



# FCC RADIO TEST REPORT

FCC ID : PY7-61863J  
Equipment : GSM/WCDMA/LTE Phone with BT, DTS/UNII  
a/b/g/n/ac, NFC and GNSS  
Brand Name : SONY  
Applicant : Sony Corporation  
1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan  
Manufacturer : Sony Corporation  
1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan  
Standard : FCC 47 CFR Part 2, 27  
Test Date(s) : Jan. 06, 2022 ~ Jan. 18, 2022

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

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Reviewed by: Jason Jia / Supervisor

*Alex Wang*

Approved by: Alex Wang / Manager



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People's Republic of China**



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**Appendix B. Test Results of Radiated Test**



## History of this test report

Report No.	Version	Description	Issued Date
FG1D0406B	01	Initial issue of report	Mar. 15, 2022



### Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4)	Pass	
	§27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 41)		
3.3	§27.50 (d)(5)	Peak-to-Average Ratio	Pass	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §27.53(h) §27.53(m)(4)	Conducted Band Edge Measurement (Band 4) (Band 41)	Pass	-
3.6	§2.1051 §27.53(h) §27.53(m)(4)	Conducted Spurious Emission (Band 4) (Band 41)	Pass	-
3.7	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.2	§2.1053 §27.53(h) §27.53(m)(4)	Radiated Spurious Emission (Band 4) (Band 41)	Pass	Under limit 11.55 dB at 5162.000 MHz

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac, NFC, and GNSS

Product Specification subjective to this standard	
Antenna Type	PIFA Antenna
Antenna Gain	LTE Band 4: -1.1dBi LTE Band 41: -1.0dBi

**Remark:** The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

EUT Information List			
HW Version	SW Version	IMEI Code	Performed Test Item
A	0.637	004402543123883 004402543123891	Conducted Measurement
		004402542203121	Radiated Spurious Emission
		004402542203121	ERP/EIRP Test

**Note:** For other wireless features of this EUT, test report will be issued separately.

## 1.2 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.3 Emission Designator

LTE Band 4		QPSK		16QAM/64QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
1.4	1710.7 ~ 1754.3	0.0776	1M09G7D	0.0659	1M10W7D
3	1711.5 ~ 1753.5	0.0780	2M73G7D	0.0653	2M73W7D
5	1712.5 ~ 1752.5	0.0776	4M52G7D	0.0670	4M51W7D
10	1715.0 ~ 1750.0	0.0776	9M11G7D	0.0668	9M09W7D
15	1717.5 ~ 1747.5	0.0776	13M5G7D	0.0661	13M5W7D
20	1720.0 ~ 1745.0	0.0787	17M9G7D	0.0668	17M9W7D
LTE Band 41		QPSK		16QAM/64QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	2498.5 ~ 2687.5	0.0946	4M52G7D	0.0785	4M53W7D
10	2501.0 ~ 2685.0	0.0931	9M07G7D	0.0778	9M09W7D
15	2503.5 ~ 2682.5	0.0938	13M6G7D	0.0780	13M5W7D
20	2506.0 ~ 2680.0	0.0959	17M9G7D	0.0789	18M0W7D



**Note:** All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.

### 1.4 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

<b>Test Firm</b>	Sporton International Inc. (Kunshan)		
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People’s Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	03CH04-KS TH01-KS	CN1257	314309

### 1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

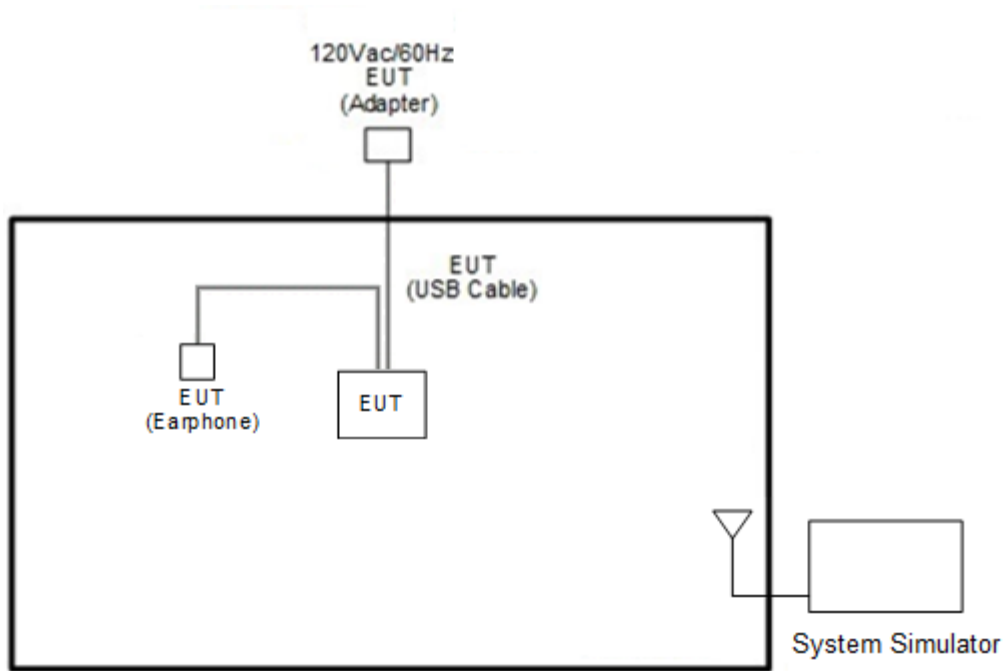
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and find Y plane as worst plane.

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	41	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	4						v	v	v	v			v		v	
	41	-	-				v	v	v	v			v		v	
26dB and 99% Bandwidth	4	v	v	v	v	v	v	v	v	v			v	v	v	v
	41	-	-	v	v	v	v	v	v	v			v	v	v	v
Conducted Band Edge	4	v	v	v	v	v	v	v	v	v	v		v			v
	41	-	-	v	v	v	v	v	v	v	v		v			v
Conducted Spurious Emission	4	v	v	v	v	v	v	v			v			v	v	v
	41	-	-	v	v	v	v	v	v	v	v			v	v	v
Frequency Stability	4				v			v					v		v	
	41	-	-		v			v					v		v	
E.R.P / E.I.R.P	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	41	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	4	Worst Case											v	v	v	
	41	Worst Case											v	v	v	
Remark	1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.															

## 2.2 Connection Diagram of Test System

<EUT With Accessory>



## 2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

## 2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss.

*Offset = RF cable loss.*

Following shows an offset computation example with cable loss 5.2 dB.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)}. \\ &= 5.2 \text{ (dB)} \end{aligned}$$





### 2.5 Frequency List of Low/Middle/High Channels

LTE Band 4 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3

LTE Band 41 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	39750	40620	41490
	Frequency	2506	2593	2680
15	Channel	39725	40620	41515
	Frequency	2503.5	2593	2682.5
10	Channel	39700	40620	41540
	Frequency	2501	2593	2685
5	Channel	39675	40620	41565
	Frequency	2498.5	2593	2687.5

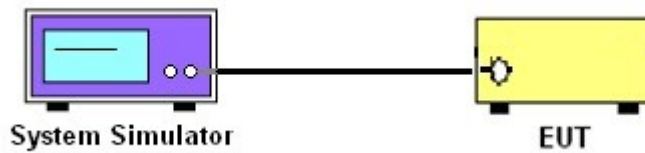
### 3 Conducted Test Items

#### 3.1 Measuring Instruments

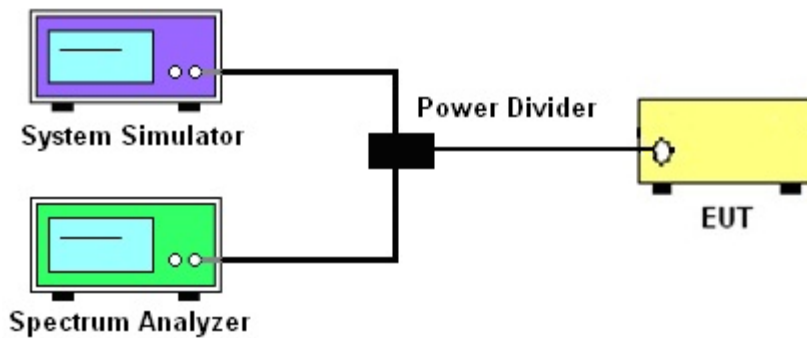
See list of measuring instruments of this test report.

##### 3.1.1 Test Setup

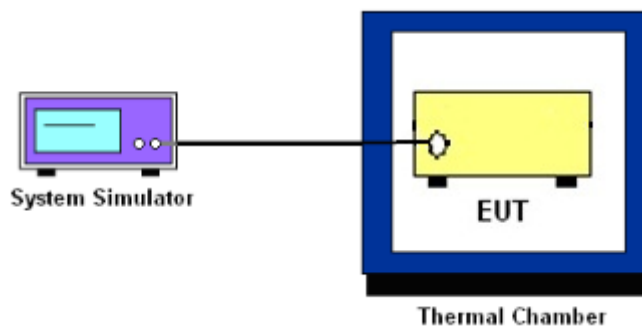
##### 3.1.2 Conducted Output Power



##### 3.1.3 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



##### 3.1.4 Frequency Stability



##### 3.1.5 Test Result of Conducted Test

Please refer to Appendix A.



## 3.2 Conducted Output Power and ERP/EIRP

### 3.2.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4.

The EIRP of mobile transmitters must not exceed 2 Watts for Band 41.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

### 3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.



### **3.3 Peak-to-Average Ratio**

#### **3.3.1 Description of the PAR Measurement**

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

#### **3.3.2 Test Procedures**

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.



### **3.4 Occupied Bandwidth**

#### **3.4.1 Description of Occupied Bandwidth Measurement**

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal.

#### **3.4.2 Test Procedures**

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.  
(this is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



### 3.5 Conducted Band Edge

#### 3.5.1 Description of Conducted Band Edge Measurement

27.53 (h)

For operations in the 1710 – 1755 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power  $P(\text{Watts})$  in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53(m)(4)

For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

#### 3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.  
The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power  $P(\text{Watts})$
9. For LTE Band 41, the other 40 dB, and 55 dB have additionally applied same calculation above.



## **3.6 Conducted Spurious Emission**

### **3.6.1 Description of Conducted Spurious Emission Measurement**

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

For LTE Band 41

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least  $55 + 10 \log (P)$  dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

### **3.6.2 Test Procedures**

1. The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)
11. For Band 41  
The limit line is derived from  $55 + 10\log(P)$ dB below the transmitter power P(Watts)



## 3.7 Frequency Stability

### 3.7.1 Description of Frequency Stability Measurement

27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### 3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to  $-30^{\circ}\text{C}$  and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in  $10^{\circ}\text{C}$  step up to  $50^{\circ}\text{C}$ . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

### 3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at  $20\pm 5^{\circ}\text{C}$  and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.



## 4 Radiated Test Items

### 4.1 Measuring Instruments

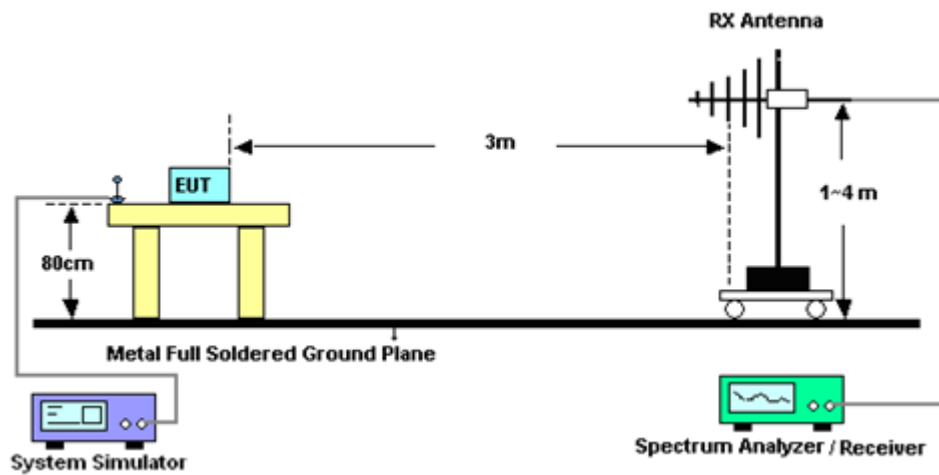
See list of measuring instruments of this test report.

#### 4.1.1 Test Setup

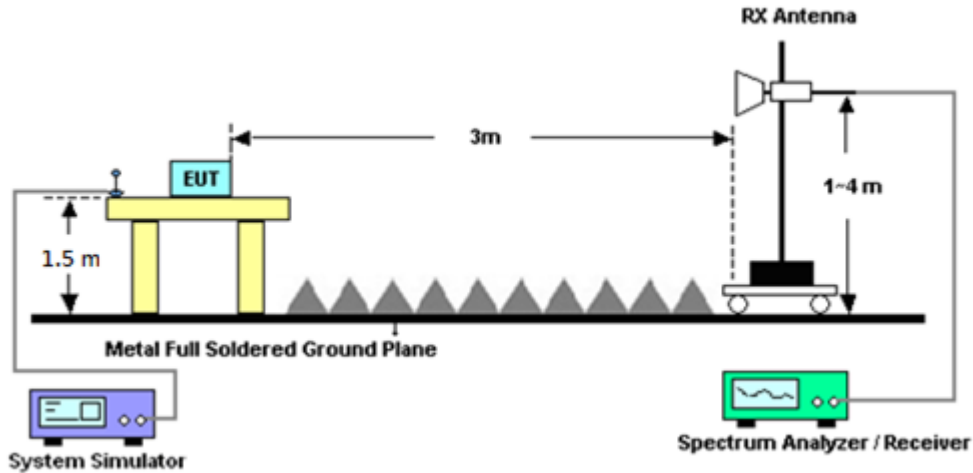
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



#### 4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

**Note:**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



## **4.2 Radiated Spurious Emission Measurement**

### **4.2.1 Description of Radiated Spurious Emission Measurement**

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

For Band 41

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $55 + 10 \log (P)$  dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

### **4.2.2 Test Procedures**

1. The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from  $43 + 10\log(P)$ dB below the transmitter power P(Watts)

$EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

$ERP \text{ (dBm)} = EIRP - 2.15$

12. For Band 41:

The limit line is derived from  $55 + 10\log(P)$ dB below the transmitter power P(Watts)



## 5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 14, 2021	Jan. 06, 2022~ Jan. 07, 2022	Oct. 13, 2022	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	Aug. 26, 2021	Jan. 06, 2022~ Jan. 07, 2022	Aug. 25, 2022	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 12, 2021	Jan. 06, 2022~ Jan. 07, 2022	Jul. 11, 2022	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 13, 2021	Jan. 18, 2022	Apr. 12, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 31, 2021	Jan. 18, 2022	Oct. 30, 2022	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 30, 2021	Jan. 18, 2022	May 29, 2022	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 18, 2021	Jan. 18, 2022	Apr. 17, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Jan. 18, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 05, 2022	Jan. 18, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 05, 2022	Jan. 18, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Jul. 30, 2021	Jan. 18, 2022	Jul. 29, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 13, 2021	Jan. 18, 2022	Oct. 12, 2022	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jan. 18, 2022	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jan. 18, 2022	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jan. 18, 2022	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required



## 6 Uncertainty of Evaluation

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.3dB
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.8dB
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## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power) and ERP/EIRP

**LTE Band 4:**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
				20050	20175	20300	L	M	H
Channel				20050	20175	20300	EIRP(W)		
Frequency (MHz)				1720	1732.5	1745	L	M	H
20	QPSK	1	0	20.03	20.06	20.05	0.0782	0.0787	0.0785
20	QPSK	1	49	19.89	19.97	20.00	0.0757	0.0771	0.0776
20	QPSK	1	99	20.01	20.00	19.91	0.0778	0.0776	0.0760
20	QPSK	50	0	19.04	19.14	18.94	0.0622	0.0637	0.0608
20	QPSK	50	24	19.00	19.08	18.98	0.0617	0.0628	0.0614
20	QPSK	50	50	19.07	19.00	18.89	0.0627	0.0617	0.0601
20	QPSK	100	0	18.90	19.10	19.02	0.0603	0.0631	0.0619
20	16QAM	1	0	19.12	19.17	19.12	0.0634	0.0641	0.0634
20	16QAM	1	49	19.16	19.20	19.24	0.0640	0.0646	0.0652
20	16QAM	1	99	19.34	19.31	19.35	0.0667	0.0662	0.0668
20	16QAM	50	0	17.93	18.02	18.12	0.0482	0.0492	0.0504
20	16QAM	50	24	18.06	18.03	17.98	0.0497	0.0493	0.0488
20	16QAM	50	50	18.12	18.11	18.07	0.0504	0.0502	0.0498
20	16QAM	100	0	18.11	18.04	18.12	0.0502	0.0494	0.0504
20	64QAM	1	0	17.91	17.94	18.02	0.0480	0.0483	0.0492
20	64QAM	1	49	18.22	18.11	18.21	0.0515	0.0502	0.0514
20	64QAM	1	99	18.16	18.05	18.08	0.0508	0.0495	0.0499
20	64QAM	50	0	17.00	16.96	17.06	0.0389	0.0385	0.0394
20	64QAM	50	24	17.00	16.99	16.99	0.0389	0.0388	0.0388
20	64QAM	50	50	17.11	17.06	17.08	0.0399	0.0394	0.0396
20	64QAM	100	0	17.04	17.03	17.08	0.0393	0.0392	0.0396
Channel				20025	20175	20325	EIRP(W)		
Frequency (MHz)				1717.5	1732.5	1747.5	L	M	H
15	QPSK	1	0	19.94	19.86	20.00	0.0766	0.0752	0.0776
15	QPSK	1	37	19.84	19.84	19.79	0.0748	0.0748	0.0740
15	QPSK	1	74	19.86	19.99	19.87	0.0752	0.0774	0.0753
15	QPSK	36	0	19.09	18.87	18.88	0.0630	0.0598	0.0600
15	QPSK	36	20	18.81	18.98	18.78	0.0590	0.0614	0.0586



15	QPSK	36	39	18.99	18.91	18.85	0.0615	0.0604	0.0596
15	QPSK	75	0	18.72	19.01	19.11	0.0578	0.0618	0.0632
15	16QAM	1	0	19.13	18.97	18.93	0.0635	0.0612	0.0607
15	16QAM	1	37	18.97	19.07	19.09	0.0612	0.0627	0.0630
15	16QAM	1	74	19.26	19.19	19.30	0.0655	0.0644	0.0661
15	16QAM	36	0	17.77	17.99	18.00	0.0465	0.0489	0.0490
15	16QAM	36	20	17.87	17.98	17.89	0.0475	0.0488	0.0478
15	16QAM	36	39	17.91	18.09	17.85	0.0480	0.0500	0.0473
15	16QAM	75	0	17.95	17.91	18.03	0.0484	0.0480	0.0493
15	64QAM	1	0	17.77	17.75	18.01	0.0465	0.0462	0.0491
15	64QAM	1	37	18.23	18.03	18.06	0.0516	0.0493	0.0497
15	64QAM	1	74	18.06	18.05	17.94	0.0497	0.0495	0.0483
15	64QAM	36	0	16.90	16.92	16.89	0.0380	0.0382	0.0379
15	64QAM	36	20	16.91	16.94	16.96	0.0381	0.0384	0.0385
15	64QAM	36	39	16.97	16.99	16.94	0.0386	0.0388	0.0384
15	64QAM	75	0	16.84	16.96	16.91	0.0375	0.0385	0.0381
Channel				20000	20175	20350	EIRP(W)		
Frequency (MHz)				1715	1732.5	1750	L	M	H
10	QPSK	1	0	20.00	19.97	19.87	0.0776	0.0771	0.0753
10	QPSK	1	25	19.69	19.82	19.97	0.0723	0.0745	0.0771
10	QPSK	1	49	19.86	19.88	19.85	0.0752	0.0755	0.0750
10	QPSK	25	0	19.03	18.88	18.86	0.0621	0.0600	0.0597
10	QPSK	25	12	18.85	19.00	18.76	0.0596	0.0617	0.0583
10	QPSK	25	25	18.95	18.88	18.77	0.0610	0.0600	0.0585
10	QPSK	50	0	18.83	18.84	19.10	0.0593	0.0594	0.0631
10	16QAM	1	0	19.13	19.14	19.06	0.0635	0.0637	0.0625
10	16QAM	1	25	18.99	19.11	19.04	0.0615	0.0632	0.0622
10	16QAM	1	49	19.35	19.30	19.17	0.0668	0.0661	0.0641
10	16QAM	25	0	17.87	17.88	18.02	0.0475	0.0476	0.0492
10	16QAM	25	12	17.89	17.89	17.86	0.0478	0.0478	0.0474
10	16QAM	25	25	18.13	18.04	17.86	0.0505	0.0494	0.0474
10	16QAM	50	0	17.99	17.84	17.93	0.0489	0.0472	0.0482
10	64QAM	1	0	17.85	17.93	17.82	0.0473	0.0482	0.0470
10	64QAM	1	25	18.04	17.98	17.99	0.0494	0.0488	0.0489
10	64QAM	1	49	18.16	17.85	18.06	0.0508	0.0473	0.0497
10	64QAM	25	0	16.86	16.86	16.91	0.0377	0.0377	0.0381
10	64QAM	25	12	16.92	16.99	16.84	0.0382	0.0388	0.0375
10	64QAM	25	25	17.11	16.95	17.07	0.0399	0.0385	0.0395



10	64QAM	50	0	16.94	16.89	16.91	0.0384	0.0379	0.0381
Channel				19975	20175	20375	EIRP(W)		
Frequency (MHz)				1712.5	1732.5	1752.5	L	M	H
5	QPSK	1	0	19.85	19.97	19.86	0.0750	0.0771	0.0752
5	QPSK	1	12	19.72	19.91	20.00	0.0728	0.0760	0.0776
5	QPSK	1	24	19.84	19.91	19.75	0.0748	0.0760	0.0733
5	QPSK	12	0	18.97	18.91	18.84	0.0612	0.0604	0.0594
5	QPSK	12	7	18.91	18.88	18.91	0.0604	0.0600	0.0604
5	QPSK	12	13	18.89	18.99	18.90	0.0601	0.0615	0.0603
5	QPSK	25	0	18.89	18.88	19.10	0.0601	0.0600	0.0631
5	16QAM	1	0	19.13	19.16	18.99	0.0635	0.0640	0.0615
5	16QAM	1	12	19.09	19.19	19.25	0.0630	0.0644	0.0653
5	16QAM	1	24	19.36	19.21	19.28	0.0670	0.0647	0.0658
5	16QAM	12	0	17.93	18.00	18.06	0.0482	0.0490	0.0497
5	16QAM	12	7	18.05	18.02	17.97	0.0495	0.0492	0.0486
5	16QAM	12	13	17.99	18.02	17.88	0.0489	0.0492	0.0476
5	16QAM	25	0	18.08	18.01	17.95	0.0499	0.0491	0.0484
5	64QAM	1	0	17.77	17.94	17.83	0.0465	0.0483	0.0471
5	64QAM	1	12	18.13	18.03	18.20	0.0505	0.0493	0.0513
5	64QAM	1	24	18.01	17.97	18.06	0.0491	0.0486	0.0497
5	64QAM	12	0	16.99	16.89	16.88	0.0388	0.0379	0.0378
5	64QAM	12	7	16.85	16.88	17.00	0.0376	0.0378	0.0389
5	64QAM	12	13	17.07	16.97	16.97	0.0395	0.0386	0.0386
5	64QAM	25	0	16.83	16.89	16.88	0.0374	0.0379	0.0378
Channel				19965	20175	20385	EIRP(W)		
Frequency (MHz)				1711.5	1732.5	1753.5	L	M	H
3	QPSK	1	0	19.98	19.86	19.85	0.0773	0.0752	0.0750
3	QPSK	1	8	19.69	19.85	19.98	0.0723	0.0750	0.0773
3	QPSK	1	14	20.02	19.87	19.91	0.0780	0.0753	0.0760
3	QPSK	8	0	19.14	19.00	18.80	0.0637	0.0617	0.0589
3	QPSK	8	4	18.82	18.93	18.88	0.0592	0.0607	0.0600
3	QPSK	8	7	18.95	18.95	18.82	0.0610	0.0610	0.0592
3	QPSK	15	0	18.69	18.82	19.00	0.0574	0.0592	0.0617
3	16QAM	1	0	18.92	18.98	19.07	0.0605	0.0614	0.0627
3	16QAM	1	8	19.06	19.10	19.07	0.0625	0.0631	0.0627
3	16QAM	1	14	19.22	19.25	19.16	0.0649	0.0653	0.0640
3	16QAM	8	0	17.85	17.87	17.95	0.0473	0.0475	0.0484
3	16QAM	8	4	17.92	17.98	17.83	0.0481	0.0488	0.0471





3	16QAM	8	7	18.00	17.98	18.07	0.0490	0.0488	0.0498
3	16QAM	15	0	18.06	17.90	17.90	0.0497	0.0479	0.0479
3	64QAM	1	0	17.77	17.84	18.03	0.0465	0.0472	0.0493
3	64QAM	1	8	18.01	17.95	18.05	0.0491	0.0484	0.0495
3	64QAM	1	14	18.08	17.86	18.03	0.0499	0.0474	0.0493
3	64QAM	8	0	16.87	16.96	17.04	0.0378	0.0385	0.0393
3	64QAM	8	4	16.80	16.96	16.85	0.0372	0.0385	0.0376
3	64QAM	8	7	16.93	17.07	16.86	0.0383	0.0395	0.0377
3	64QAM	15	0	16.87	17.00	16.89	0.0378	0.0389	0.0379
Channel				19957	20175	20393	EIRP(W)		
Frequency (MHz)				1710.7	1732.5	1754.3	L	M	H
1.4	QPSK	1	0	20.00	19.97	19.91	0.0776	0.0771	0.0760
1.4	QPSK	1	3	19.77	19.91	19.83	0.0736	0.0760	0.0746
1.4	QPSK	1	5	19.80	19.91	19.90	0.0741	0.0760	0.0759
1.4	QPSK	3	0	19.88	19.81	19.99	0.0755	0.0743	0.0774
1.4	QPSK	3	1	19.66	19.80	19.64	0.0718	0.0741	0.0714
1.4	QPSK	3	3	19.85	19.97	19.84	0.0750	0.0771	0.0748
1.4	QPSK	6	0	19.13	18.93	18.74	0.0635	0.0607	0.0581
1.4	16QAM	1	0	18.84	18.89	18.89	0.0594	0.0601	0.0601
1.4	16QAM	1	3	19.05	19.01	18.72	0.0624	0.0618	0.0578
1.4	16QAM	1	5	18.76	19.00	18.89	0.0583	0.0617	0.0601
1.4	16QAM	3	0	19.02	19.17	19.10	0.0619	0.0641	0.0631
1.4	16QAM	3	1	19.04	19.16	19.07	0.0622	0.0640	0.0627
1.4	16QAM	3	3	19.29	19.16	19.17	0.0659	0.0640	0.0641
1.4	16QAM	6	0	17.72	18.01	18.13	0.0459	0.0491	0.0505
1.4	64QAM	1	0	17.88	17.95	17.81	0.0476	0.0484	0.0469
1.4	64QAM	1	3	18.11	17.99	17.96	0.0502	0.0489	0.0485
1.4	64QAM	1	5	17.90	18.04	17.91	0.0479	0.0494	0.0480
1.4	64QAM	3	0	17.90	17.81	17.84	0.0479	0.0469	0.0472
1.4	64QAM	3	1	18.04	18.00	18.09	0.0494	0.0490	0.0500
1.4	64QAM	3	3	18.12	17.89	17.89	0.0504	0.0478	0.0478
1.4	64QAM	6	0	16.91	16.84	16.95	0.0381	0.0375	0.0385



LTE Band 41:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP		
Channel				39750	40620	41490			
Frequency (MHz)				2506	2593	2680	L	M	H
20	QPSK	1	0	20.56	20.82	20.73	0.0904	0.0959	0.0940
20	QPSK	1	49	20.67	20.56	20.58	0.0927	0.0904	0.0908
20	QPSK	1	99	20.63	20.79	20.68	0.0918	0.0953	0.0929
20	QPSK	50	0	19.93	19.99	19.82	0.0782	0.0793	0.0762
20	QPSK	50	24	19.65	19.69	19.65	0.0733	0.0740	0.0733
20	QPSK	50	50	19.68	19.84	19.78	0.0738	0.0766	0.0755
20	QPSK	100	0	19.74	19.87	19.76	0.0748	0.0771	0.0752
20	16QAM	1	0	19.94	19.89	19.95	0.0783	0.0774	0.0785
20	16QAM	1	49	19.93	19.79	19.92	0.0782	0.0757	0.0780
20	16QAM	1	99	19.96	19.85	19.97	0.0787	0.0767	0.0789
20	16QAM	50	0	19.00	19.02	18.94	0.0631	0.0634	0.0622
20	16QAM	50	24	19.03	18.75	18.71	0.0635	0.0596	0.0590
20	16QAM	50	50	19.05	18.76	18.93	0.0638	0.0597	0.0621
20	16QAM	100	0	18.72	18.84	18.62	0.0592	0.0608	0.0578
20	64QAM	1	0	18.73	18.52	18.52	0.0593	0.0565	0.0565
20	64QAM	1	49	18.63	18.67	18.65	0.0579	0.0585	0.0582
20	64QAM	1	99	18.56	18.50	18.37	0.0570	0.0562	0.0546
20	64QAM	50	0	17.89	17.86	17.87	0.0489	0.0485	0.0486
20	64QAM	50	24	17.99	17.84	17.70	0.0500	0.0483	0.0468
20	64QAM	50	50	17.65	17.74	17.88	0.0462	0.0472	0.0488
20	64QAM	100	0	17.86	17.75	17.68	0.0485	0.0473	0.0466
Channel				39725	40620	41515	EIRP		
Frequency (MHz)				2503.5	2593	2682.5	L	M	H
15	QPSK	1	0	20.42	20.72	20.62	0.0875	0.0938	0.0916
15	QPSK	1	37	20.49	20.52	20.53	0.0889	0.0895	0.0897
15	QPSK	1	74	20.58	20.71	20.68	0.0908	0.0935	0.0929
15	QPSK	36	0	19.90	19.82	19.81	0.0776	0.0762	0.0760
15	QPSK	36	20	19.49	19.65	19.59	0.0706	0.0733	0.0723
15	QPSK	36	39	19.49	19.82	19.60	0.0706	0.0762	0.0724
15	QPSK	75	0	19.63	19.72	19.67	0.0729	0.0745	0.0736
15	16QAM	1	0	19.80	19.89	19.92	0.0759	0.0774	0.0780
15	16QAM	1	37	19.82	19.72	19.80	0.0762	0.0745	0.0759
15	16QAM	1	74	19.76	19.66	19.80	0.0752	0.0735	0.0759



15	16QAM	36	0	18.80	18.99	18.78	0.0603	0.0630	0.0600
15	16QAM	36	20	18.95	18.74	18.71	0.0624	0.0594	0.0590
15	16QAM	36	39	19.04	18.62	18.82	0.0637	0.0578	0.0605
15	16QAM	75	0	18.61	18.74	18.43	0.0577	0.0594	0.0553
15	64QAM	1	0	18.63	18.42	18.50	0.0579	0.0552	0.0562
15	64QAM	1	37	18.55	18.65	18.63	0.0569	0.0582	0.0579
15	64QAM	1	74	18.54	18.46	18.36	0.0568	0.0557	0.0545
15	64QAM	36	0	17.76	17.81	17.79	0.0474	0.0480	0.0478
15	64QAM	36	20	17.93	17.77	17.60	0.0493	0.0475	0.0457
15	64QAM	36	39	17.62	17.57	17.81	0.0459	0.0454	0.0480
15	64QAM	75	0	17.79	17.59	17.68	0.0478	0.0456	0.0466
Channel				39700	40620	41540	EIRP		
Frequency (MHz)				2501	2593	2685	L	M	H
10	QPSK	1	0	20.36	20.69	20.68	0.0863	0.0931	0.0929
10	QPSK	1	25	20.49	20.49	20.48	0.0889	0.0889	0.0887
10	QPSK	1	49	20.56	20.69	20.64	0.0904	0.0931	0.0920
10	QPSK	25	0	19.74	19.79	19.66	0.0748	0.0757	0.0735
10	QPSK	25	12	19.57	19.67	19.58	0.0719	0.0736	0.0721
10	QPSK	25	25	19.62	19.83	19.66	0.0728	0.0764	0.0735
10	QPSK	50	0	19.61	19.78	19.74	0.0726	0.0755	0.0748
10	16QAM	1	0	19.80	19.81	19.76	0.0759	0.0760	0.0752
10	16QAM	1	25	19.91	19.71	19.80	0.0778	0.0743	0.0759
10	16QAM	1	49	19.91	19.77	19.83	0.0778	0.0753	0.0764
10	16QAM	25	0	18.89	18.94	18.75	0.0615	0.0622	0.0596
10	16QAM	25	12	18.85	18.68	18.52	0.0610	0.0586	0.0565
10	16QAM	25	25	18.97	18.74	18.79	0.0627	0.0594	0.0601
10	16QAM	50	0	18.66	18.68	18.58	0.0583	0.0586	0.0573
10	64QAM	1	0	18.56	18.33	18.52	0.0570	0.0541	0.0565
10	64QAM	1	25	18.58	18.48	18.46	0.0573	0.0560	0.0557
10	64QAM	1	49	18.39	18.33	18.25	0.0548	0.0541	0.0531
10	64QAM	25	0	17.74	17.81	17.79	0.0472	0.0480	0.0478
10	64QAM	25	12	17.96	17.84	17.60	0.0497	0.0483	0.0457
10	64QAM	25	25	17.48	17.59	17.69	0.0445	0.0456	0.0467
10	64QAM	50	0	17.77	17.68	17.66	0.0475	0.0466	0.0463
Channel				39675	40620	41565	EIRP		
Frequency (MHz)				2498.5	2593	2687.5	L	M	H
5	QPSK	1	0	20.45	20.63	20.64	0.0881	0.0918	0.0920
5	QPSK	1	12	20.49	20.48	20.53	0.0889	0.0887	0.0897



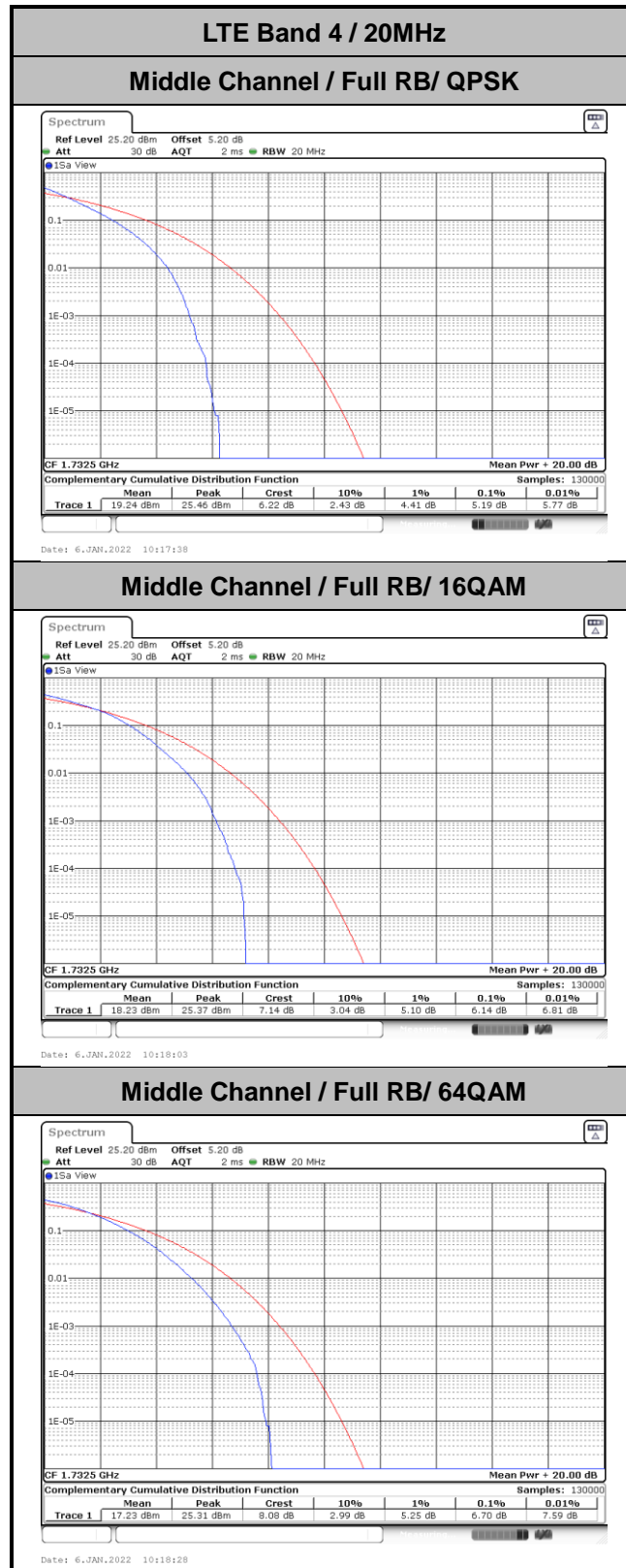
5	QPSK	1	24	20.56	20.76	20.65	0.0904	0.0946	0.0923
5	QPSK	12	0	19.90	19.87	19.76	0.0776	0.0771	0.0752
5	QPSK	12	7	19.55	19.62	19.58	0.0716	0.0728	0.0721
5	QPSK	12	13	19.55	19.78	19.60	0.0716	0.0755	0.0724
5	QPSK	25	0	19.68	19.82	19.60	0.0738	0.0762	0.0724
5	16QAM	1	0	19.77	19.86	19.84	0.0753	0.0769	0.0766
5	16QAM	1	12	19.78	19.69	19.87	0.0755	0.0740	0.0771
5	16QAM	1	24	19.95	19.71	19.93	0.0785	0.0743	0.0782
5	16QAM	12	0	18.84	18.92	18.87	0.0608	0.0619	0.0612
5	16QAM	12	7	18.85	18.71	18.60	0.0610	0.0590	0.0575
5	16QAM	12	13	18.73	18.67	18.92	0.0593	0.0585	0.0619
5	16QAM	25	0	18.55	18.72	18.45	0.0569	0.0592	0.0556
5	64QAM	1	0	18.68	18.36	18.32	0.0586	0.0545	0.0540
5	64QAM	1	12	18.52	18.56	18.57	0.0565	0.0570	0.0571
5	64QAM	1	24	18.49	18.34	18.32	0.0561	0.0542	0.0540
5	64QAM	12	0	17.82	17.71	17.76	0.0481	0.0469	0.0474
5	64QAM	12	7	17.90	17.76	17.69	0.0490	0.0474	0.0467
5	64QAM	12	13	17.62	17.65	17.87	0.0459	0.0462	0.0486
5	64QAM	25	0	17.67	17.64	17.49	0.0465	0.0461	0.0446



## LTE Band 4

### Peak-to-Average Ratio

Mode	LTE Band 4 / 20MHz			
Mod.	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Result
Middle CH	5.19	6.14	6.70	PASS





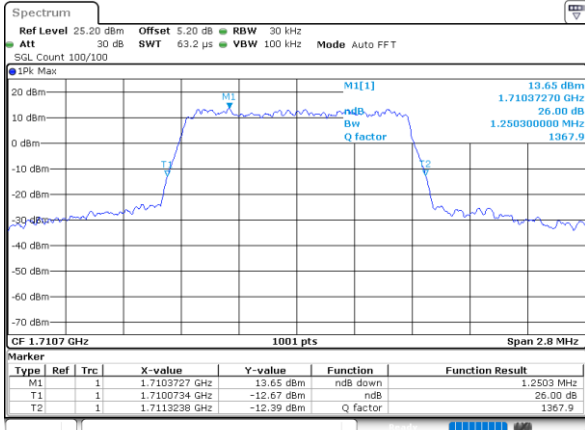
**26dB Bandwidth**

Mode	LTE Band 4 : 26dB BW(MHz)		
BW	1.4 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	1.25	1.23	1.23
Middle CH	1.23	1.23	1.22
Highest CH	1.24	1.23	1.22



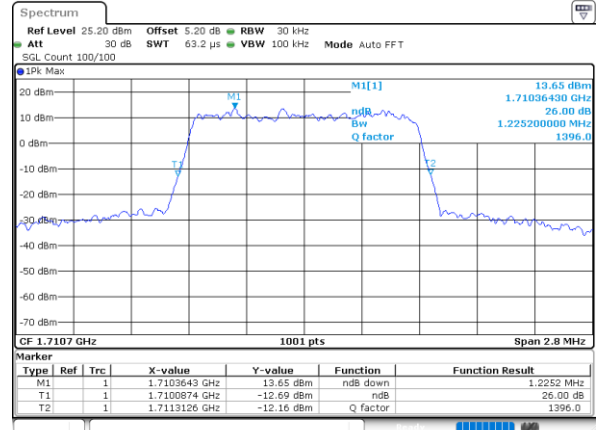
LTE Band 4

Lowest Channel / 1.4MHz / QPSK



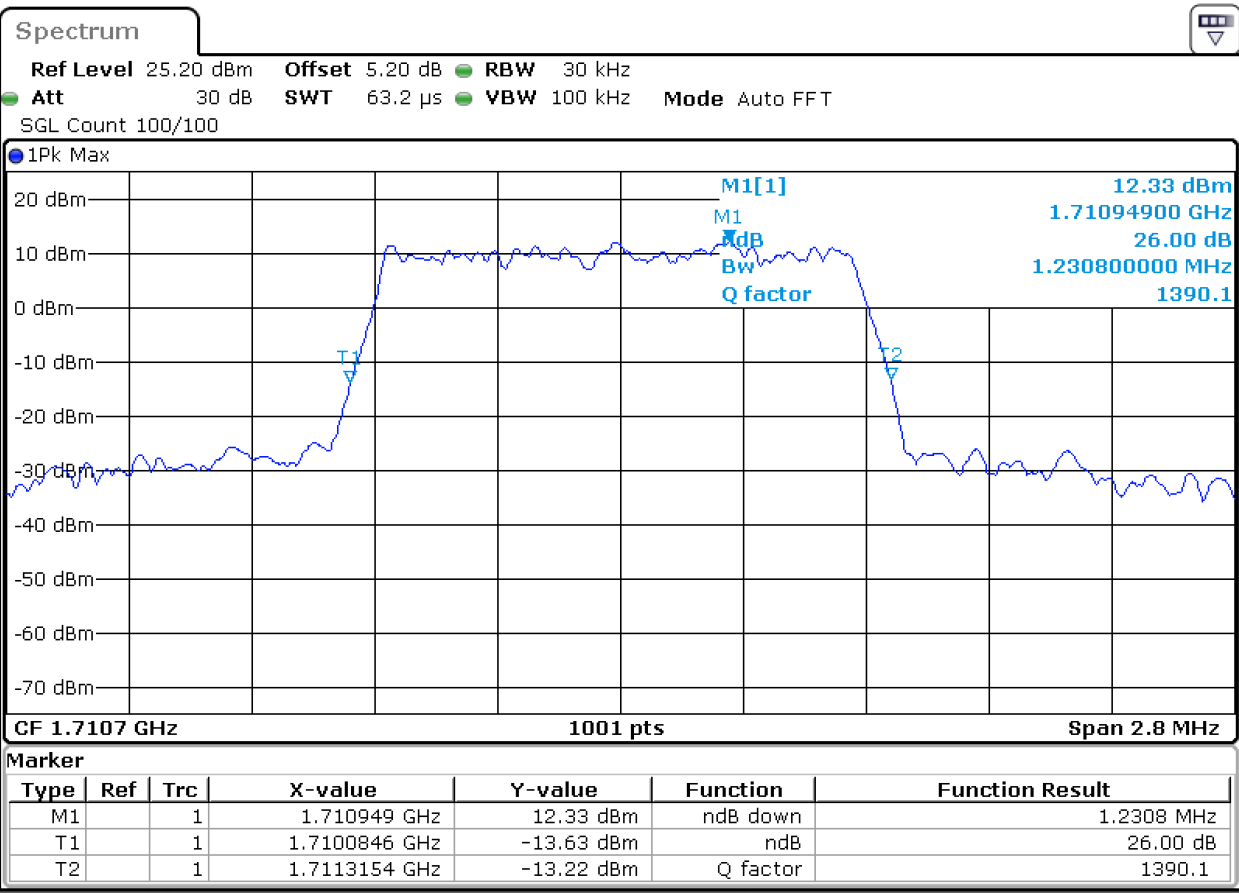
Date: 7.JAN.2022 20:31:08

Lowest Channel / 1.4MHz / 16QAM



Date: 7.JAN.2022 20:31:46

Lowest Channel / 1.4MHz / 64QAM



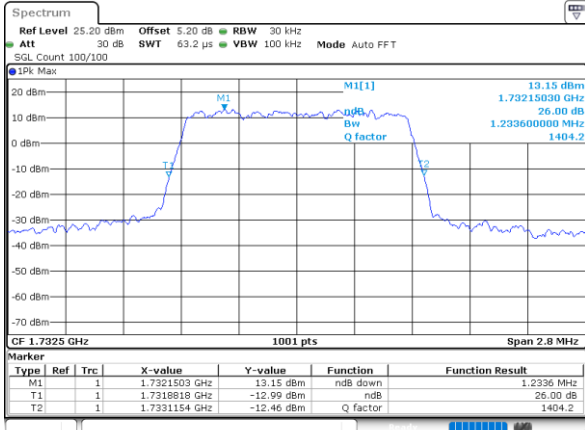
Date: 7.JAN.2022 20:32:25





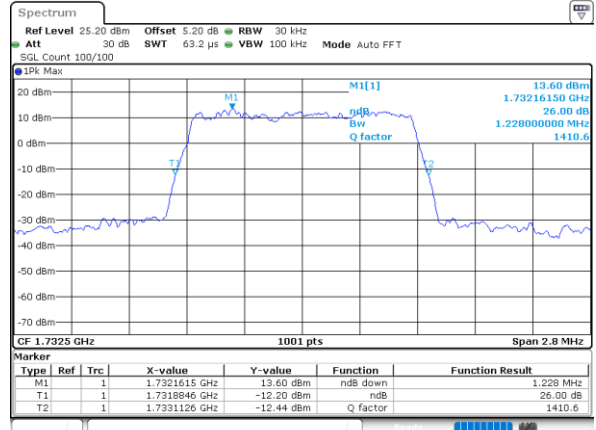
LTE Band 4

Middle Channel / 1.4MHz / QPSK



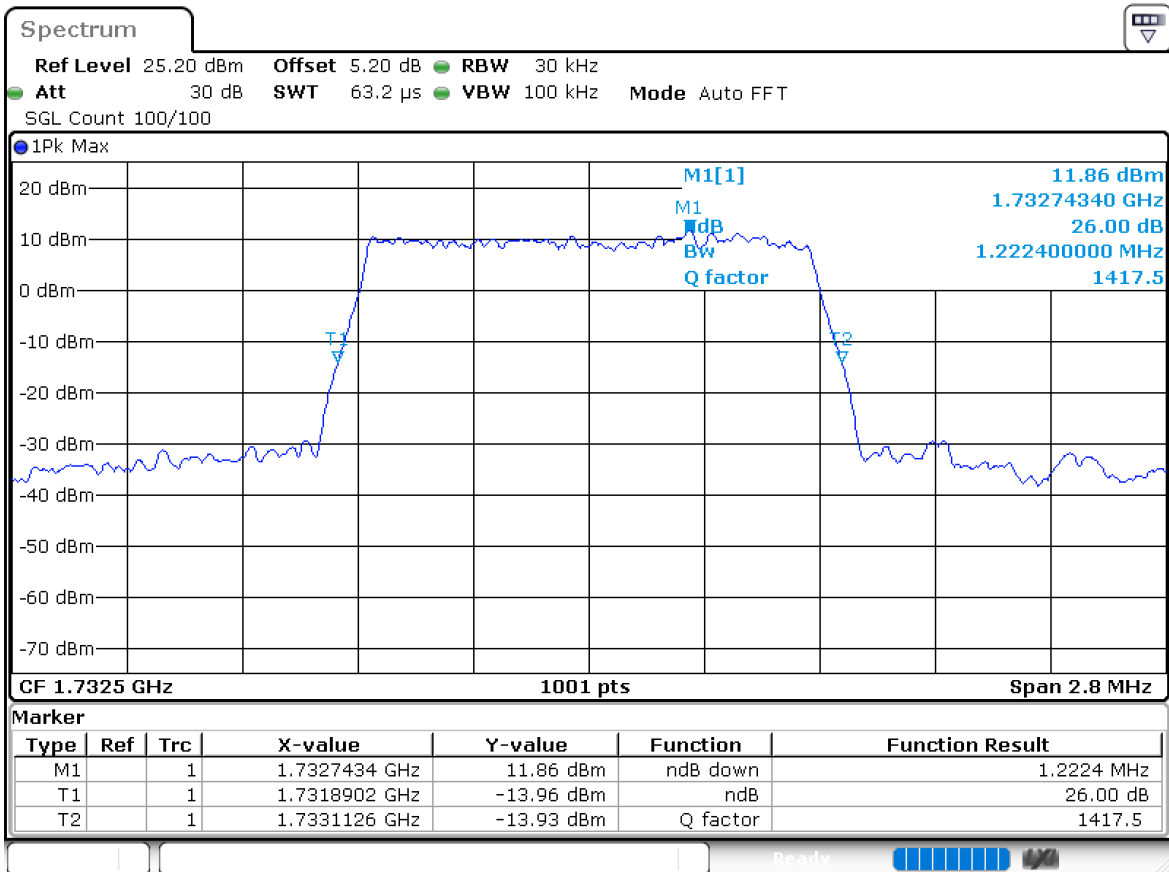
Date: 7.JAN.2022 20:33:03

Middle Channel / 1.4MHz / 16QAM



Date: 7.JAN.2022 20:33:41

Middle Channel / 1.4MHz / 64QAM

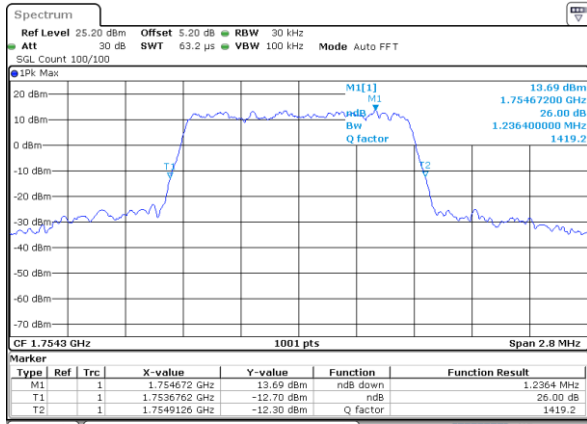


Date: 7.JAN.2022 20:34:20



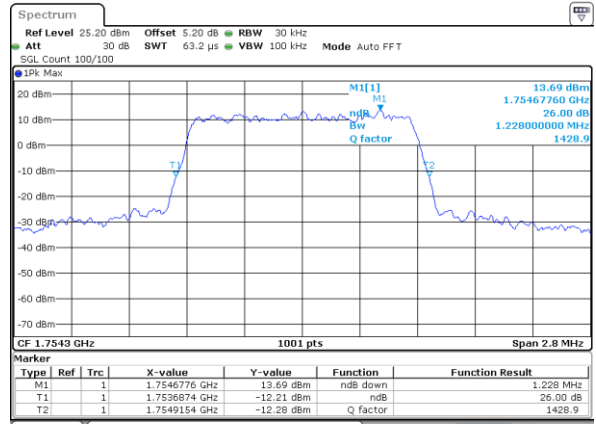
LTE Band 4

Highest Channel / 1.4MHz / QPSK



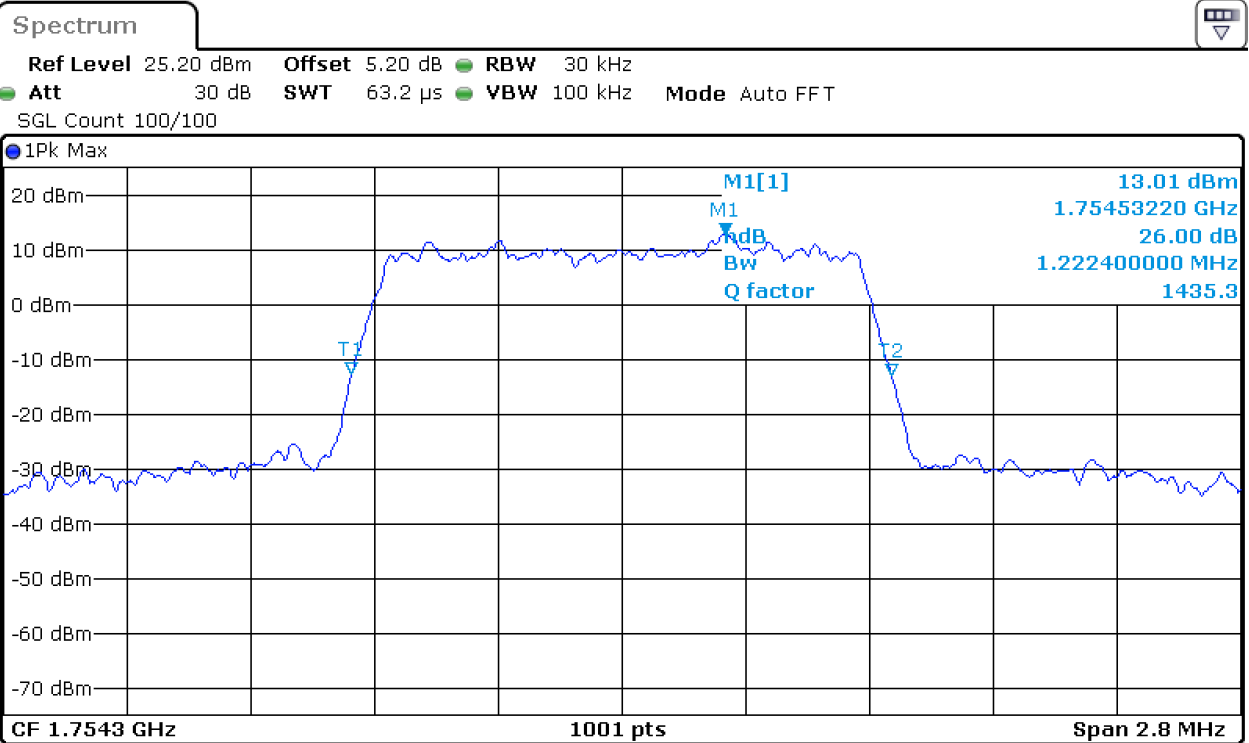
Date: 7.JAN.2022 20:34:58

Highest Channel / 1.4MHz / 16QAM



Date: 7.JAN.2022 20:35:38

Highest Channel / 1.4MHz / 64QAM



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.7545322 GHz	13.01 dBm	ndB down	1.2224 MHz
T1	1		1.7536874 GHz	-12.59 dBm	ndB	26.00 dB
T2	1		1.7549098 GHz	-12.87 dBm	Q factor	1435.3

Date: 7.JAN.2022 20:36:17

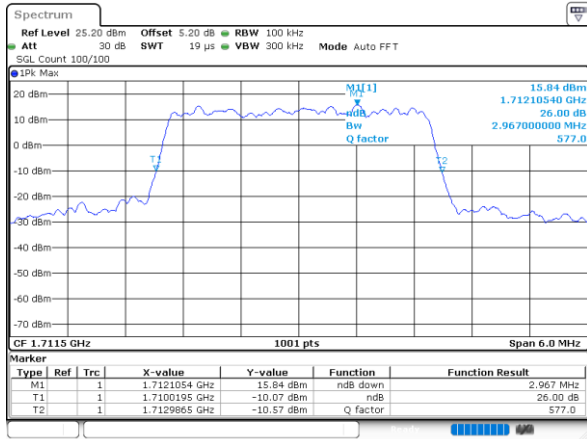


Mode	LTE Band 4 : 26dB BW(MHz)		
BW	3 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	2.97	2.97	3.00
Middle CH	3.00	3.05	3.03
Highest CH	3.06	3.00	3.03



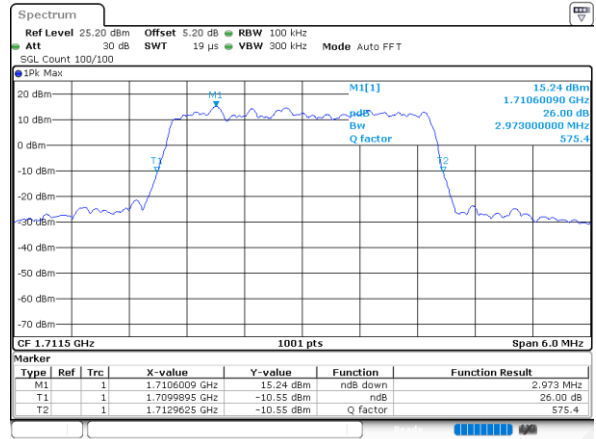
LTE Band 4

Lowest Channel / 3MHz / QPSK



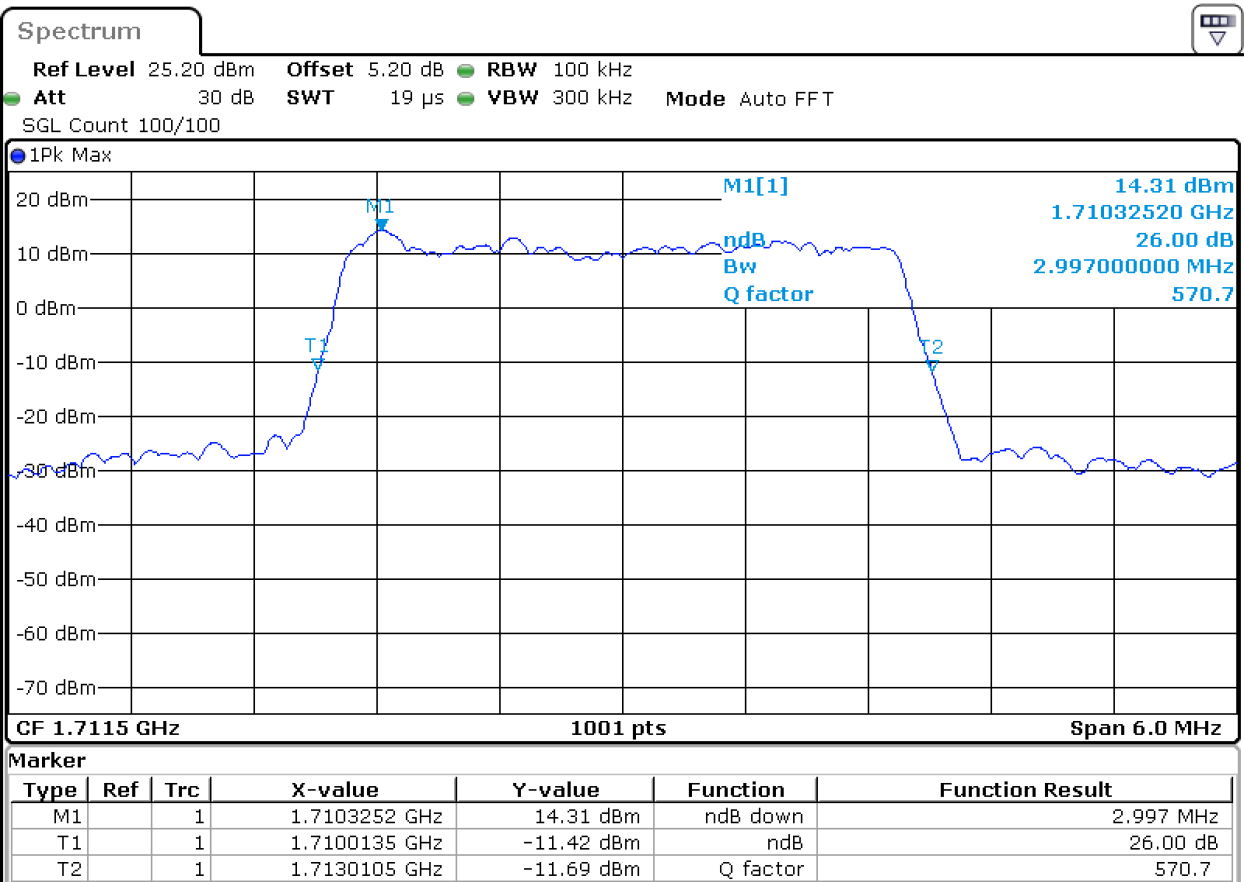
Date: 7.JAN.2022 20:36:57

Lowest Channel / 3MHz / 16QAM



Date: 7.JAN.2022 20:37:36

Lowest Channel / 3MHz / 64QAM

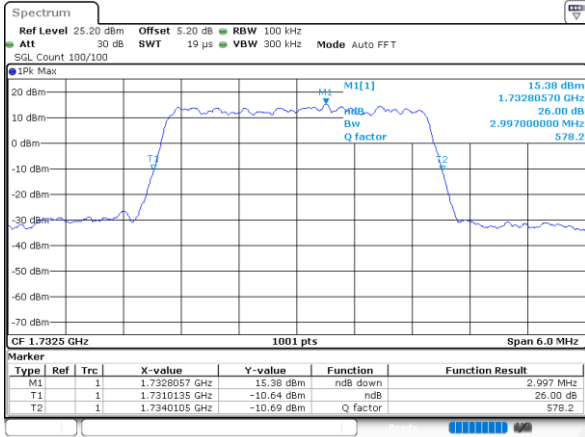


Date: 7.JAN.2022 20:38:15



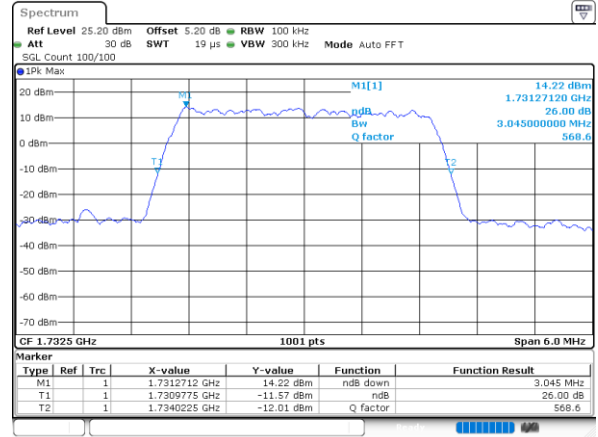
LTE Band 4

Middle Channel / 3MHz / QPSK



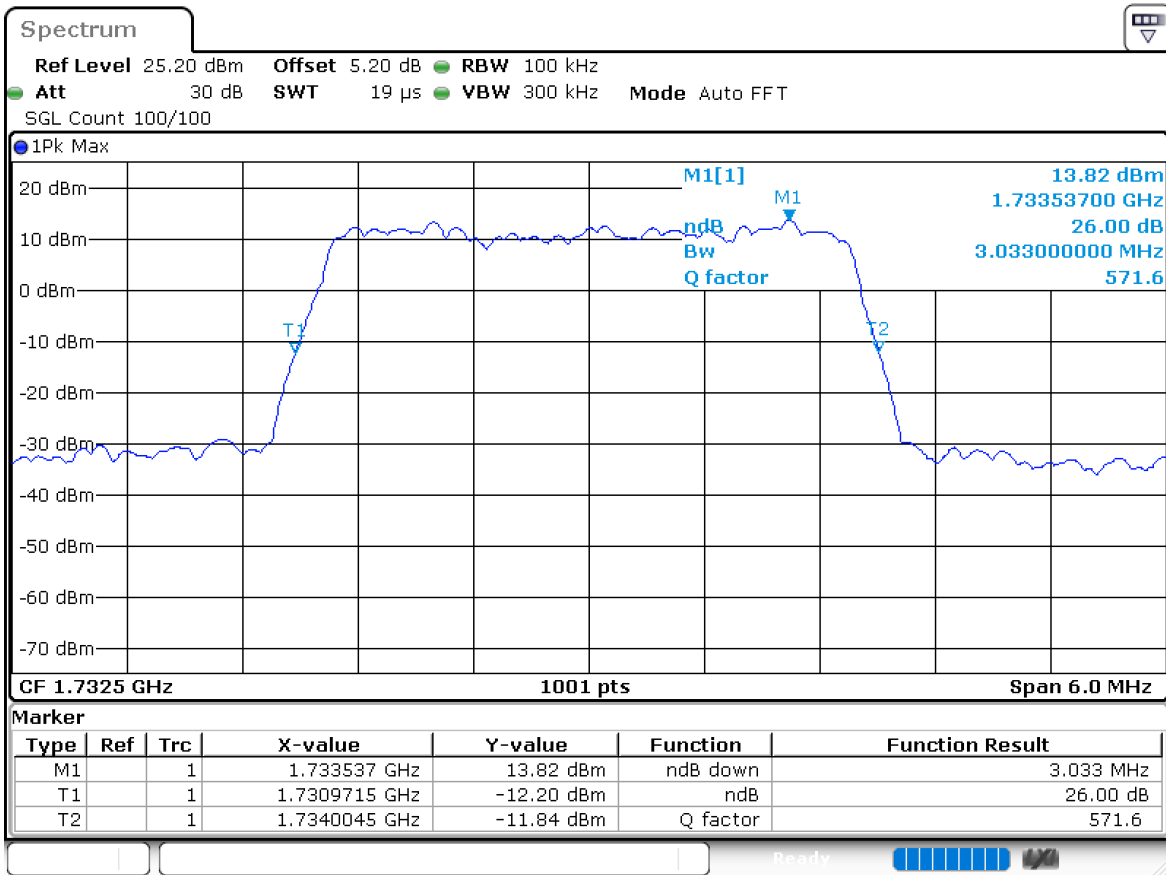
Date: 7.JAN.2022 20:38:53

Middle Channel / 3MHz / 16QAM



Date: 7.JAN.2022 20:39:32

Middle Channel / 3MHz / 64QAM

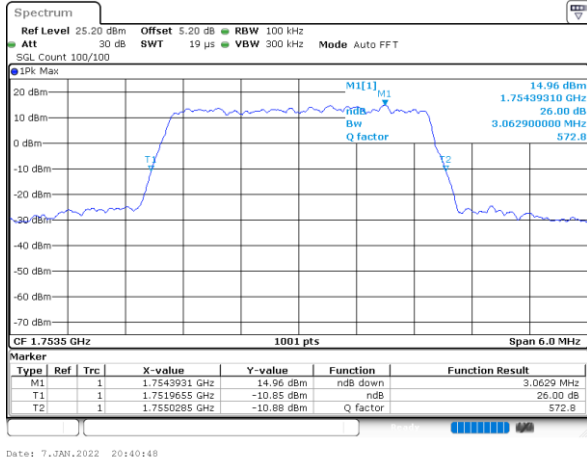


Date: 7.JAN.2022 20:40:10

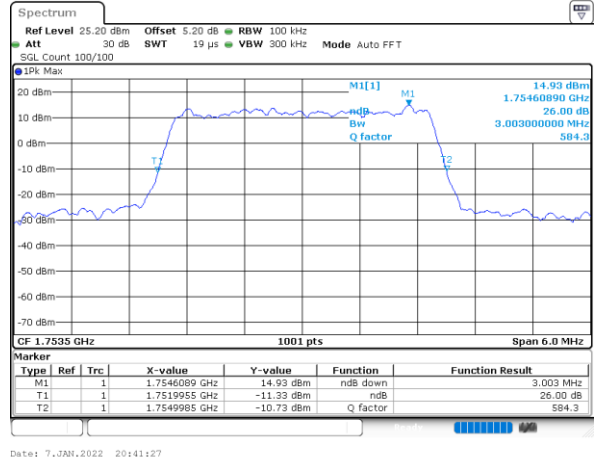


LTE Band 4

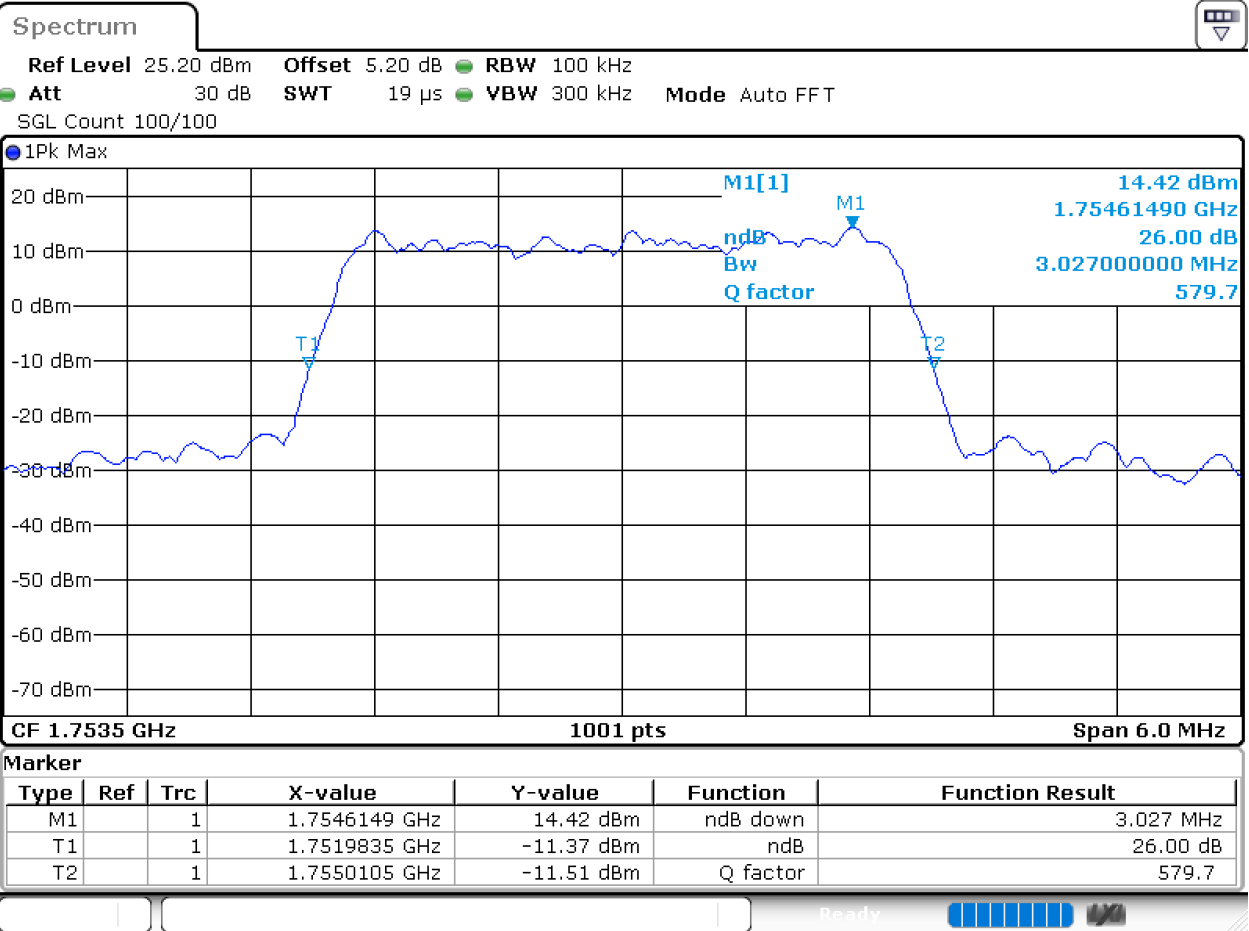
Highest Channel / 3MHz / QPSK



Highest Channel / 3MHz / 16QAM



Highest Channel / 3MHz / 64QAM



Date: 7.JAN.2022 20:42:07

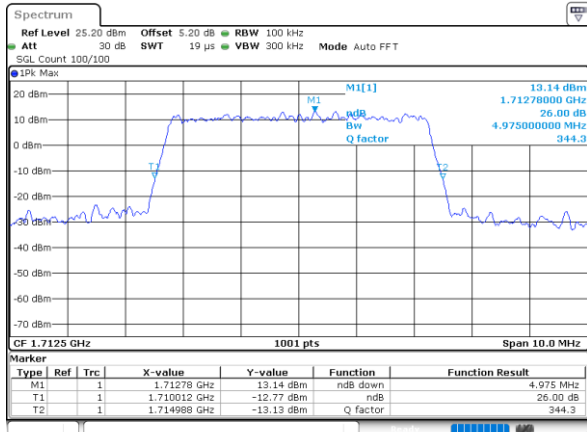


Mode	LTE Band 4 : 26dB BW(MHz)		
BW	5 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	4.98	4.88	4.97
Middle CH	4.89	4.88	4.89
Highest CH	4.91	4.86	4.86



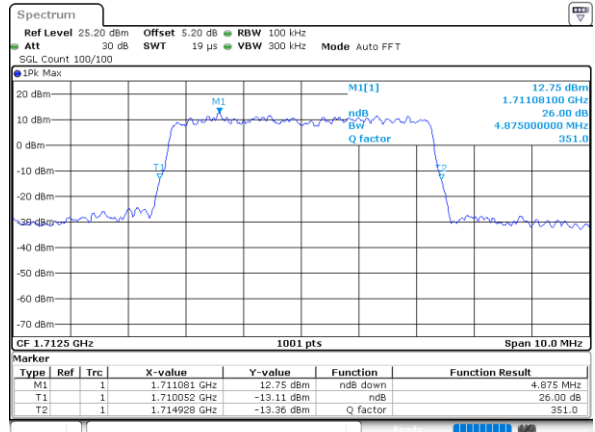
LTE Band 4

Lowest Channel / 5MHz / QPSK



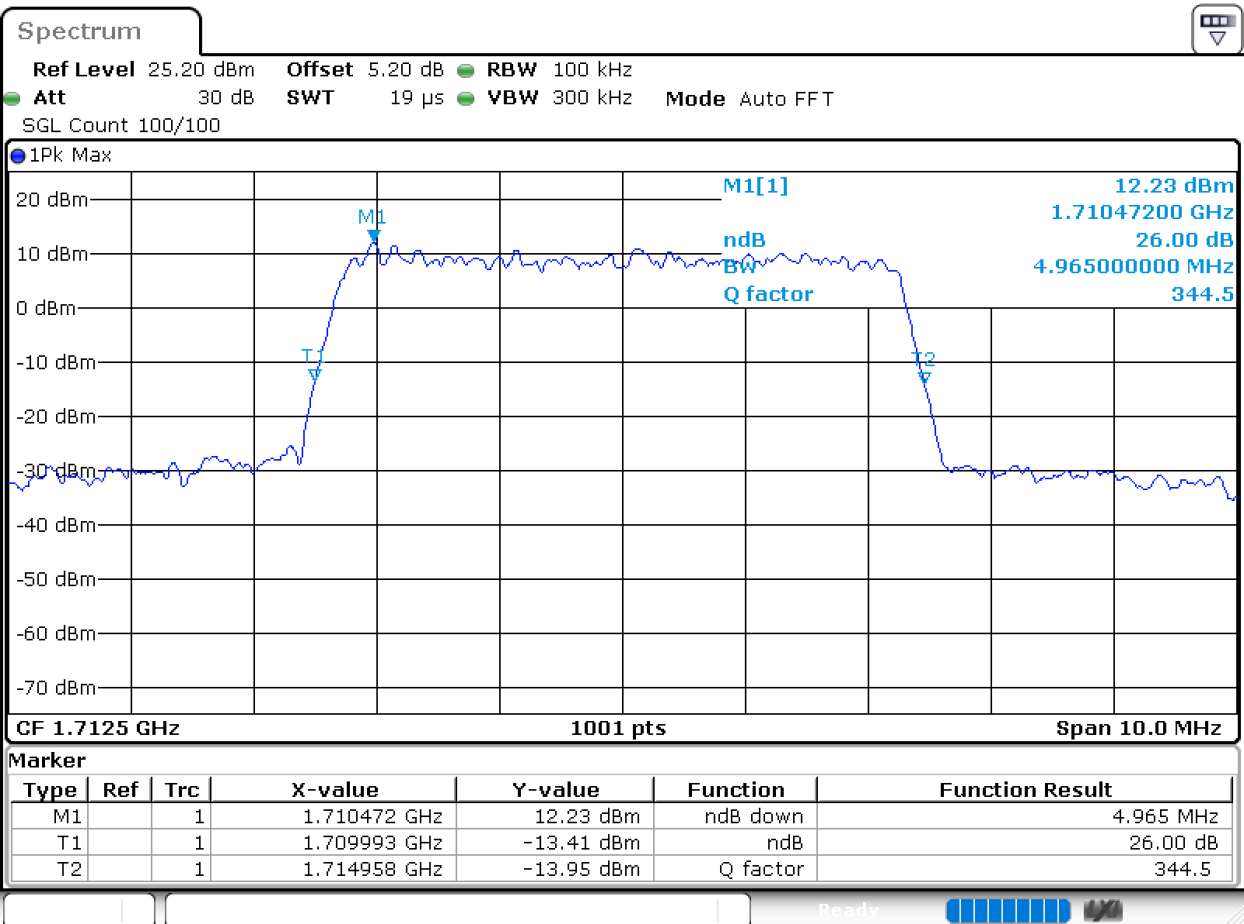
Date: 7.JAN.2022 20:42:47

Lowest Channel / 5MHz / 16QAM



Date: 7.JAN.2022 20:43:26

Lowest Channel / 5MHz / 64QAM



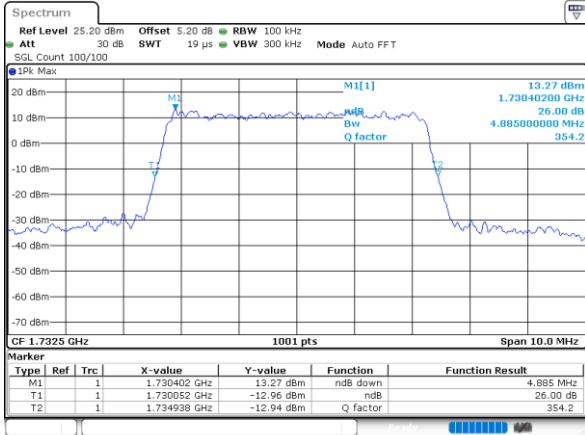
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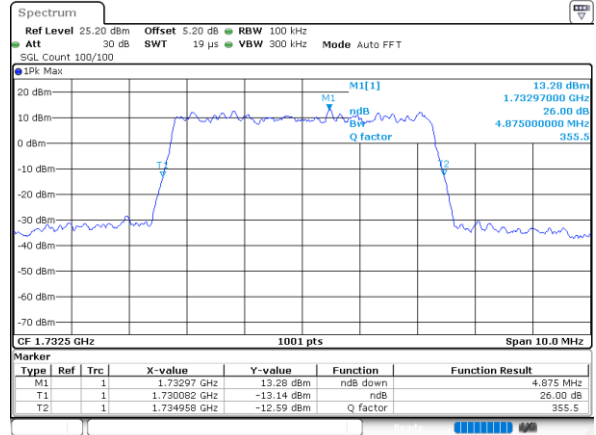
LTE Band 4

Middle Channel / 5MHz / QPSK



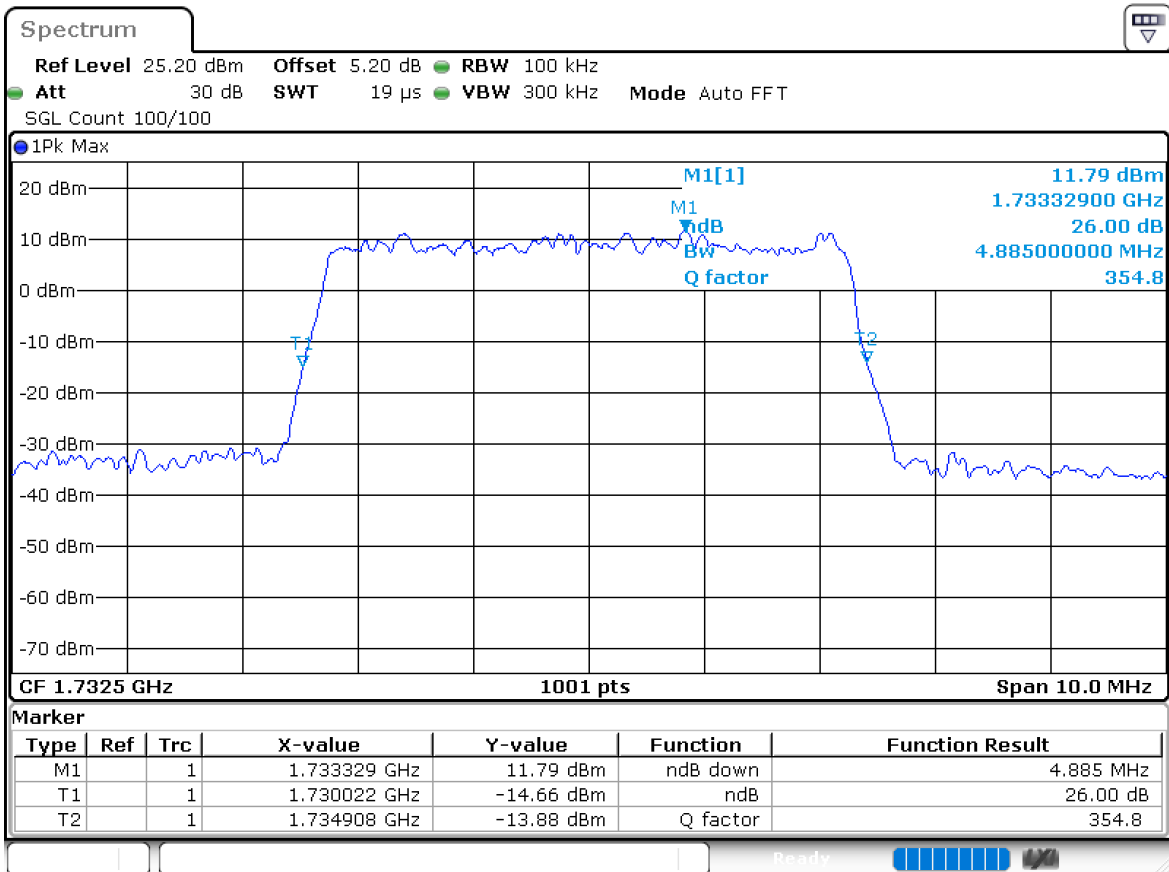
Date: 7.JAN.2022 20:44:44

Middle Channel / 5MHz / 16QAM



Date: 7.JAN.2022 20:45:22

Middle Channel / 5MHz / 64QAM

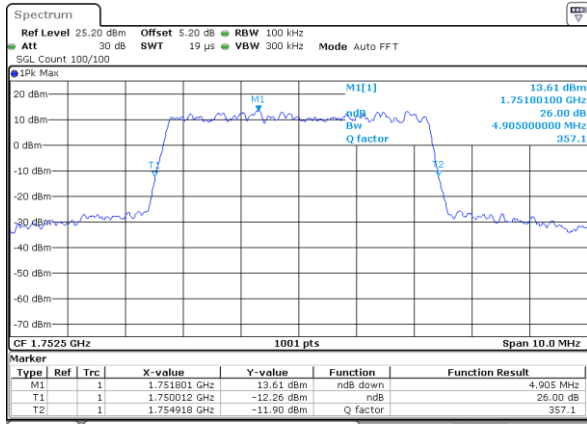


Date: 7.JAN.2022 20:46:00



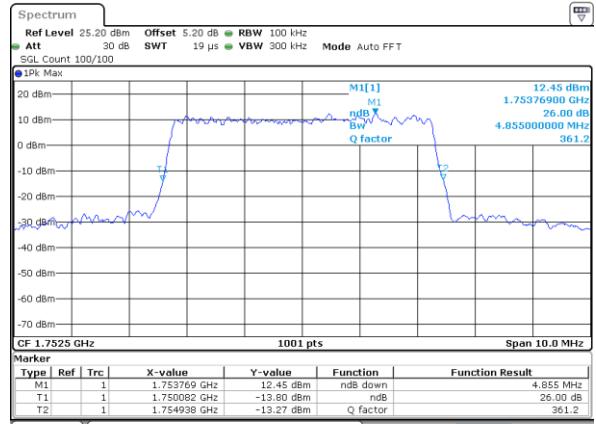
LTE Band 4

Highest Channel / 5MHz / QPSK



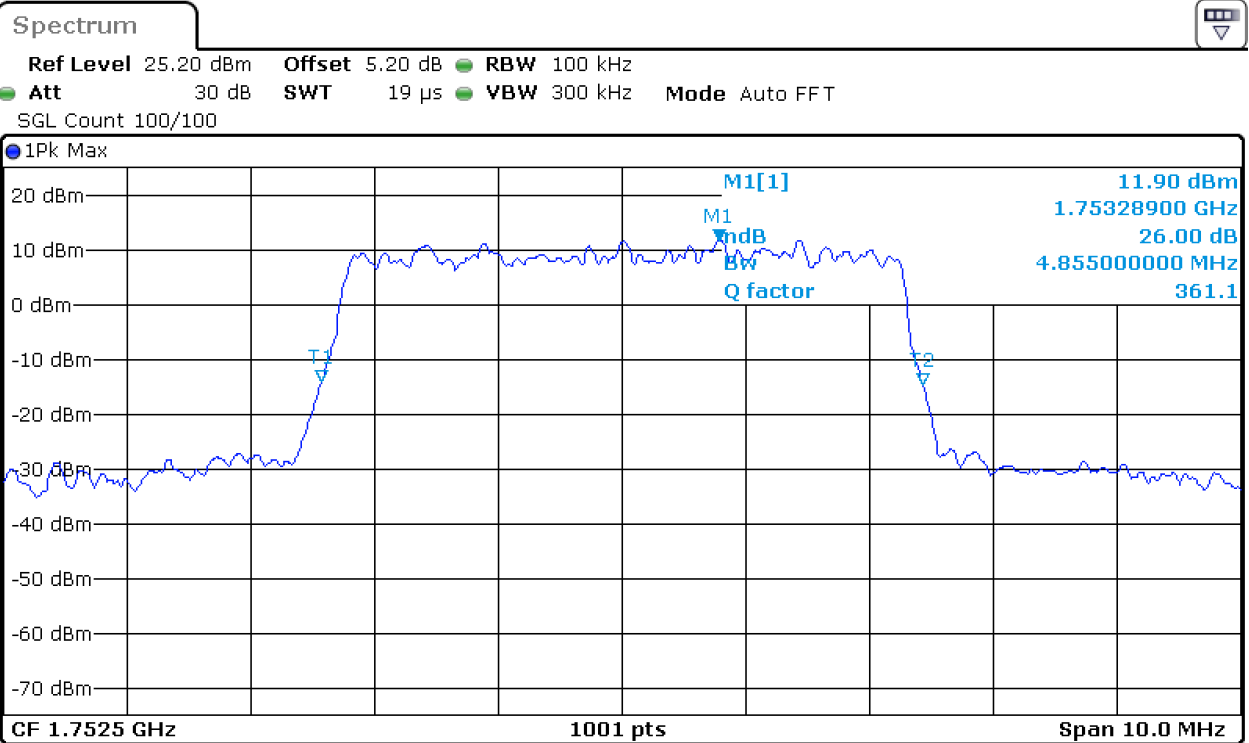
Date: 7.JAN.2022 20:46:39

Highest Channel / 5MHz / 16QAM



Date: 7.JAN.2022 20:47:19

Highest Channel / 5MHz / 64QAM



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.753289 GHz	11.90 dBm	ndB down	4.855 MHz
T1	1		1.750072 GHz	-13.81 dBm	ndB	26.00 dB
T2	1		1.754928 GHz	-14.38 dBm	Q factor	361.1

Date: 7.JAN.2022 20:47:57

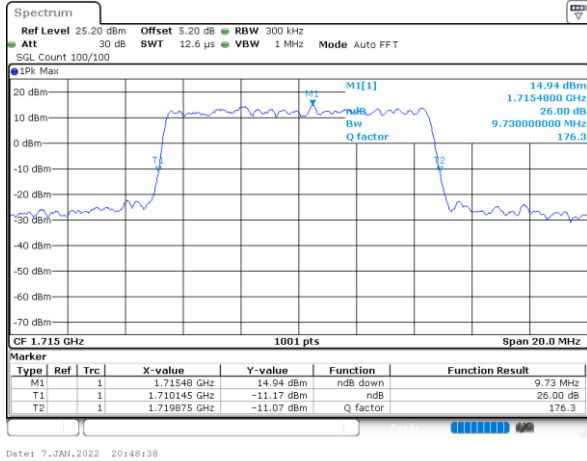


Mode	LTE Band 4 : 26dB BW(MHz)		
BW	10 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	9.73	9.79	9.83
Middle CH	9.93	9.81	9.75
Highest CH	9.93	9.83	9.77



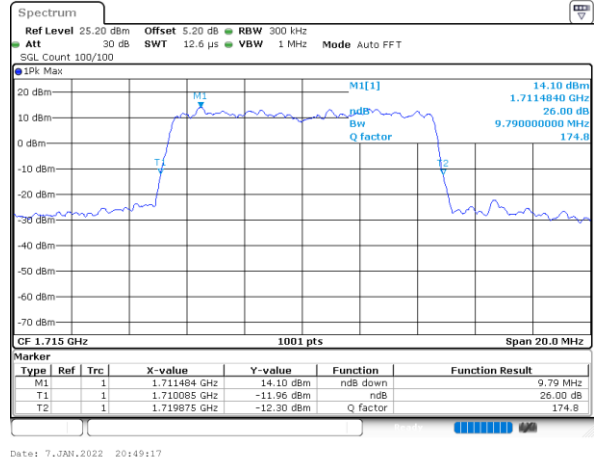
LTE Band 4

Lowest Channel / 10MHz / QPSK



Date: 7.JAN.2022 20:48:38

Lowest Channel / 10MHz / 16QAM

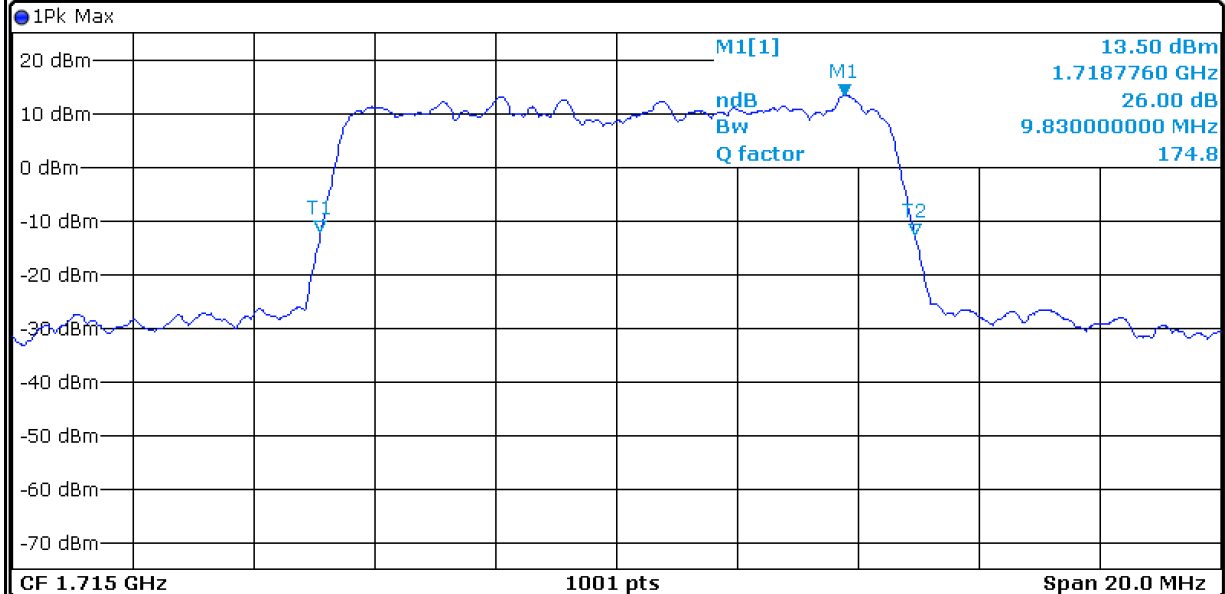


Date: 7.JAN.2022 20:49:17

Lowest Channel / 10MHz / 64QAM

Spectrum

Ref Level 25.20 dBm Offset 5.20 dB RBW 300 kHz  
 Att 30 dB SWT 12.6 μs VBW 1 MHz Mode Auto FFT  
 SGL Count 100/100



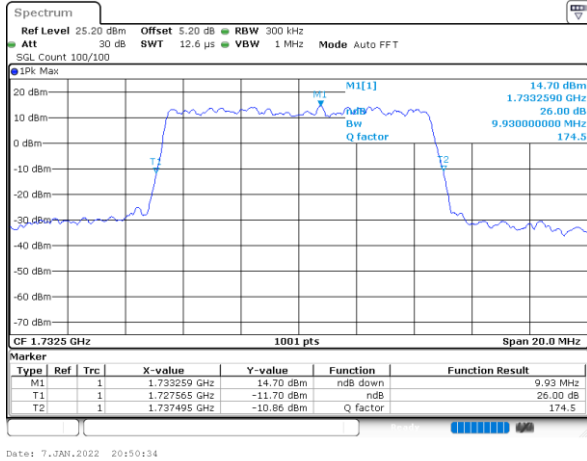
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.718776 GHz	13.50 dBm	ndB down	9.83 MHz
T1	1		1.710105 GHz	-12.04 dBm	ndB	26.00 dB
T2	1		1.719935 GHz	-12.63 dBm	Q factor	174.8

Date: 7.JAN.2022 20:49:55



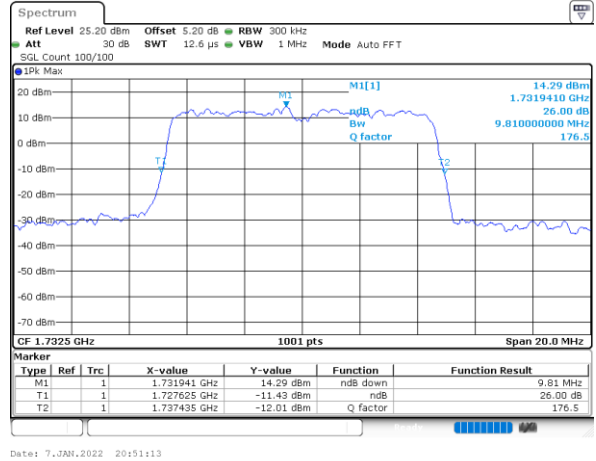
LTE Band 4

Middle Channel / 10MHz / QPSK



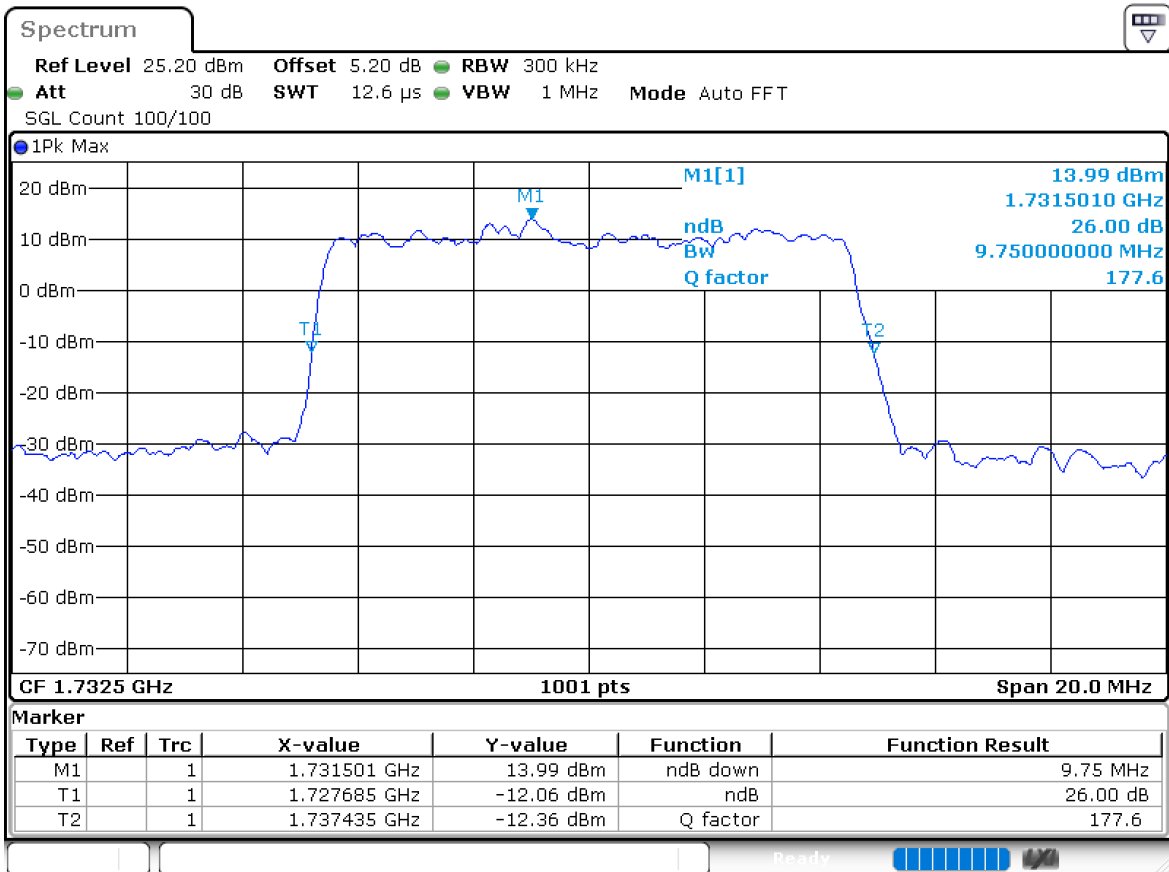
Date: 7.JAN.2022 20:50:134

Middle Channel / 10MHz / 16QAM



Date: 7.JAN.2022 20:51:13

Middle Channel / 10MHz / 64QAM

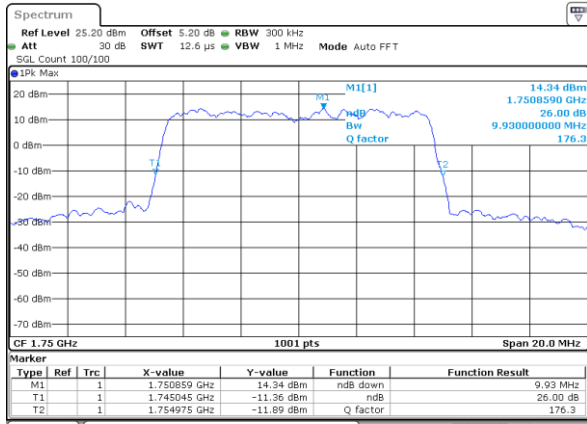


Date: 7.JAN.2022 20:51:51



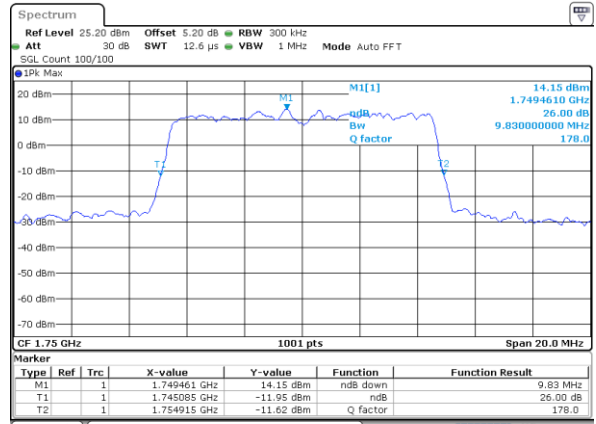
LTE Band 4

Highest Channel / 10MHz / QPSK



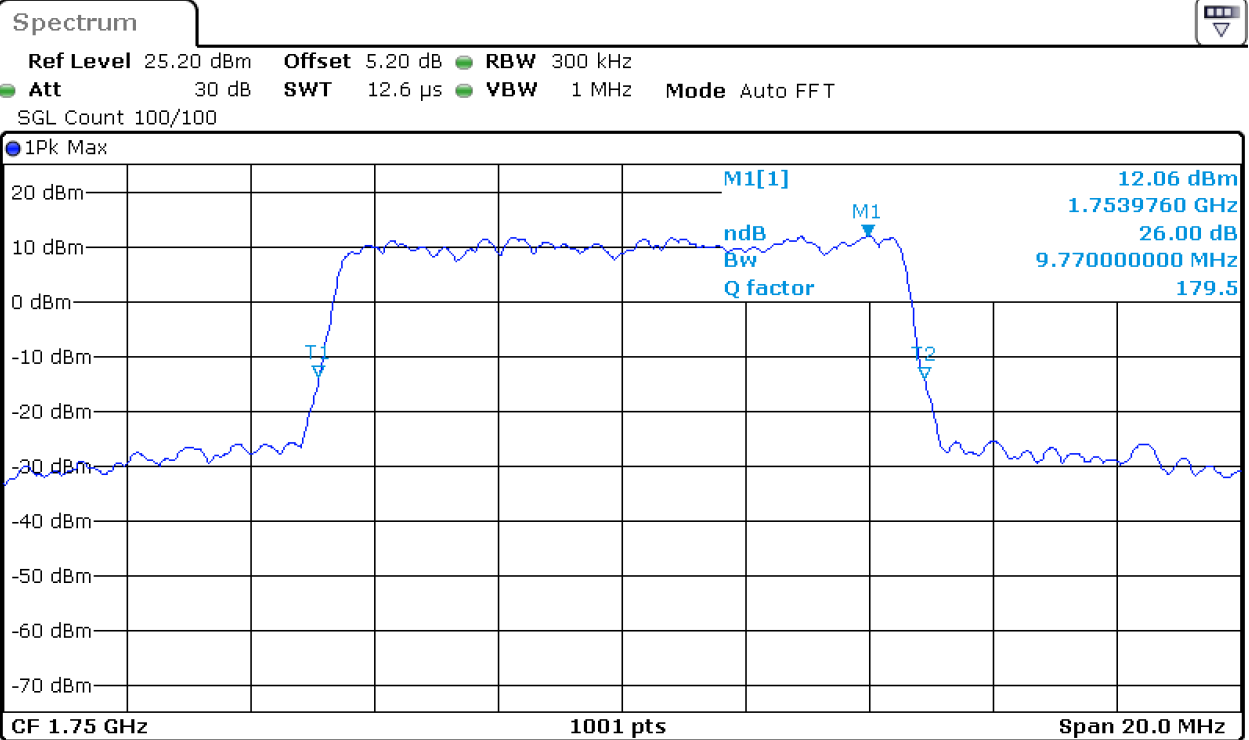
Date: 7.JAN.2022 20:52:30

Highest Channel / 10MHz / 16QAM



Date: 7.JAN.2022 20:53:08

Highest Channel / 10MHz / 64QAM



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.753976 GHz	12.06 dBm	ndB down	9.77 MHz
T1	1		1.745105 GHz	-13.69 dBm	ndB	26.00 dB
T2	1		1.754875 GHz	-13.92 dBm	Q factor	179.5

Date: 7.JAN.2022 20:53:47

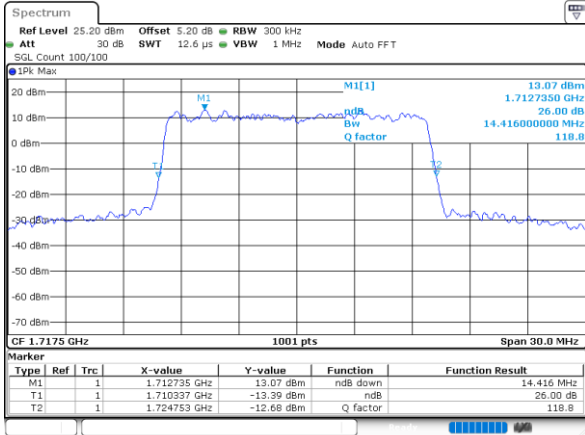


Mode	LTE Band 4 : 26dB BW(MHz)		
BW	15 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	14.42	14.42	14.33
Middle CH	14.21	14.60	14.30
Highest CH	14.42	14.63	14.60



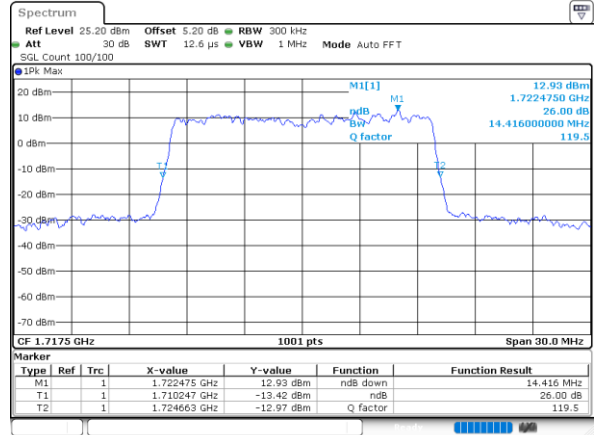
LTE Band 4

Lowest Channel / 15MHz / QPSK



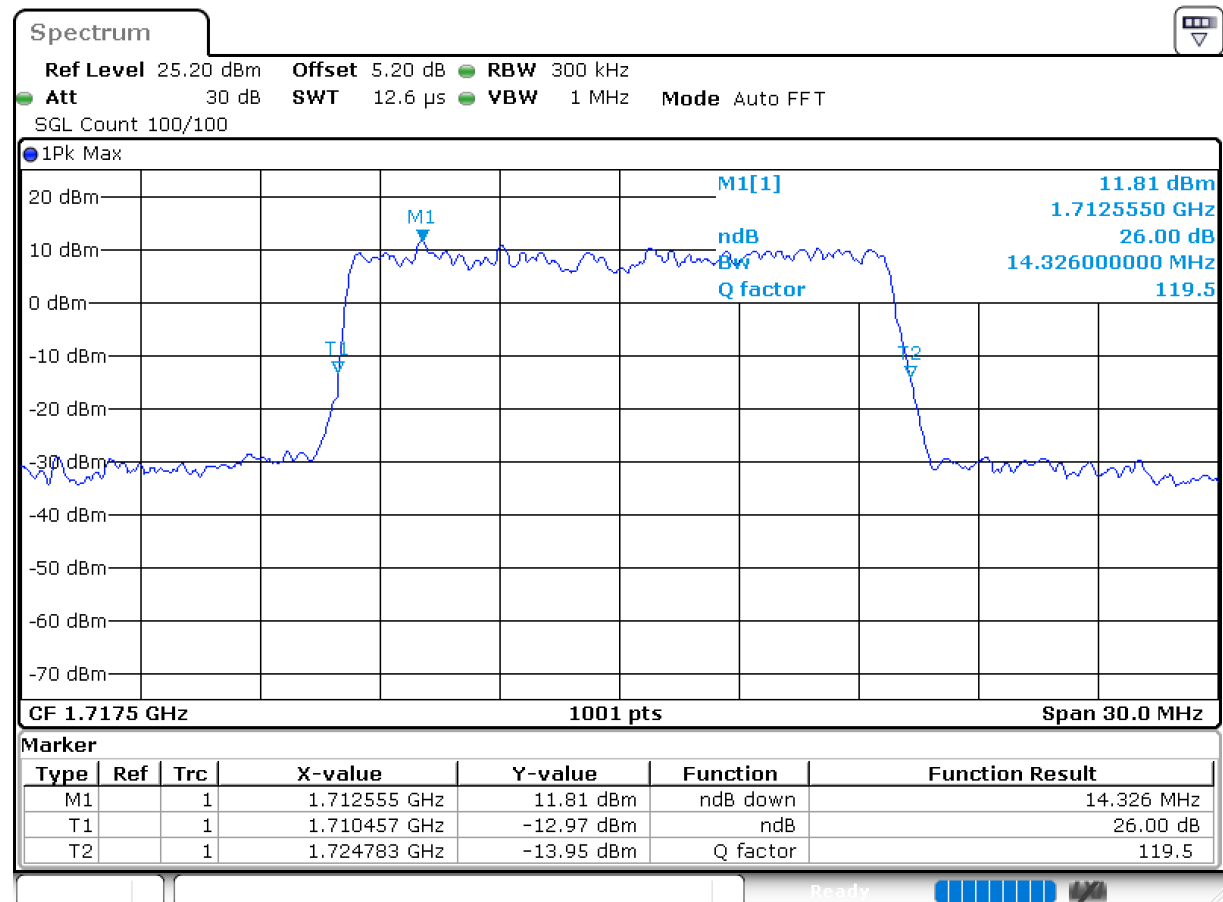
Date: 7.JAN.2022 20:54:28

Lowest Channel / 15MHz / 16QAM



Date: 7.JAN.2022 20:55:07

Lowest Channel / 15MHz / 64QAM



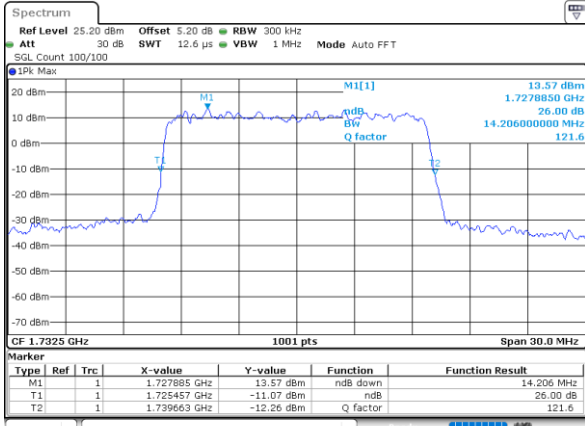
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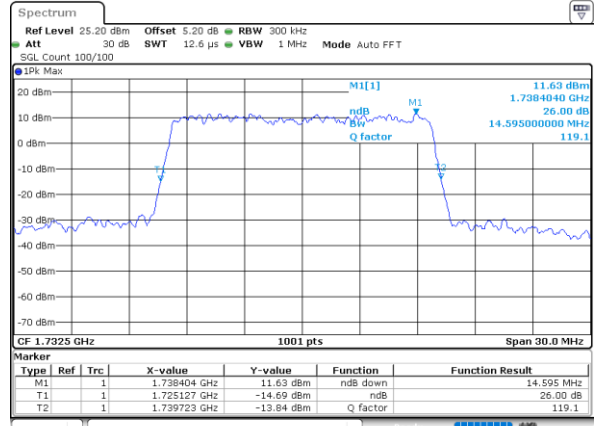
LTE Band 4

Middle Channel / 15MHz / QPSK



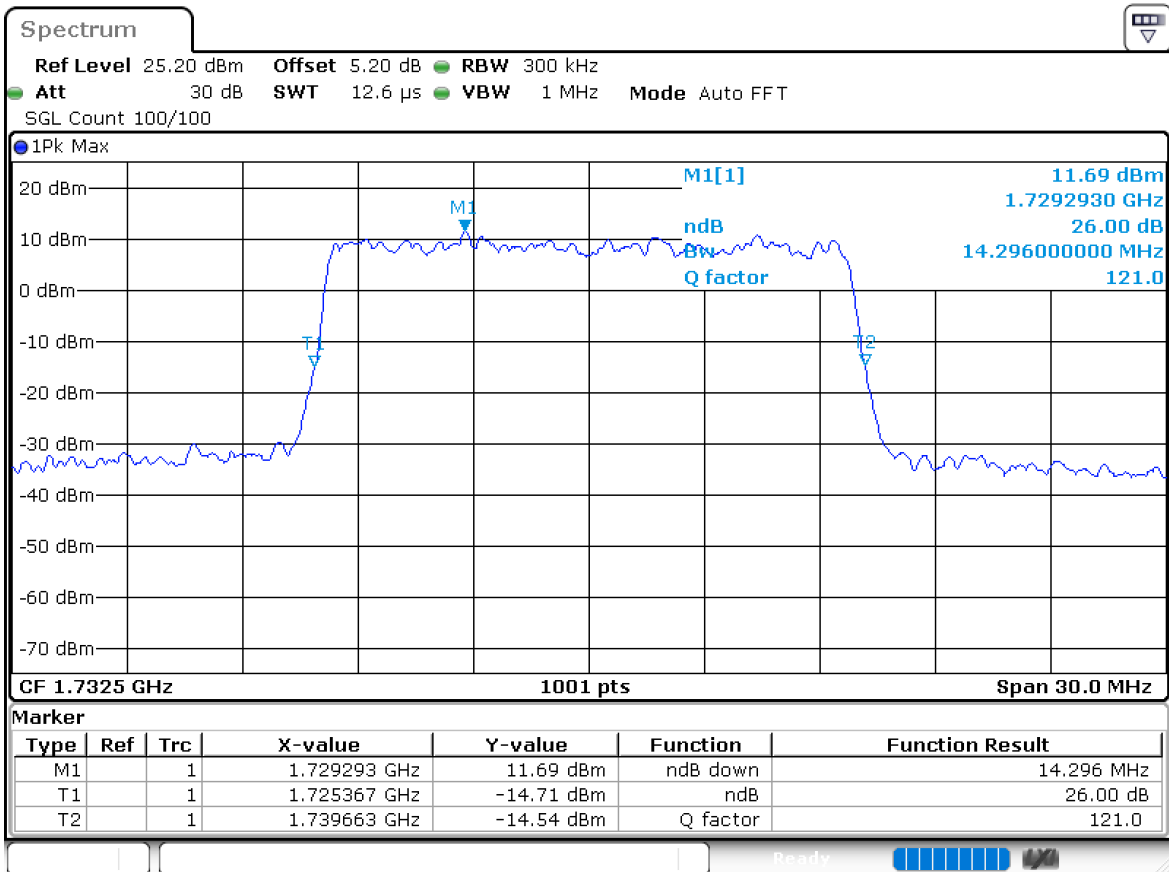
Date: 7.JAN.2022 20:56:24

Middle Channel / 15MHz / 16QAM



Date: 7.JAN.2022 20:57:03

Middle Channel / 15MHz / 64QAM

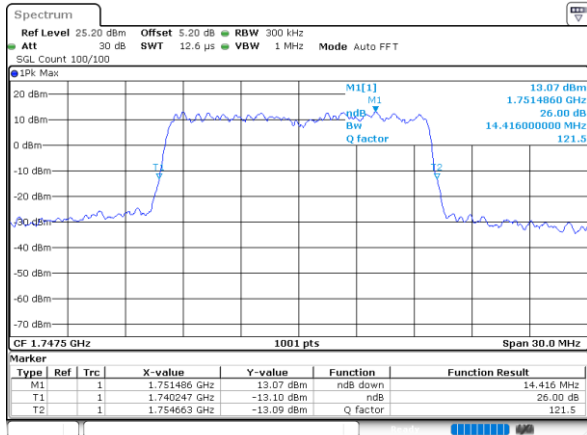


Date: 7.JAN.2022 20:57:41



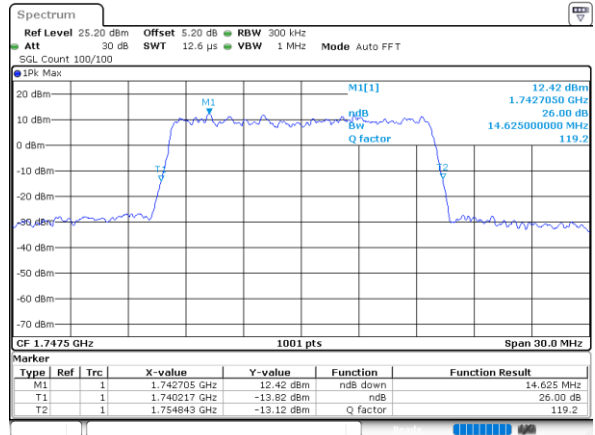
LTE Band 4

Highest Channel / 15MHz / QPSK



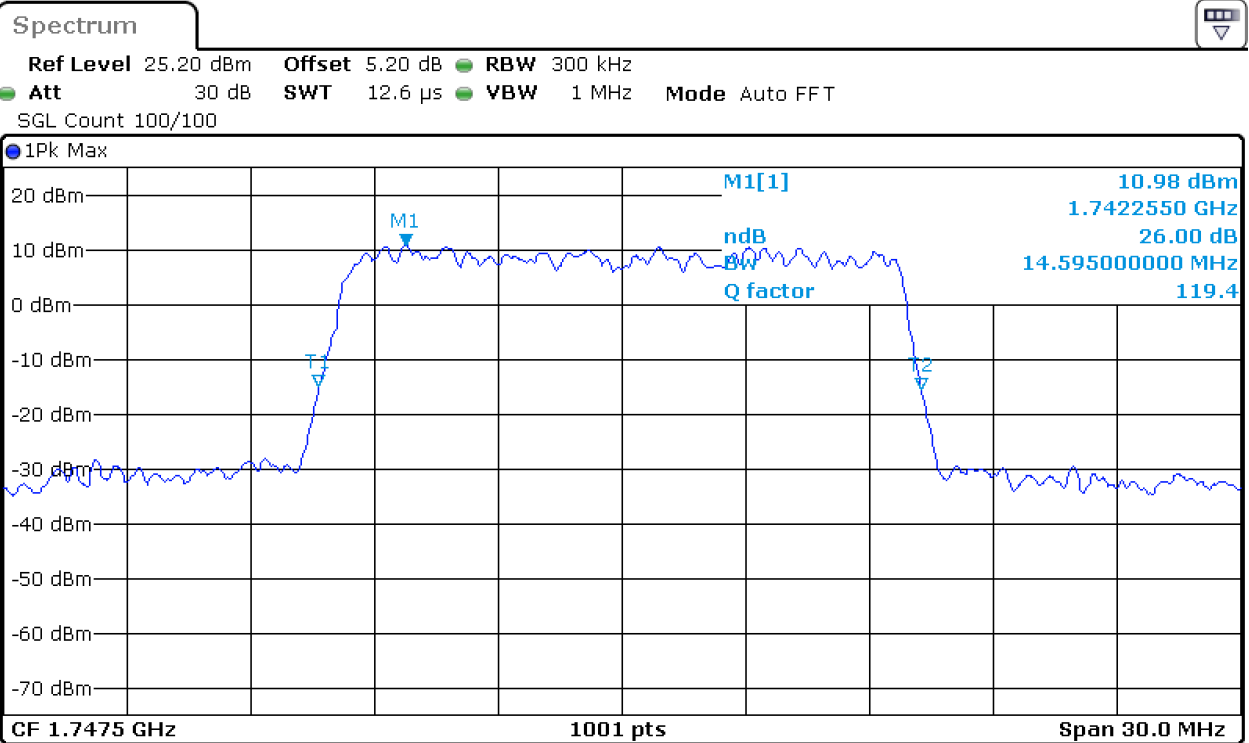
Date: 7.JAN.2022 20:58:22

Highest Channel / 15MHz / 16QAM



Date: 7.JAN.2022 20:59:01

Highest Channel / 15MHz / 64QAM



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.742255 GHz	10.98 dBm	ndB down	14.595 MHz
T1	1		1.740157 GHz	-14.80 dBm	ndB	26.00 dB
T2	1		1.754753 GHz	-15.41 dBm	Q factor	119.4

Date: 7.JAN.2022 20:59:39

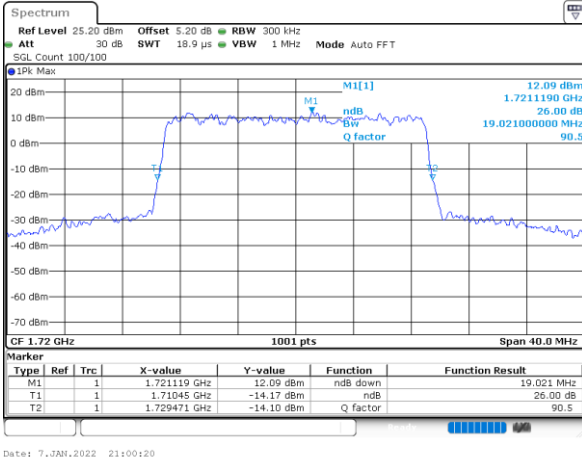


Mode	LTE Band 4 : 26dB BW(MHz)		
BW	20 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	19.02	18.98	18.94
Middle CH	18.94	18.82	19.10
Highest CH	18.98	18.66	18.62

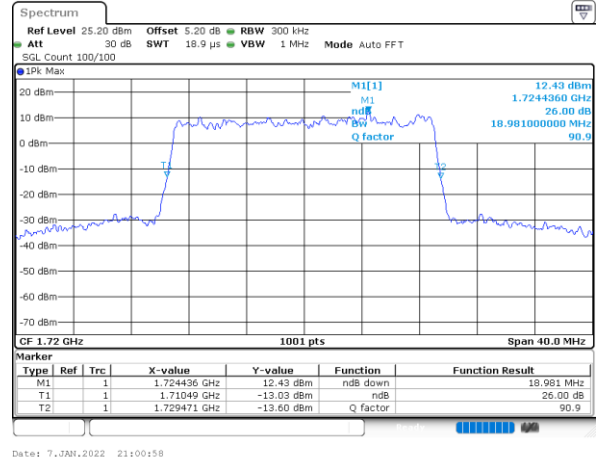


LTE Band 4

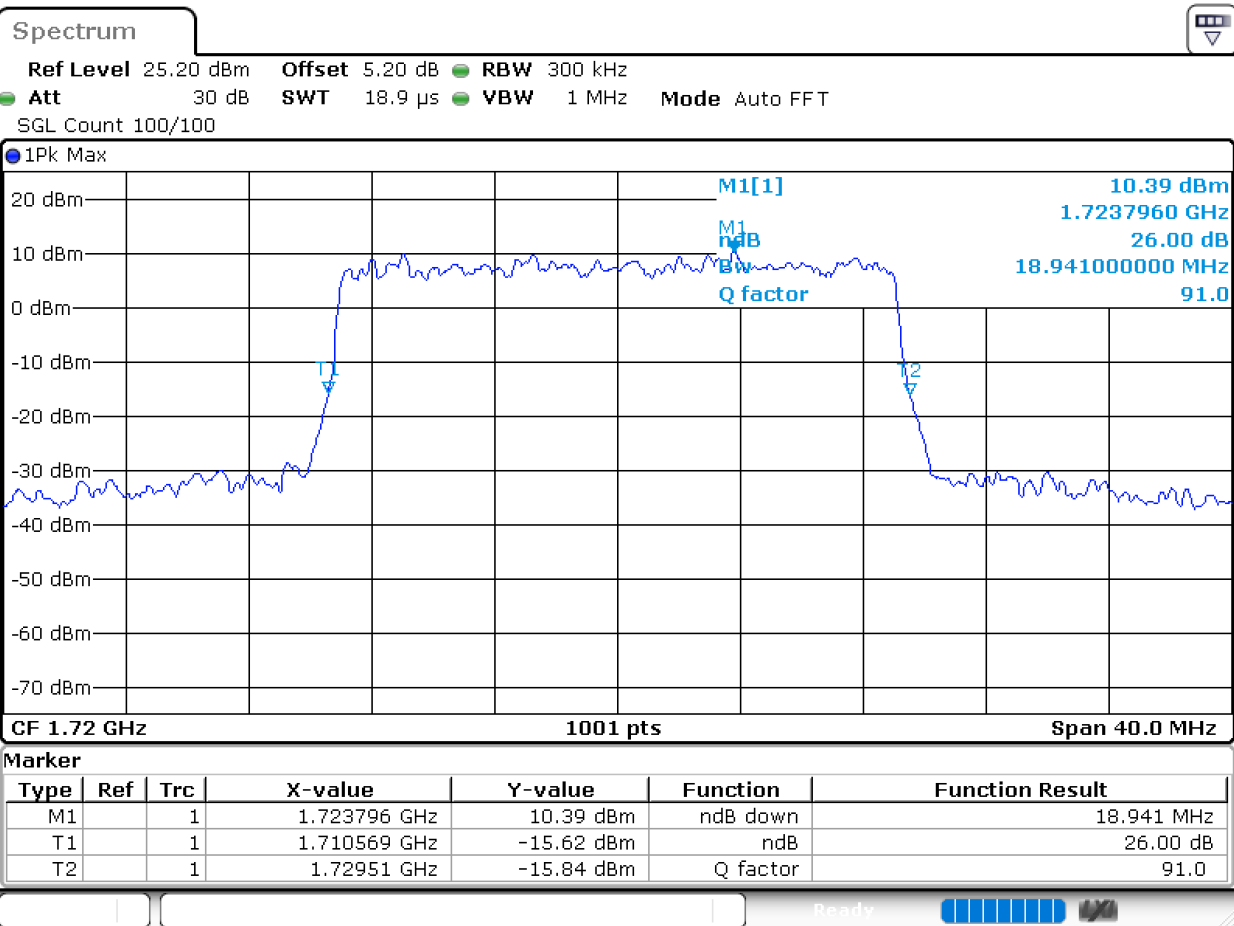
Lowest Channel / 20MHz / QPSK



Lowest Channel / 20MHz / 16QAM



Lowest Channel / 20MHz / 64QAM

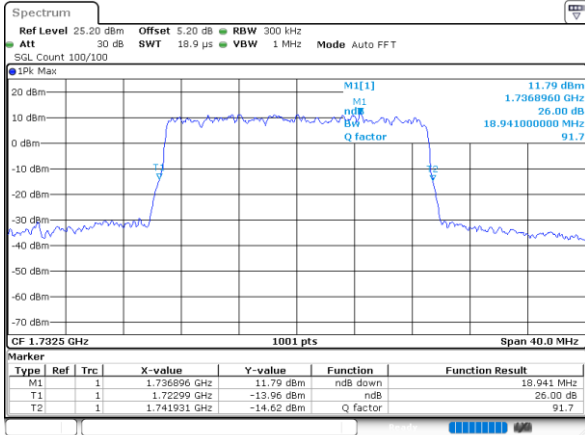


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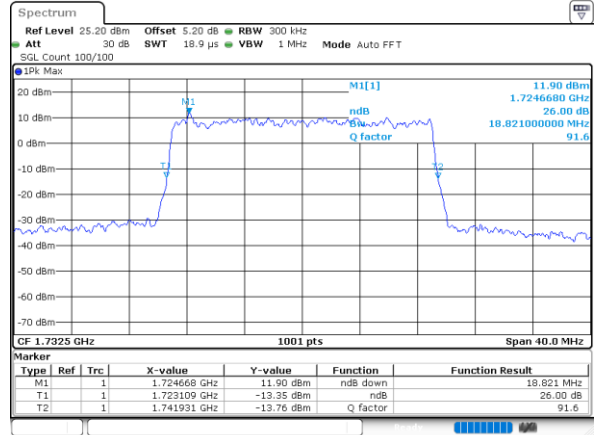
LTE Band 4

Middle Channel / 20MHz / QPSK



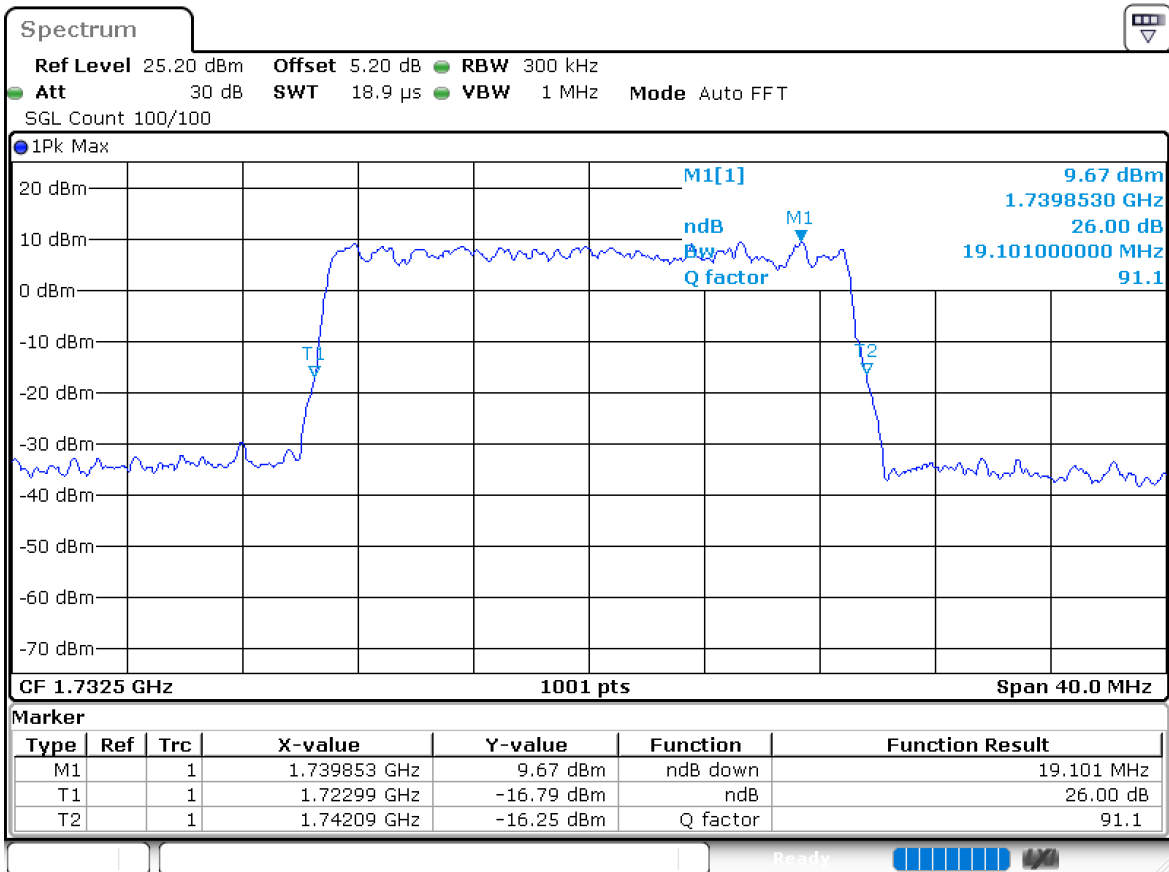
Date: 7.JAN.2022 21:02:16

Middle Channel / 20MHz / 16QAM



Date: 7.JAN.2022 21:02:54

Middle Channel / 20MHz / 64QAM

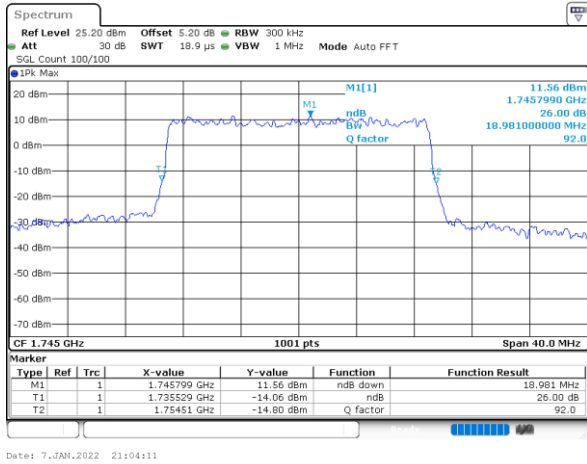


Date: 7.JAN.2022 21:03:32

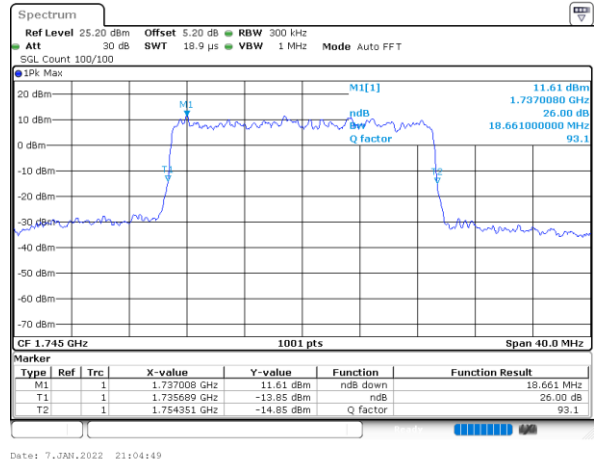


LTE Band 4

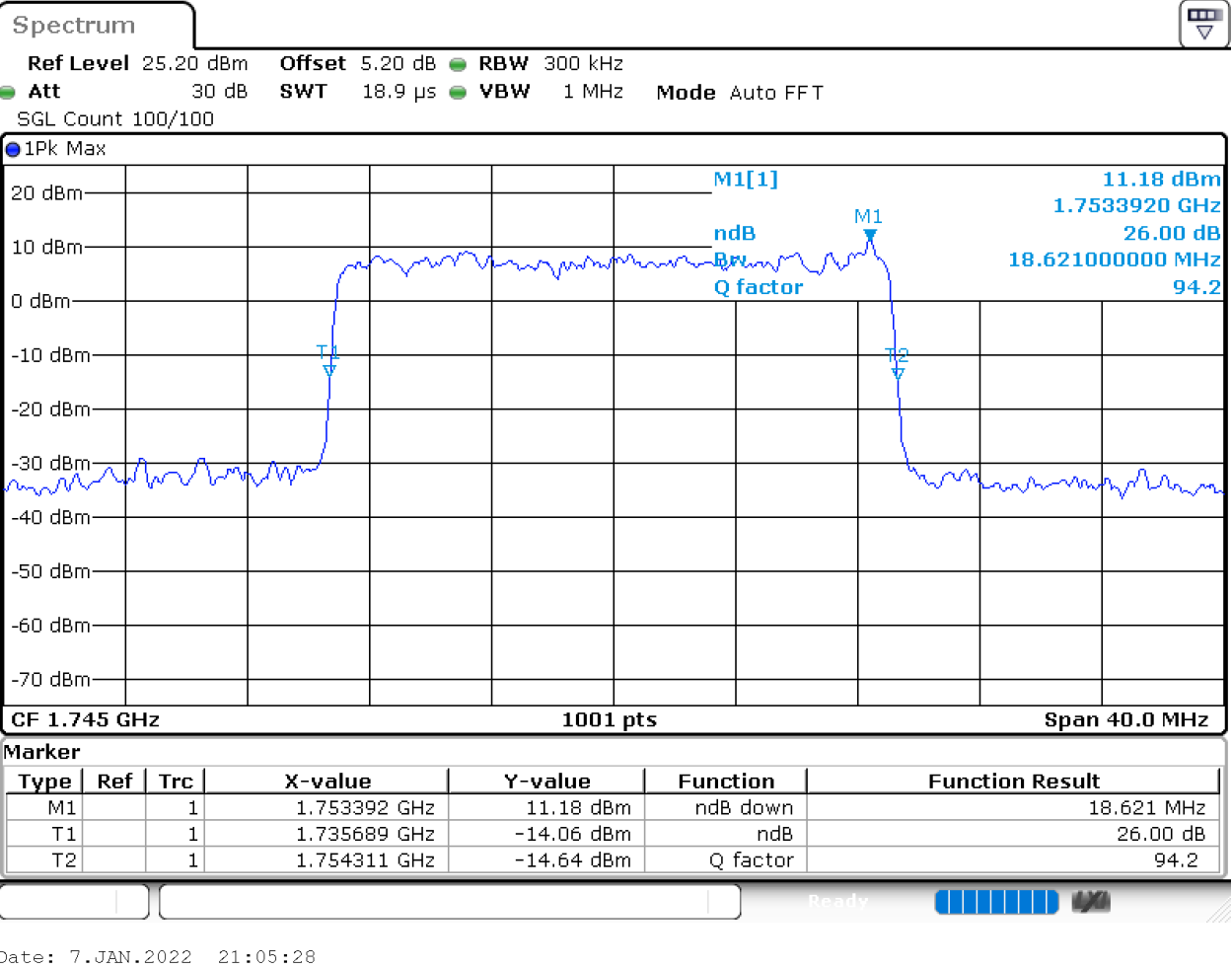
Highest Channel / 20MHz / QPSK



Highest Channel / 20MHz / 16QAM



Highest Channel / 20MHz / 64QAM





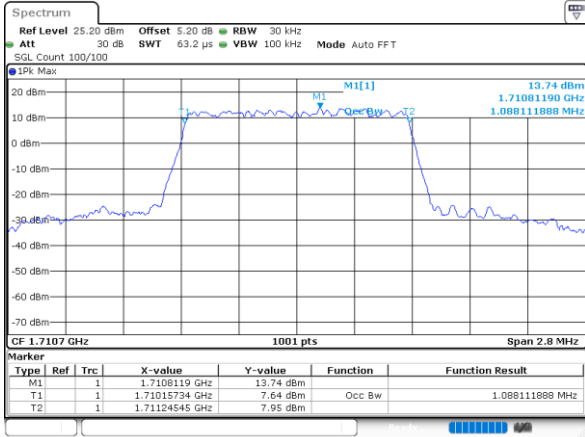
**Occupied Bandwidth**

Mode	LTE Band 4 : 99%OBW(MHz)		
BW	1.4 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	1.09	1.10	1.09
Middle CH	1.09	1.09	1.09
Highest CH	1.09	1.09	1.09



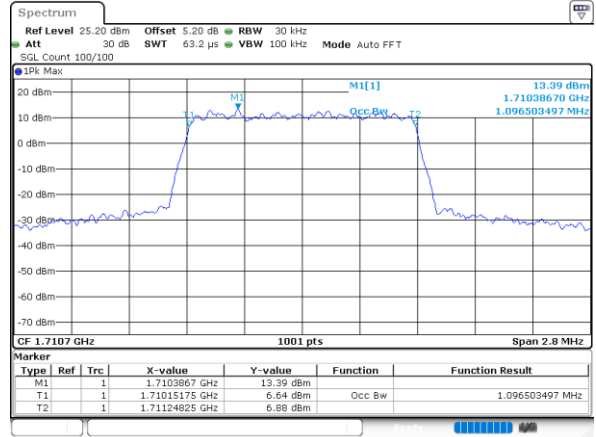
LTE Band 4

Lowest Channel / 1.4MHz / QPSK



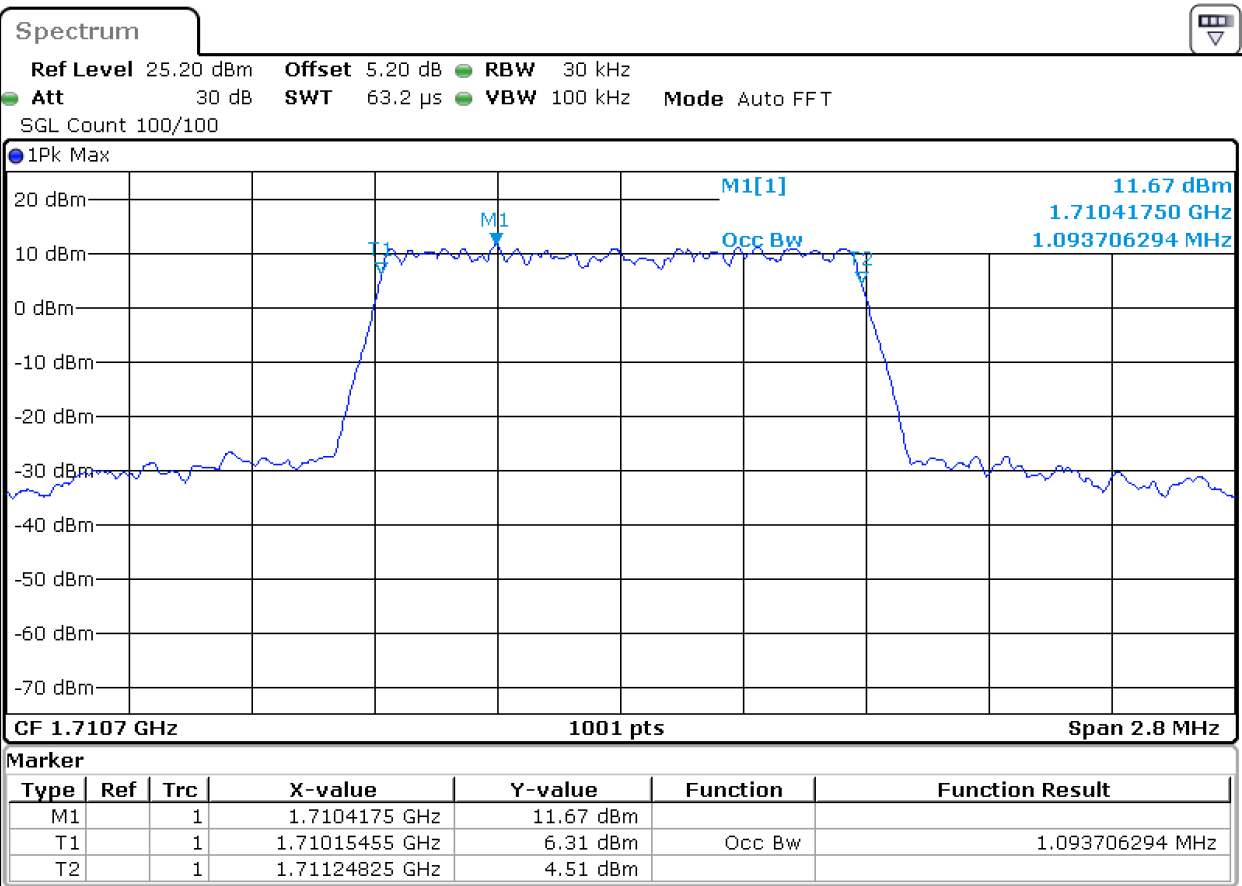
Date: 7.JAN.2022 20:30:53

Lowest Channel / 1.4MHz / 16QAM



Date: 7.JAN.2022 20:31:32

Lowest Channel / 1.4MHz / 64QAM



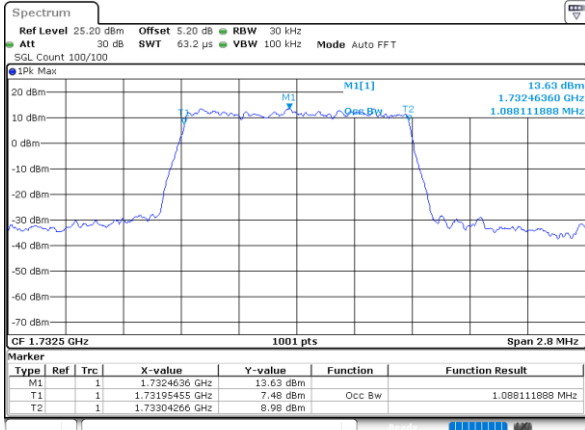
Date: 7.JAN.2022 20:32:10





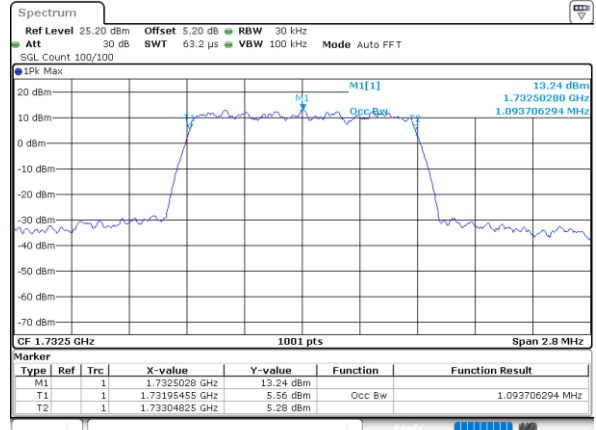
LTE Band 4

Middle Channel / 1.4MHz / QPSK



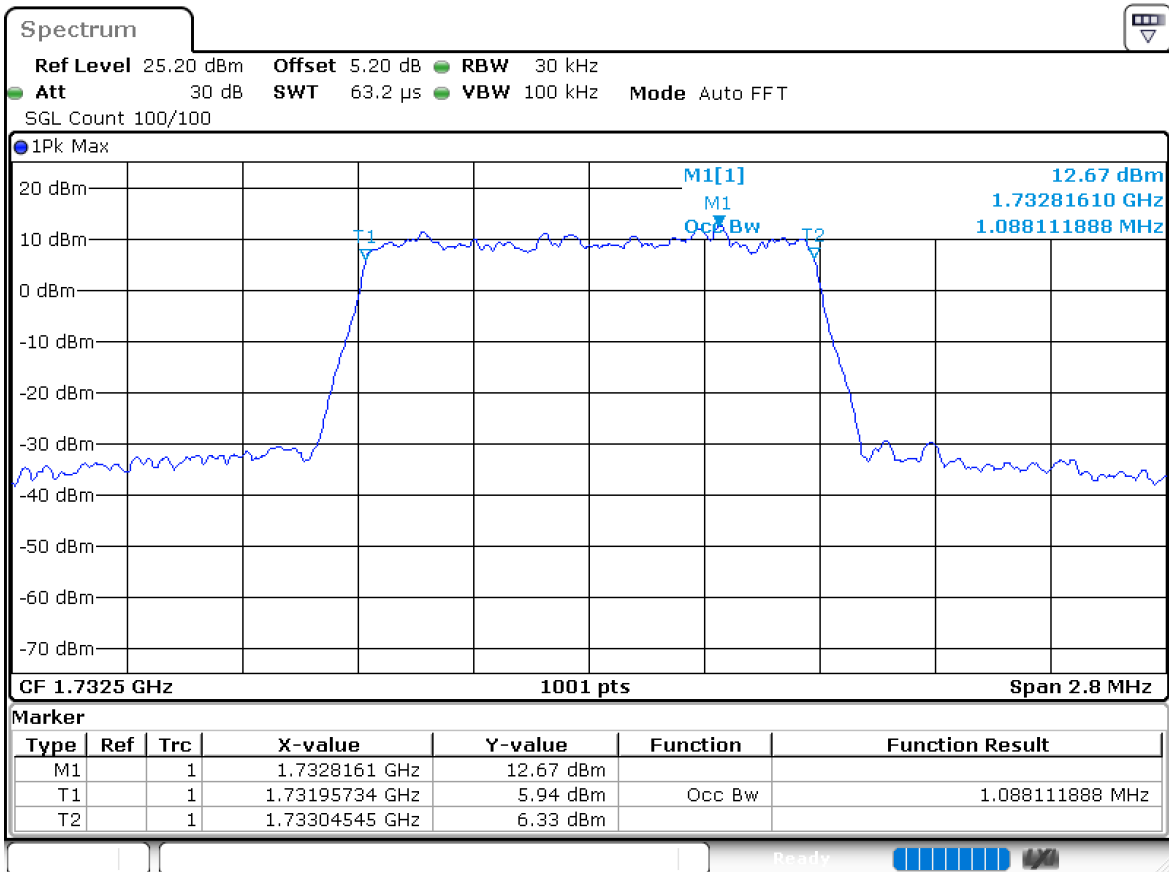
Date: 7.JAN.2022 20:32:49

Middle Channel / 1.4MHz / 16QAM



Date: 7.JAN.2022 20:33:27

Middle Channel / 1.4MHz / 64QAM

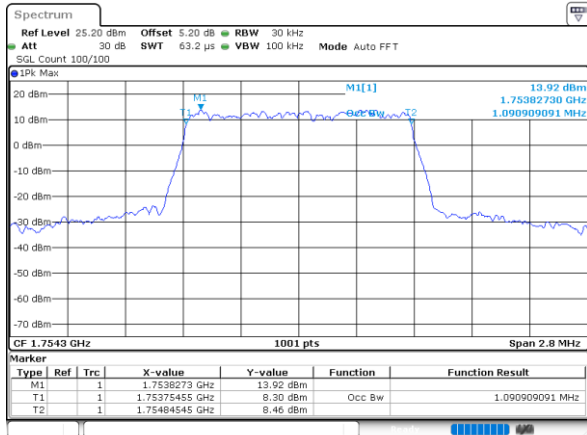


Date: 7.JAN.2022 20:34:05



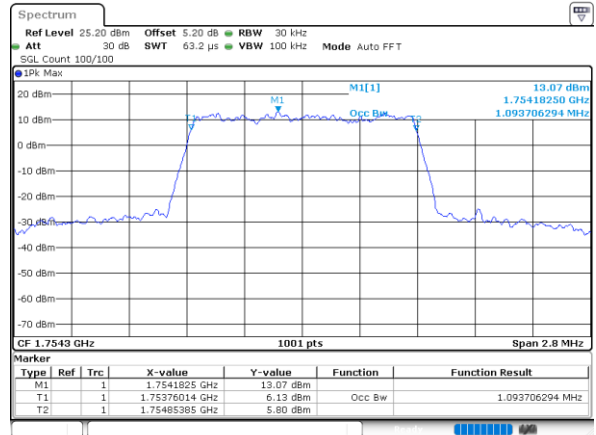
LTE Band 4

Highest Channel / 1.4MHz / QPSK



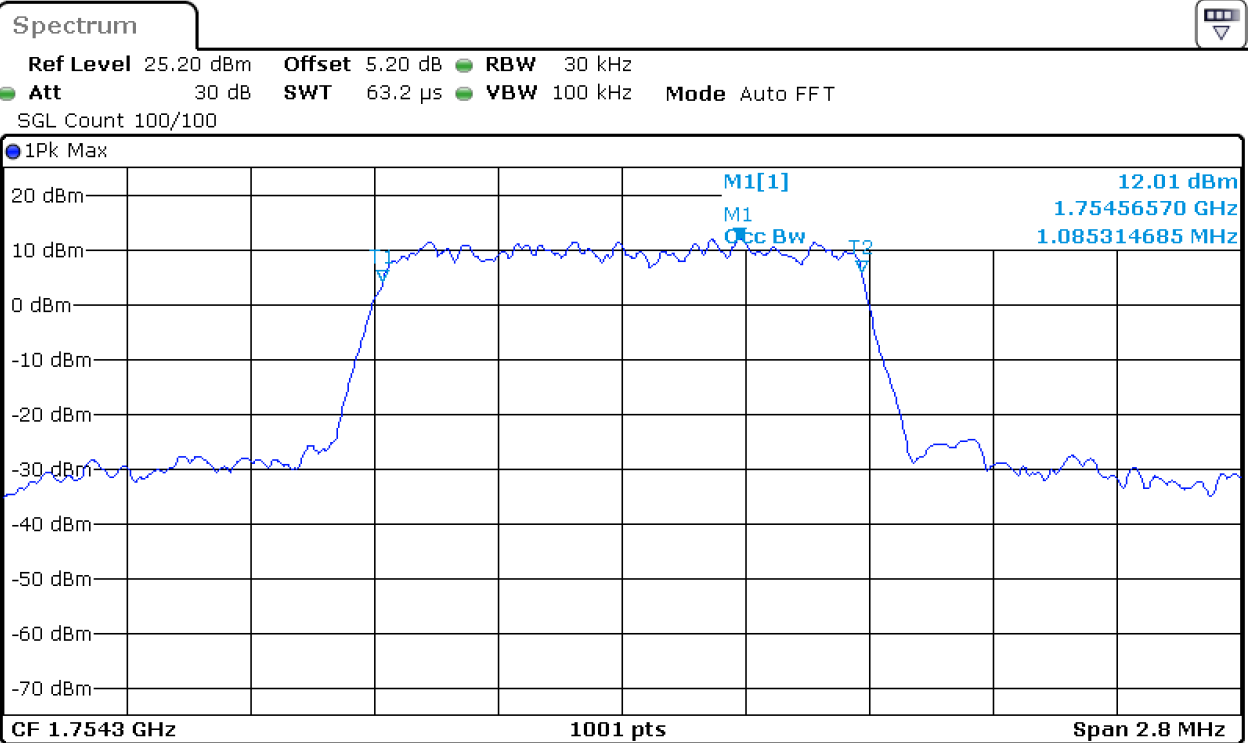
Date: 7.JAN.2022 20:34:44

Highest Channel / 1.4MHz / 16QAM



Date: 7.JAN.2022 20:35:23

Highest Channel / 1.4MHz / 64QAM



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.7545657 GHz	12.01 dBm		
T1	1		1.75375734 GHz	4.34 dBm	Occ Bw	1.085314685 MHz
T2	1		1.75484266 GHz	6.12 dBm		

Date: 7.JAN.2022 20:36:02

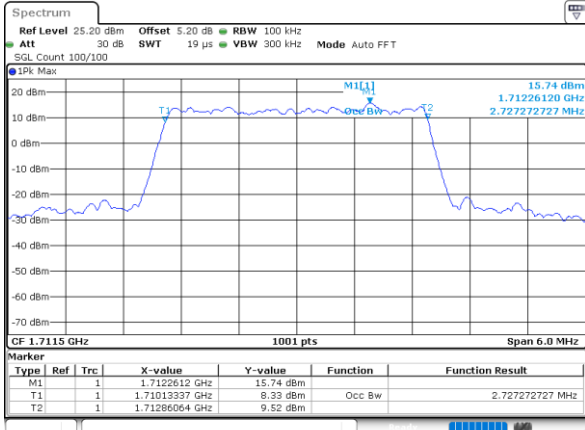


Mode	LTE Band 4 : 99%OBW(MHz)		
BW	3 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	2.73	2.72	2.72
Middle CH	2.70	2.72	2.73
Highest CH	2.73	2.72	2.71



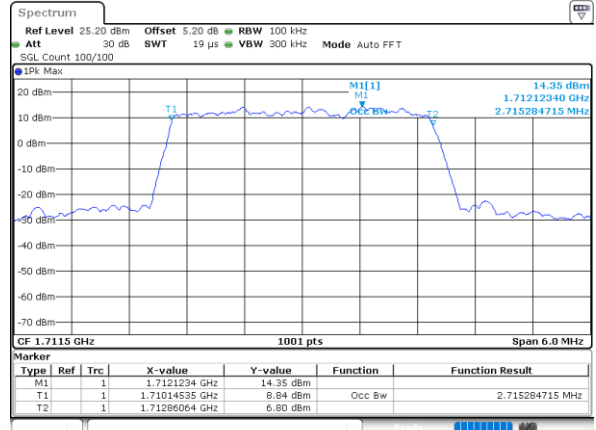
LTE Band 4

Lowest Channel / 3MHz / QPSK



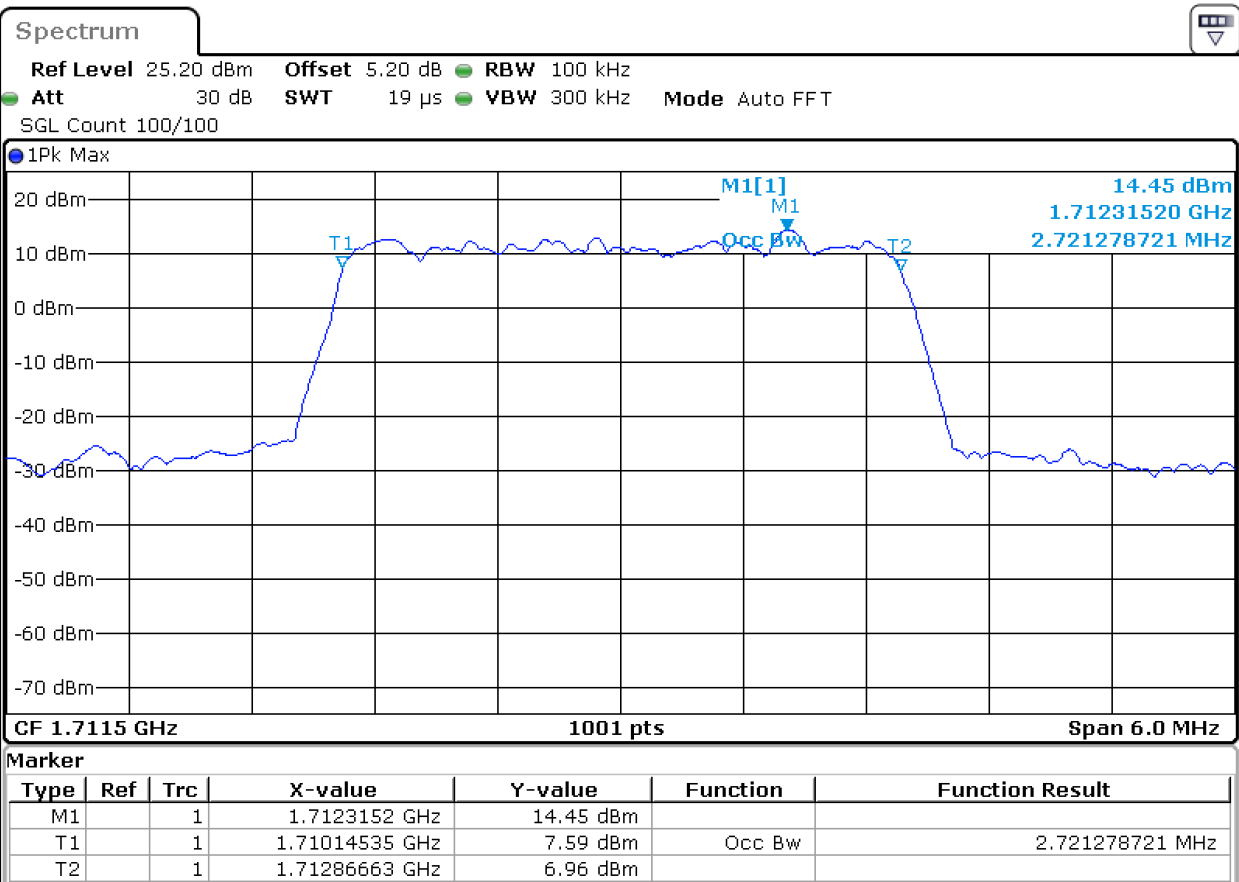
Date: 7.JAN.2022 20:36:43

Lowest Channel / 3MHz / 16QAM



Date: 7.JAN.2022 20:37:22

Lowest Channel / 3MHz / 64QAM

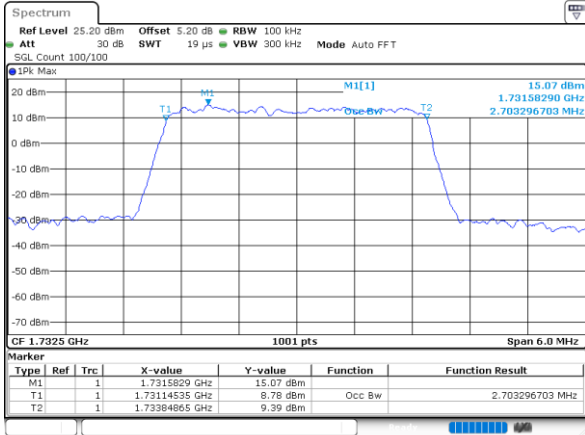


Date: 7.JAN.2022 20:38:00



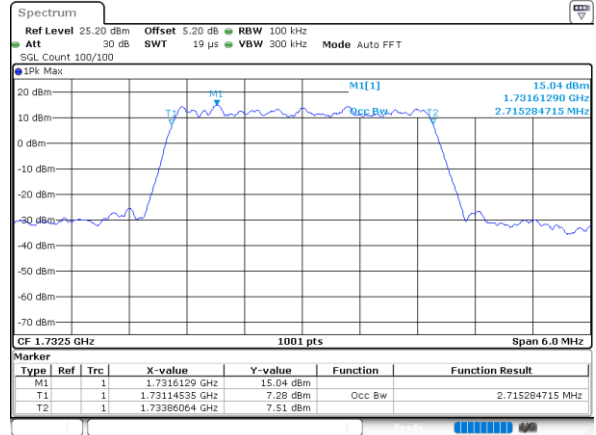
LTE Band 4

Middle Channel / 3MHz / QPSK



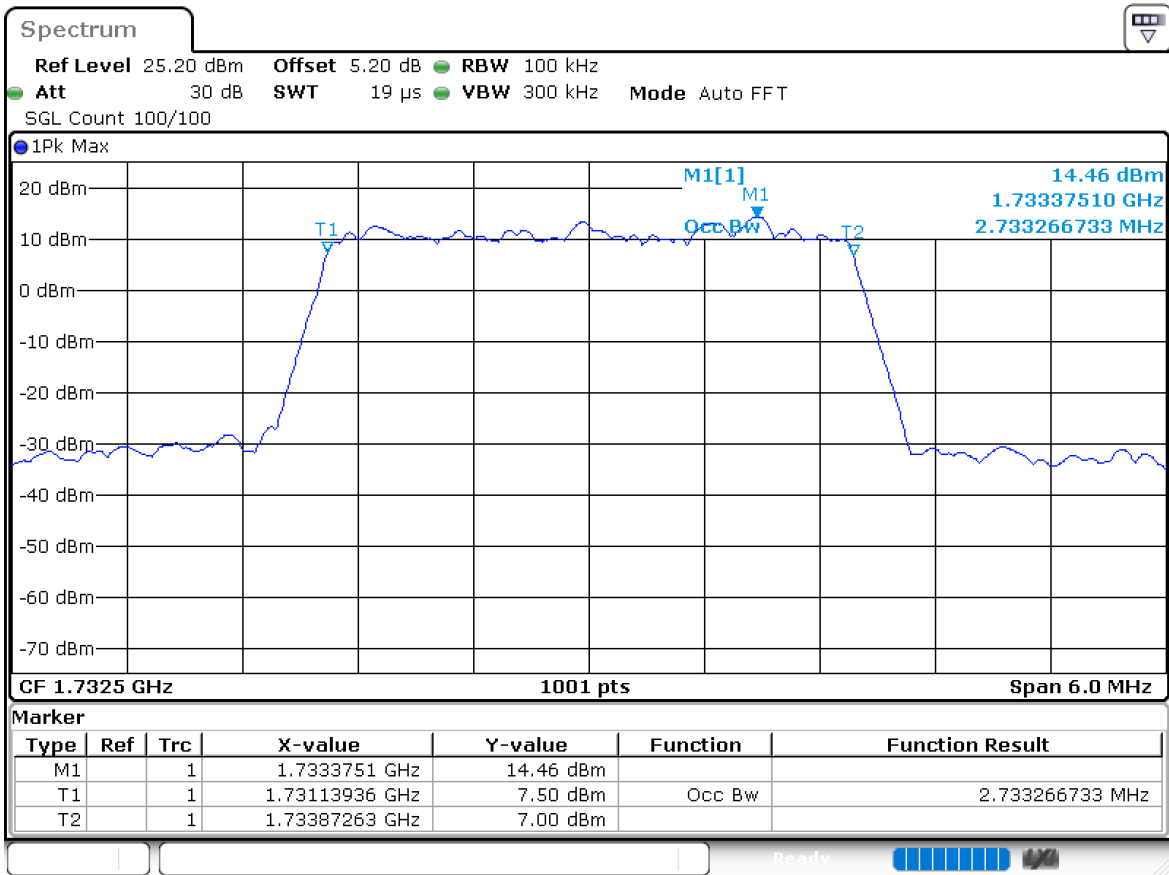
Date: 7.JAN.2022 20:38:38

Middle Channel / 3MHz / 16QAM



Date: 7.JAN.2022 20:39:17

Middle Channel / 3MHz / 64QAM

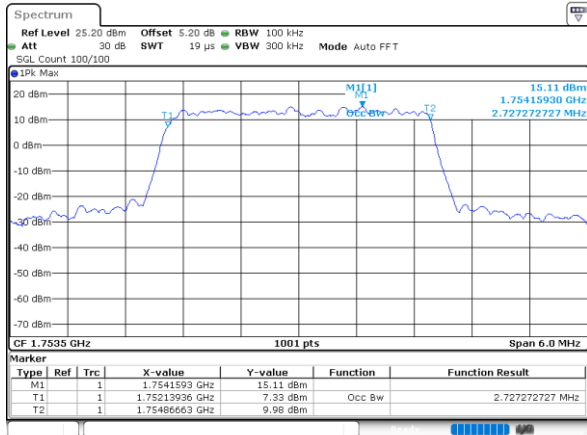


Date: 7.JAN.2022 20:39:55

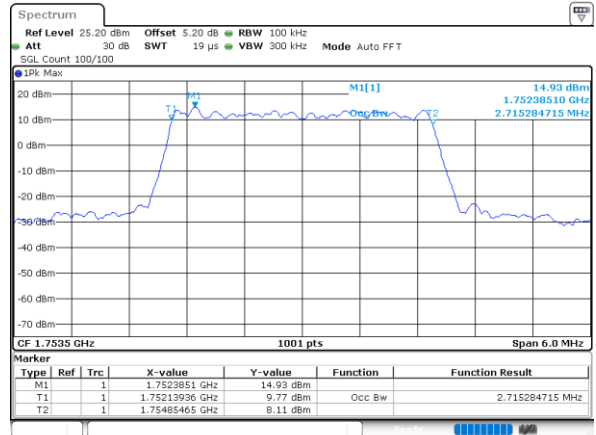


LTE Band 4

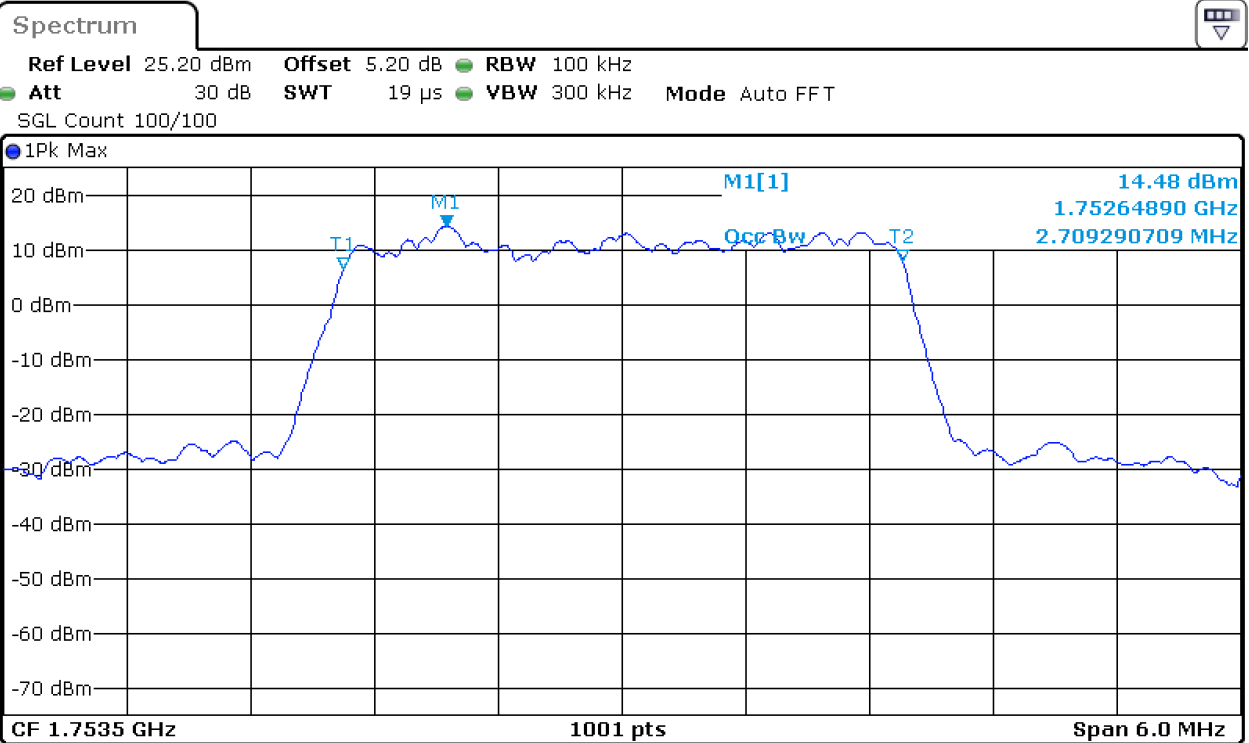
Highest Channel / 3MHz / QPSK



Highest Channel / 3MHz / 16QAM



Highest Channel / 3MHz / 64QAM



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.7526489 GHz	14.48 dBm		
T1	1		1.75215135 GHz	6.62 dBm	Occ Bw	2.709290709 MHz
T2	1		1.75486064 GHz	8.07 dBm		

Date: 7.JAN.2022 20:41:52

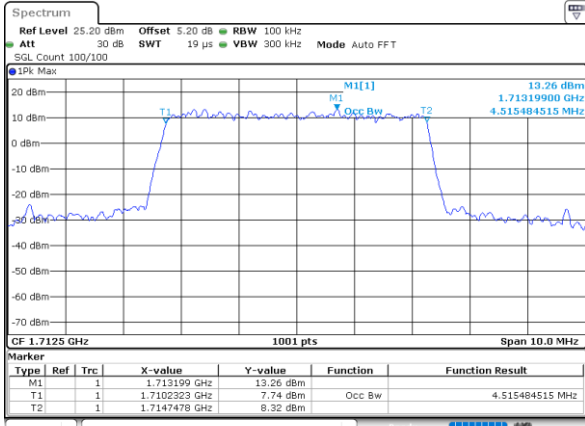


Mode	LTE Band 4 : 99%OBW(MHz)		
BW	5 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	4.52	4.48	4.51
Middle CH	4.49	4.51	4.49
Highest CH	4.51	4.49	4.49

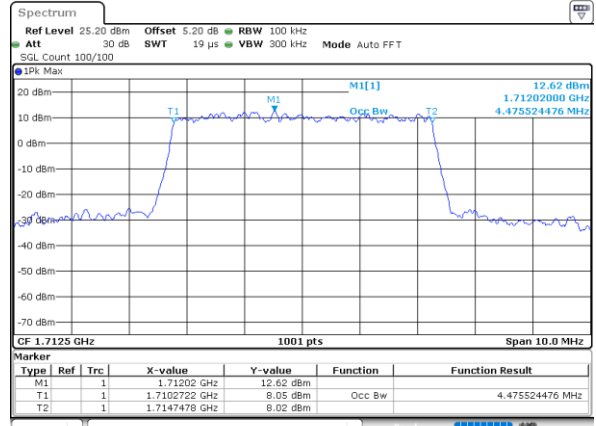


LTE Band 4

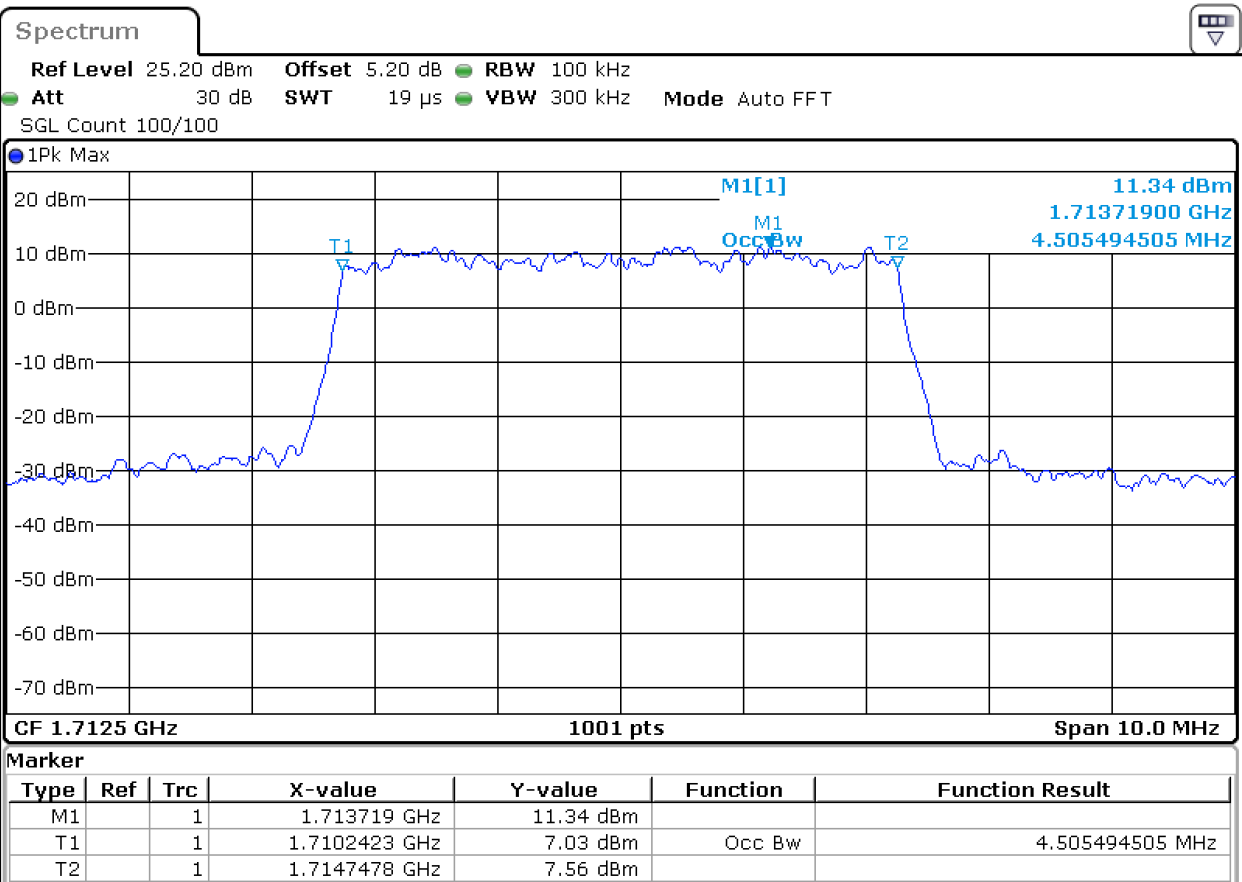
Lowest Channel / 5MHz / QPSK



Lowest Channel / 5MHz / 16QAM



Lowest Channel / 5MHz / 64QAM



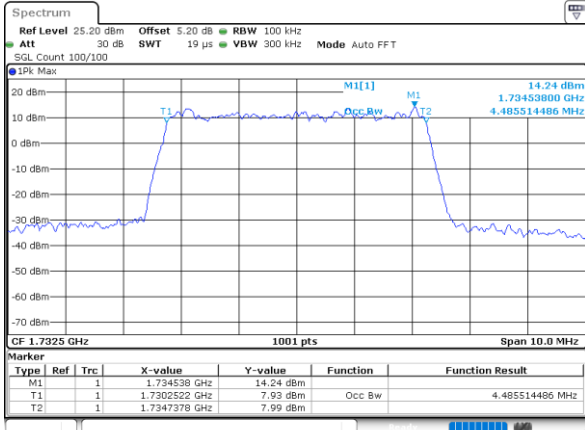
Date: 7.JAN.2022 20:43:50





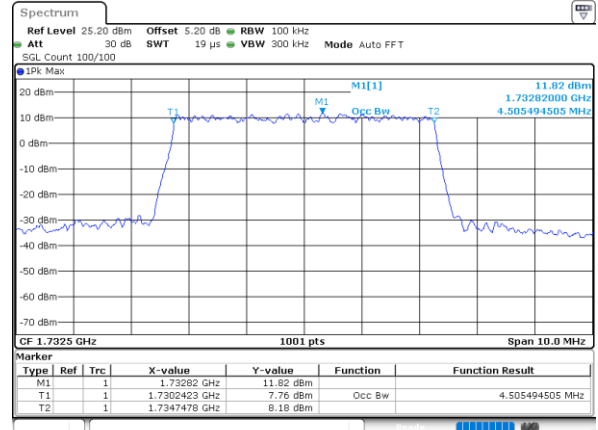
LTE Band 4

Middle Channel / 5MHz / QPSK



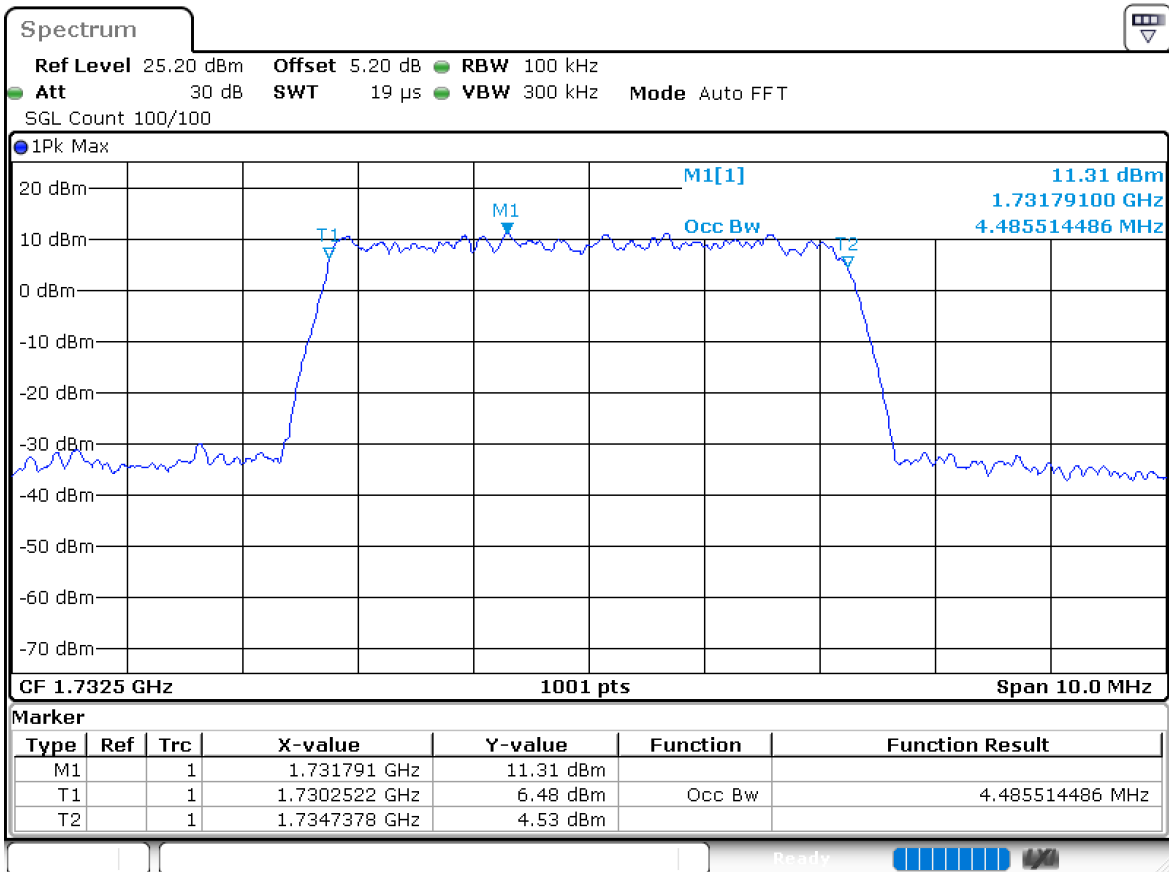
Date: 7.JAN.2022 20:44:29

Middle Channel / 5MHz / 16QAM



Date: 7.JAN.2022 20:45:07

Middle Channel / 5MHz / 64QAM

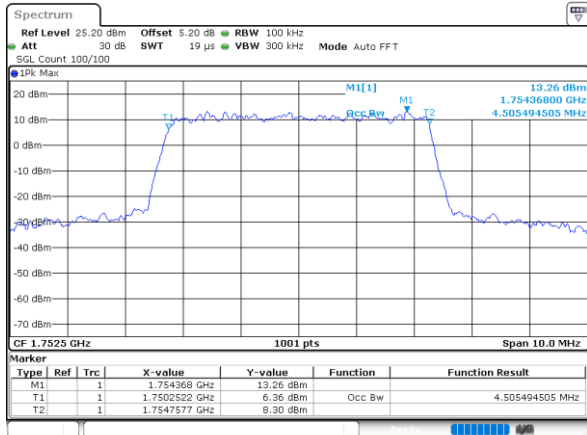


Date: 7.JAN.2022 20:45:45



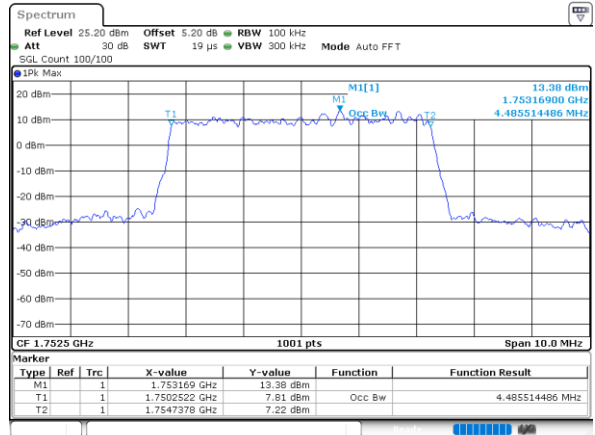
LTE Band 4

Highest Channel / 5MHz / QPSK



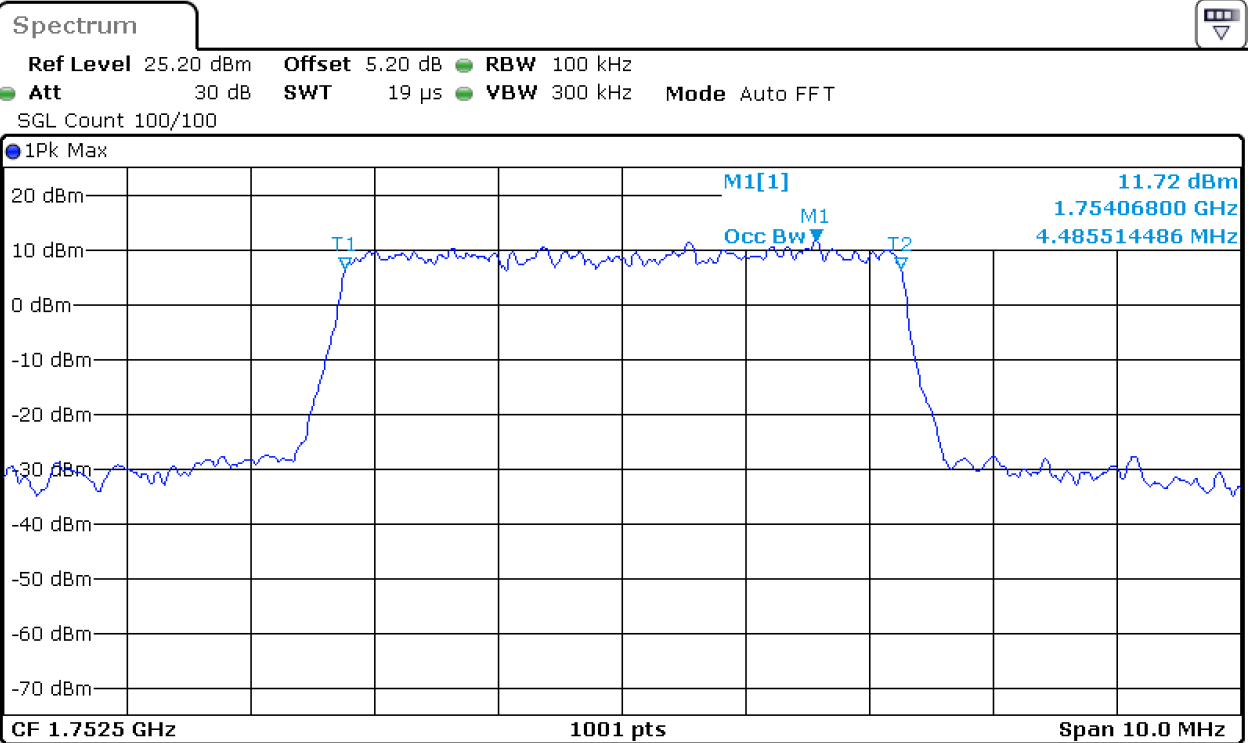
Date: 7.JAN.2022 20:46:24

Highest Channel / 5MHz / 16QAM



Date: 7.JAN.2022 20:47:03

Highest Channel / 5MHz / 64QAM



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.754068 GHz	11.72 dBm		
T1	1		1.7502622 GHz	6.52 dBm	Occ Bw	4.485514486 MHz
T2	1		1.7547478 GHz	6.68 dBm		

Date: 7.JAN.2022 20:47:43

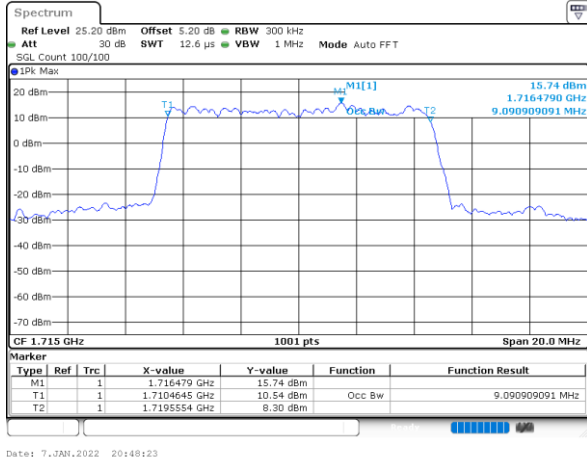


Mode	LTE Band 4 : 99%OBW(MHz)		
BW	10 MHz		
Mod.	QPSK	16QAM	64QAM
Lowest CH	9.09	9.05	9.09
Middle CH	9.03	9.03	8.99
Highest CH	9.11	9.03	9.05

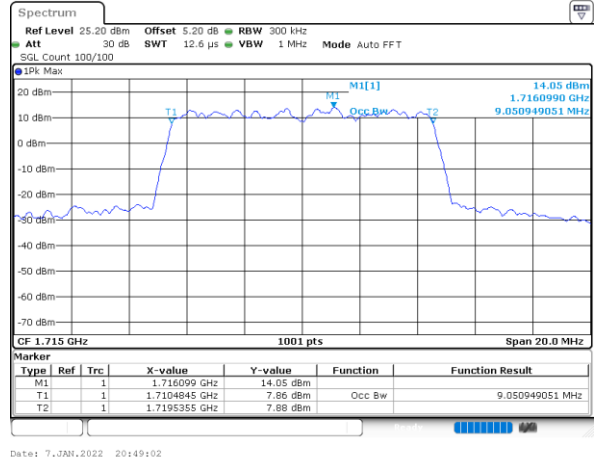


LTE Band 4

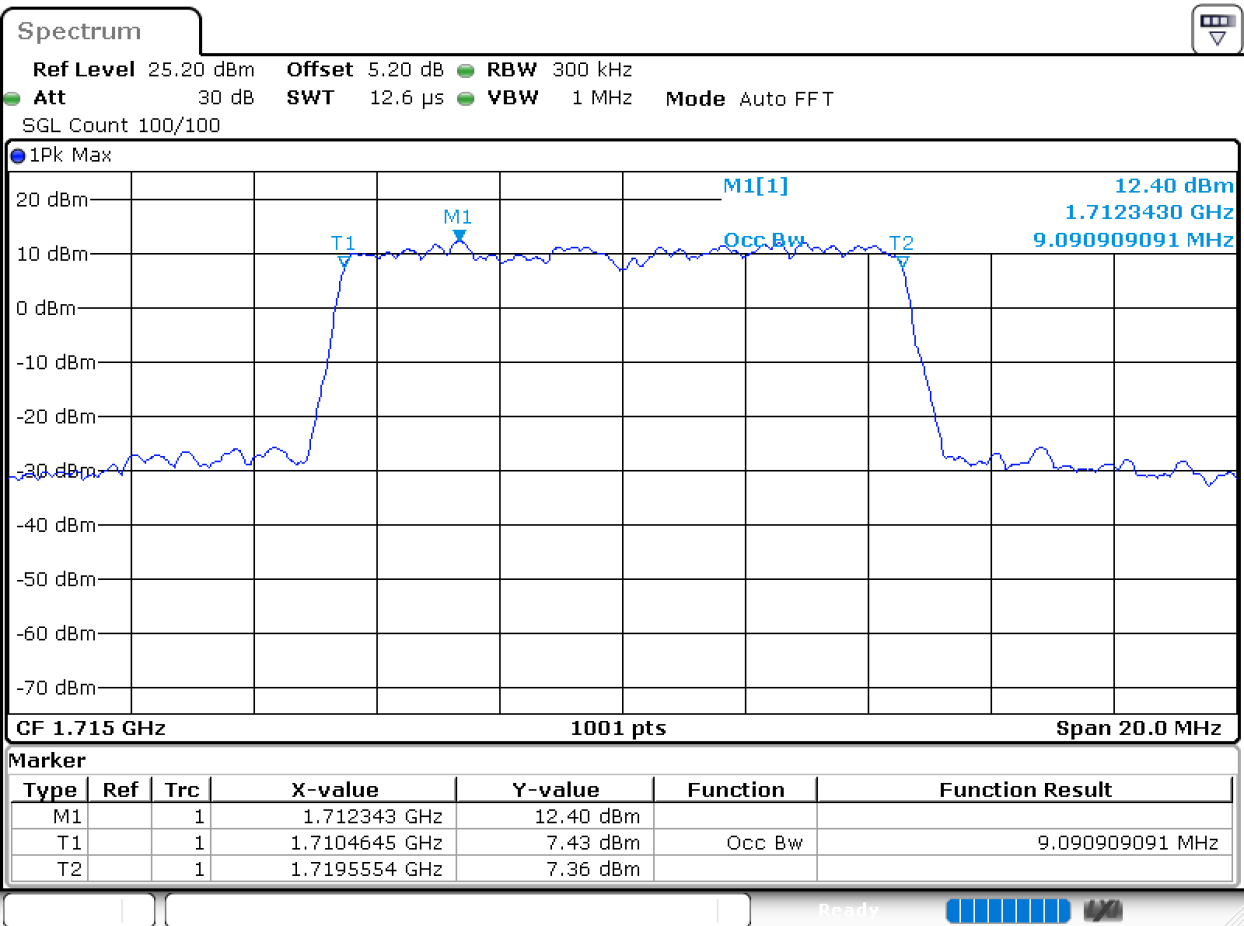
Lowest Channel / 10MHz / QPSK



Lowest Channel / 10MHz / 16QAM



Lowest Channel / 10MHz / 64QAM



Date: 7. JAN. 2022 20:49:41