



TESTREPORT

Applicant Name : Epik One America Corporation
Address : 801 Brickell avenue #900 Miami Florida 33131 United States.
Report Number: SZNS211101-56012E-RF-00C
FCC ID: 2AO6ZTX1000

Test Standard (s)

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

Sample Description

Product Type: 4G LTE Tablet
Model No.: TX1000
Multiple Model(s) No.: N/A
Trade Mark: Epik One
Date Received: 2021/11/01
Date of Test: 2021/11/02~2021/12/13
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:

Ting Lü
EMC Engineer

Approved By:

Candy Li
EMC Engineer

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

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FCC -2G,3G,4G

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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 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)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA Band 5/LTE Band 5: -1.15dBi PCS1900/WCDMA Band 2/ LTE Band 2: 1.55dBi LTE Band 4: 0.82dBi LTE Band 7: 1.72 dBi (provided by the applicant)
Voltage Range	DC3.8V from battery or DC 5V from adapter
Sample serial number	SZNS211101-56012E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition
Extreme condition*	LV: Low Voltage 3.7V NV: Normal Voltage 3.8V HV: High Voltage 4.35V(provided by the applicant)
Adapter information	Model: MST-0502100-FCC Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5.0V, 2000mA

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part24-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.

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Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±0.73dB
Unwanted Emission, conducted		±1.6dB
RF Frequency		±0.082*10 ⁻⁷
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 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

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

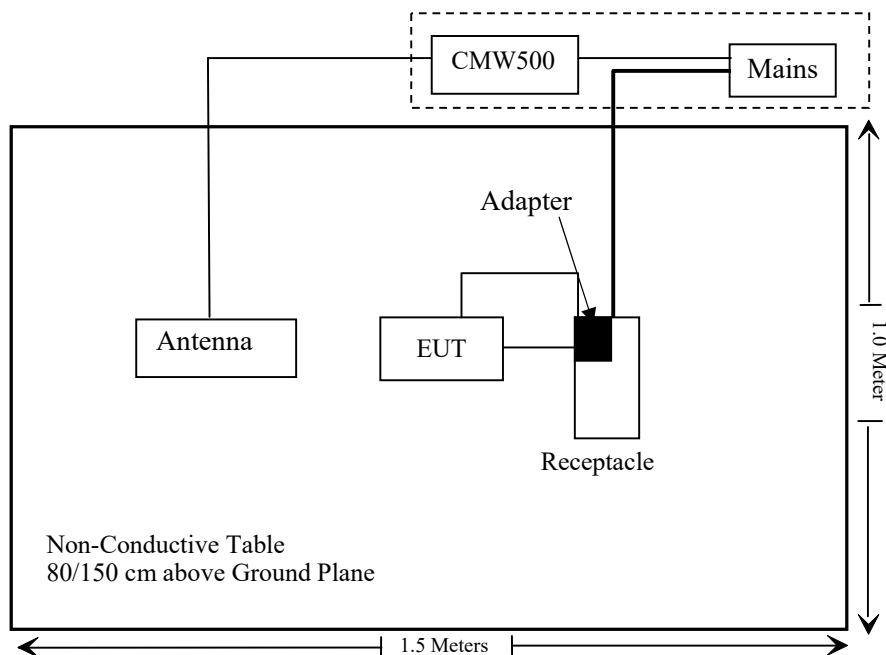
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-11621 8-U

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: SZNS211101-56012E-SA.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test (Below 1GHz)					
Rohde& Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
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
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	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
Anritsu	Signal Generator	68369B	004114	2021/07/31	2022/7/30
Radiated Emission Test(Above 1GHz)					
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/11/09	2022/11/08
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2020/11/28	2021/11/27
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 0MS-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 0MS-1152	201706003	2020/12/25	2021/12/24
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	2022/7/30
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
Gongwen	Temp. & Humid. Chamber	JB913R	GZ-WS004	2020/12/25	2021/12/24
Mini-Circuits	Power Splitter	DC-18000MH Z	SF10944151S	2020/12/25	2021/12/24

* 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).

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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: SZNS211101-56012E-SA.

FCC§2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E 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.

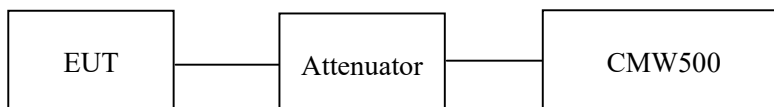
The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

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**

Temperature:	27.5 °C
Relative Humidity:	56.2 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu from 2021-11-04 to 2021-11-05.

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	32.20	28.9	38.45
	190	836.6	32.30	29.0	38.45
	251	848.8	32.40	29.1	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	32.16	30.50	28.20	26.61	28.86	27.20	24.90	23.31	38.45
	190	836.6	32.26	30.06	28.19	26.65	28.96	26.76	24.89	23.35	38.45
	251	848.8	32.26	30.11	28.27	26.65	28.96	26.81	24.97	23.35	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	26.00	25.55	24.44	21.60	22.70	22.25	21.14	18.30	38.45
	190	836.6	25.97	25.09	23.97	21.60	22.67	21.79	20.67	18.30	38.45
	251	848.8	26.03	25.52	24.34	21.76	22.73	22.22	21.04	18.46	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		22.74	22.71	22.63	19.44	19.41	19.33
	HSDPA	1	22.23	22.24	21.82	18.93	18.94	18.52
		2	22.25	22.26	21.87	18.95	18.96	18.57
		3	22.31	22.35	21.86	19.01	19.05	18.56
		4	22.24	22.37	21.67	18.94	19.07	18.37
	HSUPA	1	22.74	22.44	21.98	19.44	19.14	18.68
		2	22.55	22.43	22.02	19.25	19.13	18.72
		3	22.56	22.35	22.05	19.26	19.05	18.75
		4	22.57	22.35	22.00	19.27	19.05	18.70
		5	22.64	22.37	22.14	19.34	19.07	18.84
	HSPA+	1	22.61	22.51	22.28	19.31	19.21	18.98

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
 For GSM850 / WCDMA Band5: Antenna Gain = -1.15dBi = -3.3dBd (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	29.30	30.85	33
	661	1880.0	29.70	31.25	33
	810	1909.8	30.00	31.55	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	29.01	26.94	25.45	23.39	30.56	28.49	27.00	24.94	33
	661	1880.0	29.33	27.11	25.59	23.53	30.88	28.66	27.14	25.08	33
	810	1909.8	29.77	27.25	25.71	24.08	31.32	28.8	27.26	25.63	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	26.11	25.67	23.75	21.63	27.66	27.22	25.30	23.18	33
	661	1880.0	26.09	25.69	24.36	21.90	27.64	27.24	25.91	23.45	33
	810	1909.8	25.65	25.27	23.26	21.38	27.20	26.82	24.81	22.93	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		23.10	23.10	23.05	24.65	24.65	24.60
	HSDPA	1	22.08	21.90	21.54	23.63	23.45	23.09
		2	22.01	21.89	21.66	23.56	23.44	23.21
		3	22.05	21.95	21.57	23.60	23.50	23.12
		4	22.06	21.93	21.53	23.61	23.48	23.08
	HSUPA	1	22.64	22.17	22.32	24.19	23.72	23.87
		2	22.65	22.17	22.52	24.20	23.72	24.07
		3	22.57	22.53	22.54	24.12	24.08	24.09
		4	22.54	22.36	22.56	24.09	23.91	24.11
		5	22.52	22.37	22.57	24.07	23.92	24.12
	HSPA+	1	22.56	22.39	22.51	24.11	23.94	24.06

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)

For PCS1900 / WCDMA Band2: Antenna Gain = 1.55dBi

Limit: EIRP ≤ 33dBm

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

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.52	13
	Middle	3.48	13
	High	3.53	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.53	13
	Middle	3.47	13
	High	3.50	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.55	13
	Middle	3.56	13
	High	3.46	13
HSDPA (16QAM)	Low	3.48	13
	Middle	3.47	13
	High	3.50	13
HSUPA (BPSK)	Low	3.45	13
	Middle	3.43	13
	High	3.51	13
HSPA+	Low	3.57	13
	Middle	3.61	13
	High	3.58	13

PCS Band

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.53	13
	Middle	3.57	13
	High	3.56	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.51	13
	Middle	3.55	13
	High	3.56	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.42	13
	Middle	3.51	13
	High	3.43	13
HSDPA (16QAM)	Low	3.54	13
	Middle	3.51	13
	High	3.45	13
HSUPA (BPSK)	Low	3.43	13
	Middle	3.42	13
	High	3.57	13
HSPA+	Low	3.57	13
	Middle	3.52	13
	High	3.50	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	22.54	22.74	22.42	24.09	24.29	23.97
		RB1#3	22.61	22.66	22.43	24.16	24.21	23.98
		RB1#5	22.60	22.74	22.46	24.15	24.29	24.01
		RB3#0	22.83	22.65	22.51	24.38	24.20	24.06
		RB3#3	22.87	22.64	22.52	24.42	24.19	24.07
		RB6#0	21.75	21.60	21.56	23.30	23.15	23.11
	16QAM	RB1#0	21.46	22.04	22.26	23.01	23.59	23.81
		RB1#3	21.47	21.93	22.29	23.02	23.48	23.84
		RB1#5	21.50	21.91	22.22	23.05	23.46	23.77
		RB3#0	21.80	21.65	21.37	23.35	23.20	22.92
		RB3#3	21.80	21.69	21.44	23.35	23.24	22.99
		RB6#0	21.07	20.88	20.57	22.62	22.43	22.12
3.0	QPSK	RB1#0	22.67	22.49	22.36	24.22	24.04	23.91
		RB1#8	22.64	22.56	22.44	24.19	24.11	23.99
		RB1#14	22.57	22.57	22.40	24.12	24.12	23.95
		RB6#0	21.79	21.63	21.47	23.34	23.18	23.02
		RB6#9	21.66	21.63	21.42	23.21	23.18	22.97
		RB15#0	21.76	21.67	21.47	23.31	23.22	23.02
	16QAM	RB1#0	22.49	22.17	21.21	24.04	23.72	22.76
		RB1#8	22.50	22.15	21.15	24.05	23.70	22.70
		RB1#14	22.44	22.10	21.19	23.99	23.65	22.74
		RB6#0	20.96	20.82	20.78	22.51	22.37	22.33
		RB6#9	20.73	20.85	20.81	22.28	22.40	22.36
		RB15#0	20.77	20.60	20.59	22.32	22.15	22.14

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	22.67	22.71	22.49	24.22	24.26	24.04
		RB1#13	22.59	22.73	22.45	24.14	24.28	24.00
		RB1#24	22.57	22.75	22.47	24.12	24.30	24.02
		RB15#0	21.82	21.70	21.54	23.37	23.25	23.09
		RB15#10	21.74	21.73	21.55	23.29	23.28	23.10
		RB25#0	21.65	21.69	21.57	23.20	23.24	23.12
	16QAM	RB1#0	20.88	21.88	21.17	22.43	23.43	22.72
		RB1#13	20.87	21.80	21.16	22.42	23.35	22.71
		RB1#24	20.92	21.81	21.23	22.47	23.36	22.78
		RB15#0	20.92	20.61	20.63	22.47	22.16	22.18
		RB15#10	20.83	20.63	20.68	22.38	22.18	22.23
		RB25#0	20.89	20.79	20.54	22.44	22.34	22.09
10.0	QPSK	RB1#0	22.72	22.78	22.62	24.27	24.33	24.17
		RB1#25	22.63	22.78	22.54	24.18	24.33	24.09
		RB1#49	22.66	22.88	22.62	24.21	24.43	24.17
		RB25#0	21.76	21.75	21.65	23.31	23.30	23.2
		RB25#25	21.74	21.68	21.64	23.29	23.23	23.19
		RB50#0	21.74	21.79	21.53	23.29	23.34	23.08
	16QAM	RB1#0	22.18	21.89	21.18	23.73	23.44	22.73
		RB1#25	22.11	21.94	21.14	23.66	23.49	22.69
		RB1#49	22.08	21.88	21.09	23.63	23.43	22.64
		RB25#0	20.81	20.84	21.19	22.36	22.39	22.74
		RB25#25	20.80	20.90	20.78	22.35	22.45	22.33
		RB50#0	20.83	20.83	20.67	22.38	22.38	22.22

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	22.75	22.68	22.65	24.30	24.23	24.20
		RB1#38	22.69	22.66	22.54	24.24	24.21	24.09
		RB1#74	22.71	22.64	22.55	24.26	24.19	24.10
		RB36#0	21.70	21.81	21.68	23.25	23.36	23.23
		RB36#39	21.85	21.69	21.68	23.40	23.24	23.23
		RB75#0	21.75	21.86	21.65	23.30	23.41	23.20
	16QAM	RB1#0	22.28	22.06	22.11	23.83	23.61	23.66
		RB1#38	22.09	21.95	22.01	23.64	23.50	23.56
		RB1#74	22.15	21.98	21.97	23.70	23.53	23.52
		RB36#0	20.84	20.90	21.18	22.39	22.45	22.73
		RB36#39	20.84	20.83	20.68	22.39	22.38	22.23
		RB75#0	20.80	20.82	21.21	22.35	22.37	22.76
20.0	QPSK	RB1#0	22.99	22.83	22.82	24.54	24.38	24.37
		RB1#50	22.86	22.86	22.88	24.41	24.41	24.43
		RB1#99	23.02	22.84	22.77	24.57	24.39	24.32
		RB50#0	21.99	21.88	21.80	23.54	23.43	23.35
		RB50#50	21.87	21.82	21.69	23.42	23.37	23.24
		RB100#0	21.81	21.83	21.78	23.36	23.38	23.33
	16QAM	RB1#0	21.90	21.80	22.51	23.45	23.35	24.06
		RB1#50	21.74	21.92	22.45	23.29	23.47	24.00
		RB1#99	21.81	21.87	22.39	23.36	23.42	23.94
		RB50#0	20.95	20.97	20.87	22.50	22.52	22.42
		RB50#50	20.92	20.93	20.71	22.47	22.48	22.26
		RB100#0	20.91	20.88	21.31	22.46	22.43	22.86

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)
 For Band2: Antenna Gain = 1.55dBi
 Limit: EIRP ≤ 33dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.19	5.36	4.78	13	Pass
QPSK (100RB Size)	5.28	5.45	5.36	13	Pass
16QAM (1RB Size)	6.03	6.09	6.23	13	Pass
16QAM (100RB Size)	6.41	6.43	6.26	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	20.53	20.47	21.04	21.35	21.29	21.86
		RB1#3	20.45	20.49	21.03	21.27	21.31	21.85
		RB1#5	20.32	20.48	21.03	21.14	21.30	21.85
		RB3#0	20.59	20.54	20.98	21.41	21.36	21.80
		RB3#3	20.28	20.55	20.97	21.10	21.37	21.79
		RB6#0	20.44	20.47	20.91	21.26	21.29	21.73
	16QAM	RB1#0	20.89	20.53	20.86	21.71	21.35	21.68
		RB1#3	20.89	20.32	20.92	21.71	21.14	21.74
		RB1#5	20.88	20.56	20.99	21.70	21.38	21.81
		RB3#0	20.47	20.36	20.93	21.29	21.18	21.75
		RB3#3	20.39	20.35	20.94	21.21	21.17	21.76
		RB6#0	20.96	20.63	20.26	21.78	21.45	21.08
3.0	QPSK	RB1#0	20.42	21.00	22.43	21.24	21.82	23.25
		RB1#8	20.53	21.09	22.47	21.35	21.91	23.29
		RB1#14	20.24	20.88	22.49	21.06	21.70	23.31
		RB6#0	20.48	20.53	21.53	21.30	21.35	22.35
		RB6#9	20.47	20.69	21.62	21.29	21.51	22.44
		RB15#0	20.73	20.38	21.42	21.55	21.20	22.24
	16QAM	RB1#0	20.62	20.39	21.83	21.44	21.21	22.65
		RB1#8	20.70	20.77	21.93	21.52	21.59	22.75
		RB1#14	20.69	20.79	21.95	21.51	21.61	22.77
		RB6#0	20.57	20.36	20.37	21.39	21.18	21.19
		RB6#9	20.22	20.40	20.38	21.04	21.22	21.20
		RB15#0	20.30	20.37	20.59	21.12	21.19	21.41

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	22.19	22.43	22.40	23.01	23.25	23.22
		RB1#13	22.20	22.48	22.27	23.02	23.30	23.09
		RB1#24	22.24	22.55	22.38	23.06	23.37	23.20
		RB15#0	21.25	21.38	21.48	22.07	22.20	22.30
		RB15#10	21.18	21.42	21.44	22.00	22.24	22.26
		RB25#0	21.25	21.33	21.51	22.07	22.15	22.33
	16QAM	RB1#0	20.55	21.39	21.35	21.37	22.21	22.17
		RB1#13	20.55	21.42	21.35	21.37	22.24	22.17
		RB1#24	20.59	21.43	21.32	21.41	22.25	22.14
		RB15#0	20.70	20.42	20.55	21.52	21.24	21.37
		RB15#10	20.68	20.40	20.51	21.50	21.22	21.33
		RB25#0	20.80	20.44	20.31	21.62	21.26	21.13
10.0	QPSK	RB1#0	22.08	22.50	22.51	22.90	23.32	23.33
		RB1#25	22.11	22.51	22.44	22.93	23.33	23.26
		RB1#49	22.19	22.51	22.50	23.01	23.33	23.32
		RB25#0	21.18	21.33	21.32	22.00	22.15	22.14
		RB25#25	21.18	21.41	21.37	22.00	22.23	22.19
		RB50#0	21.12	21.37	21.48	21.94	22.19	22.30
	16QAM	RB1#0	20.85	21.13	21.13	21.67	21.95	21.95
		RB1#25	20.93	21.26	21.13	21.75	22.08	21.95
		RB1#49	20.97	21.29	21.28	21.79	22.11	22.10
		RB25#0	20.70	20.57	20.49	21.52	21.39	21.31
		RB25#25	20.23	20.59	20.48	21.05	21.41	21.30
		RB50#0	20.28	20.47	20.50	21.10	21.29	21.32

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	22.06	22.45	22.56	22.88	23.27	23.38
		RB1#38	22.18	22.53	22.56	23.00	23.35	23.38
		RB1#74	22.21	22.54	22.52	23.03	23.36	23.34
		RB36#0	21.16	21.37	21.36	21.98	22.19	22.18
		RB36#39	21.26	21.46	21.45	22.08	22.28	22.27
		RB75#0	21.20	21.51	21.42	22.02	22.33	22.24
	16QAM	RB1#0	20.91	21.17	21.59	21.73	21.99	22.41
		RB1#38	20.97	21.28	21.64	21.79	22.10	22.46
		RB1#74	21.07	21.25	21.75	21.89	22.07	22.57
		RB36#0	20.31	20.56	20.62	21.13	21.38	21.44
		RB36#39	20.41	20.53	20.71	21.23	21.35	21.53
		RB75#0	20.25	20.50	20.54	21.07	21.32	21.36
20.0	QPSK	RB1#0	22.24	22.20	22.44	23.06	23.02	23.26
		RB1#50	22.36	22.30	22.58	23.18	23.12	23.4
		RB1#99	22.46	22.41	22.62	23.28	23.23	23.44
		RB50#0	21.29	21.24	21.37	22.11	22.06	22.19
		RB50#50	21.27	21.47	21.51	22.09	22.29	22.33
		RB100#0	21.35	21.44	21.38	22.17	22.26	22.20
	16QAM	RB1#0	20.82	21.38	21.67	21.64	22.20	22.49
		RB1#50	21.01	21.51	21.72	21.83	22.33	22.54
		RB1#99	21.08	21.60	21.71	21.90	22.42	22.53
		RB50#0	20.36	20.49	20.45	21.18	21.31	21.27
		RB50#50	20.50	20.64	20.51	21.32	21.46	21.33
		RB100#0	20.35	20.46	20.46	21.17	21.28	21.28

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

For Band4: Antenna Gain = 0.82dBi

Limit: EIRP ≤ 30dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.23	5.42	5.13	13	Pass
QPSK (100RB Size)	5.74	5.65	5.68	13	Pass
16QAM (1RB Size)	6.72	7.36	6.41	13	Pass
16QAM (100RB Size)	6.70	6.81	6.49	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	22.54	22.64	22.54	19.24	19.34	19.24
		RB1#3	22.56	22.64	22.51	19.26	19.34	19.21
		RB1#5	22.60	22.65	22.52	19.30	19.35	19.22
		RB3#0	22.67	22.61	22.58	19.37	19.31	19.28
		RB3#3	22.65	22.67	22.64	19.35	19.37	19.34
		RB6#0	21.61	21.70	21.65	18.31	18.40	18.35
	16QAM	RB1#0	22.27	22.18	21.40	18.97	18.88	18.10
		RB1#3	22.25	21.99	21.51	18.95	18.69	18.21
		RB1#5	22.29	21.95	21.51	18.99	18.65	18.21
		RB3#0	21.23	21.40	21.47	17.93	18.10	18.17
		RB3#3	21.29	21.33	21.43	17.99	18.03	18.13
		RB6#0	21.31	21.13	20.81	18.01	17.83	17.51
3.0	QPSK	RB1#0	22.57	22.71	22.66	19.27	19.41	19.36
		RB1#8	22.50	22.63	22.61	19.20	19.33	19.31
		RB1#14	22.65	22.69	22.58	19.35	19.39	19.28
		RB6#0	21.59	21.76	21.58	18.29	18.46	18.28
		RB6#9	22.18	21.60	21.62	18.88	18.30	18.32
		RB15#0	21.68	21.55	21.40	18.38	18.25	18.10
	16QAM	RB1#0	21.53	22.15	21.38	18.23	18.85	18.08
		RB1#8	21.43	22.00	21.33	18.13	18.70	18.03
		RB1#14	22.02	22.04	21.39	18.72	18.74	18.09
		RB6#0	20.99	20.63	21.19	17.69	17.33	17.89
		RB6#9	21.04	21.20	20.71	17.74	17.90	17.41
		RB15#0	21.04	21.27	20.97	17.74	17.97	17.67

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	22.62	22.81	22.65	19.32	19.51	19.35
		RB1#13	22.66	22.64	22.65	19.36	19.34	19.35
		RB1#24	22.62	22.93	22.57	19.32	19.63	19.27
		RB15#0	21.65	21.61	21.53	18.35	18.31	18.23
		RB15#10	22.16	21.68	21.44	18.86	18.38	18.14
		RB25#0	22.15	21.62	21.56	18.85	18.32	18.26
	16QAM	RB1#0	20.95	21.73	21.51	17.65	18.43	18.21
		RB1#13	21.44	21.50	21.43	18.14	18.20	18.13
		RB1#24	20.97	21.66	21.64	17.67	18.36	18.34
		RB15#0	21.05	20.61	21.22	17.75	17.31	17.92
		RB15#10	21.17	21.09	21.16	17.87	17.79	17.86
		RB25#0	21.28	21.27	20.97	17.98	17.97	17.67
10.0	QPSK	RB1#0	22.58	22.91	22.65	19.28	19.61	19.35
		RB1#25	22.53	22.87	22.48	19.23	19.57	19.18
		RB1#49	22.57	22.88	22.49	19.27	19.58	19.19
		RB25#0	22.14	21.70	21.58	18.84	18.40	18.28
		RB25#25	21.70	21.81	21.50	18.40	18.51	18.20
		RB50#0	21.62	21.36	21.74	18.32	18.06	18.44
	16QAM	RB1#0	21.37	21.45	21.57	18.07	18.15	18.27
		RB1#25	21.30	21.51	21.46	18.00	18.21	18.16
		RB1#49	21.22	21.44	21.49	17.92	18.14	18.19
		RB25#0	21.15	20.82	21.27	17.85	17.52	17.97
		RB25#25	21.07	21.16	21.27	17.77	17.86	17.97
		RB50#0	21.15	21.22	20.67	17.85	17.92	17.37

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
For Band5: Antenna Gain = -1.15dBi = -3.3dBd (0dBd=2.15dBi)
Limit: ERP ≤ 38.45dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.91	5.80	5.19	13	Pass
QPSK (50RB Size)	5.59	5.30	5.68	13	Pass
16QAM (1RB Size)	6.61	7.01	6.03	13	Pass
16QAM (50RB Size)	6.38	6.14	6.52	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	23.06	23.05	22.99	24.78	24.77	24.71
		RB1#13	23.10	23.05	22.95	24.82	24.77	24.67
		RB1#24	23.02	23.06	23.05	24.74	24.78	24.77
		RB15#0	21.93	21.87	22.04	23.65	23.59	23.76
		RB15#10	21.98	21.96	22.00	23.70	23.68	23.72
		RB25#0	22.01	21.98	22.01	23.73	23.70	23.73
	16QAM	RB1#0	21.39	21.86	21.91	23.11	23.58	23.63
		RB1#13	21.45	21.81	21.91	23.17	23.53	23.63
		RB1#24	21.47	21.91	22.02	23.19	23.63	23.74
		RB15#0	20.94	20.96	21.11	22.66	22.68	22.83
		RB15#10	20.99	20.98	21.10	22.71	22.70	22.82
		RB25#0	21.14	21.13	20.95	22.86	22.85	22.67
10.0	QPSK	RB1#0	22.88	22.98	23.02	24.60	24.70	24.74
		RB1#25	22.91	22.96	23.03	24.63	24.68	24.75
		RB1#49	22.95	23.02	23.12	24.67	24.74	24.84
		RB25#0	21.93	21.97	22.01	23.65	23.69	23.73
		RB25#25	21.89	21.87	22.15	23.61	23.59	23.87
		RB50#0	22.00	22.05	22.06	23.72	23.77	23.78
	16QAM	RB1#0	21.72	21.86	21.67	23.44	23.58	23.39
		RB1#25	21.64	21.88	21.69	23.36	23.60	23.41
		RB1#49	21.71	21.92	21.69	23.43	23.64	23.41
		RB25#0	20.99	21.07	21.15	22.71	22.79	22.87
		RB25#25	21.02	21.21	21.24	22.74	22.93	22.96
		RB50#0	21.18	21.12	21.11	22.90	22.84	22.83

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	22.90	22.95	23.03	24.62	24.67	24.75
		RB1#38	22.95	23.07	23.10	24.67	24.79	24.82
		RB1#74	22.86	23.12	23.18	24.58	24.84	24.90
		RB36#0	21.98	21.91	21.97	23.70	23.63	23.69
		RB36#39	21.97	22.04	22.01	23.69	23.76	23.73
		RB75#0	21.91	21.94	22.05	23.63	23.66	23.77
	16QAM	RB1#0	21.79	22.07	22.22	23.51	23.79	23.94
		RB1#38	21.76	22.13	22.32	23.48	23.85	24.04
		RB1#74	21.86	22.24	22.41	23.58	23.96	24.13
		RB36#0	21.20	20.99	21.22	22.92	22.71	22.94
		RB36#39	21.13	21.06	21.29	22.85	22.78	23.01
		RB75#0	21.08	21.15	21.16	22.80	22.87	22.88
20.0	QPSK	RB1#0	23.06	22.93	23.24	24.78	24.65	24.96
		RB1#50	23.06	22.97	23.23	24.78	24.69	24.95
		RB1#99	23.11	23.07	23.35	24.83	24.79	25.07
		RB50#0	22.00	21.98	22.01	23.72	23.7	23.73
		RB50#50	21.98	21.88	21.95	23.70	23.60	23.67
		RB100#0	22.04	22.01	22.10	23.76	23.73	23.82
	16QAM	RB1#0	21.54	22.20	22.35	23.26	23.92	24.07
		RB1#50	21.49	22.23	22.38	23.21	23.95	24.10
		RB1#99	21.58	22.38	22.41	23.30	24.10	24.13
		RB50#0	21.21	21.19	21.10	22.93	22.91	22.82
		RB50#50	21.14	21.25	21.18	22.86	22.97	22.90
		RB100#0	20.96	21.11	21.12	22.68	22.83	22.84

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

For Band7: Antenna Gain = 1.72dBi

Limit: EIRP ≤ 33dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.43	4.61	4.32	13	Pass
QPSK (100RB Size)	5.22	5.16	5.33	13	Pass
16QAM (1RB Size)	5.45	5.57	5.28	13	Pass
16QAM (100RB Size)	6.12	6.06	6.11	13	Pass

FCC §2.1049, §22.917, §22.905 & §24.238&§27.53 - OCCUPIED BANDWIDTH

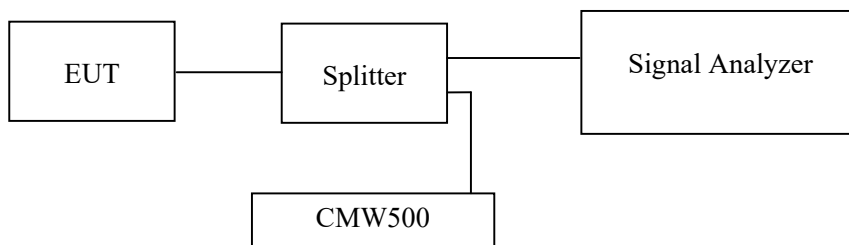
Applicable Standard

FCC 47 §2.1049, §22.917, §22.905, §24.238, and §27.53.

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

Temperature:	27.5 °C
Relative Humidity:	56.2 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu from 2021-11-04 to 2021-11-05.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

Cellular Band (Part 22H)

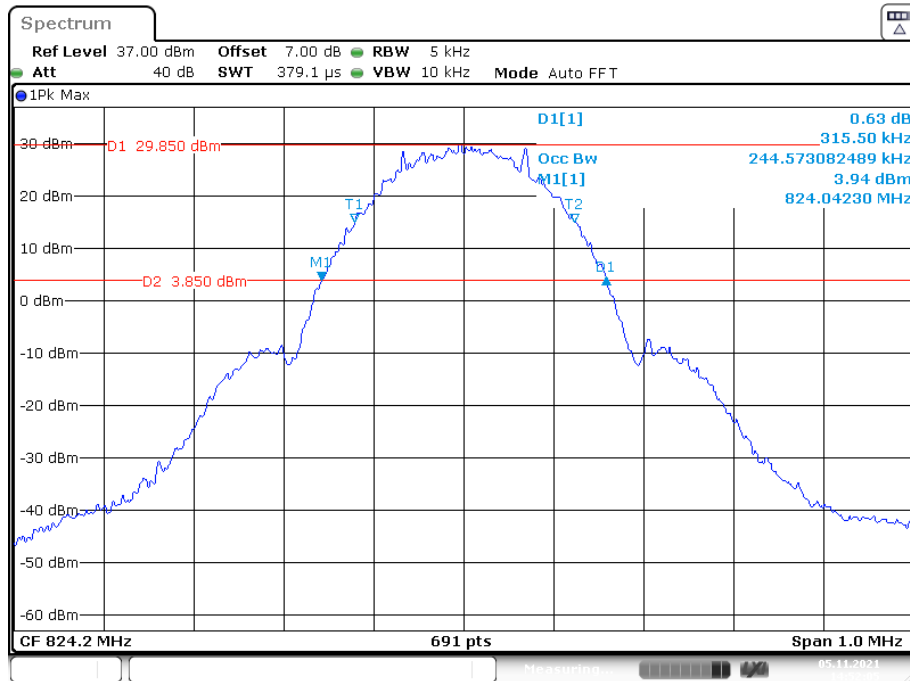
Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	128	824.2	244.57	315.50
	190	836.6	241.68	315.50
	251	848.8	243.13	315.50
EGPRS(8PSK)	128	824.2	243.13	308.20
	190	836.6	241.68	308.20
	251	848.8	240.23	305.40

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.15	4.69
	836.6	4.15	4.69
	846.6	4.14	4.69
HSDPA	826.4	4.15	4.69
	836.6	4.17	4.67
	846.6	4.17	4.69
HSUPA	826.4	4.17	4.69
	836.6	4.15	4.69
	846.6	4.17	4.67

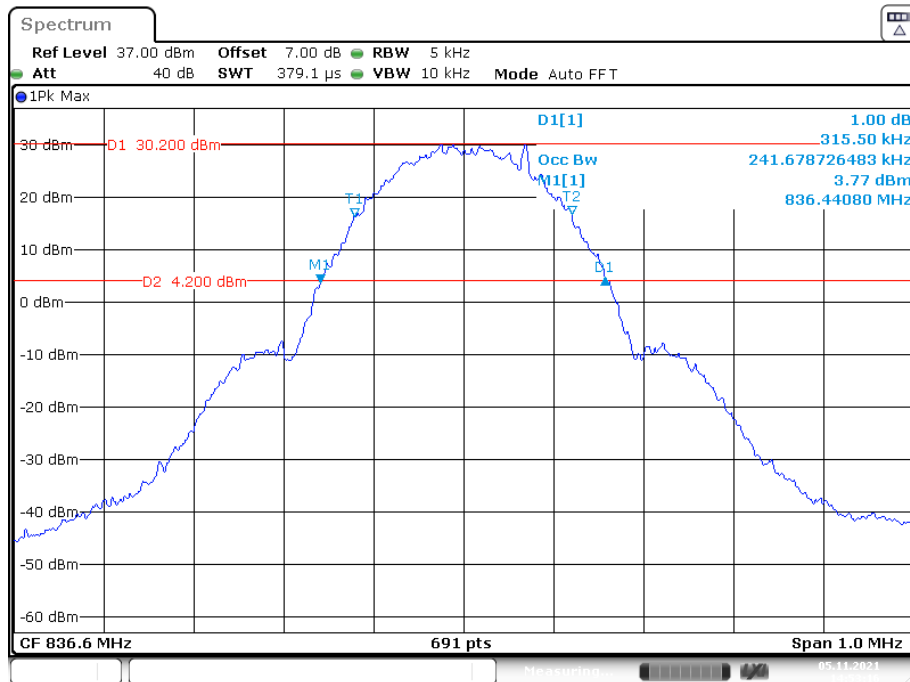
PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	241.68	318.40
	661	1880.0	244.57	316.90
	810	1909.8	243.13	321.30
EGPRS(8PSK)	512	1850.2	240.23	306.80
	661	1880.0	241.68	306.80
	810	1909.8	243.13	311.10

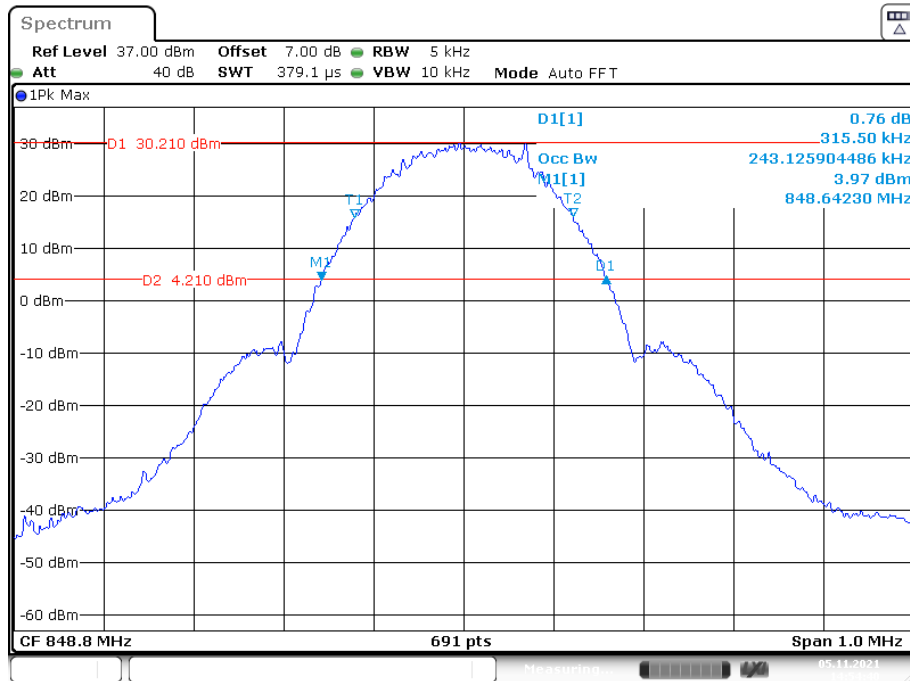
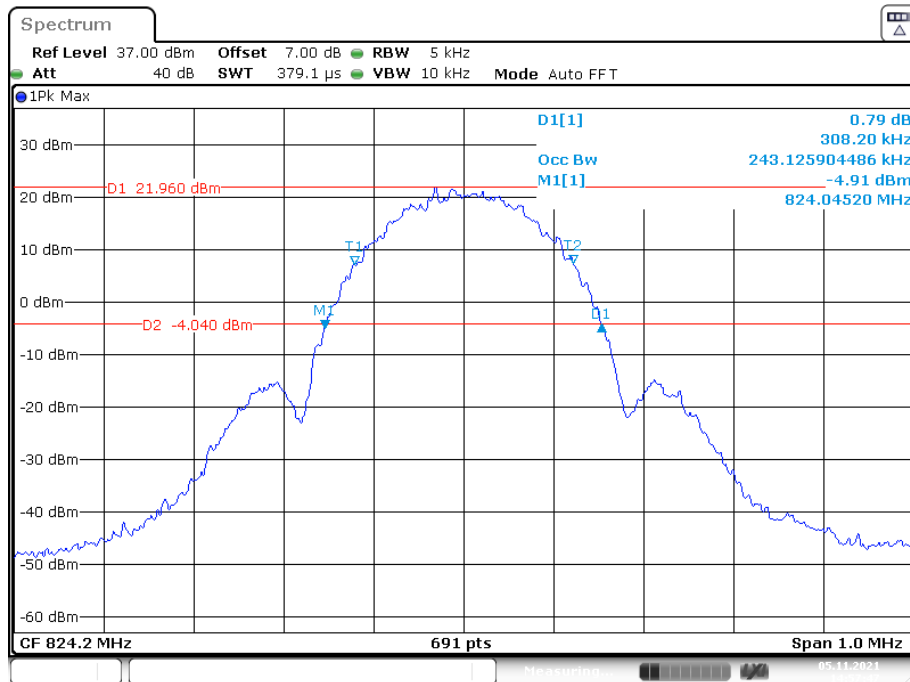
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.15	4.69
	1880.0	4.15	4.69
	1907.6	4.15	4.69
HSDPA	1852.4	4.17	4.67
	1880.0	4.15	4.69
	1907.6	4.17	4.66
HSUPA	1852.4	4.15	4.69
	1880.0	4.15	4.69
	1907.6	4.17	4.66

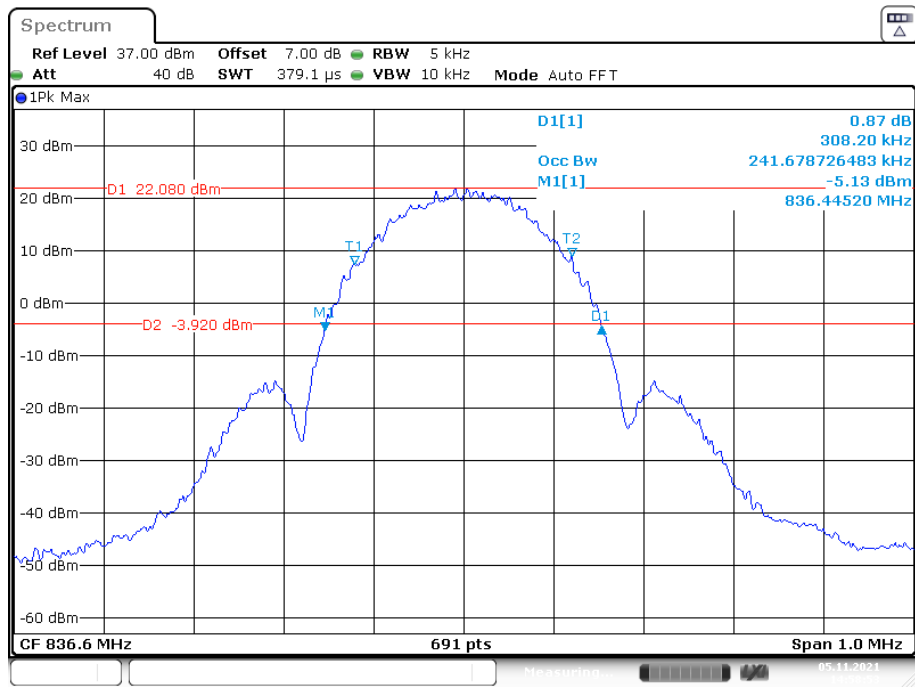
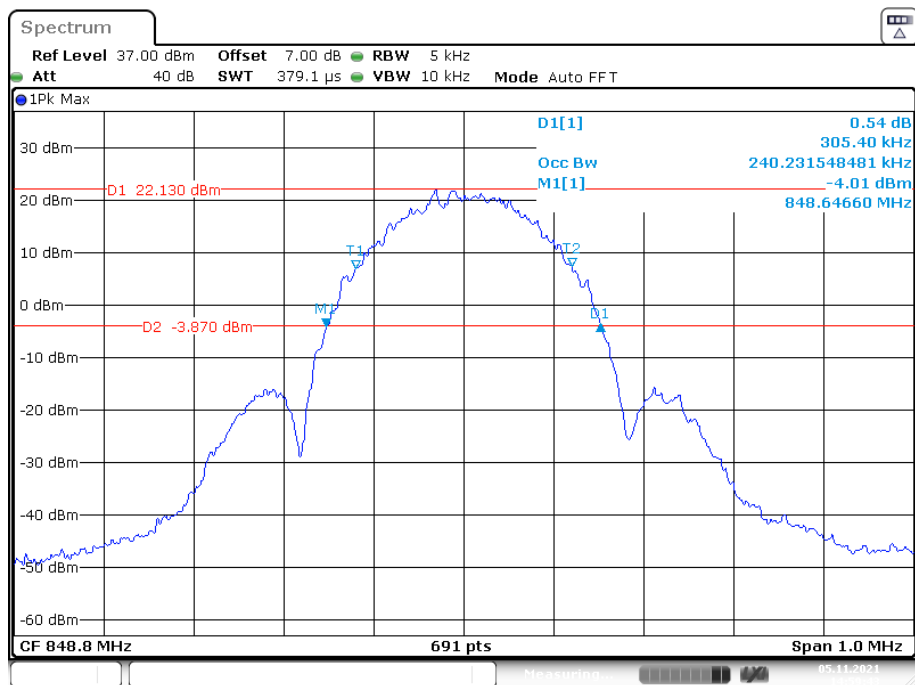
Cellular Band (Part 22H)**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel**

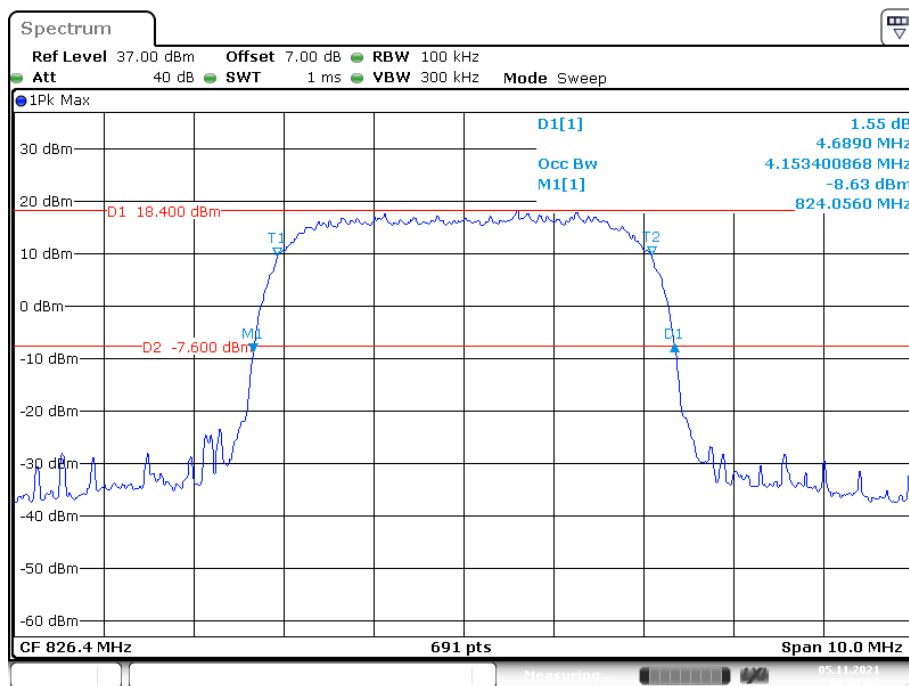
Date: 5.NOV.2021 14:52:05

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

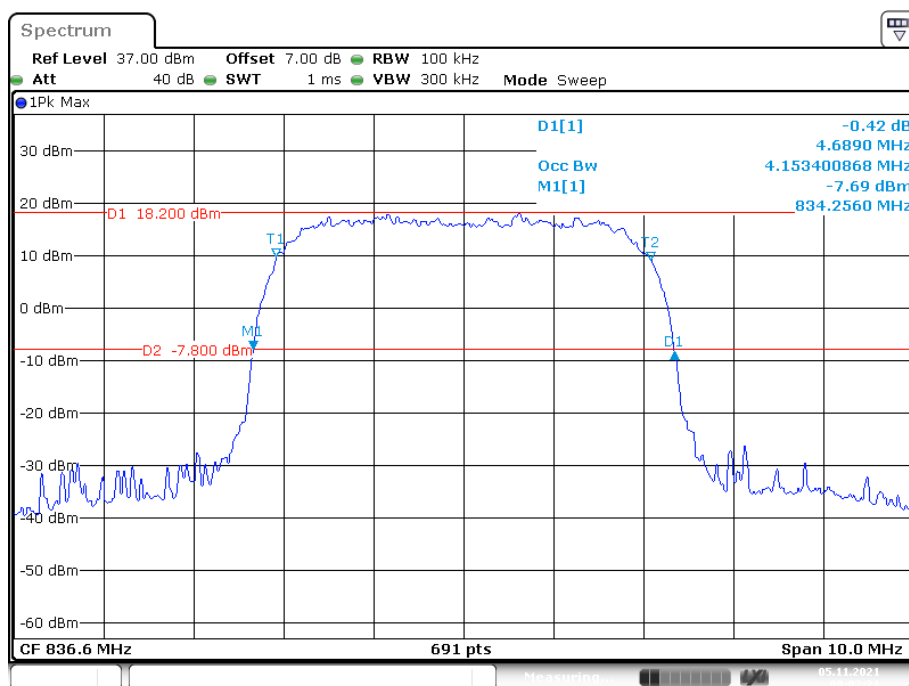
Date: 5.NOV.2021 14:53:16

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

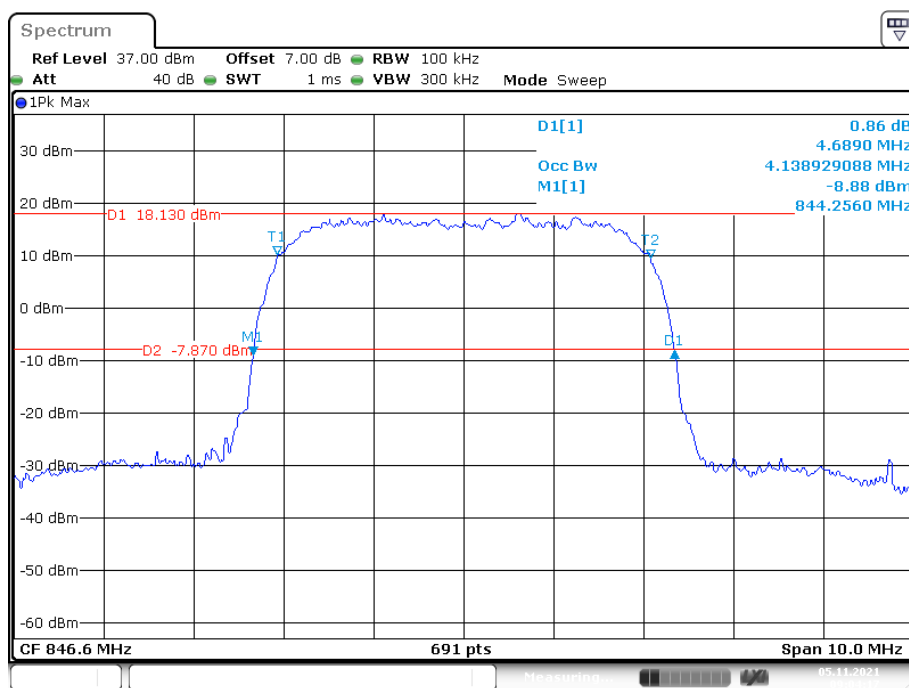
26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel**

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

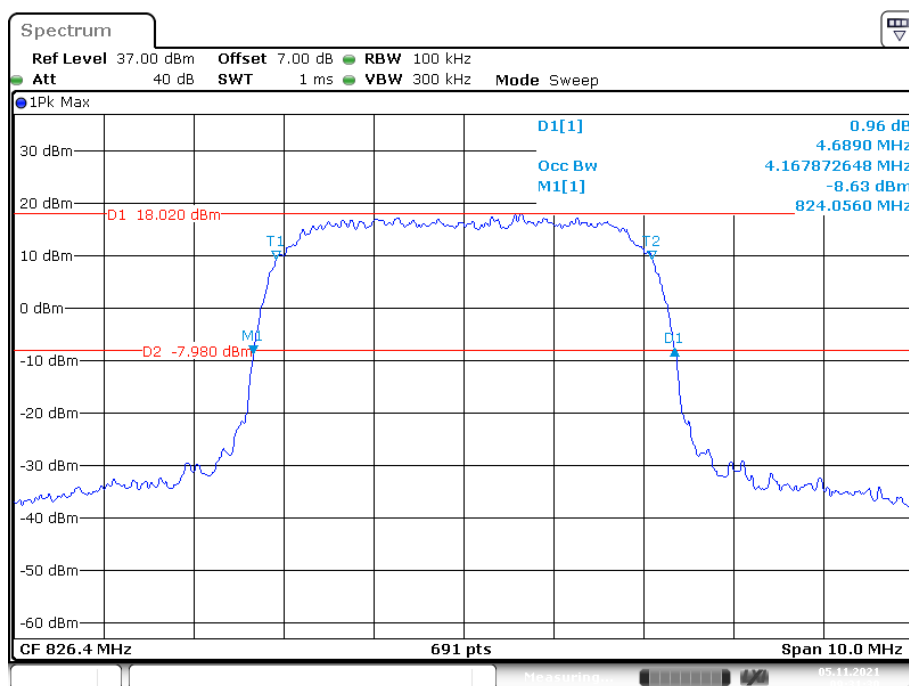
Date: 5.NOV.2021 09:01:03

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

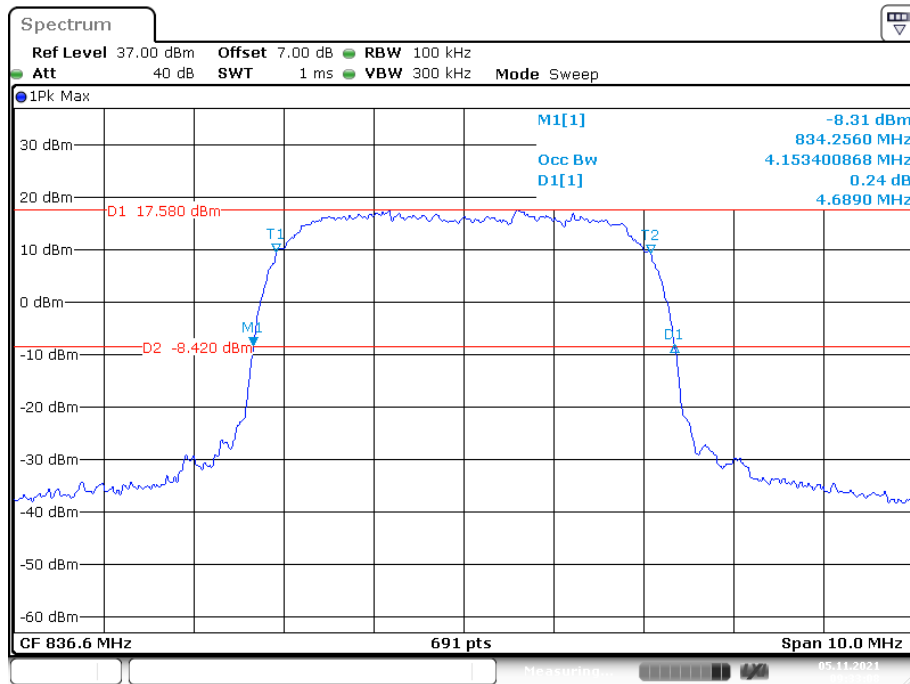
Date: 5.NOV.2021 09:02:22

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

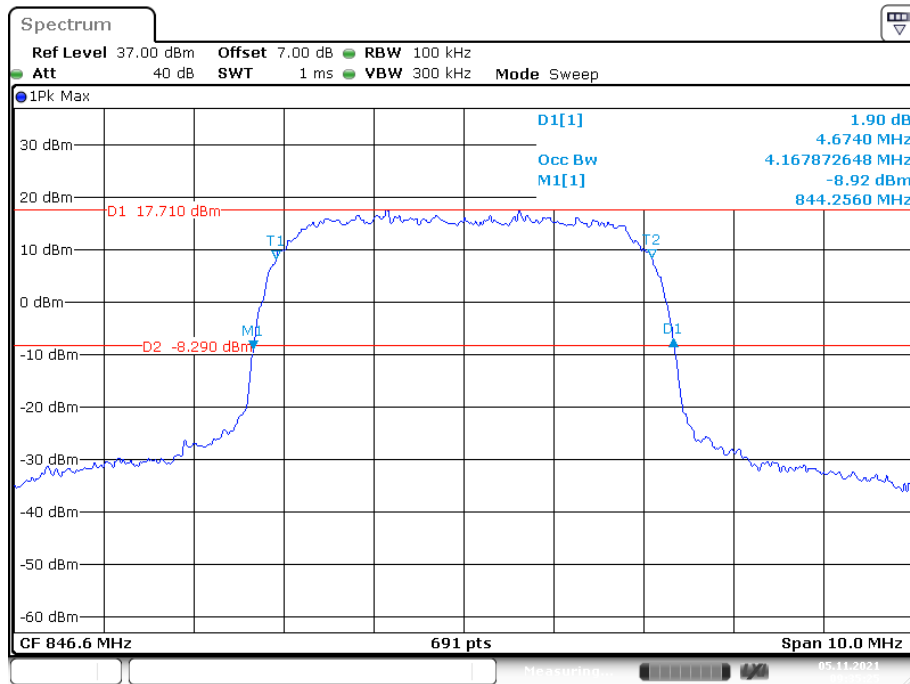
Date: 5.NOV.2021 09:04:17

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

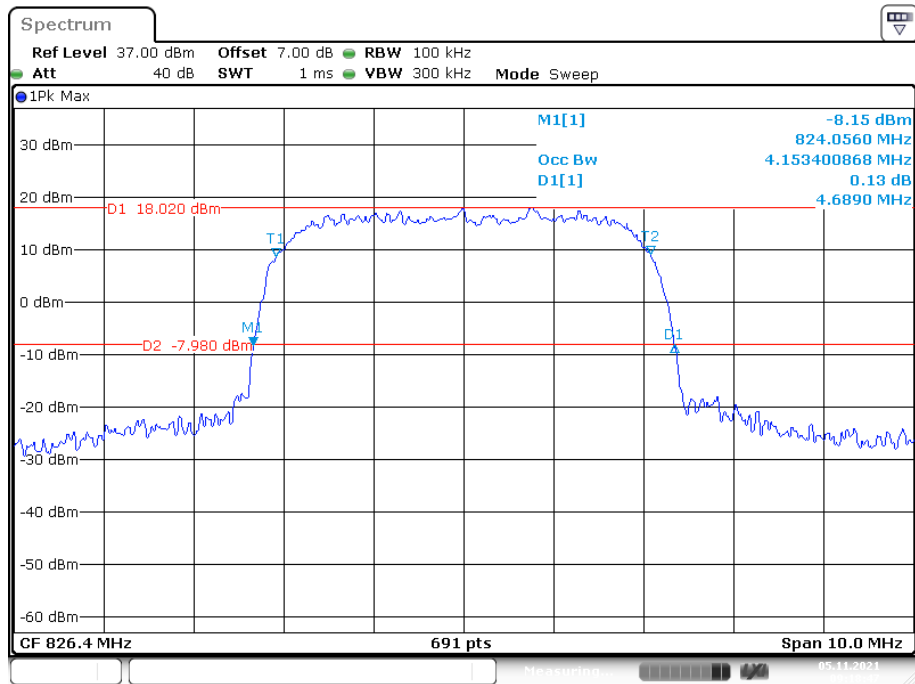
Date: 5.NOV.2021 09:31:30

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

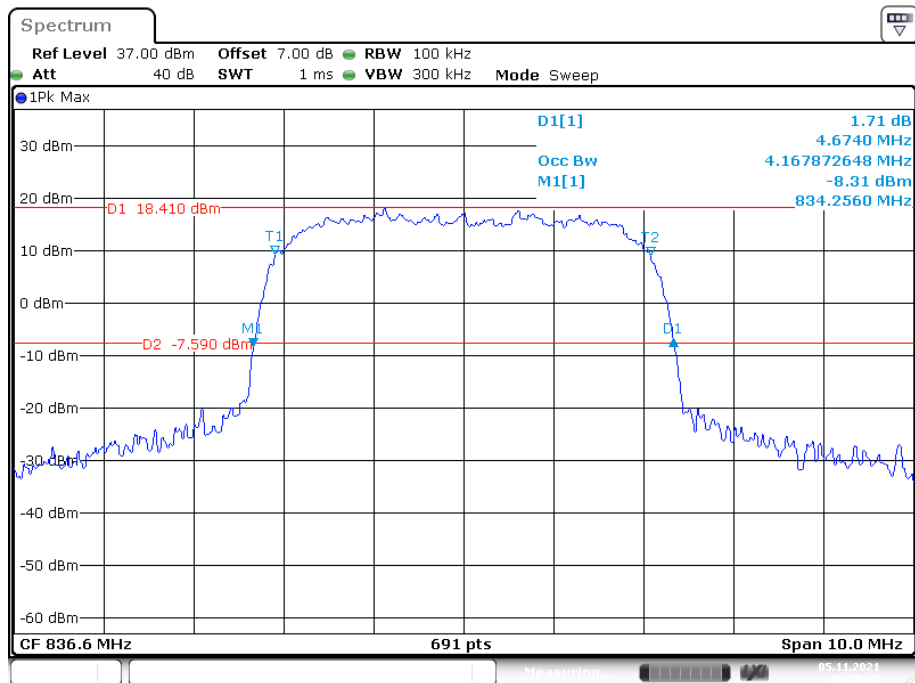
Date: 5.NOV.2021 09:33:08

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

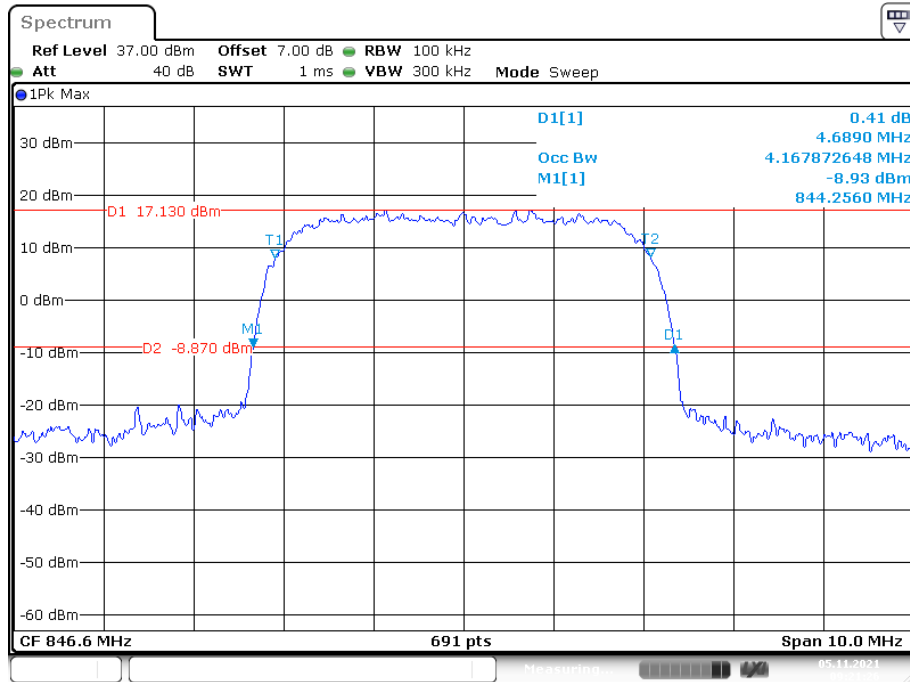
Date: 5.NOV.2021 09:35:25

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

Date: 5.NOV.2021 09:18:48

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

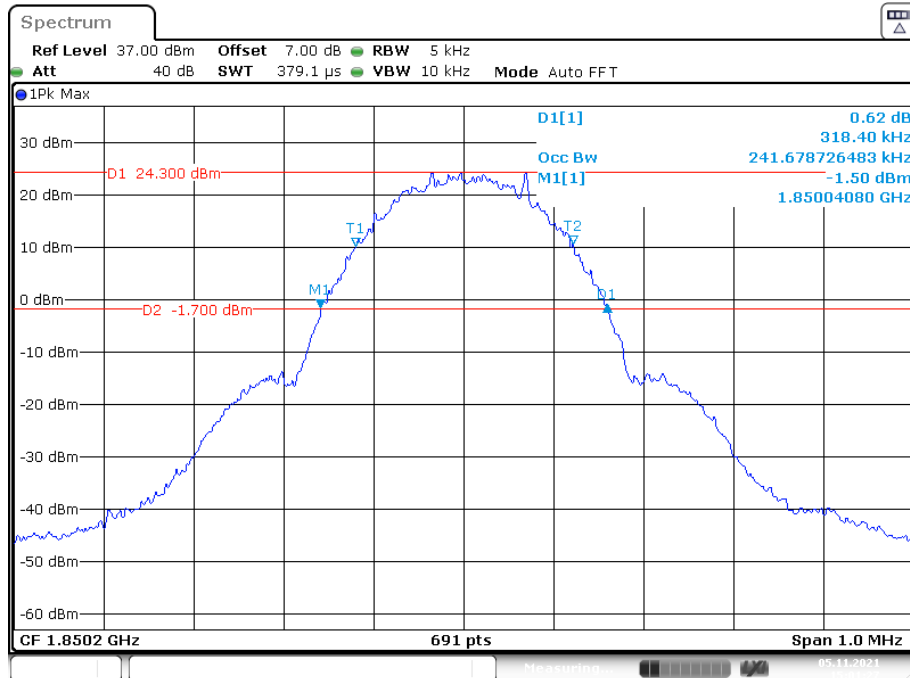
Date: 5.NOV.2021 09:20:18

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

Date: 5.NOV.2021 09:21:27

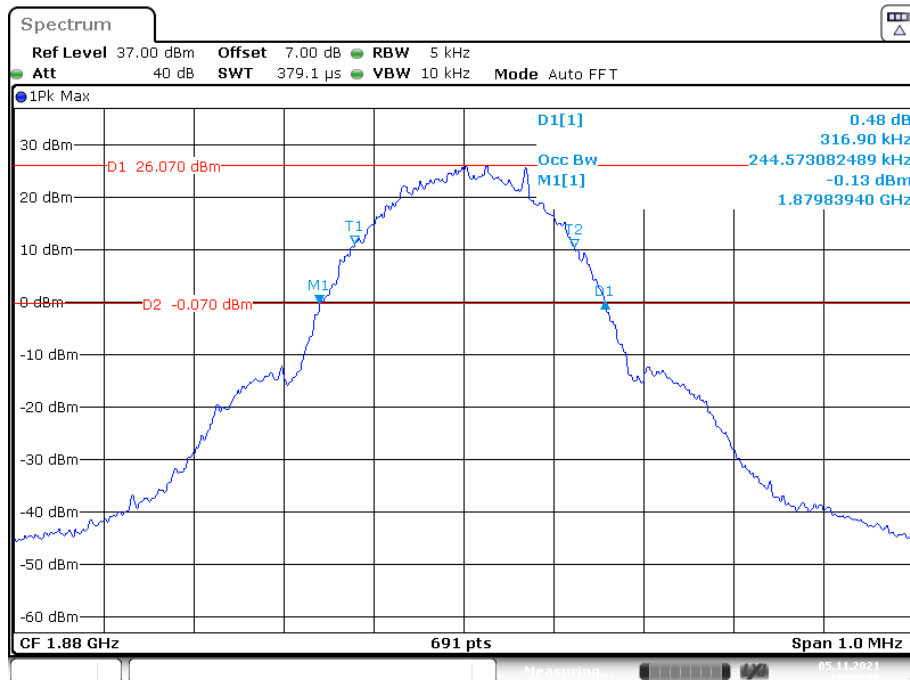
PCS Band (Part 24E)

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



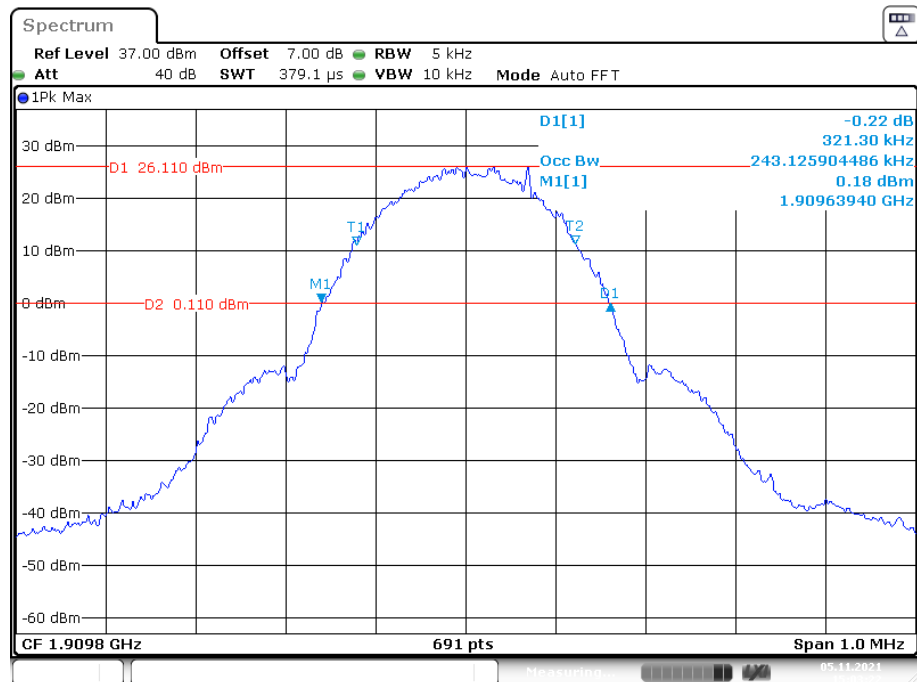
Date: 5.NOV.2021 15:01:27

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



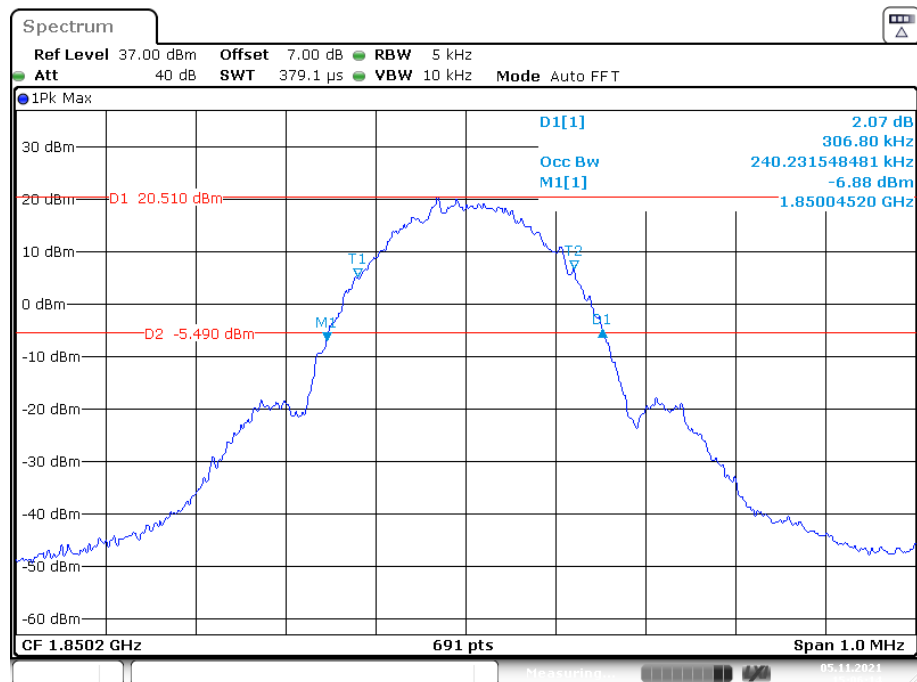
Date: 5.NOV.2021 15:02:33

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

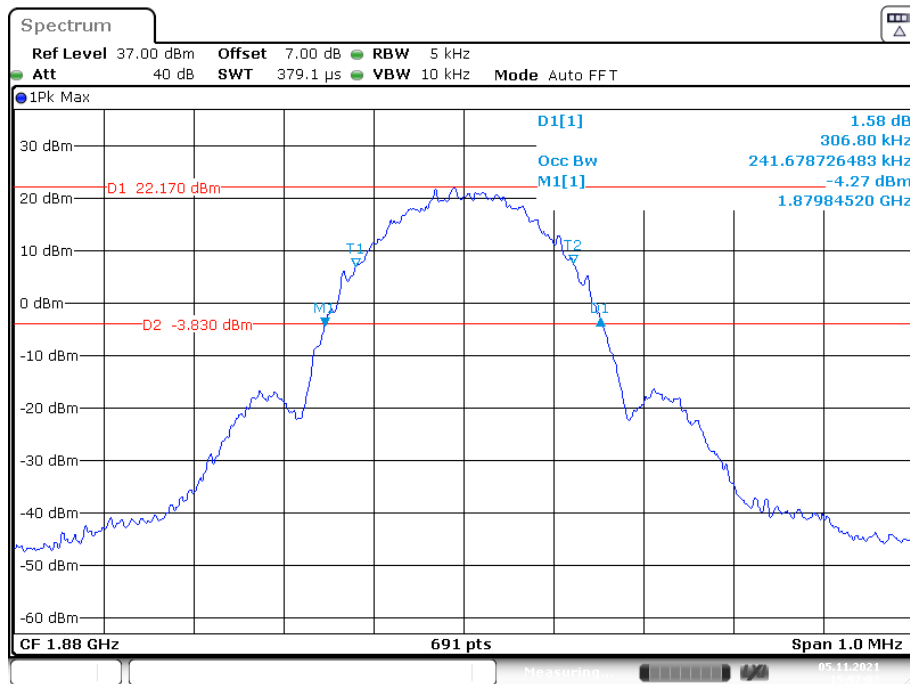
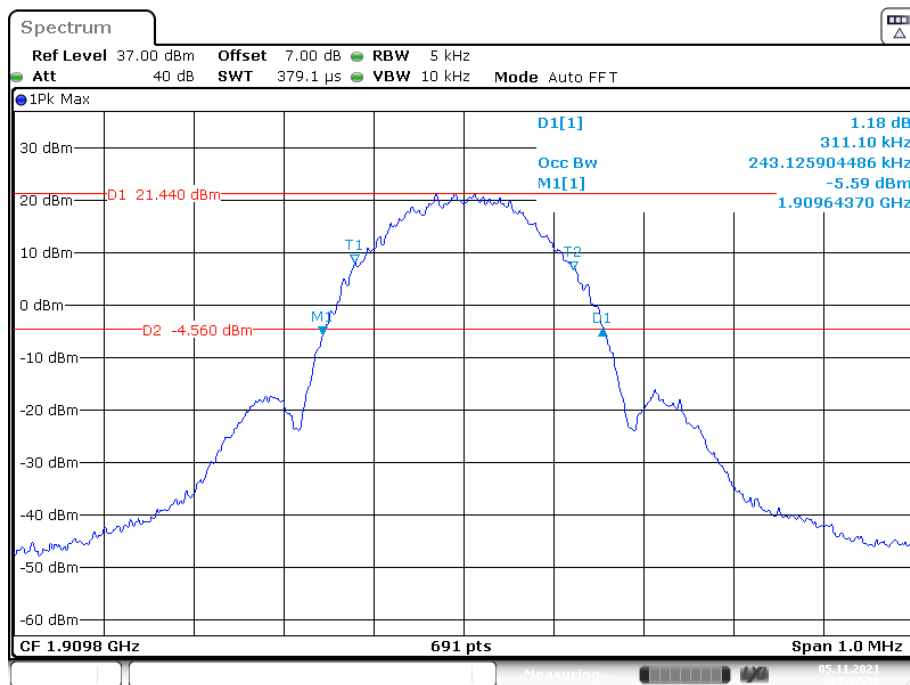


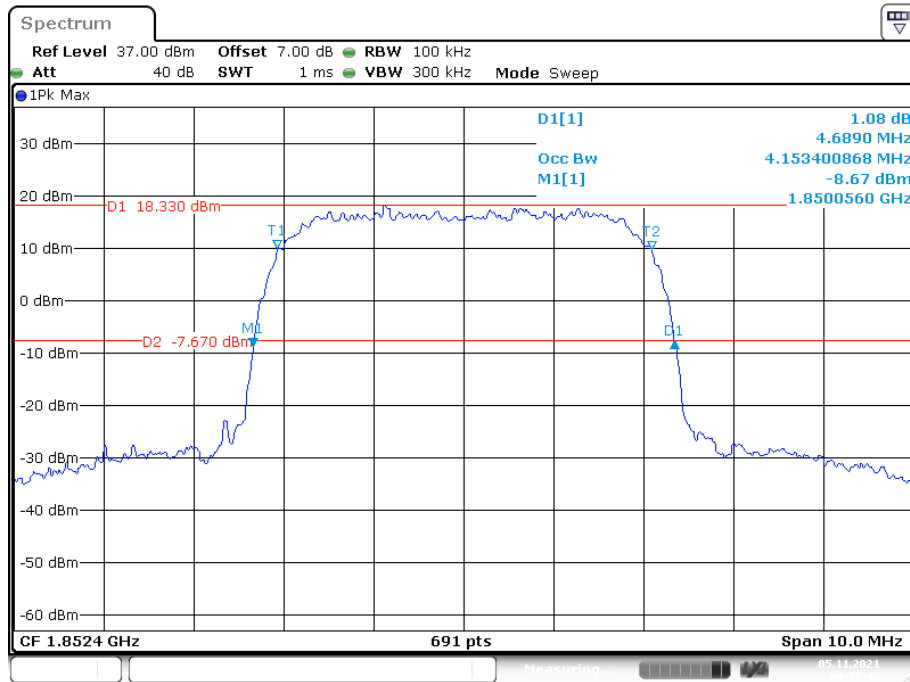
Date: 5.NOV.2021 15:03:23

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

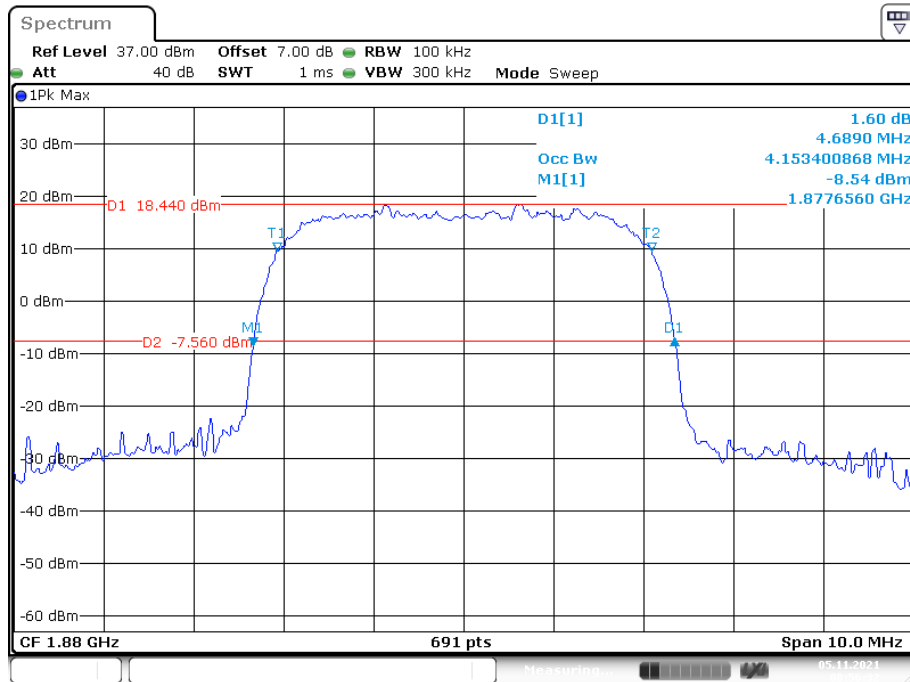


Date: 5.NOV.2021 15:06:14

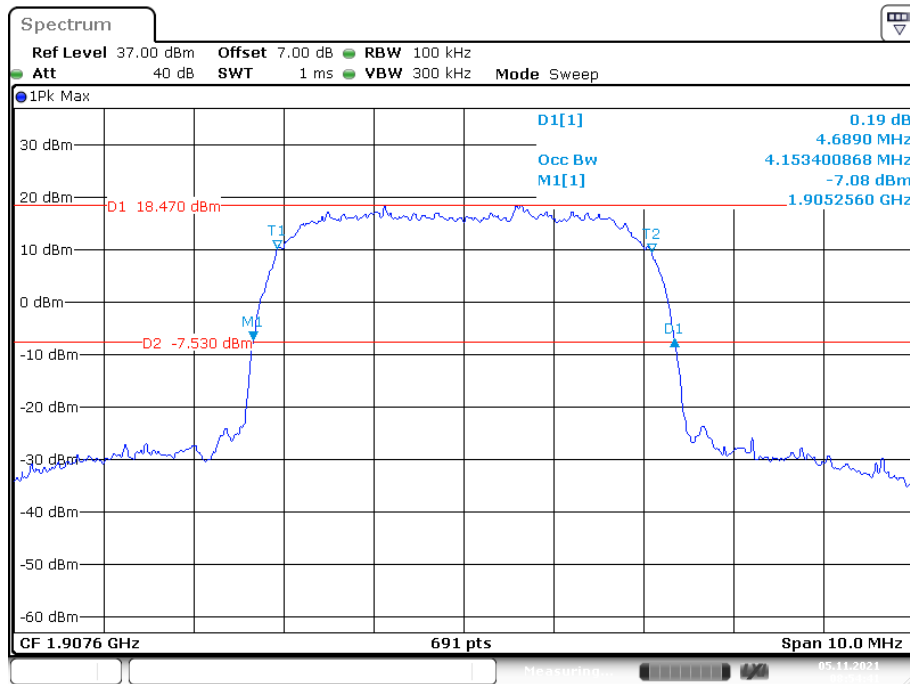
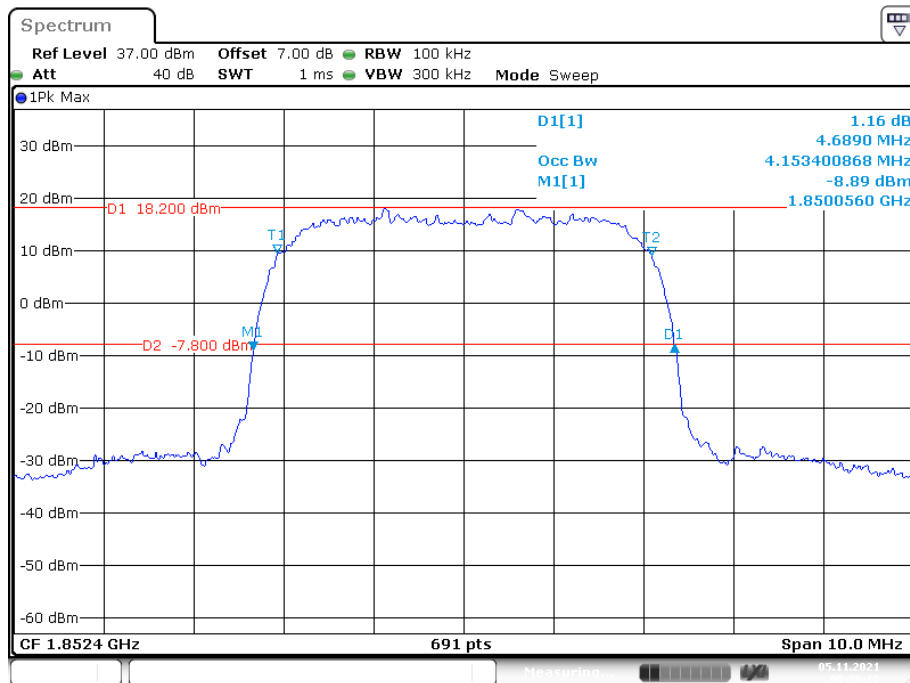
26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel**

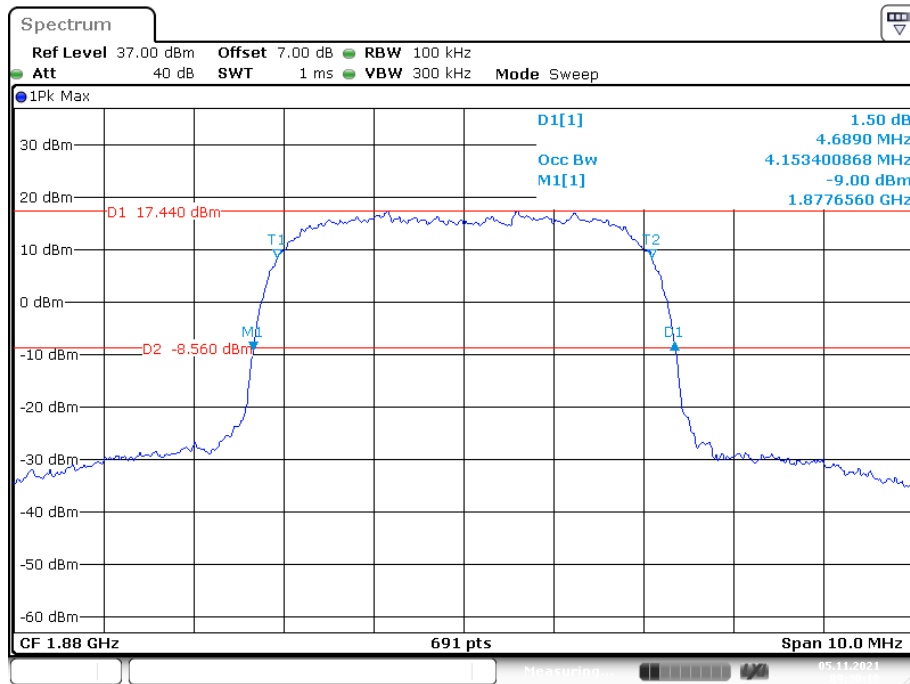
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel

Date: 5.NOV.2021 08:57:44

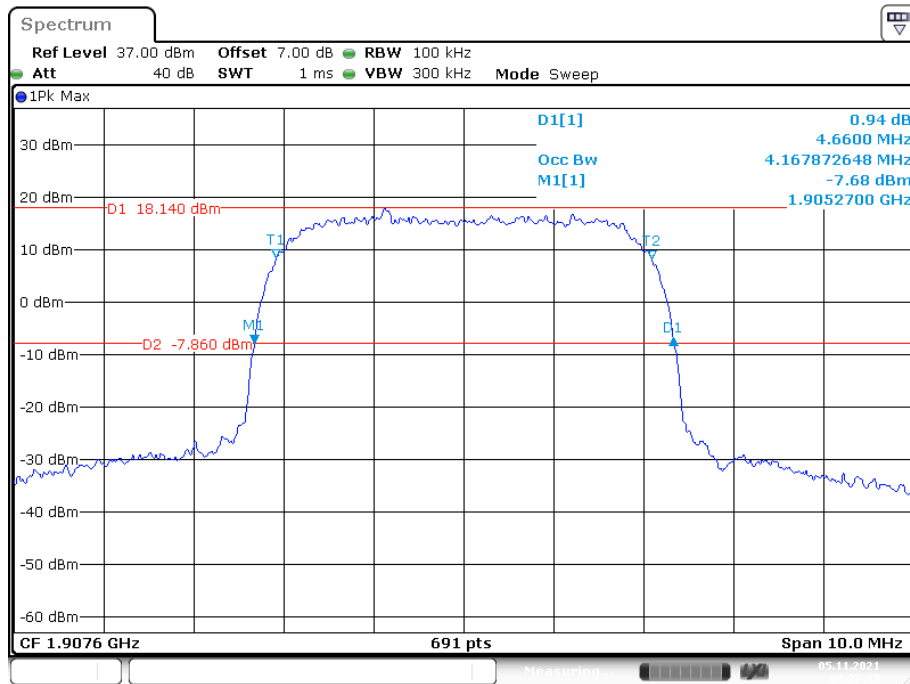
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel

Date: 5.NOV.2021 08:56:32

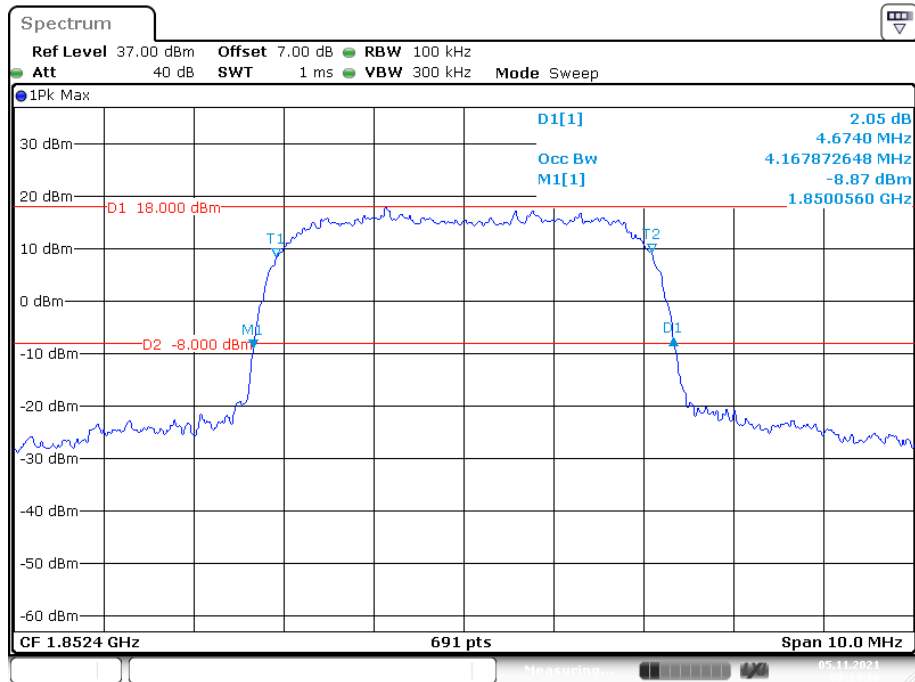
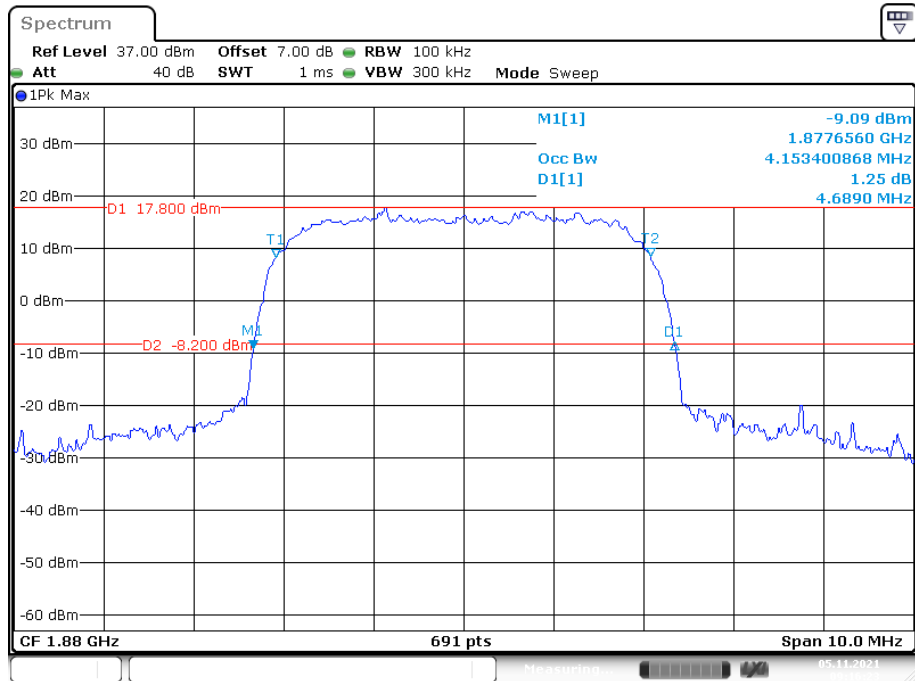
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**

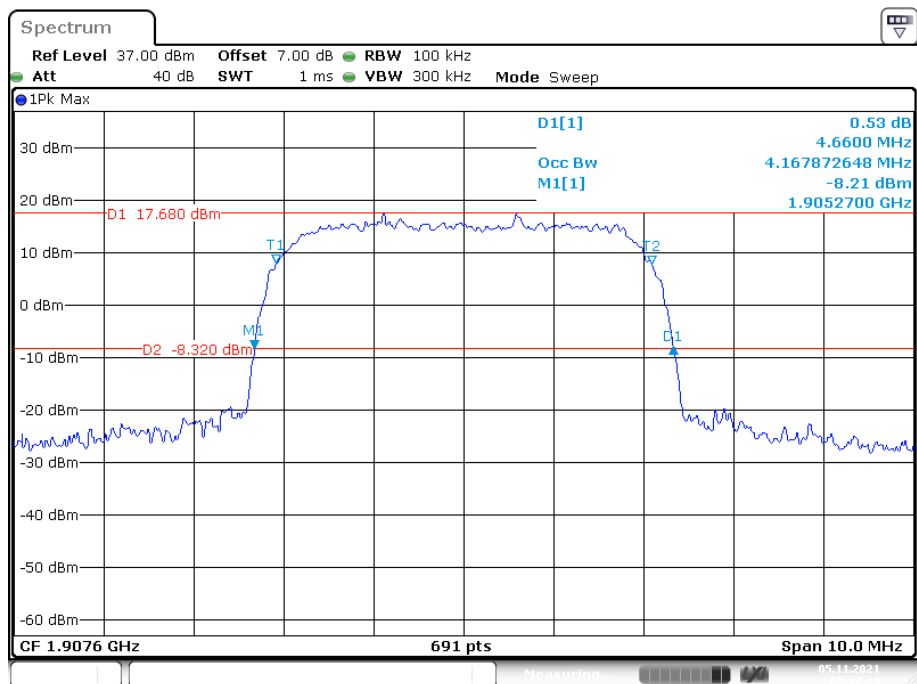
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel

Date: 5.NOV.2021 09:30:18

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

Date: 5.NOV.2021 09:27:33

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: 5.NOV.2021 09:17:25

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	1.102	1.260	1.102	1.254	1.096	1.260
	16QAM	1.096	1.254	1.102	1.260	1.102	1.260
3 MHz	QPSK	2.695	3.000	2.695	3.012	2.695	3.012
	16QAM	2.695	3.024	2.683	3.000	2.683	3.012
5 MHz	QPSK	4.531	5.000	4.511	5.020	4.511	5.000
	16QAM	4.511	4.980	4.531	5.020	4.551	5.000
10 MHz	QPSK	8.982	9.760	8.982	9.800	8.942	9.800
	16QAM	8.942	9.760	8.982	9.840	8.982	9.840
15 MHz	QPSK	13.533	15.060	13.473	15.060	13.533	15.120
	16QAM	13.473	15.060	13.593	15.180	13.533	15.060
20 MHz	QPSK	17.964	19.600	17.964	19.680	18.044	19.840
	16QAM	17.964	19.680	18.044	19.840	17.964	19.680

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	1.090	1.260	1.102	1.260	1.102	1.254
	16QAM	1.114	1.260	1.096	1.254	1.102	1.260
3 MHz	QPSK	2.707	3.000	2.695	3.012	2.695	3.024
	16QAM	2.695	3.024	2.683	3.012	2.695	3.012
5 MHz	QPSK	4.531	5.000	4.511	5.000	4.511	5.000
	16QAM	4.511	5.000	4.551	5.040	4.551	5.020
10 MHz	QPSK	8.980	9.800	8.982	9.760	8.942	9.800
	16QAM	8.942	9.760	8.942	9.720	8.942	9.800
15 MHz	QPSK	13.533	15.120	13.473	15.060	13.533	15.120
	16QAM	13.593	15.060	13.533	15.060	13.533	15.060
20 MHz	QPSK	17.964	19.680	17.964	19.600	17.964	19.840
	16QAM	18.044	19.840	18.044	19.760	17.964	19.680

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	1.254	1.102	1.260	1.102	1.254
	16QAM	1.102	1.260	1.096	1.248	1.102	1.254
3 MHz	QPSK	2.695	2.988	2.695	3.012	2.695	3.000
	16QAM	2.695	3.012	2.695	3.000	2.683	3.024
5 MHz	QPSK	4.531	5.000	4.531	5.020	4.491	5.000
	16QAM	4.511	4.980	4.531	5.000	4.531	5.020
10 MHz	QPSK	8.982	9.800	8.942	9.720	8.942	9.800
	16QAM	8.942	9.720	8.942	9.800	8.942	9.880

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	4.531	5.000	4.511	5.020	4.511	5.000
	16QAM	4.511	5.000	4.551	5.020	4.551	5.040
10 MHz	QPSK	8.982	9.800	8.942	9.760	8.942	9.760
	16QAM	8.942	9.760	8.982	9.800	8.942	9.880
15 MHz	QPSK	13.473	15.060	13.473	14.940	13.533	15.120
	16QAM	13.533	15.060	13.533	15.180	13.533	15.120
20 MHz	QPSK	17.964	19.600	17.964	19.600	18.044	19.840
	16QAM	18.044	19.760	18.044	19.840	17.964	19.760

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

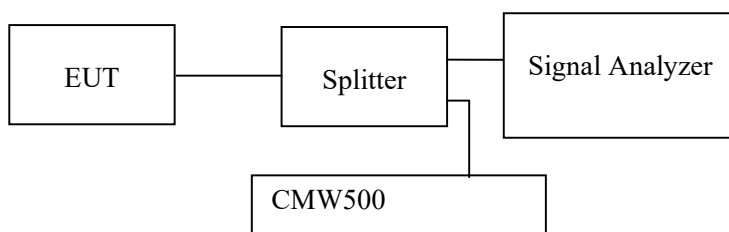
Applicable Standard

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 10th harmonic.



Test Data

Environmental Conditions

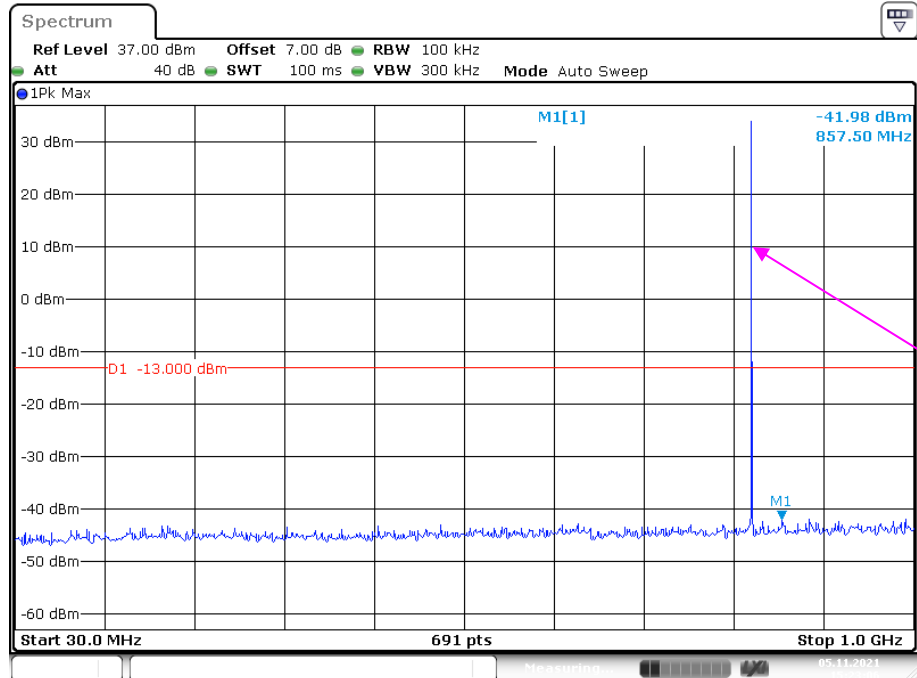
Temperature:	27.5 °C
Relative Humidity:	56.2 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu on 2021-11-04 and 2021-11-05.

EUT operation mode: Transmitting

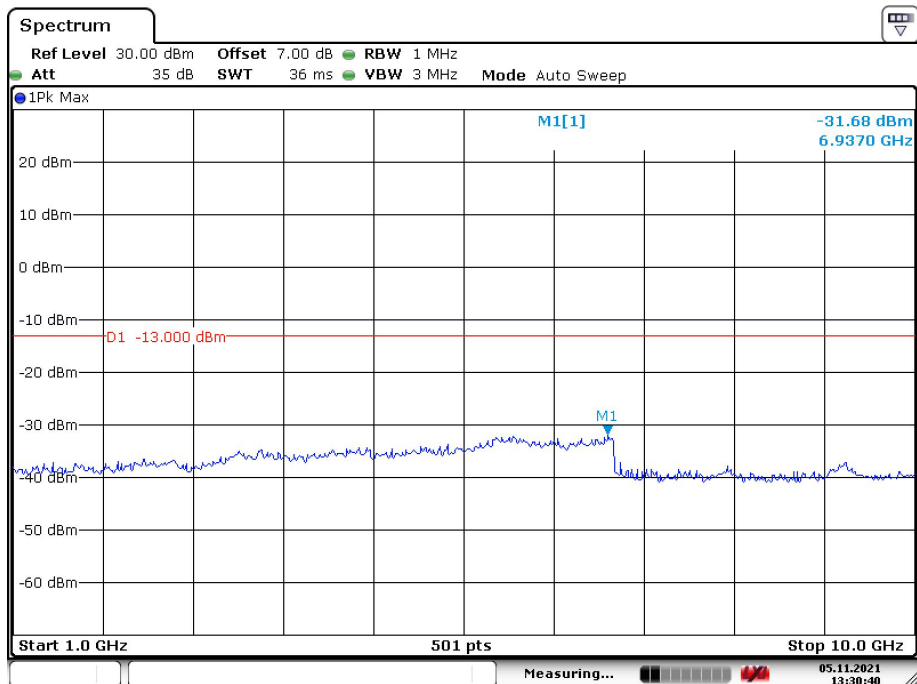
Test result: Pass

Please refer to the following plots.

Cellular Band (Part 22H)**Low Channel:****30 MHz – 1 GHz (GSM Mode)**

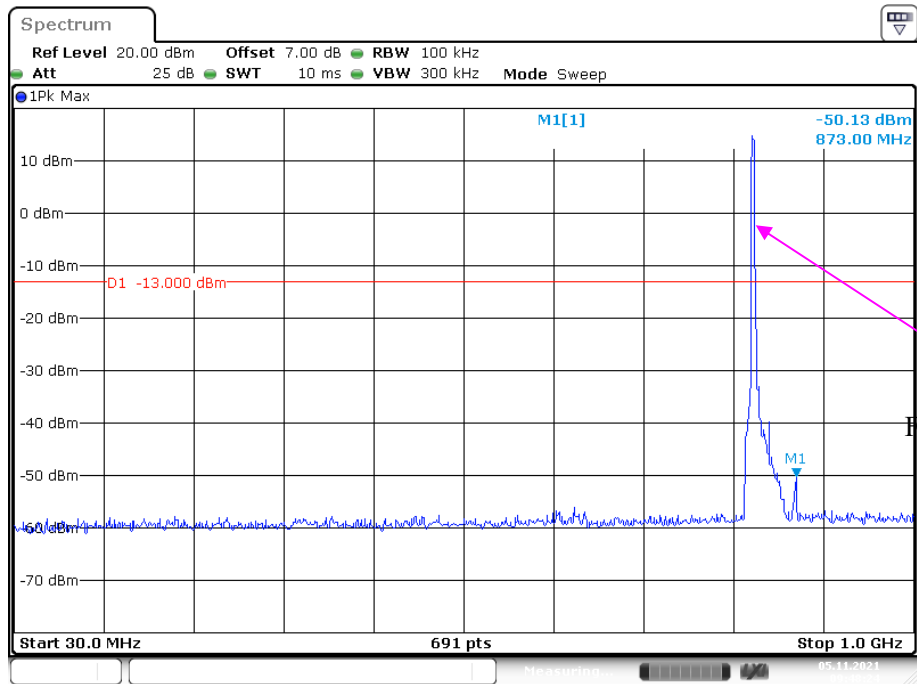
Date: 5.NOV.2021 15:23:06

Fundamental test

1 GHz – 10 GHz (GSM Mode)

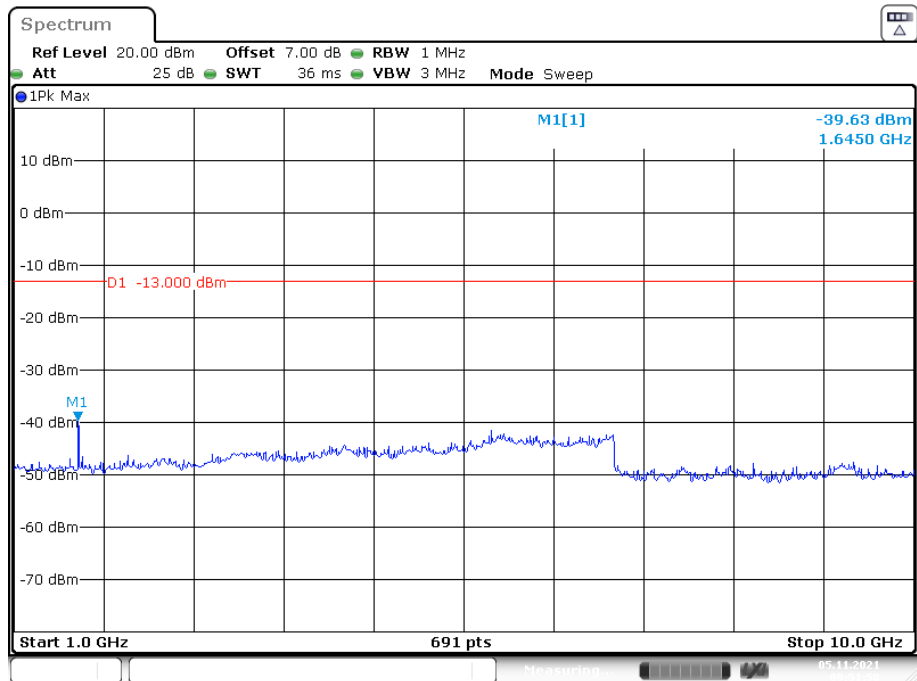
Date: 5.NOV.2021 13:30:40

30 MHz – 1 GHz (WCDMA Mode)

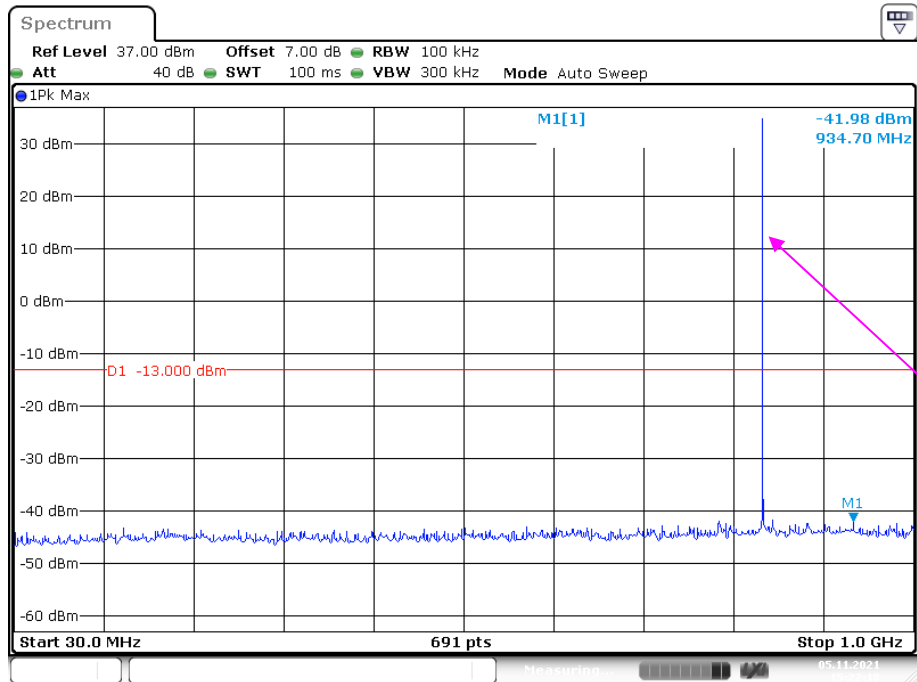


Date: 5.NOV.2021 09:48:24

1 GHz – 10 GHz (WCDMA Mode)

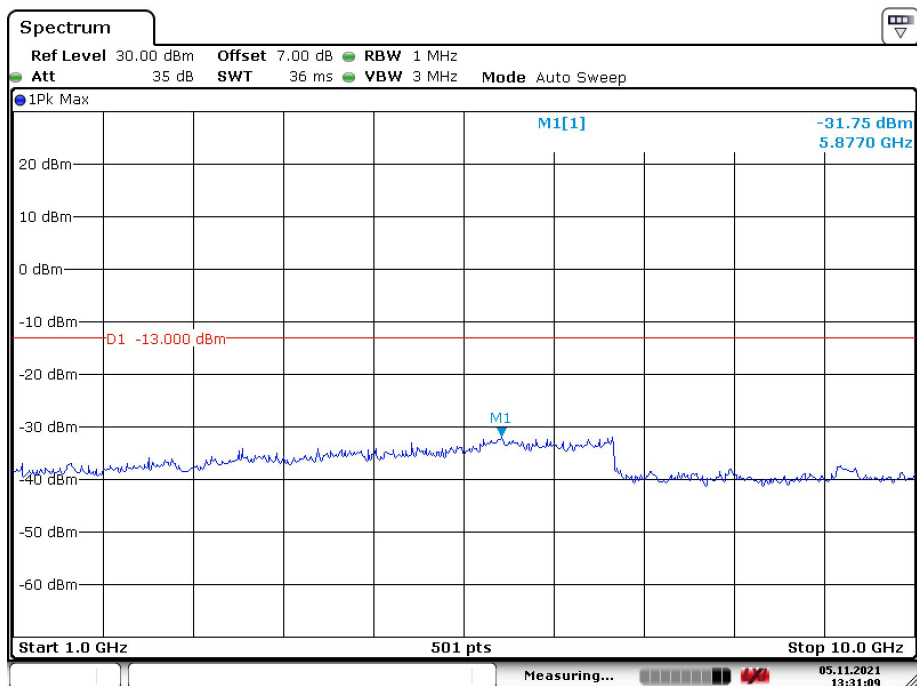


Date: 5.NOV.2021 09:51:58

Middle Channel:**30 MHz – 1 GHz (GSM Mode)**

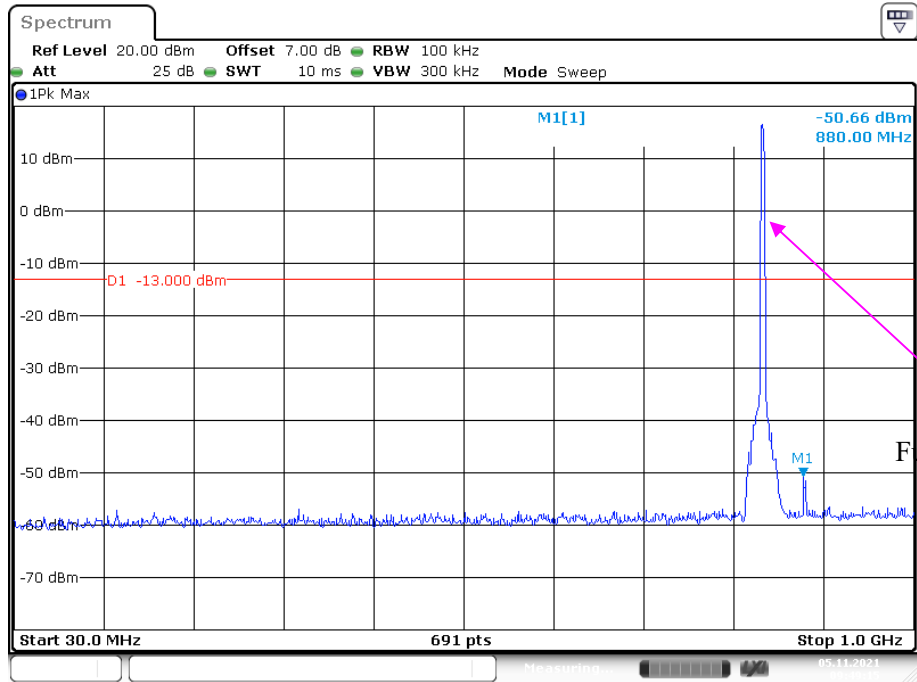
Date: 5.NOV.2021 15:22:18

Fundamental test

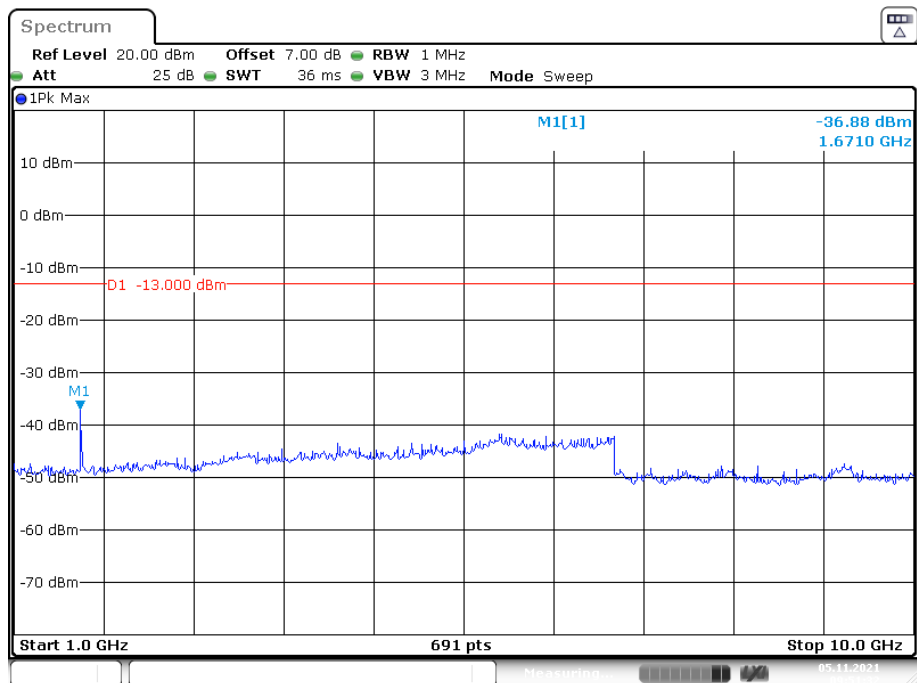
1 GHz – 10 GHz (GSM Mode)

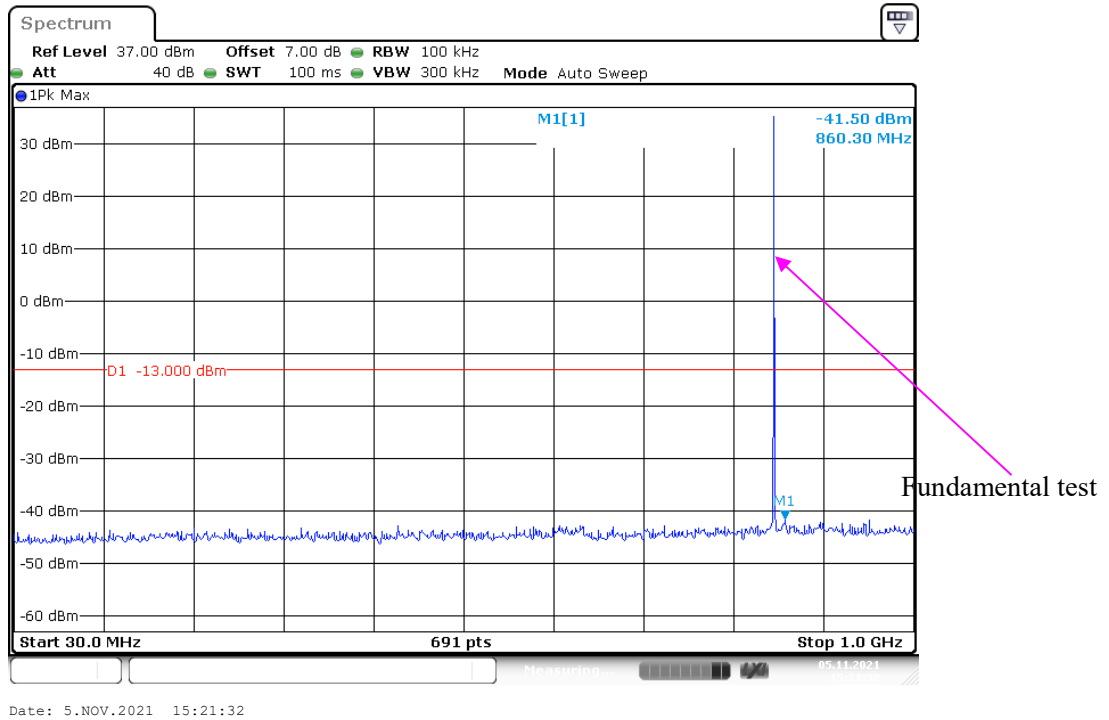
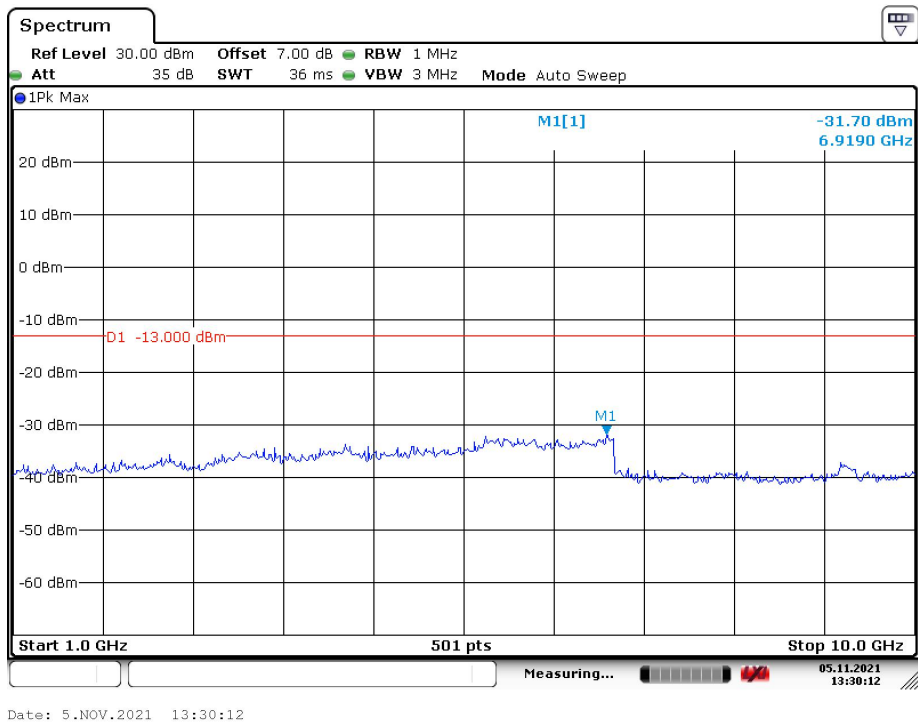
Date: 5.NOV.2021 13:31:10

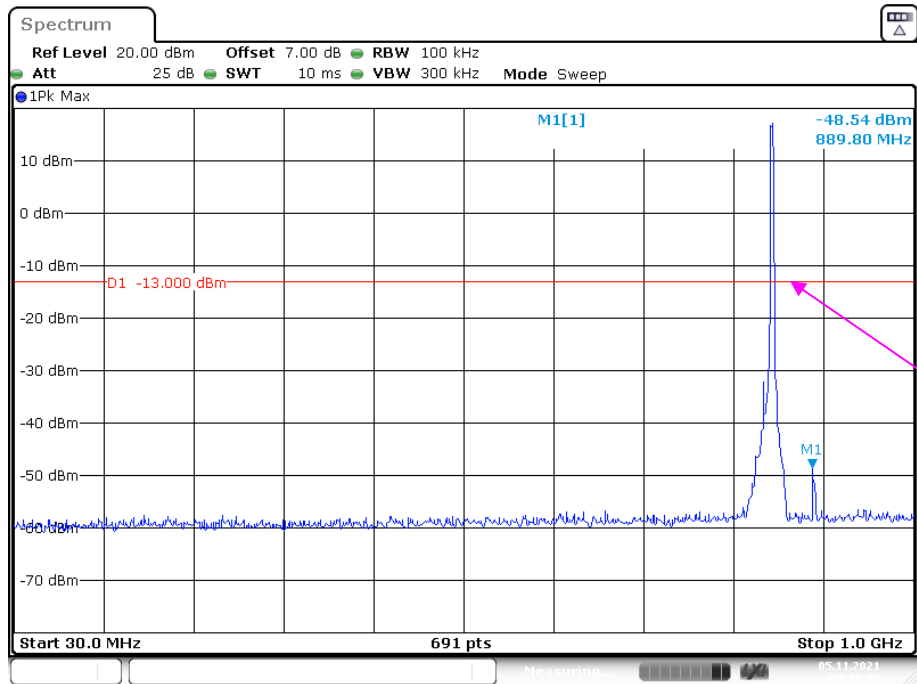
30 MHz – 1 GHz (WCDMA Mode)



1 GHz – 10 GHz (WCDMA Mode)

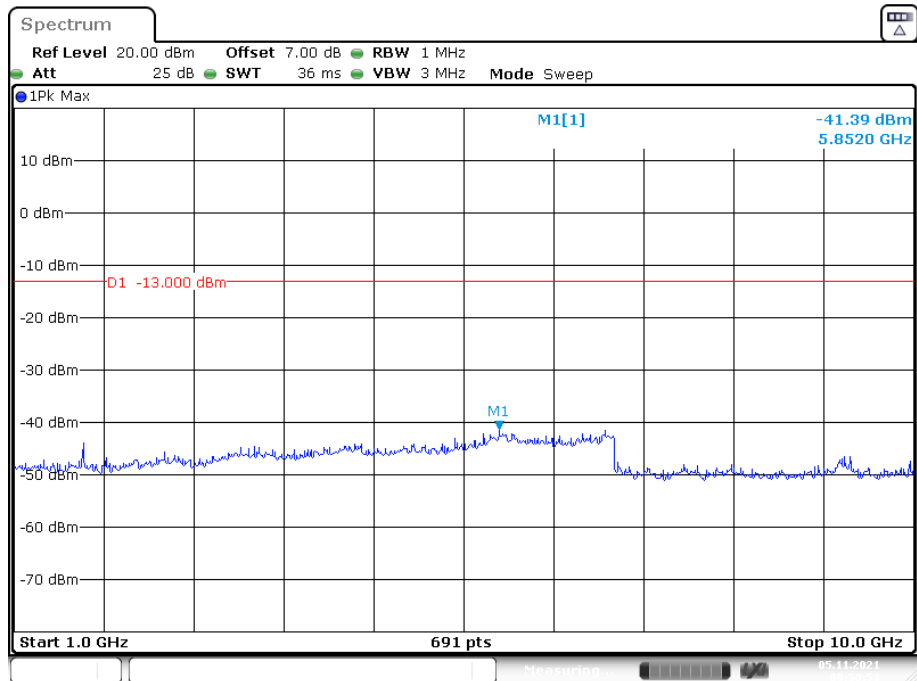


High Channel:**30 MHz – 1 GHz (GSM Mode)****1 GHz – 10 GHz (GSM Mode)**

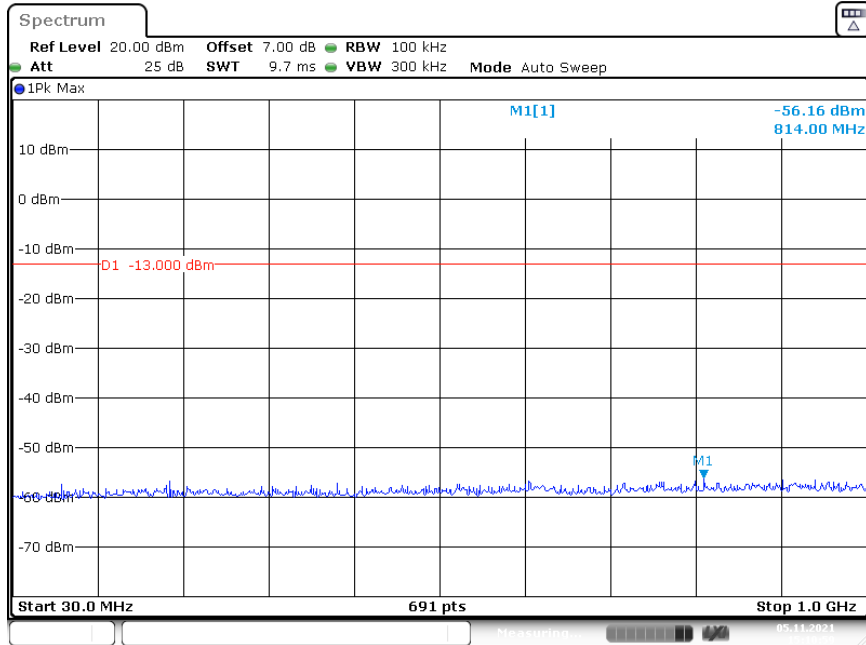
30 MHz – 1 GHz (WCDMA Mode)

Date: 5.NOV.2021 09:49:49

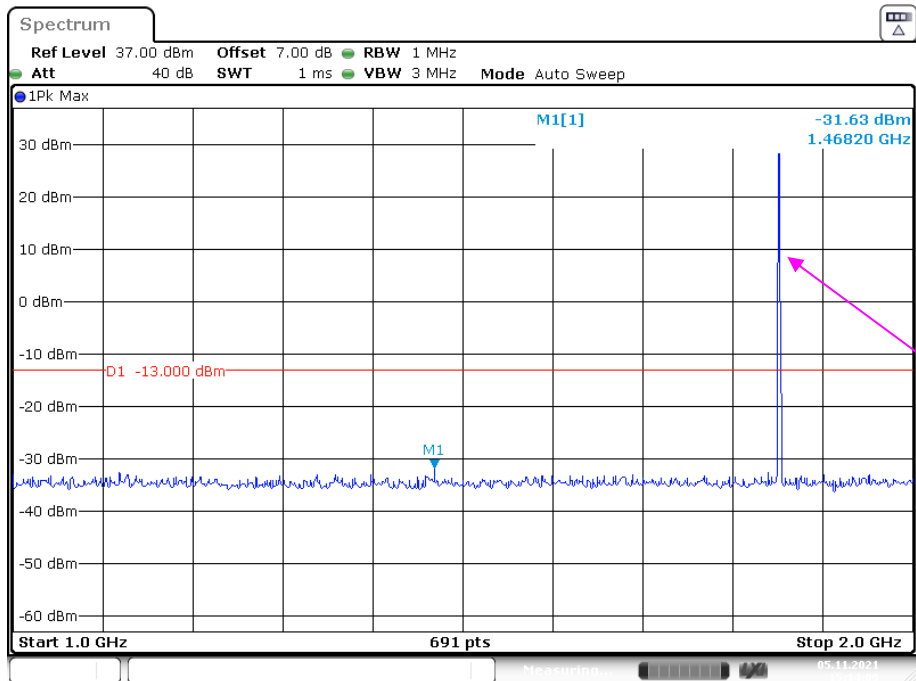
Fundamental test

1 GHz – 10 GHz (WCDMA Mode)

Date: 5.NOV.2021 09:50:53

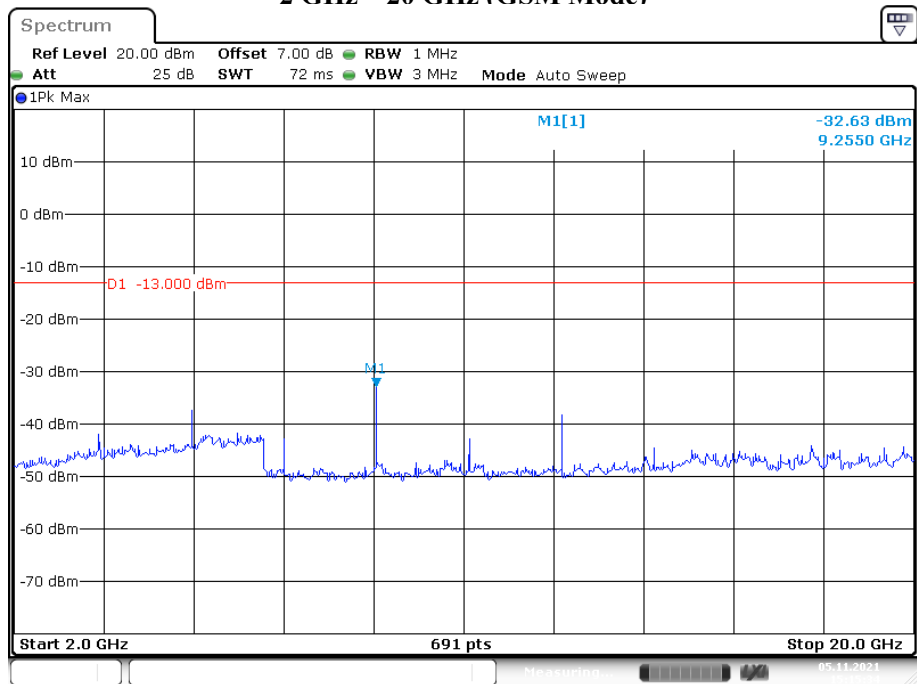
**PCS Band (Part 24E)
Low Channel:****30 MHz – 1 GHz (GSM Mode)**

Date: 5.NOV.2021 15:10:59

1 GHz – 2 GHz (GSM Mode)

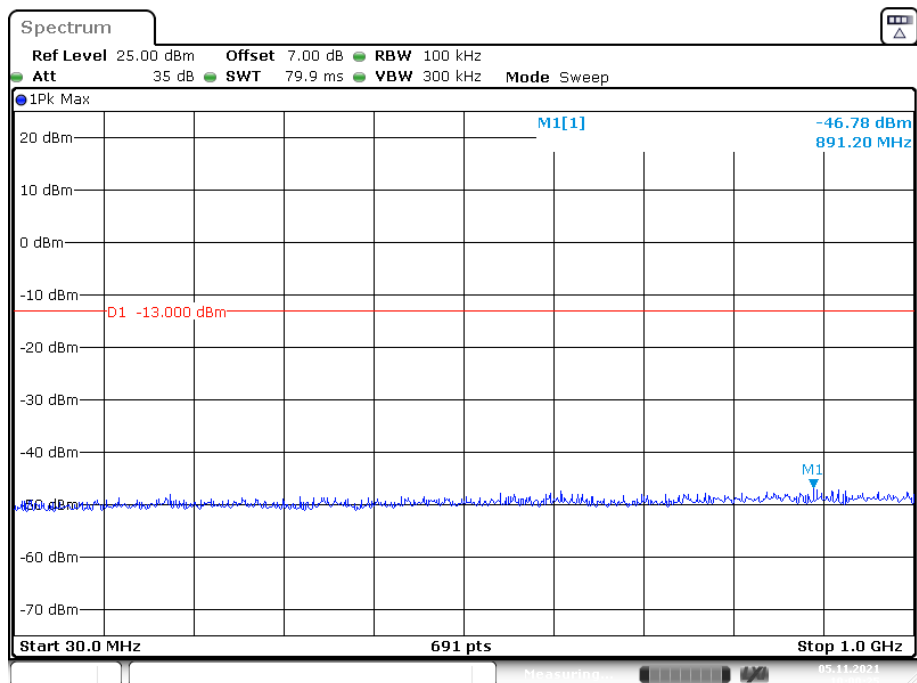
Date: 5.NOV.2021 15:14:09

2 GHz – 20 GHz (GSM Mode)



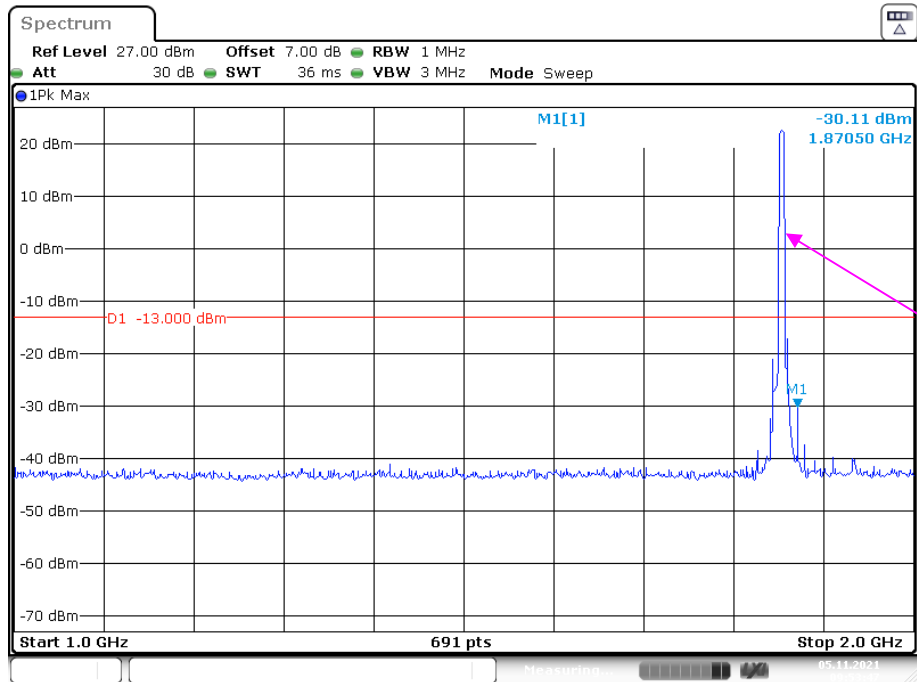
Date: 5.NOV.2021 15:15:34

30 MHz – 1 GHz (WCDMA Mode)



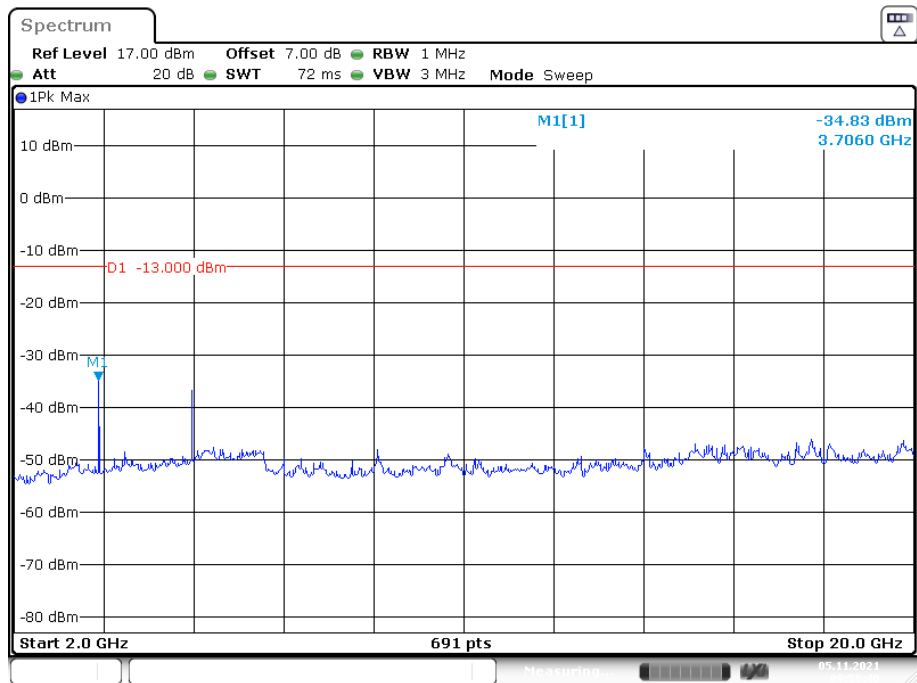
Date: 5.NOV.2021 10:00:26

1 GHz – 2 GHz (WCDMA Mode)

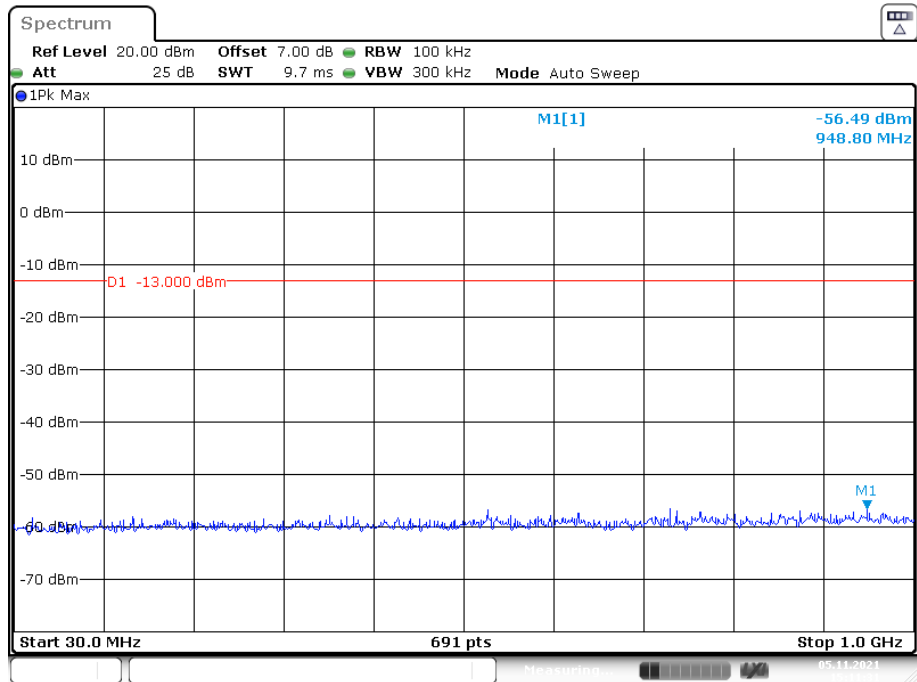


Date: 5.NOV.2021 09:53:48

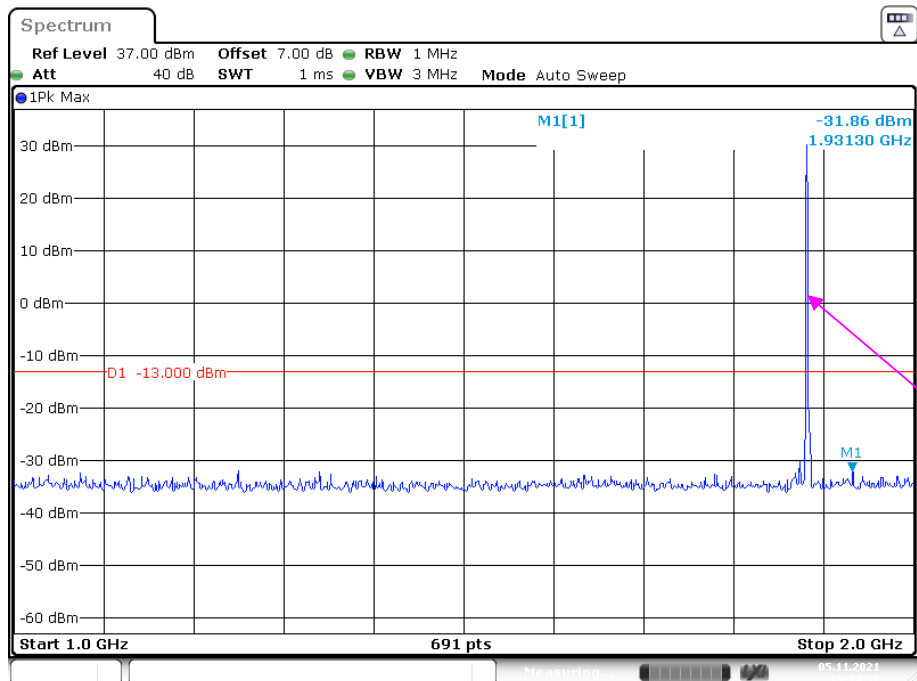
2 GHz – 20 GHz (WCDMA Mode)



Date: 5.NOV.2021 09:58:41

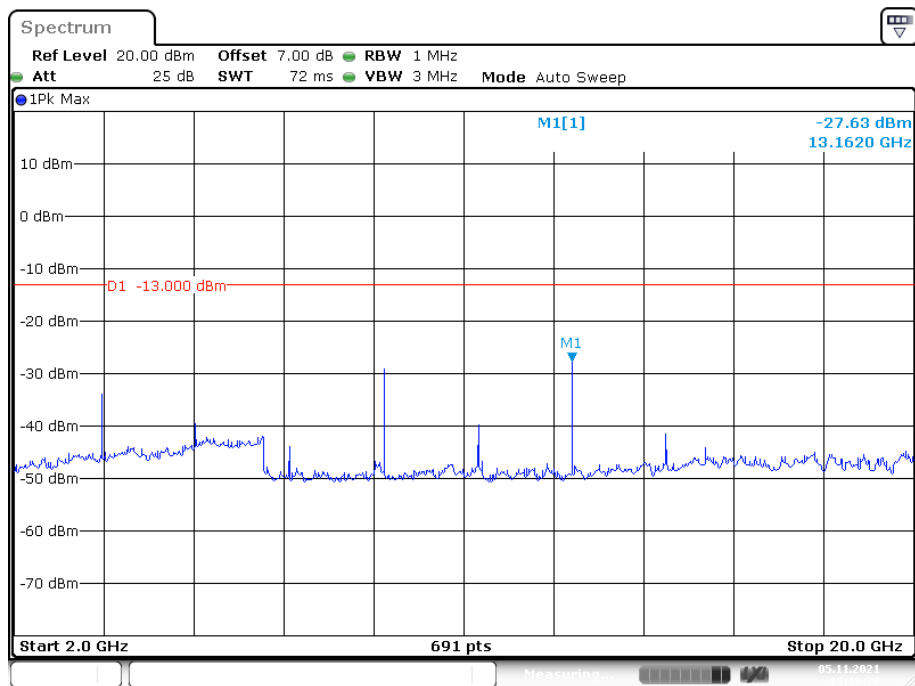
Middle Channel:**30 MHz – 1 GHz (GSM Mode)**

Date: 5.NOV.2021 15:11:31

1 GHz – 2 GHz (GSM Mode)

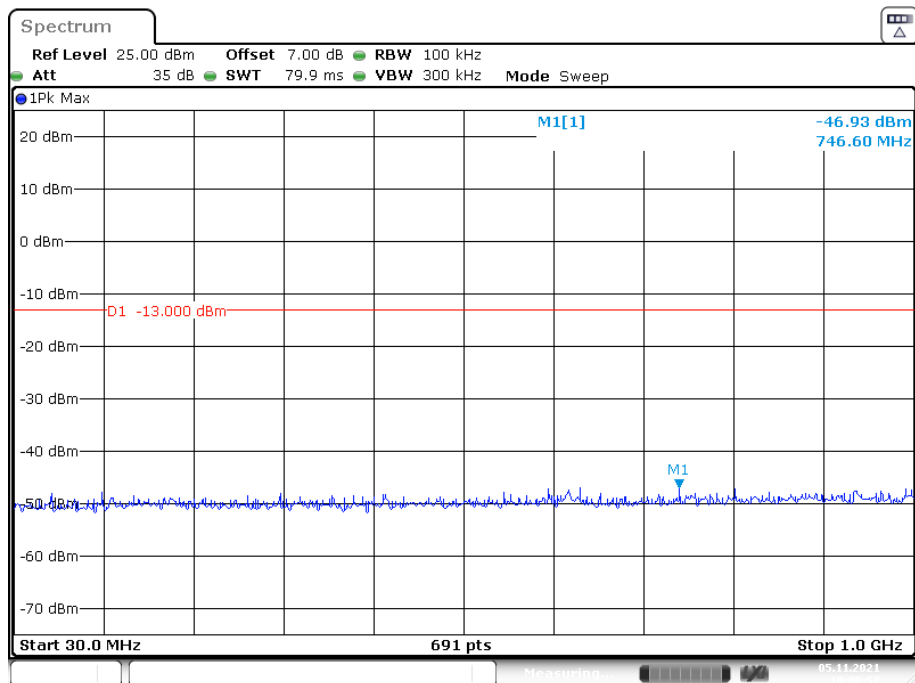
Date: 5.NOV.2021 15:14:37

2 GHz – 20 GHz (GSM Mode)



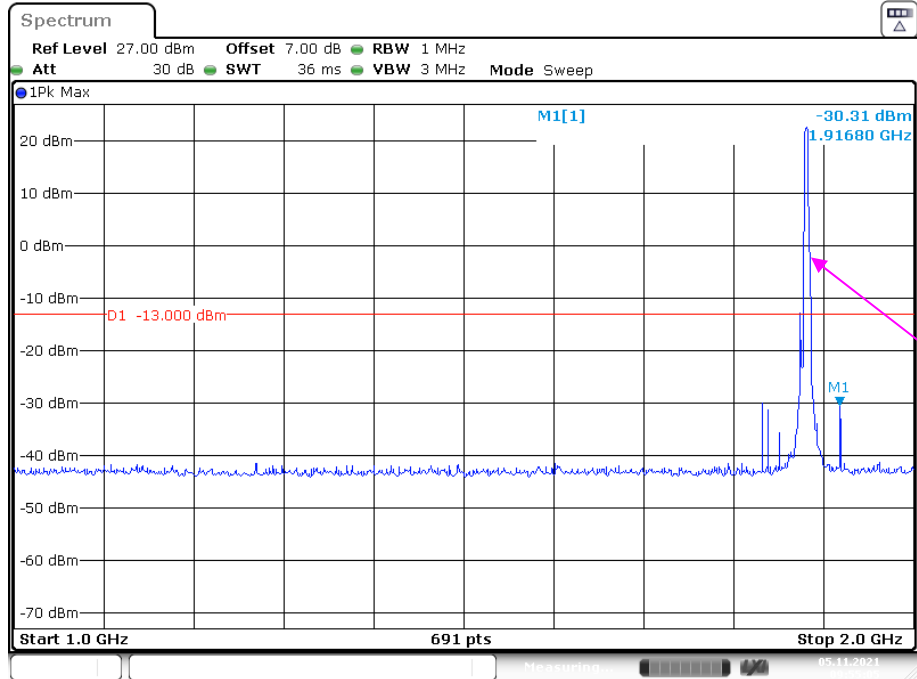
Date: 5.NOV.2021 15:16:28

30 MHz – 1 GHz (WCDMA Mode)



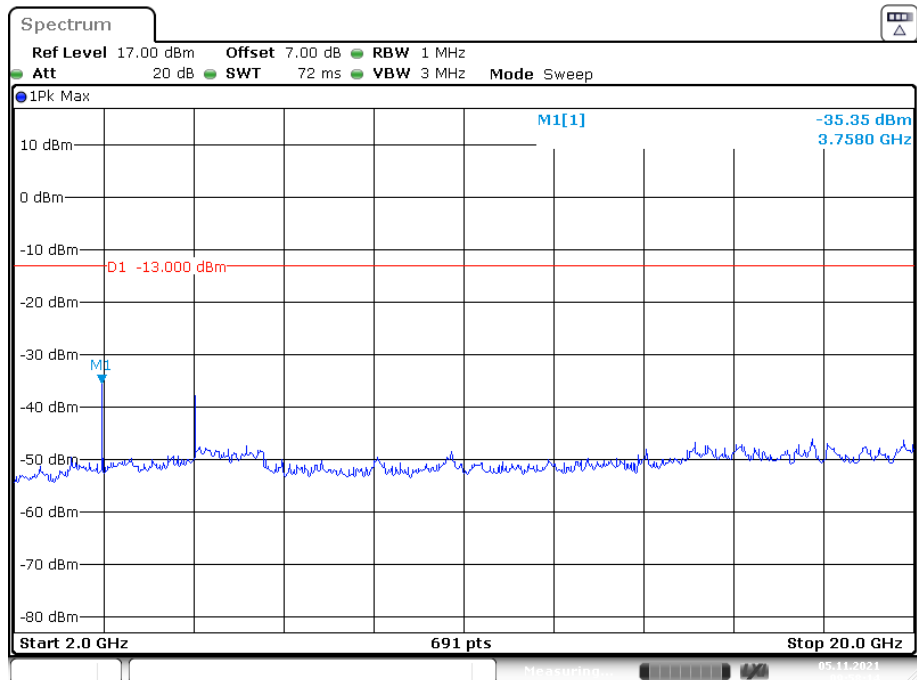
Date: 5.NOV.2021 10:00:57

1 GHz – 2GHz (WCDMA Mode)

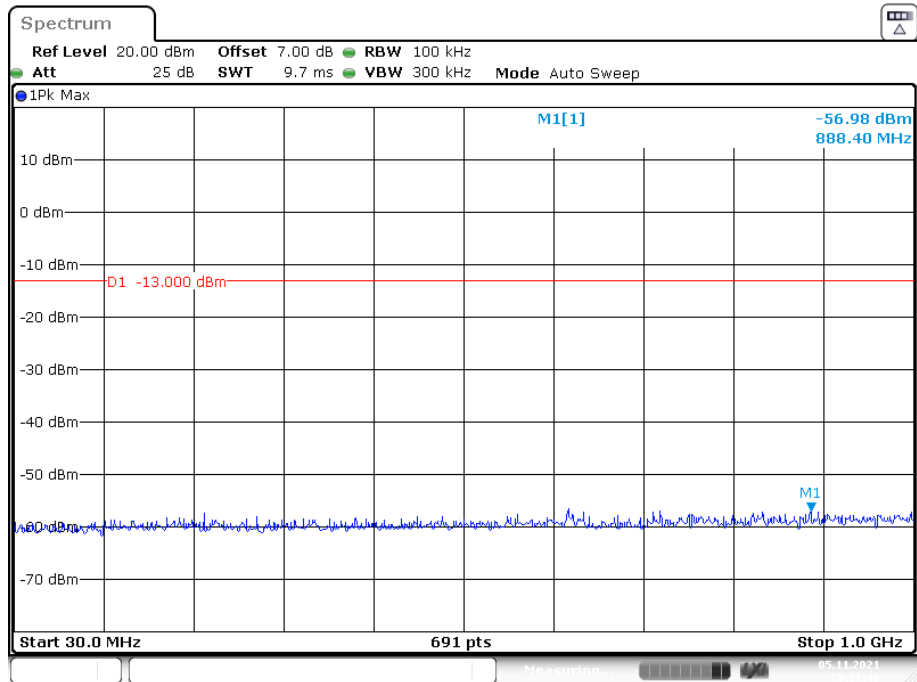


Date: 5.NOV.2021 09:55:05

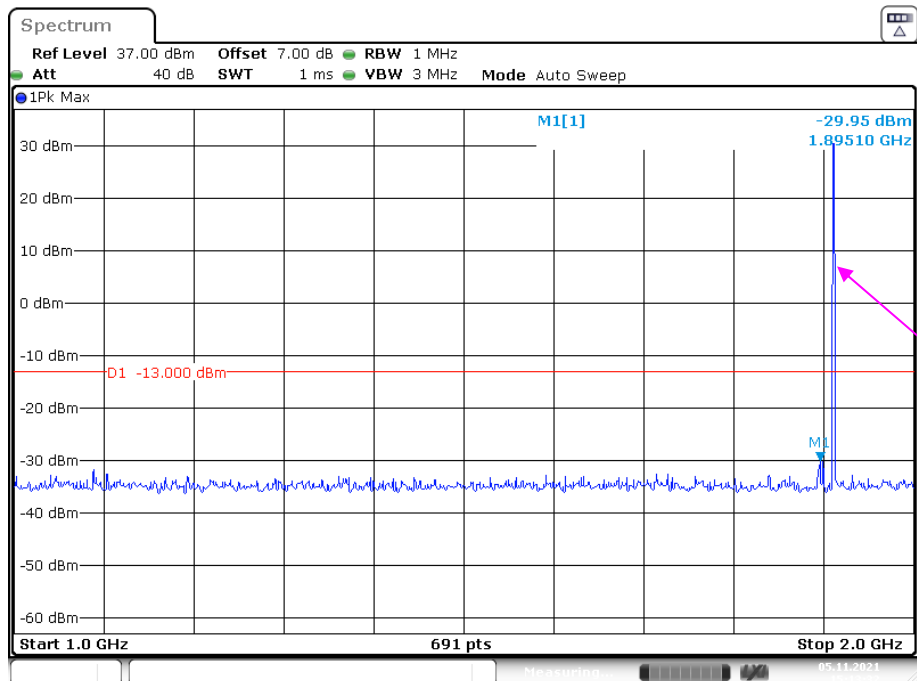
2 GHz – 20 GHz (WCDMA Mode)



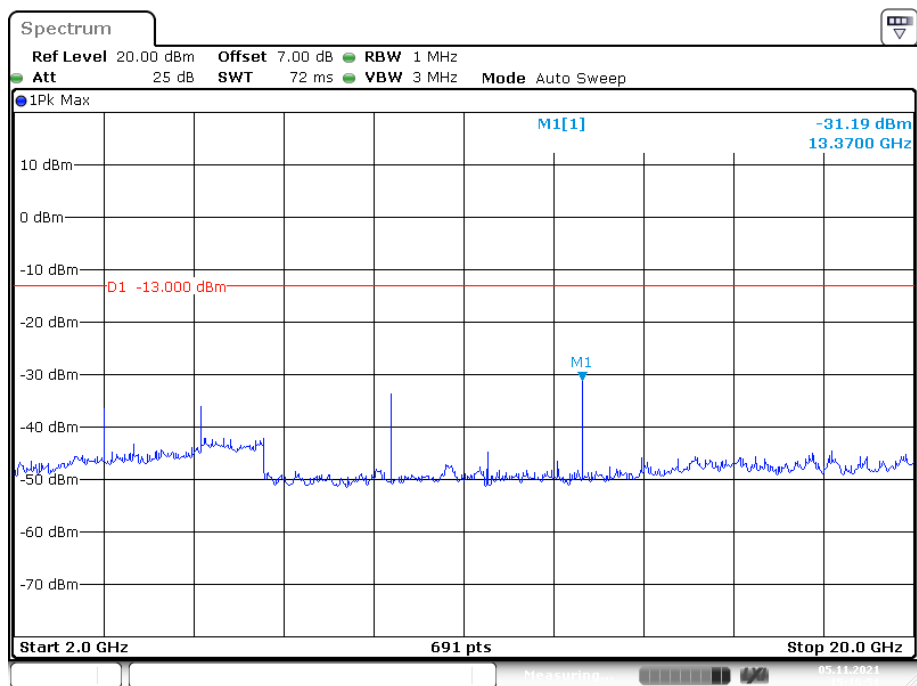
Date: 5.NOV.2021 09:58:14

High Channel:**30 MHz – 1 GHz (GSM Mode)**

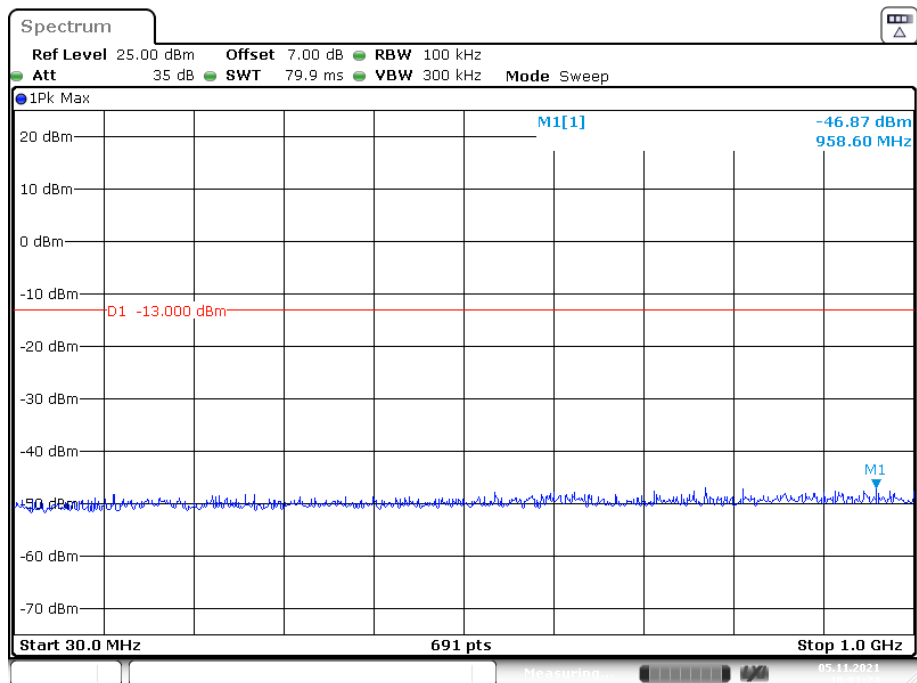
Date: 5.NOV.2021 15:11:49

1 GHz – 2 GHz (GSM Mode)

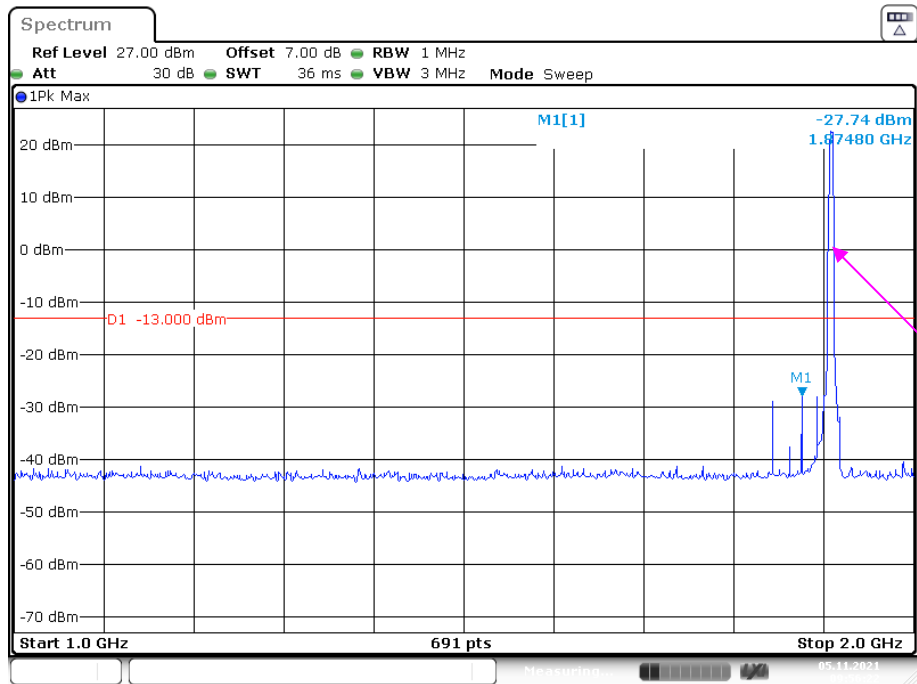
Date: 5.NOV.2021 15:13:32

2 GHz – 20 GHz (GSM Mode)

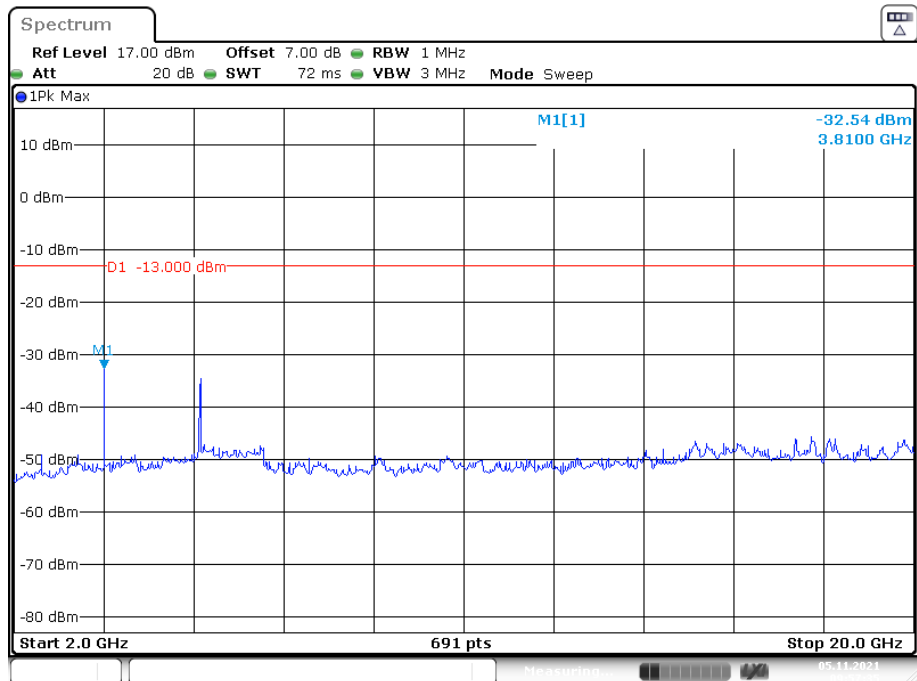
Date: 5.NOV.2021 15:16:52

30 MHz – 1 GHz (WCDMA Mode)

Date: 5.NOV.2021 10:01:24

1 GHz – 2 GHz (WCDMA Mode)

Date: 5.NOV.2021 09:56:22

2 GHz – 20 GHz (WCDMA Mode)

Date: 5.NOV.2021 09:57:35

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**

Temperature:	26.5 °C
Relative Humidity:	52 %
ATM Pressure:	101.0kPa

The testing was performed by Caro hu on 2021-11-02 to 2021-11-10 for below 1GHz and Bin Duan on 2021-11-09 for above 1GHz.

Test mode: Transmitting (Pre-scan in the X,Y and Z axes of orientation, the worst case X-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								
141.2	-55.76	233	1.1	H	-8.41	-64.17	-13	-51.17
141.2	-56.97	160	1.6	V	-3.67	-60.64	-13	-47.64
1648.4	-50.97	204	1.2	H	-2.73	-53.70	-13	-40.70
1648.4	-49.81	49	2	V	-2.79	-52.60	-13	-39.60
2472.6	-38.68	69	2.4	H	1.18	-37.50	-13	-24.50
2472.6	-39.91	67	1.2	V	1.21	-38.70	-13	-25.70
3296.8	-38.24	110	1.7	H	3.24	-35.00	-13	-22.00
3296.8	-41.17	248	1.6	V	3.27	-37.90	-13	-24.90
Middle Channel								
141.9	-54.13	123	2	H	-8.41	-62.54	-13	-49.54
141.9	-55.9	154	2.2	V	-3.67	-59.57	-13	-46.57
1673.2	-47.43	48	1.2	H	-2.67	-50.10	-13	-37.10
1673.2	-46.46	48	1.5	V	-2.74	-49.20	-13	-36.20
2509.8	-38.92	346	1.7	H	1.32	-37.60	-13	-24.60
2509.8	-38.46	339	1	V	1.36	-37.10	-13	-24.10
3346.4	-41.11	26	1.9	H	3.31	-37.80	-13	-24.80
3346.4	-42.92	293	1.4	V	3.32	-39.60	-13	-26.60
High Channel								
142.3	-54.75	59	1.8	H	-8.41	-63.16	-13	-50.16
142.3	-56.24	338	2.1	V	-3.67	-59.91	-13	-46.91
1697.6	-42.96	301	2.5	H	-2.64	-45.60	-13	-32.60
1697.6	-43.91	108	1.1	V	-2.69	-46.60	-13	-33.60
2546.4	-38.67	93	1.9	H	1.47	-37.20	-13	-24.20
2546.4	-38.52	258	1.3	V	1.52	-37.00	-13	-24.00
3395.2	-46.08	25	1.2	H	3.38	-42.70	-13	-29.70
3395.2	-46.97	217	1.7	V	3.37	-43.60	-13	-30.60

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
WCDMA Band 5								
Low Channel ((826.4MHz)								
145.9	-51.87	168	1.1	H	-8.41	-60.28	-13	-47.28
145.9	-55.01	166	1.6	V	-3.67	-58.68	-13	-45.68
1652.80	-48.37	64	1.3	H	-2.73	-51.10	-13	-38.10
1652.80	-47.21	317	2.4	V	-2.79	-50.00	-13	-37.00
2479.20	-40.08	49	1.6	H	1.18	-38.90	-13	-25.90
2479.20	-37.81	151	1.4	V	1.21	-36.60	-13	-23.60
Middle Channel (836.6MHz)								
146.5	-51.53	85	2.1	H	-8.41	-59.94	-13	-46.94
146.5	-55.46	16	1.3	V	-3.67	-59.13	-13	-46.13
1673.20	-47.83	232	2	H	-2.67	-50.50	-13	-37.50
1673.20	-46.26	289	2.1	V	-2.74	-49.00	-13	-36.00
2509.80	-44.92	122	1.3	H	1.32	-43.60	-13	-30.60
2509.80	-41.86	16	1.1	V	1.36	-40.50	-13	-27.50
High Channel (846.6MHz)								
146.9	-52.41	44	2.4	H	-8.41	-60.82	-13	-47.82
146.9	-56.01	29	2.3	V	-3.67	-59.68	-13	-46.68
1673.20	-47.06	135	2.1	H	-2.64	-49.70	-13	-36.70
1673.20	-45.61	71	2.2	V	-2.69	-48.30	-13	-35.30
2509.80	-45.77	293	2.4	H	1.47	-44.30	-13	-31.30
2509.80	-42.52	139	2.0	V	1.52	-41.00	-13	-28.00

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								
141.7	-55.85	292	1.7	H	-8.41	-64.26	-13	-51.26
141.7	-57.49	338	1.9	V	-3.67	-61.16	-13	-48.16
3700.4	-50.16	340	2.3	H	4.96	-45.20	-13	-32.20
3700.4	-49.69	85	1.2	V	4.59	-45.10	-13	-32.10
5550.6	-44.53	45	1.0	H	10.63	-33.90	-13	-20.90
5550.6	-41.18	272	1.1	V	8.98	-32.20	-13	-19.20
Middle Channel								
142.6	-54.93	298	1.9	H	-8.41	-63.34	-13	-50.34
142.6	-57.09	65	1.8	V	-3.67	-60.76	-13	-47.76
3760	-49.81	141	2.2	H	5.31	-44.50	-13	-31.50
3760	-49.13	80	2	V	4.93	-44.20	-13	-31.20
5640	-44.38	244	1.3	H	10.68	-33.70	-13	-20.70
5640	-42.24	140	1.4	V	9.24	-33.00	-13	-20.00
High Channel								
141.7	-55.86	176	1.8	H	-8.41	-64.27	-13	-51.27
141.7	-56.16	56	1.6	V	-3.67	-59.83	-13	-46.83
3819.6	-47.64	280	2.2	H	5.64	-42.00	-13	-29.00
3819.6	-46.37	197	1.1	V	5.27	-41.10	-13	-28.10
5729.4	-45.73	130	2.4	H	10.73	-35.00	-13	-22.00
5729.4	-43.71	321	2.2	V	9.51	-34.20	-13	-21.20
WCDMA Band 2								
Low Channel (1852.4MHz)								
145.6	-50.76	148	1.4	H	-8.41	-59.17	-13	-46.17
145.6	-55.26	30	1.4	V	-3.67	-58.93	-13	-45.93
3704.8	-48.46	221	1.7	H	4.96	-43.50	-13	30.50
3704.8	-46.69	342	2.0	V	4.59	-42.10	-13	29.10
Middle Channel (1880MHz)								
144.2	-52.53	192	1.1	H	-8.41	-60.94	-13	-47.94
144.2	-55.46	201	1.1	V	-3.67	-59.13	-13	-46.13
3760.0	-49.41	119	1.9	H	5.31	-44.10	-13	31.10
3760.0	-48.43	204	1.2	V	4.93	-43.50	-13	30.50
High Channel (1907.6MHz)								
146.1	-52.75	333	1.2	H	-8.41	-61.16	-13	-48.16
146.1	-55.8	214	2.3	V	-3.67	-59.47	-13	-46.47
3815.2	-49.34	337	2.3	H	5.64	-43.70	-13	30.70
3815.2	-48.97	197	1.7	V	5.27	-43.70	-13	30.70

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								
142.8	-54.2	178	1.9	H	-8.41	-62.61	-13	-49.61
142.8	-55.95	257	1.6	V	-3.67	-59.62	-13	-46.62
3701.40	-33.86	296	2.1	H	4.96	-28.90	-13	-15.90
3701.40	-32.29	283	1.2	V	4.59	-27.70	-13	-14.70
5552.10	-47.23	347	1.3	H	10.63	-36.60	-13	-23.60
5552.10	-46.98	155	2.2	V	8.98	-38.00	-13	-25.00
1.4MHz bandwidth, Middle Channel								
142.1	-54.05	346	1.9	H	-8.41	-62.46	-13	-49.46
142.1	-56.05	215	2.2	V	-3.67	-59.72	-13	-46.72
3760.00	-30.81	252	2.4	H	5.31	-25.50	-13	-12.50
3760.00	-29.43	119	2.3	V	4.93	-24.50	-13	-11.50
5640.00	-45.48	249	1.4	H	10.68	-34.80	-13	-21.80
5640.00	-45.44	102	1.5	V	9.24	-36.20	-13	-23.20
1.4MHz bandwidth, High Channel								
142.6	-53.52	155	1.3	H	-8.41	-61.93	-13	-48.93
142.6	-55.71	109	1.4	V	-3.67	-59.38	-13	-46.38
3818.60	-32.54	131	1.9	H	5.64	-26.90	-13	-13.90
3818.60	-31.47	210	1.3	V	5.27	-26.20	-13	-13.20
5727.90	-48.03	102	2.1	H	10.73	-37.30	-13	-24.30
5727.90	-49.51	147	2.2	V	9.51	-40.00	-13	-27.00

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 4								
Test frequency range: 30MHz-20GHz								
1.4MHz bandwidth, Low Channel								
143.4	-53.08	347	1.2	H	-8.41	-61.49	-13	-48.49
143.4	-56.15	131	2.3	V	-3.67	-59.82	-13	-46.82
3421.40	-36.13	71	1.2	H	3.43	-32.70	-13	-19.70
3421.40	-34.40	104	1.1	V	3.4	-31.00	-13	-18.00
5132.10	-49.62	51	1	H	9.72	-39.90	-13	-26.90
5132.10	-46.58	25	1.2	V	8.38	-38.20	-13	-25.20
1.4MHz bandwidth, Middle Channel								
143.9	-53.08	318	1.7	H	-8.41	-61.49	-13	-48.49
143.9	-56.05	156	2	V	-3.67	-59.72	-13	-46.72
3465.00	-35.29	250	1.4	H	3.49	-31.80	-13	-18.80
3465.00	-34.55	352	1.8	V	3.45	-31.10	-13	-18.10
5197.50	-50.44	41	1.8	H	9.84	-40.60	-13	-27.60
5197.50	-46.81	140	2.4	V	8.41	-38.40	-13	-25.40
1.4MHz bandwidth, High Channel								
143.5	-54.05	157	1.9	H	-8.41	-62.46	-13	-49.46
143.5	-56.21	115	2.1	V	-3.67	-59.88	-13	-46.88
3465.00	-34.65	61	1.9	H	3.55	-31.10	-13	-18.10
3465.00	-34.00	8	1.1	V	3.5	-30.50	-13	-17.50
5197.50	-49.76	63	2	H	9.96	-39.80	-13	-26.80
5197.50	-45.94	43	2.5	V	8.44	-37.50	-13	-24.50

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								
142.0	-54.71	108	1.3	H	-8.41	-63.12	-13	-50.12
142.0	-56.79	176	1.8	V	-3.67	-60.46	-13	-47.46
1649.40	-49.47	314	2.4	H	-2.73	-52.20	-13	-39.20
1649.40	-47.71	231	1.8	V	-2.79	-50.50	-13	-37.50
2474.10	-34.28	338	1.9	H	1.18	-33.10	-13	-20.10
2474.10	-32.91	324	1	V	1.21	-31.70	-13	-18.70
3298.80	-49.34	305	1.2	H	3.24	-46.10	-13	-33.10
3298.80	-48.77	70	1.6	V	3.27	-45.50	-13	-32.50
1.4MHz bandwidth, Middle Channel								
142.2	-53.75	243	1.4	H	-8.41	-62.16	-13	-49.16
142.2	-56.79	52	2	V	-3.67	-60.46	-13	-47.46
1673.00	-41.73	18	2.5	H	-2.67	-44.40	-13	-31.40
1673.00	-42.26	221	2.1	V	-2.74	-45.00	-13	-32.00
2509.50	-48.82	71	2.4	H	1.32	-47.50	-13	-34.50
2509.50	-49.16	78	1.9	V	1.36	-47.80	-13	-34.80
3346.00	-49.61	47	1.4	H	3.31	-46.30	-13	-33.30
3346.00	-49.12	150	1.3	V	3.32	-45.80	-13	-32.80
1.4MHz bandwidth, High Channel								
142.4	-54.41	14	1.7	H	-8.41	-62.82	-13	-49.82
142.4	-56.46	210	2.3	V	-3.67	-60.13	-13	-47.13
1696.60	-40.66	144	1.6	H	-2.64	-43.30	-13	-30.30
1696.60	-41.21	148	2.2	V	-2.69	-43.90	-13	-30.90
2544.90	-48.27	195	1.1	H	1.47	-46.80	-13	-33.80
2544.90	-49.32	168	1.5	V	1.52	-47.80	-13	-34.80
3393.20	-49.58	148	1.8	H	3.38	-46.20	-13	-33.20
3393.20	-48.87	41	2.4	V	3.37	-45.50	-13	-32.50

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								
144.6	-52.87	121	2.2	H	-8.41	-61.28	-25	-36.28
144.6	-55.49	80	1.2	V	-3.67	-59.16	-25	-34.16
5005.00	-52.00	58	1.9	H	9.5	-42.50	-25	-17.50
5005.00	-51.52	95	1.8	V	8.32	-43.20	-25	-18.20
7507.50	-56.58	289	1.2	H	14.38	-42.20	-25	-17.20
7507.50	-56.86	125	1.1	V	15.16	-41.70	-25	-16.70
5MHz bandwidth, Middle Channel								
144.2	-52.08	38	1.4	H	-8.41	-60.49	-25	-35.49
144.2	-55.55	44	2.1	V	-3.67	-59.22	-25	-34.22
5070.00	-50.16	5	1.2	H	9.56	-40.60	-25	-15.60
5070.00	-50.54	174	1.1	V	8.34	-42.20	-25	-17.20
7605.00	-59.01	176	2.4	H	14.71	-44.30	-25	-19.30
7605.00	-59.14	146	2.5	V	15.34	-43.80	-25	-18.80
5MHz bandwidth, High Channel								
144.7	-52.5	78	1.1	H	-8.41	-60.91	-25	-35.91
144.7	-55.67	110	2.4	V	-3.67	-59.34	-25	-34.34
5135.00	-49.32	22	1.2	H	9.72	-39.60	-25	-14.60
5135.00	-48.78	8	1.8	V	8.38	-40.40	-25	-15.40
7702.50	-59.13	268	2.1	H	15.03	-44.10	-25	-19.10
7702.50	-58.71	8	1.6	V	15.51	-43.20	-25	-18.20

Note:

Absolute Level = Reading Level + Substituted Factor

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

Margin = Absolute Level - Limit

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.

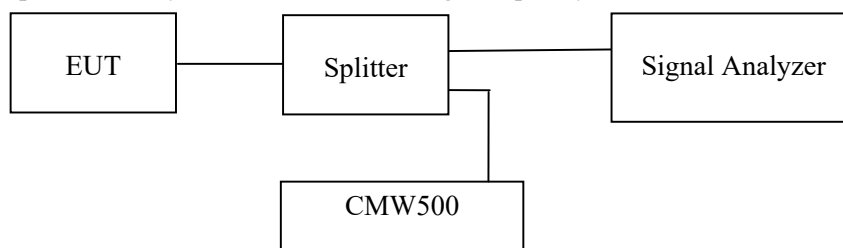
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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

Temperature:	27.5 °C
Relative Humidity:	56.2 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu on 2021-11-04 and 2021-12-13.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

Please refer to the following plots.

Spectrum

Ref Level 37.00 dBm Offset 7.00 dB RBW 5 kHz
 Att 40 dB SWT 900 μ s VBW 10 kHz Mode Auto FFT

1Rm Max

M1[1] -13.84 dBm
 823.99710 MHz

D1 -13.000 dBm

CF 824.0 MHz 691 pts Span 2.0 MHz

Spectrum

Ref Level 37.00 dBm Offset 7.00 dB RBW 5 kHz
 Att 40 dB SWT 900 μ s VBW 10 kHz Mode Auto FFT

1Rm Max

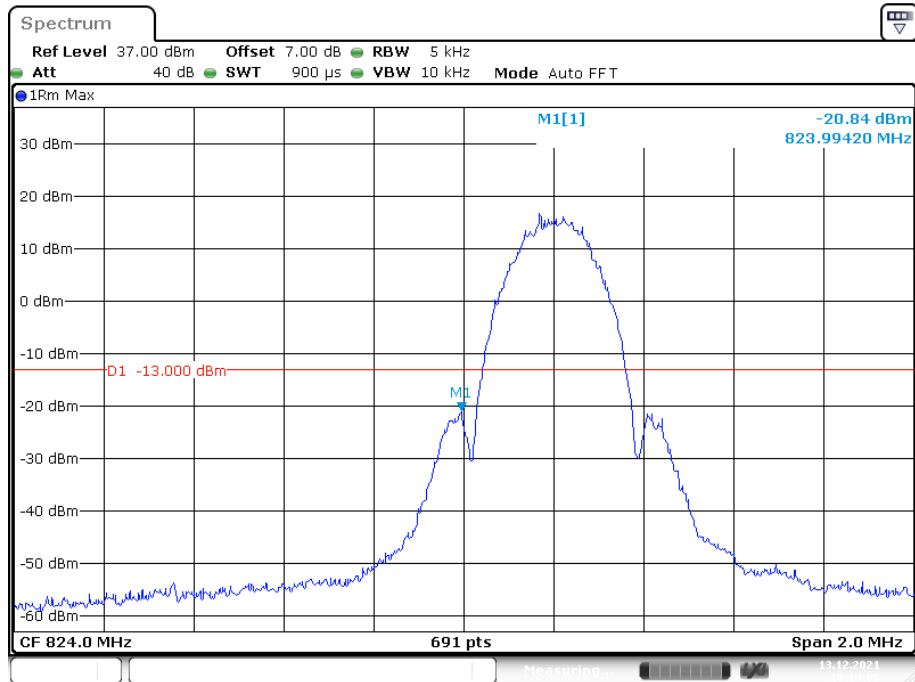
M1[1] -13.62 dBm
 849.02030 MHz

D1 -13.000 dBm

CF 849.0 MHz 691 pts Span 2.0 MHz

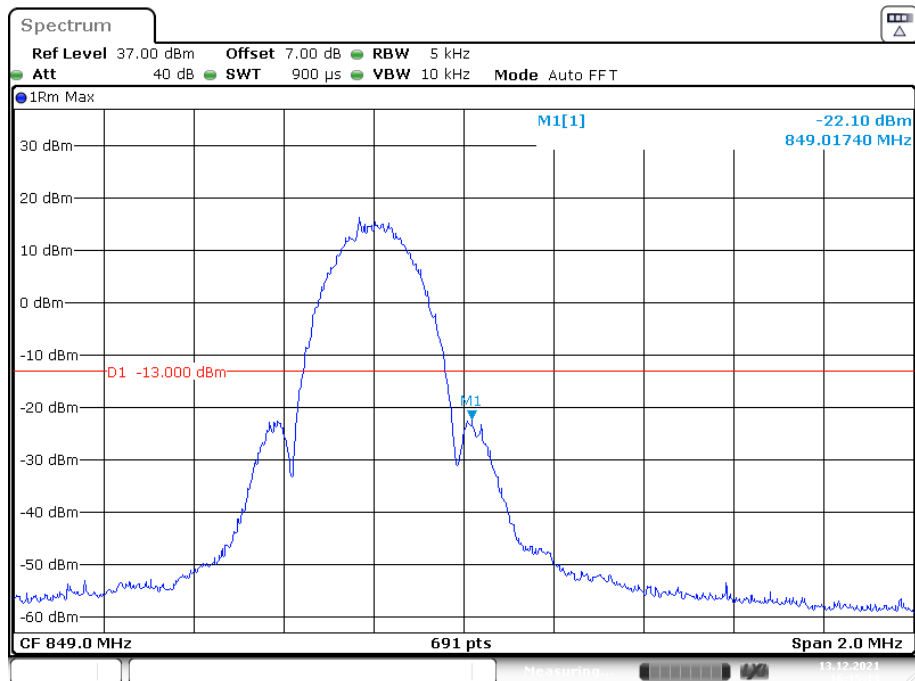
FCC -2G,3G,4G

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



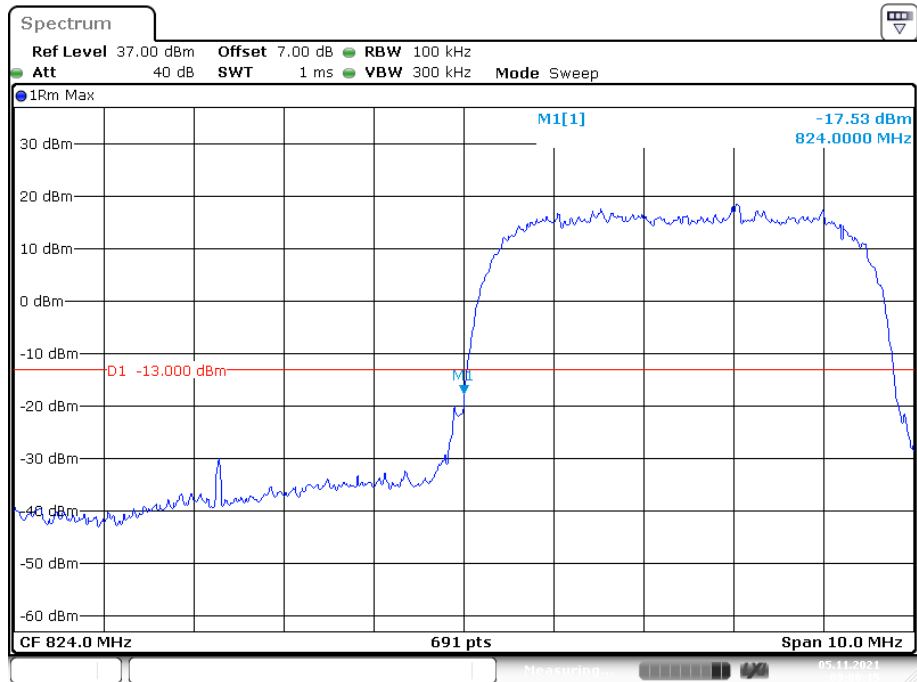
Date: 13.DEC.2021 16:14:06

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



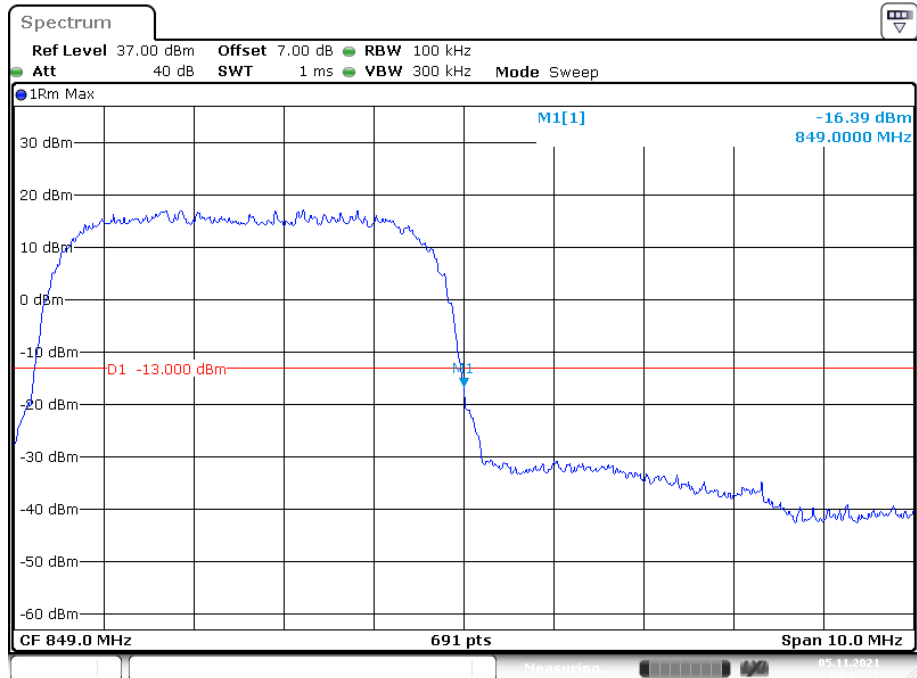
Date: 13.DEC.2021 16:15:13

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

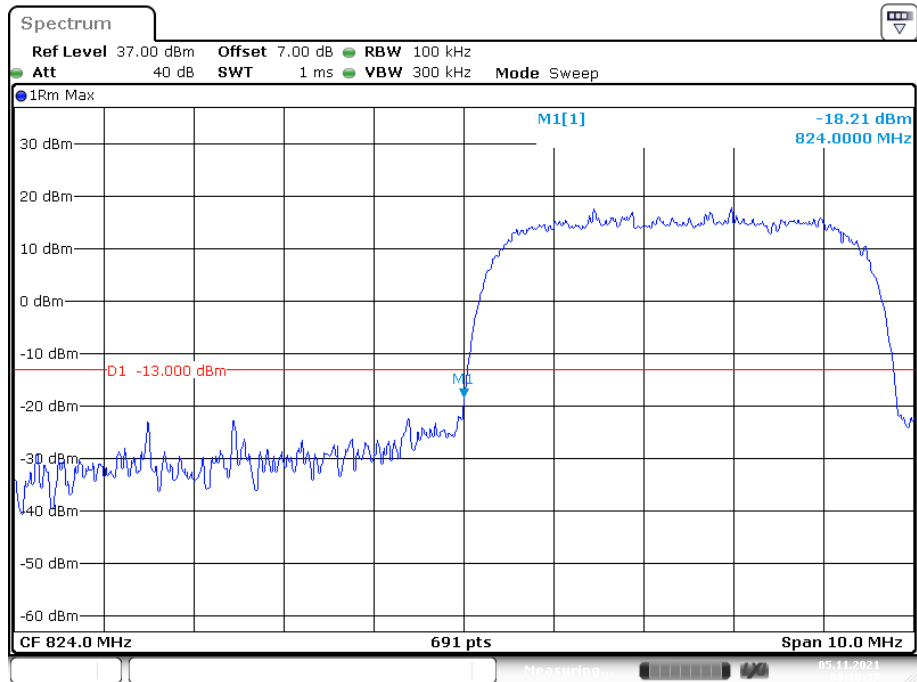
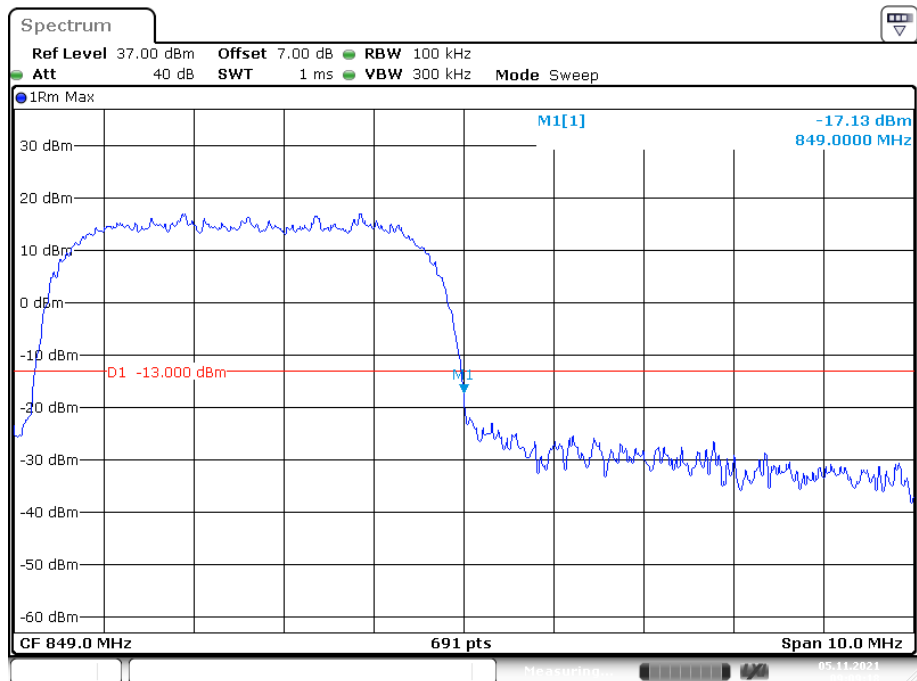


Date: 5.NOV.2021 09:06:15

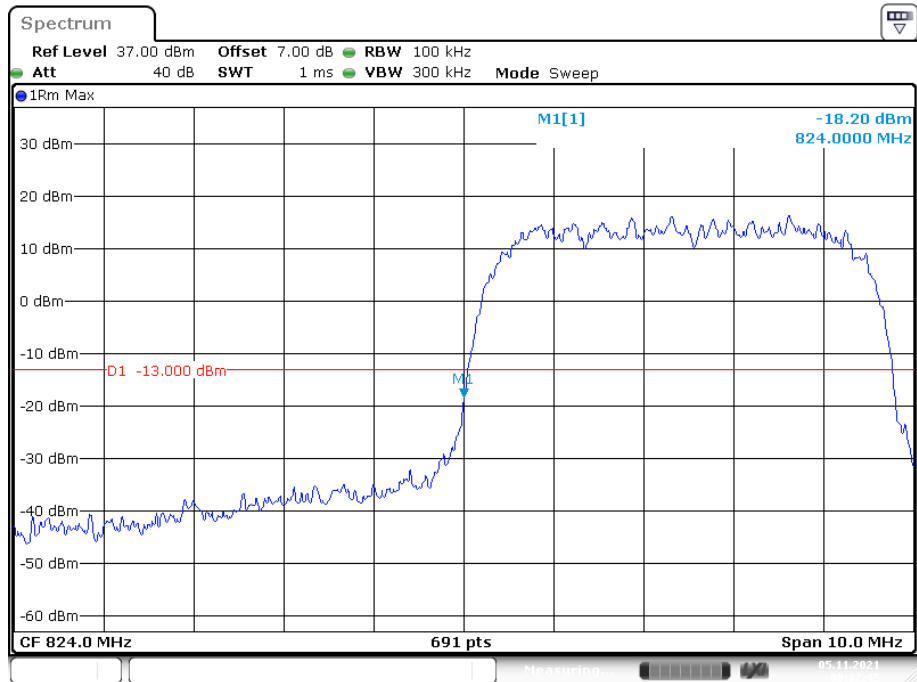
Cellular Band, Right Band Edge for RMC (BPSK) Mode



Date: 5.NOV.2021 09:07:27

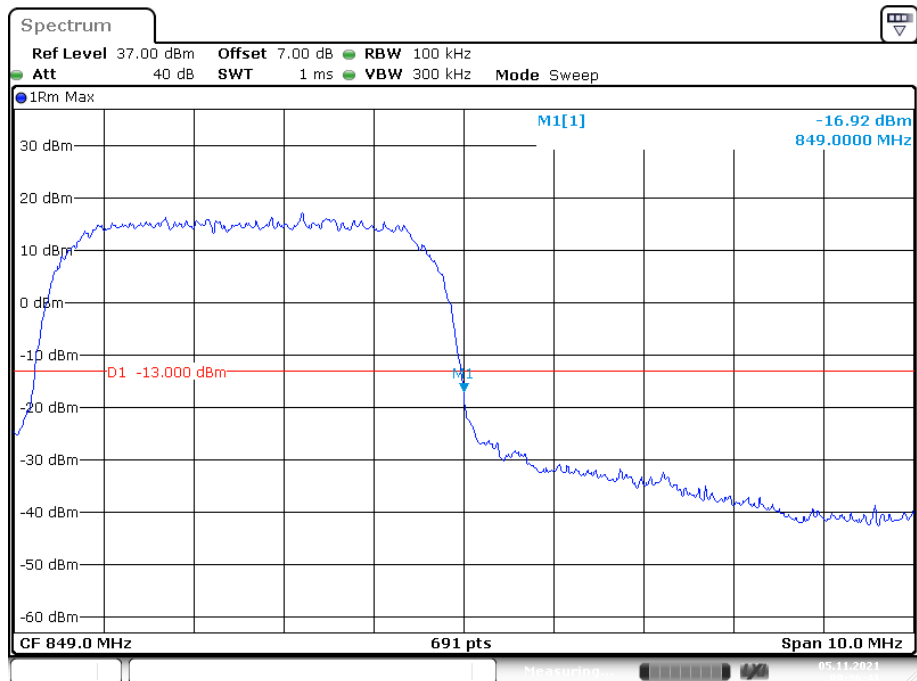
Cellular Band, Left Band Edge for HSDPA(16QAM) Mode**Cellular Band, Right Band Edge for HSDPA (16QAM) Mode**

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



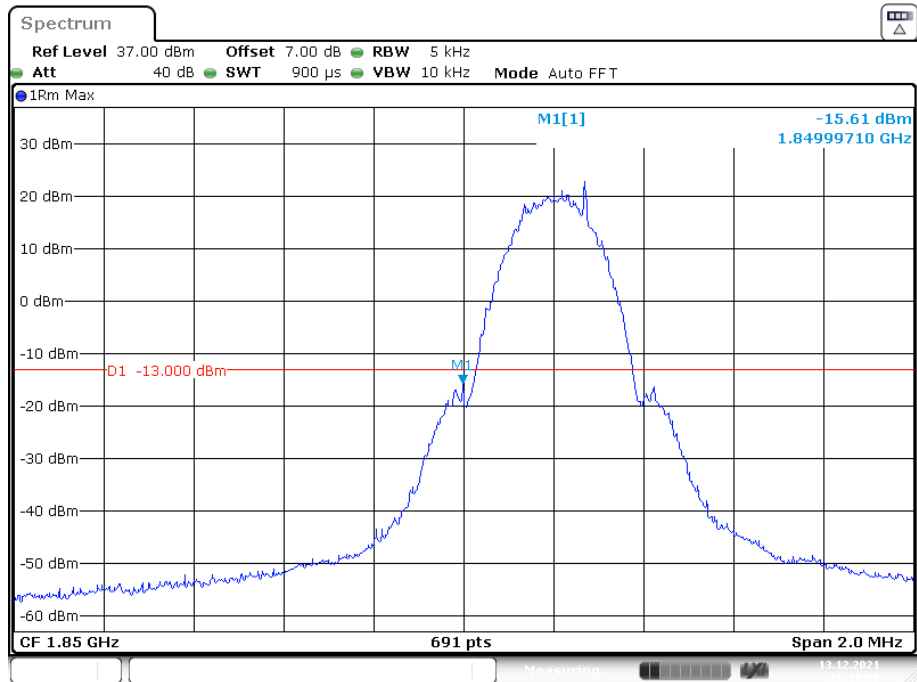
Date: 5.NOV.2021 09:37:45

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



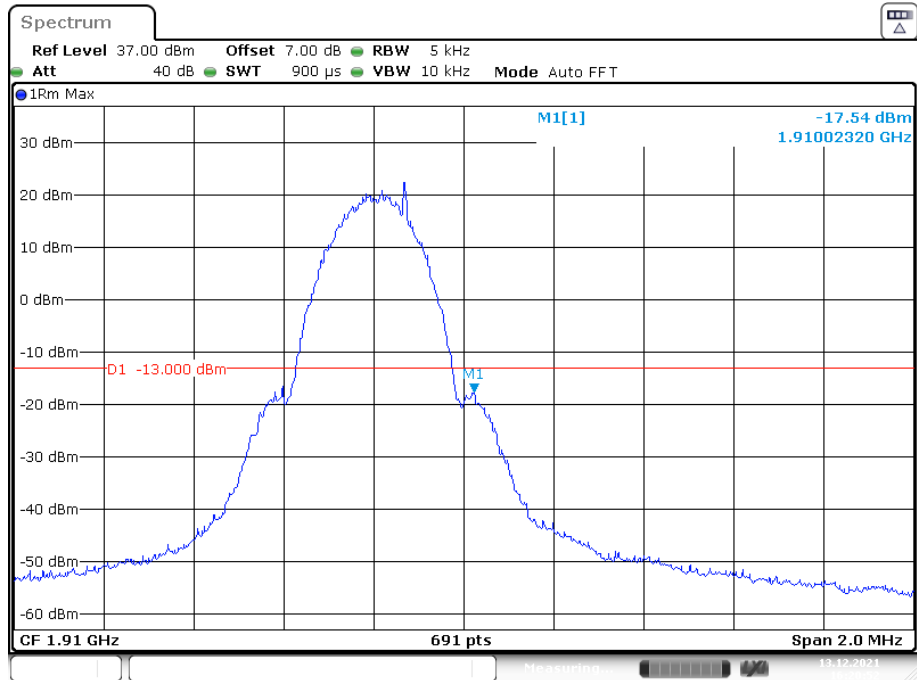
Date: 5.NOV.2021 09:36:41

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



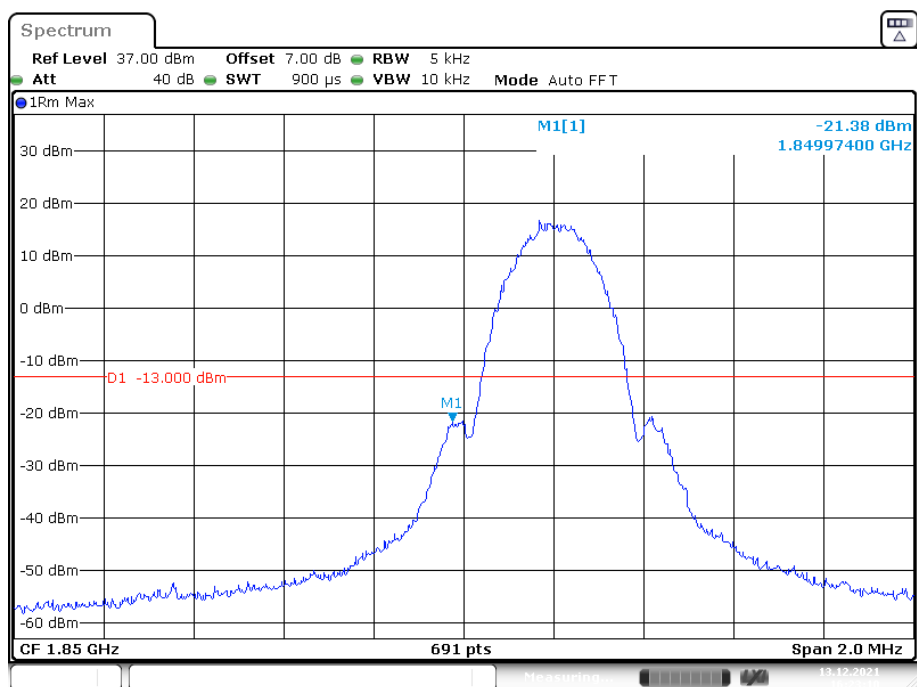
Date: 13.DEC.2021 16:19:59

PCS Band, Right Band Edge for GSM (GMSK) Mode

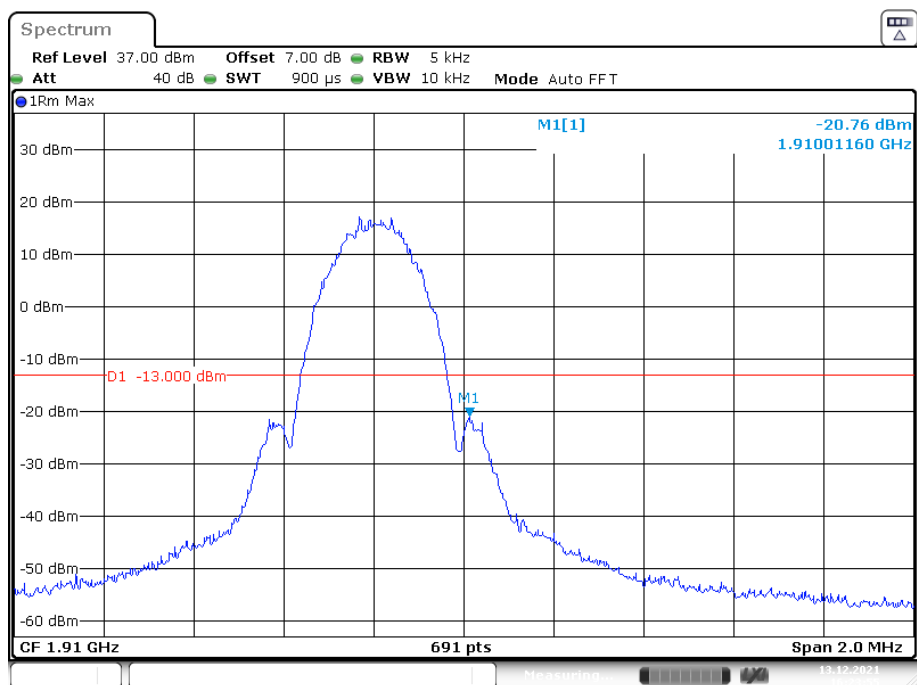


Date: 13.DEC.2021 16:20:52

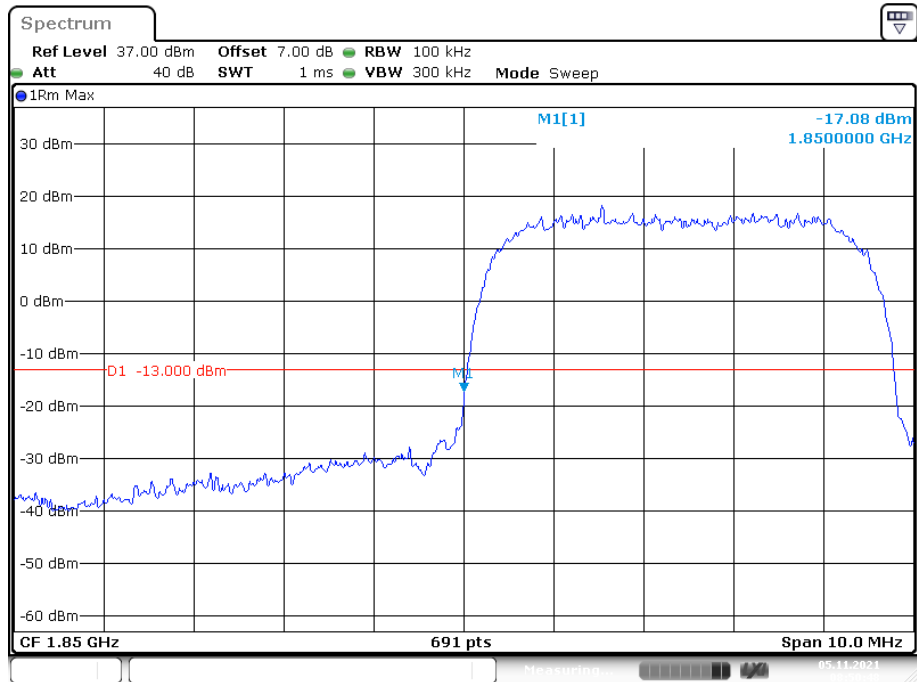
PCS Band, Left Band Edge for EGPRS (8PSK) Mode



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

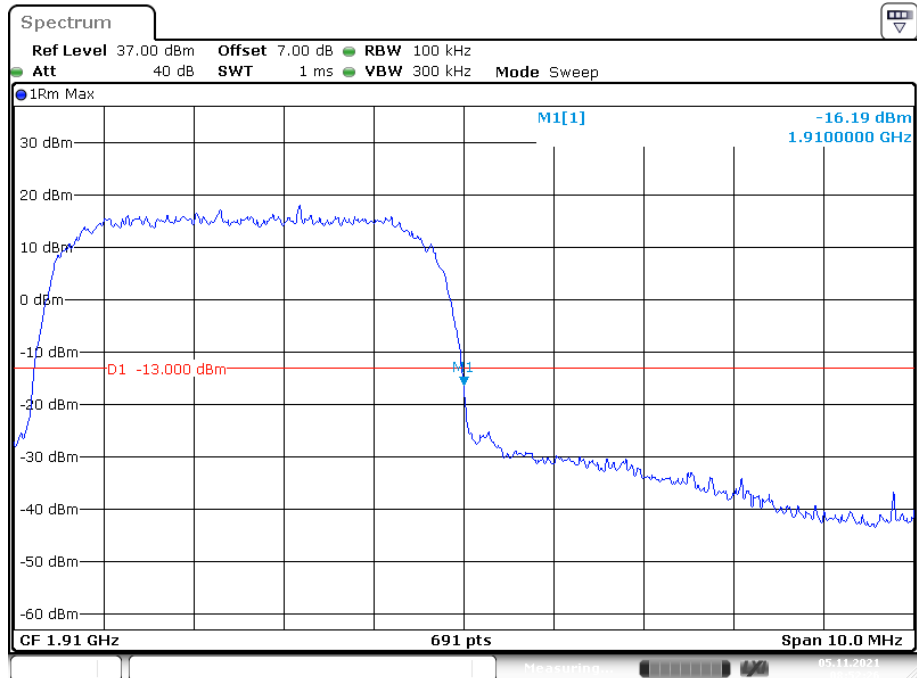


PCS Band, Left Band Edge for RMC (BPSK) Mode



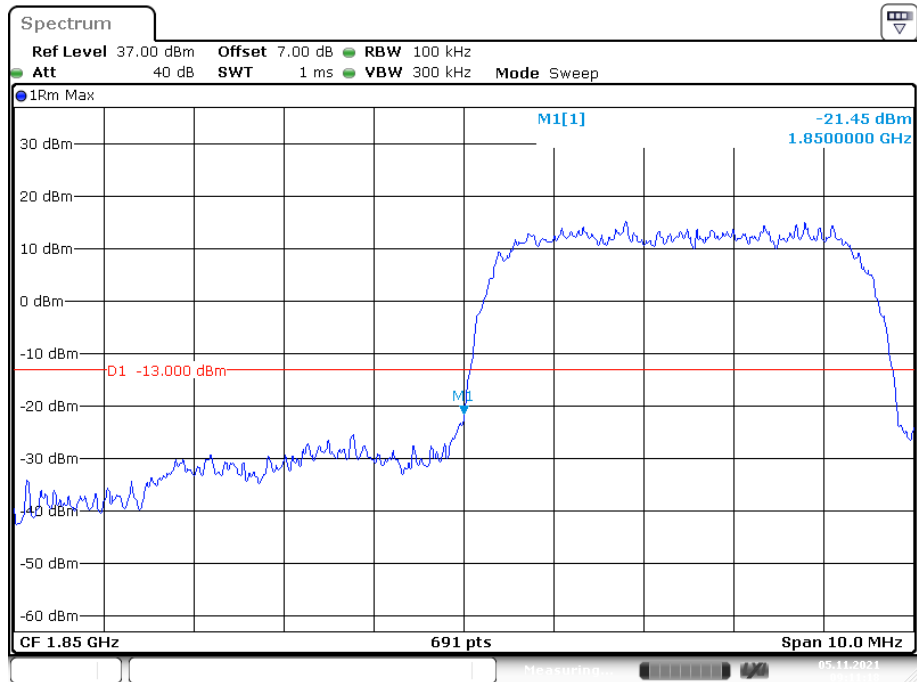
Date: 5.NOV.2021 08:50:48

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



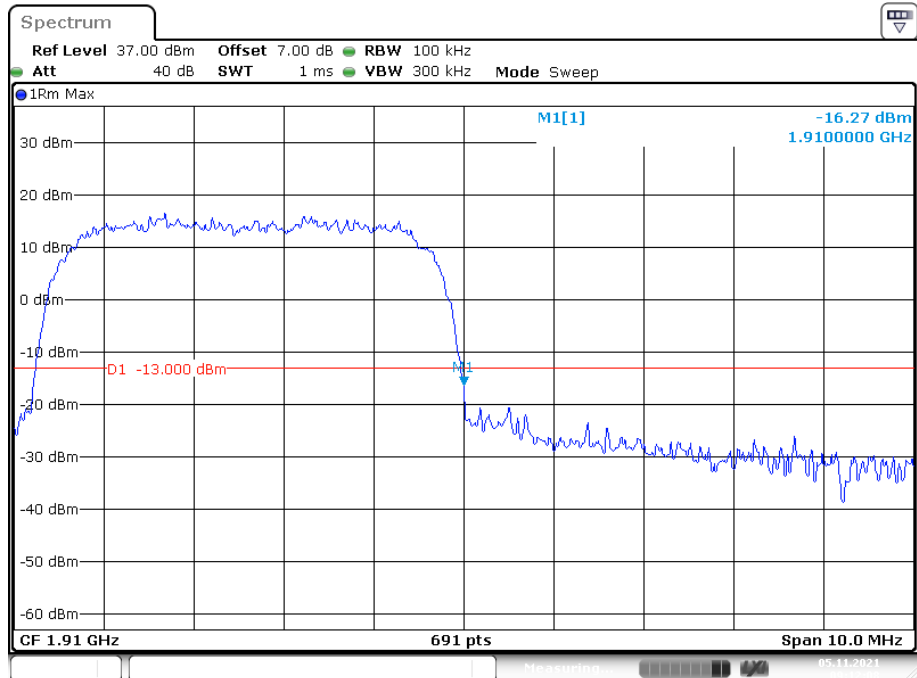
Date: 5.NOV.2021 08:52:26

PCS Band, Left Band Edge for HSDPA(16QAM) Mode

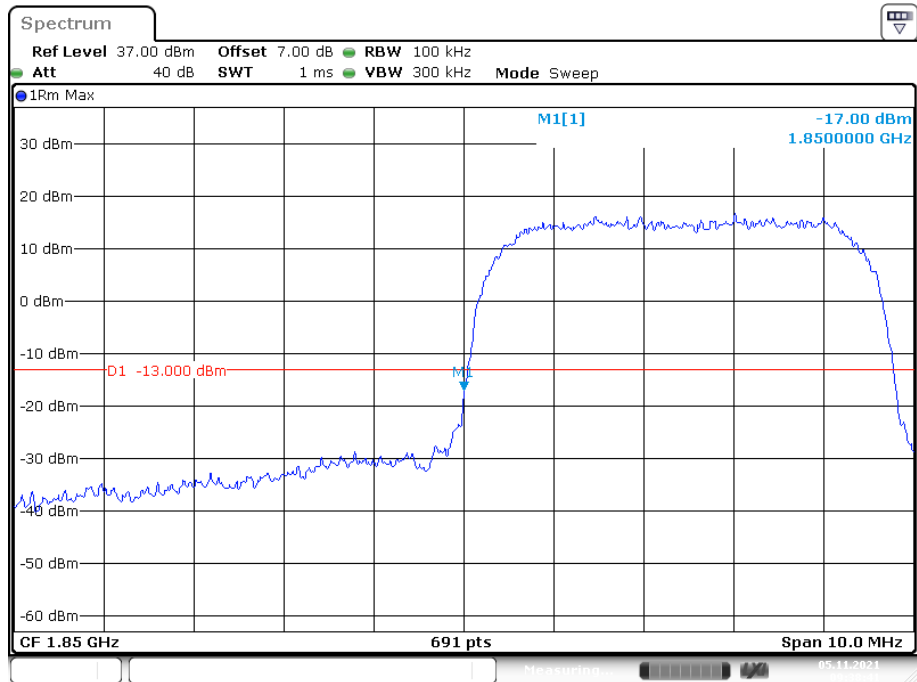


Date: 5.NOV.2021 09:11:19

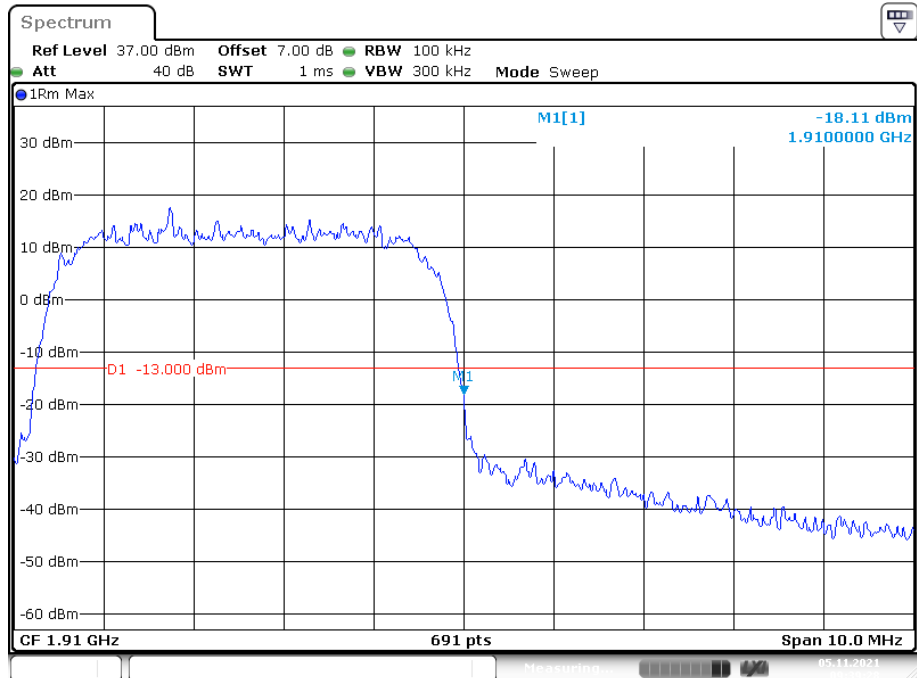
PCS Band, Right Band Edge for HSDPA (16QAM) Mode



Date: 5.NOV.2021 09:12:08

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

Date: 5.NOV.2021 09:38:41

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

Date: 5.NOV.2021 09:39:28

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&§27.54.

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

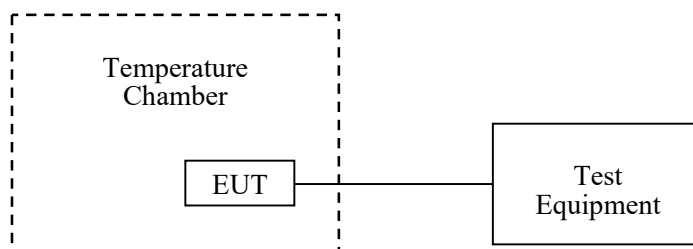
According to §24.235&§27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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**

Temperature:	27.5 °C
Relative Humidity:	56.2 %
ATM Pressure:	101.0 kPa

The testing was performed by Paul liu from 2021-11-04 to 2021-11-05.

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		10	0.0120	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		0	0.0000	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	2.5
	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		-8.72	-0.0104	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	2.5
	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	0.0043	pass
10		2	0.0011	pass
20		17	0.0090	pass
30		3	0.0016	pass
40		7	0.0037	pass
50		5	0.0027	pass
20	L.V.	-3	-0.0016	pass
	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	0.0043	pass
-10		5	0.0027	pass
0		10	0.0053	pass
10		-4	-0.0021	pass
20		-10	-0.0053	pass
30		-3	-0.0016	pass
40		-8	-0.0043	pass
50		7	0.0037	pass
20	L.V.	3	0.0016	pass
	H.V.	6	0.0032	pass

WCDMA Mode

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-10.11	-0.0054	pass
-20		-11.19	-0.0060	pass
-10		-10.18	-0.0054	pass
0		-10.15	-0.0054	pass
10		-10.13	-0.0054	pass
20		-10.49	-0.0056	pass
30		-10.14	-0.0054	pass
40		-10.17	-0.0054	pass
50		-10.10	-0.0054	pass
20	L.V.	-10.15	-0.0054	pass
	H.V.	-10.12	-0.0054	pass

LTE:
QPSK:
Band 2:

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	14	0.0074	pass
-20		-5	-0.0027	pass
-10		-6	-0.0032	pass
0		12	0.0064	pass
10		8	0.0043	pass
20		6	0.0032	pass
30		-7	-0.0037	pass
40		7	0.0037	pass
50		5	0.0027	pass
20	LV	-8	-0.0043	pass
	HV	4	0.0021	pass

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.1137	1754.8733	1710	1755
-20		1710.1126	1754.8732	1710	1755
-10		1710.1132	1754.8728	1710	1755
0		1710.1121	1754.8725	1710	1755
10		1710.1135	1754.8747	1710	1755
20		1710.1127	1754.8728	1710	1755
30		1710.1133	1754.8738	1710	1755
40		1710.1128	1754.8742	1710	1755
50		1710.1152	1754.8747	1710	1755
20	L.V.	1710.1154	1754.8765	1710	1755
	H.V.	1710.1043	1754.8742	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-3	-0.0036	2.5
-20		7	0.0084	2.5
-10		-4	-0.0048	2.5
0		-6	-0.0072	2.5
10		-10	-0.0120	2.5
20		3	0.0036	2.5
30		7	0.0084	2.5
40		5	0.0060	2.5
50		7	0.0084	2.5
20	L.V.	9	0.0108	2.5
	H.V.	8	0.0096	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2500.8777	2569.9854	2500	2570
-20		2500.8746	2569.9944	2500	2570
-10		2500.8738	2569.9843	2500	2570
0		2500.8726	2569.9735	2500	2570
10		2500.7935	2569.9827	2500	2570
20		2500.7827	2569.9428	2500	2570
30		2500.7742	2569.9325	2500	2570
40		2500.7639	2569.9922	2500	2570
50		2500.7527	2569.9923	2500	2570
20	L.V.	2500.7525	2569.9835	2500	2570
	H.V.	2500.7444	2569.9747	2500	2570

16QAM:**Band 2:**

10.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	9	0.0048	pass
-20		7	0.0037	pass
-10		5	0.0027	pass
0		-8	-0.0043	pass
10		4	0.0022	pass
20		-10	-0.0053	pass
30		7	0.0037	pass
40		3	0.0016	pass
50		-6	-0.0032	pass
20	L.V.	6	0.0032	pass
	H.V.	-8	-0.0043	pass

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.2933	1754.7657	1710	1755
-20		1710.2928	1754.7563	1710	1755
-10		1710.2755	1754.7688	1710	1755
0		1710.2656	1754.7445	1710	1755
10		1710.2652	1754.7437	1710	1755
20		1710.2646	1754.7628	1710	1755
30		1710.2526	1754.7629	1710	1755
40		1710.2622	1754.7657	1710	1755
50		1710.2637	1754.7753	1710	1755
20	L.V.	1710.2623	1754.7537	1710	1755
	H.V.	1710.2711	1754.7528	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	4	0.0048	2.5
-20		8	0.0096	2.5
-10		10	0.0120	2.5
0		9	0.0108	2.5
10		7	0.0084	2.5
20		2	0.0024	2.5
30		4	0.0048	2.5
40		6	0.0072	2.5
50		5	0.0060	2.5
20	L.V.	3	0.0036	2.5
	H.V.	7	0.0084	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	N.V.	2500.8377	2569.8336	2500	2570
-20		2500.8456	2569.8542	2500	2570
-10		2500.7643	2569.8428	2500	2570
0		2500.7245	2569.8529	2500	2570
10		2500.6328	2569.8233	2500	2570
20		2500.6236	2569.7854	2500	2570
30		2500.6354	2569.7847	2500	2570
40		2500.6328	2569.8429	2500	2570
50		2500.6225	2569.8445	2500	2570
20	L.V.	2500.6236	2569.8352	2500	2570
	H.V.	2500.6144	2569.8236	2500	2570

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