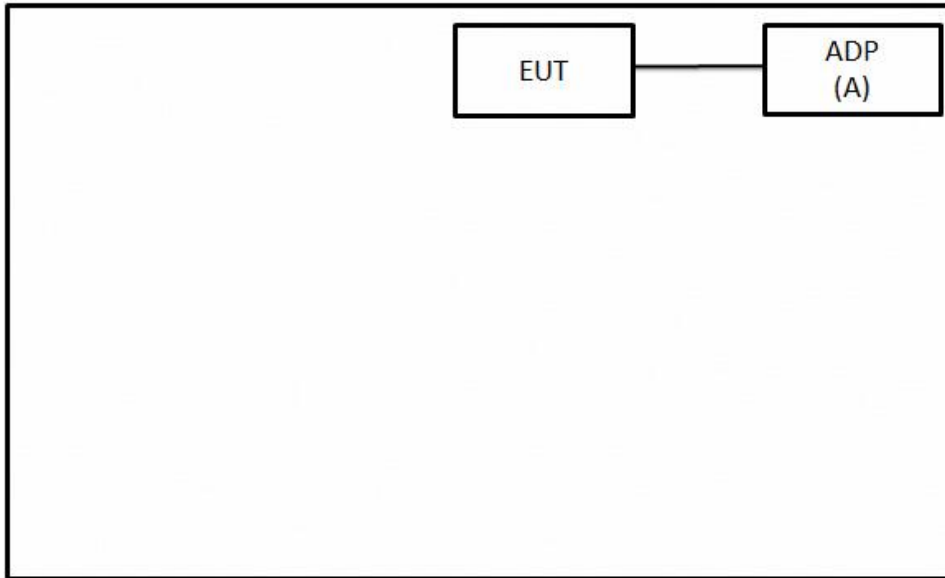
NOTE:

- (1) The Radiated emissions test was verified based on the worst conducted power and Bandwidth test results reported in the original report.

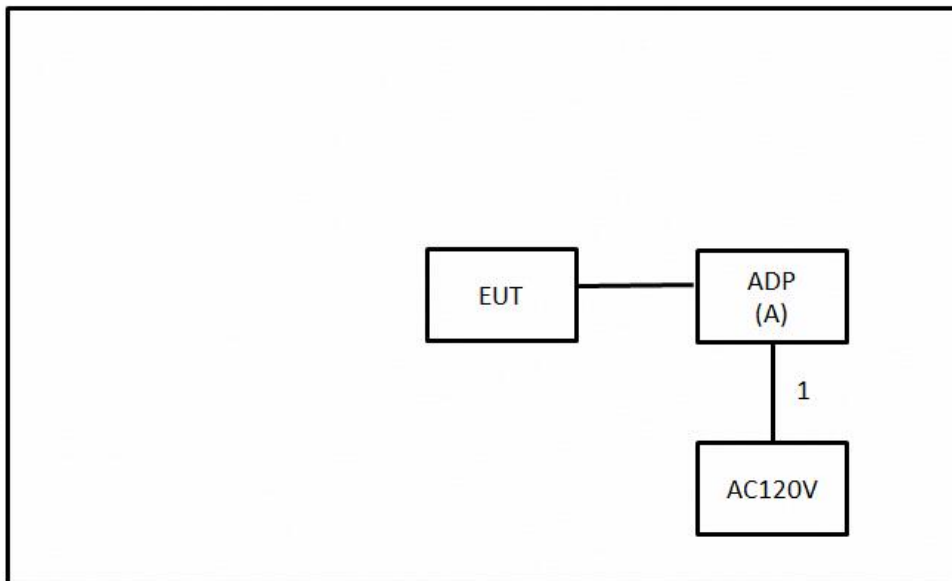
2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.4.

AC Power Line Conducted Emissions Test



Radiated Emissions



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
A	Adapter	LITEON	PA-1450-50	N/A	Supplied by test requester

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	N/A	N/A	1m	Power Cord	Supplied by test requester

3 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56 *	56 - 46 *
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)
 Margin Level = Measurement Value – Limit Value
 Calculation example:

Reading Level		Correct Factor		Measurement Value
38.22	+	3.45	=	41.67

Measurement Value		Limit Value		Margin Level
41.67	-	60	=	-18.33

The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

3.2 TEST PROCEDURE

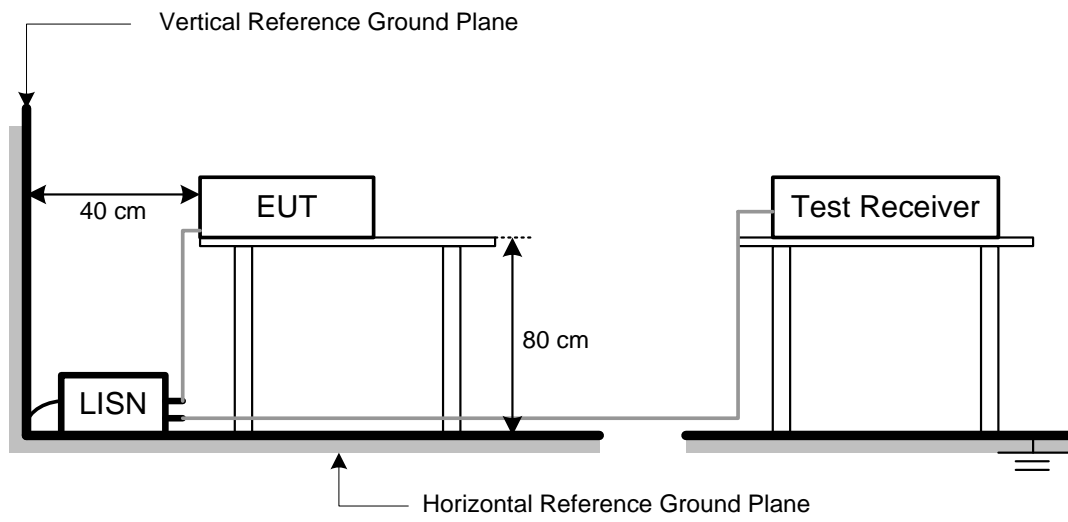
- a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
 All other support equipment were powered from an additional LISN(s).
 The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle to keep the cable above 40 cm.
- c. Excess I/O cables that are not connected to a peripheral shall be bundled in the center.
 The end of the cable will be terminated, using the correct terminating impedance.
 The overall length shall not exceed 1 m.
- d. The LISN is spaced at least 80 cm from the nearest part of the EUT chassis.
- e. For the actual test configuration, please refer to the related Item - EUT TEST PHOTO.

NOTE:

- (1) In the results, each reading is marked as Peak, QP or AVG per the detector used.
 BW=9 kHz (6 dB Bandwidth)
- (2) All readings are Peak unless otherwise stated QP or AVG in column of Note. Both the QP and the AVG readings must be less than the limit for compliance.

3.3 DEVIATION FROM TEST STANDARD

No deviation.

3.4 TEST SETUP**3.5 TEST RESULT**

Please refer to the APPENDIX A.

4 RF POWER OUTPUT TEST

4.1 LIMIT

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

4.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

EIRP / ERP Power Measurement:

$EIRP = \text{Conducted Power} + \text{Antenna gain}$.

$ERP \text{ power} = EIPR \text{ power} - 2.15 \text{ dBi}$.

Conducted Power Measurement:

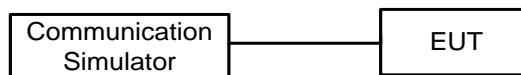
The EUT was set up for the maximum power with WCDMA and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP

Conducted Power Measurement:



4.5 TEST RESULT

Please refer to the APPENDIX B.

5 OCCUPIED BANDWIDTH MEASUREMENT

5.1 TEST PROCEDURE

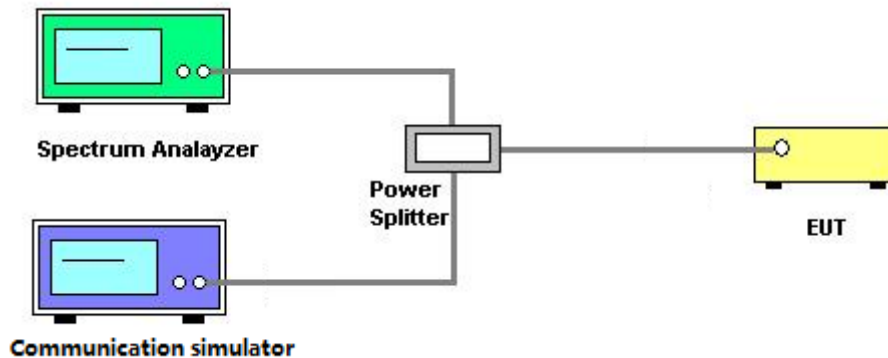
The testing follows FCC KDB 971168 v03r01 Section 4.

- 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.
- The EUT was connected to spectrum analyzer and system simulator via a power divider.
- $RBW = (1\% \sim 5\%) * EBW$
 $VBW \geq 3 * RBW$.
- Set spectrum analyzer with Peak detector.

5.2 DEVIATION FROM TEST STANDARD

No deviation.

5.3 TEST SETUP



5.4 TEST RESULT

Please refer to the APPENDIX C

6 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

6.1 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.

6.2 TEST PROCEDURE

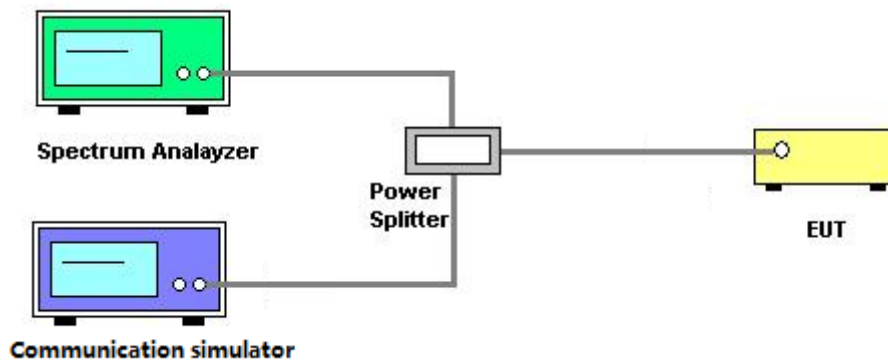
The testing follows FCC KDB 971168 v03r01 Section 6.

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

6.3 DEVIATION FROM TEST STANDARD

No deviation.

6.4 TEST SETUP



6.5 TEST RESULT

Please refer to the APPENDIX D.

7 RADIATED SPURIOUS EMISSIONS TEST

7.1 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.

NOTE:

(1) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)

Margin Level = Measurement Value - Limit Value

Calculation example:

Reading Level		Correct Factor		Measurement Value
-50.43	+	-2.11	=	-52.54

Measurement Value		Limit Value		Margin Level
-52.54	-	-13	=	-39.54

7.2 TEST PROCEDURE

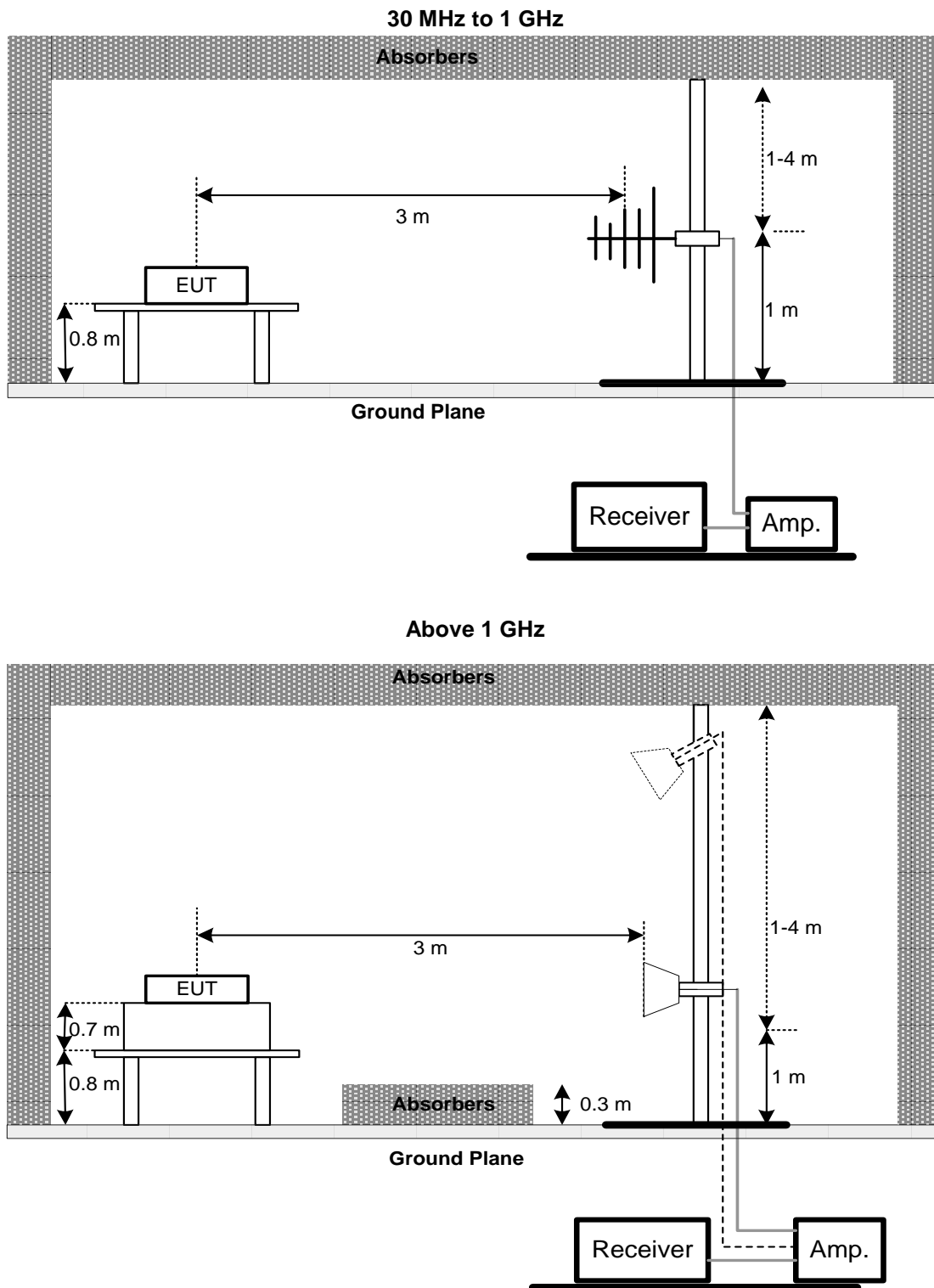
The testing follows FCC KDB 971168 v03r01 Section 6.2.

- a. 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.
- b. 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
- c. EIRP = Output power level of S.G - TX cable loss + Antenna gain of substitution horn.
- d. ERP can be calculated form EIRP by subtracting the gain of dipole, $ERP = EIPR - 2.15\text{dBi}$.
- e. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

7.3 DEVIATION FROM TEST STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULT

Please refer to the APPENDIX E.

8 BAND EDGE MEASUREMENT

8.1 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.

8.2 TEST PROCEDURE

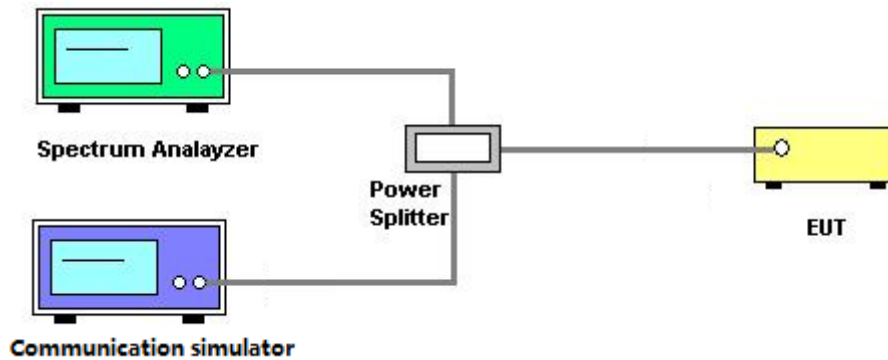
The testing follows FCC KDB 971168 v03r01 Section 6.

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

8.3 DEVIATION FROM TEST STANDARD

No deviation.

8.4 TEST SETUP



8.5 TEST RESULT

Please refer to the APPENDIX F

9 PEAK TO AVERAGE RATIO MEASUREMENT

9.1 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.

9.2 TEST PROCEDURE

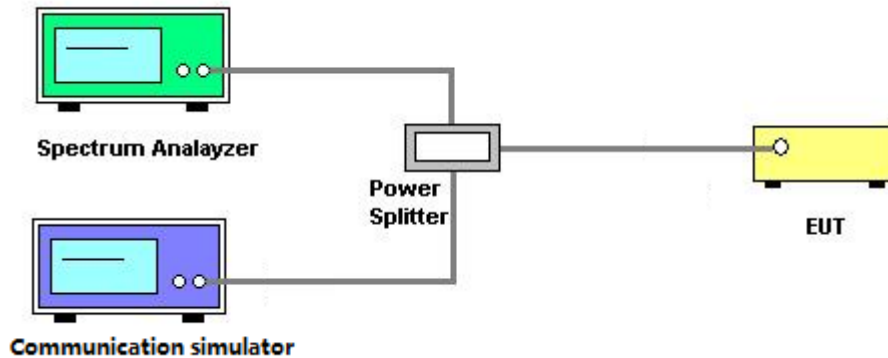
The testing follows FCC KDB 971168 v03r01 Section 5.7.

- Set resolution/measurement bandwidth \geq signal's occupied bandwidth.
- Set the number of counts to a value that stabilizes the measured CCDF curve.
- Record the maximum PAPR level associated with a probability of 0.1%.

9.3 DEVIATION FROM TEST STANDARD

No deviation.

9.4 TEST SETUP



9.5 TEST RESULT

Please refer to the APPENDIX G.

10 FREQUENCY STABILITY MEASUREMENT

10.1 LIMIT

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

10.2 TEST PROCEDURE

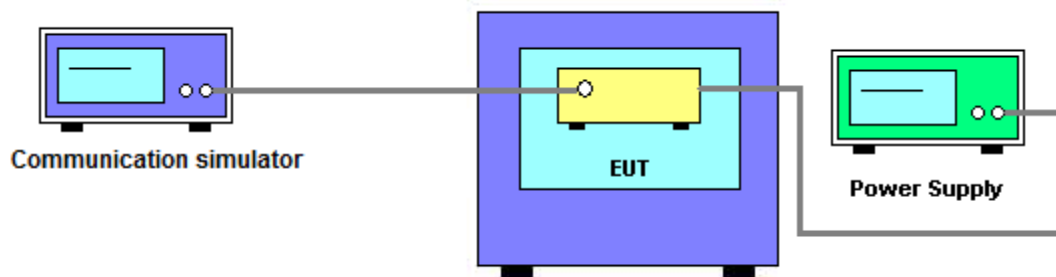
The testing follows FCC KDB 971168 v03r01 Section 9.

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ 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.
- The frequency error was recorded frequency error from the communication simulator.

10.3 DEVIATION FROM TEST STANDARD

No deviation.

10.4 TEST SETUP



10.5 TEST RESULT

Please refer to the APPENDIX H

11 LIST OF MEASURING EQUIPMENTS

AC Power Line Conducted Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	TWO-LINE V-NETWORK	R&S	ENV216	101339	2021/3/10	2022/3/9
2	Test Cable	EMCI	EMCRG58-BM-B M-9000	210501	2021/5/3	2022/5/2
3	EMI Test Receiver	R&S	ESR 7	101433	2020/12/11	2021/12/10
4	Measurement Software	EZ	EZ EMC (Version NB-03A1-01)	N/A	N/A	N/A

RF Power Output						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	8960 Series 10 Wireless Com Test Set	Agilent	E5515C	GB47390193	2021/7/23	2022/7/22
2	Radio Communication Analyzer	Anritsu	MT8820C	6201381608	2021/1/7	2022/1/6

Radiated Spurious Emissions						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Preamplifier	EMCI	EMC02325B	980217	2021/4/8	2022/4/7
2	Preamplifier	EMCI	EMC012645B	980267	2021/4/8	2022/4/7
3	Test Cable	EMCI	EMC-SM-SM-1000	180809	2021/4/8	2022/4/7
4	Test Cable	EMCI	EMC104-SM-SM-3000	151205	2021/4/8	2022/4/7
5	Test Cable	EMCI	EMC-SM-SM-7000	180408	2021/4/8	2022/4/7
6	MXE EMI Receiver	Agilent	N9038A	MY554200087	2021/5/27	2022/5/26
7	Signal Analyzer	Agilent	N9010A	MY56480554	2021/8/25	2022/8/24
8	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	2021/6/2	2022/6/1
9	Horn Ant	Schwarzbeck	BBHA 9170	BBHA 9170340	2021/7/9	2022/7/8
10	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	VULB 9168-352	2021/8/11	2022/8/10
11	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0625	2021/8/11	2022/8/10
12	Measurement Software	EZ	EZ EMC (Version NB-03A1-01)	N/A	N/A	N/A
13	8960 Series 10 Wireless Com Test Set	Agilent	E5515C	GB47390193	2021/7/23	2022/7/22
14	Radio Communication Analyzer (LTE)	Anritsu	MT8820C	6201381608	2021/1/7	2022/1/6

Frequency Stability Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	8960 Series 10 Wireless Com Test Set	Agilent	E5515C	GB47390193	2021/7/23	2022/7/22
2	Radio Communication Analyzer	Anritsu	MT8820C	6201381608	2021/1/7	2022/1/6
3	Thermal Chamber	HOLINK	H-T-1F-D	BA03101701	2021/6/28	2022/6/27

Others Conducted Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	8960 Series 10 Wireless Com Test Set	Agilent	E5515C	GB47390193	2021/7/23	2022/7/22
2	Radio Communication Analyzer	Anritsu	MT8820C	6201381608	2021/1/7	2022/1/6
3	Spectrum Analyzer	R&S	FSP40	100129	2021/6/8	2022/6/7
4	Spectrum Analyzer	Agilent	N9010A	MY54200240	2021/5/27	2022/5/26

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

12 EUT TEST PHOTO

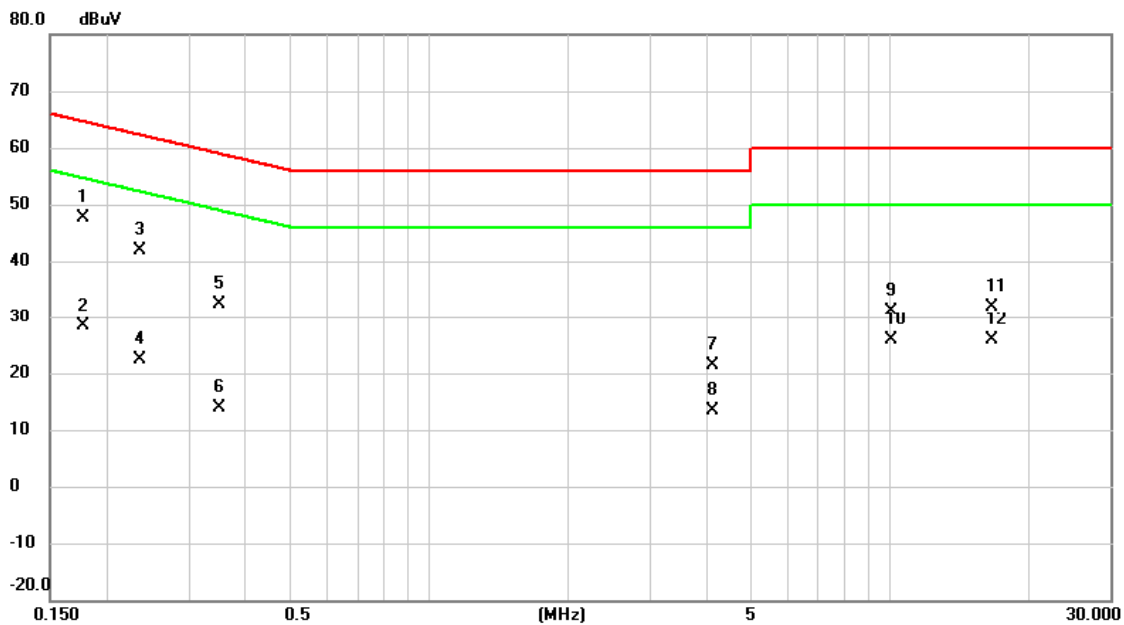
Please refer to document Appendix No.: TP-2107T083A-FCCP-1 (APPENDIX-TEST PHOTOS).

13 EUT PHOTOS

Please refer to document Appendix No.: EP-2107T083A-1 (APPENDIX-EUT PHOTOS).

APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

Test Mode	Normal	Tested Date	2021/9/17
Test Frequency	-	Phase	Line

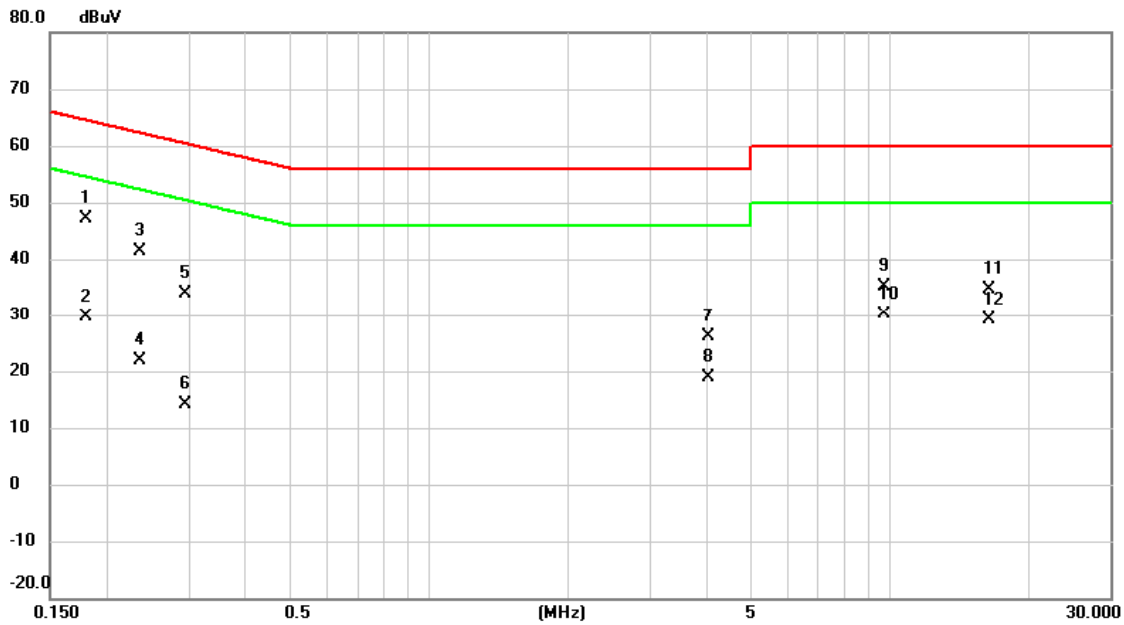


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1770	38.01	9.72	47.73	64.63	-16.90	QP	
2		0.1770	18.75	9.72	28.47	54.63	-26.16	AVG	
3		0.2355	32.10	9.72	41.82	62.25	-20.43	QP	
4		0.2355	12.74	9.72	22.46	52.25	-29.79	AVG	
5		0.3525	22.74	9.72	32.46	58.90	-26.44	QP	
6		0.3525	4.22	9.72	13.94	48.90	-34.96	AVG	
7		4.0920	11.43	9.90	21.33	56.00	-34.67	QP	
8		4.0920	3.46	9.90	13.36	46.00	-32.64	AVG	
9		10.0433	21.11	10.11	31.22	60.00	-28.78	QP	
10		10.0433	15.77	10.11	25.88	50.00	-24.12	AVG	
11		16.5930	21.65	10.20	31.85	60.00	-28.15	QP	
12		16.5930	15.64	10.20	25.84	50.00	-24.16	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	Normal	Tested Date	2021/9/17
Test Frequency	-	Phase	Neutral

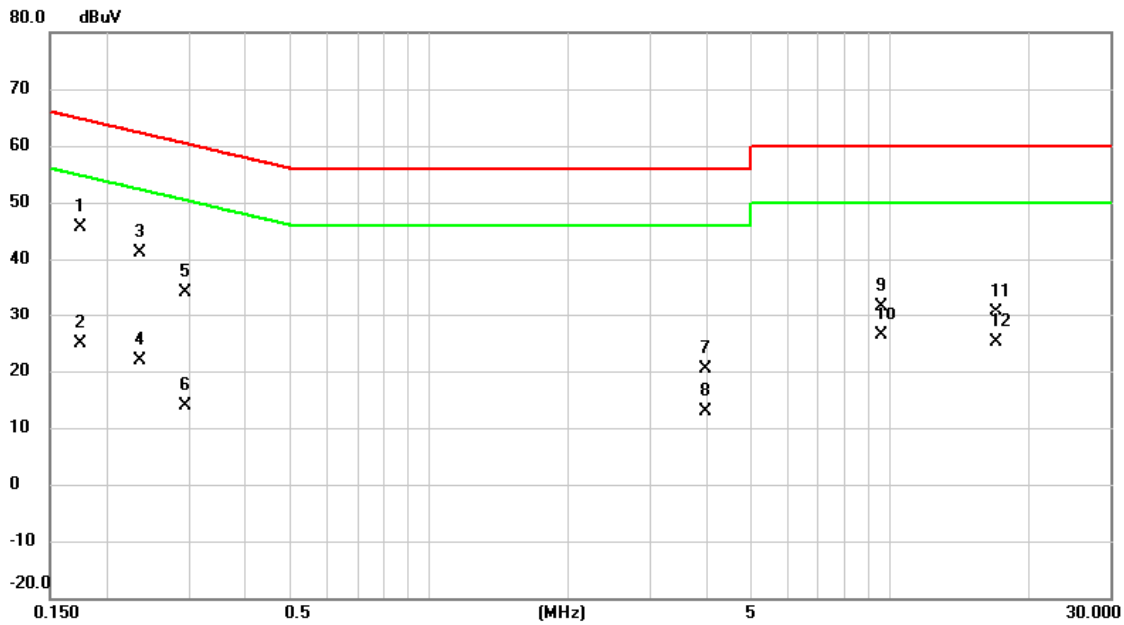


No.	Mk.	Freq. (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector	Comment
1	*	0.1793	37.47	9.73	47.20	64.52	-17.32	QP	
2		0.1793	19.87	9.73	29.60	54.52	-24.92	AVG	
3		0.2355	31.62	9.72	41.34	62.25	-20.91	QP	
4		0.2355	12.19	9.72	21.91	52.25	-30.34	AVG	
5		0.2940	24.16	9.73	33.89	60.41	-26.52	QP	
6		0.2940	4.42	9.73	14.15	50.41	-36.26	AVG	
7		4.0155	16.13	9.91	26.04	56.00	-29.96	QP	
8		4.0155	8.86	9.91	18.77	46.00	-27.23	AVG	
9		9.7238	25.08	10.14	35.22	60.00	-24.78	QP	
10		9.7238	20.04	10.14	30.18	50.00	-19.82	AVG	
11		16.3568	24.47	10.28	34.75	60.00	-25.25	QP	
12		16.3568	18.96	10.28	29.24	50.00	-20.76	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	Idle	Tested Date	2021/9/17
Test Frequency	-	Phase	Line

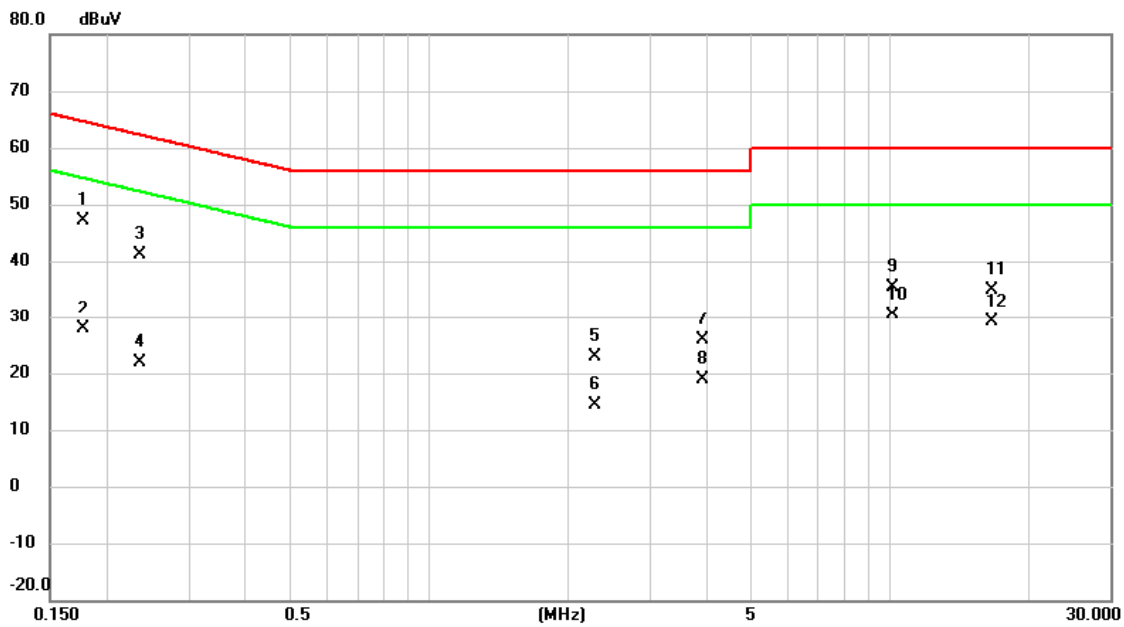


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1748	35.94	9.73	45.67	64.73	-19.06	QP	
2		0.1748	15.04	9.73	24.77	54.73	-29.96	AVG	
3		0.2355	31.32	9.72	41.04	62.25	-21.21	QP	
4		0.2355	12.15	9.72	21.87	52.25	-30.38	AVG	
5		0.2940	24.39	9.73	34.12	60.41	-26.29	QP	
6		0.2940	4.19	9.73	13.92	50.41	-36.49	AVG	
7		3.9525	10.61	9.89	20.50	56.00	-35.50	QP	
8		3.9525	2.87	9.89	12.76	46.00	-33.24	AVG	
9		9.6158	21.54	10.10	31.64	60.00	-28.36	QP	
10		9.6158	16.16	10.10	26.26	50.00	-23.74	AVG	
11		17.0160	20.52	10.20	30.72	60.00	-29.28	QP	
12		17.0160	14.89	10.20	25.09	50.00	-24.91	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	Idle	Tested Date	2021/9/17
Test Frequency	-	Phase	Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1770	37.46	9.73	47.19	64.63	-17.44	QP	
2		0.1770	18.13	9.73	27.86	54.63	-26.77	AVG	
3		0.2355	31.36	9.72	41.08	62.25	-21.17	QP	
4		0.2355	12.10	9.72	21.82	52.25	-30.43	AVG	
5		2.2853	13.11	9.79	22.90	56.00	-33.10	QP	
6		2.2853	4.60	9.79	14.39	46.00	-31.61	AVG	
7		3.9075	15.98	9.90	25.88	56.00	-30.12	QP	
8		3.9075	8.93	9.90	18.83	46.00	-27.17	AVG	
9		10.1625	25.35	10.15	35.50	60.00	-24.50	QP	
10		10.1625	20.18	10.15	30.33	50.00	-19.67	AVG	
11		16.5863	24.50	10.29	34.79	60.00	-25.21	QP	
12		16.5863	18.93	10.29	29.22	50.00	-20.78	AVG	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX B RF POWER OUTPUT TEST

Output Power (dBm):

Band	Mode	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)
WCDMA Band II	Rel 99	9262/9662	1852.4	22.43
		9400/9800	1880.0	22.46
		9538/9938	1907.6	22.44

Band	Sub-test	UL/DL Channel No.	Average power(dBm)
HSDPA II	1	9262/9662	22.38
		9400/9800	22.37
		9538/9983	22.39
	2	9262/9662	21.90
		9400/9800	21.89
		9538/9983	21.91
	3	9262/9662	21.48
		9400/9800	21.47
		9538/9983	21.49
	4	9262/9662	22.29
		9400/9800	22.28
		9538/9983	22.30

Band	Sub-test	UL/DL Channel No.	Average power(dBm)
HSUPA II	1	9262/9662	22.39
		9400/9800	22.38
		9538/9983	22.40
	2	9262/9662	20.44
		9400/9800	20.43
		9538/9983	20.45
	3	9262/9662	21.53
		9400/9800	21.52
		9538/9983	21.54
	4	9262/9662	20.67
		9400/9800	20.66
		9538/9983	20.68
	5	9262/9662	22.32
		9400/9800	22.31
		9538/9983	22.33

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	
2	1.4	18607	1850.7	QPSK	1	0	0	22.21	
					1	3	0	22.12	
					1	5	0	22.17	
					3	0	0	22.21	
					3	1	0	22.12	
					3	3	0	22.17	
				16QAM	6	0	1	21.27	
					1	0	1	21.43	
					1	3	1	21.30	
					1	5	1	21.28	
					3	0	1	21.43	
					3	1	1	21.30	
		18900	1880.0	QPSK	1880.0	3	3	1	21.28
						6	0	2	20.36
						1	0	0	22.03
						1	3	0	22.25
						1	5	0	22.13
						3	0	0	22.03
				16QAM	3	1	0	22.25	
					3	3	0	22.13	
					6	0	1	21.09	
					1	0	1	21.21	
					1	3	1	21.17	
					1	5	1	21.20	
		19193	1909.3	QPSK	1909.3	3	0	1	21.21
						3	1	1	21.17
						3	3	1	21.20
						6	0	2	20.50
						1	0	0	22.13
						1	3	0	22.01
16QAM	1			5	0	22.15			
	3			0	0	22.13			
	3			1	0	22.01			
	3			3	0	22.15			
	6			0	1	21.19			
	1			0	1	21.31			
19193	1909.3	16QAM	1909.3	1	3	1	21.27		
				1	5	1	21.22		
				3	0	1	21.31		
				3	1	1	21.27		
				3	3	1	21.22		
				6	0	2	20.60		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)	
2	3	18615	1851.5	QPSK	1	0	0	22.26	
					1	8	0	22.17	
					1	14	0	22.22	
					8	0	1	21.41	
					8	4	1	21.25	
					8	7	1	21.44	
				16QAM	15	0	1	21.32	
					1	0	1	21.48	
					1	8	1	21.35	
					1	14	1	21.33	
					8	0	2	20.31	
					8	4	2	20.35	
		18900	1880.0	QPSK	1880.0	8	7	2	20.29
						8	0	2	20.41
						15	0	2	20.41
						1	0	0	22.08
						1	8	0	22.30
						1	14	0	22.18
				16QAM	8	0	1	21.19	
					8	4	1	21.34	
					8	7	1	21.36	
					15	0	1	21.14	
					1	0	1	21.26	
					1	8	1	21.22	
		19815	1908.5	QPSK	1908.5	1	14	1	21.25
						8	0	2	20.09
						8	4	2	20.44
						8	7	2	20.21
						15	0	2	21.30
						1	0	0	22.18
16QAM	1			8	0	22.06			
	1			14	0	22.20			
	8			0	1	21.29			
	8			4	1	21.10			
	8			7	1	21.38			
	15			0	1	21.24			
16QAM	1	0	1	21.36					
	1	8	1	21.32					
	1	14	1	21.27					
	8	0	2	20.19					
	8	4	2	20.20					
	8	7	2	20.23					
					15	0	2	21.10	

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
2	5	18625	1852.5	QPSK	1	0	0	22.31
					1	12	0	22.22
					1	24	0	22.27
					12	0	1	21.46
					12	7	1	21.30
					12	13	1	21.49
					25	0	1	21.37
				16QAM	1	0	1	21.53
					1	12	1	21.40
					1	24	1	21.38
					12	0	2	20.36
					12	7	2	20.40
					12	13	2	20.34
					25	0	2	20.46
		18900	1880.0	QPSK	1	0	0	22.13
					1	12	0	22.35
					1	24	0	22.23
					12	0	1	21.24
					12	7	1	21.39
					12	13	1	21.41
					25	0	1	21.19
				16QAM	1	0	1	21.31
					1	12	1	21.27
					1	24	1	21.30
					12	0	2	20.14
					12	7	2	20.49
					12	13	2	20.26
					25	0	2	20.28
		19175	1907.5	QPSK	1	0	0	22.23
					1	12	0	22.11
1	24				0	22.25		
12	0				1	21.34		
12	7				1	21.15		
12	13				1	21.43		
25	0				1	21.29		
16QAM	1			0	1	21.41		
	1			12	1	21.37		
	1			24	1	21.32		
	12			0	2	20.24		
	12			7	2	20.25		
	12			13	2	20.28		
	25			0	2	20.38		

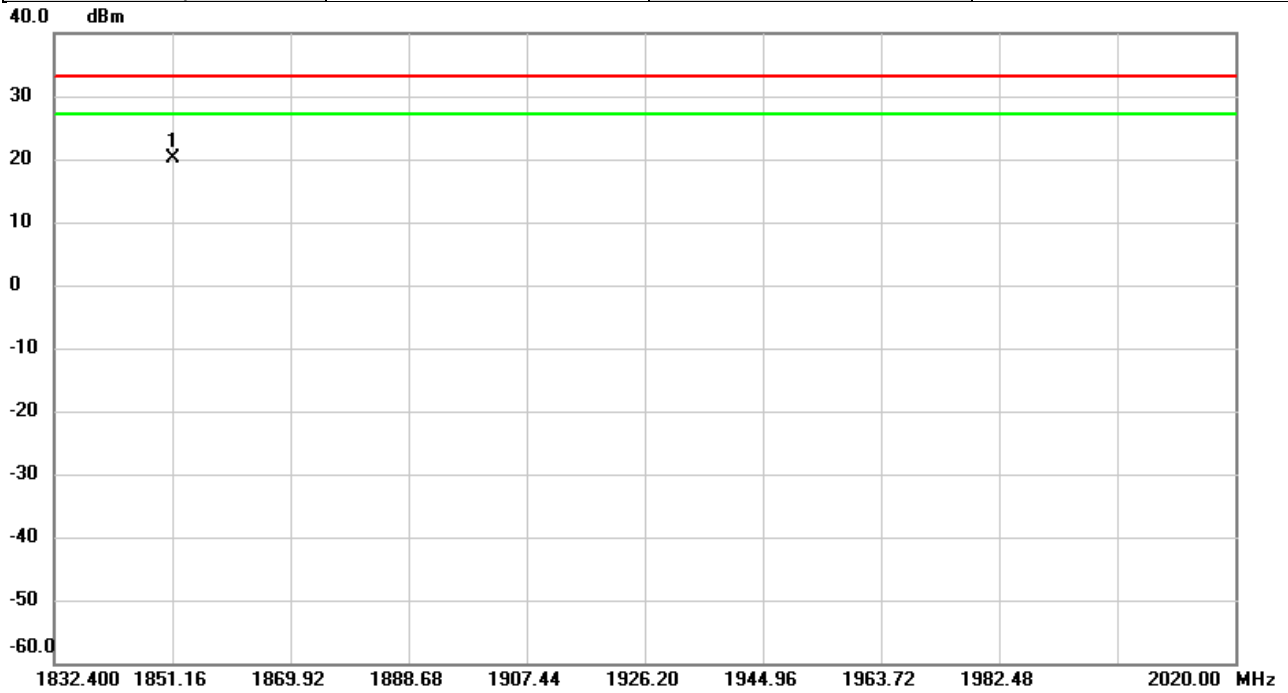
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
2	10	18650	1855.0	QPSK	1	0	0	22.36
					1	25	0	22.27
					1	49	0	22.32
					25	0	1	21.51
					25	12	1	21.35
					25	25	1	21.54
				16QAM	50	0	1	21.42
					1	0	1	21.58
					1	25	1	21.45
					1	49	1	21.43
					25	0	2	20.41
					25	12	2	20.45
		18900	1880.0	QPSK	25	25	2	20.39
					50	0	2	20.51
					1	0	0	22.18
					1	25	0	22.40
					1	49	0	22.28
					25	0	1	21.29
				16QAM	25	12	1	21.44
					25	25	1	21.46
					50	0	1	21.24
					1	0	1	21.36
					1	25	1	21.32
					1	49	1	21.35
		19150	1905.0	QPSK	25	0	2	20.19
					25	12	2	20.54
					25	25	2	20.31
50	0				2	20.33		
1	0				0	22.28		
1	25				0	22.16		
16QAM	1			49	0	22.30		
	25			0	1	21.39		
	25			12	1	21.20		
	25			25	1	21.48		
	50			0	1	21.34		
	1			0	1	21.46		
16QAM	1	25	1	21.42				
	1	49	1	21.37				
	25	0	2	20.29				
	25	12	2	20.30				
	25	25	2	20.33				
	50	0	2	20.43				

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
2	15	18675	1857.5	QPSK	1	0	0	22.41
					1	37	0	22.32
					1	74	0	22.37
					36	0	1	21.56
					36	20	1	21.40
					36	39	1	21.59
					75	0	1	21.47
				16QAM	1	0	1	21.63
					1	37	1	21.50
					1	74	1	21.48
					36	0	2	20.46
					36	20	2	20.50
					36	39	2	20.44
					75	0	2	20.56
		18900	1880.0	QPSK	1	0	0	22.23
					1	37	0	22.45
					1	74	0	22.33
					36	0	1	21.34
					36	20	1	21.49
					36	39	1	21.51
					75	0	1	21.29
				16QAM	1	0	1	21.41
					1	37	1	21.37
					1	74	1	21.40
					36	0	2	20.24
					36	20	2	20.59
					36	39	2	20.36
75	0				2	20.38		
19125	1902.5	QPSK	1	0	0	22.33		
			1	37	0	22.21		
			1	74	0	22.35		
			36	0	1	21.44		
			36	20	1	21.25		
			36	39	1	21.53		
			75	0	1	21.39		
		16QAM	1	0	1	21.51		
			1	37	1	21.47		
			1	74	1	21.42		
			36	0	2	20.34		
			36	20	2	20.35		
			36	39	2	20.38		
			75	0	2	20.48		

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)		
2	20	18700	1860.0	QPSK	1	0	0	22.76		
					1	49	0	22.67		
					1	99	0	22.72		
					50	0	1	21.57		
					50	24	1	21.41		
					50	50	1	21.60		
				16QAM	100	0	1	21.48		
					1	0	1	21.64		
					1	49	1	21.51		
					1	99	1	21.49		
					50	0	2	20.47		
					50	24	2	20.51		
		18900	1880.0	QPSK	1880.0	QPSK	50	50	2	20.45
							100	0	2	20.57
							1	0	0	22.84
							1	49	0	22.70
							1	99	0	22.52
							50	0	1	21.35
				16QAM	50	24	1	21.50		
					50	50	1	21.52		
					100	0	1	21.30		
					1	0	1	21.42		
					1	49	1	21.38		
					1	99	1	21.41		
		19100	1900.0	QPSK	1900.0	QPSK	50	0	2	20.25
							50	24	2	20.60
							50	50	2	20.37
							100	0	2	20.39
							1	0	0	22.63
							1	49	0	22.46
16QAM	1			99	0	22.52				
	50			0	1	21.45				
	50			24	1	21.26				
	50			50	1	21.54				
	100			0	1	21.40				
	1			0	1	21.52				
16QAM	1	49	1	21.48						
	1	99	1	21.43						
	50	0	2	20.35						
	50	24	2	20.36						
	50	50	2	20.39						
	100	0	2	20.49						

ERP (dBm):

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9662	Polarization	Vertical
Temp	25°C	Hum.	52%

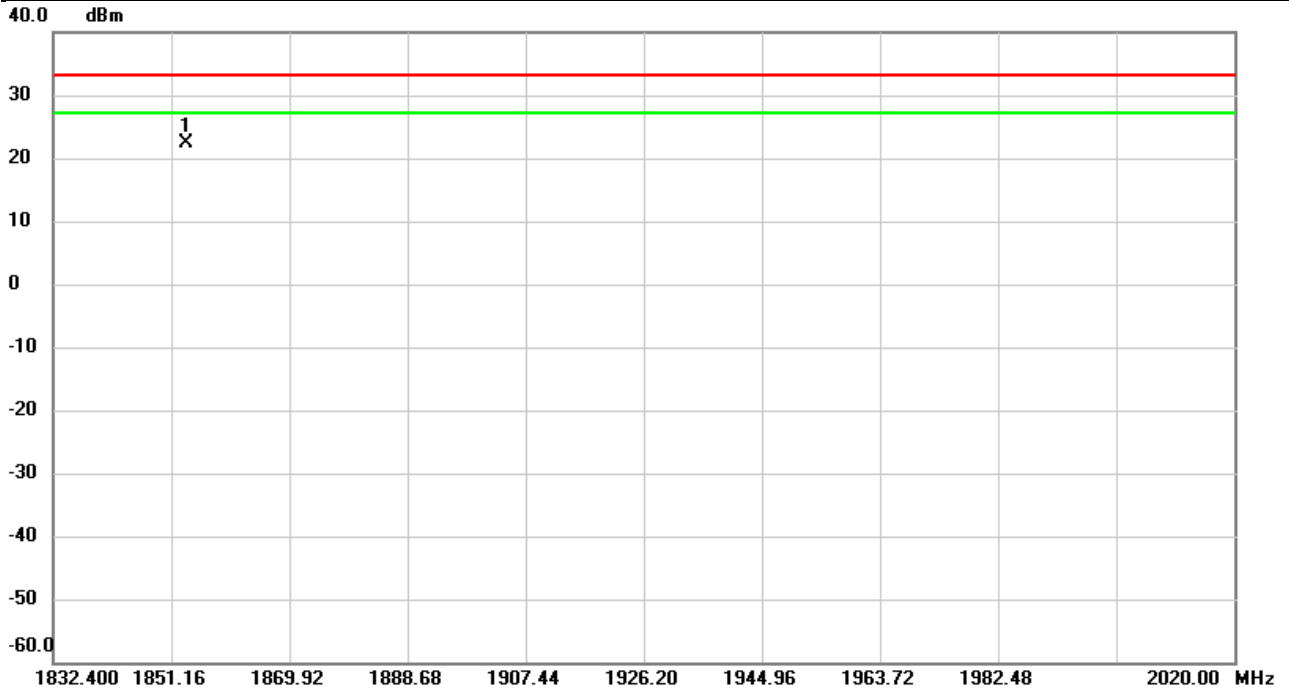


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1851.229	-19.46	39.67	20.21	33.01	-12.80	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9662	Polarization	Horizontal
Temp	25°C	Hum.	52%

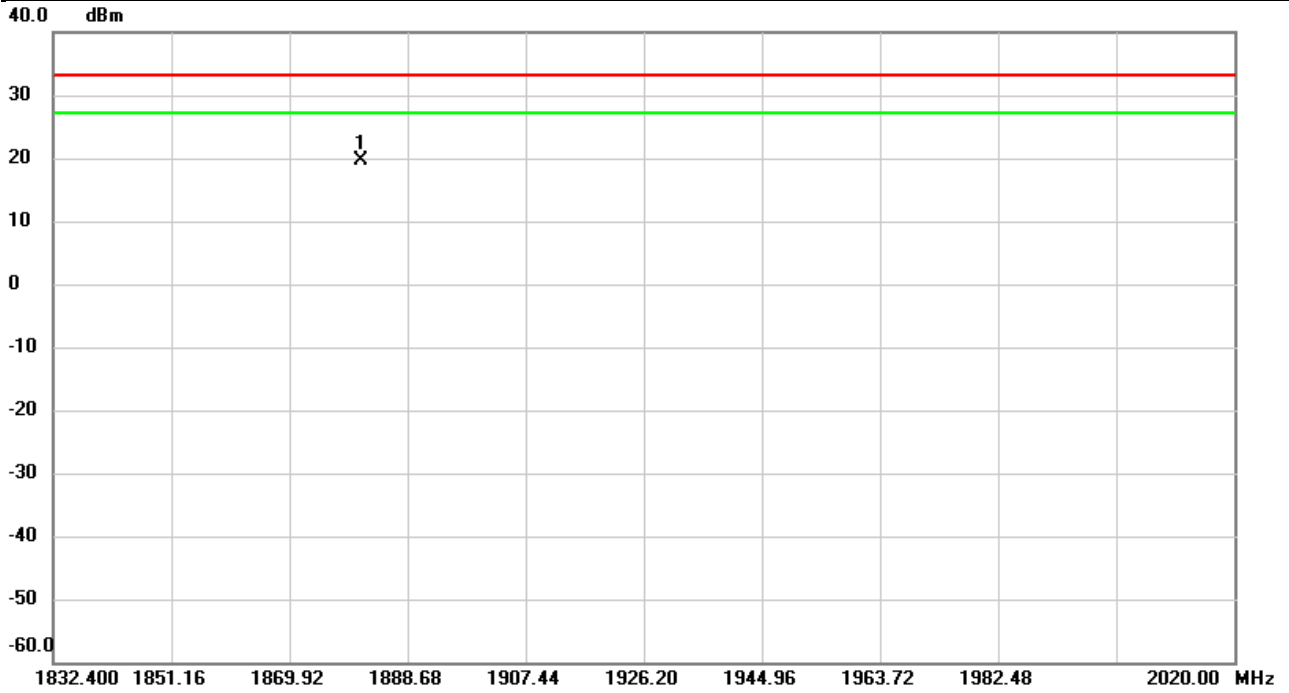


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1853.618	-18.14	40.60	22.46	33.01	-10.55	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9800	Polarization	Vertical
Temp	25°C	Hum.	52%

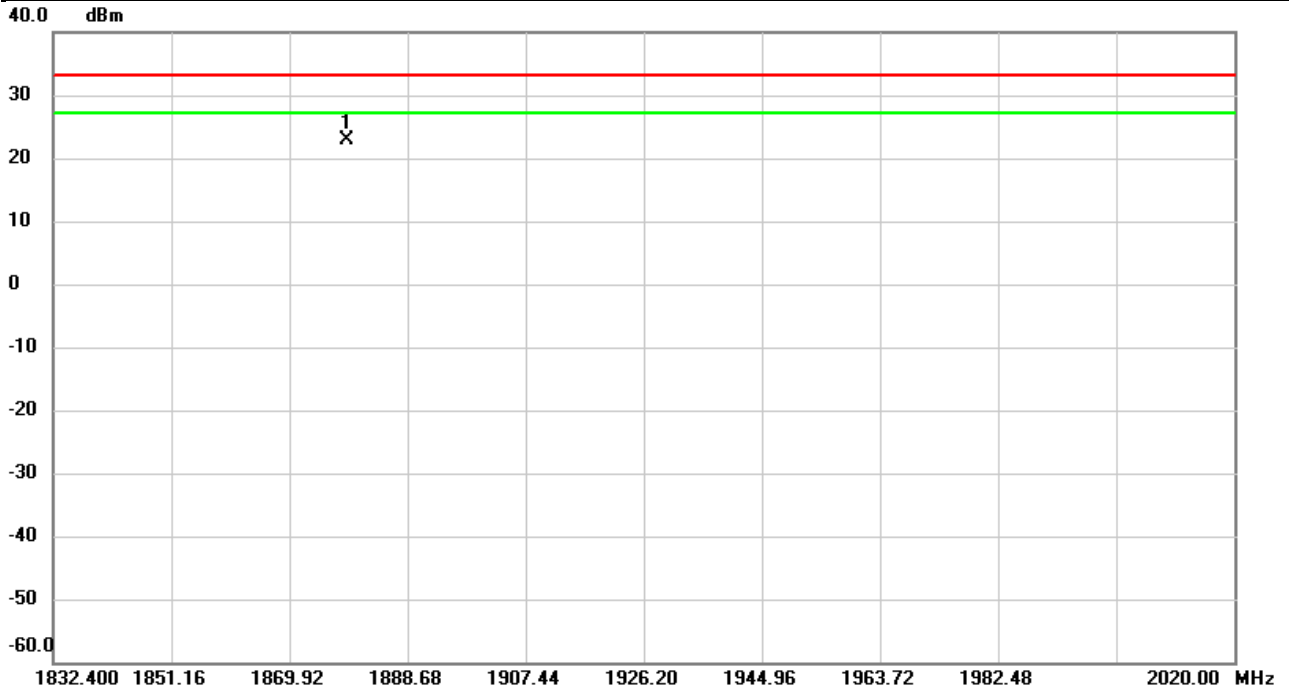


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1881.201	-20.25	39.79	19.54	33.01	-13.47	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9800	Polarization	Horizontal
Temp	25°C	Hum.	52%

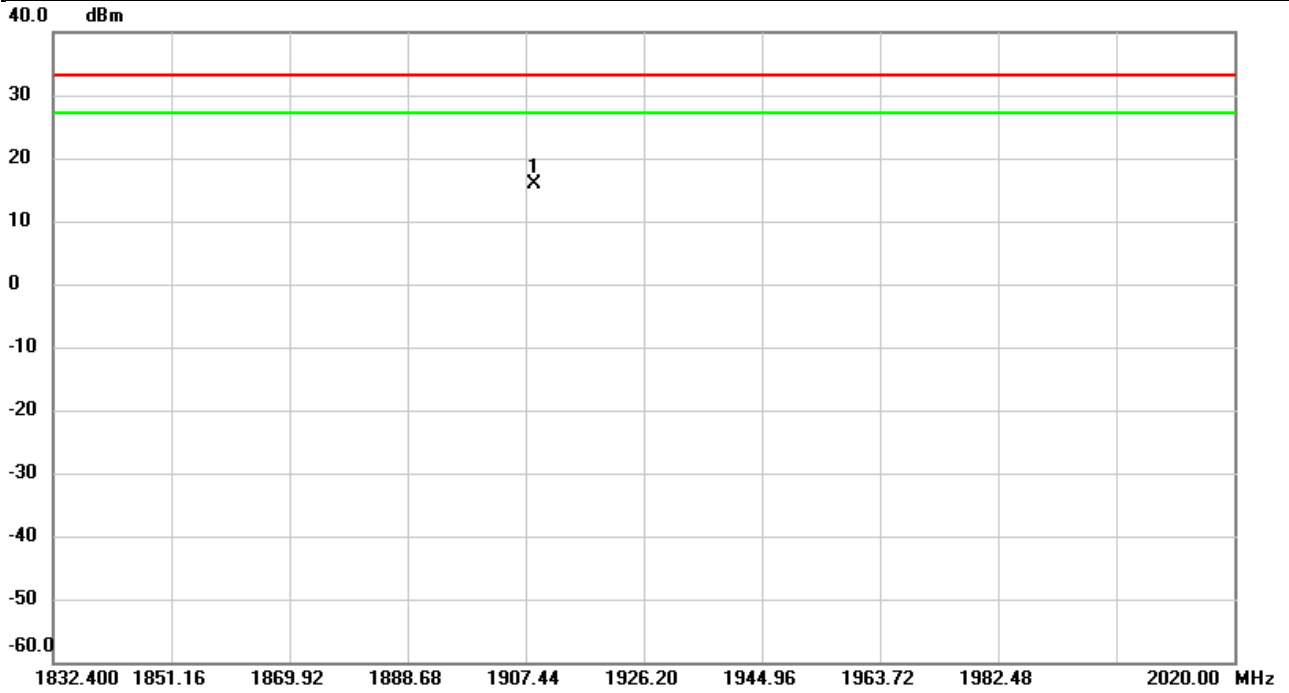


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1878.950	-17.85	40.73	22.88	33.01	-10.13	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9938	Polarization	Vertical
Temp	25°C	Hum.	52%

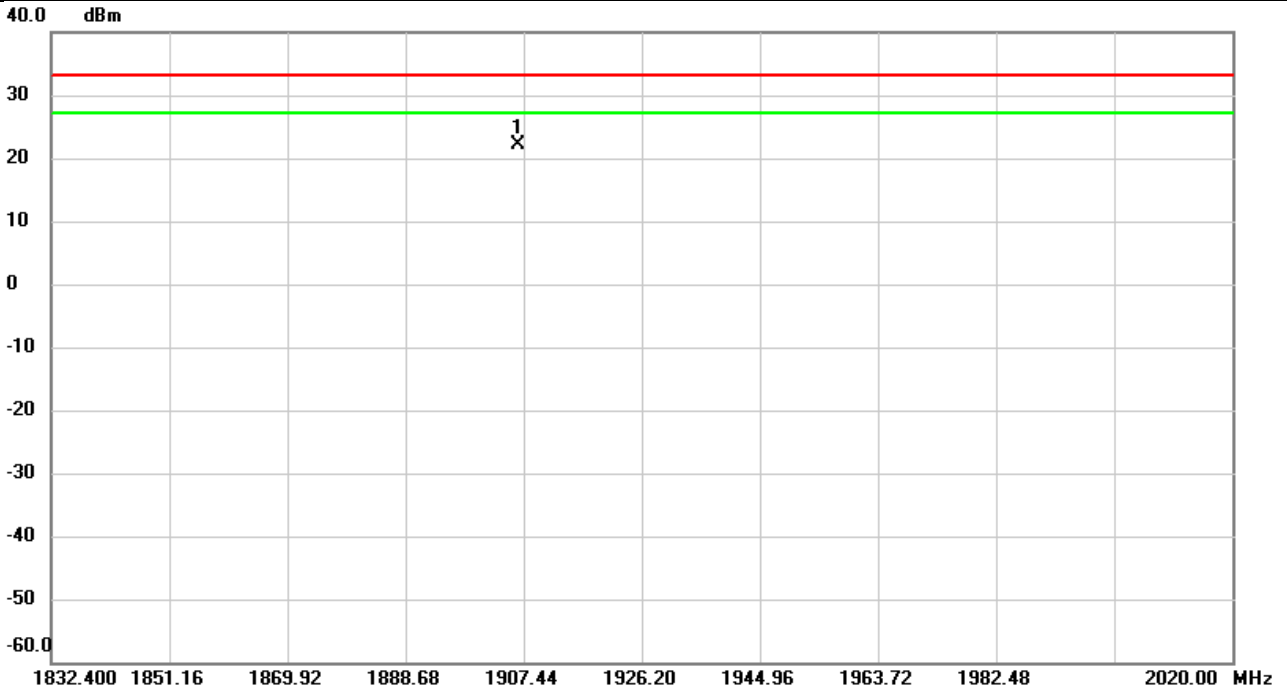


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1908.791	-24.09	39.89	15.80	33.01	-17.21	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9938	Polarization	Horizontal
Temp	25°C	Hum.	52%

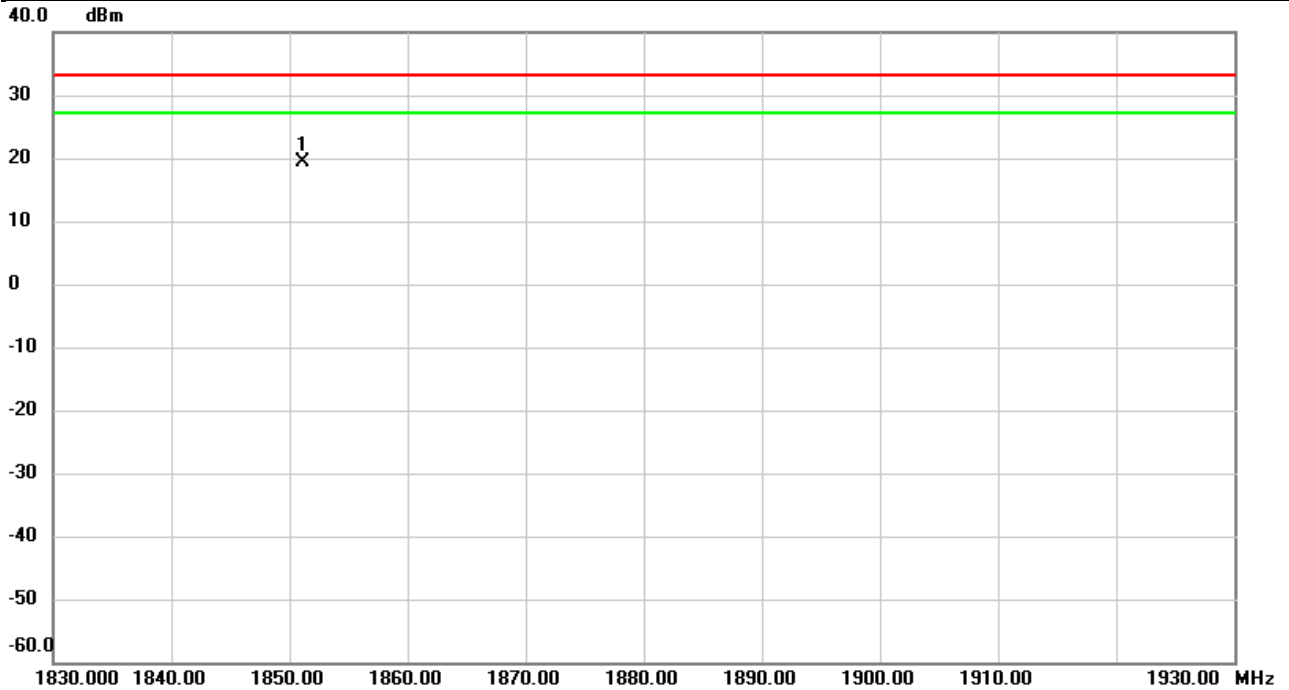


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1906.458	-18.73	40.87	22.14	33.01	-10.87	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH18700	Polarization	Vertical
Temp	22°C	Hum.	54%

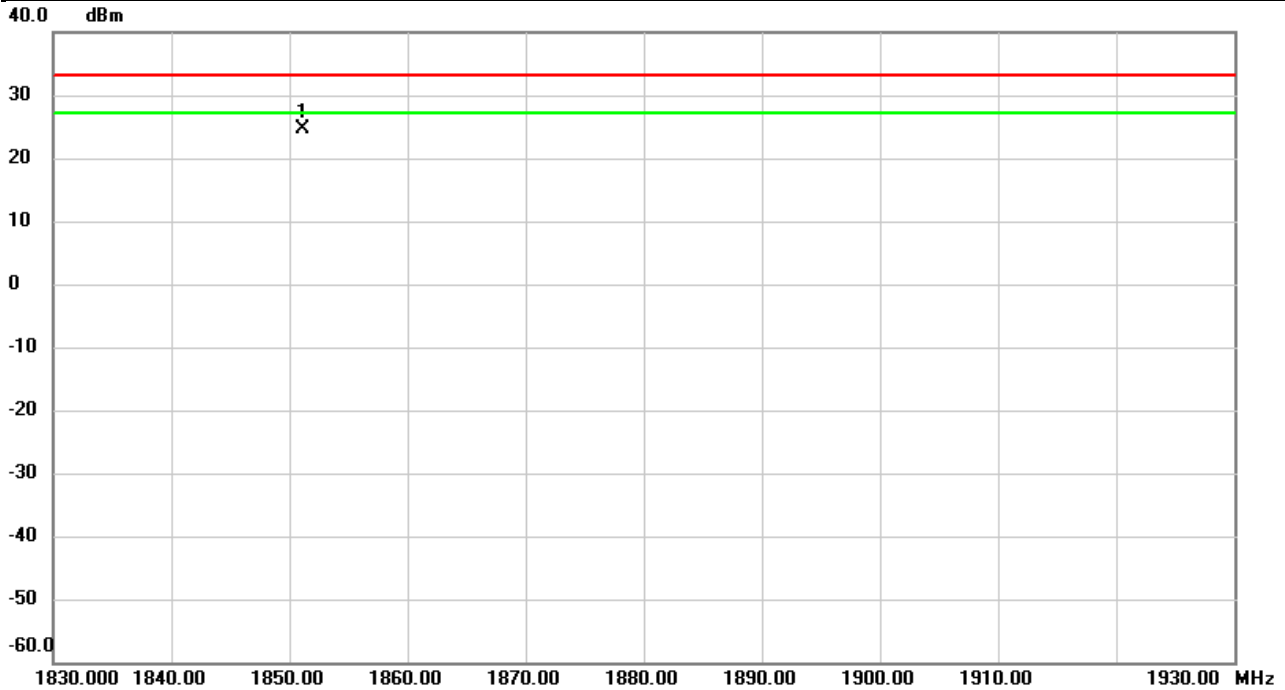


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	1851.127	-20.35	39.67	19.32	33.01	-13.69	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH18700	Polarization	Horizontal
Temp	22°C	Hum.	54%

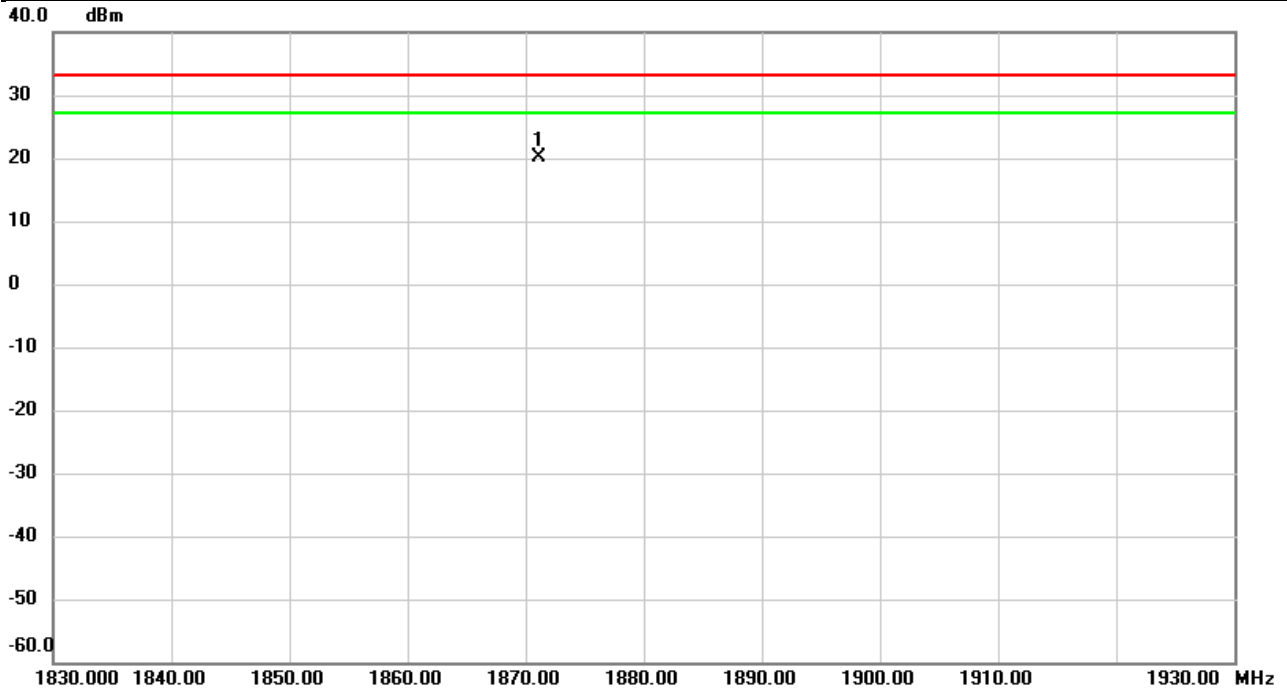


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1851.100	-15.90	40.59	24.69	33.01	-8.32	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH18900	Polarization	Vertical
Temp	22°C	Hum.	54%

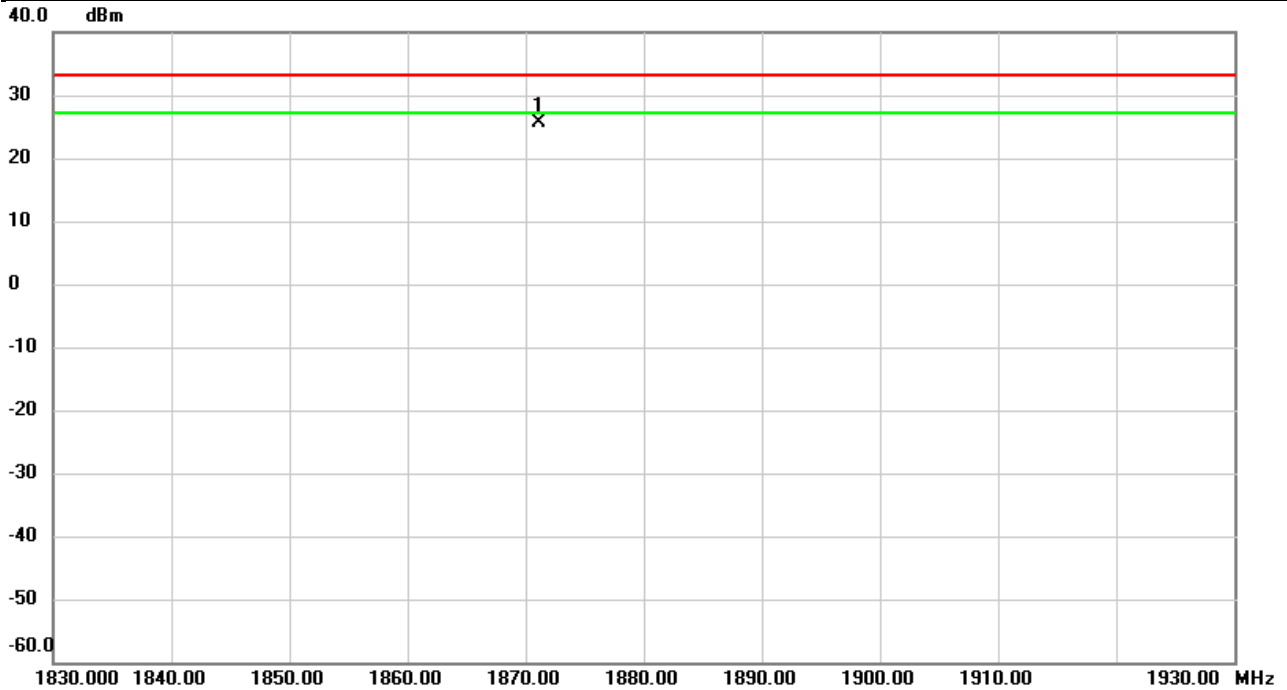


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	1871.093	-19.73	39.75	20.02	33.01	-12.99	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH18900	Polarization	Horizontal
Temp	22°C	Hum.	54%

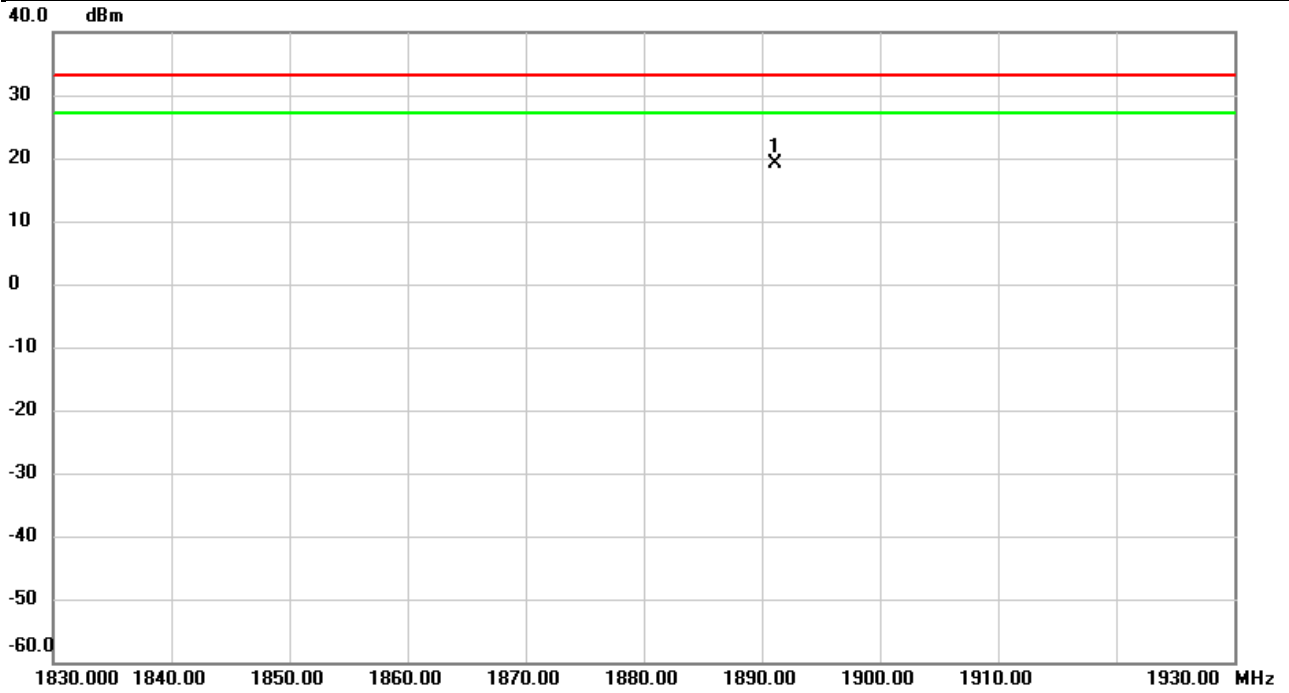


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	1871.140	-14.94	40.69	25.75	33.01	-7.26	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH19100	Polarization	Vertical
Temp	22°C	Hum.	54%

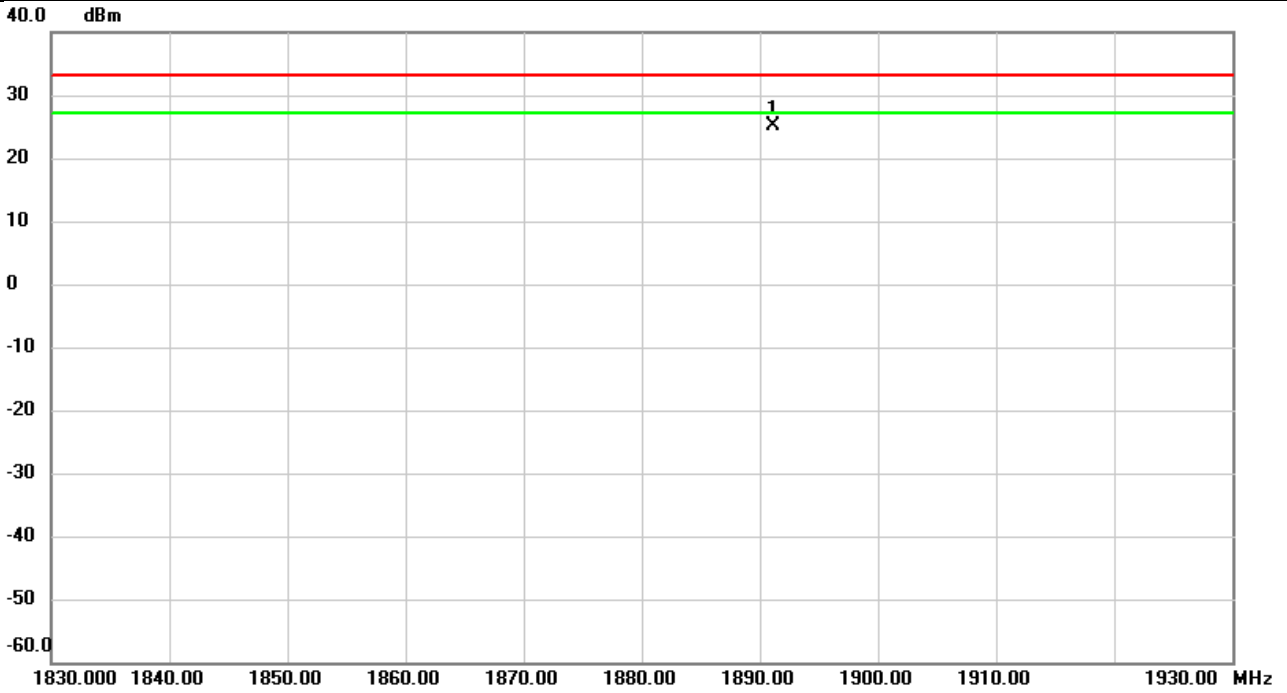


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	1891.120	-20.68	39.83	19.15	33.01	-13.86	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH19100	Polarization	Horizontal
Temp	22°C	Hum.	54%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	1891.093	-15.68	40.79	25.11	33.01	-7.90	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX C OCCUPIED BANDWIDTH

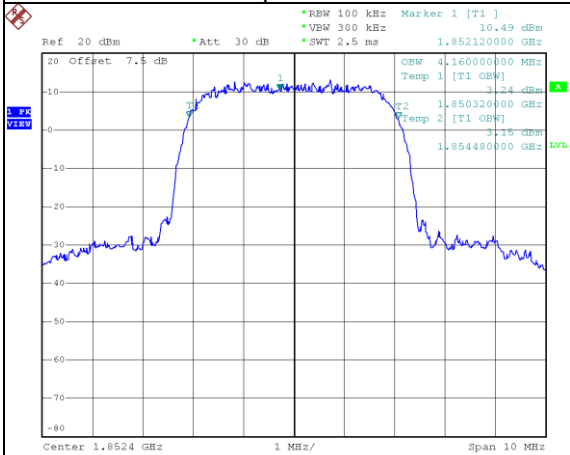
WCDMA Band II_WCDMA

QPSK

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
9262	1852.4	4.16	9262	1852.4	4.74
9400	1880	4.12	9400	1880	4.72
9538	1907.6	4.14	9538	1907.6	4.76

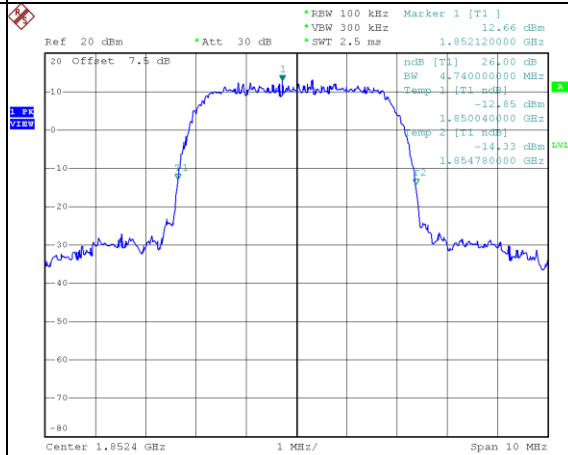
Spectrum Plot

99% Occupied Bandwidth-9262



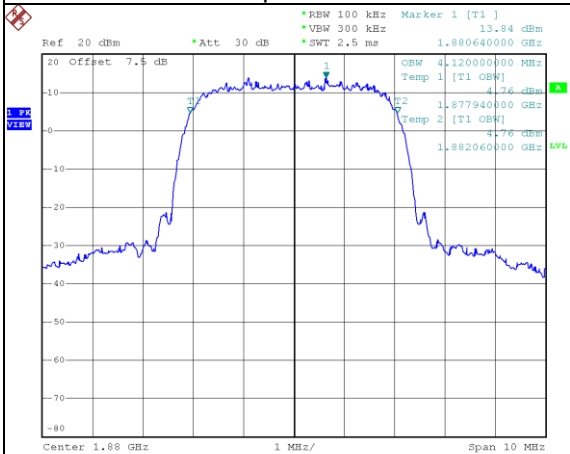
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26dB Bandwidth-9262



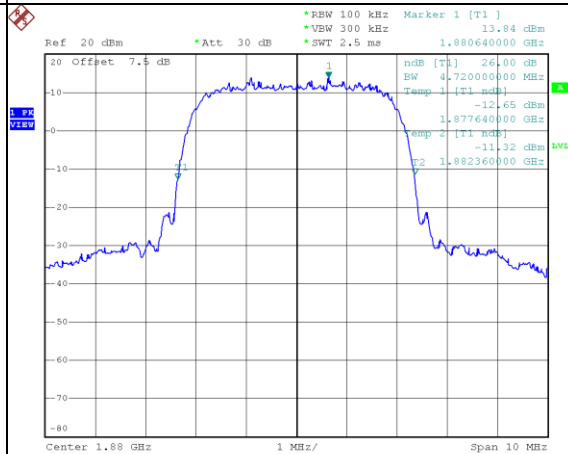
Date: 27.SEP.2021 15:33:34

99% Occupied Bandwidth-9400

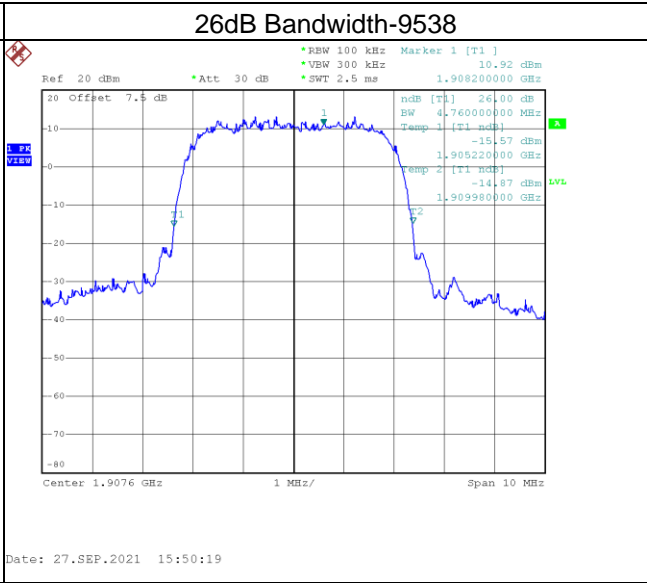
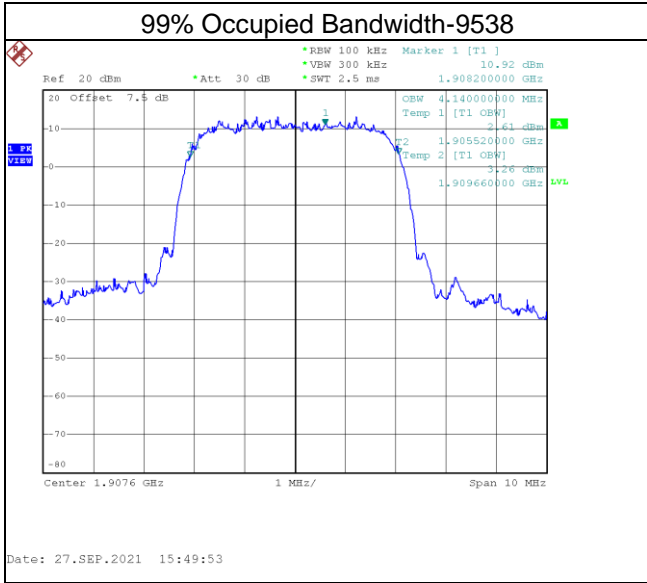


Date: 27.SEP.2021 15:43:01

26dB Bandwidth-9400



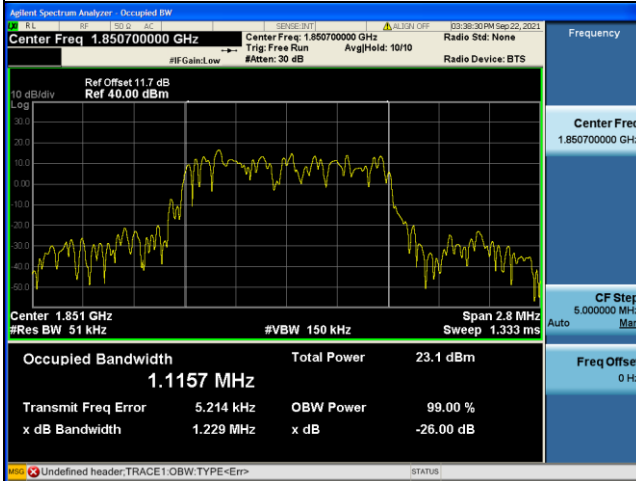
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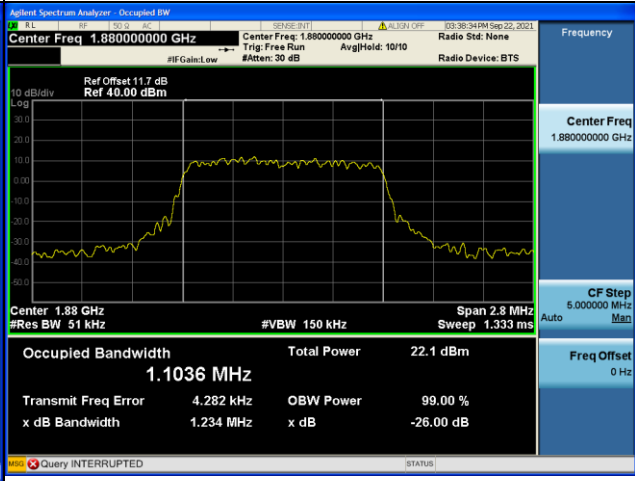
LTE Band 2_1.4M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18607	1850.7	1.1157	18607	1850.7	1.229
18900	1880	1.1036	18900	1880	1.234
19193	1909.3	1.0969	19193	1909.3	1.309
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18607	1850.7	1.0994	18607	1850.7	1.257
18900	1880	1.1042	18900	1880	1.258
19193	1909.3	1.1037	19193	1909.3	1.231

Spectrum Plot

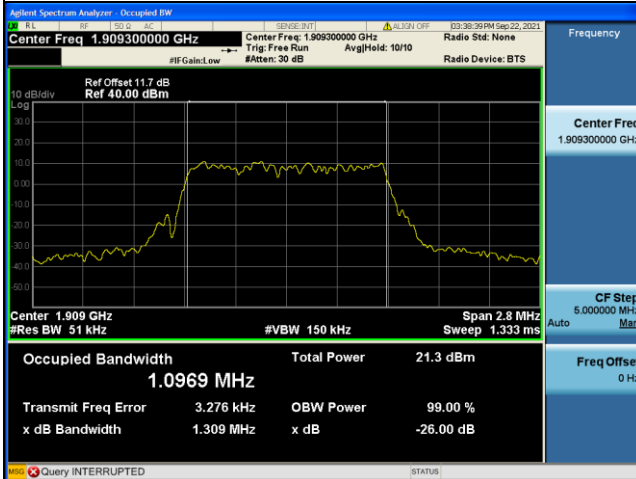
QPSK-18607



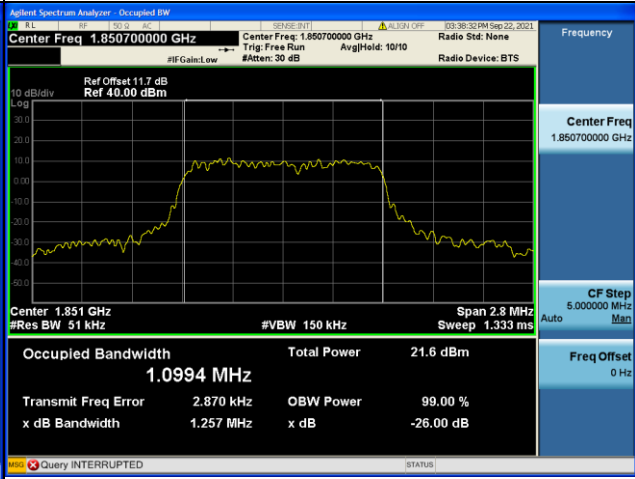
QPSK-18900



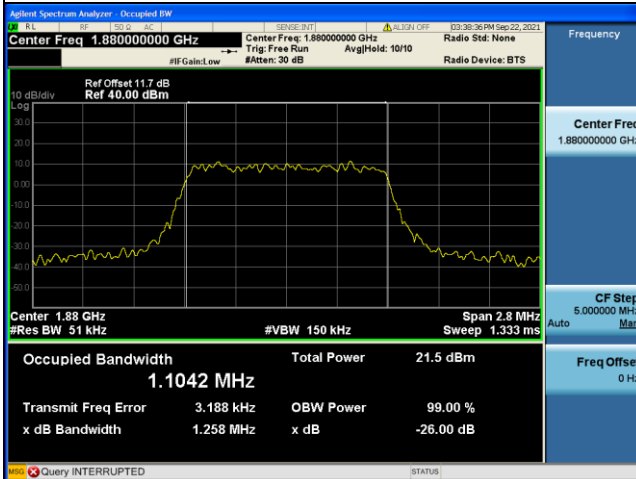
QPSK-19193



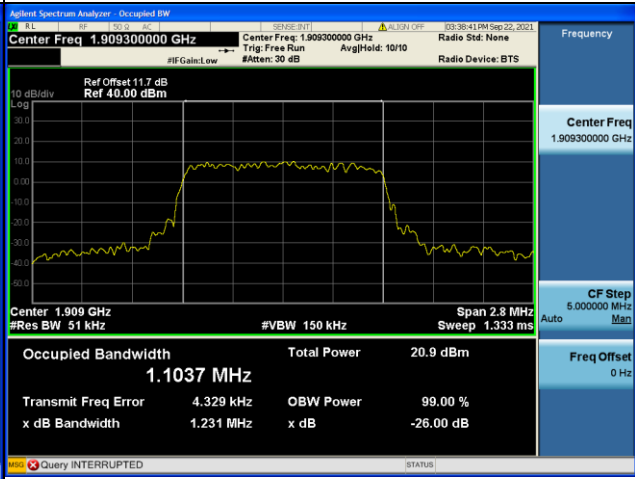
16QAM-18607



16QAM-18900

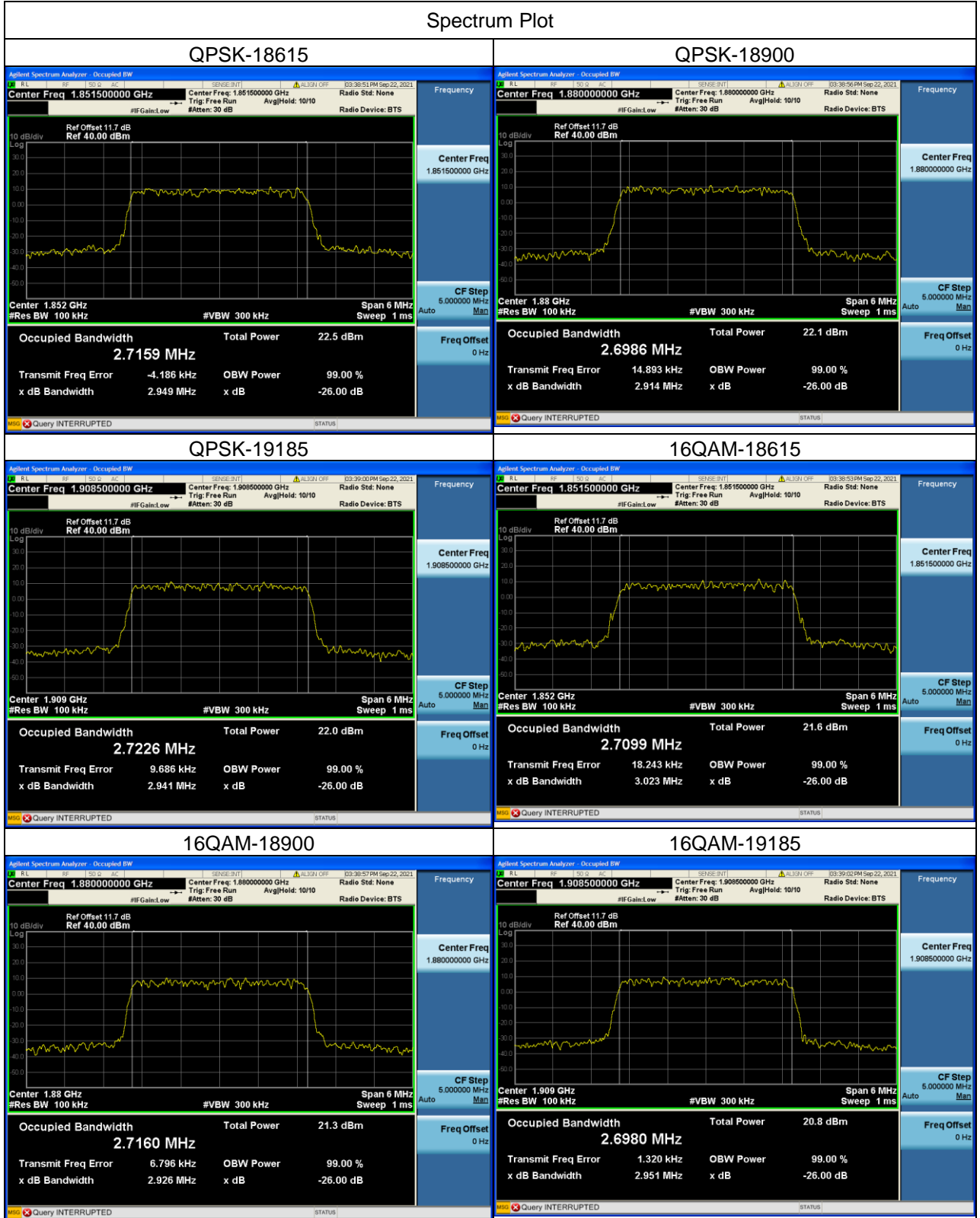


16QAM-19193



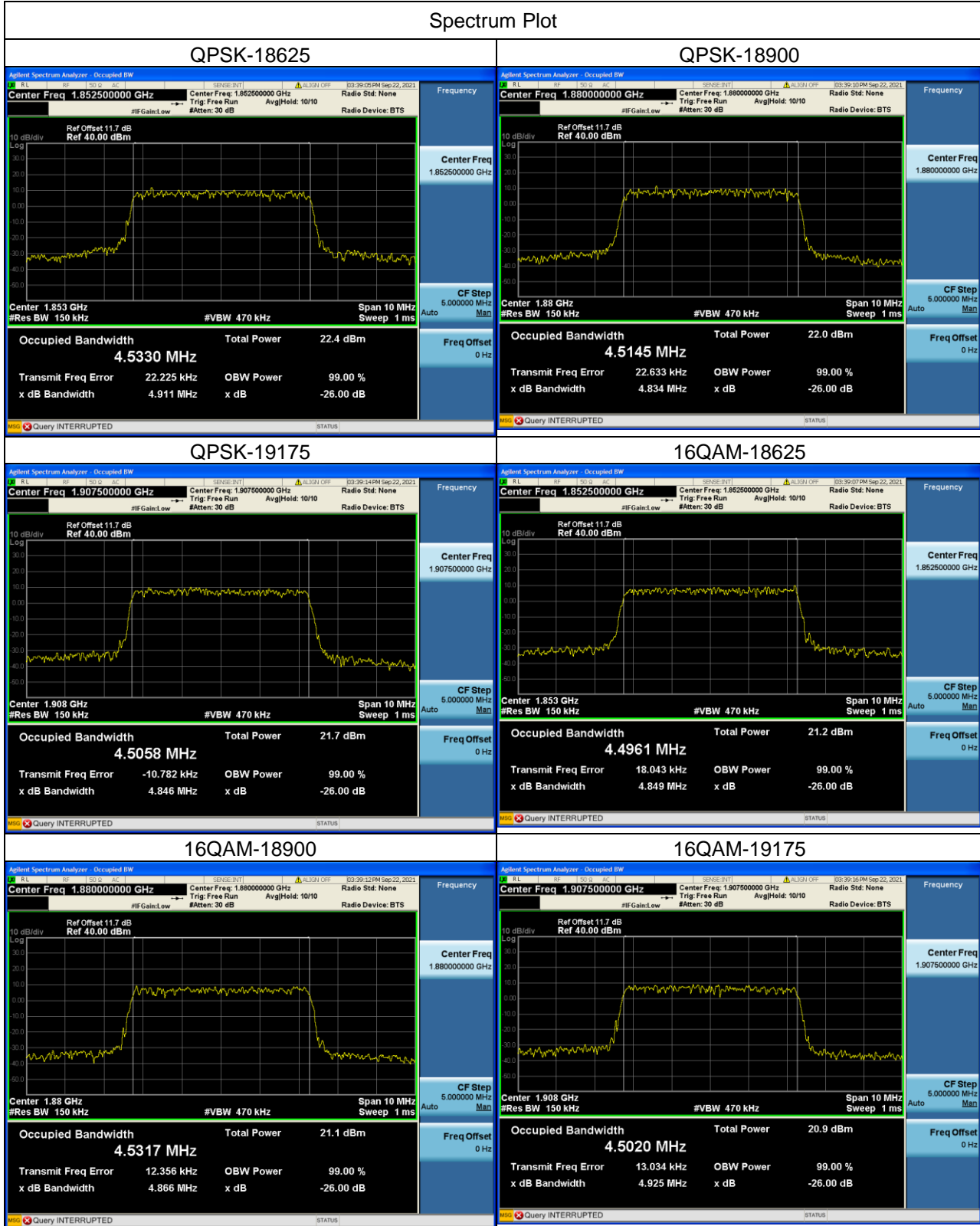
LTE Band 2_3M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18615	1851.5	2.7159	18615	1851.5	2.949
18900	1880	2.6986	18900	1880	2.914
19185	1908.5	2.7226	19185	1908.5	2.941
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18615	1851.5	2.7099	18615	1851.5	3.023
18900	1880	2.7160	18900	1880	2.926
19185	1908.5	2.6980	19185	1908.5	2.951

Spectrum Plot



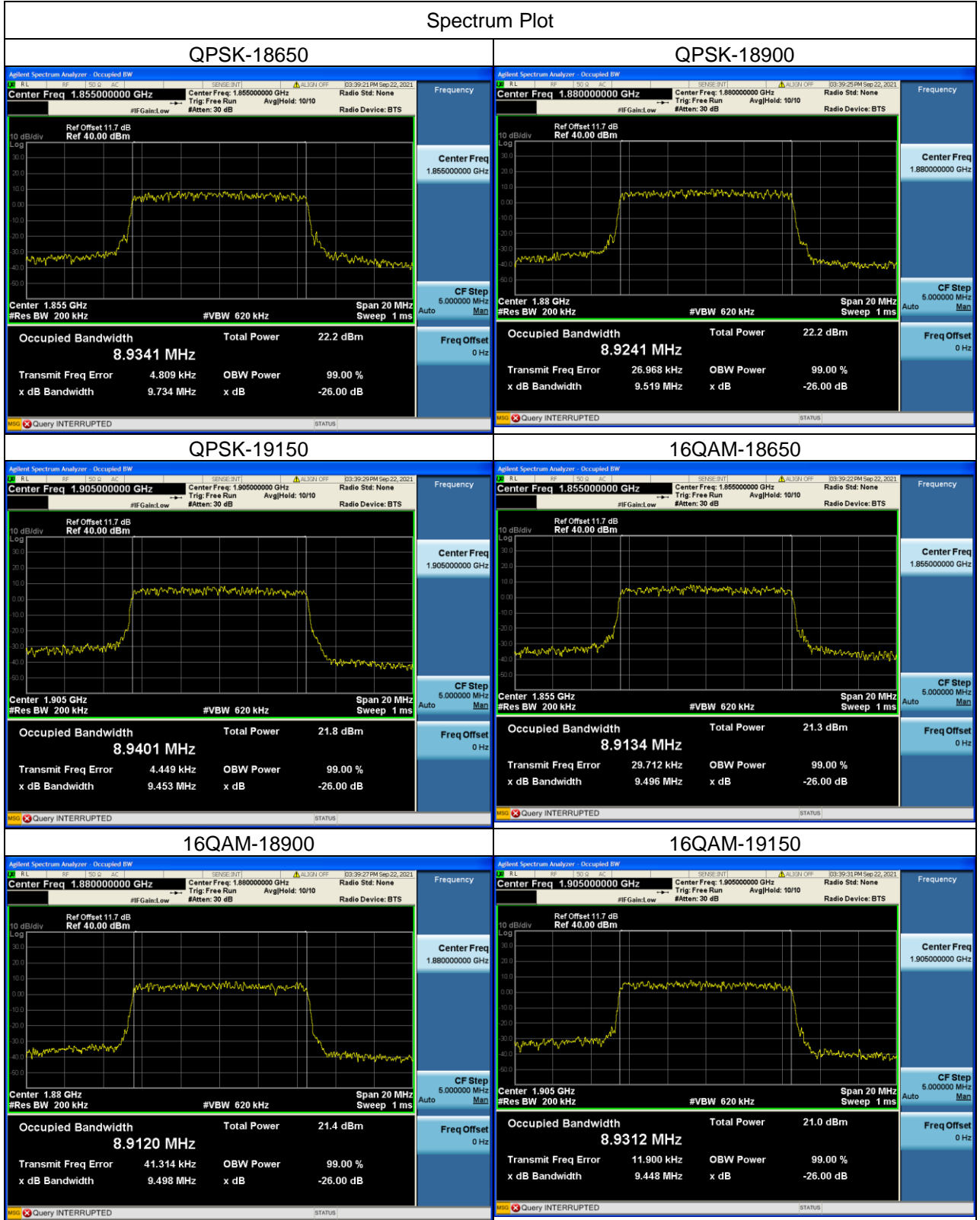
LTE Band 2_5M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	4.5330	18625	1852.5	4.911
18900	1880	4.5145	18900	1880	4.834
19175	1907.5	4.5058	19175	1907.5	4.846
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18625	1852.5	4.4961	18625	1852.5	4.849
18900	1880	4.5317	18900	1880	4.866
19175	1907.5	4.5020	19175	1907.5	4.925

Spectrum Plot



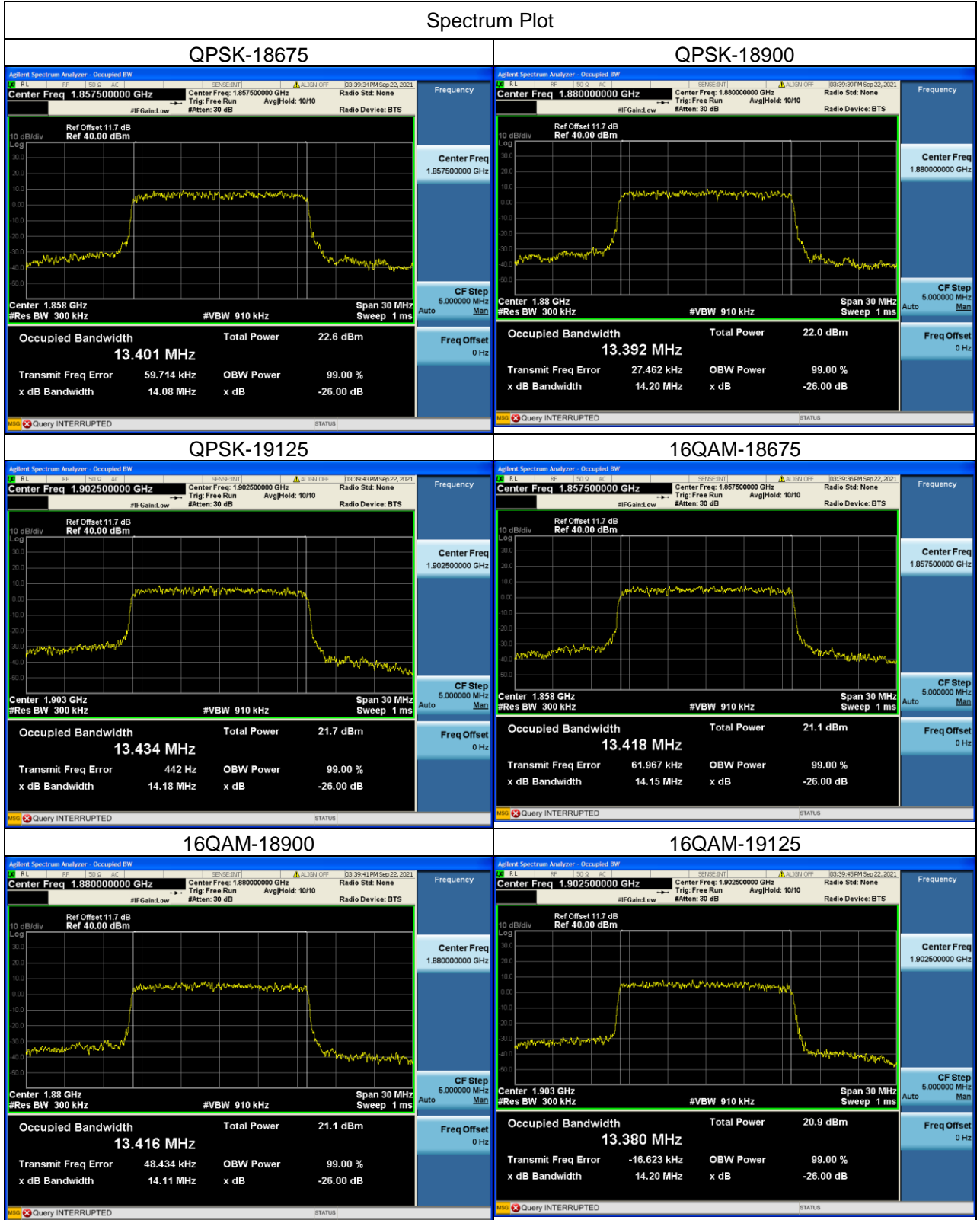
LTE Band 2_10M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	8.9341	18650	1855	9.734
18900	1880	8.9241	18900	1880	9.519
19150	1905	8.9401	19150	1905	9.453
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18650	1855	8.9134	18650	1855	9.496
18900	1880	8.9120	18900	1880	9.498
19150	1905	8.9312	19150	1905	9.448

Spectrum Plot



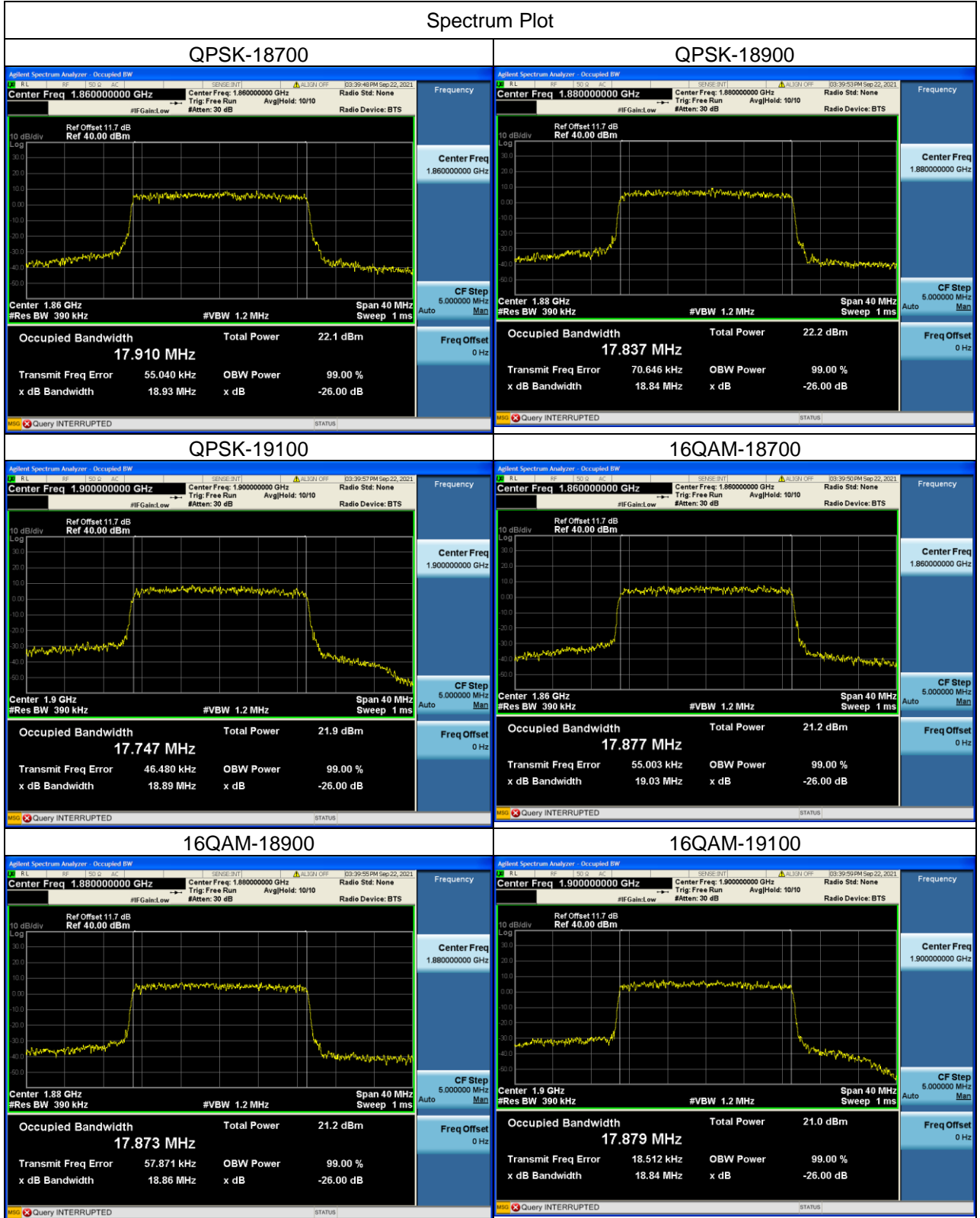
LTE Band 2_15M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	13.401	18675	1857.5	14.08
18900	1880	13.392	18900	1880	14.20
19125	1902.5	13.434	19125	1902.5	14.18
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18675	1857.5	13.418	18675	1857.5	14.15
18900	1880	13.416	18900	1880	14.11
19125	1902.5	13.380	19125	1902.5	14.20

Spectrum Plot

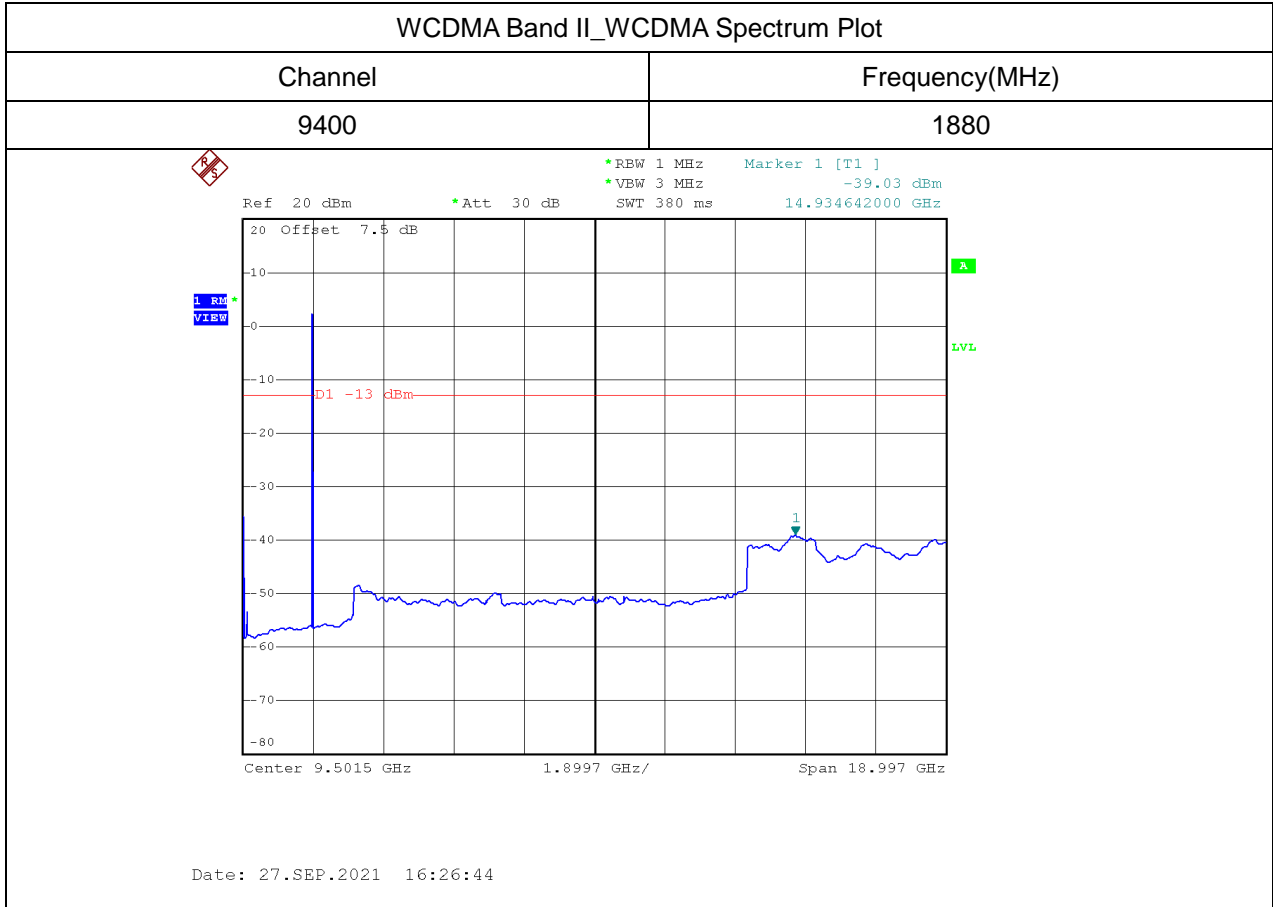


LTE Band 2_20M					
QPSK					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	17.910	18700	1860	18.93
18900	1880	17.837	18900	1880	18.84
19100	1900	17.747	19100	1900	18.89
16QAM					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
18700	1860	17.877	18700	1860	19.03
18900	1880	17.873	18900	1880	18.86
19100	1900	17.879	19100	1900	18.84

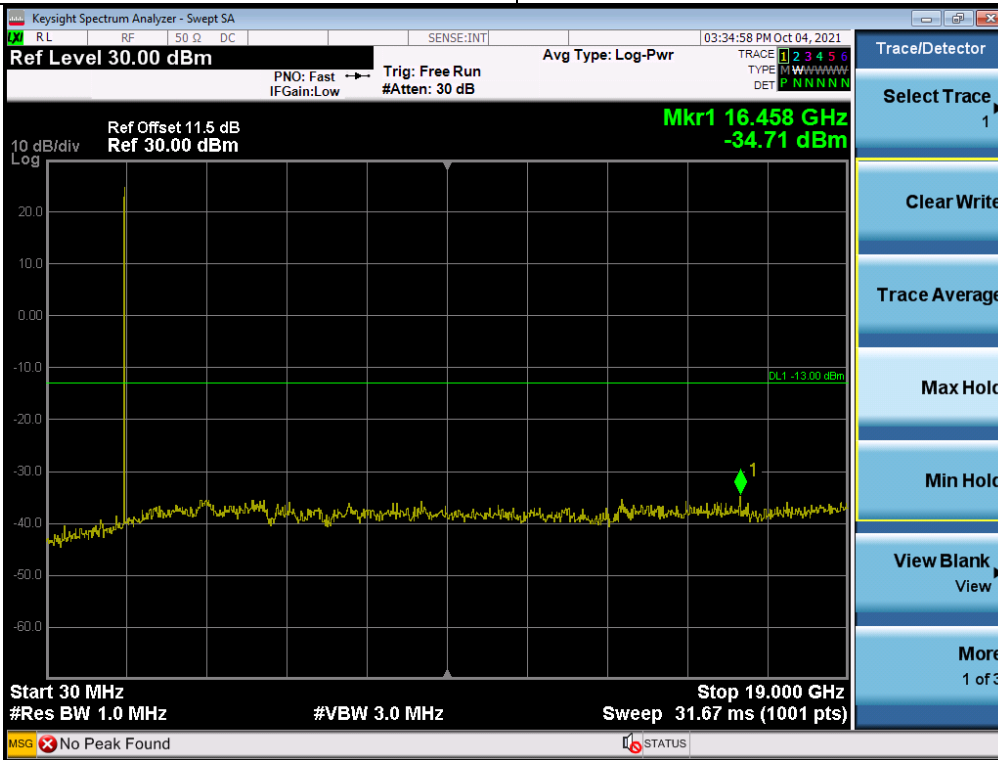
Spectrum Plot



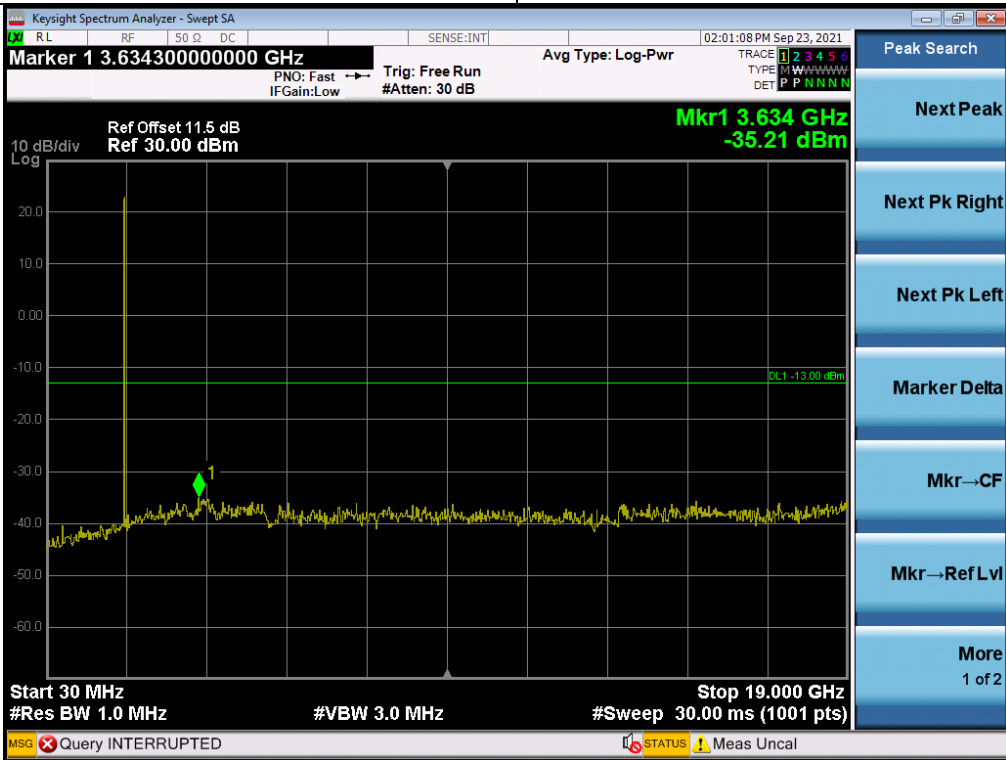
APPENDIX D CONDUCTED SPURIOUS EMISSION



LTE Band 2_1.4M Spectrum Plot	
Channel	Frequency(MHz)
18900	1880

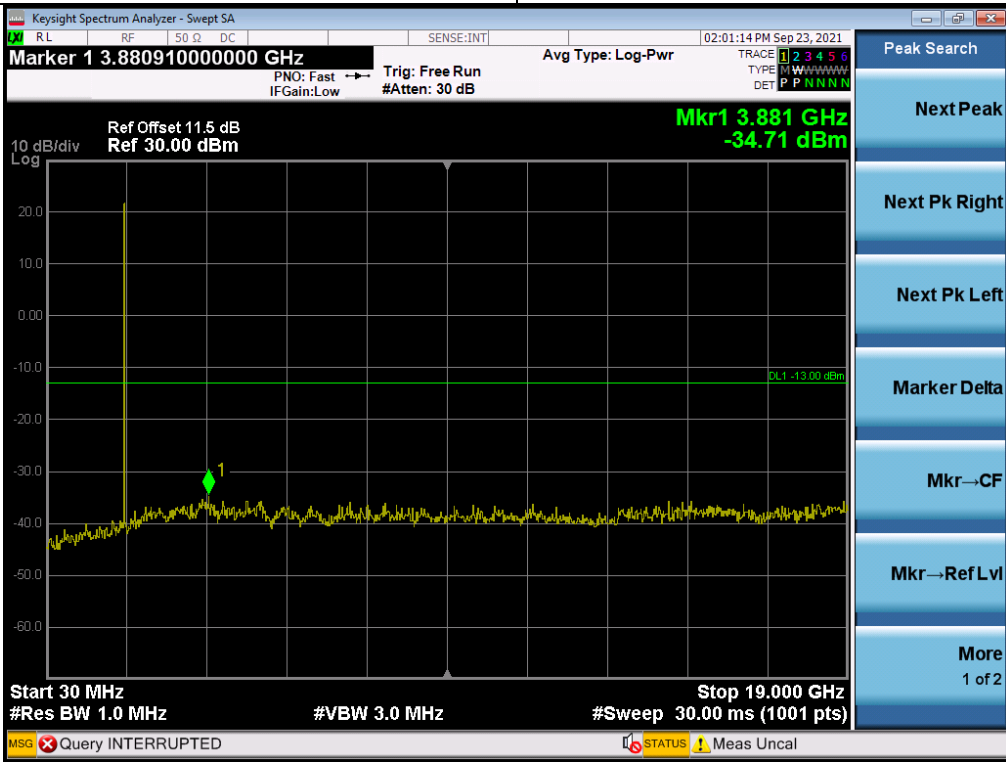


LTE Band 2_3M Spectrum Plot	
Channel	Frequency(MHz)
18900	1880

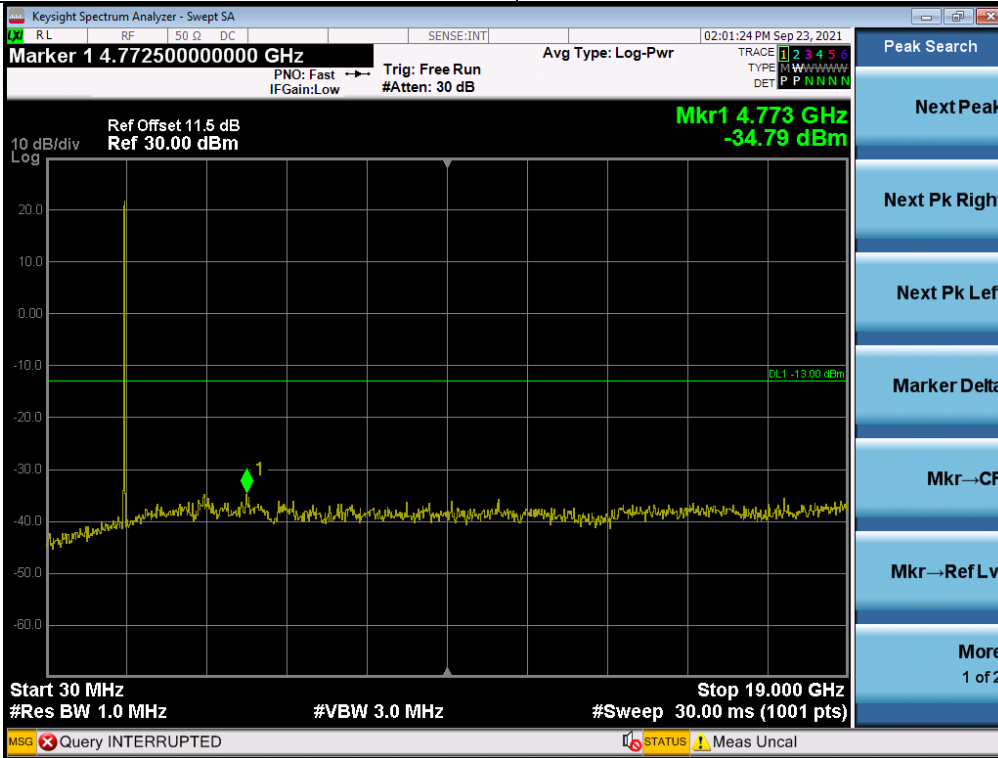


LTE Band 2_5M Spectrum Plot

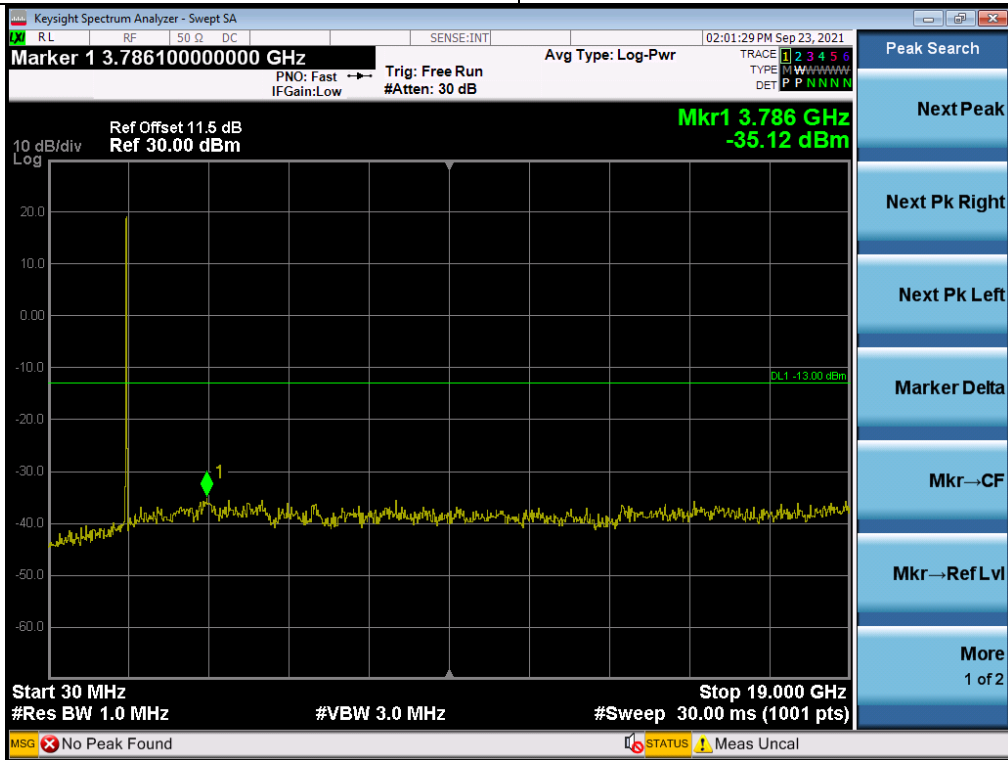
Channel	Frequency(MHz)
18900	1880



LTE Band 2_10M Spectrum Plot	
Channel	Frequency(MHz)
18900	1880

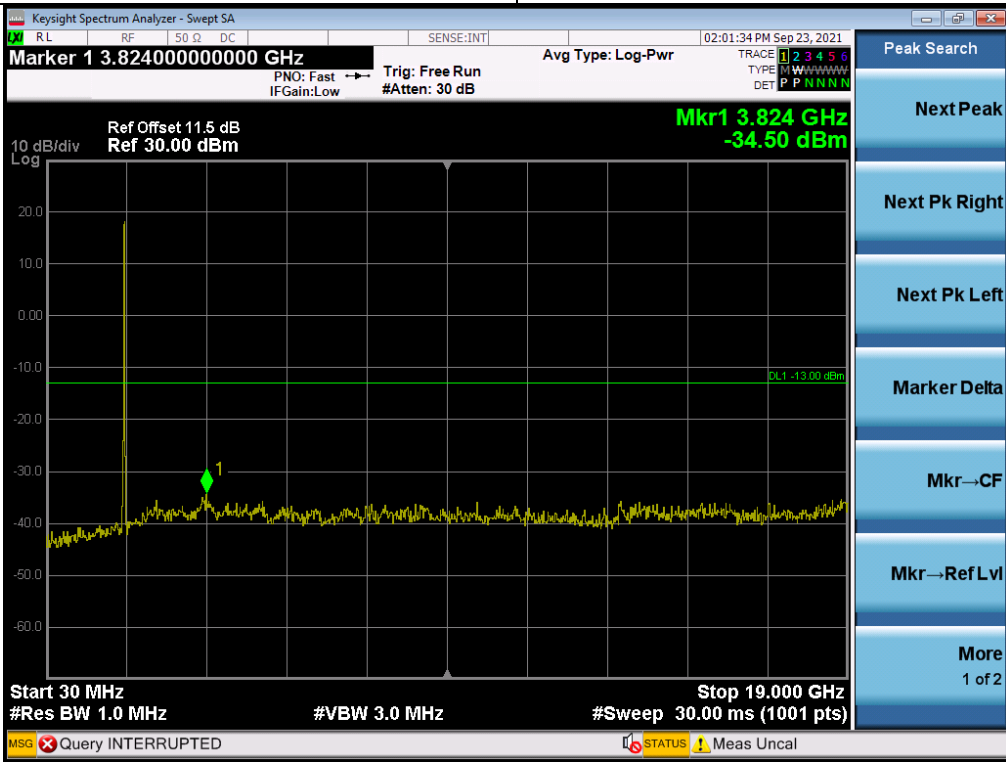


LTE Band 2_15M Spectrum Plot	
Channel	Frequency(MHz)
18900	1880



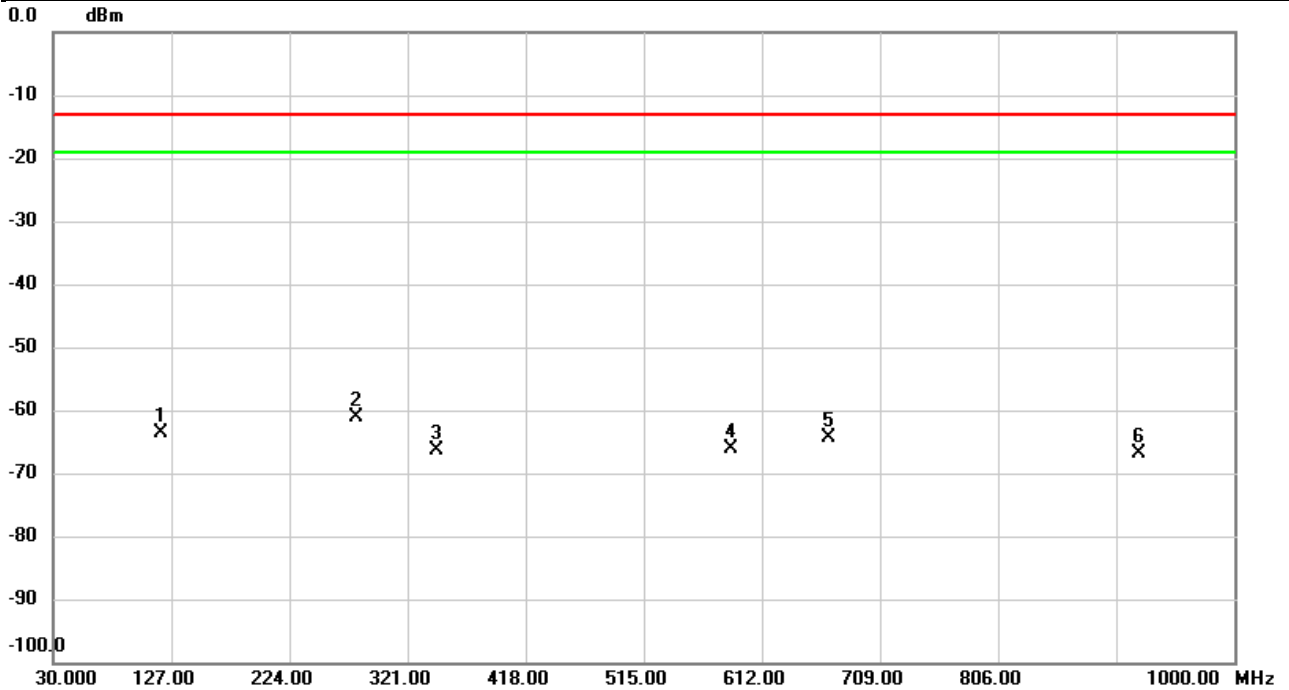
LTE Band 2_20M Spectrum Plot

Channel	Frequency(MHz)
18900	1880



APPENDIX E RADIATED SPURIOUS EMISSIONS TEST

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9800	Polarization	Vertical
Temp	25°C	Hum.	52%

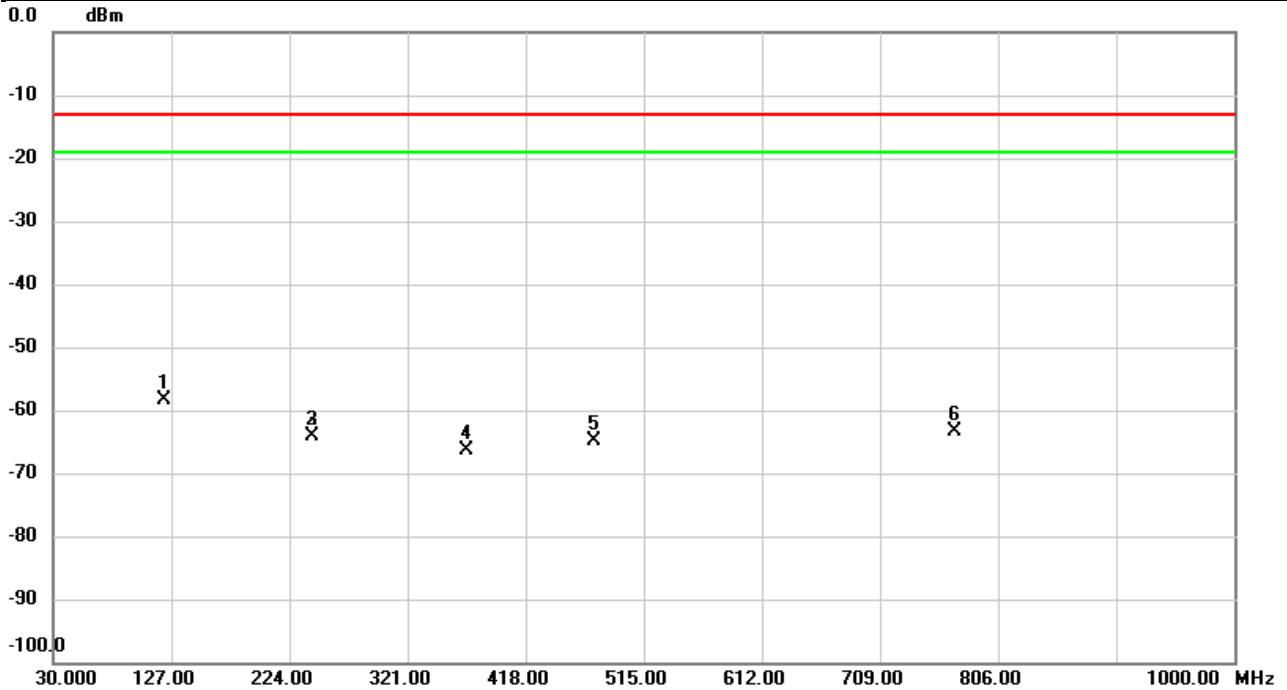


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		119.0783	-62.92	-0.70	-63.62	-13.00	-50.62	peak	
2	*	279.4516	-68.83	7.67	-61.16	-13.00	-48.16	peak	
3		345.3470	-73.50	7.11	-66.39	-13.00	-53.39	peak	
4		587.2325	-77.84	11.81	-66.03	-13.00	-53.03	peak	
5		666.3523	-77.69	13.20	-64.49	-13.00	-51.49	peak	
6		921.2036	-78.54	11.64	-66.90	-13.00	-53.90	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9800	Polarization	Horizontal
Temp	25°C	Hum.	52%

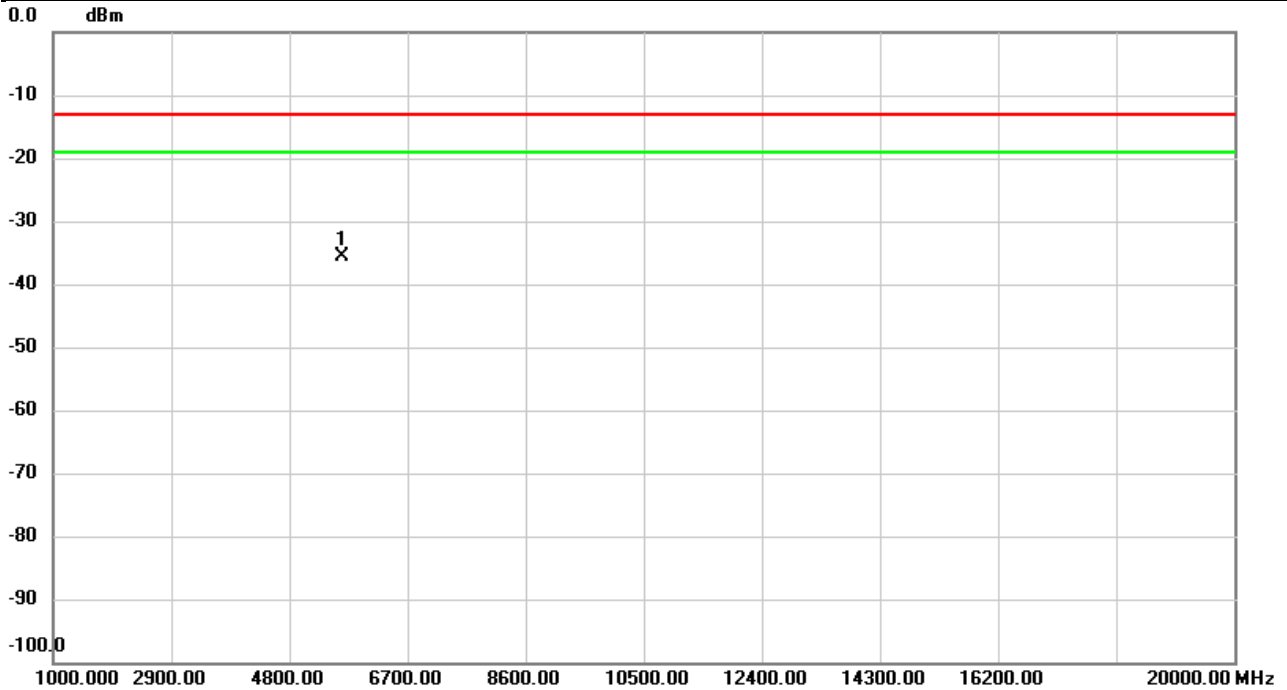


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	121.6326	-60.95	2.56	-58.39	-13.00	-45.39	peak	
2		243.3353	-63.54	-0.55	-64.09	-13.00	-51.09	peak	
3		243.3353	-63.54	-0.55	-64.09	-13.00	-51.09	peak	
4		369.2090	-71.33	4.89	-66.44	-13.00	-53.44	peak	
5		474.3570	-76.73	11.95	-64.78	-13.00	-51.78	peak	
6		770.5626	-77.20	13.76	-63.44	-13.00	-50.44	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9800	Polarization	Vertical
Temp	25°C	Hum.	52%

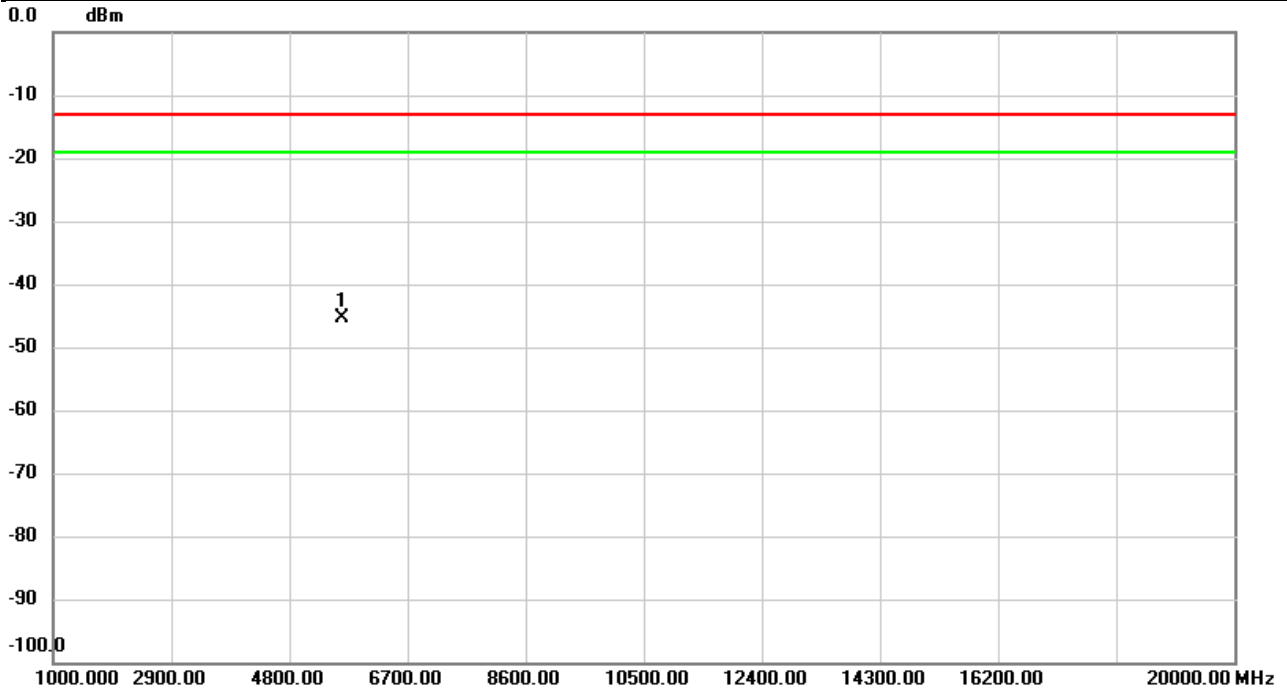


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	5642.967	-38.24	2.58	-35.66	-13.00	-22.66	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	WCDMA Band II	Test Date	2021/9/17
Test Channel	CH9800	Polarization	Horizontal
Temp	25°C	Hum.	52%

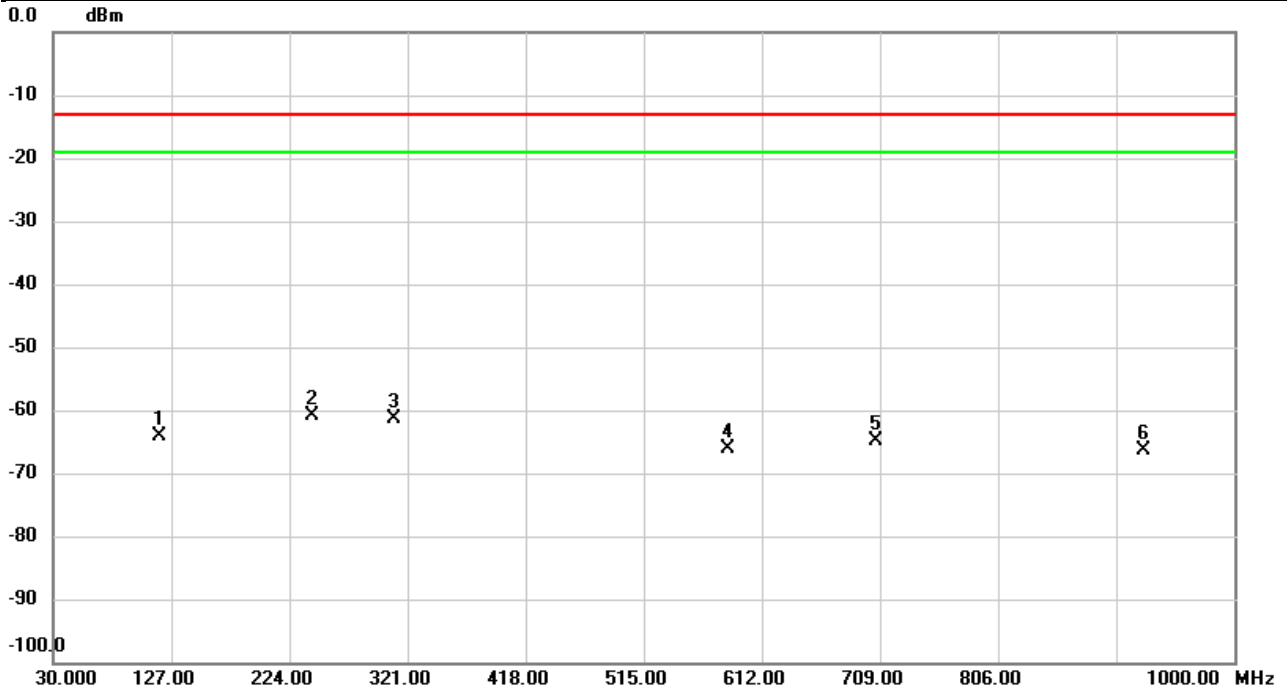


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	5637.900	-48.31	2.98	-45.33	-13.00	-32.33	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/17
Test Channel	CH18900	Polarization	Vertical
Temp	25°C	Hum.	52%

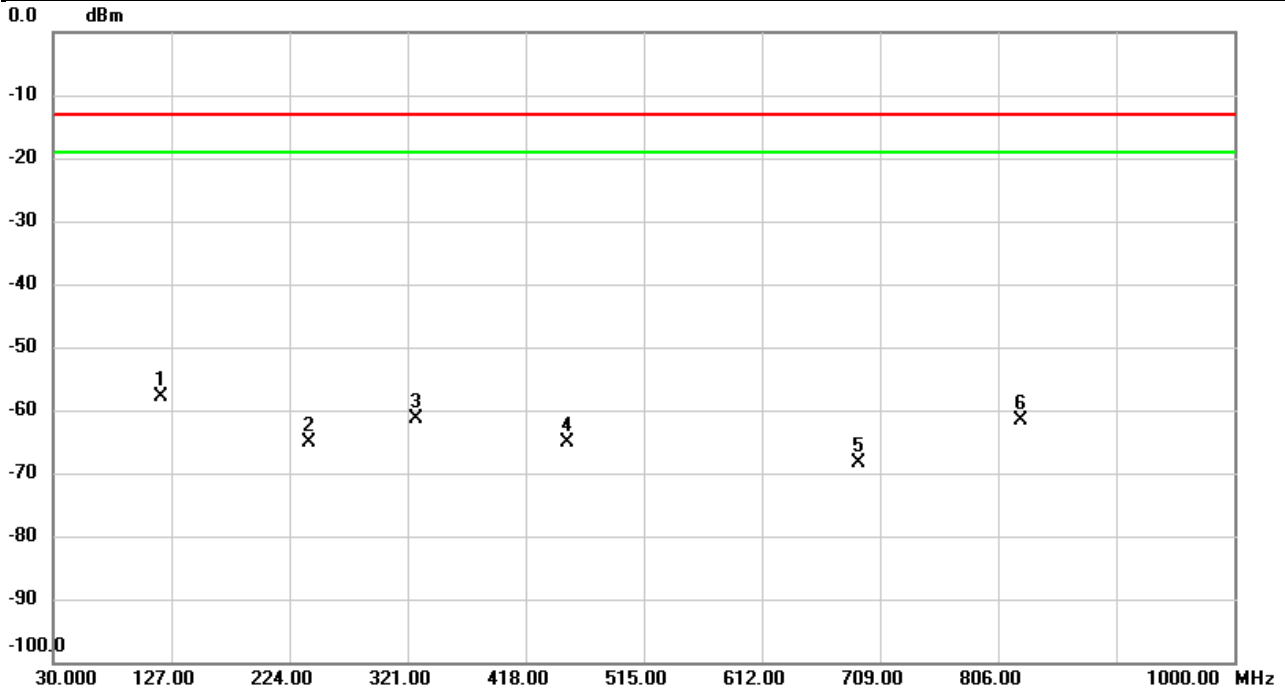


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		117.9143	-63.61	-0.63	-64.24	-13.00	-51.24	peak	
2	*	242.3976	-68.71	7.73	-60.98	-13.00	-47.98	peak	
3		309.7156	-68.93	7.54	-61.39	-13.00	-48.39	peak	
4		583.5790	-77.75	11.55	-66.20	-13.00	-53.20	peak	
5		705.3786	-77.61	12.85	-64.76	-13.00	-51.76	peak	
6		925.5040	-78.19	11.75	-66.44	-13.00	-53.44	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/17
Test Channel	CH18900	Polarization	Horizontal
Temp	25°C	Hum.	52%

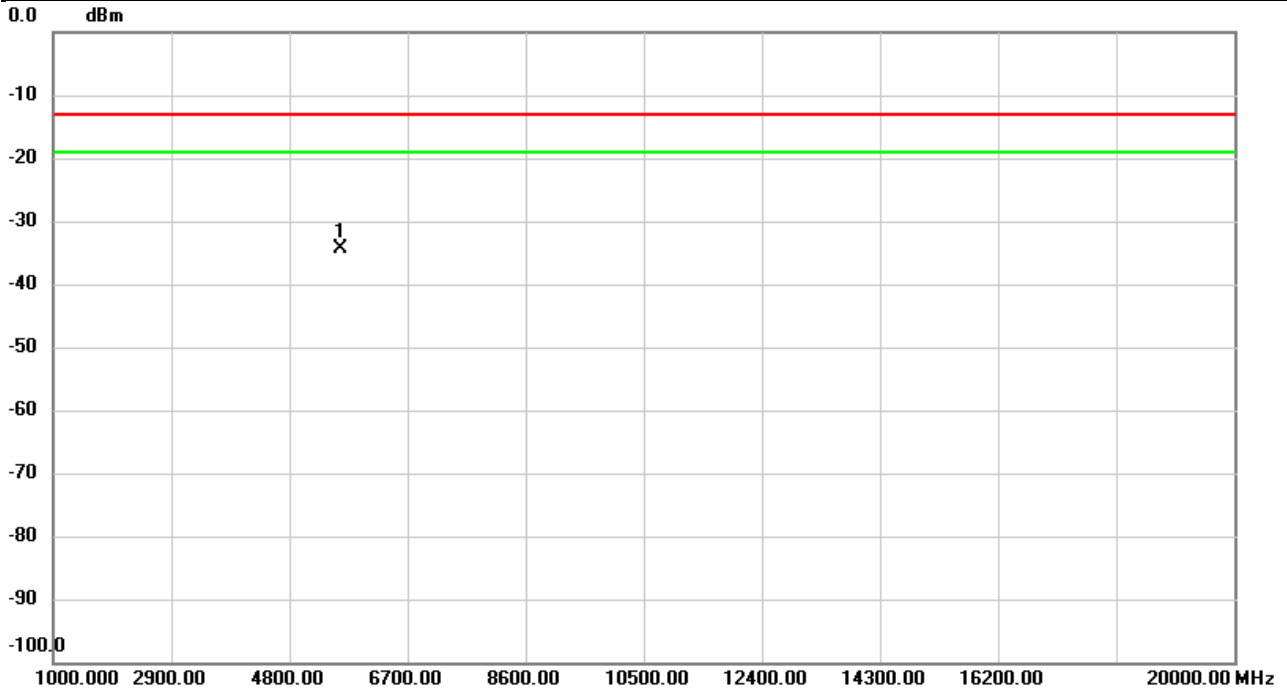


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	118.4640	-60.39	2.63	-57.76	-13.00	-44.76	peak	
2		240.4900	-64.63	-0.48	-65.11	-13.00	-52.11	peak	
3		328.3073	-64.08	2.68	-61.40	-13.00	-48.40	peak	
4		452.6936	-77.38	12.37	-65.01	-13.00	-52.01	peak	
5		691.7016	-77.40	9.01	-68.39	-13.00	-55.39	peak	
6		825.2383	-77.34	15.81	-61.53	-13.00	-48.53	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH18900	Polarization	Vertical
Temp	22°C	Hum.	54%

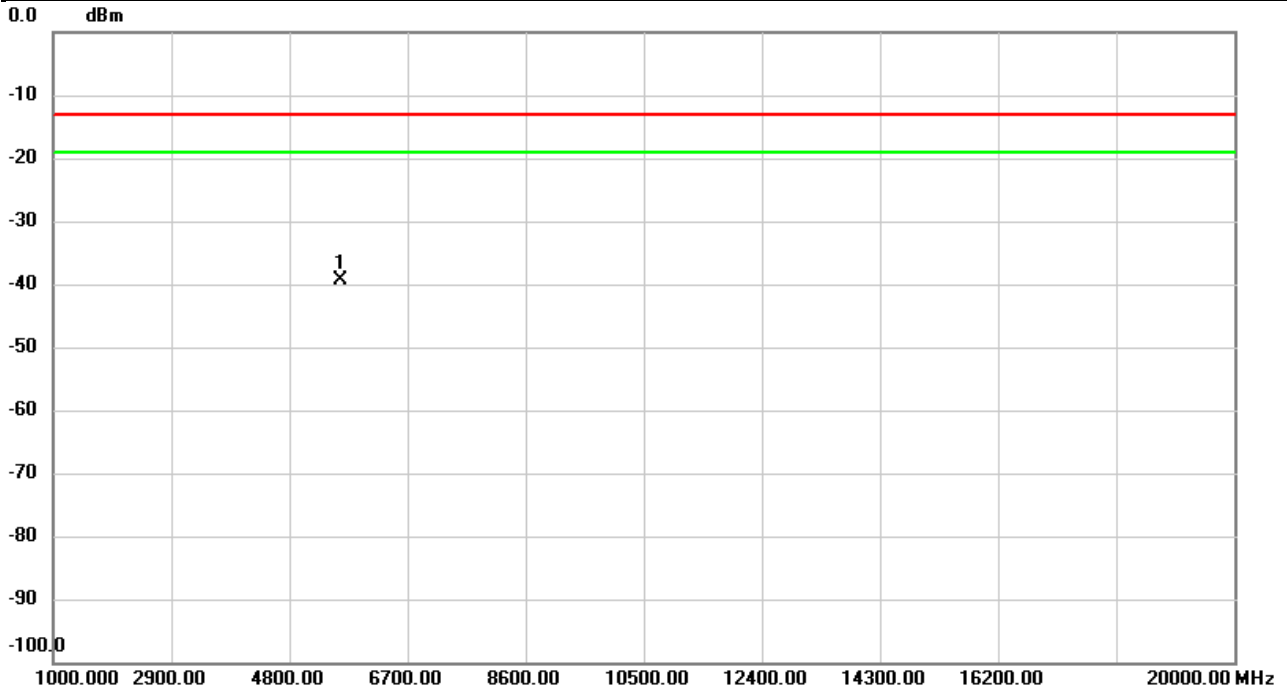


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	5613.200	-36.57	2.13	-34.44	-13.00	-21.44	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	LTE Band 2	Test Date	2021/9/16
Test Channel	CH18900	Polarization	Horizontal
Temp	22°C	Hum.	54%



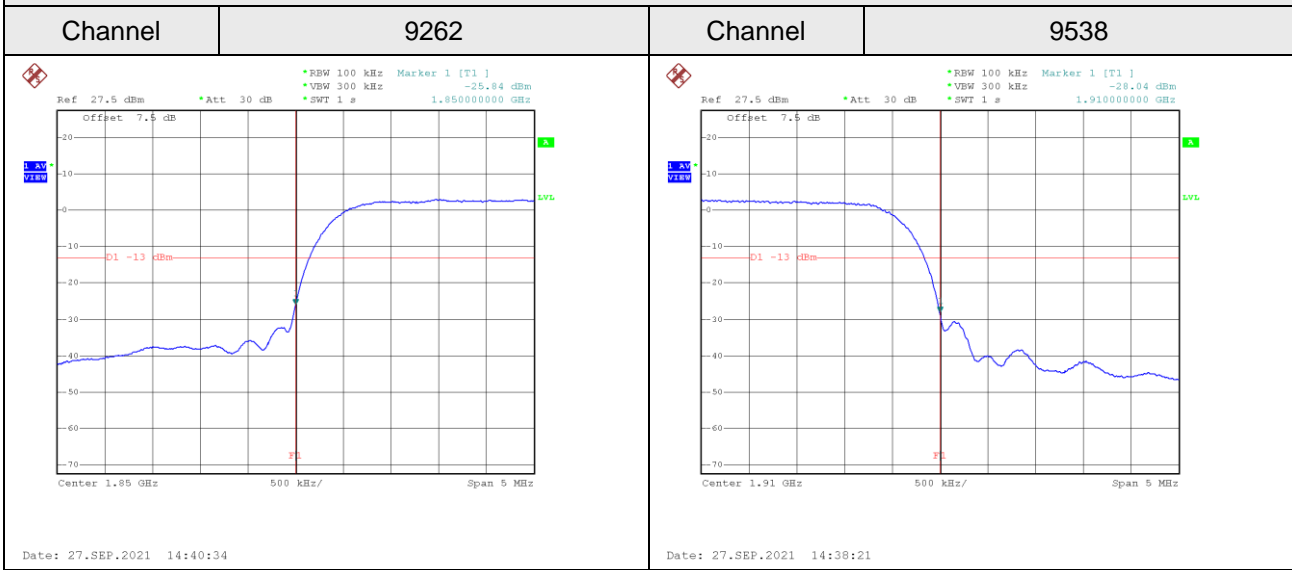
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
1	*	5613.200	-42.48	3.22	-39.26	-13.00	-26.26	peak	

REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

APPENDIX F BAND EDGE

WCDMA Band II_WCDMA Spectrum Plot



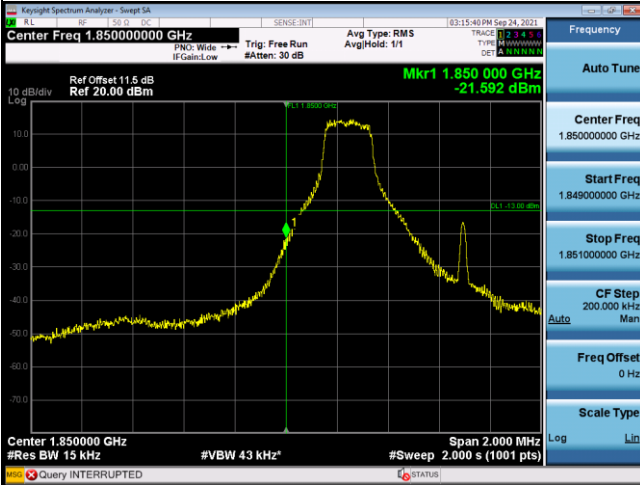
LTE Band 2_1.4M Spectrum Plot

1RB#0

1RB#5

Channel 18607

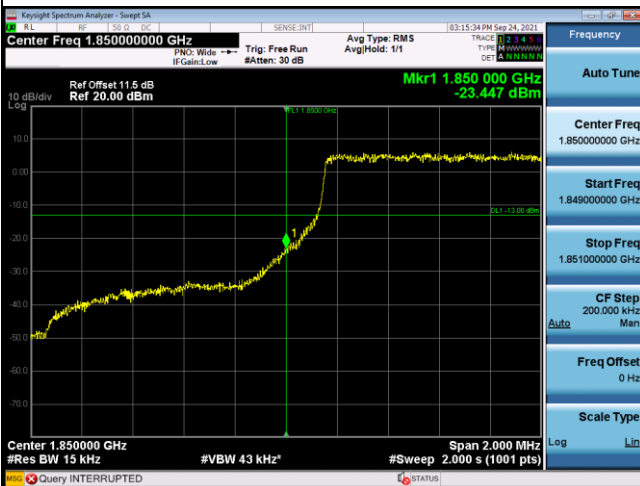
Channel 19193



6RB#0

Channel 18607

Channel 19193



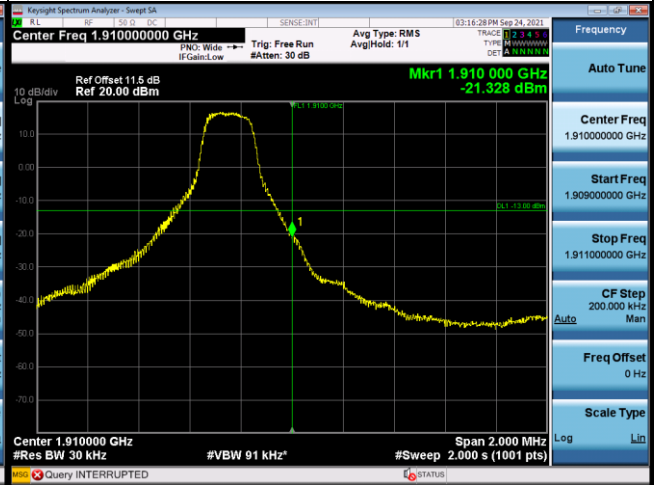
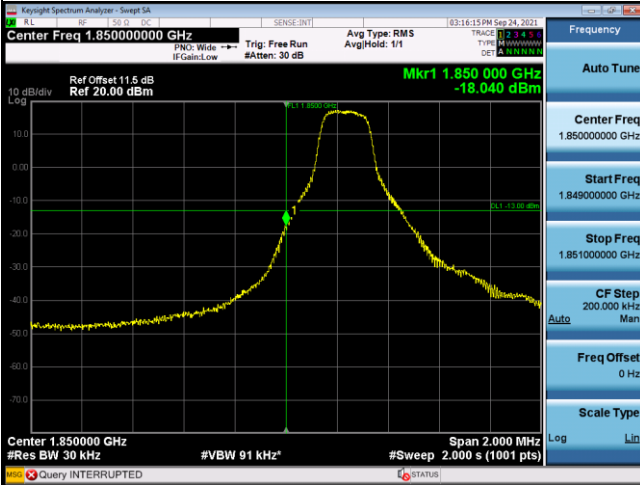
LTE Band 2_3M Spectrum Plot

1RB#0

1RB#14

Channel 18615

Channel 19185



15RB#0

Channel 18615

Channel 19185

