



# TEST REPORT

Applicant Name : TECNO MOBILE LIMITED  
Address : FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35  
SHAN MEI STREET FOTAN NT Hong Kong  
Report Number: SZNS211103-56542E-RF-00C  
FCC ID: 2ADYY-BD4I

## Test Standard (s)

FCC PART 27; FCC PART 22H; FCC PART 24E

## Sample Description

Product Type: Mobile Phone  
Model No.: BD4i  
Multiple Model(s) No.: N/A  
Trade Mark: TECNO  
Date Received: 2021/10/25  
Date of Test: 2021/11/19~2021/12/10  
Report Date: 2021/12/13

Test Result:	Pass*
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\* In the configuration tested, the EUT complied with the standards above.

## Prepared and Checked By:

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EMC Engineer

## Approved By:

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Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 38: 2570-2620MHz(TX/RX) LTE Band 41: 2535-2655MHz(TX/RX)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA Band5/LTE Band 5: -4dBi PCS1900/WCDMA Band 2/ LTE Band 2: -1dBi WCDMA Band 4/ LTE Band 4: -1dBi LTE Band 7: 0.5dBi LTE Band 38/LTE Band 41: 1dBi (provided by the applicant)
Voltage Range	DC 3.85V from battery or DC 5V from adapter
Sample serial number	SZNS211103-56542E-RF-S5 for RF conducted SZNS211103-56542E-RF-S1 for CE&RE (Assigned by ATC)
Sample/EUT Status	Good condition
Extreme condition*	LV: Low Voltage 3.6V NV: Normal Voltage 3.85V HV: High Voltage 4.4V(provided by the applicant)
Adapter 1 information	Model: A8-501000 Input: AC 100-240V, 50/60Hz, 200mA Output: DC 5.0V, 10A
Adapter 2 information	Model: U050TSA Input: AC 100-240V, 50/60Hz, Max 0.2A Output: DC 5.0V, 1.0A

### Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, and Subpart 27 of the Federal Communication Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability and band edge.

## Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2-Subpart J as well as the following parts:

Part 22 Subpart H - Public Mobile Services  
 Part 24 Subpart E - Personal Communication Services  
 Part 27 - Miscellaneous Wireless Communications Services

ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±0.73dB
Unwanted Emission, conducted		±1.6dB
RF Frequency		±0.082*10 <sup>-7</sup>
Emissions, Radiated	30MHz - 1GHz	±4.28dB
	1GHz - 18GHz	±4.98dB
	18GHz - 26.5GHz	±5.06dB
Temperature		±1 °C
Humidity		±6%
Supply voltages		±0.4%

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

## Test Facility

The Test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The final qualification test was performed with the EUT operating at normal mode.

Test was performed as below table:

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM850	0.25	824.2	836.6	848.8
DCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
WCDMA B4	4.2	1712.4	1732.6	1752.6
WCDMA B5	4.2	826.4	836.6	846.6
LTE B2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE B4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE B5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE B7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE B38	5	2572.5	2595	2617.5
	10	2575	2595	2615
	15	2577.5	2595	2612.5
	20	2580	2595	2610
LTE B41	5	2537.5	2595	2652.5
	10	2540	2595	2650
	15	2542.5	2595	2647.5
	20	2545	2595	2645

### Equipment Modifications

No modification was made to the EUT.

### Support Equipment List and Details

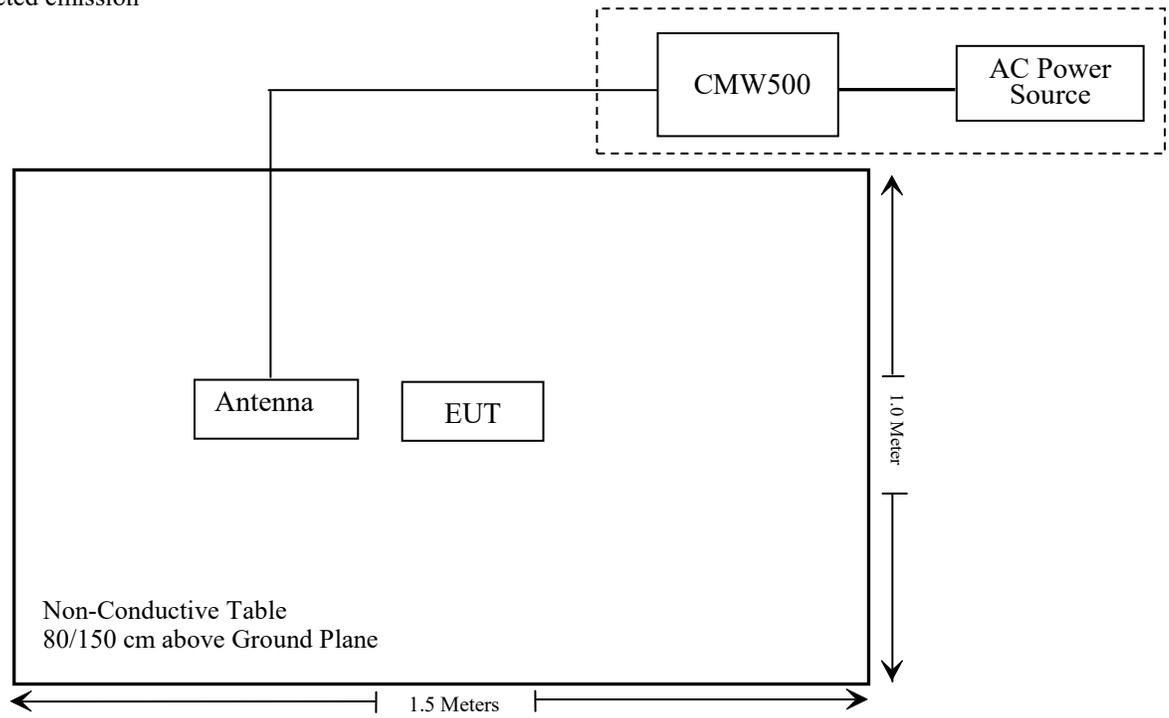
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606

### Support Cable Description

Cable Description	Length (m)	From / Port	To
Un-shielded Un-detachable AC cable	1.2	AC Power	CMW500

### Block Diagram of Test Setup

For conducted emission



## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 1.1307 ,§2.1093	RF Exposure (SAR)	Compliant*
§2.1046; § 22.913 (a); § 24.232 (c); §27.50 (d) (h);	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53	Occupied Bandwidth	Compliant
§ 2.1051; §22.917 (a); § 24.238 (a); §27.53;	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 (h) (m)	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliant

Note: \* Please refer to SAR report number: SZNS211103-56542E-SA.

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2020/12/25	2021/12/24
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/5/18	2022/5/17
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2021/11/11	2022/11/10
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
OREGON SCIENTIFIC	Temperature & Humidity Meter	JB913R	GZ-WS004	2020/01/02	2023/01/01
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-10m	No.7	2021/11/09	2022/11/08
Unknown	RF Coaxial Cable	N-2m	No.8	2021/11/09	2022/11/08
Unknown	Band Reject Filter	MSF824-862 MS-1147	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF1850-191 OMS-1148	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF1710-178 5MS-1150	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF2495-257 OMS-1152	201706003	2020/12/25	2021/12/24
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2020/01/05	2023/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
PASTERNAK	Horn Antenn	PE9852/2F-20	1120	2020/01/05	2023/01/04
PASTERNAK	Horn Antenn	PE9852/2F-20	1120	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	N-1m	No.7	2020/12/25	2021/12/24
Anritsu	Signal Generator	68369B	004114	2021/07/31	2022/07/30

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/12/25	2021/12/24
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2020/12/25	2021/12/24
Gongwen	Temp. & Humid. Chamber	JB913R	GZ-WS004	2020/12/25	2021/12/24
FLUKE	Multimeter	17B+	31141269WS	2020/12/25	2021/12/24
Manson	DC Power Source	KPS-6604	ATCS-205	NCR	NCR

\* Statement of Traceability: Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

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## **FCC §1.1307(b)&§2.1093 - RF EXPOSURE INFORMATION**

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliant, please refer to the SAR report: SZNS211103-56542E-SA.

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## **FCC§2.1047 - MODULATION CHARACTERISTIC**

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According to FCC § 2.1047(d), Part 22H & 24E & 27, there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

## **FCC § 2.1046,§ 22.913 (a)&§ 24.232(c); §27.50(d)(h)- RF OUTPUT POWER**

### **Applicable Standard**

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

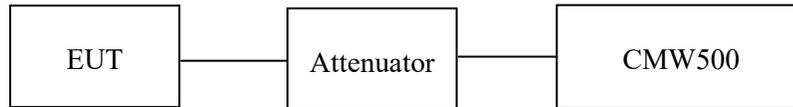
According to §27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

According to §27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2500-2570MHz.

### **Test Procedure**

#### *Conducted method:*

The RF output of the transmitter was connected to the CMW500 through sufficient attenuation.



#### *Radiated method:*

ANSI C63.26-2015 Section 5.5.

### **Test Data**

#### **Environmental Conditions**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Ting Lv from 2021-11-19 to 2021-12-01.*

**Conducted Power****Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	33.10	<b>26.95</b>	38.45
	190	836.6	33.00	26.85	38.45
	251	848.8	32.80	26.65	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.55	31.47	29.42	28.30	<b>26.40</b>	25.32	23.27	22.15	38.45
	190	836.6	32.47	31.35	29.30	28.18	26.32	25.20	23.15	22.03	38.45
	251	848.8	32.27	31.18	29.09	27.91	26.12	25.03	22.94	21.76	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	27.15	25.55	23.05	21.72	<b>21.00</b>	19.40	16.90	15.57	38.45
	190	836.6	26.93	25.55	23.10	21.57	20.78	19.40	16.95	15.42	38.45
	251	848.8	26.57	25.20	22.49	21.16	20.42	19.05	16.34	15.01	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		23.72	23.85	23.59	17.57	<b>17.70</b>	17.44
	HSDPA	1	21.17	21.13	21.42	15.02	14.98	15.27
		2	21.22	21.32	21.22	15.07	15.17	15.07
		3	21.23	21.25	21.23	15.08	15.10	15.08
		4	21.25	21.24	21.20	15.10	15.09	15.05
	HSUPA	1	22.09	21.96	22.10	15.94	15.81	15.95
		2	22.05	21.98	22.05	15.90	15.83	15.90
		3	22.01	21.97	22.04	15.86	15.82	15.89
		4	22.03	21.89	21.99	15.88	15.74	15.84
		5	22.04	21.88	21.98	15.89	15.73	15.83
HSPA+	1	22.08	21.92	21.97	15.93	15.77	15.82	

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)  
 For GSM850 / WCDMA Band5: Antenna Gain = -4dBi = -6.15dBd (0dBd=2.15dBi)  
 Limit: ERP ≤ 38.45dBm

## PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	26.60	<b>25.60</b>	33
	661	1880.0	26.50	25.50	33
	810	1909.8	26.30	25.30	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	26.16	25.34	23.58	22.47	25.16	24.34	22.58	21.47	33
	661	1880.0	26.25	25.22	23.43	22.37	<b>25.25</b>	24.22	22.43	21.37	33
	810	1909.8	25.85	25.08	23.34	22.30	24.85	24.08	22.34	21.30	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	25.76	24.54	22.41	21.25	24.76	23.54	21.41	20.25	33
	661	1880.0	25.93	24.68	22.62	21.36	24.93	23.68	21.62	20.36	33
	810	1909.8	26.05	24.87	22.73	21.51	<b>25.05</b>	23.87	21.73	20.51	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		17.76	17.88	17.88	16.76	<b>16.88</b>	16.88
	HSDPA	1	16.12	16.15	16.16	15.12	15.15	15.16
		2	16.22	16.25	16.27	15.22	15.25	15.27
		3	16.26	16.18	16.23	15.26	15.18	15.23
		4	16.27	16.32	16.31	15.27	15.32	15.31
	HSUPA	1	16.39	16.32	16.37	15.39	15.32	15.37
		2	16.35	16.25	16.25	15.35	15.25	15.25
		3	16.32	16.18	16.17	15.32	15.18	15.17
		4	16.27	16.41	16.16	15.27	15.41	15.16
		5	16.33	16.23	16.23	15.33	15.23	15.23
HSPA+	1	16.27	16.19	16.24	15.27	15.19	15.24	

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)  
 For PCS1900 / WCDMA Band2: Antenna Gain = -1dBi  
 Limit: EIRP ≤ 33dBm

**AWS Band (Part 27)**

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 4)	RMC12.2k		18.20	18.21	18.19	17.20	<b>17.21</b>	17.19
	HSDPA	1	16.54	16.69	16.56	15.54	15.69	15.56
		2	16.64	16.54	16.50	15.64	15.54	15.50
		3	16.55	16.63	16.51	15.55	15.63	15.51
		4	16.53	16.50	16.49	15.53	15.50	15.49
	HSUPA	1	16.76	16.53	16.57	15.76	15.53	15.57
		2	16.68	16.56	16.50	15.68	15.56	15.50
		3	16.65	16.58	16.51	15.65	15.58	15.51
		4	16.60	16.55	16.58	15.60	15.55	15.58
		5	16.57	16.50	16.56	15.57	15.50	15.56
	HSPA+	1	16.51	16.49	16.54	15.51	15.49	15.54

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For WCDMA Band4: Antenna Gain = -1dBi

The limit: EIRP ≤ 30dBm

**Peak-to-average ratio (PAR)****Cellular Band**

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.52	13
	Middle	3.47	13
	High	3.48	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.53	13
	Middle	3.48	13
	High	3.46	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	4.55	13
	Middle	4.44	13
	High	4.47	13
HSDPA (16QAM)	Low	4.62	13
	Middle	4.64	13
	High	4.59	13
HSUPA (BPSK)	Low	4.46	13
	Middle	4.48	13
	High	4.51	13
HSPA+	Low	4.62	13
	Middle	4.58	13
	High	4.57	13

**PCS Band**

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.53	13
	Middle	3.53	13
	High	3.56	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.51	13
	Middle	3.56	13
	High	3.49	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	4.42	13
	Middle	4.51	13
	High	4.45	13
HSDPA (16QAM)	Low	4.56	13
	Middle	4.50	13
	High	4.47	13
HSUPA (BPSK)	Low	4.46	13
	Middle	4.45	13
	High	4.48	13
HSPA+	Low	4.49	13
	Middle	4.52	13
	High	4.57	13

### AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	4.97	13
	Middle	5.12	13
	High	5.08	13
HSDPA (16QAM)	Low	5.07	13
	Middle	5.04	13
	High	5.13	13
HSUPA (BPSK)	Low	5.14	13
	Middle	5.05	13
	High	5.13	13
HSPA+	Low	5.02	13
	Middle	5.13	13
	High	5.12	13

## LTE Band 2:

## Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	15.83	15.87	15.94	14.83	14.87	14.94
		RB1#3	15.98	16.03	16.10	14.98	<b>15.03</b>	15.10
		RB1#5	15.84	15.84	15.96	14.84	14.84	14.96
		RB3#0	15.96	15.93	15.97	14.96	14.93	14.97
		RB3#3	15.84	15.98	15.95	14.84	14.98	14.95
		RB6#0	14.88	14.96	15.05	13.88	13.96	14.05
	16QAM	RB1#0	14.85	14.99	14.92	13.85	13.99	13.92
		RB1#3	15.03	15.17	15.12	14.03	<b>14.17</b>	14.12
		RB1#5	14.90	14.99	14.95	13.90	13.99	13.95
		RB3#0	15.11	14.86	15.01	14.11	13.86	14.01
		RB3#3	15.05	14.87	14.99	14.05	13.87	13.99
		RB6#0	13.95	13.97	13.95	12.95	12.97	12.95
3.0	QPSK	RB1#0	15.90	15.98	16.11	14.90	14.98	15.11
		RB1#8	15.91	15.93	16.04	14.91	14.93	<b>15.04</b>
		RB1#14	15.95	15.91	16.00	14.95	14.91	15.00
		RB6#0	14.90	14.96	15.08	13.90	13.96	14.08
		RB6#9	14.92	14.93	15.03	13.92	13.93	14.03
		RB15#0	14.99	14.97	15.02	13.99	13.97	14.02
	16QAM	RB1#0	15.52	15.09	15.01	14.52	14.09	14.01
		RB1#8	15.49	15.06	15.03	14.49	14.06	14.03
		RB1#14	15.52	15.06	14.98	<b>14.52</b>	14.06	13.98
		RB6#0	13.97	13.92	13.95	12.97	12.92	12.95
		RB6#9	13.99	13.97	13.90	12.99	12.97	12.90
		RB15#0	14.06	13.92	14.03	13.06	12.92	13.03

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	15.82	15.87	15.97	14.82	14.87	14.97
		RB1#13	16.00	15.96	16.05	15.00	14.96	<b>15.05</b>
		RB1#24	15.92	15.84	15.90	14.92	14.84	14.90
		RB15#0	14.96	14.98	15.14	13.96	13.98	14.14
		RB15#10	15.03	14.93	14.97	14.03	13.93	13.97
		RB25#0	14.96	14.92	14.97	13.96	13.92	13.97
	16QAM	RB1#0	14.78	15.09	14.96	13.78	14.09	13.96
		RB1#13	14.94	15.24	15.08	13.94	<b>14.24</b>	14.08
		RB1#24	14.79	15.12	14.96	13.79	14.12	13.96
		RB15#0	14.02	13.95	14.11	13.02	12.95	13.11
		RB15#10	14.06	13.91	13.97	13.06	12.91	12.97
		RB25#0	13.99	13.94	13.99	12.99	12.94	12.99
10.0	QPSK	RB1#0	15.92	16.00	16.14	14.92	15.00	15.14
		RB1#25	16.13	16.09	16.36	15.13	15.09	<b>15.36</b>
		RB1#49	16.03	15.91	16.06	15.03	14.91	15.06
		RB25#0	14.98	15.06	15.19	13.98	14.06	14.19
		RB25#25	15.17	14.96	14.93	14.17	13.96	13.93
		RB50#0	15.06	15.03	15.04	14.06	14.03	14.04
	16QAM	RB1#0	15.52	15.05	15.06	14.52	14.05	14.06
		RB1#25	15.73	15.23	15.14	<b>14.73</b>	14.23	14.14
		RB1#49	15.54	15.06	15.00	14.54	14.06	14.00
		RB25#0	14.05	14.09	14.20	13.05	13.09	13.20
		RB25#25	14.26	13.98	13.95	13.26	12.98	12.95
		RB50#0	14.12	14.03	14.05	13.12	13.03	13.05

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	15.81	15.86	15.93	14.81	14.86	14.93
		RB1#38	16.03	15.95	16.17	15.03	14.95	<b>15.17</b>
		RB1#74	15.90	15.84	15.93	14.90	14.84	14.93
		RB36#0	15.03	15.17	15.18	14.03	14.17	14.18
		RB36#39	15.17	15.02	15.06	14.17	14.02	14.06
		RB75#0	15.13	15.08	15.11	14.13	14.08	14.11
	16QAM	RB1#0	15.43	14.95	15.29	14.43	13.95	14.29
		RB1#38	15.59	15.05	15.33	<b>14.59</b>	14.05	14.33
		RB1#74	15.34	15.00	15.23	14.34	14.00	14.23
		RB36#0	13.96	14.05	14.05	12.96	13.05	13.05
		RB36#39	14.07	13.98	13.93	13.07	12.98	12.93
		RB75#0	14.08	14.04	14.02	13.08	13.04	13.02
20.0	QPSK	RB1#0	15.69	15.73	15.68	14.69	14.73	14.68
		RB1#50	16.24	16.11	16.23	<b>15.24</b>	15.11	15.23
		RB1#99	15.75	15.74	15.73	14.75	14.74	14.73
		RB50#0	14.91	15.06	14.93	13.91	14.06	13.93
		RB50#50	15.04	14.96	14.86	14.04	13.96	13.86
		RB100#0	14.99	15.04	14.88	13.99	14.04	13.88
	16QAM	RB1#0	15.02	14.81	15.29	14.02	13.81	14.29
		RB1#50	15.50	15.26	15.67	14.50	14.26	<b>14.67</b>
		RB1#99	14.95	14.91	15.17	13.95	13.91	14.17
		RB50#0	13.89	14.02	13.92	12.89	13.02	12.92
		RB50#50	14.03	13.96	13.86	13.03	12.96	12.86
		RB100#0	14.02	13.99	13.89	13.02	12.99	12.89

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band2: Antenna Gain = -1dBi

Limit: EIRP ≤ 33dBm

**Peak-to-average ratio (PAR)****20MHz Bandwidth**

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	5.19	3.80	4.41	13	Pass
QPSK (100RB Size)	5.28	4.81	4.46	13	Pass
16QAM (1RB Size)	6.41	4.70	5.10	13	Pass
16QAM (100RB Size)	6.35	5.80	5.48	13	Pass

## LTE Band 4

## Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	16.19	16.15	15.96	15.19	15.15	14.96
		RB1#3	16.31	16.29	16.15	<b>15.31</b>	15.29	15.15
		RB1#5	16.16	16.12	15.97	15.16	15.12	14.97
		RB3#0	16.28	16.23	16.08	15.28	15.23	15.08
		RB3#3	16.25	16.22	16.12	15.25	15.22	15.12
		RB6#0	15.24	15.18	15.06	14.24	14.18	14.06
	16QAM	RB1#0	15.14	15.26	15.01	14.14	14.26	14.01
		RB1#3	15.37	15.44	15.19	14.37	14.44	14.19
		RB1#5	15.18	15.27	15.03	14.18	14.27	14.03
		RB3#0	15.47	15.19	15.20	14.47	14.19	14.20
		RB3#3	15.47	15.19	15.12	<b>14.47</b>	14.19	14.12
		RB6#0	14.27	14.18	13.99	13.27	13.18	12.99
3.0	QPSK	RB1#0	16.20	16.18	16.08	<b>15.20</b>	15.18	15.08
		RB1#8	16.18	16.18	16.04	15.18	15.18	15.04
		RB1#14	16.16	16.17	16.02	15.16	15.17	15.02
		RB6#0	15.17	15.09	14.97	14.17	14.09	13.97
		RB6#9	15.14	15.08	14.98	14.14	14.08	13.98
		RB15#0	15.22	15.17	15.05	14.22	14.17	14.05
	16QAM	RB1#0	15.78	15.32	15.10	14.78	14.32	14.10
		RB1#8	15.78	15.32	15.02	<b>14.78</b>	14.32	14.02
		RB1#14	15.76	15.31	15.04	14.76	14.31	14.04
		RB6#0	14.21	14.18	13.94	13.21	13.18	12.94
		RB6#9	14.24	14.18	13.95	13.24	13.18	12.95
		RB15#0	14.29	14.14	14.07	13.29	13.14	13.07

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	16.11	16.11	15.97	15.11	15.11	14.97
		RB1#13	16.23	16.24	16.07	15.23	<b>15.24</b>	15.07
		RB1#24	16.12	16.15	15.93	15.12	15.15	14.93
		RB15#0	15.22	15.18	15.06	14.22	14.18	14.06
		RB15#10	15.24	15.21	15.06	14.24	14.21	14.06
		RB25#0	15.22	15.16	15.07	14.22	14.16	14.07
	16QAM	RB1#0	15.05	15.40	15.07	14.05	14.40	14.07
		RB1#13	15.15	15.53	15.16	14.15	<b>14.53</b>	14.16
		RB1#24	15.03	15.41	15.03	14.03	14.41	14.03
		RB15#0	14.29	14.16	14.13	13.29	13.16	13.13
		RB15#10	14.32	14.16	14.07	13.32	13.16	13.07
		RB25#0	14.26	14.15	14.09	13.26	13.15	13.09
10.0	QPSK	RB1#0	16.16	16.18	16.07	15.16	15.18	15.07
		RB1#25	16.32	16.35	16.24	15.32	<b>15.35</b>	15.24
		RB1#49	16.14	16.20	16.05	15.14	15.20	15.05
		RB25#0	15.26	15.24	15.14	14.26	14.24	14.14
		RB25#25	15.30	15.28	15.07	14.30	14.28	14.07
		RB50#0	15.28	15.21	15.11	14.28	14.21	14.11
	16QAM	RB1#0	15.78	15.35	15.10	14.78	14.35	14.10
		RB1#25	15.92	15.50	15.25	<b>14.92</b>	14.50	14.25
		RB1#49	15.76	15.33	15.05	14.76	14.33	14.05
		RB25#0	14.31	14.26	14.27	13.31	13.26	13.27
		RB25#25	14.35	14.30	14.19	13.35	13.30	13.19
		RB50#0	14.33	14.23	14.15	13.33	13.23	13.15

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	16.06	16.13	16.25	15.06	15.13	15.25
		RB1#38	16.18	16.21	16.13	15.18	<b>15.21</b>	15.13
		RB1#74	16.09	16.12	15.98	15.09	15.12	14.98
		RB36#0	15.24	15.17	15.18	14.24	14.17	14.18
		RB36#39	15.34	15.22	15.16	14.34	14.22	14.16
		RB75#0	15.24	15.23	15.14	14.24	14.23	14.14
	16QAM	RB1#0	15.68	15.21	15.44	14.68	14.21	14.44
		RB1#38	15.77	15.34	15.52	<b>14.77</b>	14.34	14.52
		RB1#74	15.7	15.24	15.36	14.70	14.24	14.36
		RB36#0	14.22	14.19	14.12	13.22	13.19	13.12
		RB36#39	14.2	14.24	14.08	13.20	13.24	13.08
		RB75#0	14.24	14.18	14.11	13.24	13.18	13.11
20.0	QPSK	RB1#0	15.92	15.93	15.84	14.92	14.93	14.84
		RB1#50	16.37	16.39	16.24	15.37	<b>15.39</b>	15.24
		RB1#99	15.94	15.96	15.79	14.94	14.96	14.79
		RB50#0	15.16	15.2	15.19	14.16	14.20	14.19
		RB50#50	15.25	15.18	15.09	14.25	14.18	14.09
		RB100#0	15.17	15.21	15.16	14.17	14.21	14.16
	16QAM	RB1#0	15.22	15.15	15.46	14.22	14.15	14.46
		RB1#50	15.68	15.53	15.79	14.68	14.53	<b>14.79</b>
		RB1#99	15.25	15.14	15.38	14.25	14.14	14.38
		RB50#0	14.17	14.24	14.22	13.17	13.24	13.22
		RB50#50	14.23	14.23	14.13	13.23	13.23	13.13
		RB100#0	14.22	14.24	14.18	13.22	13.24	13.18

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band4: Antenna Gain = -1dBi

Limit: EIRP ≤ 30dBm

**Peak-to-average ratio (PAR)****20MHz Bandwidth**

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	4.90	5.48	5.07	13	Pass
QPSK (100RB Size)	5.36	5.25	5.33	13	Pass
16QAM (1RB Size)	6.12	6.35	5.51	13	Pass
16QAM (100RB Size)	6.17	6.09	6.17	13	Pass

**LTE Band 5:****Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.66	23.76	23.68	17.51	17.61	17.53
		RB1#3	23.86	23.95	23.89	17.71	<b>17.80</b>	17.74
		RB1#5	23.69	23.77	23.67	17.54	17.62	17.52
		RB3#0	23.81	23.85	23.79	17.66	17.70	17.64
		RB3#3	23.77	23.87	23.81	17.62	17.72	17.66
		RB6#0	22.76	22.84	22.76	16.61	16.69	16.61
	16QAM	RB1#0	22.73	22.87	22.70	16.58	16.72	16.55
		RB1#3	22.90	23.08	22.94	16.75	<b>16.93</b>	16.79
		RB1#5	22.70	22.87	22.77	16.55	16.72	16.62
		RB3#0	22.93	22.77	22.85	16.78	16.62	16.70
		RB3#3	22.93	22.79	22.86	16.78	16.64	16.71
		RB6#0	21.77	21.89	21.73	15.62	15.74	15.58
3.0	QPSK	RB1#0	23.73	23.80	23.80	17.58	17.65	17.65
		RB1#8	23.77	23.83	23.78	17.62	<b>17.68</b>	17.63
		RB1#14	23.77	23.83	23.77	17.62	17.68	17.62
		RB6#0	22.71	22.78	22.72	16.56	16.63	16.57
		RB6#9	22.76	22.81	22.70	16.61	16.66	16.55
		RB15#0	22.77	22.84	22.77	16.62	16.69	16.62
	16QAM	RB1#0	23.26	22.95	22.79	17.11	16.80	16.64
		RB1#8	23.29	22.97	22.77	17.14	16.82	16.62
		RB1#14	23.32	22.94	22.76	<b>17.17</b>	16.79	16.61
		RB6#0	21.79	21.81	21.68	15.64	15.66	15.53
		RB6#9	21.83	21.86	21.68	15.68	15.71	15.53
		RB15#0	21.82	21.80	21.82	15.67	15.65	15.67

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	23.65	23.75	23.66	17.50	17.60	17.51
		RB1#13	23.88	23.89	23.79	17.73	<b>17.74</b>	17.64
		RB1#24	23.74	23.76	23.68	17.59	17.61	17.53
		RB15#0	22.81	22.83	22.81	16.66	16.68	16.66
		RB15#10	22.84	22.81	22.78	16.69	16.66	16.63
		RB25#0	22.79	22.81	22.75	16.64	16.66	16.60
	16QAM	RB1#0	22.55	23.01	22.74	16.40	16.86	16.59
		RB1#13	22.77	23.15	22.88	16.62	<b>17.00</b>	16.73
		RB1#24	22.65	23.03	22.76	16.50	16.88	16.61
		RB15#0	21.86	21.83	21.87	15.71	15.68	15.72
		RB15#10	21.87	21.80	21.84	15.72	15.65	15.69
		RB25#0	21.85	21.82	21.79	15.70	15.67	15.64
10.0	QPSK	RB1#0	23.72	23.78	23.78	17.57	17.63	17.63
		RB1#25	23.96	23.96	23.96	17.81	<b>17.81</b>	17.81
		RB1#49	23.82	23.78	23.79	17.67	17.63	17.64
		RB25#0	22.80	22.88	22.90	16.65	16.73	16.75
		RB25#25	22.88	22.79	22.74	16.73	16.64	16.59
		RB50#0	22.83	22.84	22.86	16.68	16.69	16.71
	16QAM	RB1#0	23.25	22.92	22.80	17.10	16.77	16.65
		RB1#25	23.52	23.12	22.93	<b>17.37</b>	16.97	16.78
		RB1#49	23.34	22.95	22.76	17.19	16.80	16.61
		RB25#0	21.87	21.90	21.97	15.72	15.75	15.82
		RB25#25	21.95	21.83	21.86	15.80	15.68	15.71
		RB50#0	21.88	21.85	21.87	15.73	15.70	15.72

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)  
For Band5: Antenna Gain = -4dBi = -6.15dBd (0dBd=2.15dBi)  
Limit: ERP ≤ 38.45dBm

**Peak-to-average ratio (PAR)****10MHz bandwidth**

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	4.52	3.74	4.93	13	Pass
QPSK (50RB Size)	4.75	5.07	5.07	13	Pass
16QAM (1RB Size)	5.33	4.81	6.06	13	Pass
16QAM (50RB Size)	5.59	5.97	5.97	13	Pass

**LTE Band 7:****Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	16.44	16.38	16.34	16.94	16.88	16.84
		RB1#13	16.64	16.51	16.50	<b>17.14</b>	17.01	17.00
		RB1#24	16.53	16.40	16.35	17.03	16.90	16.85
		RB15#0	15.65	15.43	15.38	16.15	15.93	15.88
		RB15#10	15.70	15.48	15.44	16.20	15.98	15.94
		RB25#0	15.64	15.47	15.39	16.14	15.97	15.89
	16QAM	RB1#0	15.36	15.65	15.29	15.86	16.15	15.79
		RB1#13	15.54	15.78	15.43	16.04	<b>16.28</b>	15.93
		RB1#24	15.41	15.67	15.25	15.91	16.17	15.75
		RB15#0	14.71	14.45	14.44	15.21	14.95	14.94
		RB15#10	14.75	14.48	14.43	15.25	14.98	14.93
		RB25#0	14.71	14.50	14.40	15.21	15.00	14.90
10.0	QPSK	RB1#0	16.55	16.49	16.50	17.05	16.99	17.00
		RB1#25	16.73	16.63	16.67	<b>17.23</b>	17.13	17.17
		RB1#49	16.67	16.46	16.32	17.17	16.96	16.82
		RB25#0	15.65	15.50	15.06	16.15	16.00	15.56
		RB25#25	15.81	15.59	15.24	16.31	16.09	15.74
		RB50#0	15.70	15.57	15.40	16.20	16.07	15.90
	16QAM	RB1#0	16.01	15.64	15.19	16.51	16.14	15.69
		RB1#25	16.27	15.76	15.29	<b>16.77</b>	16.26	15.79
		RB1#49	16.15	15.64	15.00	16.65	16.14	15.50
		RB25#0	14.76	14.57	14.27	15.26	15.07	14.77
		RB25#25	14.84	14.63	14.51	15.34	15.13	15.01
		RB50#0	14.74	14.58	14.51	15.24	15.08	15.01

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	16.45	16.39	16.36	16.95	16.89	16.86
		RB1#38	16.66	16.49	16.49	<b>17.16</b>	16.99	16.99
		RB1#74	16.46	16.44	16.04	16.96	16.94	16.54
		RB36#0	15.62	15.54	15.13	16.12	16.04	15.63
		RB36#39	15.75	15.61	15.35	16.25	16.11	15.85
		RB75#0	15.72	15.59	15.34	16.22	16.09	15.84
	16QAM	RB1#0	15.98	15.54	15.61	16.48	16.04	16.11
		RB1#38	16.16	15.62	15.54	<b>16.66</b>	16.12	16.04
		RB1#74	16.05	15.58	15.26	16.55	16.08	15.76
		RB36#0	14.57	14.50	14.35	15.07	15.00	14.85
		RB36#39	14.73	14.56	14.39	15.23	15.06	14.89
		RB75#0	14.68	14.55	14.48	15.18	15.05	14.98
20.0	QPSK	RB1#0	16.30	16.23	16.23	16.80	16.73	16.73
		RB1#50	16.81	16.61	16.57	<b>17.31</b>	17.11	17.07
		RB1#99	16.22	16.16	15.86	16.72	16.66	16.36
		RB50#0	15.41	15.36	15.17	15.91	15.86	15.67
		RB50#50	15.65	15.51	15.16	16.15	16.01	15.66
		RB100#0	15.57	15.48	15.21	16.07	15.98	15.71
	16QAM	RB1#0	15.44	15.42	15.38	15.94	15.92	15.88
		RB1#50	15.77	15.79	15.82	16.27	<b>16.29</b>	16.32
		RB1#99	15.37	15.47	15.26	15.87	15.97	15.76
		RB50#0	14.41	14.43	14.53	14.91	14.93	15.03
		RB50#50	14.65	14.52	14.44	15.15	15.02	14.94
		RB100#0	14.62	14.49	14.52	15.12	14.99	15.02

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)  
For Band7: Antenna Gain = 0.5dBi  
Limit: EIRP ≤ 33dBm

**Peak-to-average ratio (PAR)****20MHz bandwidth**

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	4.12	4.52	4.26	13	Pass
QPSK (50RB Size)	4.84	4.96	4.49	13	Pass
16QAM (1RB Size)	5.19	5.25	5.45	13	Pass
16QAM (50RB Size)	5.91	5.86	5.57	13	Pass

## LTE Band 38:

## Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	17.17	17.33	17.37	18.17	18.33	18.37
		RB1#13	17.38	17.53	17.59	18.38	18.53	<b>18.59</b>
		RB1#24	17.26	17.36	17.45	18.26	18.36	18.45
		RB15#0	16.23	16.41	16.47	17.23	17.41	17.47
		RB15#10	16.28	16.43	16.46	17.28	17.43	17.46
		RB25#0	16.22	16.42	16.44	17.22	17.42	17.44
	16QAM	RB1#0	16.39	16.35	16.43	17.39	17.35	17.43
		RB1#13	16.61	16.53	16.63	17.61	17.53	<b>17.63</b>
		RB1#24	16.44	16.35	16.45	17.44	17.35	17.45
		RB15#0	15.25	15.35	15.49	16.25	16.35	16.49
		RB15#10	15.30	15.37	15.50	16.30	16.37	16.50
		RB25#0	15.23	15.39	15.53	16.23	16.39	16.53
10.0	QPSK	RB1#0	17.25	17.51	17.52	18.25	18.51	18.52
		RB1#25	17.60	17.78	17.84	18.60	18.78	<b>18.84</b>
		RB1#49	17.35	17.54	17.59	18.35	18.54	18.59
		RB25#0	16.25	16.44	16.43	17.25	17.44	17.43
		RB25#25	16.28	16.44	16.52	17.28	17.44	17.52
		RB50#0	16.25	16.44	16.44	17.25	17.44	17.44
	16QAM	RB1#0	16.46	16.38	16.58	17.46	17.38	17.58
		RB1#25	16.78	16.68	16.87	17.78	17.68	<b>17.87</b>
		RB1#49	16.53	16.43	16.59	17.53	17.43	17.59
		RB25#0	15.24	15.45	15.47	16.24	16.45	16.47
		RB25#25	15.29	15.47	15.55	16.29	16.47	16.55
		RB50#0	15.26	15.43	15.47	16.26	16.43	16.47

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	17.16	17.38	17.37	18.16	18.38	18.37
		RB1#38	17.31	17.53	17.52	18.31	<b>18.53</b>	18.52
		RB1#74	17.35	17.38	17.45	18.35	18.38	18.45
		RB36#0	16.27	16.46	16.47	17.27	17.46	17.47
		RB36#39	16.37	16.47	16.49	17.37	17.47	17.49
		RB75#0	16.37	16.46	16.49	17.37	17.46	17.49
	16QAM	RB1#0	16.33	16.26	16.53	17.33	17.26	17.53
		RB1#38	16.48	16.41	16.71	17.48	17.41	<b>17.71</b>
		RB1#74	16.53	16.30	16.62	17.53	17.30	17.62
		RB36#0	15.25	15.37	15.46	16.25	16.37	16.46
		RB36#39	15.36	15.40	15.54	16.36	16.40	16.54
		RB75#0	15.28	15.42	15.47	16.28	16.42	16.47
20.0	QPSK	RB1#0	17.00	17.13	17.27	18.00	18.13	18.27
		RB1#50	17.61	17.68	17.79	18.61	18.68	<b>18.79</b>
		RB1#99	17.20	17.17	17.34	18.20	18.17	18.34
		RB50#0	16.26	16.38	16.37	17.26	17.38	17.37
		RB50#50	16.42	16.44	16.45	17.42	17.44	17.45
		RB100#0	16.30	16.46	16.39	17.30	17.46	17.39
	16QAM	RB1#0	16.08	16.10	16.44	17.08	17.10	17.44
		RB1#50	16.69	16.67	16.98	17.69	17.67	<b>17.98</b>
		RB1#99	16.23	16.13	16.52	17.23	17.13	17.52
		RB50#0	15.26	15.42	15.40	16.26	16.42	16.40
		RB50#50	15.37	15.51	15.48	16.37	16.51	16.48
		RB100#0	15.34	15.43	15.43	16.34	16.43	16.43

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band38: Antenna Gain = 1dBi

Limit: EIRP ≤ 33dBm

**Peak-to-average ratio (PAR)****20MHz bandwidth**

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	8.32	10.22	8.67	13	Pass
QPSK (50RB Size)	10.22	10.38	10.74	13	Pass
16QAM (1RB Size)	8.41	8.28	6.55	13	Pass
16QAM (50RB Size)	10.74	12.43	6.41	13	Pass

**LTE Band 41:****Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	17.84	17.62	17.98	18.84	18.62	<b>18.98</b>
		RB1#13	17.95	17.72	17.96	18.95	18.72	18.96
		RB1#24	17.89	17.62	17.84	18.89	18.62	18.84
		RB15#0	16.89	16.61	16.91	17.89	17.61	17.91
		RB15#10	16.99	16.60	16.87	17.99	17.60	17.87
		RB25#0	16.92	16.58	16.87	17.92	17.58	17.87
	16QAM	RB1#0	16.85	16.81	16.85	17.85	17.81	17.85
		RB1#13	16.98	16.94	16.92	<b>17.98</b>	17.94	17.92
		RB1#24	16.90	16.83	16.83	17.90	17.83	17.83
		RB15#0	15.90	15.63	15.84	16.90	16.63	16.84
		RB15#10	15.97	15.65	15.84	16.97	16.65	16.84
		RB25#0	15.97	15.58	15.91	16.97	16.58	16.91
10.0	QPSK	RB1#0	17.90	17.65	17.89	18.90	18.65	18.89
		RB1#25	18.22	18.00	18.25	19.22	19.00	<b>19.25</b>
		RB1#49	17.91	17.72	17.94	18.91	18.72	18.94
		RB25#0	16.96	16.64	16.87	17.96	17.64	17.87
		RB25#25	17.04	16.69	16.85	18.04	17.69	17.85
		RB50#0	17.01	16.64	16.85	18.01	17.64	17.85
	16QAM	RB1#0	17.05	16.55	16.91	18.05	17.55	17.91
		RB1#25	17.34	16.89	17.24	<b>18.34</b>	17.89	18.24
		RB1#49	17.04	16.63	16.94	18.04	17.63	17.94
		RB25#0	15.95	15.68	15.88	16.95	16.68	16.88
		RB25#25	16.01	15.72	15.90	17.01	16.72	16.90
		RB50#0	15.95	15.65	15.90	16.95	16.65	16.90

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	17.81	17.63	17.81	18.81	18.63	18.81
		RB1#38	17.97	17.70	18.00	18.97	18.70	<b>19.00</b>
		RB1#74	17.71	17.66	17.92	18.71	18.66	18.92
		RB36#0	17.00	16.65	16.97	18.00	17.65	17.97
		RB36#39	17.08	16.73	16.94	18.08	17.73	17.94
		RB75#0	17.04	16.73	16.96	18.04	17.73	17.96
	16QAM	RB1#0	16.94	16.52	16.94	17.94	17.52	17.94
		RB1#38	17.11	16.65	17.11	<b>18.11</b>	17.65	18.11
		RB1#74	16.85	16.57	17.07	17.85	17.57	18.07
		RB36#0	15.92	15.63	15.95	16.92	16.63	16.95
		RB36#39	15.96	15.64	15.98	16.96	16.64	16.98
		RB75#0	15.93	15.67	15.93	16.93	16.67	16.93
20.0	QPSK	RB1#0	17.64	17.38	17.67	18.64	18.38	18.67
		RB1#50	18.19	17.88	18.22	19.19	18.88	<b>19.22</b>
		RB1#99	17.42	17.48	17.80	18.42	18.48	18.80
		RB50#0	16.87	16.61	16.84	17.87	17.61	17.84
		RB50#50	16.90	16.69	16.88	17.90	17.69	17.88
		RB100#0	16.89	16.70	16.87	17.89	17.70	17.87
	16QAM	RB1#0	16.70	16.35	16.82	17.70	17.35	17.82
		RB1#50	17.18	16.89	17.37	<b>18.18</b>	17.89	18.37
		RB1#99	16.45	16.43	16.96	17.45	17.43	17.96
		RB50#0	15.85	15.68	15.85	16.85	16.68	16.85
		RB50#50	15.90	15.76	15.90	16.90	16.76	16.90
		RB100#0	15.83	15.65	15.87	16.83	16.65	16.87

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band41: Antenna Gain = 1dBi

Limit: EIRP ≤ 33dBm

**Peak-to-average ratio (PAR)****20MHz bandwidth**

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	8.67	9.00	8.46	13	Pass
QPSK (50RB Size)	5.94	8.41	4.38	13	Pass
16QAM (1RB Size)	8.72	8.00	12.86	13	Pass
16QAM (50RB Size)	12.70	11.68	12.20	13	Pass

## FCC §2.1049, §22.917, §22.905 & §24.238 & § 7.53 - OCCUPIED BANDWIDTH

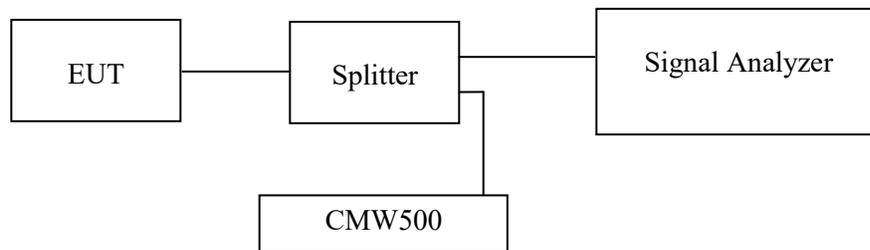
### Applicable Standard

FCC 47 §2.1049, §22.917, §22.905, §24.238, and § 7.53.

### Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 1% to 5% of the anticipated emission bandwidth and the 26 dB & 99% bandwidth was recorded.



### Test Data

#### Environmental Conditions

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Ting Lv from 2021-11-20 to 2021-12-09.*

*EUT operation mode: Transmitting*

#### Test Result: Pass

*Please refer to the following tables and plots.*

**Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	128	824.2	244.57	318.40
	190	836.6	244.57	316.90
	251	848.8	244.57	319.80
EGPRS(8PSK)	128	824.2	250.36	321.30
	190	836.6	250.36	321.30
	251	848.8	250.36	321.30

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.17	4.72
	836.6	4.15	4.70
	846.6	4.17	4.70
HSDPA	826.4	4.20	4.76
	836.6	4.18	4.73
	846.6	4.21	4.98
HSUPA	826.4	4.17	4.72
	836.6	4.15	4.72
	846.6	4.20	4.89

**PCS Band (Part 24E)**

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	241.68	314.00
	661	1880.0	243.13	312.60
	810	1909.8	241.68	311.10
EGPRS(8PSK)	512	1850.2	250.36	321.30
	661	1880.0	248.91	316.90
	810	1909.8	248.91	321.30

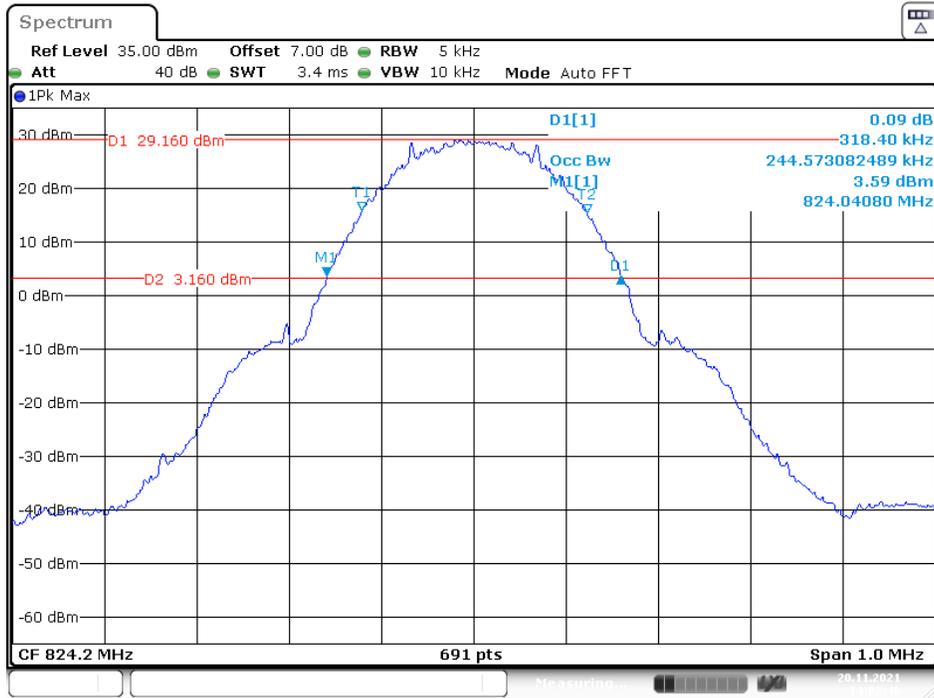
	<b>Frequency (MHz)</b>	<b>Occupied Bandwidth (MHz)</b>	<b>26dB Bandwidth (MHz)</b>
RMC	1852.4	4.18	4.72
	1880.0	4.18	4.72
	1907.6	4.17	4.72
HSDPA	1852.4	4.25	5.99
	1880.0	4.24	5.83
	1907.6	4.24	5.85
HSUPA	1852.4	4.25	6.25
	1880.0	4.24	5.15
	1907.6	4.24	6.72

**AWS Band (Part 27)**

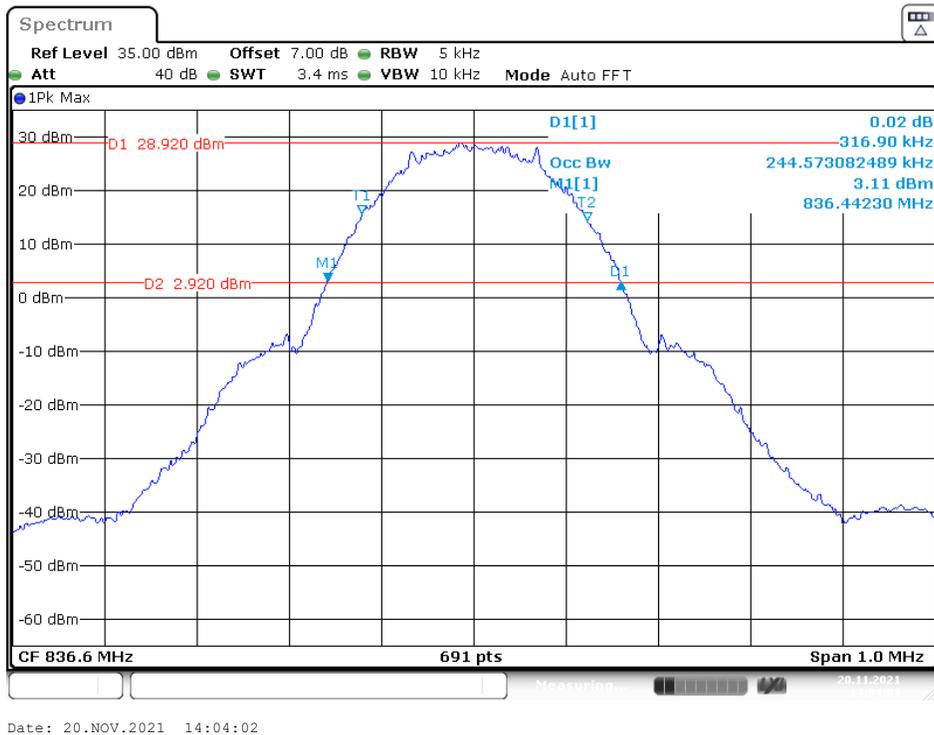
	<b>Frequency (MHz)</b>	<b>Occupied Bandwidth (MHz)</b>	<b>26dB Bandwidth (MHz)</b>
RMC	1712.4	4.17	4.70
	1732.6	4.17	4.72
	1752.6	4.17	4.72
HSDPA	1712.4	4.28	6.47
	1732.6	4.28	5.82
	1752.6	4.24	5.93
HSUPA	1712.4	4.25	6.04
	1732.6	4.30	6.51
	1752.6	4.27	6.21

**Cellular Band (Part 22H)**

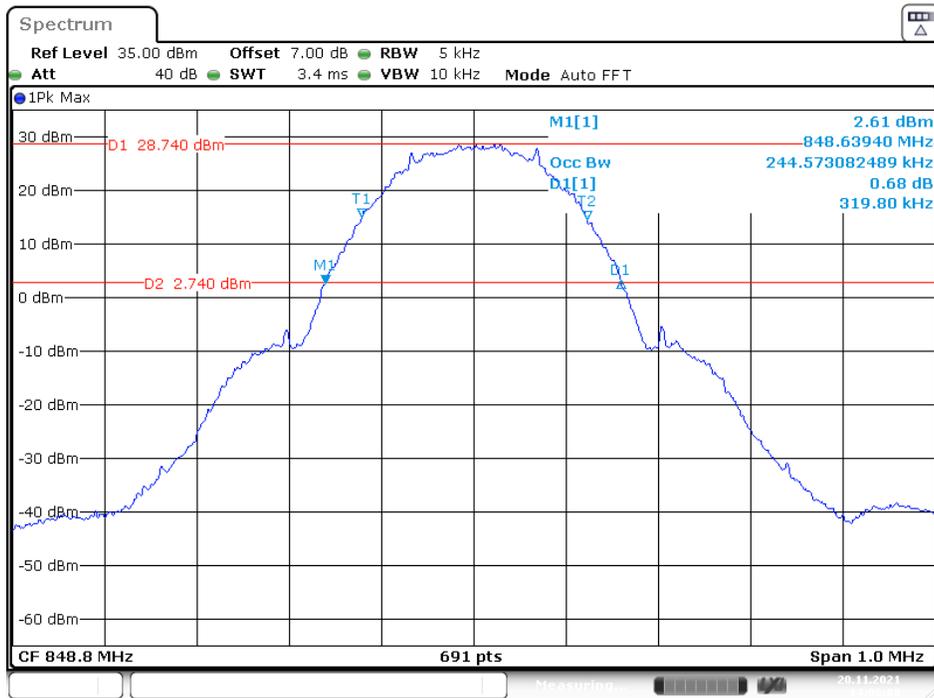
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel**



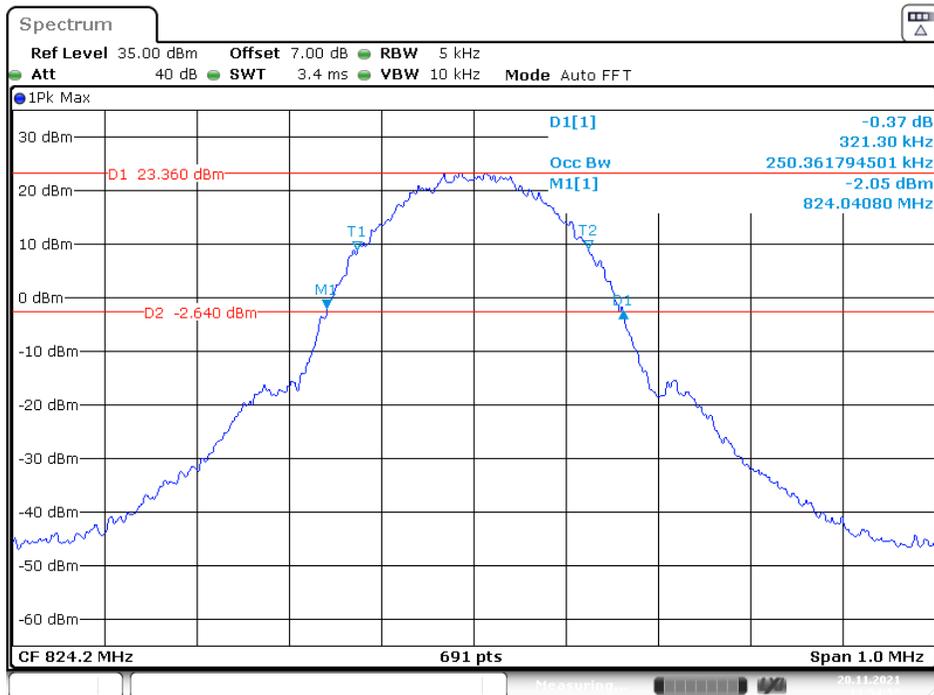
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel**



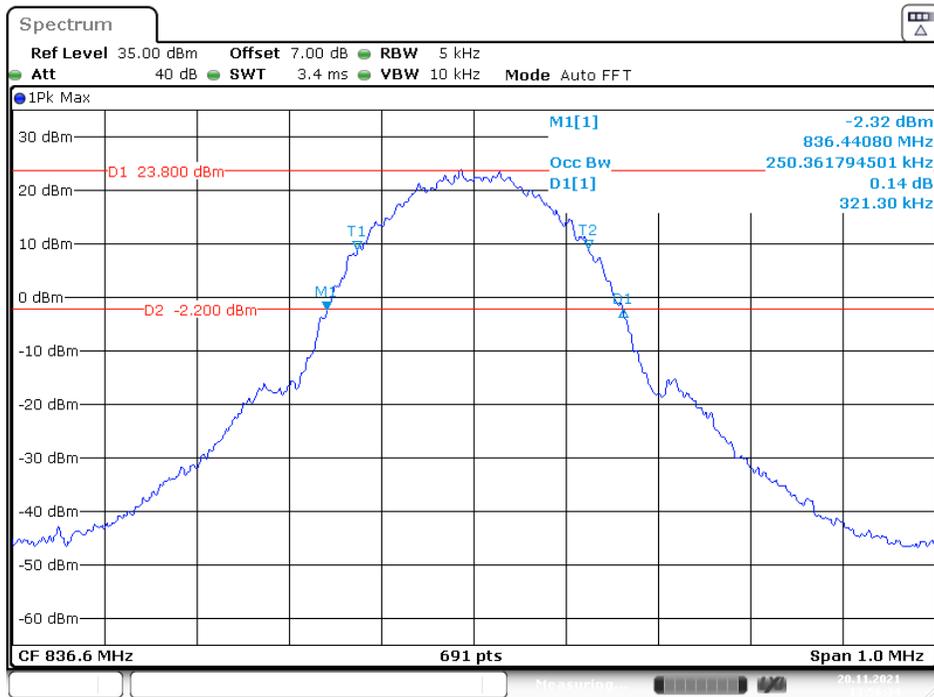
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel**



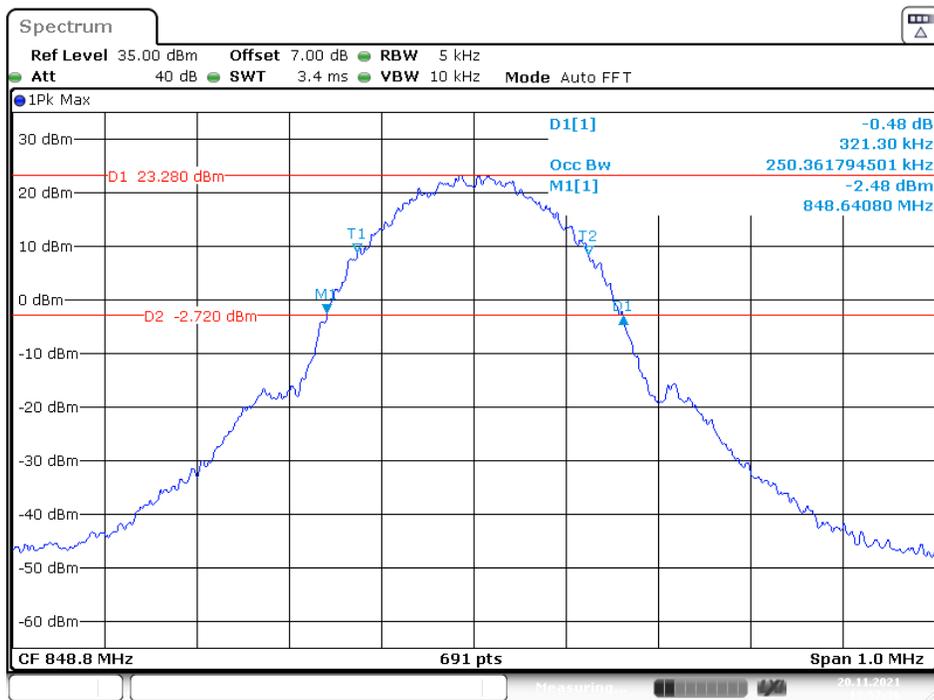
**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Low channel**



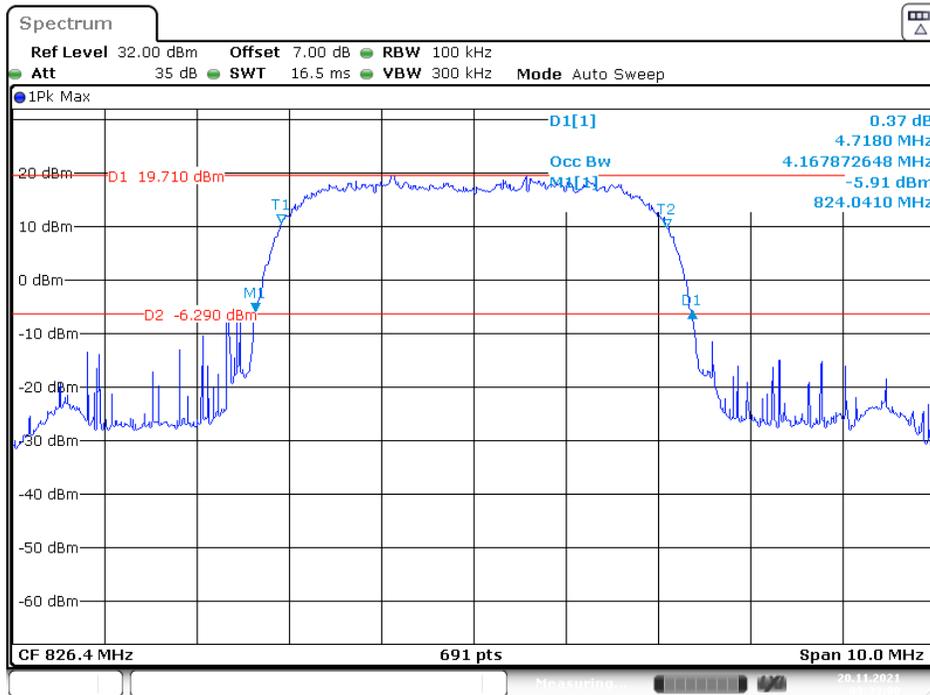
**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel**



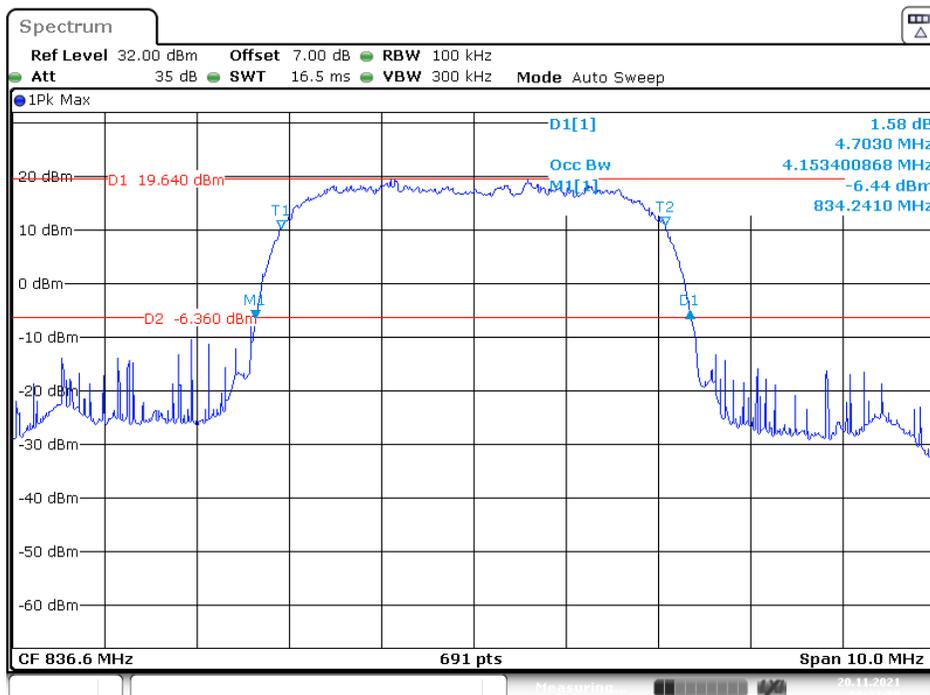
**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel**



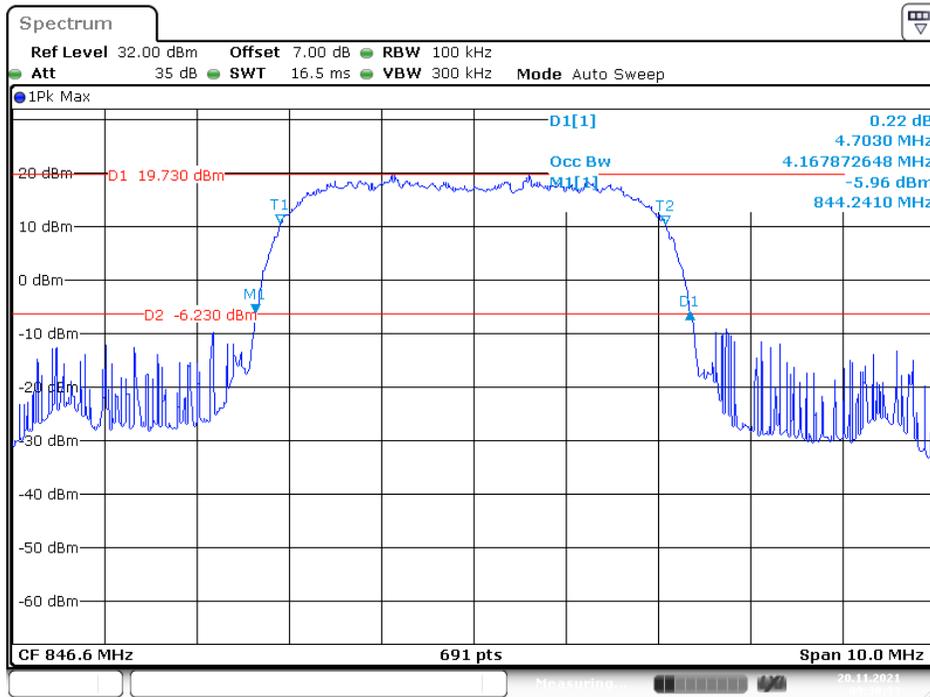
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel



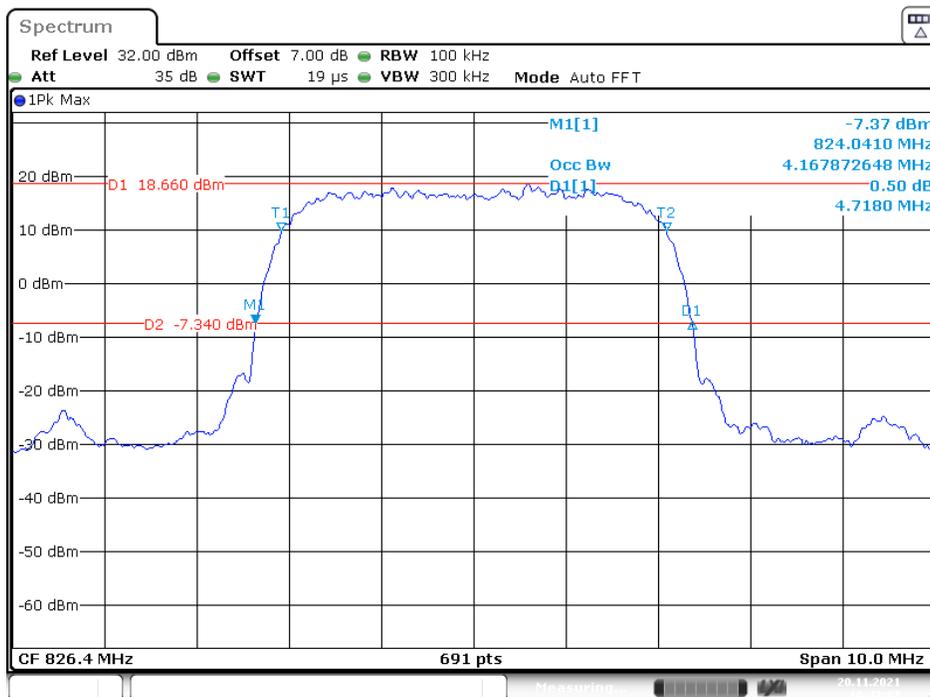
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



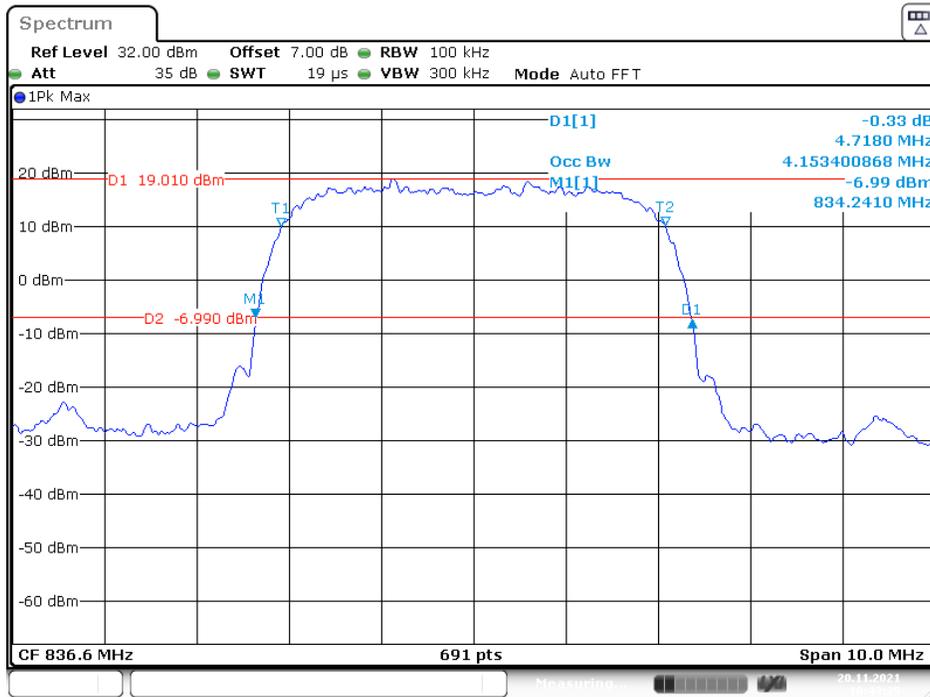
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



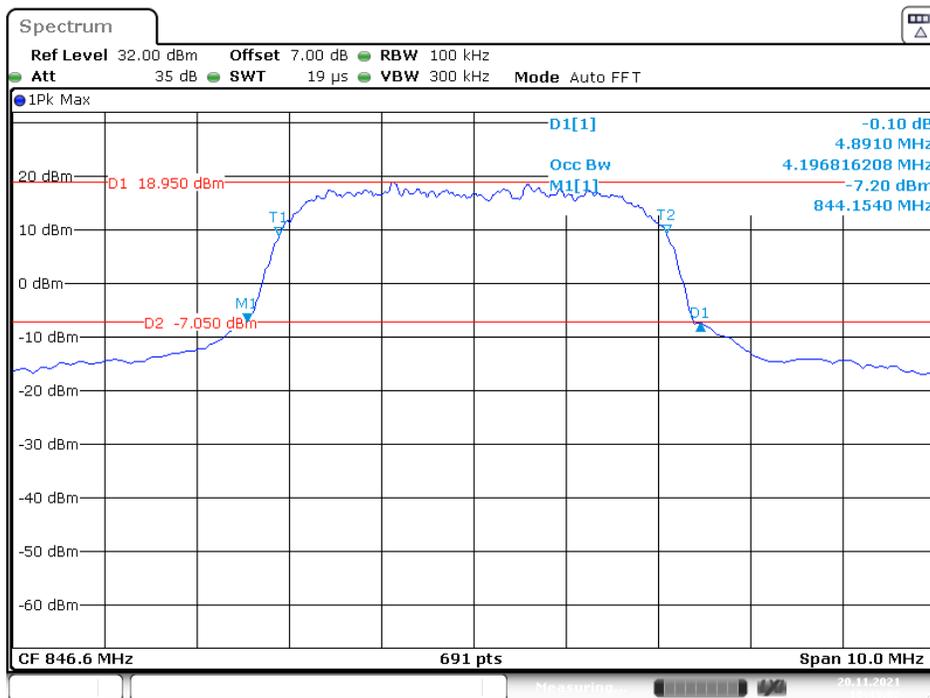
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



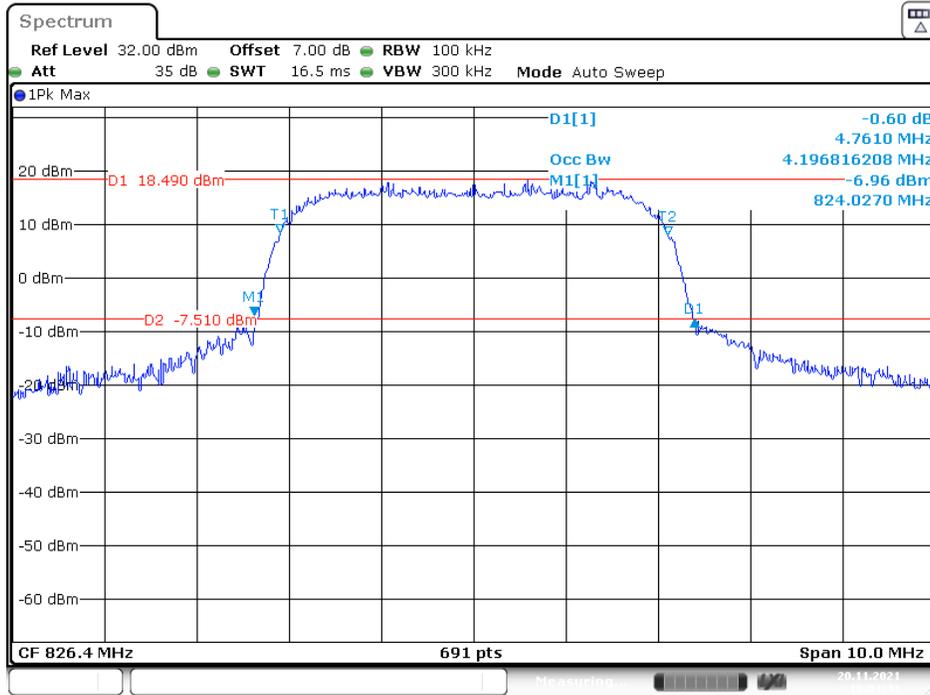
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel



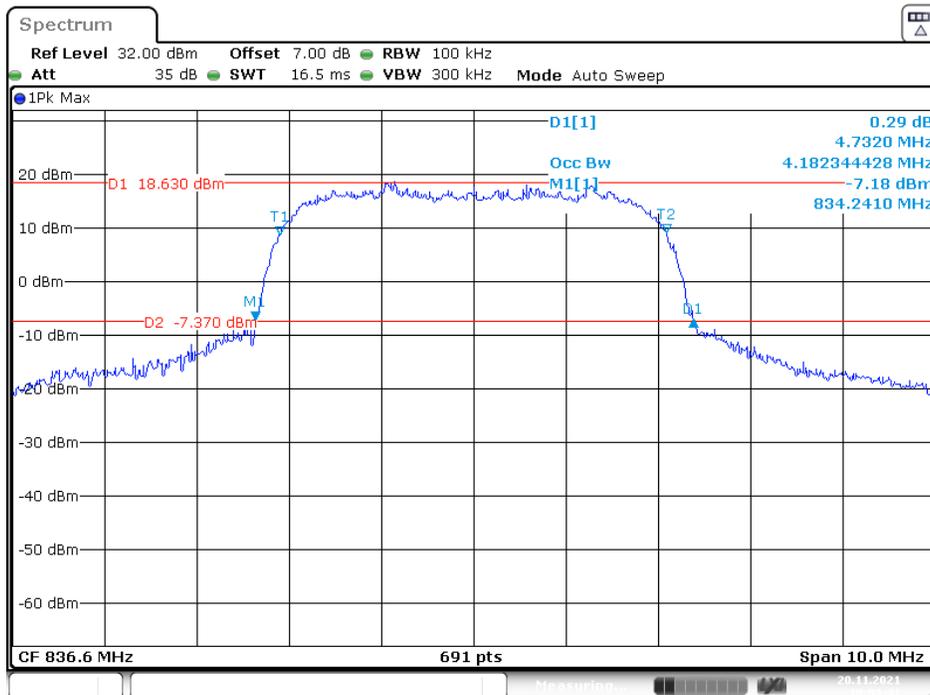
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



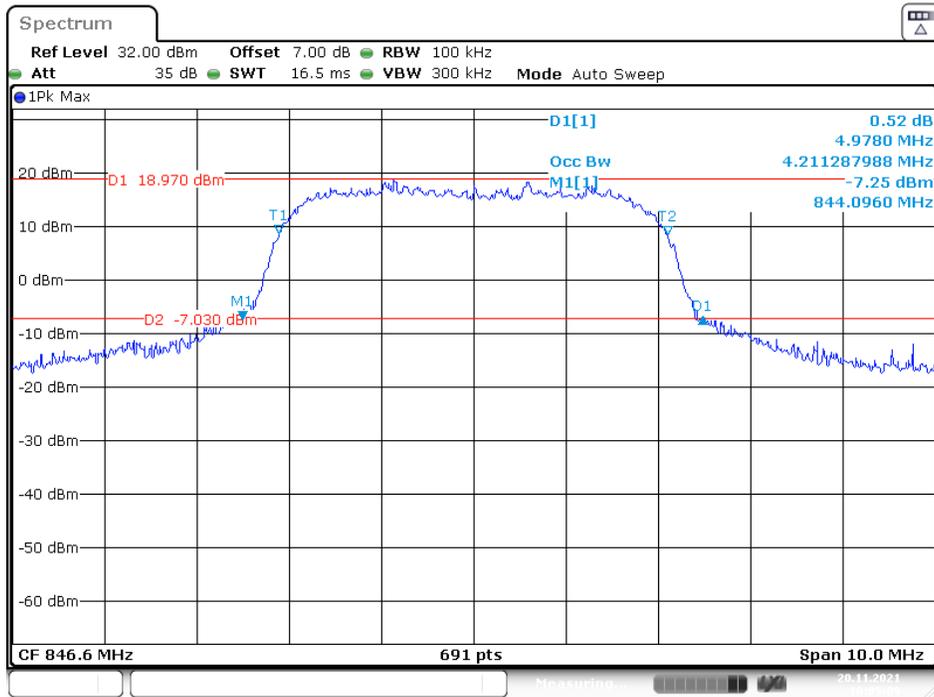
**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**



**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel**



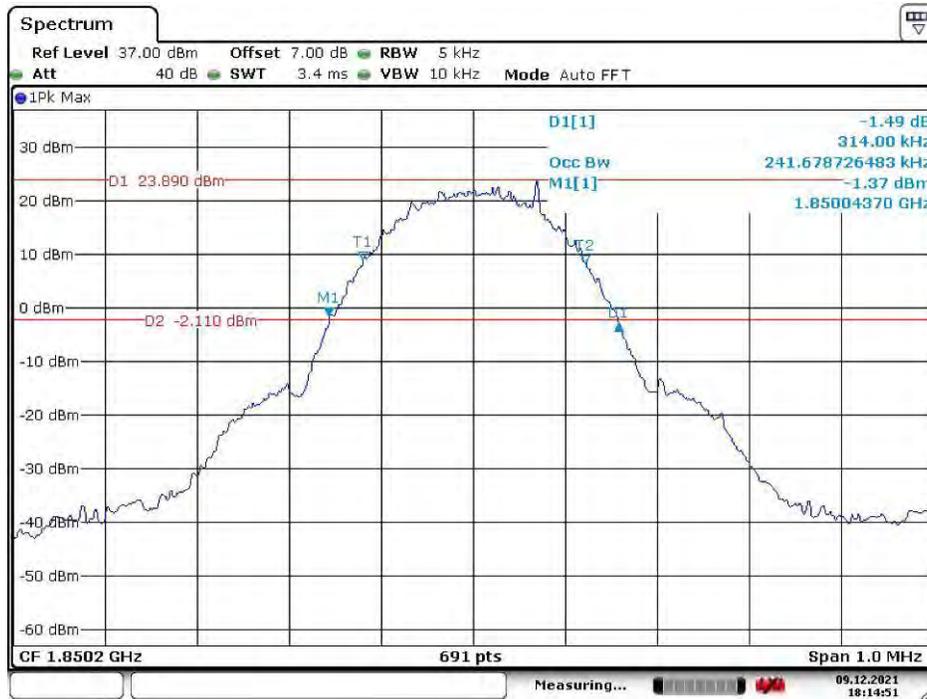
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 20.NOV.2021 10:05:09

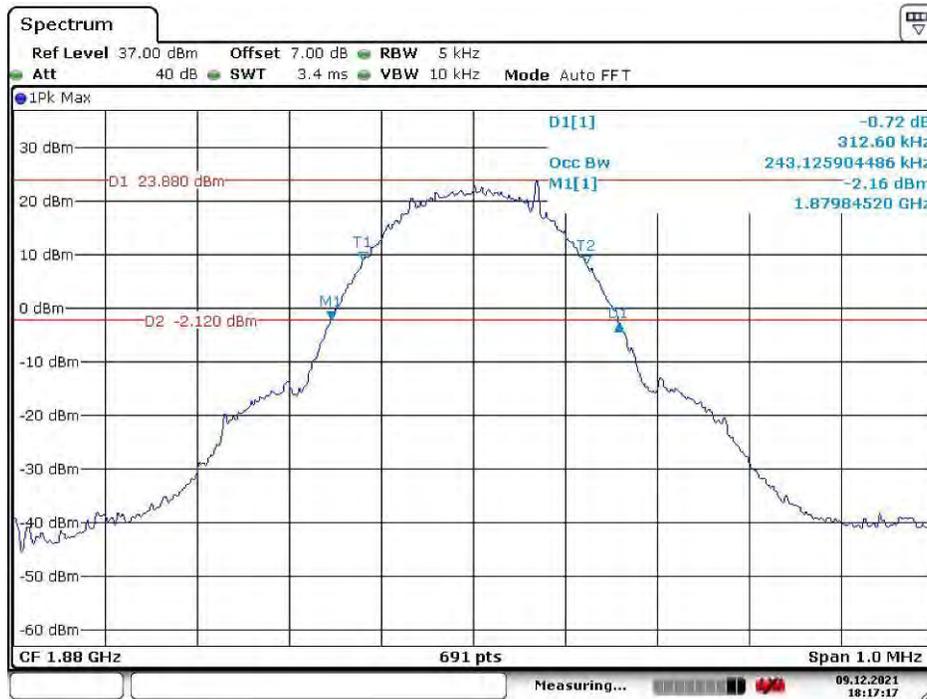
PCS Band (Part 24E)

26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel



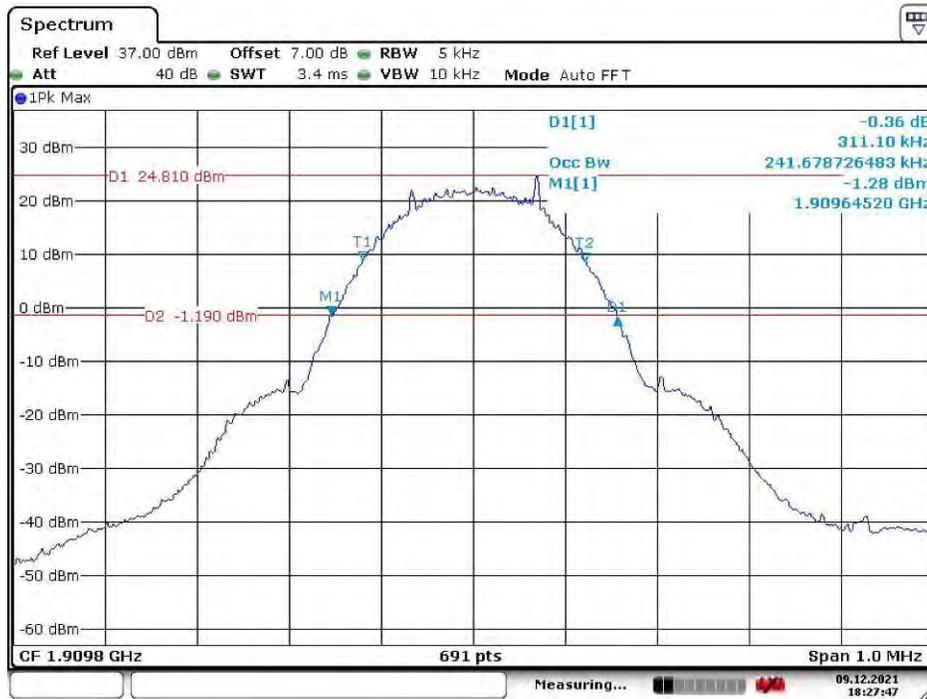
Date: 9.DEC.2021 18:14:51

26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



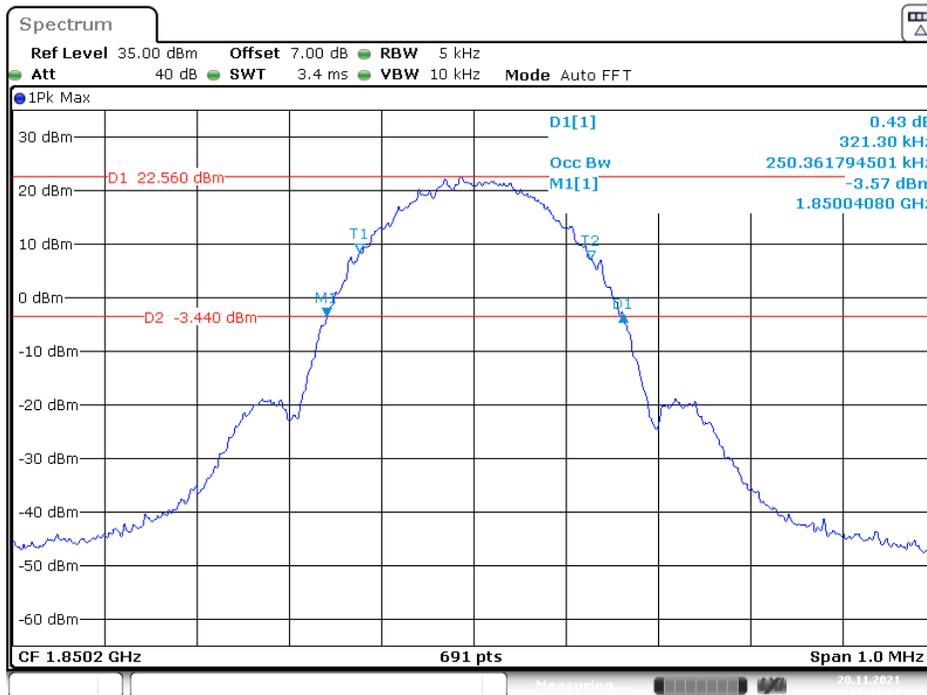
Date: 9.DEC.2021 18:17:17

**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel**



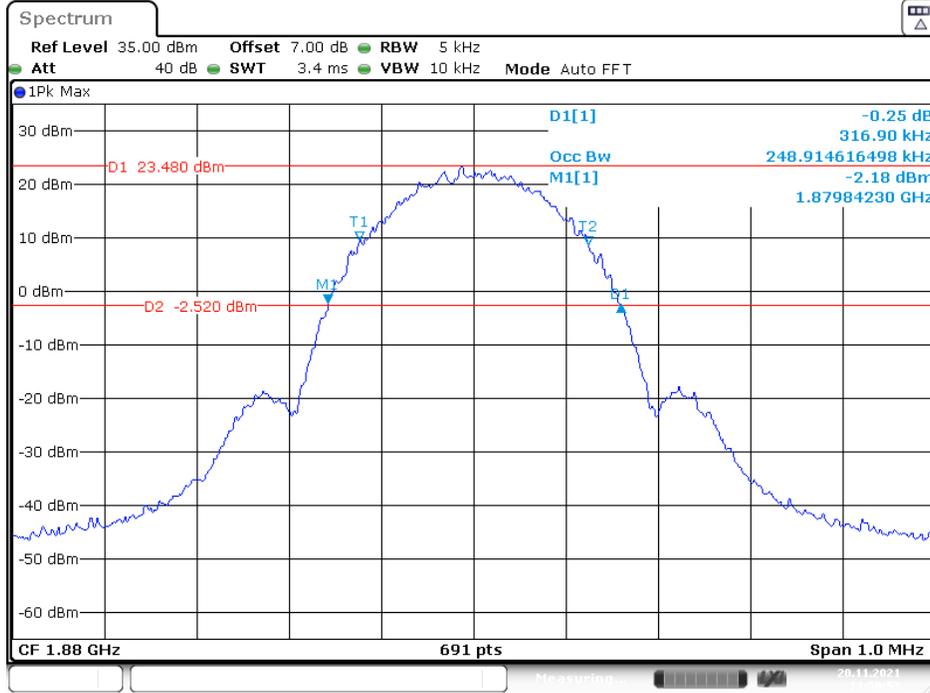
Date: 9.DEC.2021 18:27:48

**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Low channel**

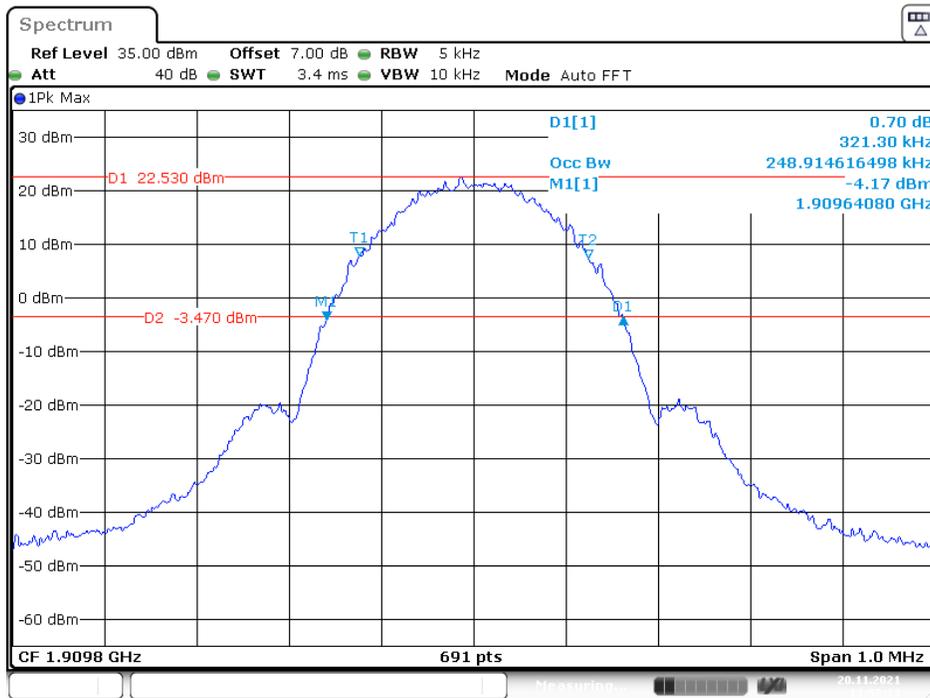


Date: 20.NOV.2021 13:49:02

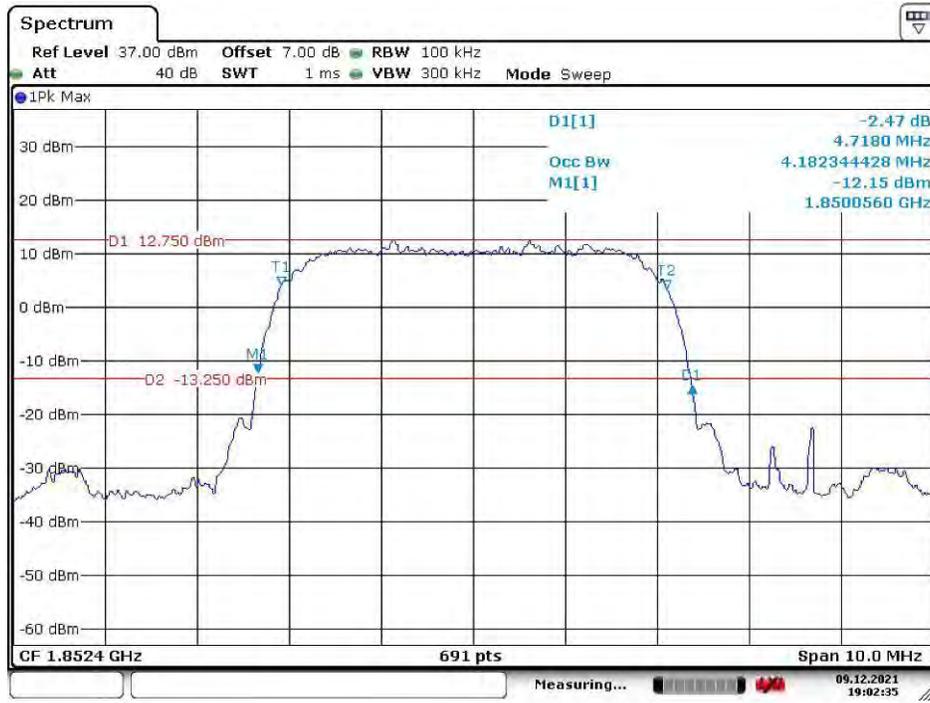
**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel**



**26 dB Emissions &99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel**

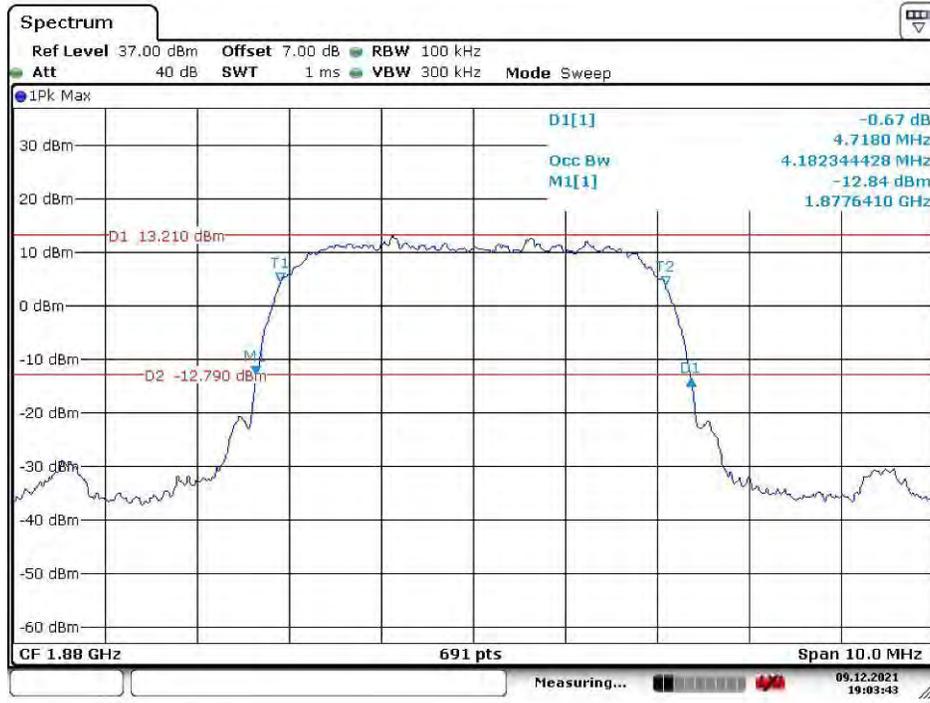


26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel



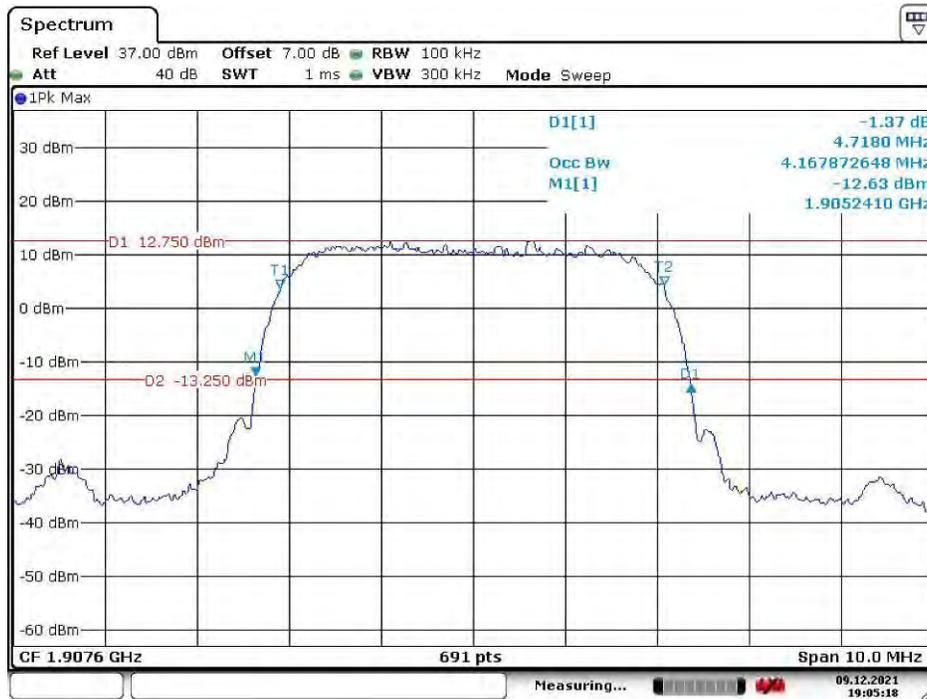
Date: 9.DEC.2021 19:02:35

26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



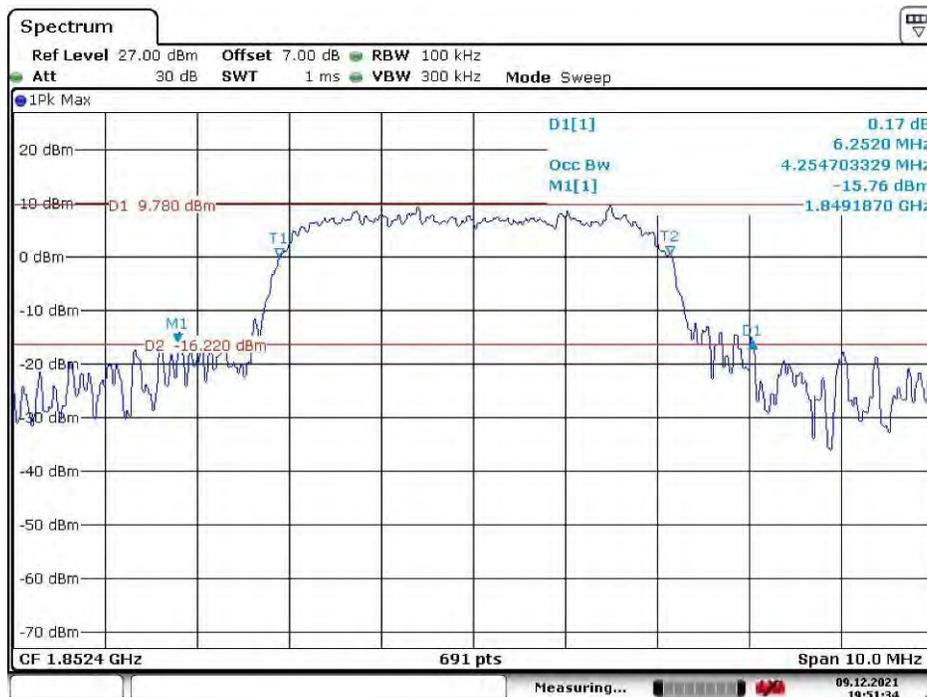
Date: 9.DEC.2021 19:03:43

**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



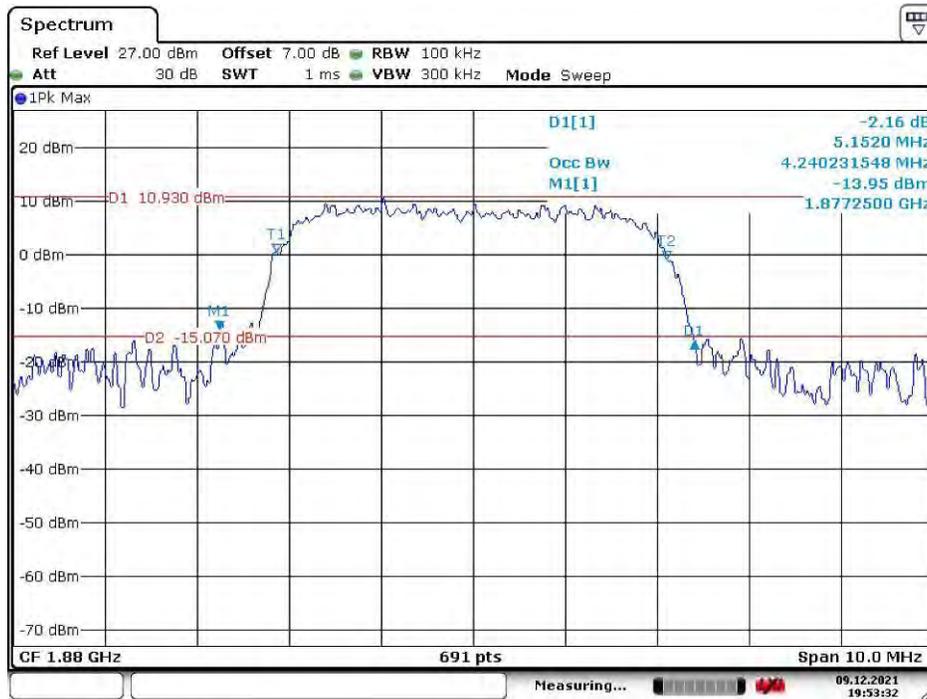
Date: 9.DEC.2021 19:05:18

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



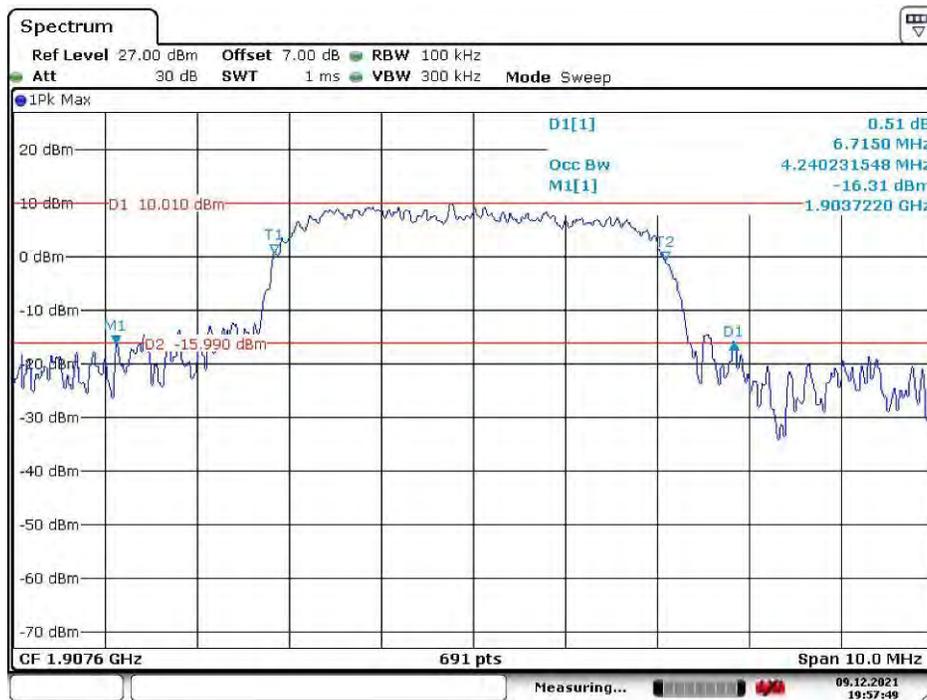
Date: 9.DEC.2021 19:51:35

26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel



Date: 9.DEC.2021 19:53:33

26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



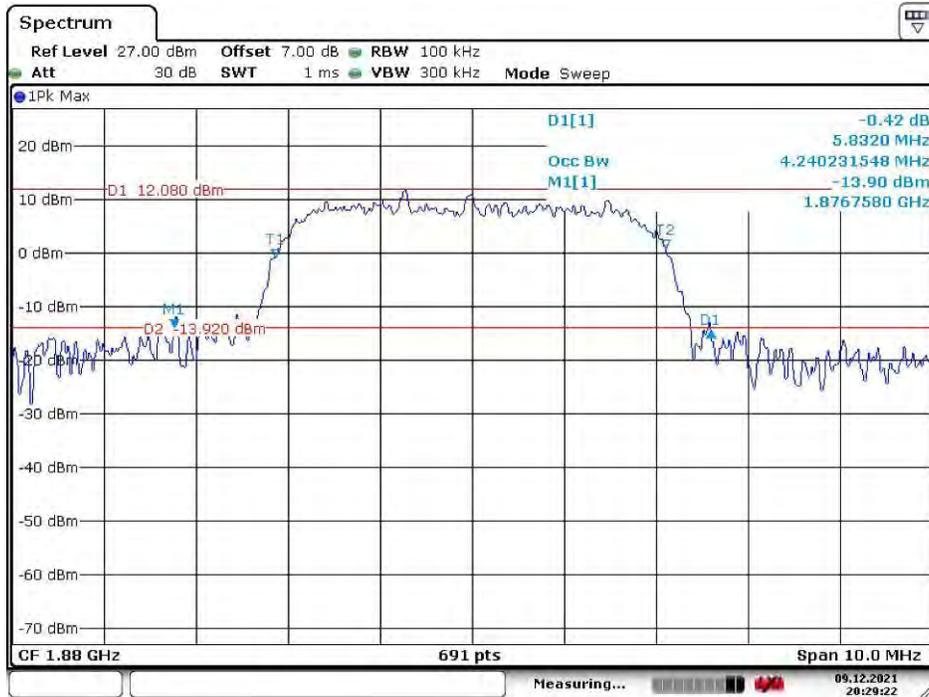
Date: 9.DEC.2021 19:57:49

### 26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel



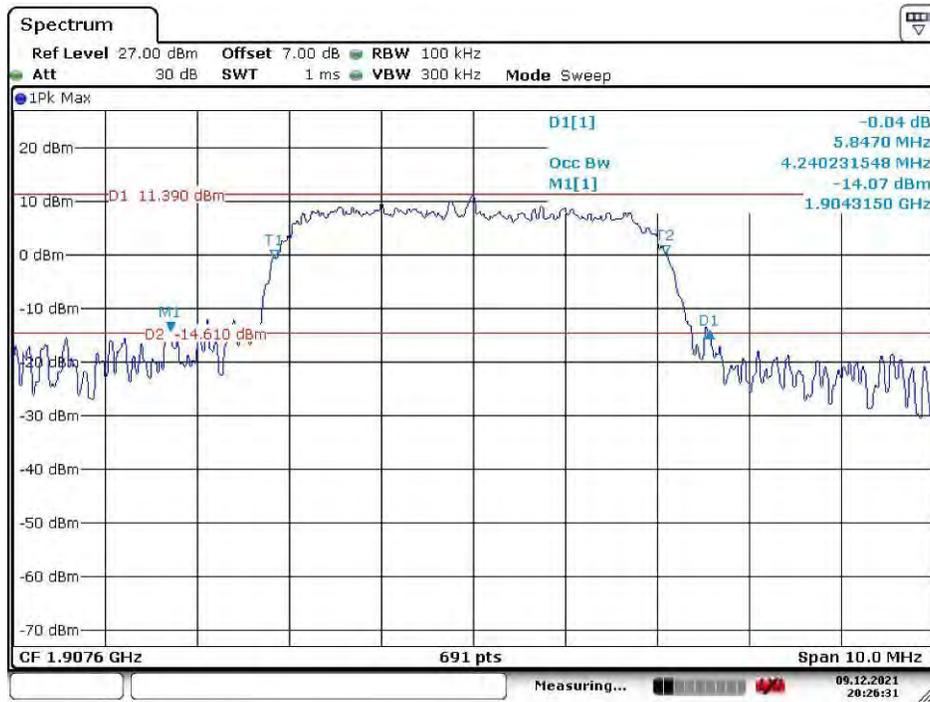
Date: 9.DEC.2021 20:35:22

### 26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel



Date: 9.DEC.2021 20:29:23

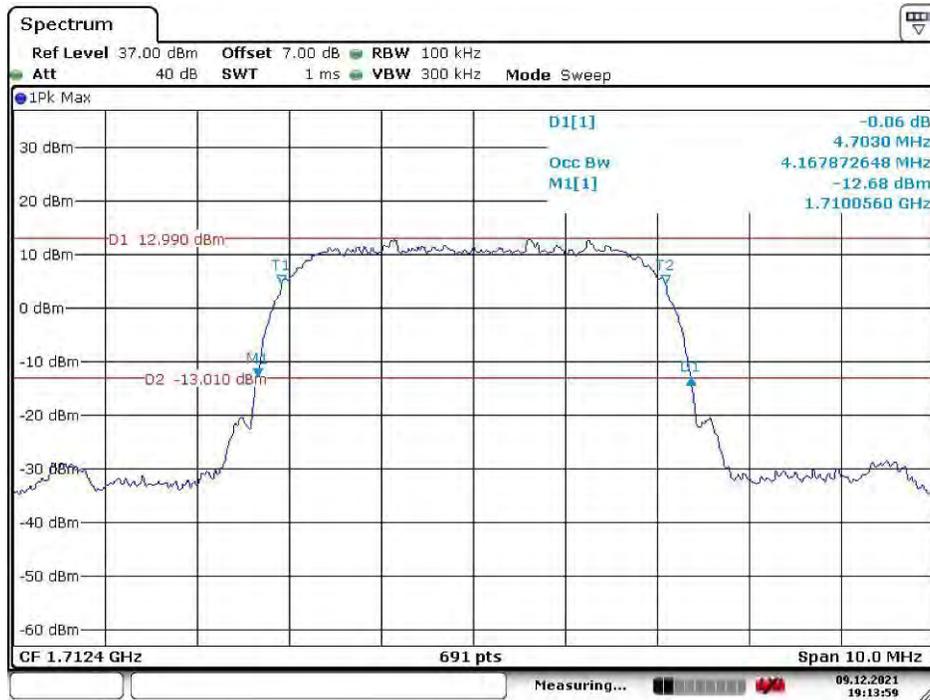
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



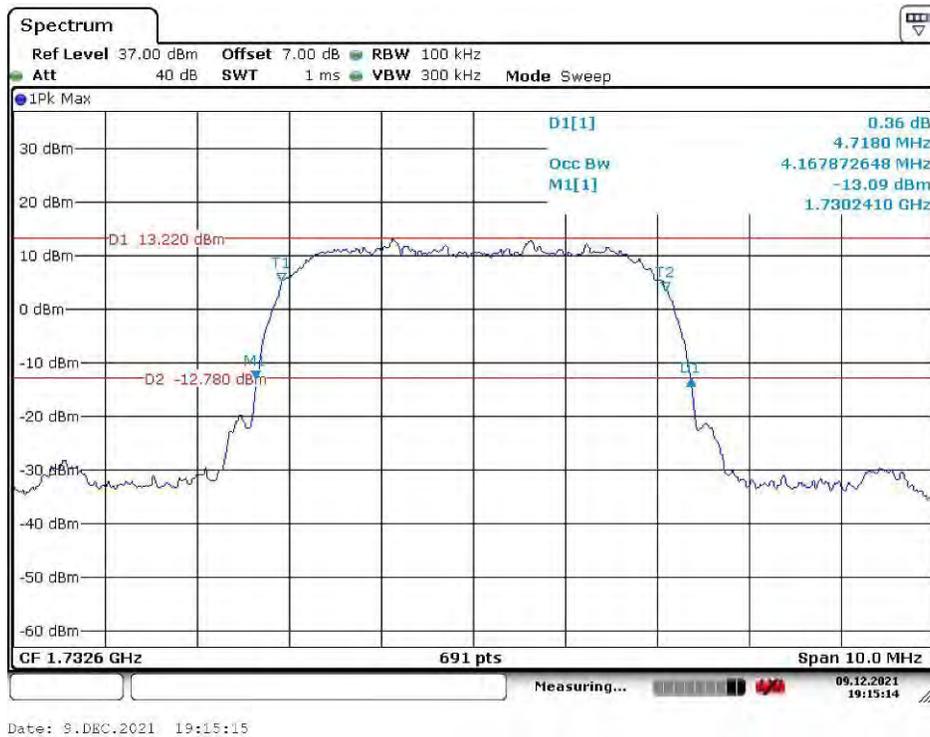
Date: 9.DEC.2021 20:26:31

**AWS Band (Part 27)**

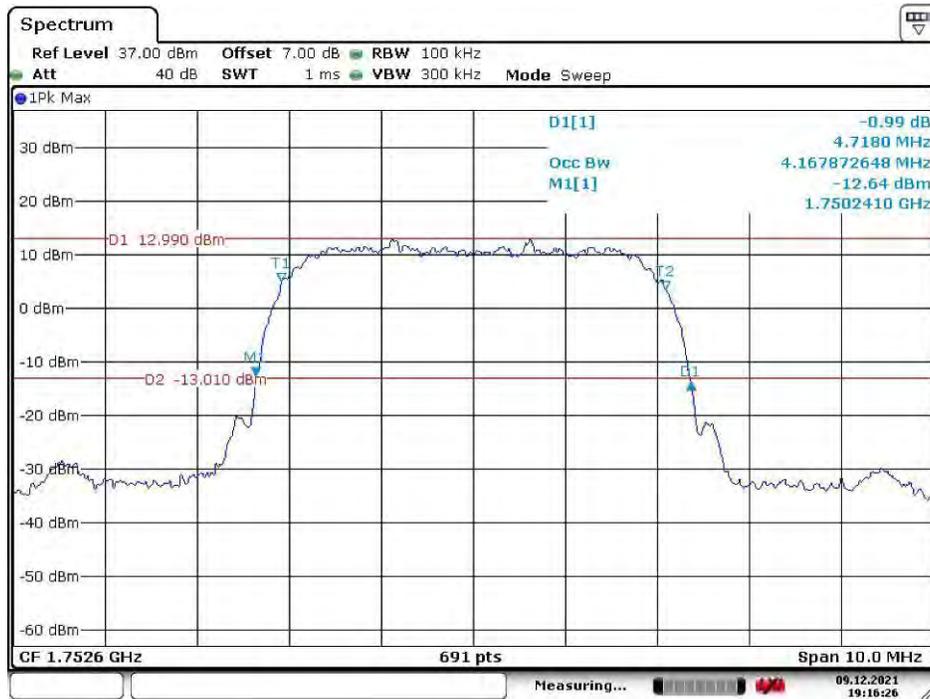
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel**



**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel**



**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



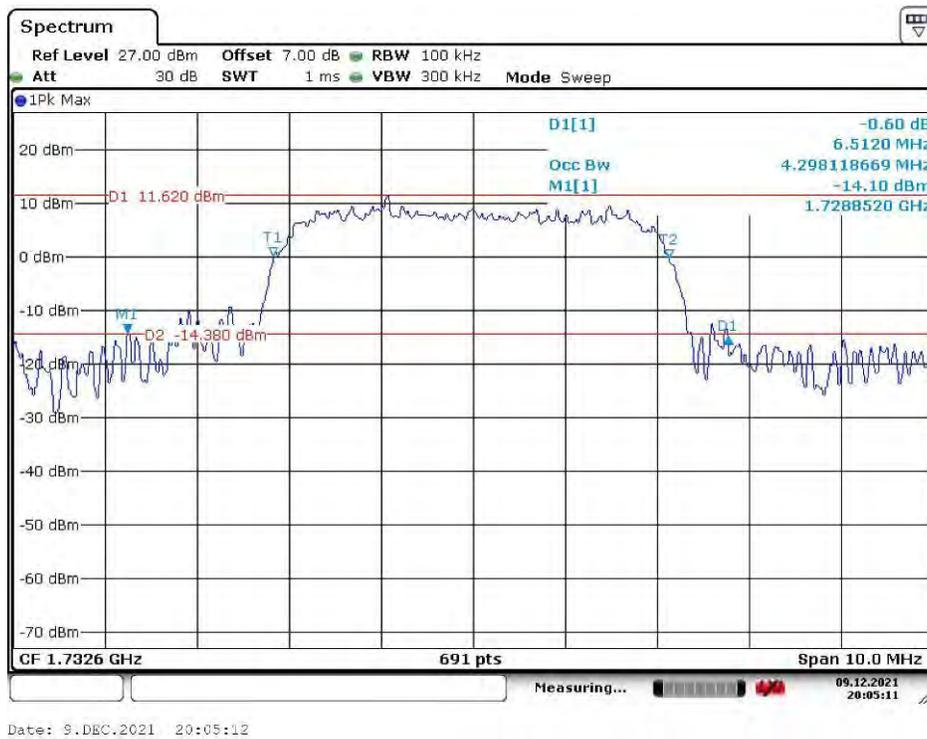
Date: 9.DEC.2021 19:16:26

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**

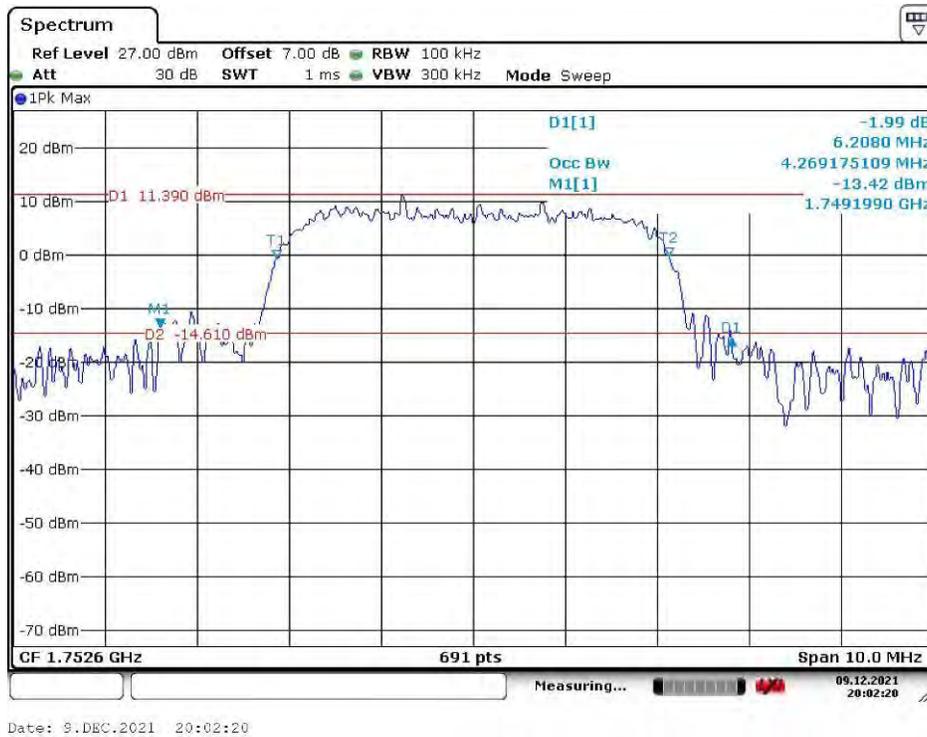


Date: 9.DEC.2021 20:06:43

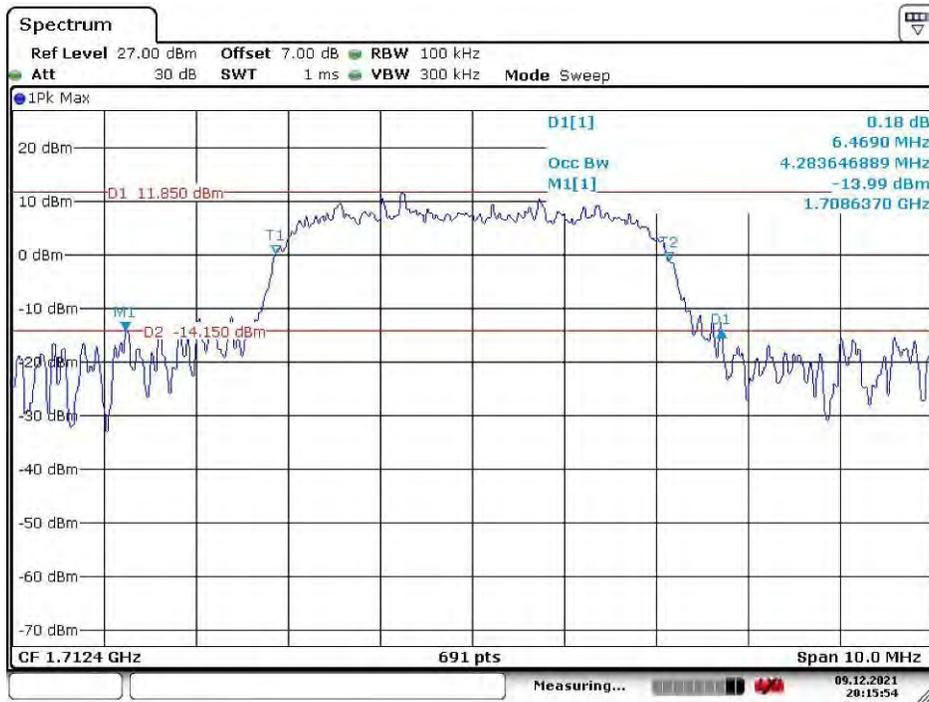
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel



26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel

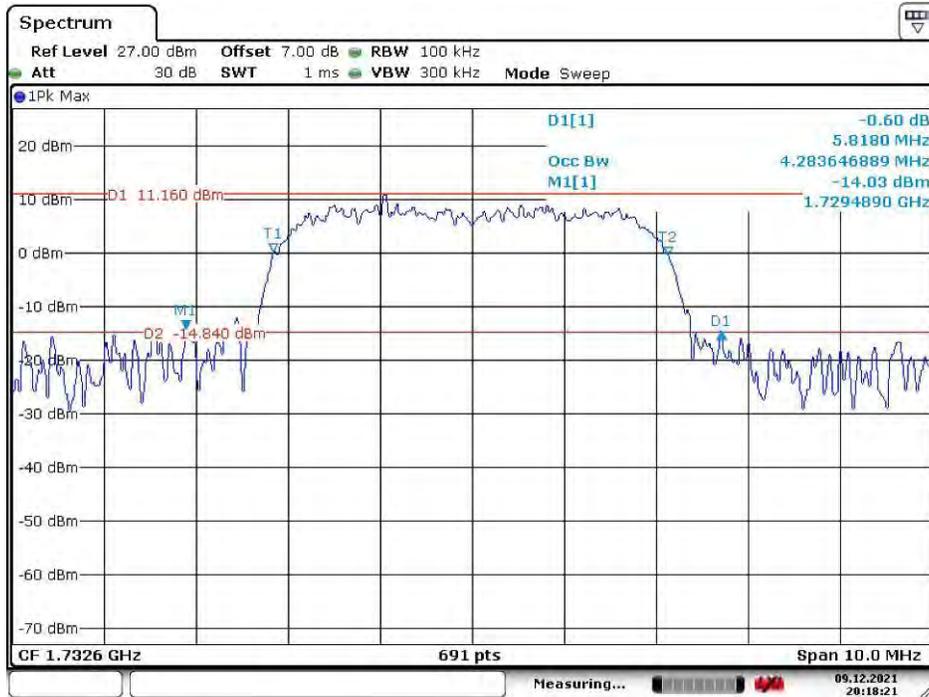


26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel



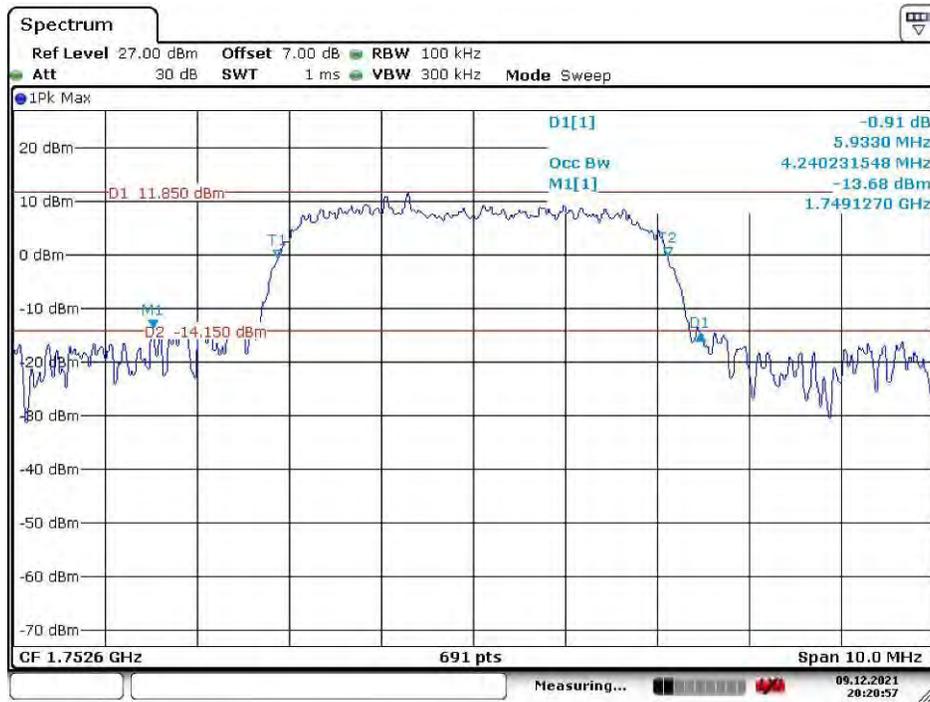
Date: 9.DEC.2021 20:15:54

26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel



Date: 9.DEC.2021 20:18:22

26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 9.DEC.2021 20:20:58

**LTE Band 2:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.096	1.308	1.102	1.290	1.096	1.320
	16QAM	1.090	1.284	1.096	1.284	1.102	1.320
3 MHz	QPSK	2.683	2.868	2.683	2.868	2.683	2.892
	16QAM	2.683	2.880	2.683	2.880	2.683	2.868
5 MHz	QPSK	4.511	5.440	4.515	4.935	4.491	4.960
	16QAM	4.511	5.140	4.511	4.960	4.511	4.980
10 MHz	QPSK	8.942	9.720	8.942	9.720	8.942	9.600
	16QAM	8.942	9.720	8.942	9.840	8.942	9.600
15 MHz	QPSK	13.473	14.700	13.473	15.780	13.473	14.760
	16QAM	13.473	14.700	13.533	14.940	13.473	14.700
20 MHz	QPSK	17.884	19.200	17.884	19.200	17.884	19.520
	16QAM	17.964	19.280	17.964	19.360	17.884	19.280

**LTE Band 4:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.096	1.290	1.096	1.314	1.102	1.290
	16QAM	1.096	1.320	1.090	1.284	1.090	1.290
3 MHz	QPSK	2.683	2.880	2.683	2.880	2.683	2.892
	16QAM	2.683	2.892	2.683	2.880	2.683	2.868
5 MHz	QPSK	4.511	4.960	4.511	4.960	4.491	4.960
	16QAM	4.471	4.920	4.511	4.960	4.511	4.980
10 MHz	QPSK	8.942	9.680	8.942	9.600	8.981	9.640
	16QAM	8.942	9.600	8.942	9.600	8.981	9.640
15 MHz	QPSK	13.533	14.820	13.413	14.580	13.473	14.700
	16QAM	13.533	14.640	13.473	14.640	13.473	14.640
20 MHz	QPSK	18.044	19.200	17.964	19.200	17.964	19.360
	16QAM	17.964	19.360	17.884	20.240	17.884	19.200

**LTE Band 5:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.096	1.302	1.096	1.308	1.102	1.296
	16QAM	1.096	1.326	1.090	1.284	1.096	1.290
3 MHz	QPSK	2.683	2.868	2.683	2.868	2.683	2.892
	16QAM	2.683	2.880	2.683	2.868	2.671	2.868
5 MHz	QPSK	4.511	4.940	4.511	5.000	4.471	4.920
	16QAM	4.491	4.920	4.511	4.960	4.511	4.960
10 MHz	QPSK	8.942	9.720	8.942	9.560	8.942	9.640
	16QAM	8.942	9.560	8.942	9.600	8.942	9.560

**LTE Band 7**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.511	4.960	4.511	5.060	4.491	4.960
	16QAM	4.491	4.940	4.531	5.600	4.511	4.980
10 MHz	QPSK	8.942	9.720	8.942	9.600	8.942	9.640
	16QAM	8.942	9.720	8.942	9.640	8.942	9.640
15 MHz	QPSK	13.533	14.760	13.473	14.640	13.473	14.640
	16QAM	13.473	14.880	13.533	14.700	13.473	14.700
20 MHz	QPSK	17.964	19.040	17.964	19.280	17.964	19.440
	16QAM	17.964	19.360	18.044	19.440	17.884	19.280

**LTE Band 38**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.491	4.900	4.491	4.940	4.511	4.920
	16QAM	4.491	4.960	4.491	4.940	4.491	4.940
10 MHz	QPSK	8.942	9.640	8.942	9.720	8.942	9.560
	16QAM	8.942	9.480	8.942	9.520	8.942	9.800
15 MHz	QPSK	13.473	14.640	13.473	14.640	13.413	14.640
	16QAM	13.473	14.640	13.533	15.000	13.533	14.700
20 MHz	QPSK	17.964	19.120	17.884	19.200	17.884	19.360
	16QAM	17.884	19.280	17.884	19.280	17.884	19.120

**LTE Band 41**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.491	5.100	4.491	4.940	4.511	4.960
	16QAM	4.491	4.960	4.491	4.940	4.511	4.940
10 MHz	QPSK	8.942	9.680	8.942	9.680	8.942	9.560
	16QAM	8.942	9.520	8.942	9.520	8.942	9.680
15 MHz	QPSK	13.473	14.580	13.413	14.640	13.413	14.640
	16QAM	13.533	14.700	13.533	14.700	13.533	14.640
20 MHz	QPSK	17.964	19.040	17.884	19.200	17.884	19.200
	16QAM	17.964	19.360	17.884	19.200	17.884	19.200

The test plots of LTE band please refer to the Appendix A.

## FCC §2.1051, §22.917(a) & §24.238(a)& §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

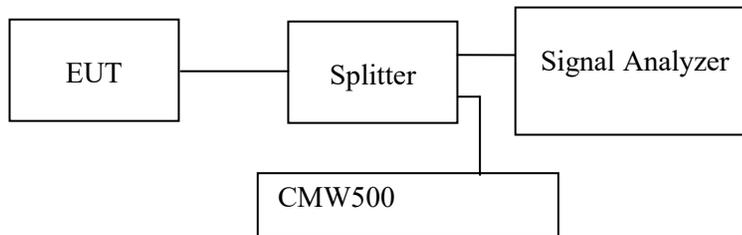
### Applicable Standard

FCC §2.1051, §22.917(a) & §24.238(a)&§27.53.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

### Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.



### Test Data

#### Environmental Conditions

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Ting Lv from 2021-11-20 to 2021-12-10.*

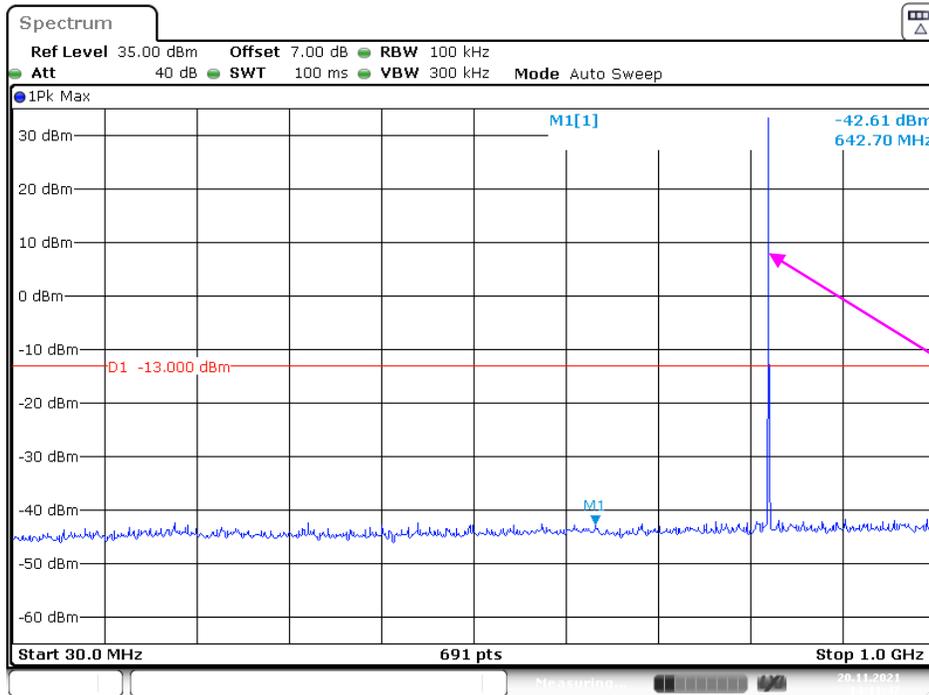
*EUT operation mode: Transmitting*

**Test result: Pass**

*Please refer to the following plots.*

**Cellular Band (Part 22H)**  
**Low Channel:**

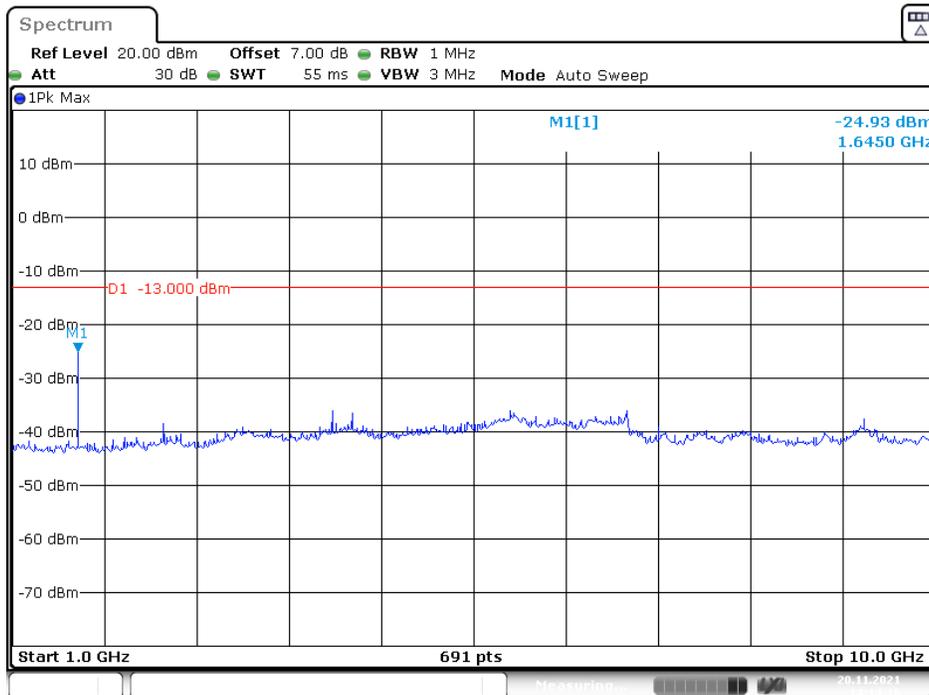
**30 MHz – 1 GHz (GSM Mode)**



Date: 20.NOV.2021 14:11:46

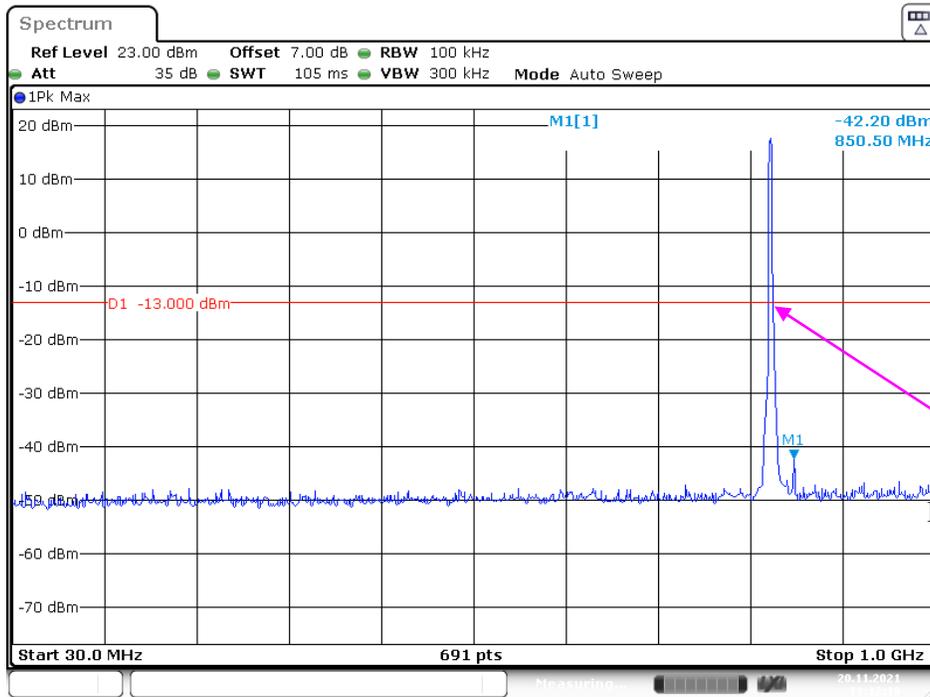
Fundamental test

**1 GHz – 10 GHz (GSM Mode)**

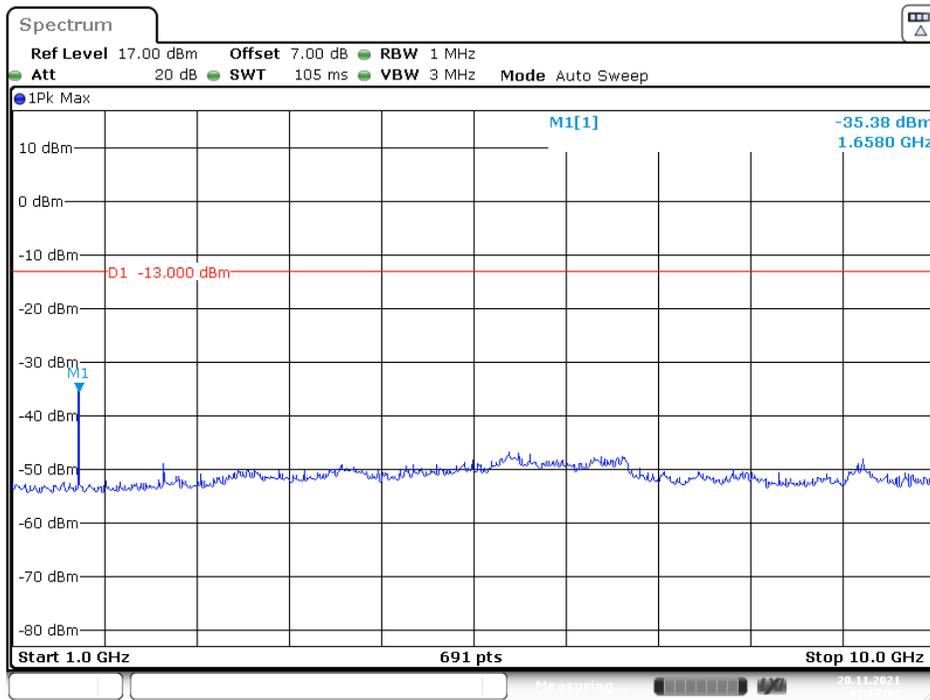


Date: 20.NOV.2021 14:14:16

### 30 MHz – 1 GHz (WCDMA Mode)

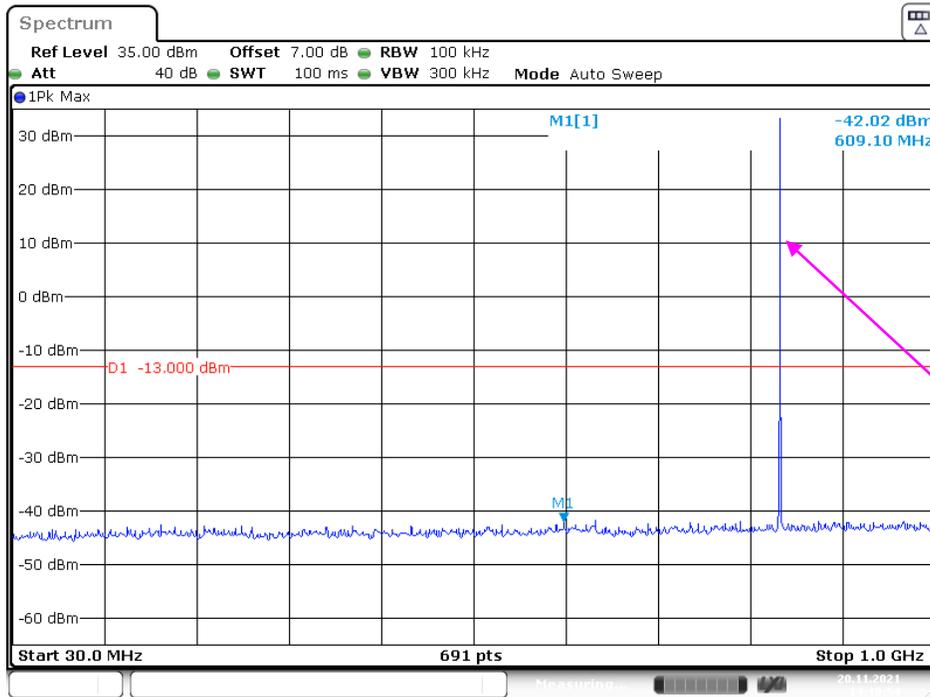


### 1 GHz – 10 GHz (WCDMA Mode)



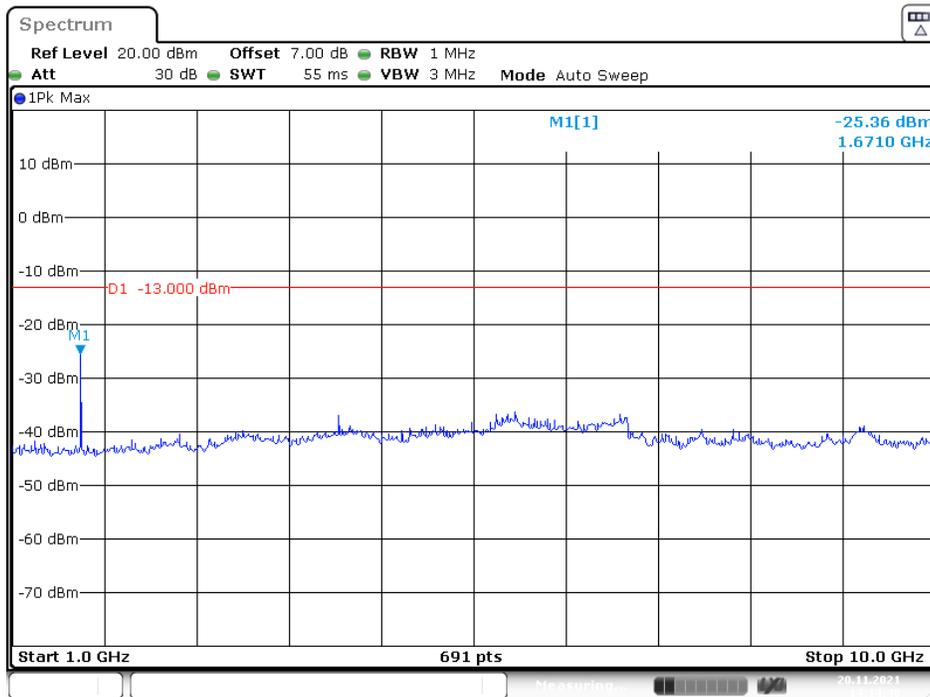
Middle Channel:

30 MHz – 1 GHz (GSM Mode)

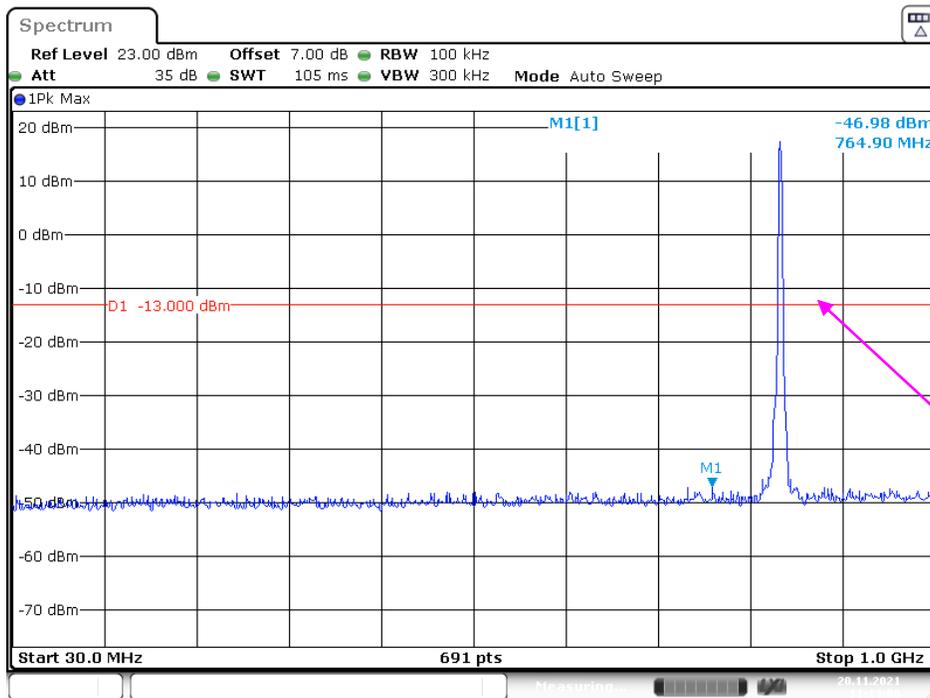


Fundamental test

1 GHz – 10 GHz (GSM Mode)

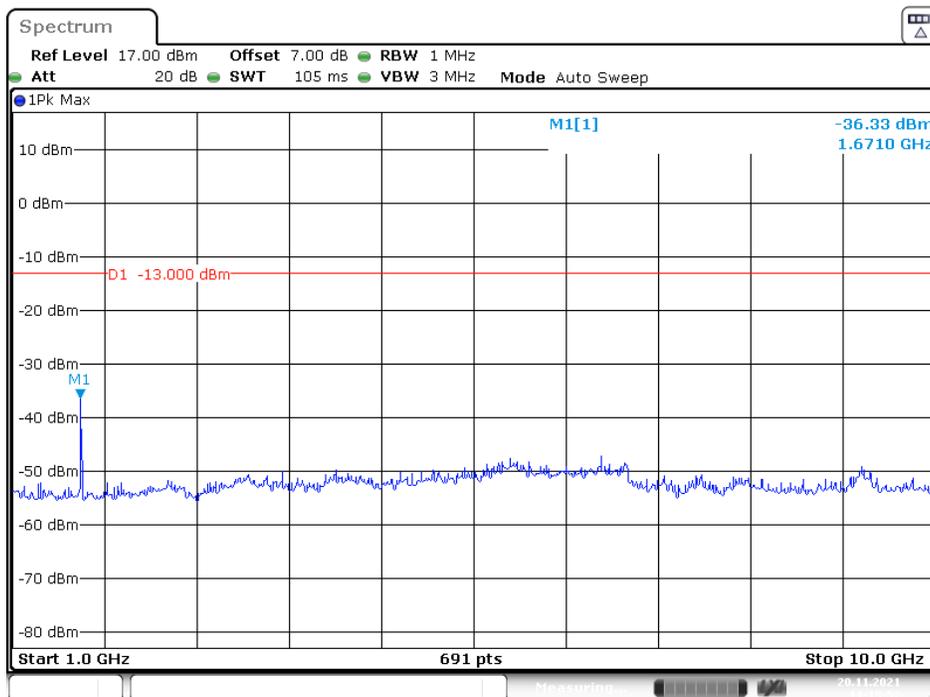


### 30 MHz – 1 GHz (WCDMA Mode)



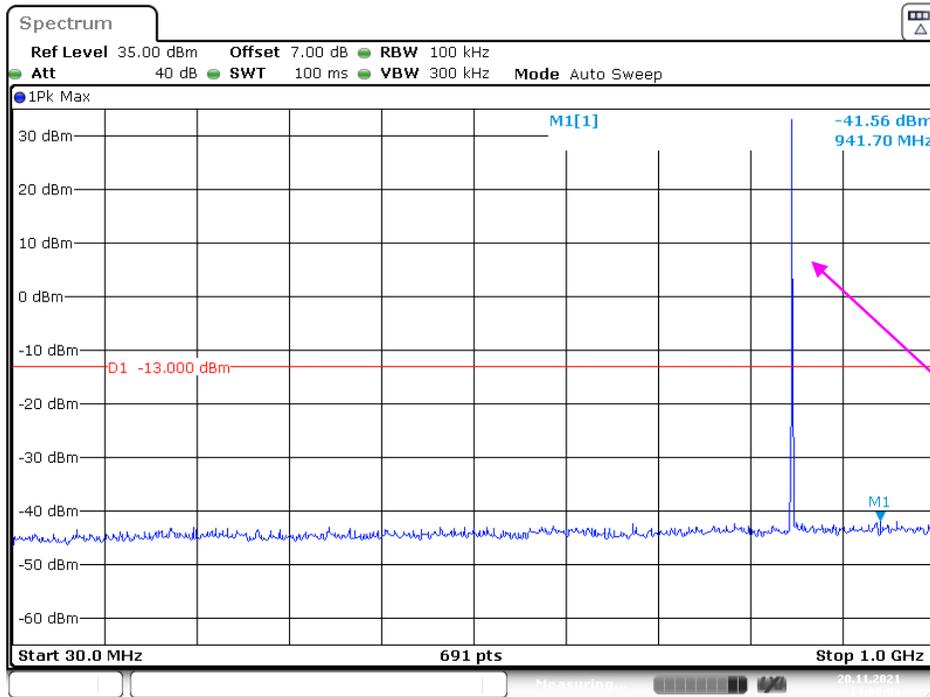
Fundamental test

### 1 GHz – 10 GHz (WCDMA Mode)



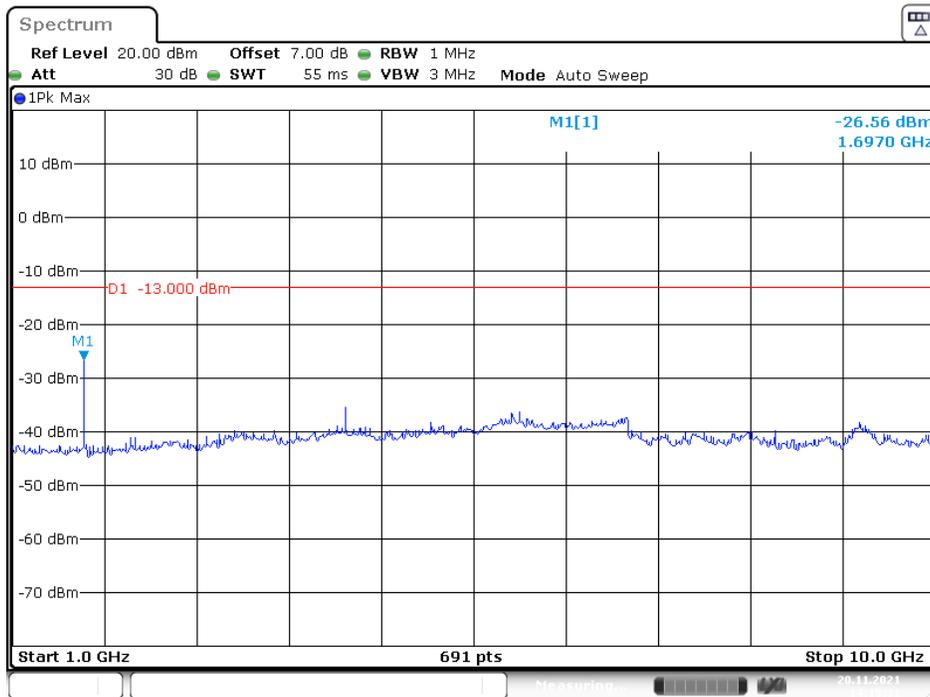
**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**

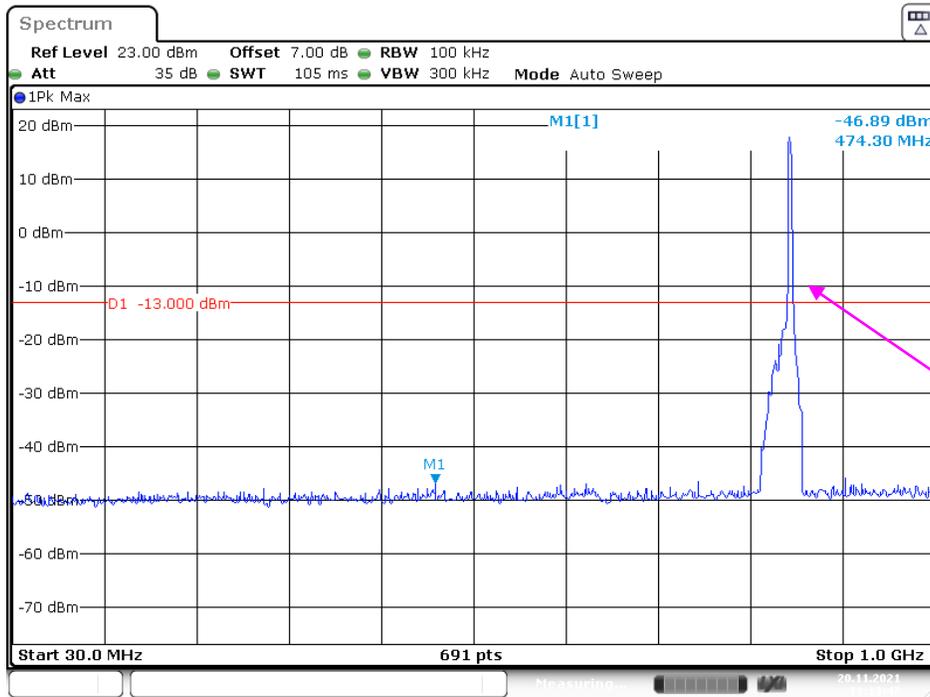


Fundamental test

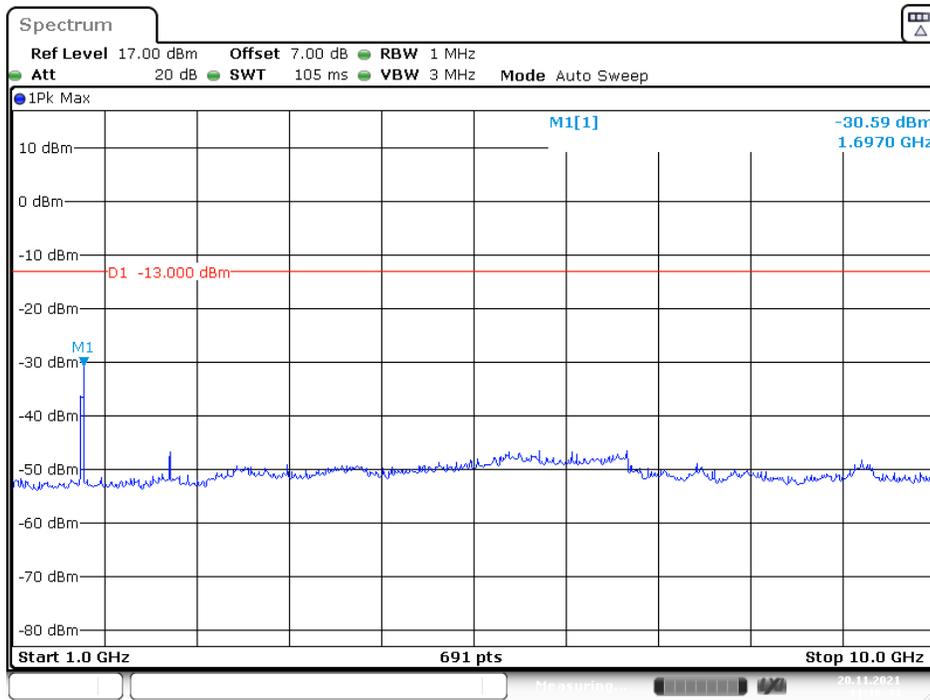
**1 GHz – 10 GHz (GSM Mode)**



### 30 MHz – 1 GHz (WCDMA Mode)

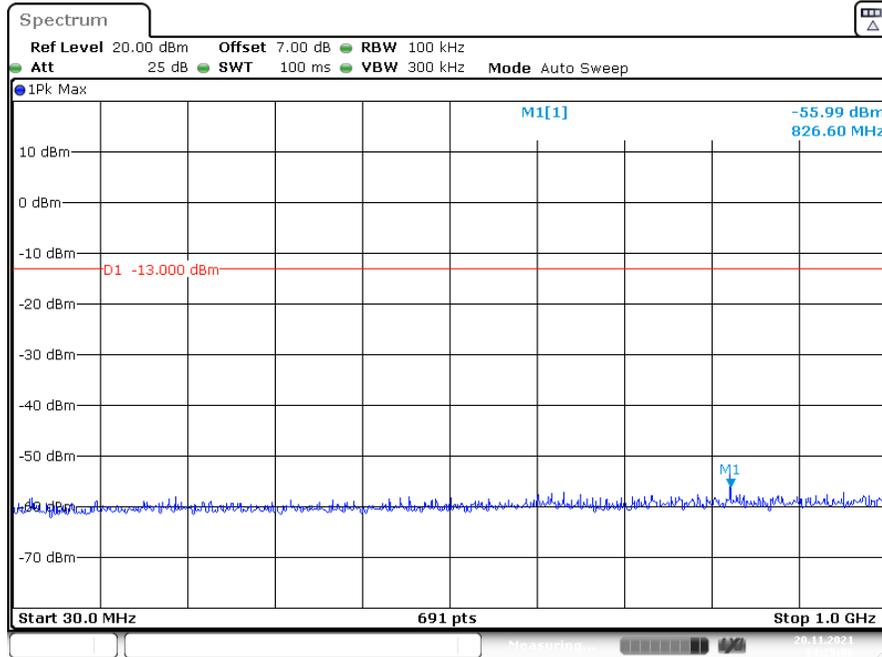


### 1 GHz – 10 GHz (WCDMA Mode)

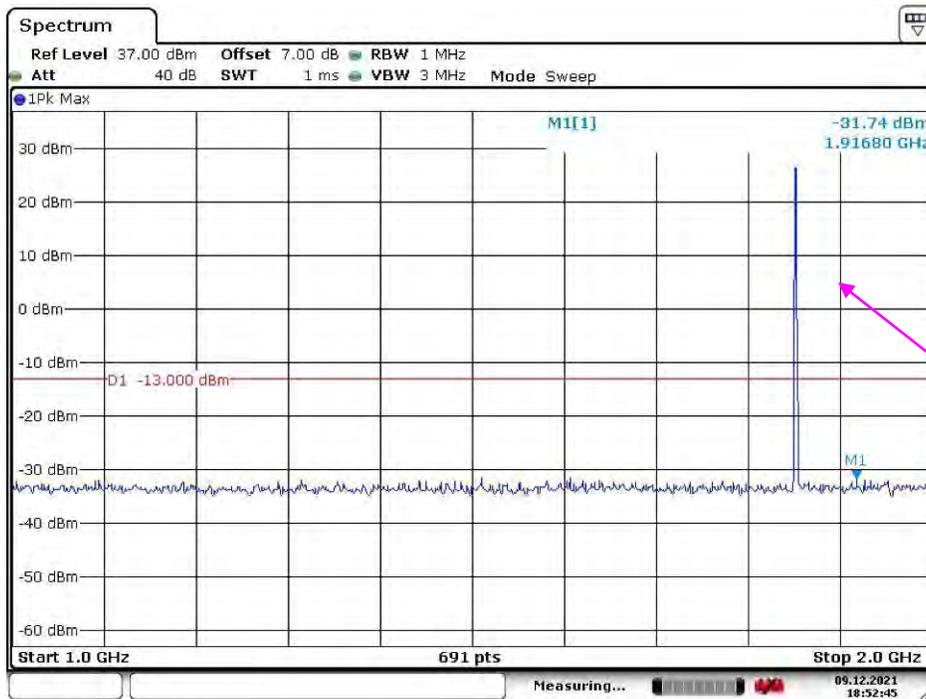


**PCS Band (Part 24E)**  
**Low Channel:**

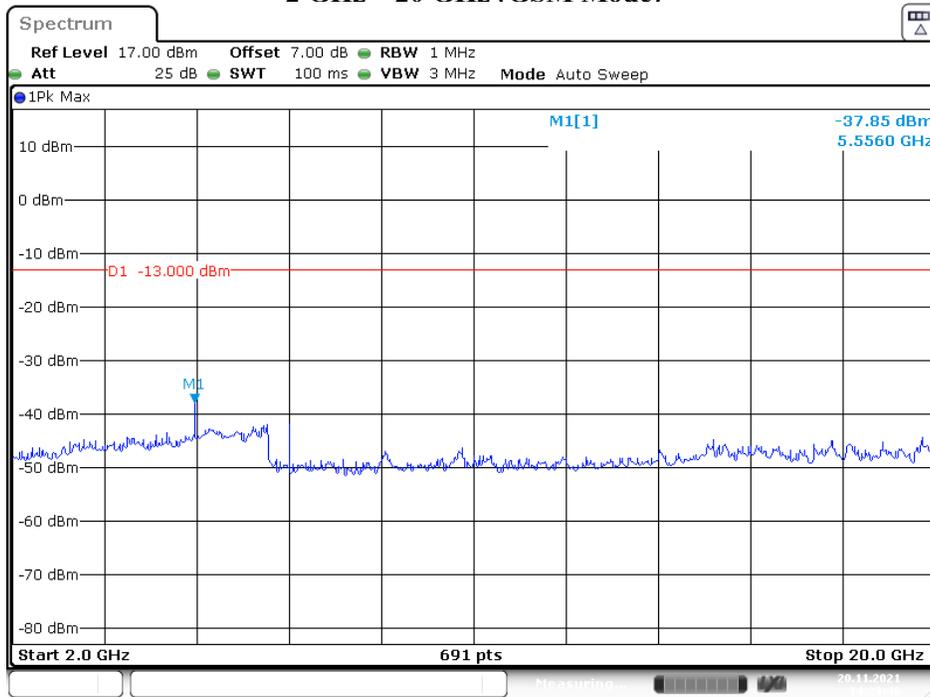
**30 MHz – 1 GHz (GSM Mode)**



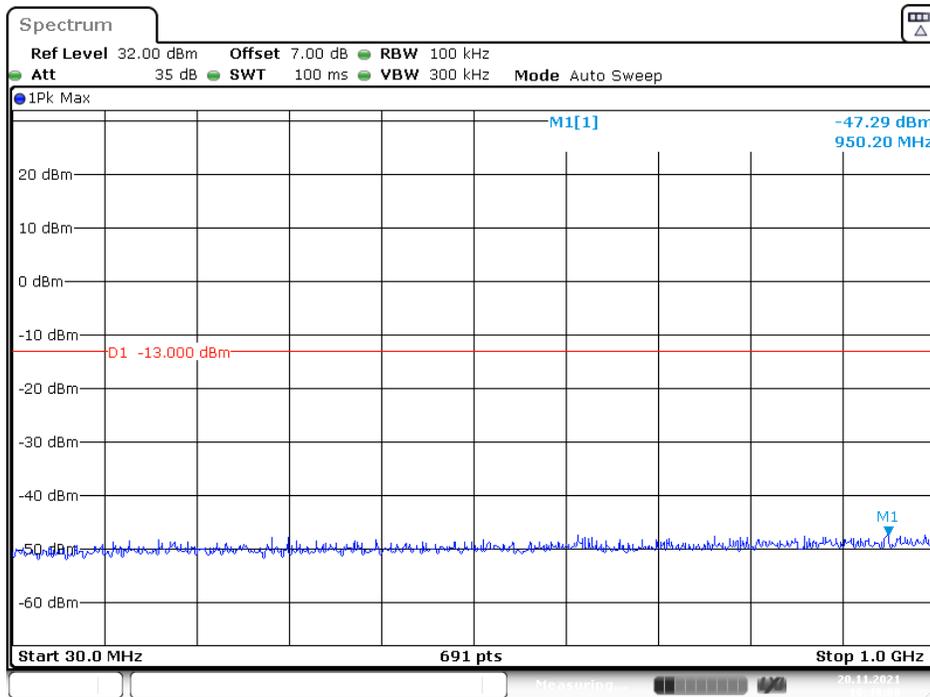
**1 GHz – 2 GHz (GSM Mode)**



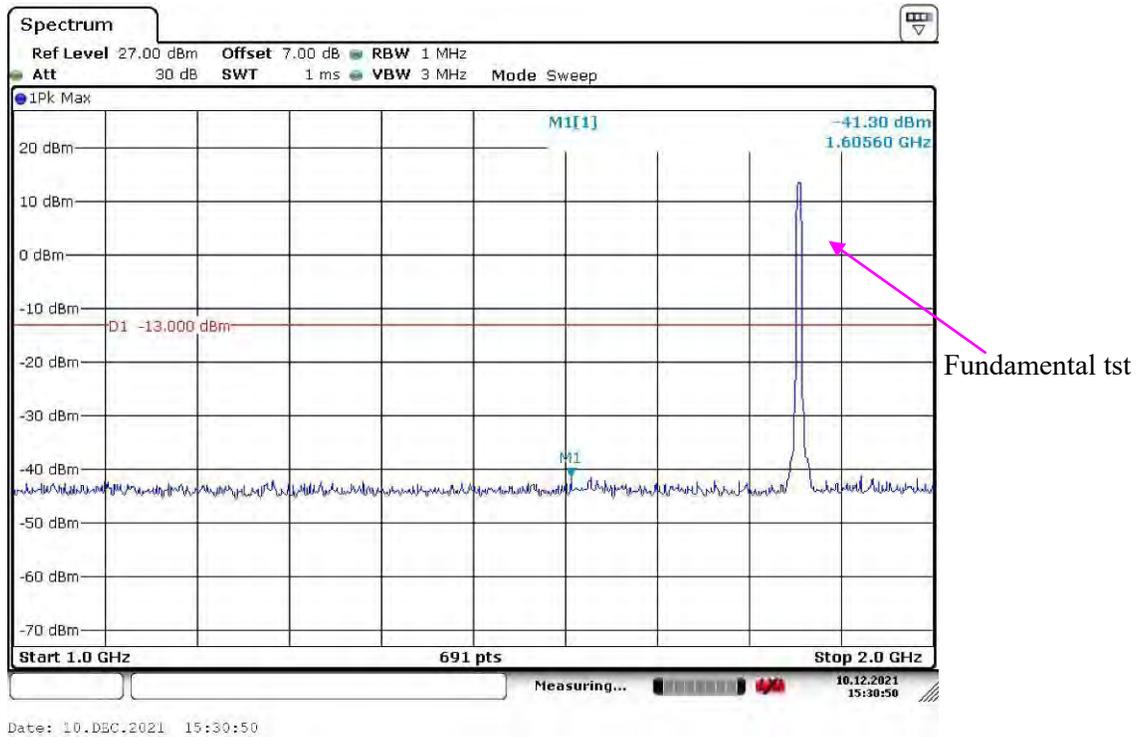
### 2 GHz – 20 GHz (GSM Mode)



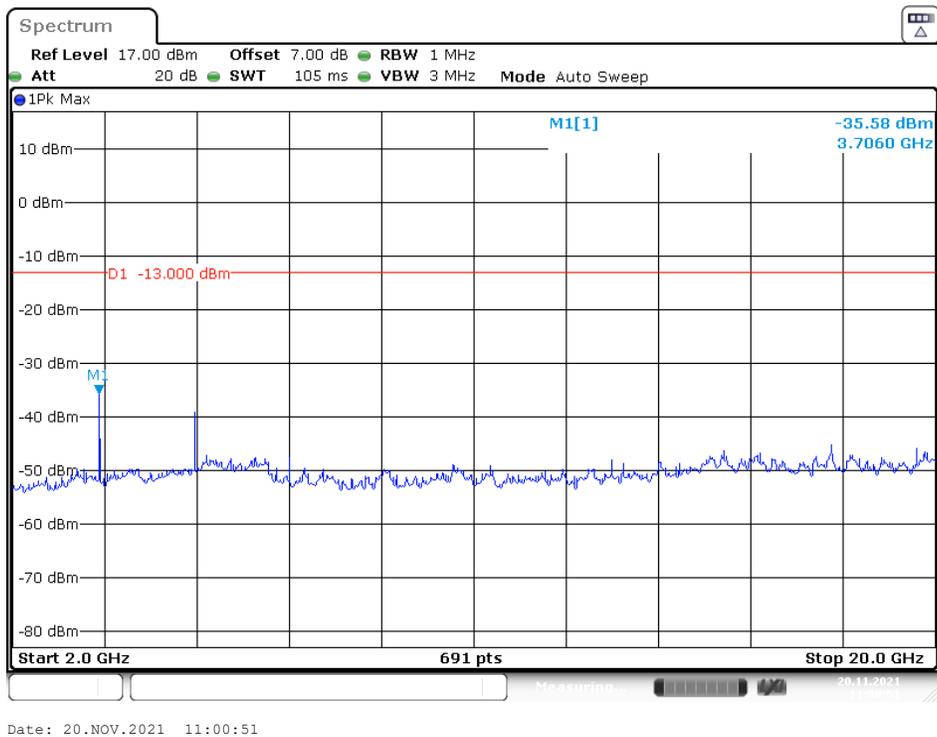
### 30 MHz – 1 GHz (WCDMA Mode)



### 1 GHz – 2 GHz (WCDMA Mode)

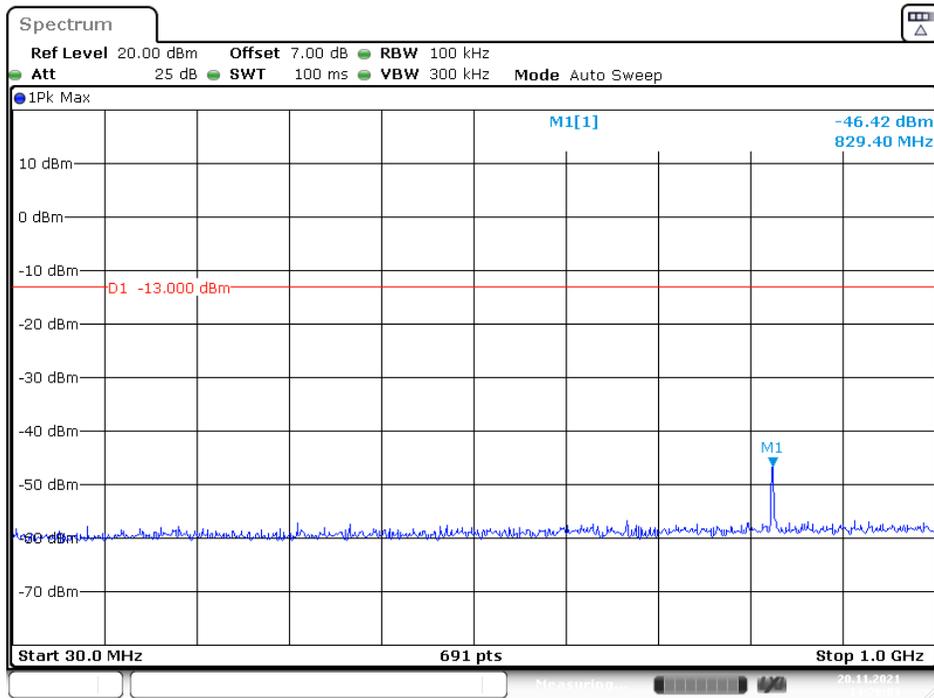


### 2 GHz – 20 GHz (WCDMA Mode)



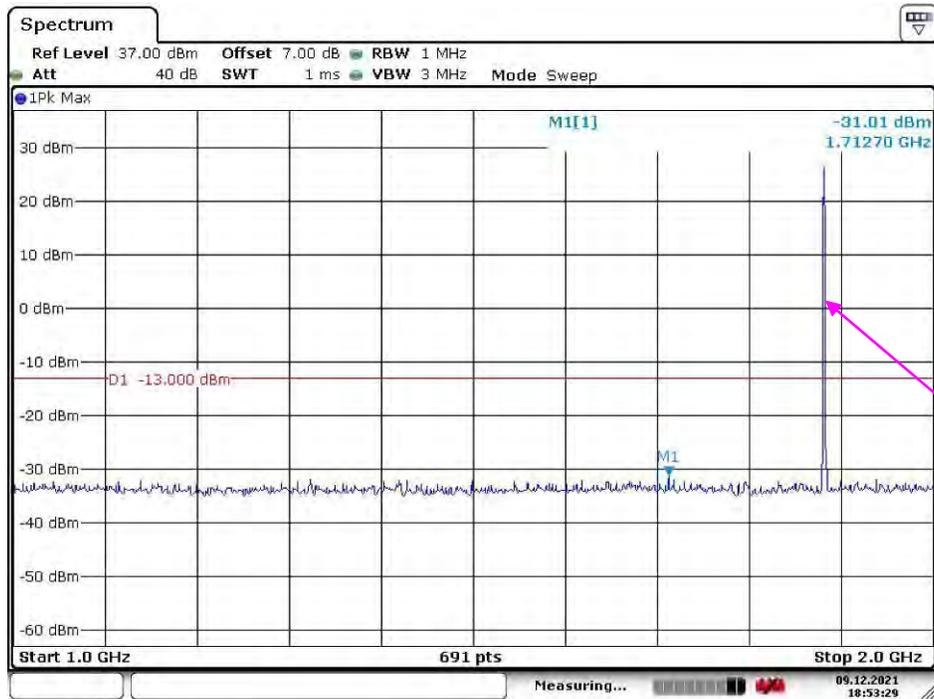
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



Date: 20.NOV.2021 14:26:03

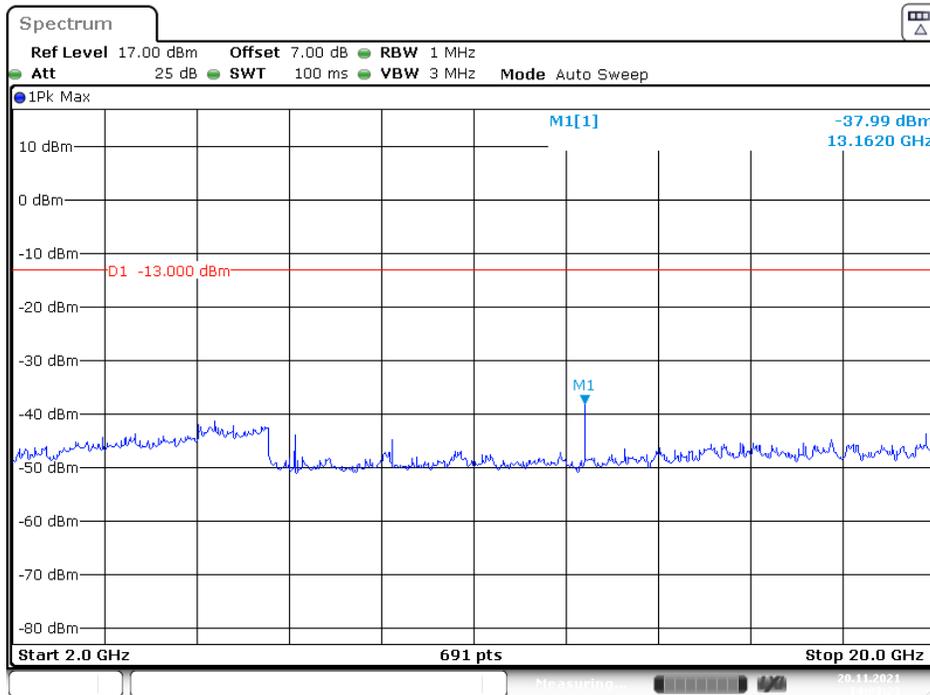
1 GHz – 2 GHz (GSM Mode)



Fundamental test

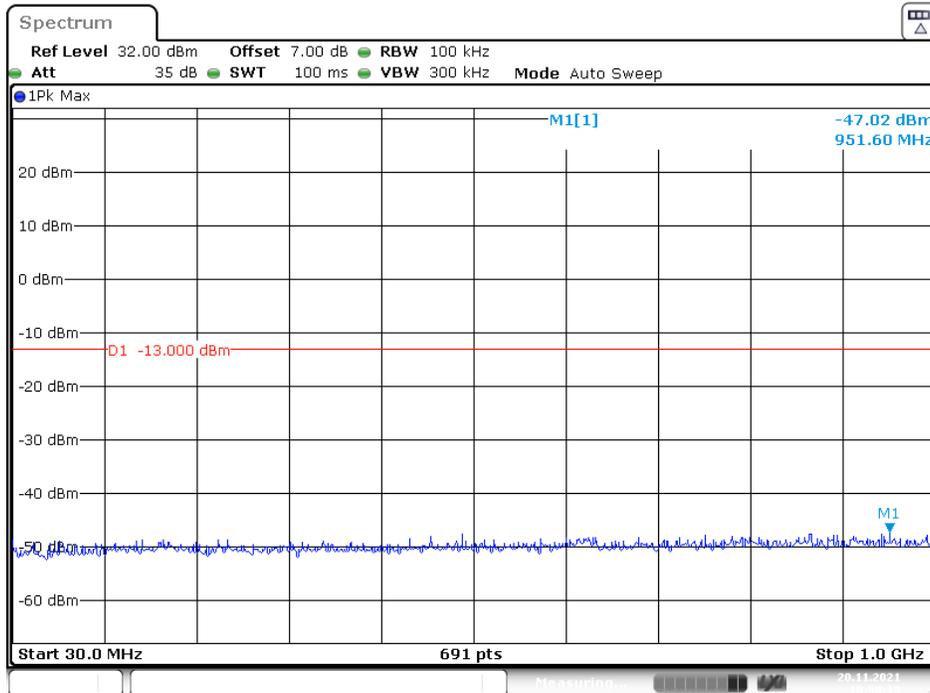
Date: 9.DEC.2021 18:53:29

### 2 GHz – 20 GHz (GSM Mode)



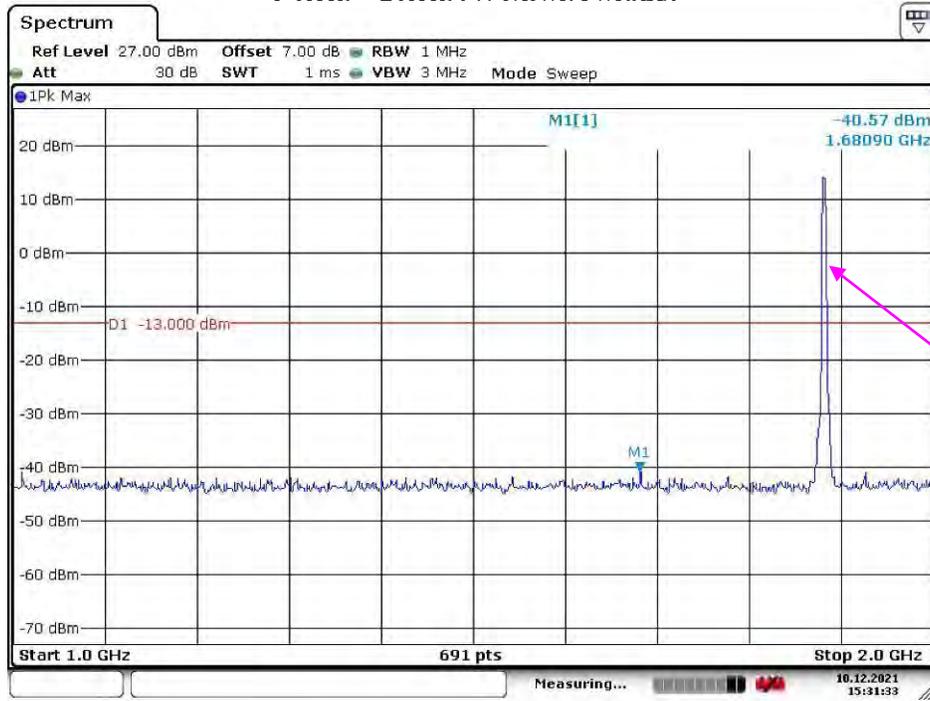
Date: 20.NOV.2021 14:23:23

### 30 MHz – 1 GHz (WCDMA Mode)



Date: 20.NOV.2021 10:50:19

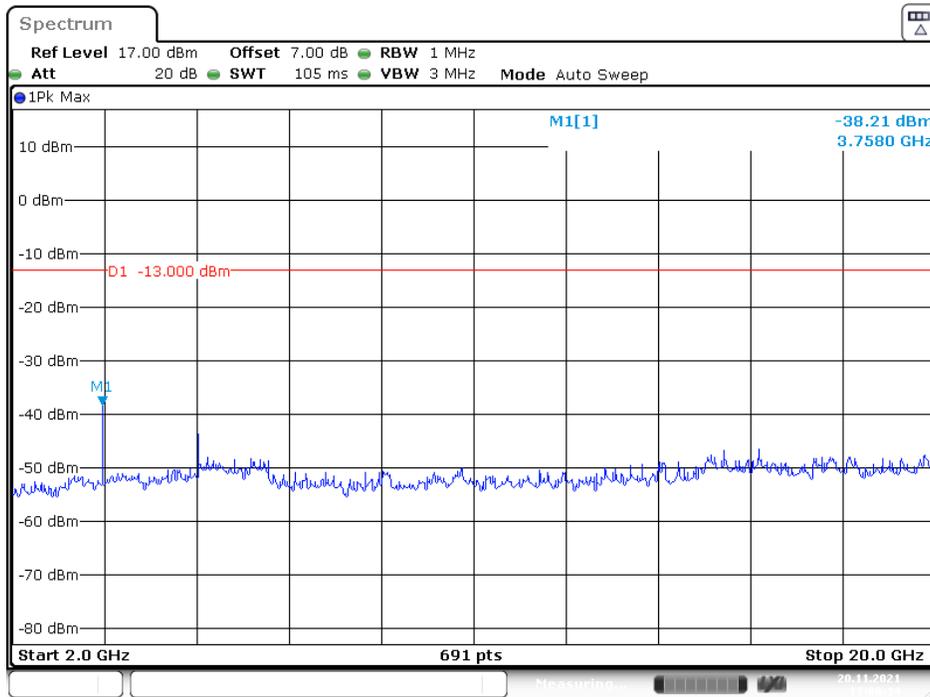
### 1 GHz – 2GHz (WCDMA Mode)



Date: 10.DEC.2021 15:31:33

Fundamental test

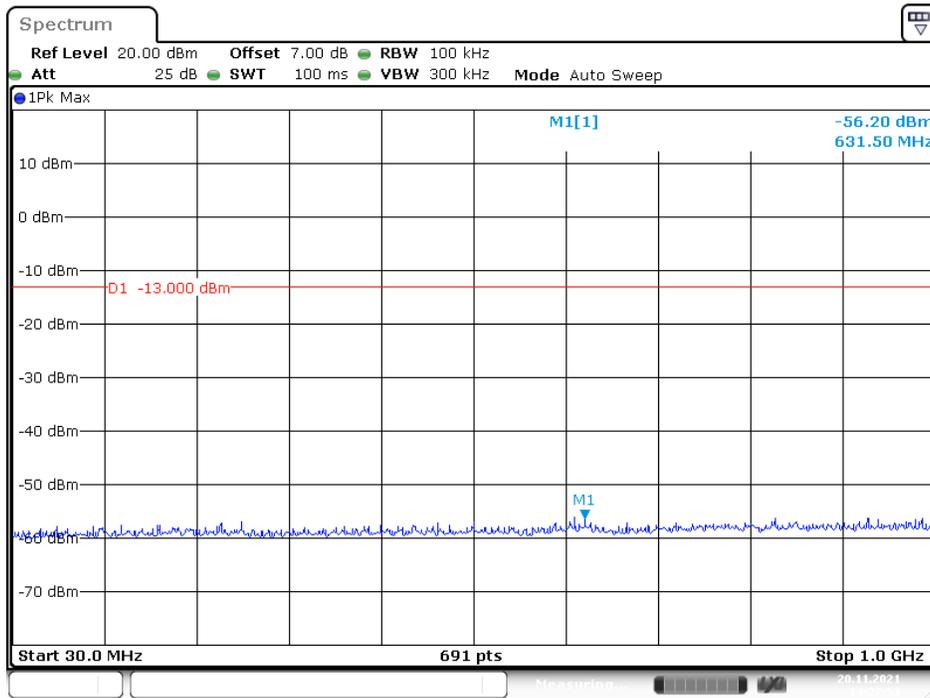
### 2 GHz – 20 GHz (WCDMA Mode)



Date: 20.NOV.2021 11:00:14

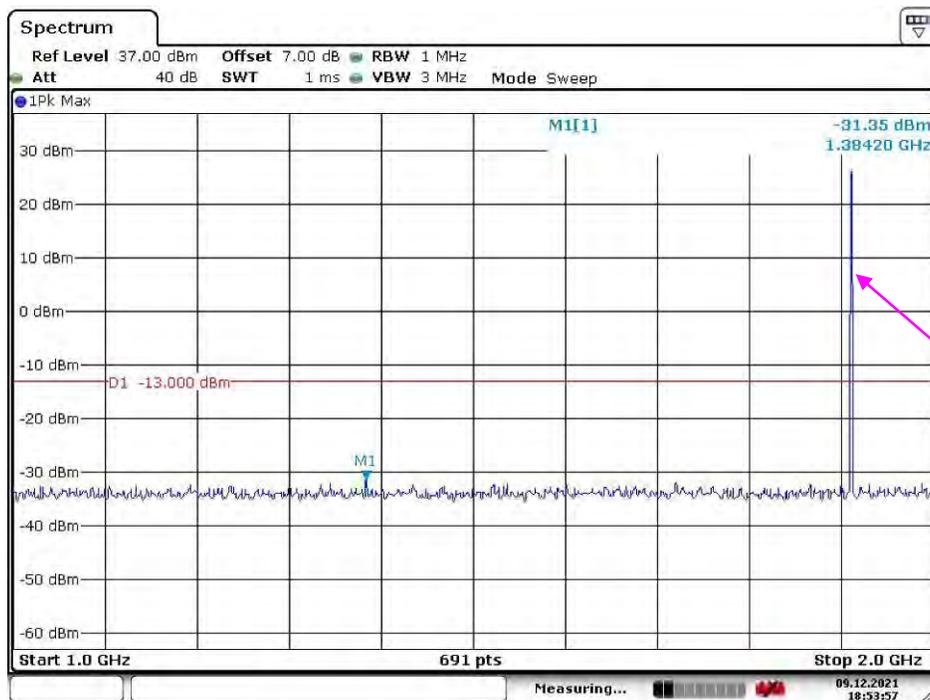
**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**



Date: 20.NOV.2021 14:27:53

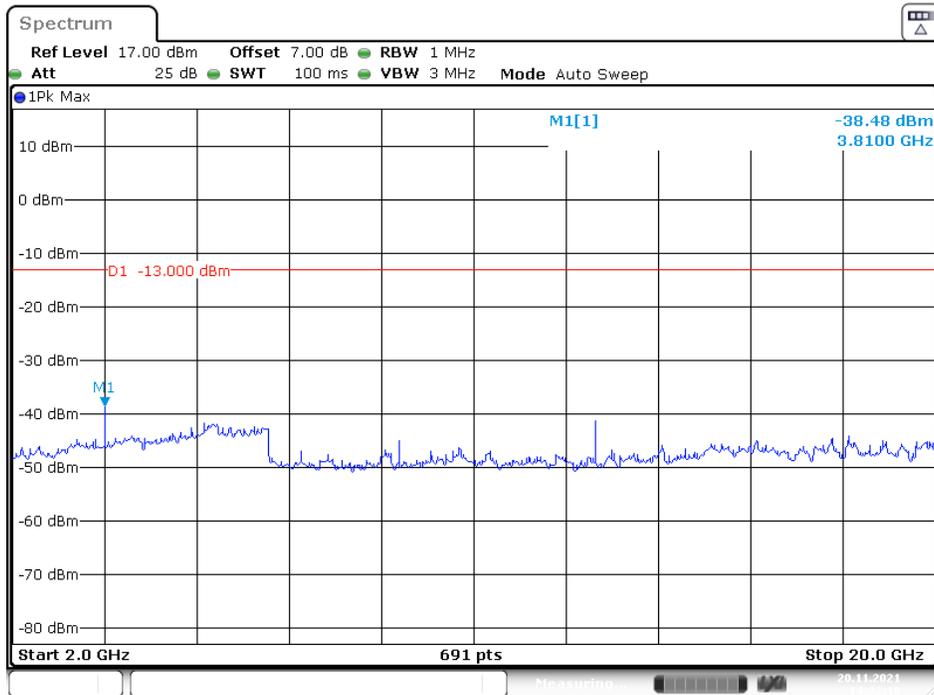
**1 GHz – 2 GHz (GSM Mode)**



Fundamental test

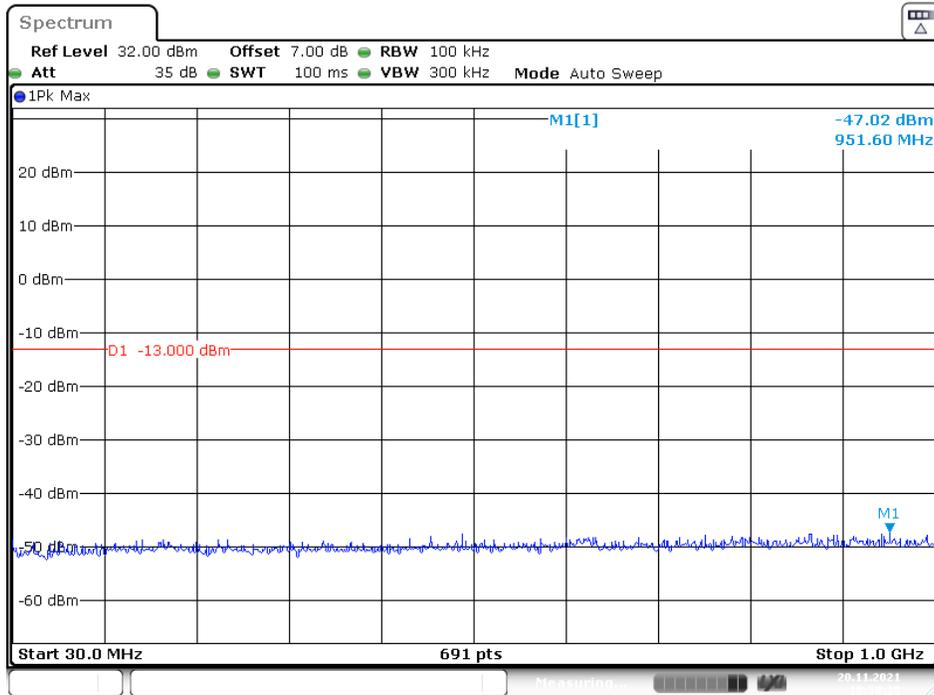
Date: 9.DEC.2021 18:53:57

### 2 GHz – 20 GHz (GSM Mode)



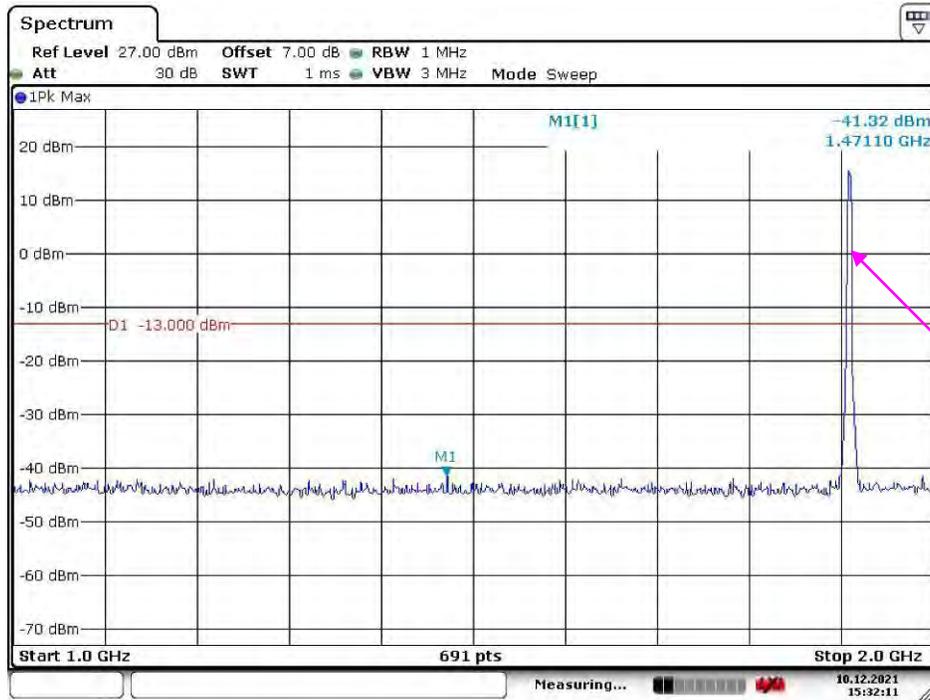
Date: 20.NOV.2021 14:22:18

### 30 MHz – 1 GHz (WCDMA Mode)



Date: 20.NOV.2021 10:50:19

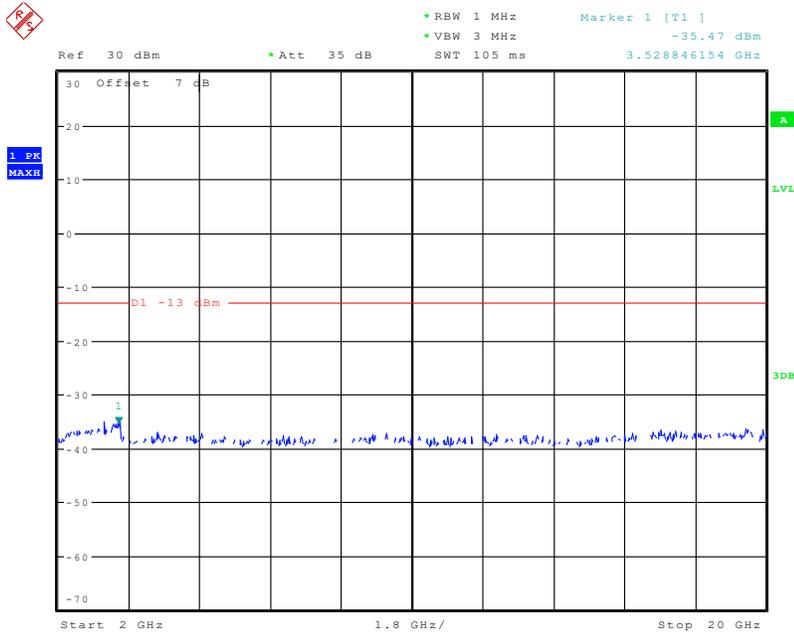
### 1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 10.DEC.2021 15:32:11

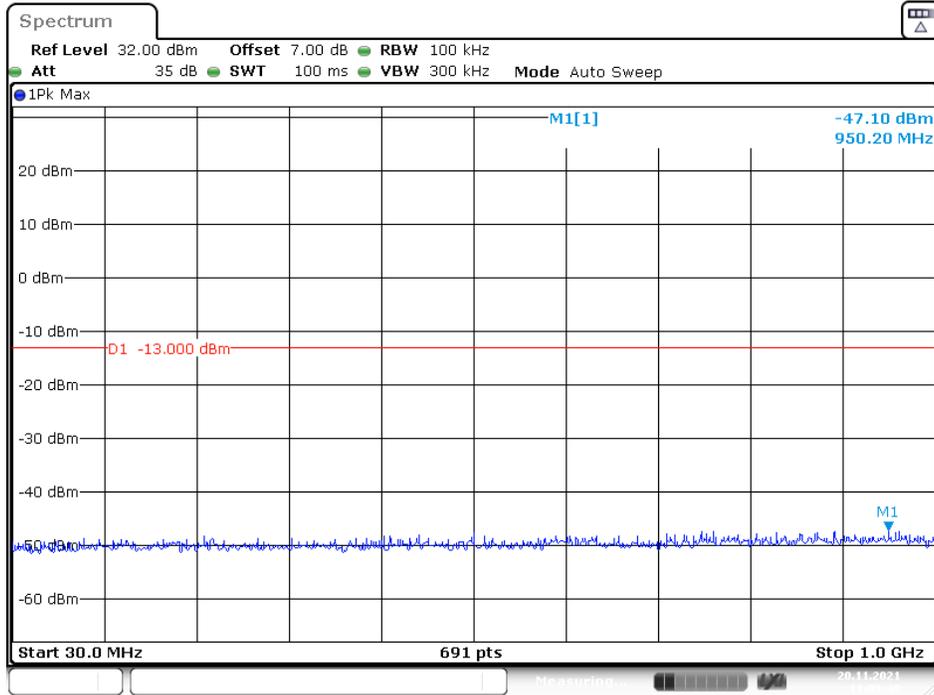
### 2 GHz – 20 GHz (WCDMA Mode)



Date: 20.NOV.2021 10:57:45

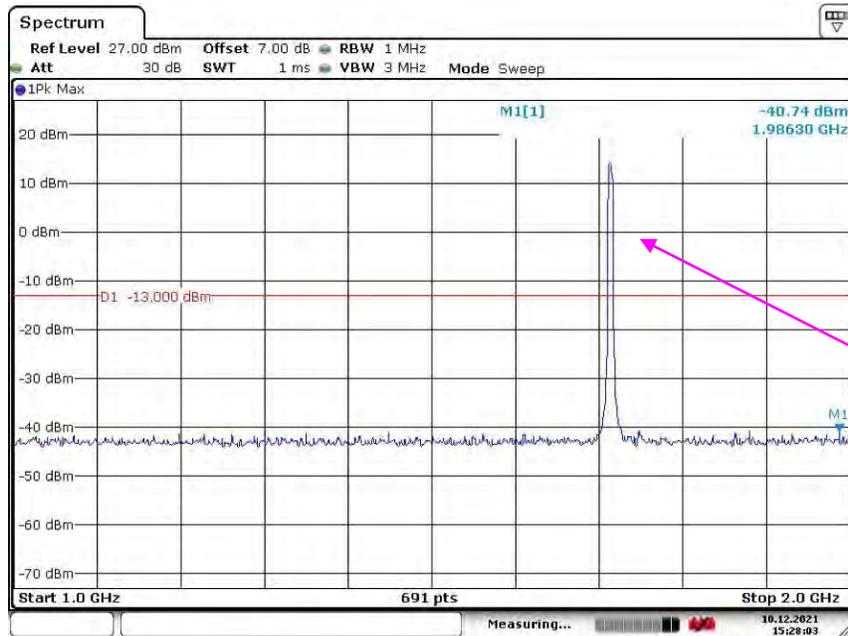
**AWS Band (Part 27)**  
**Low Channel:**

**30 MHz – 1 GHz (WCDMA Mode)**



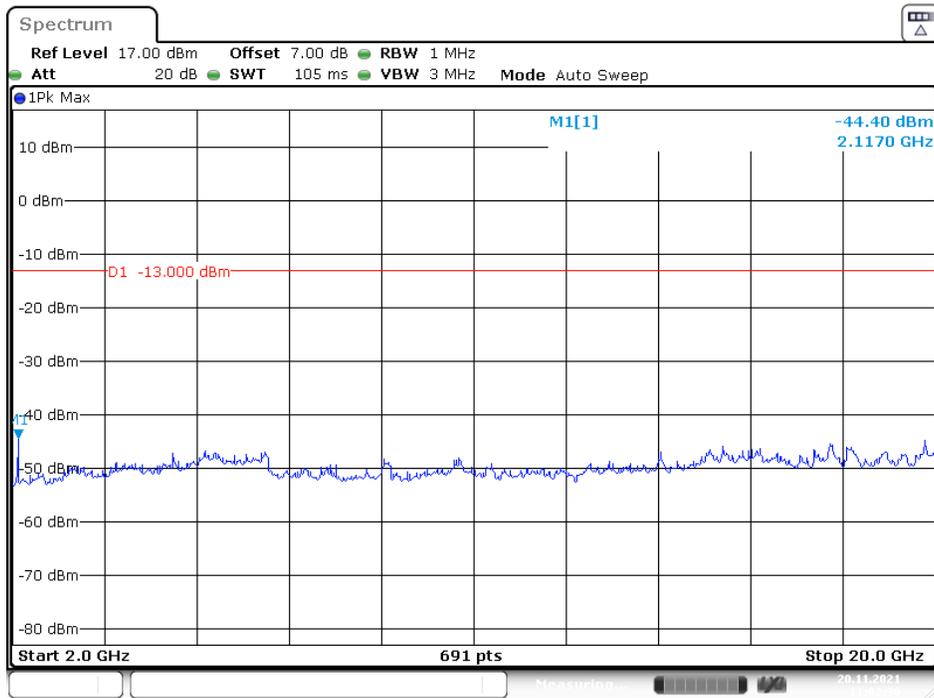
Date: 20.NOV.2021 11:08:40

**1 GHz – 20 GHz (WCDMA Mode)**



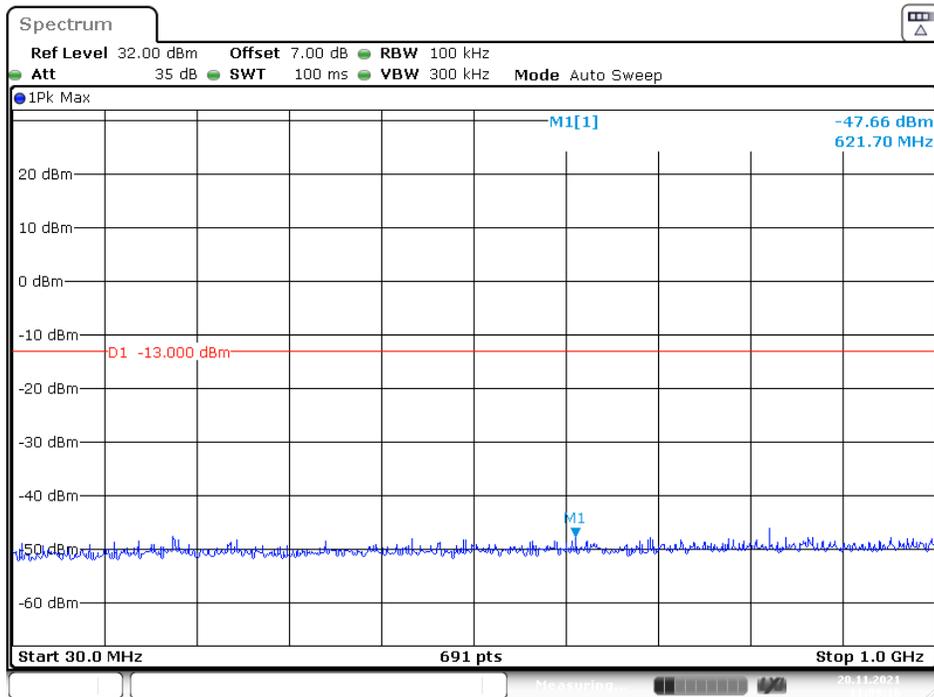
Date: 10.DEC.2021 15:28:03

### 2 GHz – 20 GHz (WCDMA Mode)

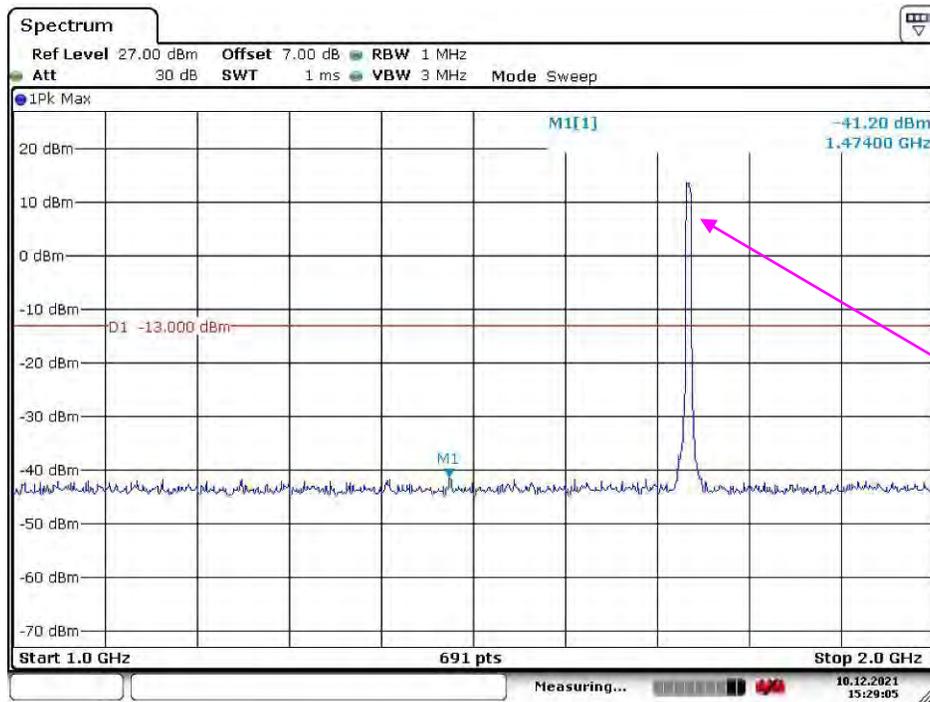


### Middle Channel

### 30 MHz – 1 GHz (WCDMA Mode)



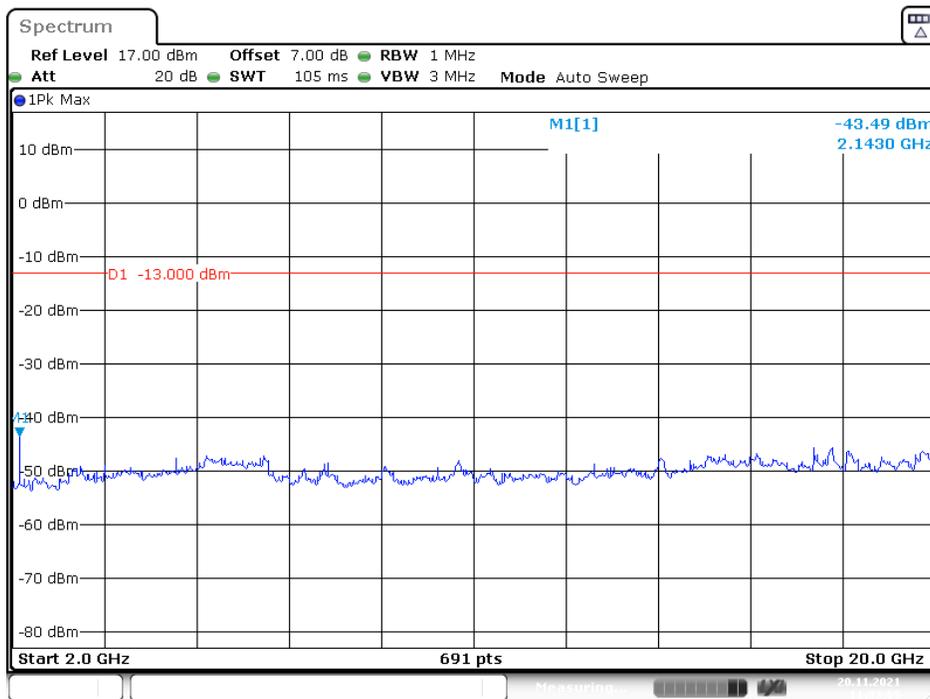
### 1 GHz – 20 GHz (WCDMA Mode)



Fundamental test

Date: 10.DEC.2021 15:29:06

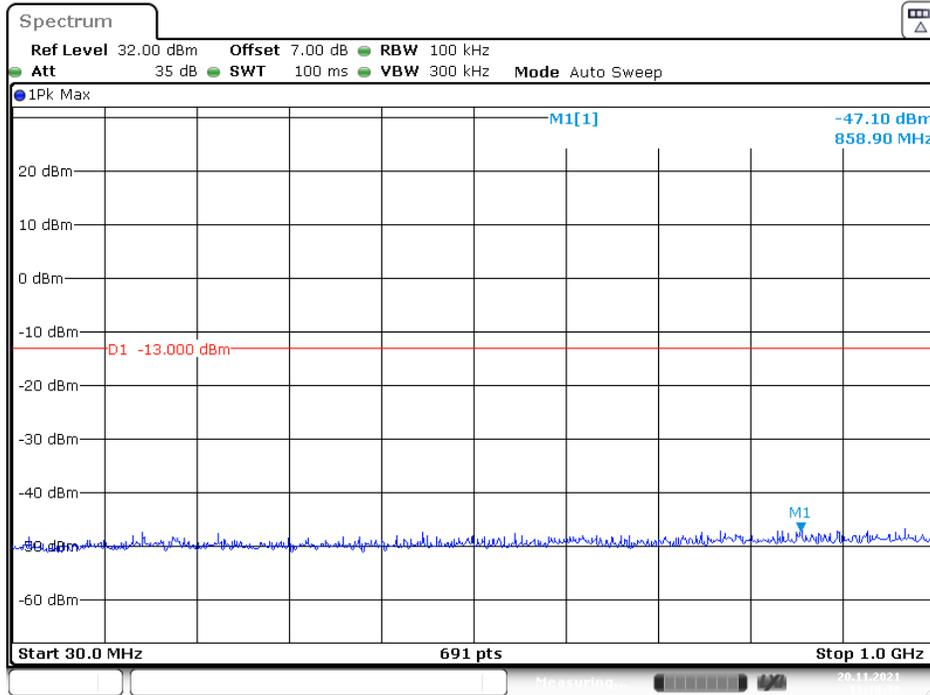
### 2 GHz – 20 GHz (WCDMA Mode)



Date: 20.NOV.2021 11:03:05

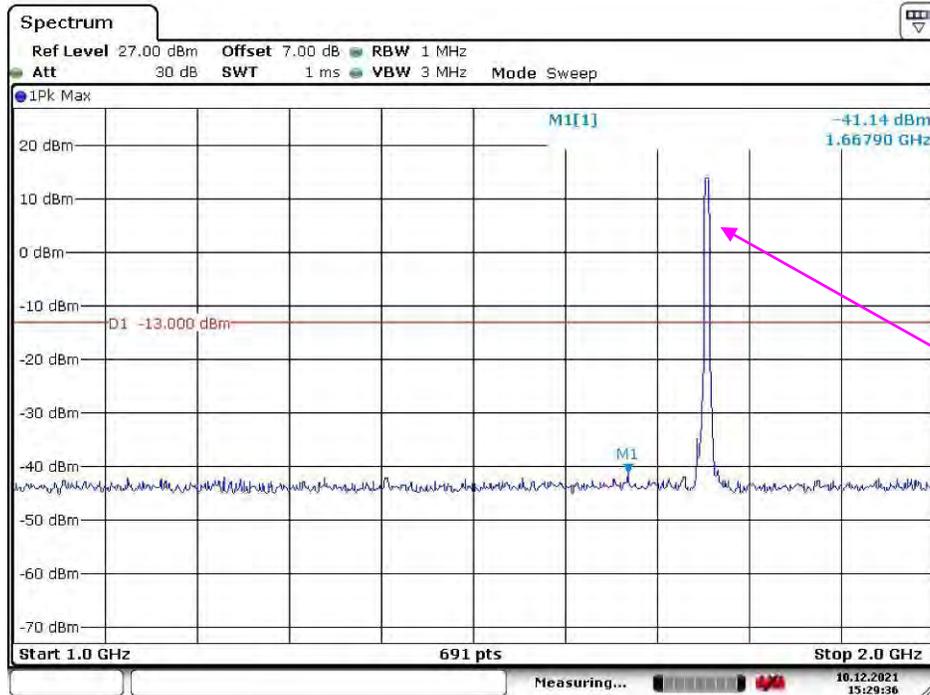
High Channel:

30 MHz – 1 GHz (WCDMA Mode)



Date: 20.NOV.2021 11:10:38

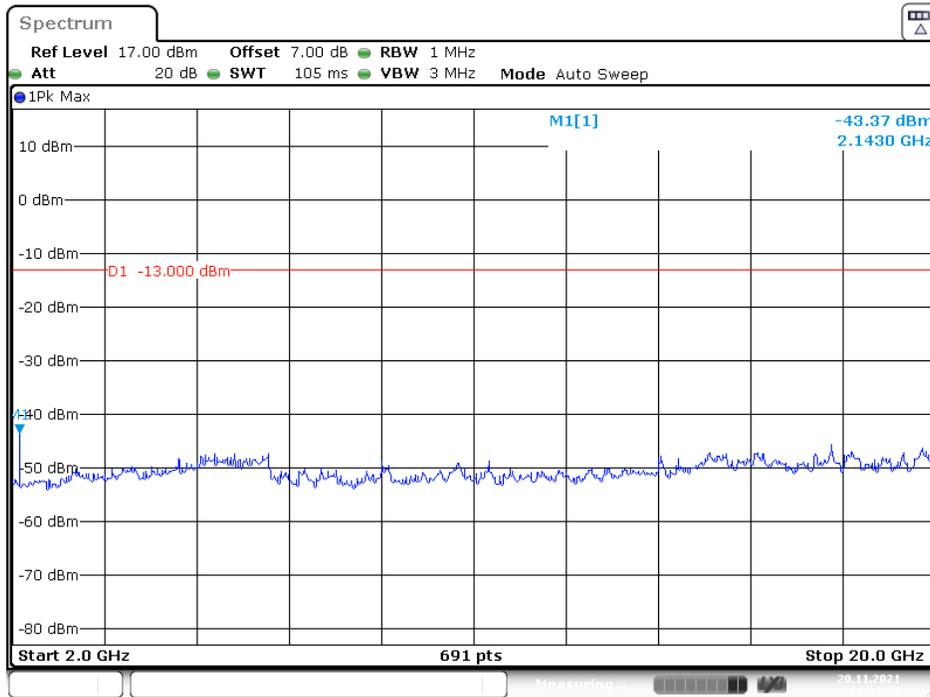
1 GHz – 20 GHz (WCDMA Mode)



Fundamental test

Date: 10.DEC.2021 15:29:36

### 2 GHz – 20 GHz (WCDMA Mode)



Date: 20.NOV.2021 11:03:26

The test plots of LTE band please refer to the Appendix B.

## **FCC § 2.1053; § 22.917 (a);§ 24.238 (a); §27.53- SPURIOUS RADIATED EMISSIONS**

### **Applicable Standard**

FCC § 2.1053, §22.917(a)& § 24.238(a) &§ 27.53.

### **Test Procedure**

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

### **Test Data**

#### **Environmental Conditions**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0kPa

*The testing was performed by Chao Mo on 2021-11-30.*

*Test mode: Transmitting (Pre-scan in the X,Y and Z axes of orientation, the worst case Z-axis of orientation was recorded)*

*The worst case is as below:*

**30MHz-10GHz:****Cellular Band (Part 22H)**

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
GSM850								
Low Channel								
153.74	-71.02	149	1.6	H	-6.4	-77.42	-13	-64.42
153.74	-76.67	264	1.6	V	-0.5	-77.17	-13	-64.17
1648.4	-49.70	220	2.0	H	3.5	-46.20	-13	-33.20
1648.4	-49.70	178	1.8	V	3.1	-46.60	-13	-33.60
2472.6	-48.80	276	1.4	H	6.6	-42.20	-13	-29.20
2472.6	-52.50	326	1.1	V	5.8	-46.70	-13	-33.70
3296.8	-49.10	151	2.0	H	6.4	-42.70	-13	-29.70
3296.8	-48.80	176	1.9	V	5.7	-43.10	-13	-30.10
Middle Channel								
153.74	-71.84	147	1.9	H	-6.4	-78.24	-13	-65.24
153.74	-78.21	310	1.2	V	-0.5	-78.71	-13	-65.71
1673.2	-49.30	210	1.4	H	3.8	-45.50	-13	-32.50
1673.2	-50.30	215	1.6	V	3.1	-47.20	-13	-34.20
2509.8	-45.80	169	1.3	H	6.2	-39.60	-13	-26.60
2509.8	-51.00	264	1.6	V	5.5	-45.50	-13	-32.50
3346.4	-50.60	315	2.2	H	6.6	-44.00	-13	-31.00
3346.4	-50.00	315	1.5	V	5.4	-44.60	-13	-31.60
High Channel								
153.74	-70.86	44	1.8	H	-6.4	-77.26	-13	-64.26
153.74	-77.55	236	2.0	V	-0.5	-78.05	-13	-65.05
1697.6	-48.70	43	2.0	H	4.1	-44.60	-13	-31.60
1697.6	-46.00	73	1.5	V	3.1	-42.90	-13	-29.90
2546.4	-43.00	171	1.3	H	6.1	-36.90	-13	-23.90
2546.4	-46.30	45	1.4	V	5.8	-40.50	-13	-27.50
3395.2	-51.70	17	1.2	H	6.2	-45.50	-13	-32.50
3395.2	-50.80	100	1.2	V	5.4	-45.40	-13	-32.40

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
WCDMA Band 5								
Low Channel ((826.4MHz)								
153.74	-71.99	111	1.8	H	-6.4	-78.39	-13	-65.39
153.74	-77.04	208	2.0	V	-0.5	-77.54	-13	-64.54
1652.8	-57.10	84	2.1	H	3.5	-53.60	-13	-40.60
1652.8	-54.50	136	1.4	V	3.1	-51.40	-13	-38.40
2479.2	-57.50	190	1.9	H	6.6	-50.90	-13	-37.90
2479.2	-55.60	211	2.1	V	5.8	-49.80	-13	-36.80
3305.6	-52.90	119	2.0	H	6.4	-46.50	-13	-33.50
3305.6	-51.60	302	2.2	V	5.7	-45.90	-13	-32.90
Middle Channel (836.6MHz)								
153.74	-72.27	116	2.1	H	-6.4	-78.67	-13	-65.67
153.74	-78.04	236	1.4	V	-0.5	-78.54	-13	-65.54
1673.2	-56.30	0	1.3	H	3.8	-52.50	-13	-39.50
1673.2	-53.70	212	1.4	V	3.1	-50.60	-13	-37.60
2509.8	-56.80	9	1.2	H	6.2	-50.60	-13	-37.60
2509.8	-55.00	264	1.0	V	5.5	-49.50	-13	-36.50
3346.4	-52.80	217	1.5	H	6.6	-46.20	-13	-33.20
3346.4	-51.20	8	1.7	V	5.4	-45.80	-13	-32.80
High Channel (846.6MHz)								
153.74	-72.54	266	1.4	H	-6.4	-78.94	-13	-65.94
153.74	-76.57	123	1.6	V	-0.5	-77.07	-13	-64.07
1693.2	-57.10	261	1.0	H	4.1	-53.00	-13	-40.00
1693.2	-54.40	357	1.1	V	3.1	-51.30	-13	-38.30
2539.8	-56.60	258	1.0	H	6.1	-50.50	-13	-37.50
2539.8	-55.10	133	1.6	V	5.8	-49.30	-13	-36.30
3386.4	-51.90	269	1.4	H	6.2	-45.70	-13	-32.70
3386.4	-50.70	334	2.1	V	5.4	-45.30	-13	-32.30

**30MHz-20GHz:****PCS Band (Part 24E)**

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
GSM 1900								
Low Channel								
153.74	-71.78	234	2.2	H	-6.4	-78.18	-13	-65.18
153.74	-76.60	34	1.1	V	-0.5	-77.10	-13	-64.10
3700.4	-54.50	194	1.7	H	8.1	-46.40	-13	-33.40
3700.4	-53.20	11	2.1	V	7.6	-45.60	-13	-32.60
Middle Channel								
153.74	-71.69	225	1	H	-6.4	-78.09	-13	-65.09
153.74	-77.59	129	2.1	V	-0.5	-78.09	-13	-65.09
3760.0	-56.40	313	1.7	H	8.8	-47.60	-13	-34.60
3760.0	-54.50	143	1.4	V	8.0	-46.50	-13	-33.50
High Channel								
153.74	-72.46	209	2.0	H	-6.4	-78.86	-13	-65.86
153.74	-78.49	0	1.3	V	-0.5	-78.99	-13	-65.99
3819.6	-55.60	189	1.8	H	8.7	-46.90	-13	-33.90
3819.6	-53.80	168	1.7	V	8.0	-45.80	-13	-32.80
WCDMA Band 2								
Low Channel (1852.4MHz)								
153.74	-71.04	223	1.7	H	-6.4	-77.44	-13	-64.44
153.74	-77.59	25	1.8	V	-0.5	-78.09	-13	-65.09
3704.8	-55.40	104	1.7	H	8.1	-47.30	-13	-34.30
3704.8	-53.70	81	2.2	V	7.6	-46.10	-13	-33.10
Middle Channel (1880MHz)								
153.74	-71.56	235	2	H	-6.4	-77.96	-13	-64.96
153.74	-76.80	330	1.3	V	-0.5	-77.30	-13	-64.30
3760.0	-55.80	271	2.1	H	8.8	-47.00	-13	-34.00
3760.0	-54.00	305	1.9	V	8.0	-46.00	-13	-33.00
High Channel (1907.6MHz)								
153.74	-71.74	83	1.1	H	-6.4	-78.14	-13	-65.14
153.74	-77.65	90	2.2	V	-0.5	-78.15	-13	-65.15
3815.2	-55.30	294	1.1	H	8.7	-46.60	-13	-33.60
3815.2	-53.40	262	1.6	V	8.0	-45.40	-13	-32.40

**30MHz-20GHz:****AWS Band (Part 27E)**

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
WCDMA Band 4								
Low Channel (1712.4MHz)								
153.74	-70.90	288	1.0	H	-6.4	-77.30	-13	-64.30
153.74	-77.50	356	2.2	V	-0.5	-78.00	-13	-65.00
3424.8	-52.50	336	1.6	H	6.4	-46.10	-13	-33.10
3424.8	-51.10	297	1.0	V	5.7	-45.40	-13	-32.40
Middle Channel (1732.6MHz)								
153.74	-71.23	296	1.5	H	-6.4	-77.63	-13	-64.63
153.74	-77.84	226	1.1	V	-0.5	-78.34	-13	-65.34
3465.2	-52.50	248	1.6	H	6.9	-45.60	-13	-32.60
3465.2	-52.10	8	1.1	V	6.2	-45.90	-13	-32.90
High Channel (1752.6MHz)								
153.74	-70.95	208	1.1	H	-6.4	-77.35	-13	-64.35
153.74	-76.92	289	1.9	V	-0.5	-77.42	-13	-64.42
3505.2	-53.20	336	1.9	H	7.8	-45.40	-13	-32.40
3505.2	-52.10	42	1.7	V	6.5	-45.60	-13	-32.60

**LTE Band:** (Pre-scan with all the bandwidth, and worst case as below)

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 2								
Test frequency range: 30MHz-20GHz								
1.4MHz bandwidth, Low Channel								
153.74	-71.03	123	1.2	H	-6.4	-77.43	-13	-64.43
153.74	-78.06	160	1.7	V	-0.5	-78.56	-13	-65.56
3701.4	-54.40	291	1.1	H	8.1	-46.30	-13	-33.30
3701.4	-52.30	157	1.2	V	7.6	-44.70	-13	-31.70
1.4MHz bandwidth, Middle Channel								
153.74	-72.29	220	1.4	H	-6.4	-78.69	-13	-65.69
153.74	-77.36	348	2.1	V	-0.5	-77.86	-13	-64.86
3760.0	-55.60	32	1.1	H	8.8	-46.80	-13	-33.80
3760.0	-53.40	72	1.9	V	8.0	-45.40	-13	-32.40
1.4MHz bandwidth, High Channel								
153.74	-70.66	47	1.8	H	-6.4	-77.06	-13	-64.06
153.74	-78.06	49	2.1	V	-0.5	-78.56	-13	-65.56
3818.6	-54.90	260	1.3	H	8.7	-46.20	-13	-33.20
3818.6	-52.60	200	1.2	V	8.0	-44.60	-13	-31.60
Band 4								
Test frequency range: 30MHz-20GHz								
1.4MHz bandwidth, Low Channel								
153.74	-70.91	37	2.2	H	-6.4	-77.31	-13	-64.31
153.74	-76.63	22	1.5	V	-0.5	-77.13	-13	-64.13
3421.4	-52.50	17	2.0	H	6.4	-46.10	-13	-33.10
3421.4	-50.80	75	1.6	V	5.7	-45.10	-13	-32.10
1.4MHz bandwidth, Middle Channel								
153.74	-70.73	126	1.4	H	-6.4	-77.13	-13	-64.13
153.74	-77.67	139	1.0	V	-0.5	-78.17	-13	-65.17
3465.0	-52.40	50	1.5	H	6.9	-45.50	-13	-32.50
3465.0	-51.50	188	1.4	V	6.2	-45.30	-13	-32.30
1.4MHz bandwidth, High Channel								
153.74	-71.08	287	1.2	H	-6.4	-77.48	-13	-64.48
153.74	-77.17	149	1.7	V	-0.5	-77.67	-13	-64.67
3508.6	-52.80	342	1.9	H	7.8	-45.00	-13	-32.00
3508.6	-51.40	119	2.0	V	6.5	-44.90	-13	-31.90

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 5								
Test frequency range: 30MHz-10GHz								
1.4MHz bandwidth, Low Channel								
153.74	-71.62	61	1.1	H	-6.4	-78.02	-13	-65.02
153.74	-76.52	247	1.2	V	-0.5	-77.02	-13	-64.02
1649.4	-58.80	111	1.2	H	3.5	-55.30	-13	-42.30
1649.4	-56.70	104	2.1	V	3.1	-53.60	-13	-40.60
2474.1	-47.50	209	1.1	H	6.6	-40.90	-13	-27.90
2474.1	-53.40	68	2.2	V	5.8	-47.60	-13	-34.60
3298.8	-52.00	150	1.6	H	6.4	-45.60	-13	-32.60
3298.8	-51.80	319	1.2	V	5.7	-46.10	-13	-33.10
1.4MHz bandwidth, Middle Channel								
153.74	-72.12	295	1.0	H	-6.4	-78.52	-13	-65.52
153.74	-77.17	110	1.6	V	-0.5	-77.67	-13	-64.67
1673.0	-49.60	287	1.6	H	3.8	-45.80	-13	-32.80
1673.0	-51.70	244	1.8	V	3.1	-48.60	-13	-35.60
2509.5	-51.90	217	1.9	H	6.2	-45.70	-13	-32.70
2509.5	-53.50	10	1.5	V	5.5	-48.00	-13	-35.00
3346.0	-52.10	313	1.4	H	6.6	-45.50	-13	-32.50
3346.0	-51.50	300	2.0	V	5.4	-46.10	-13	-33.10
1.4MHz bandwidth, High Channel								
153.74	-72.22	244	1.5	H	-6.4	-78.62	-13	-65.62
153.74	-77.00	176	1.4	V	-0.5	-77.50	-13	-64.50
1696.6	-54.90	283	1.0	H	4.1	-50.80	-13	-37.80
1696.6	-51.80	88	2.2	V	3.1	-48.70	-13	-35.70
2544.9	-52.60	321	1.3	H	6.1	-46.50	-13	-33.50
2544.9	-48.80	5	1.6	V	5.8	-43.00	-13	-30.00
3393.2	-52.30	285	1.3	H	6.2	-46.10	-13	-33.10
3393.2	-51.00	193	2.0	V	5.4	-45.60	-13	-32.60

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 7								
Test frequency range: 30MHz-26.5GHz								
5MHz bandwidth, Low Channel								
153.74	-71.17	347	1.8	H	-6.4	-77.57	-25	-52.57
153.74	-78.20	329	1.8	V	-0.5	-78.70	-25	-53.70
5005.0	-56.50	318	1.6	H	10.8	-45.70	-25	-20.70
5005.0	-54.70	192	2.0	V	10.1	-44.60	-25	-19.60
5MHz bandwidth, Middle Channel								
153.74	-72.02	137	1.1	H	-6.4	-78.42	-25	-53.42
153.74	-76.91	318	1.1	V	-0.5	-77.41	-25	-52.41
5070.0	-55.30	63	1.8	H	11.1	-44.20	-25	-19.20
5070.0	-54.30	359	2.1	V	10.7	-43.60	-25	-18.60
5MHz bandwidth, High Channel								
153.74	-71.02	151	2.2	H	-6.4	-77.42	-25	-52.42
153.74	-78.21	219	1.2	V	-0.5	-78.71	-25	-53.71
5135.0	-55.10	292	2.0	H	11.3	-43.80	-25	-18.80
5135.0	-54.10	153	1.5	V	10.8	-43.30	-25	-18.30
LTE BAND 38								
Test frequency range: 30MHz-26.5GHz								
5MHz, Low Channel								
153.74	-71.46	110	1.3	H	-6.4	-77.86	-25	-52.86
153.74	-77.75	255	1.6	V	-0.5	-78.25	-25	-53.25
5145.0	-57.40	24	1.9	H	11.4	-46.00	-25	-21.00
5145.0	-55.70	263	1.9	V	10.7	-45.00	-25	-20.00
5MHz, Middle Channel								
153.74	-72.20	29	1.4	H	-6.4	-78.60	-25	-53.60
153.74	-78.38	195	1.7	V	-0.5	-78.88	-25	-53.88
5190.0	-55.50	321	1.9	H	10.5	-45.00	-25	-20.00
5190.0	-53.40	106	2.1	V	10.0	-43.40	-25	-18.40
5MHz, High Channel								
153.74	-71.61	11	1.9	H	-6.4	-78.01	-25	-53.01
153.74	-76.54	102	1.7	V	-0.5	-77.04	-25	-52.04
5235.0	-54.90	123	1.8	H	9.7	-45.20	-25	-20.20
5235.0	-52.90	110	2.0	V	9.3	-43.60	-25	-18.60

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
BAND 41								
Test frequency range: 1-26.5GHz								
5MHz, Low Channel								
153.74	-71.46	85	1.2	H	-6.4	-77.86	-25	-52.86
153.74	-78.04	54	2.0	V	-0.5	-78.54	-25	-53.54
5075.0	-56.70	359	1.8	H	11.1	-45.60	-25	-20.60
5075.0	-55.30	7	1.2	V	10.7	-44.60	-25	-19.60
5MHz bandwidth, Middle Channel								
153.74	-70.90	239	2.1	H	-6.4	-77.30	-25	-52.30
153.74	-77.15	36	1.9	V	-0.5	-77.65	-25	-52.65
5190.0	-55.90	56	1.9	H	10.5	-45.40	-25	-20.40
5190.0	-54.40	237	1.9	V	10.0	-44.40	-25	-19.40
5MHz bandwidth, High Channel								
153.74	-71.64	200	2.2	H	-6.4	-78.04	-25	-53.04
153.74	-78.28	212	2.1	V	-0.5	-78.78	-25	-53.78
5305.0	-54.90	167	2.1	H	9.6	-45.30	-25	-20.30
5305.0	-52.90	230	1.7	V	8.8	-44.10	-25	-19.10

**Note:**

Absolute Level = Reading Level + Substituted Factor

Substituted Factor contains: SG Level - Cable loss+ Antenna Gain

Margin = Limit- Absolute Level

## FCC§ 22.917 (a);§ 24.238 (a); §27.53 (h)(m) - BAND EDGES

### Applicable Standard

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

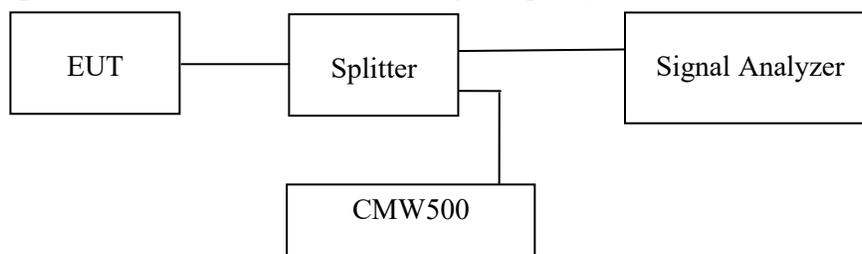
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC §27.53 (h)(m), 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.

### Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



### Test Data

#### Environmental Conditions

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	101.0 kPa

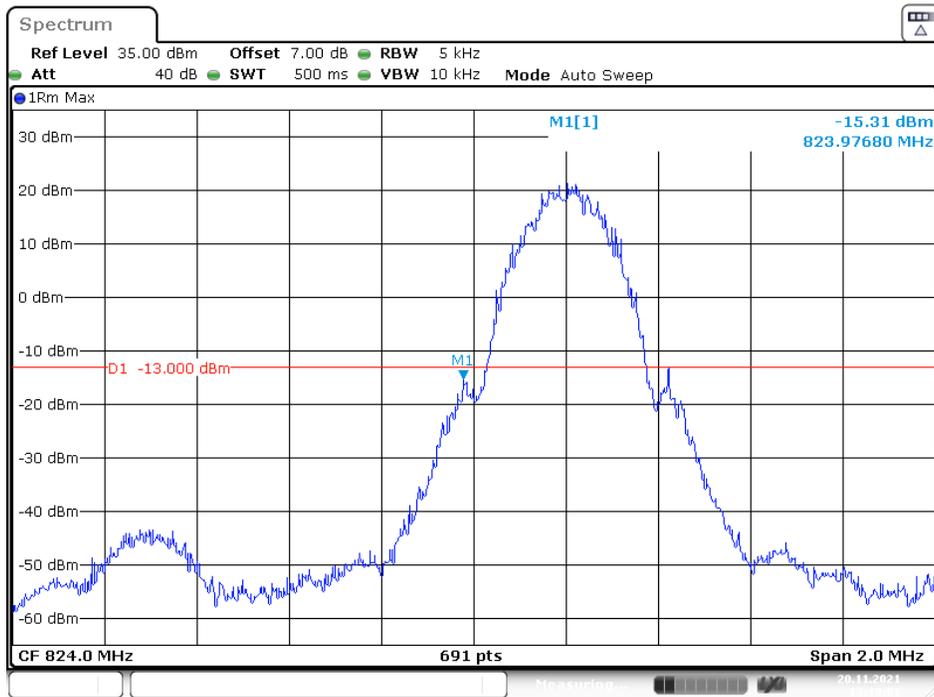
*The testing was performed by Ting Lv from 2021-11-20 to 2021-12-09.*

*EUT operation mode: Transmitting (Worst case)*

**Test Result: Pass**

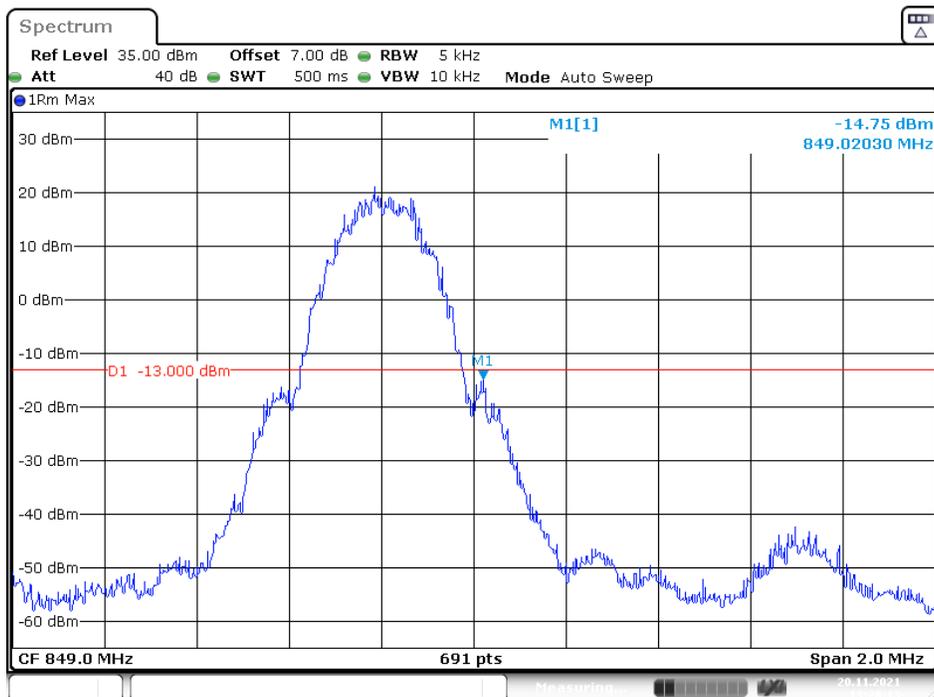
*Please refer to the following plots.*

### Cellular Band, Left Band Edge for GSM (GMSK) Mode



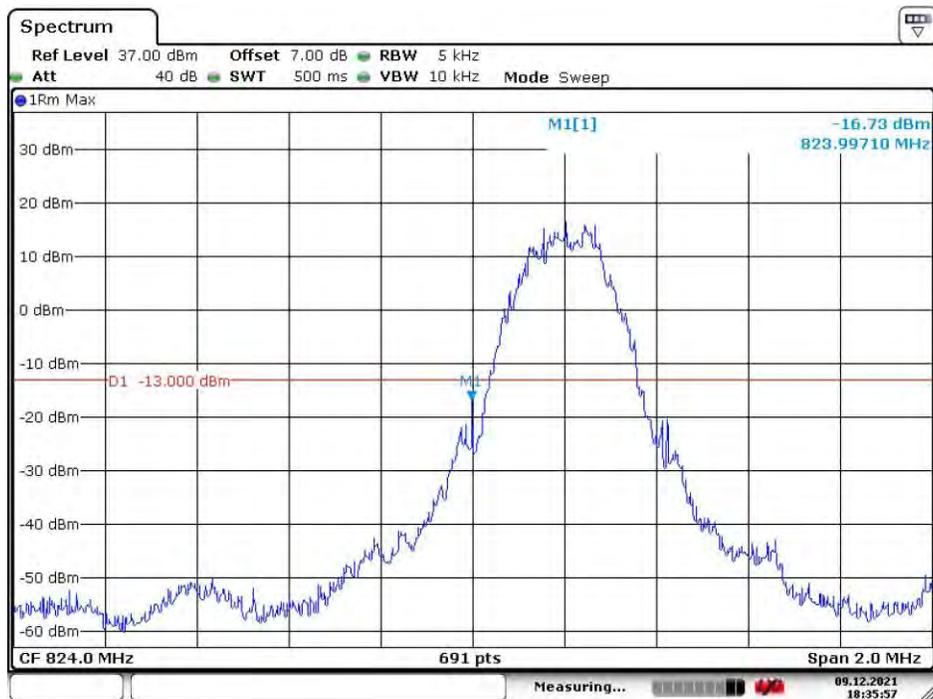
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### Cellular Band, Right Band Edge for GSM (GMSK) Mode



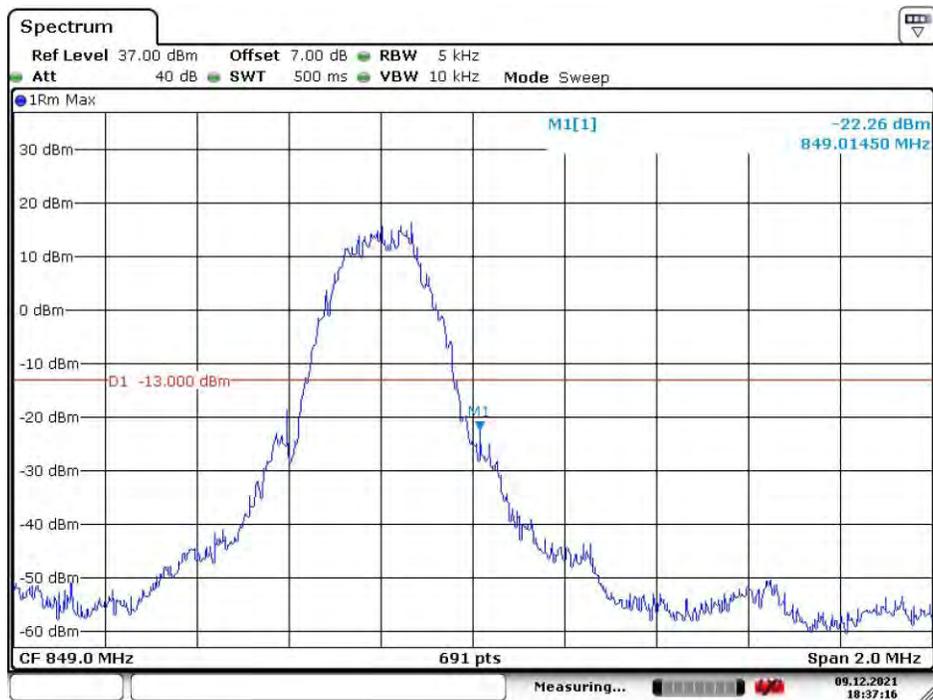
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### Cellular Band, Left Band Edge for EGPRS (8PSK) Mode



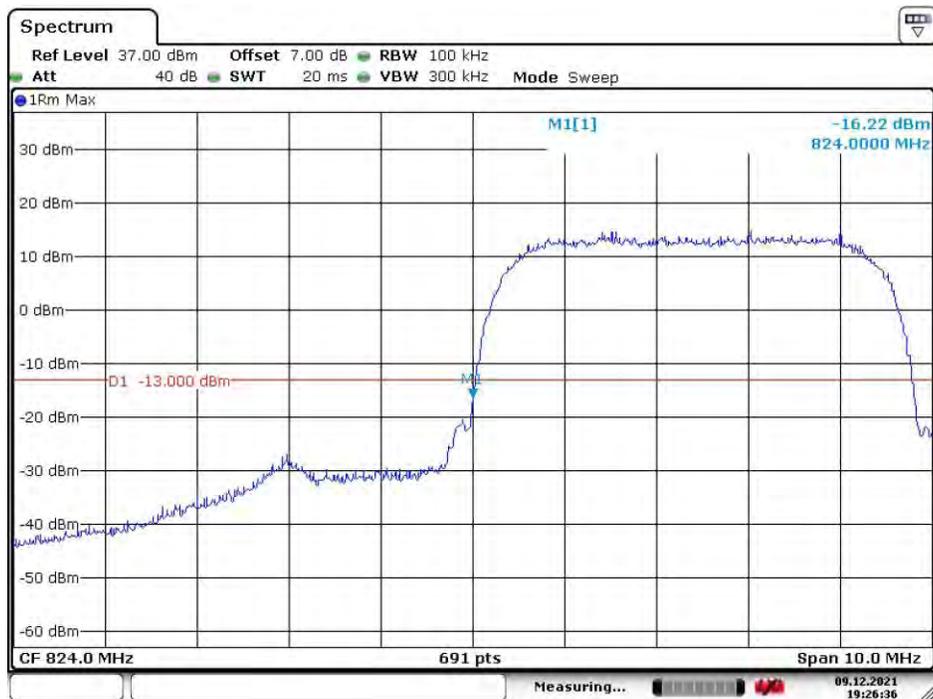
Date: 9.DEC.2021 18:35:57

### Cellular Band, Right Band Edge for EGPRS (8PSK) Mode



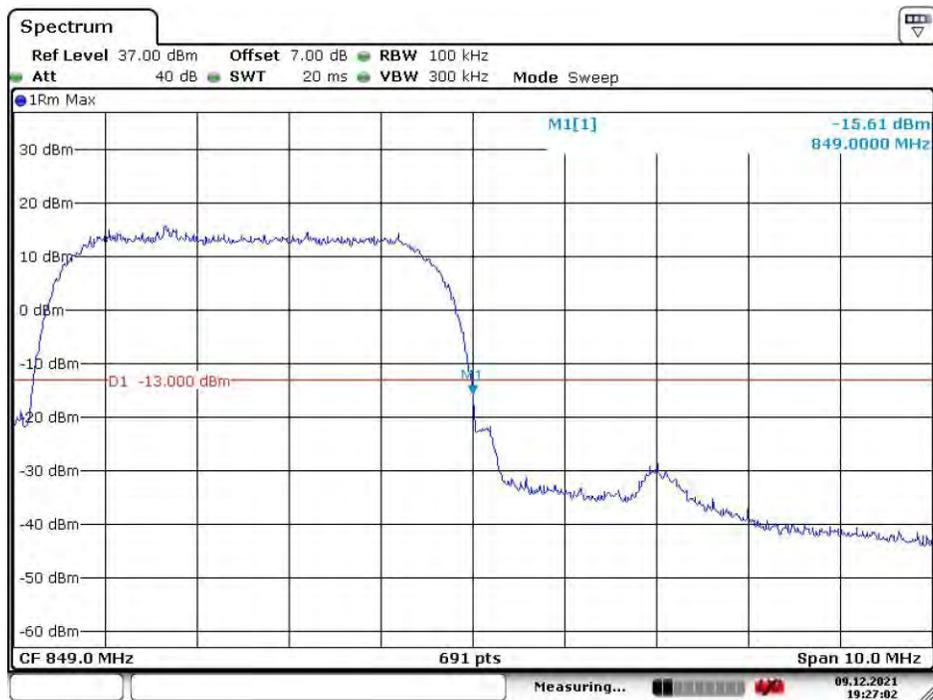
Date: 9.DEC.2021 18:37:16

### Cellular Band, Left Band Edge for RMC (BPSK) Mode



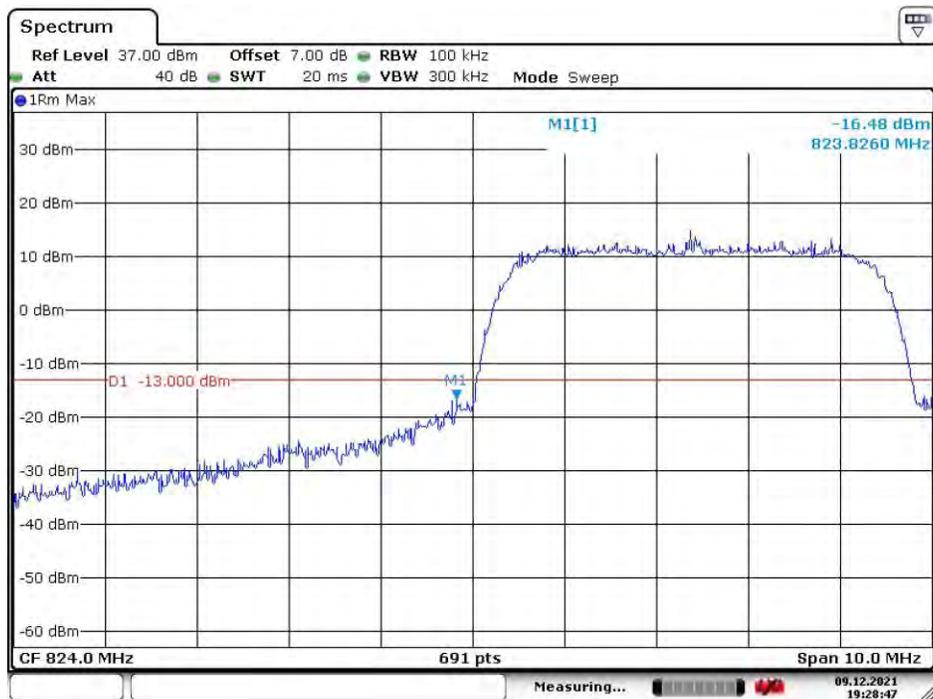
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### Cellular Band, Right Band Edge for RMC (BPSK) Mode



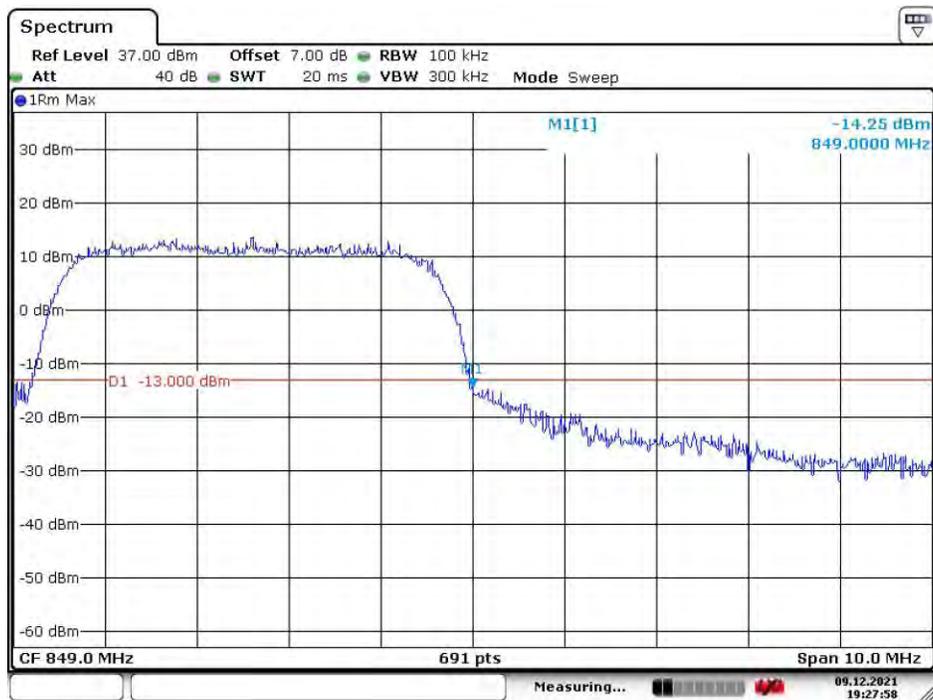
Date: 9.DEC.2021 19:27:03

### Cellular Band, Left Band Edge for HSDPA(16QAM) Mode



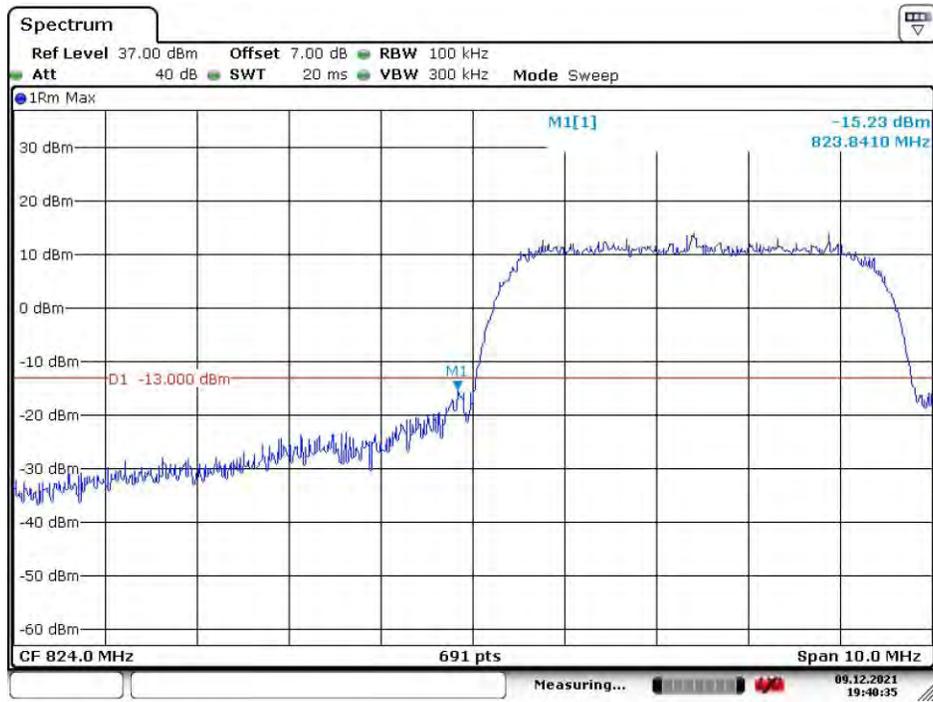
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### Cellular Band, Right Band Edge for HSDPA (16QAM) Mode



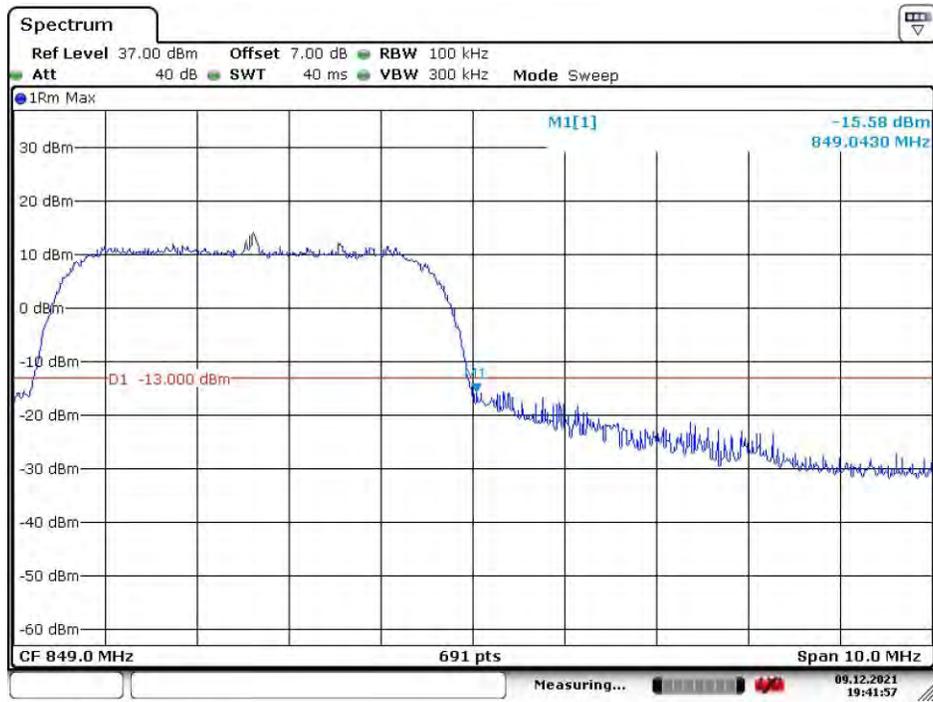
Date: 9.DEC.2021 19:27:59

### Cellular Band, Left Band Edge for HSUPA (BPSK) Mode



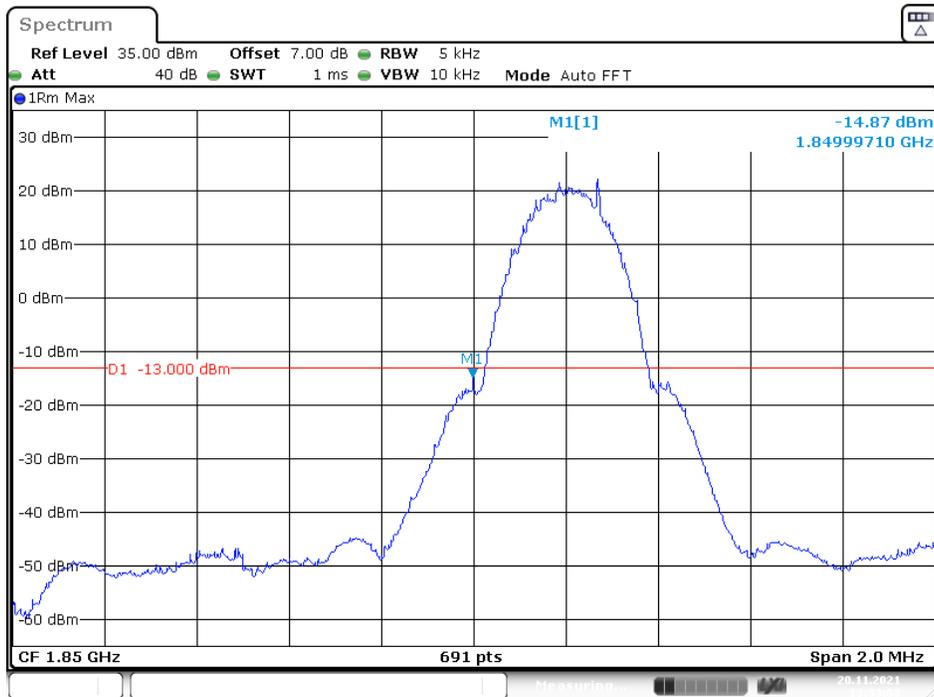
Date: 9.DEC.2021 19:40:35

### Cellular Band, Right Band Edge for HSUPA (BPSK) Mode



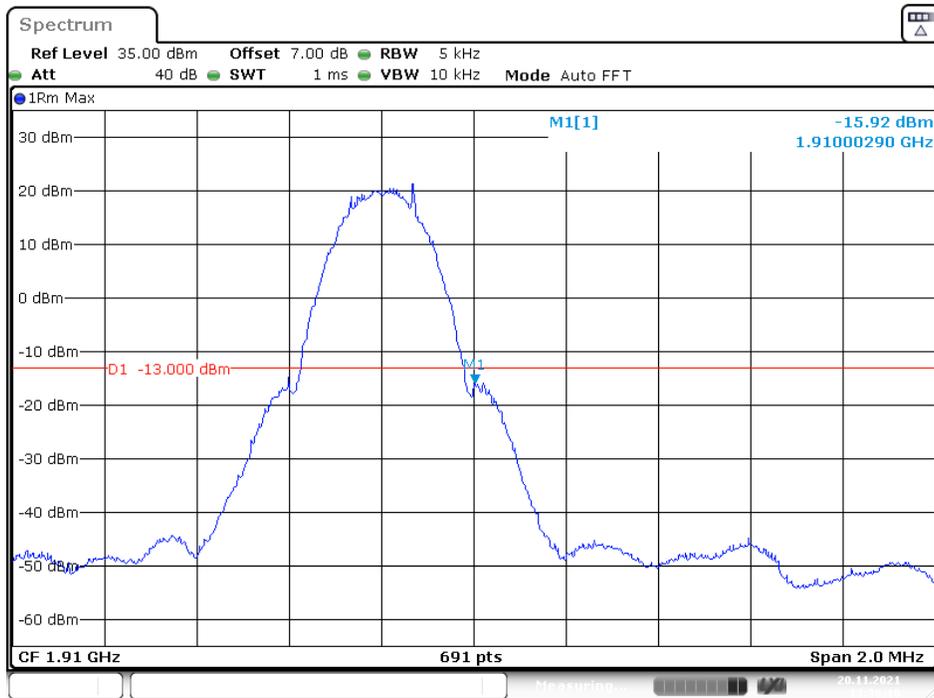
Date: 9.DEC.2021 19:41:57

### PCS Band, Left Band Edge for GSM (GMSK) Mode



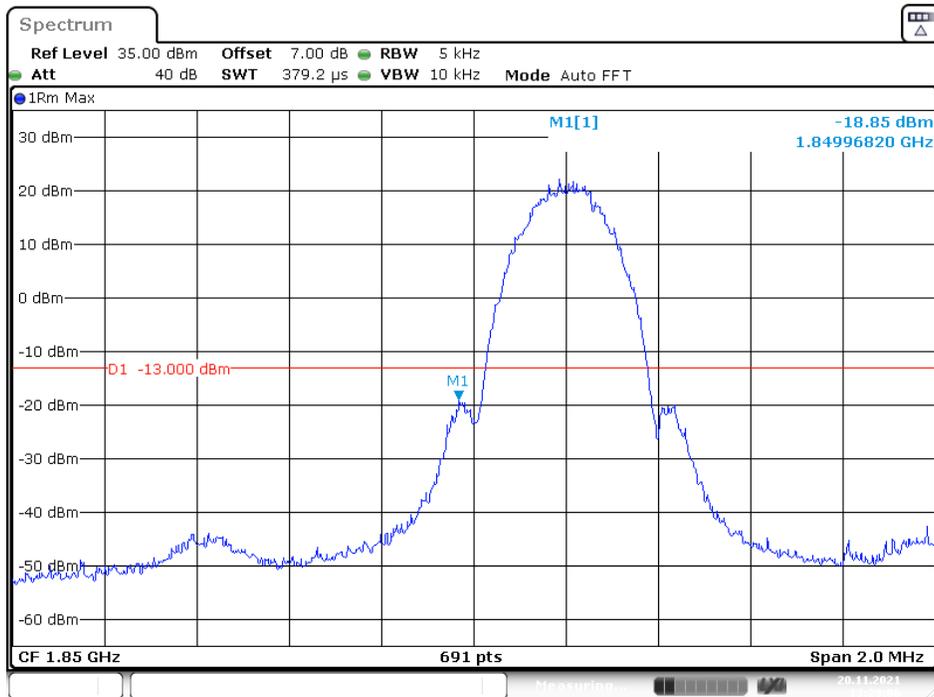
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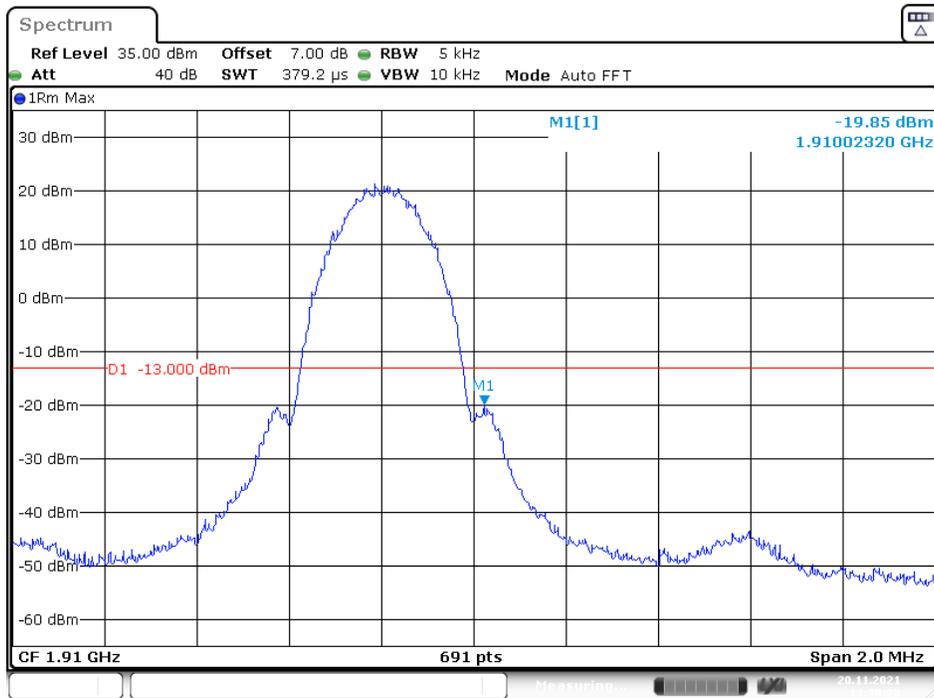


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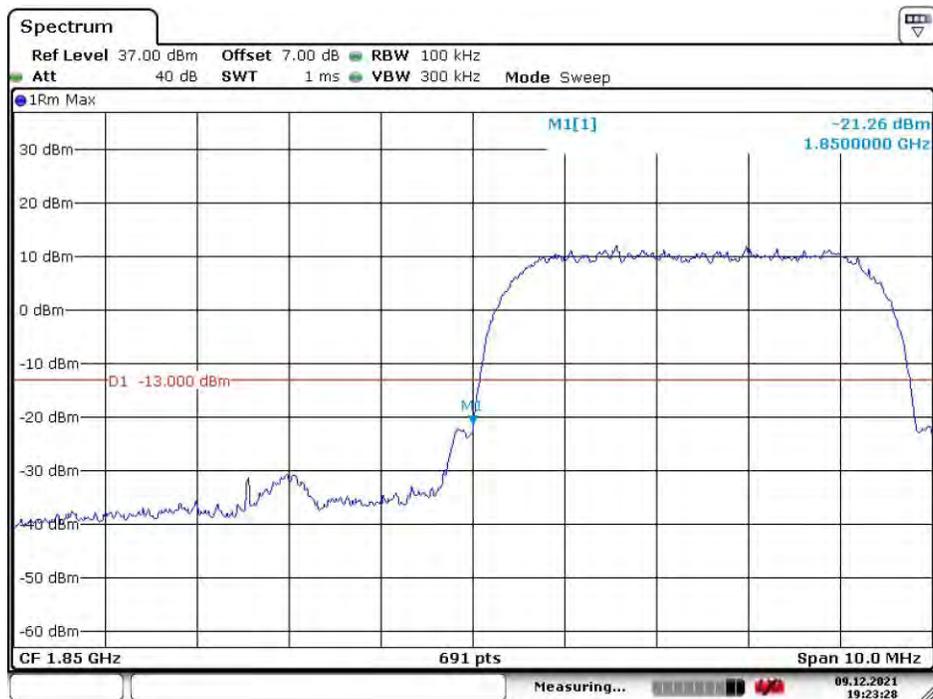
### PCS Band, Left Band Edge for EGPRS (8PSK) Mode



### PCS Band, Right Band Edge for EGPRS (8PSK) Mode

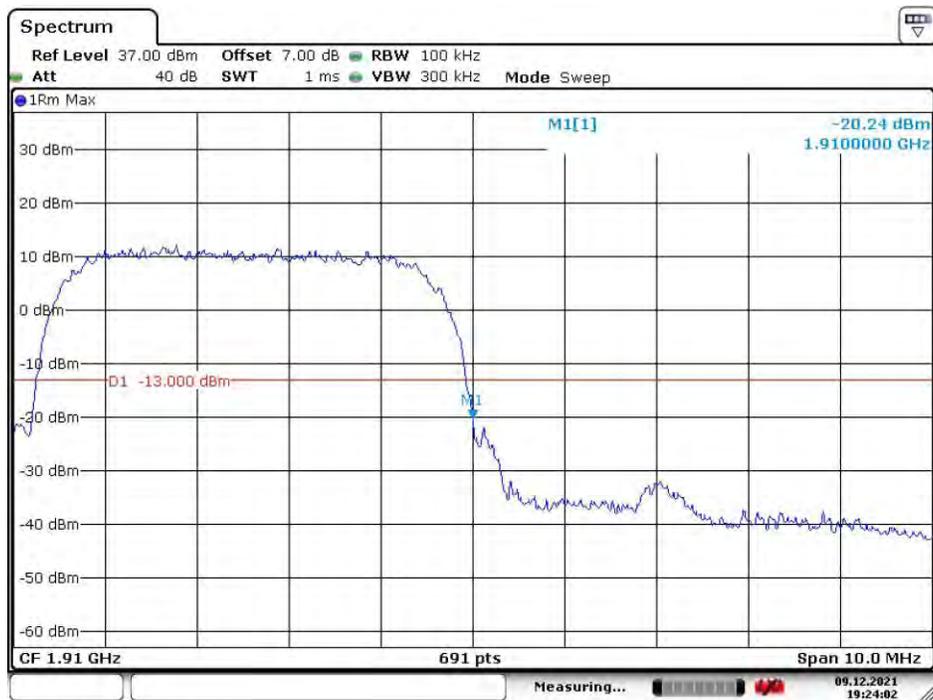


### PCS Band, Left Band Edge for RMC (BPSK) Mode



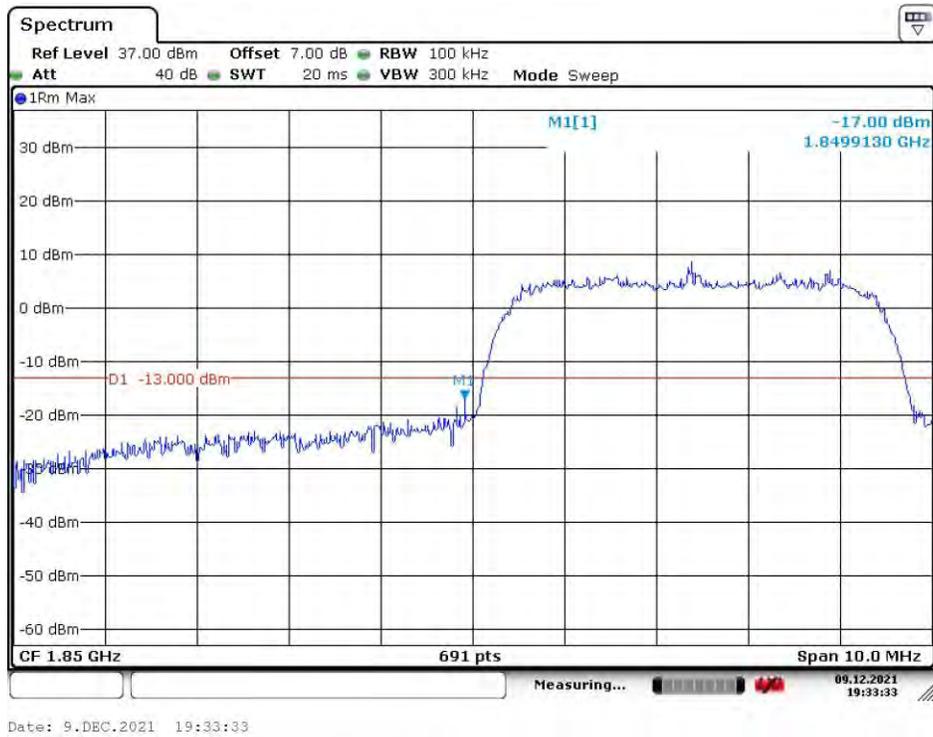
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### PCS Band, Right Band Edge for RMC (BPSK) Mode

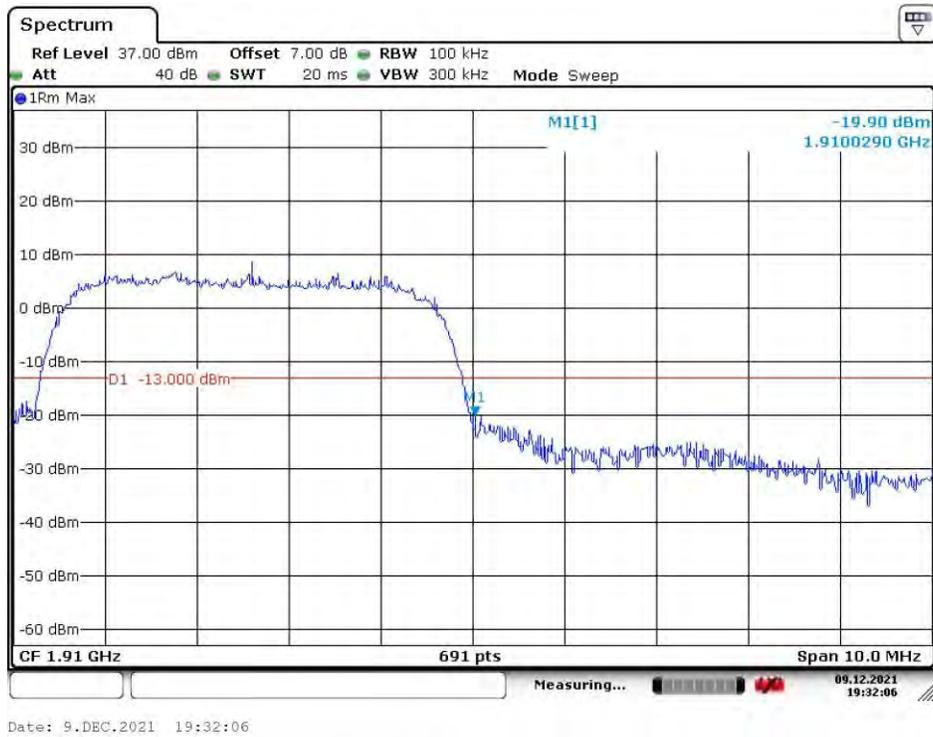


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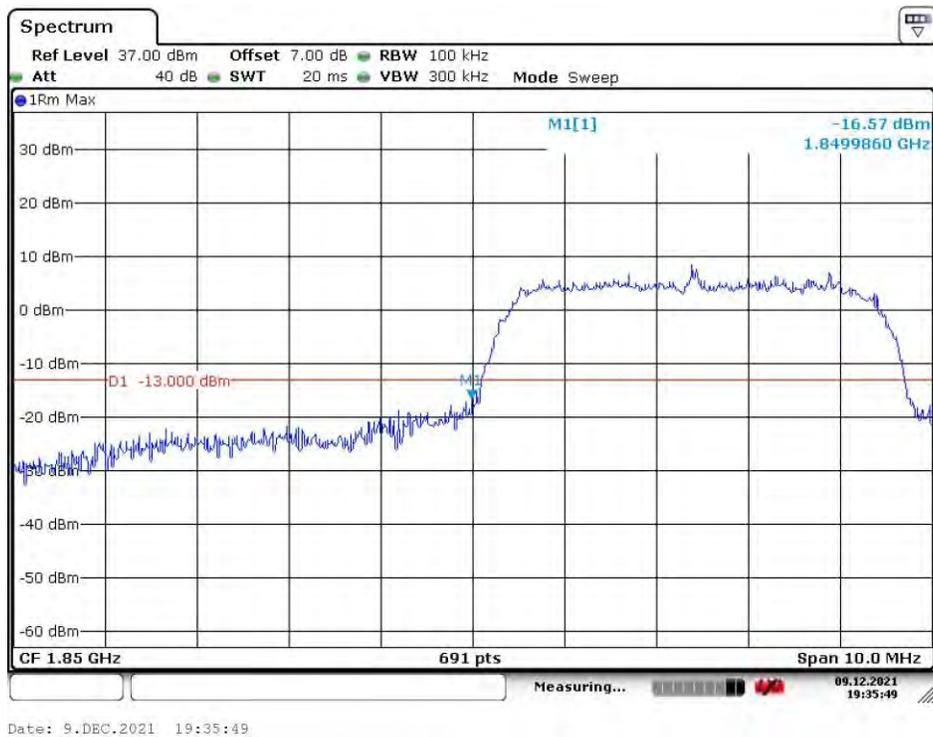
### PCS Band, Left Band Edge forHSDPA(16QAM) Mode



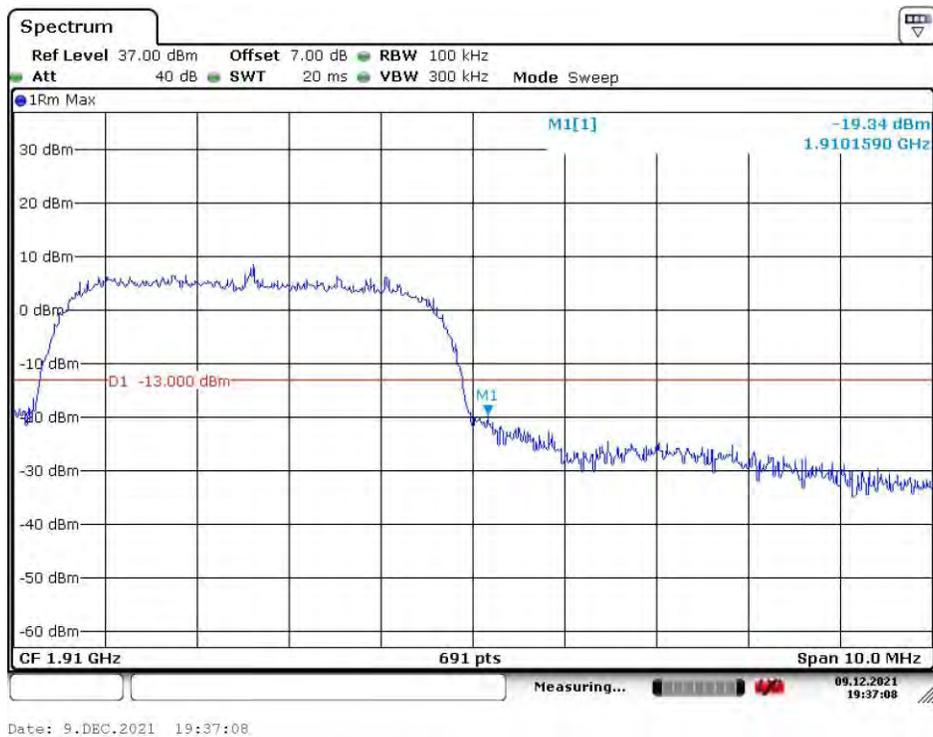
### PCS Band, Right Band Edge forHSDPA (16QAM) Mode



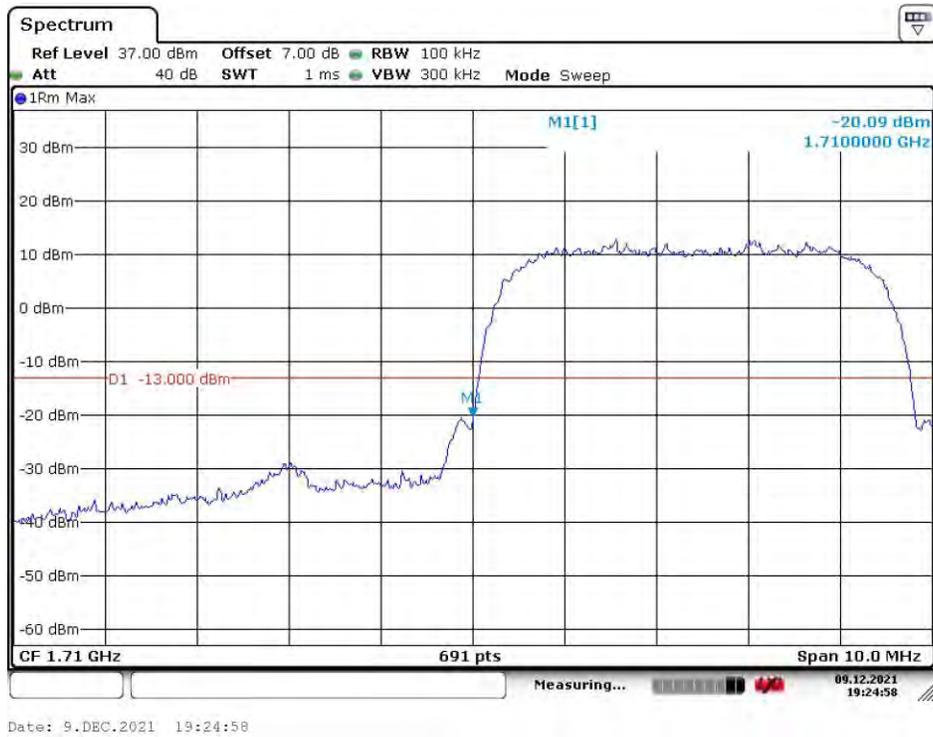
### PCS Band, Left Band Edge for HSUPA (BPSK) Mode



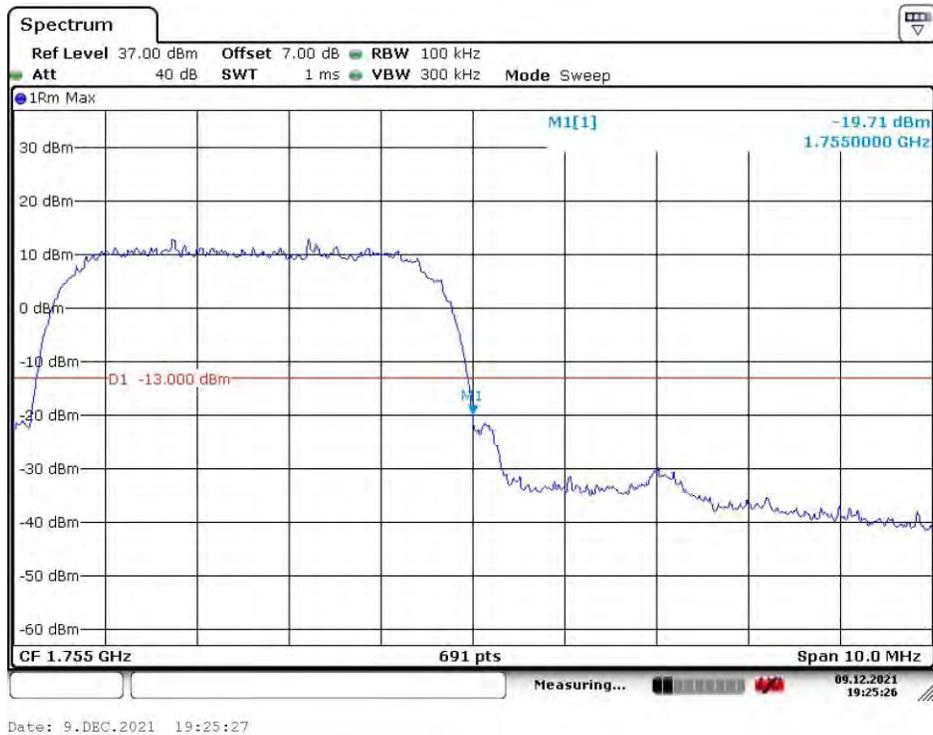
### PCS Band, Right Band Edge for HSUPA (BPSK) Mode



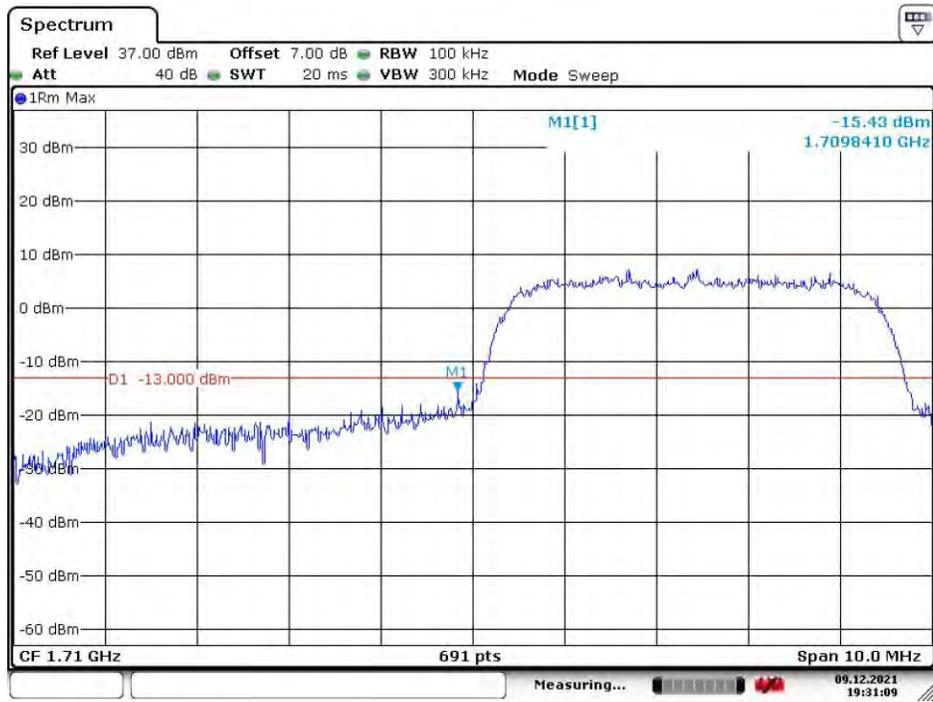
### AWS Band, Left Band Edge for RMC (BPSK) Mode



### AWS Band, Right Band Edge for RMC (BPSK) Mode

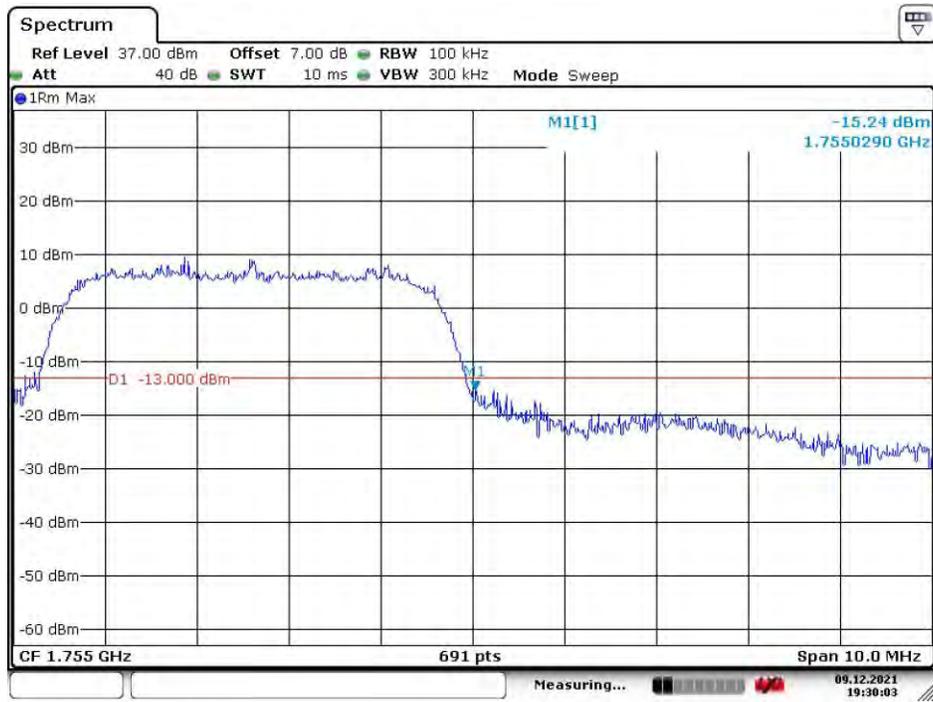


### AWS Band, Left Band Edge for HSDPA(16QAM) Mode



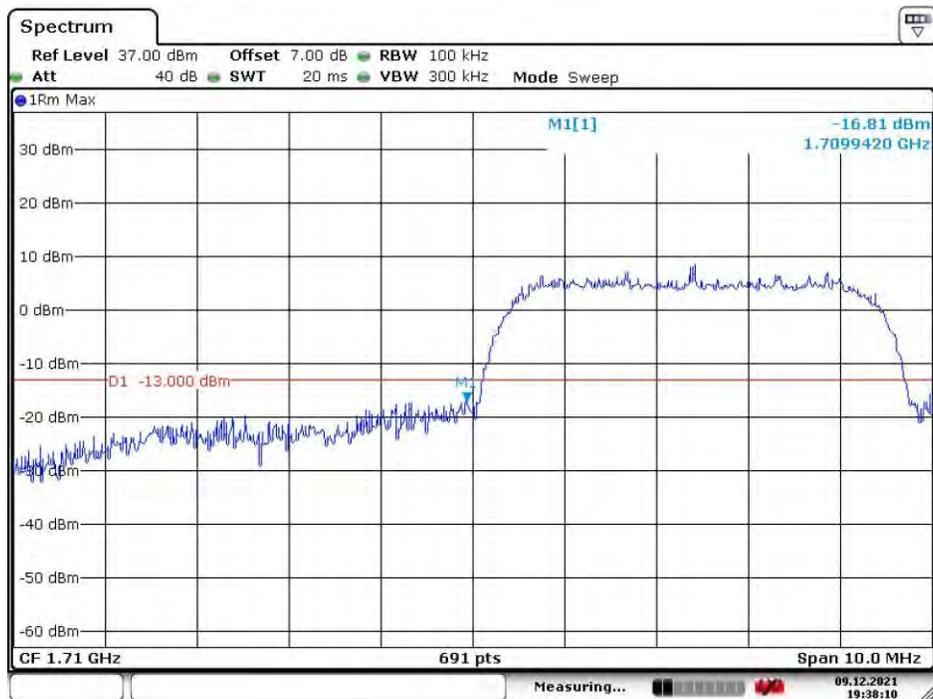
Date: 9.DEC.2021 19:31:09

### AWS Band, Right Band Edge for HSDPA (16QAM) Mode



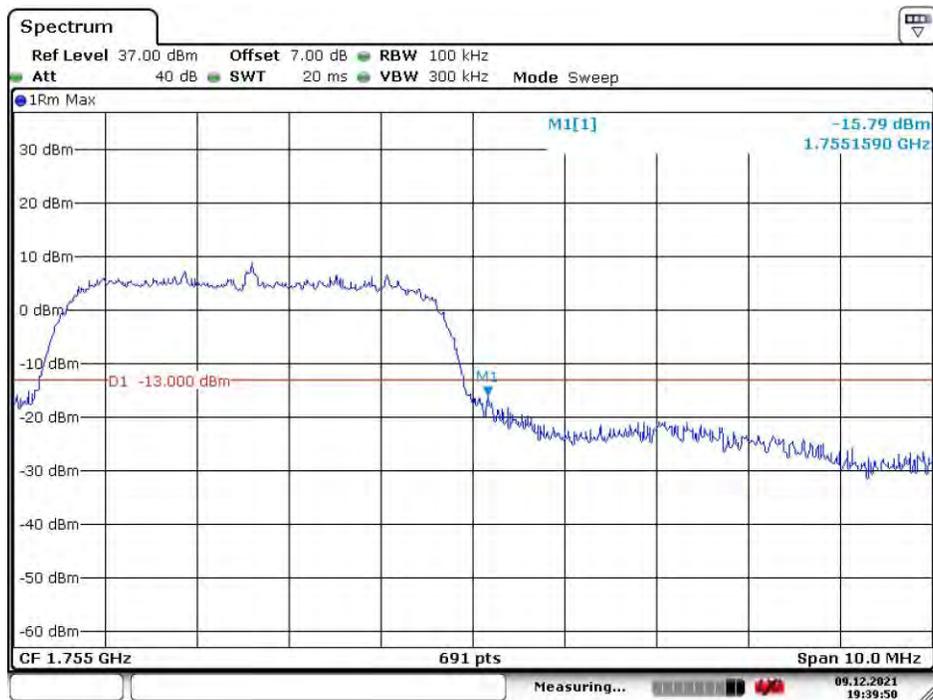
Date: 9.DEC.2021 19:30:04

### AWS Band, Left Band Edge for HSUPA (BPSK) Mode



Date: 9.DEC.2021 19:38:10

### AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 9.DEC.2021 19:39:50

The test plots of LTE bands please refer to the Appendix C.

## **FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY**

### **Applicable Standard**

FCC § 2.1055, §22.355, §24.235&§ 7.54.

According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile > 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

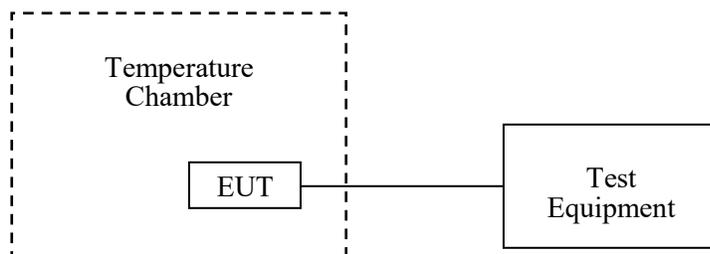
According to §24.235&§ 7.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### **Test Procedure**

**Frequency Stability vs. Temperature:** The equipment under test was connected to an external AC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The AC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

**Frequency Stability vs. Voltage:** For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



**Test Data****Environmental Conditions**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Ting Lv on 2021-11-19.

EUT operation mode: Transmitting

**Test Result: Pass**

Please refer to the following tables.

**Cellular Band (Part 22H)****GSM Mode**

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	6	0.0072	2.5
-20		4	0.0048	2.5
-10		2	0.0024	2.5
0		6	0.0072	2.5
10		9	0.0108	2.5
20		9	0.0108	2.5
30		6	0.0072	2.5
40		7	0.0084	2.5
50		8	0.0096	2.5
20	L.V.	2	0.0024	2.5
	H.V.	2	0.0024	2.5

**EGPRS Mode**

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	8	0.0096	2.5
-20		7	0.0084	2.5
-10		3	0.0036	2.5
0		-8	-0.0096	2.5
10		-6	-0.0072	2.5
20		2	0.0024	2.5
30		7	0.0084	2.5
40		-3	-0.0036	2.5
50		5	0.0060	2.5
20		L.V.	4	0.0048
	H.V.	6	0.0072	2.5

**WCDMA Mode**

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-9.10	-0.0109	2.5
-20		-7.29	-0.0087	2.5
-10		-6.38	-0.0076	2.5
0		-7.25	-0.0087	2.5
10		-6.93	-0.0083	2.5
20		-7.15	-0.0086	2.5
30		-7.84	-0.0094	2.5
40		-8.05	-0.0096	2.5
50		-8.08	-0.0097	2.5
20		L.V.	-9.15	-0.0109
	H.V.	-6.06	-0.0072	2.5

## PCS Band (Part 24E)

## GSM Mode

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	6	0.0032	pass
-20		4	0.0021	pass
-10		3	0.0016	pass
0		8	0.0042	pass
10		2	0.0011	pass
20		25	0.0133	pass
30		3	0.0016	pass
40		7	0.0037	pass
50		5	0.0027	pass
20		L.V.	3	0.0016
	H.V.	3	0.0016	pass

## EDGE Mode

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	4	0.0021	pass
-20		8	0.0042	pass
-10		5	0.0027	pass
0		10	0.0054	pass
10		-4	-0.0021	pass
20		21	0.0112	pass
30		-3	-0.0016	pass
40		-8	-0.0042	pass
50		7	0.0037	pass
20		L.V.	3	0.0016
	H.V.	6	0.0032	pass

**WCDMA Mode**

<b>Middle Channel, <math>f_0=1880.0</math> MHz</b>				
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Frequency Error (Hz)</b>	<b>Frequency Error (ppm)</b>	<b>Result</b>
-30	N.V.	-12.11	-0.0064	pass
-20		-11.19	-0.0060	pass
-10		-10.18	-0.0054	pass
0		-11.15	-0.0059	pass
10		-10.13	-0.0054	pass
20		-11.27	-0.0060	pass
30		-10.84	-0.0058	pass
40		-11.17	-0.0059	pass
50		-11.16	-0.0059	pass
20	L.V.	-11.15	-0.0059	pass
	H.V.	-10.72	-0.0057	pass

**AWS Band (Part 27)**

<b>Temperature (°C)</b>	<b>Power Supplied (V<sub>DC</sub>)</b>	<b>F<sub>L</sub> (MHz)</b>	<b>F<sub>H</sub> (MHz)</b>	<b>F<sub>L</sub> Limit (MHz)</b>	<b>F<sub>H</sub> Limit (MHz)</b>
-30	N.V.	1710.3039	1754.7028	1710	1755
-20		1710.3050	1754.6954	1710	1755
-10		1710.3006	1754.6966	1710	1755
0		1710.3040	1754.7002	1710	1755
10		1710.3029	1754.6981	1710	1755
20		1710.3047	1754.6965	1710	1755
30		1710.3045	1754.6976	1710	1755
40		1710.3039	1754.7031	1710	1755
50		1710.3004	1754.6960	1710	1755
20	L.V.	1710.3017	1754.6956	1710	1755
	H.V.	1710.3043	1754.6987	1710	1755

**LTE:**  
**QPSK:**  
**Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	-9.57	-0.0051	pass
-20		-9.97	-0.0053	pass
-10		-6.13	-0.0033	pass
0		6.17	0.0033	pass
10		7.92	0.0042	pass
20		6.46	0.0034	pass
30		-6.52	-0.0035	pass
40		7.18	0.0038	pass
50		-9.69	-0.0052	pass
20	LV	-8.17	-0.0043	pass
	HV	-7.05	-0.0038	pass

**Band 4:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	1710.5025	1754.5029	1710	1755
-20		1710.5023	1754.4965	1710	1755
-10		1710.5031	1754.5019	1710	1755
0		1710.5031	1754.4967	1710	1755
10		1710.5013	1754.4984	1710	1755
20		1710.5008	1754.4960	1710	1755
30		1710.5028	1754.5025	1710	1755
40		1710.5059	1754.5011	1710	1755
50		1710.5048	1754.5019	1710	1755
20		L.V.	1710.5030	1754.4956	1710
	H.V.	1710.5039	1754.5026	1710	1755

**Band 5:**

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-5.94	-0.0071	2.5
-20		-6.97	-0.0083	2.5
-10		-5.50	-0.0066	2.5
0		6.06	0.0072	2.5
10		9.80	0.0117	2.5
20		5.03	0.006	2.5
30		-6.62	-0.0079	2.5
40		-8.73	-0.0104	2.5
50		-7.05	-0.0084	2.5
20	L.V.	8.99	0.0107	2.5
	H.V.	-7.17	-0.0086	2.5

**Band 7:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2500.5222	2569.4729	2500	2570
-20		2500.5199	2569.4726	2500	2570
-10		2500.5167	2569.4739	2500	2570
0		2500.5208	2569.4781	2500	2570
10		2500.5194	2569.4708	2500	2570
20		2500.5165	2569.4768	2500	2570
30		2500.5222	2569.4733	2500	2570
40		2500.5176	2569.4756	2500	2570
50		2500.5181	2569.4762	2500	2570
20	L.V.	2500.5199	2569.4752	2500	2570
	H.V.	2500.5156	2569.4740	2500	2570

**Band 38:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2570.5193	2619.4855	2570	2620
-20		2570.5176	2619.4800	2570	2620
-10		2570.5157	2619.4846	2570	2620
0		2570.5180	2619.4863	2570	2620
10		2570.5166	2619.4825	2570	2620
20		2570.5188	2619.4831	2570	2620
30		2570.5183	2619.4831	2570	2620
40		2570.5216	2619.4862	2570	2620
50		2570.5175	2619.4858	2570	2620
20		L.V.	2570.5206	2619.4855	2570
	H.V.	2570.5164	2619.4795	2570	2620

**Band 41:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2535.5137	2654.4848	2535	2655
-20		2535.5182	2654.4858	2535	2655
-10		2535.5139	2654.4830	2535	2655
0		2535.5152	2654.4877	2535	2655
10		2535.5146	2654.4830	2535	2655
20		2535.5174	2654.4847	2535	2655
30		2535.5151	2654.4833	2535	2655
40		2535.5171	2654.4826	2535	2655
50		2535.5161	2654.4885	2535	2655
20		L.V.	2535.5214	2654.4833	2535
	H.V.	2535.5158	2654.4823	2535	2655

**16QAM:****Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-7.32	-0.0039	pass
-20		-6.68	-0.0036	pass
-10		9.77	0.0052	pass
0		-7.62	-0.0041	pass
10		-9.91	-0.0053	pass
20		-9.82	-0.0052	pass
30		-6.68	-0.0036	pass
40		-8.85	-0.0047	pass
50		5.67	0.0030	pass
20	L.V.	6.05	0.0032	pass
	H.V.	7.52	0.0040	pass

**Band 4:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	1710.5005	1754.4964	1710	1755
-20		1710.5037	1754.4980	1710	1755
-10		1710.4992	1754.5006	1710	1755
0		1710.4974	1754.4983	1710	1755
10		1710.4997	1754.4987	1710	1755
20		1710.5007	1754.5019	1710	1755
30		1710.5041	1754.4981	1710	1755
40		1710.4975	1754.4991	1710	1755
50		1710.5023	1754.5033	1710	1755
20	L.V.	1710.4988	1754.5011	1710	1755
	H.V.	1710.5034	1754.4992	1710	1755

**Band 5:**

10.0 MHz Middle Channel, $f_0 = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-7.72	-0.0092	2.5
-20		8.10	0.0097	2.5
-10		-8.59	-0.0103	2.5
0		9.33	0.0112	2.5
10		-6.94	-0.0083	2.5
20		7.54	0.009	2.5
30		6.43	0.0077	2.5
40		-6.17	-0.0074	2.5
50		-6.44	-0.0077	2.5
20	L.V.	6.34	0.0076	2.5
	H.V.	-6.89	-0.0082	2.5

**Band 7:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2500.5208	2569.4719	2500	2570
-20		2500.5173	2569.4728	2500	2570
-10		2500.5156	2569.4766	2500	2570
0		2500.5204	2569.4767	2500	2570
10		2500.5173	2569.4736	2500	2570
20		2500.5198	2569.4776	2500	2570
30		2500.5210	2569.4742	2500	2570
40		2500.5200	2569.4747	2500	2570
50		2500.5175	2569.4768	2500	2570
20		L.V.	2500.5219	2569.4709	2500
	H.V.	2500.5147	2569.4718	2500	2570

**Band 38:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2570.5196	2619.4868	2570	2620
-20		2570.5186	2619.4866	2570	2620
-10		2570.5198	2619.4859	2570	2620
0		2570.5206	2619.4819	2570	2620
10		2570.5225	2619.4896	2570	2620
20		2570.5168	2619.4891	2570	2620
30		2570.5169	2619.4916	2570	2620
40		2570.5225	2619.4893	2570	2620
50		2570.5171	2619.4876	2570	2620
20		L.V.	2570.5194	2619.4841	2570
	H.V.	2570.5181	2619.4879	2570	2620

**Band 41:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2535.5162	2654.4867	2535	2655
-20		2535.5140	2654.4847	2535	2655
-10		2535.5140	2654.4853	2535	2655
0		2535.5205	2654.4884	2535	2655
10		2535.5167	2654.4836	2535	2655
20		2535.5157	2654.4839	2535	2655
30		2535.5147	2654.4857	2535	2655
40		2535.5197	2654.4836	2535	2655
50		2535.5200	2654.4868	2535	2655
20		L.V.	2535.5211	2654.4857	2535
	H.V.	2535.5146	2654.4807	2535	2655

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