



TESTREPORT

Applicant Name : Epik One America Corporation
Address : 801 Brickell avenue #900 Miami Florida 33131 United States.
Report Number: SZNS211025-54826E-RF-00D
FCC ID: 2AO6ZX620

Test Standard (s)

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

Sample Description

Product Type: 4G Smart Phone
Model No.: X620
Multiple Model(s) No.: N/A
Trade Mark: Epik One
Date Received: 2021/10/25
Date of Test: 2021/10/29~2021/11/30
Report Date: 2021/12/08

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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Page 1 of 108

FCC -2G,3G,4G

TABLE OF CONTENTS

GENERAL INFORMATION	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION	5
DESCRIPTION OF TEST CONFIGURATION	5
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
SUPPORT CABLE DESCRIPTION	6
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
TEST EQUIPMENT LIST	8
FCC §1.1307(B)& §2.1093 - RF EXPOSURE INFORMATION.....	10
FCC §2.1047 - MODULATION CHARACTERISTIC	11
FCC § 2.1046, § 22.913 (A)& § 24.232(C); §27.50(D)(H)- RF OUTPUT POWER	12
APPLICABLE STANDARD	12
TEST PROCEDURE	12
TEST DATA	12
FCC §2.1049, §22.917, §22.905 & §24.238& §27.53 - OCCUPIED BANDWIDTH.....	32
APPLICABLE STANDARD	32
TEST PROCEDURE	32
TEST DATA	32
FCC §2.1051, §22.917(A) & §24.238(A)& §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS ...	58
APPLICABLE STANDARD	58
TEST PROCEDURE	58
TEST DATA	58
FCC § 2.1053; § 22.917 (A); § 24.238 (A); §27.53- SPURIOUS RADIATED EMISSIONS.....	79
APPLICABLE STANDARD	79
TEST PROCEDURE	79
TEST DATA	79
FCC § 22.917 (A); § 24.238 (A); §27.53 (H)(M) - BAND EDGES	86
APPLICABLE STANDARD	86
TEST PROCEDURE	86
TEST DATA	86
FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY	100
APPLICABLE STANDARD	100
TEST PROCEDURE	100
TEST DATA	101

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)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA Band 5/LTE Band 5: -0.73dBi PCS1900/WCDMA Band 2/ LTE Band 2: 0.41dBi WCDMA Band 4/ LTE Band 4: 0.43dBi LTE Band 7: 0.84 dBi (provided by the applicant)
Voltage Range	DC 3.8V from battery or DC 5.0V from adapter
Sample serial number	SZNS211025-54826E-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: YMK-6W050100 Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5V, 1000mA

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 ⁻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 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

Equipment Modifications

No modification was made to the EUT.

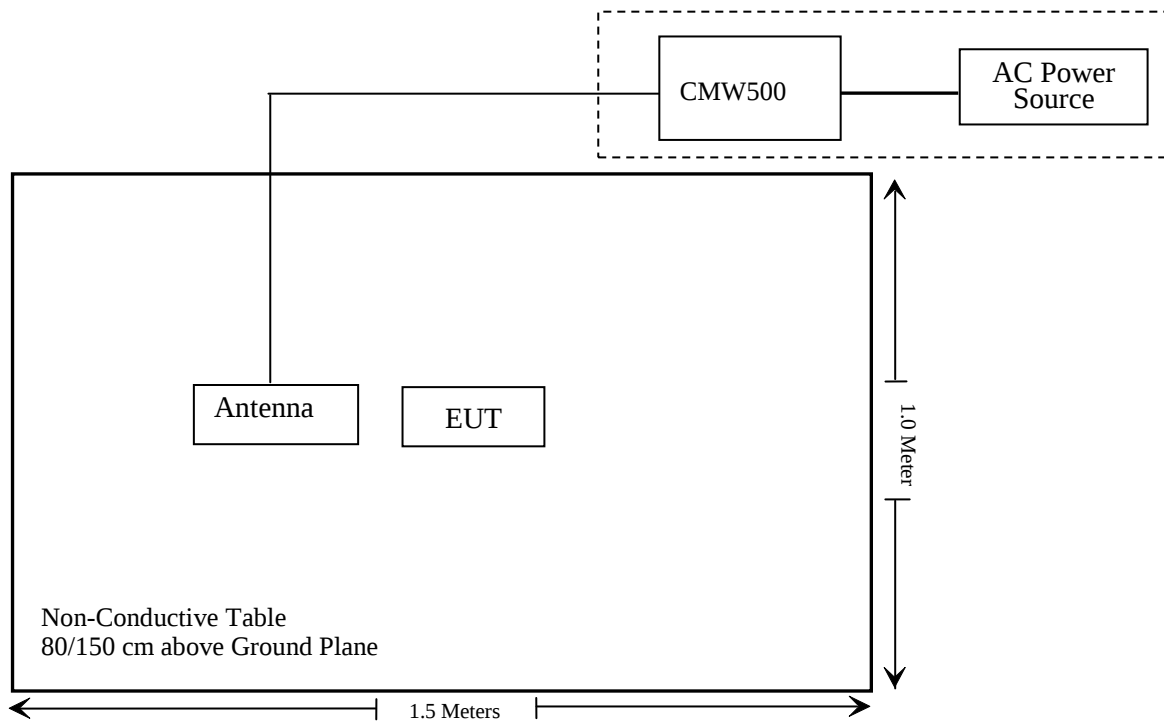
Support Equipment List and Details

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
Unshielded Un-detachable AC cable	1.2	AC Power	CMW500

Block Diagram of Test Setup



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: SZNS211025-54826E-20.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde& Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2020/11/09	2021/11/08
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2020/11/28	2021/11/27
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
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-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	2020/11/09	2021/11/08
Unknown	RF Coaxial Cable	N-2m	No.8	2020/11/09	2021/11/08
Unknown	RF Coaxial Cable	N-1m	No.7	2020/12/25	2021/12/24
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 SMS-1150	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF2495-257 OMS-1152	201706003	2020/12/25	2021/12/24
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/12/25	2021/12/24
Anritsu	Signal Generator	68369B	004114	2021/7/31	2022/7/30

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	Spectrum Analyzer	FSU26	200982	2021/07/06	2022/07/05
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2020/12/25	2021/12/24
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/12/25	2021/12/24
HP	6dB Attenuator	8493B 6dB Attenuator	2708A 04769	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).

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: SZNS211025-54826E-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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.

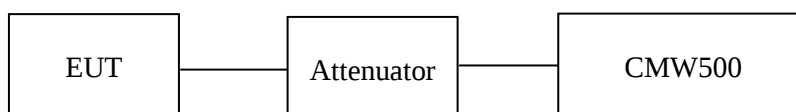
According to §27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

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**

Temperature:	28.6 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Ting Lv from 2021-10-29 to 2021-10-30.

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	32.3	28.92	38.45
	190	836.6	32.3	28.92	38.45
	251	848.8	32.5	29.12	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	32.23	30.08	28.69	26.41	28.85	26.70	25.31	23.03	38.45
	190	836.6	32.32	30.63	28.68	26.45	28.94	27.25	25.30	23.07	38.45
	251	848.8	32.45	30.17	28.26	26.51	29.07	26.79	24.88	23.13	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	25.94	25.52	24.12	21.31	22.56	22.14	20.74	17.93	38.45
	190	836.6	26.04	25.90	24.62	21.96	22.66	22.52	21.24	18.58	38.45
	251	848.8	26.01	25.66	24.31	21.61	22.63	22.28	20.93	18.23	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		23.04	23.07	23.06	19.66	19.69	19.68
	HSDPA	1	22.05	21.94	22.10	18.67	18.56	18.72
		2	22.01	21.96	22.04	18.63	18.58	18.66
		3	22.00	21.98	22.05	18.62	18.60	18.67
		4	22.02	21.98	22.06	18.64	18.60	18.68
	HSUPA	1	22.61	22.58	22.53	19.23	19.20	19.15
		2	22.62	22.56	22.43	19.24	19.18	19.05
		3	22.57	22.52	22.46	19.19	19.14	19.08
		4	22.56	22.48	22.47	19.18	19.10	19.09
		5	22.58	22.47	22.46	19.20	19.09	19.08
	HSPA+	1	22.59	22.46	22.48	19.21	19.08	19.10

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)
 For GSM850 / WCDMA Band5: Antenna Gain = -0.73dBi = -2.88dBd (0dBd=2.15dBi)
 Cable loss=0.5dB, which was provided by manufacturer.
 Limit: ERP≤38.45dBm

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	29.6	29.21	33
	661	1880.0	29.5	29.11	33
	810	1909.8	29.5	29.11	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	29.64	27.19	25.05	23.93	29.25	26.8	24.66	23.54	33
	661	1880.0	29.53	26.90	25.28	23.63	29.14	26.51	24.89	23.24	33
	810	1909.8	29.59	26.69	25.57	23.80	29.20	26.30	25.18	23.41	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	25.98	25.60	23.85	21.03	25.59	25.21	23.46	20.64	33
	661	1880.0	26.01	25.78	23.71	21.43	25.62	25.39	23.32	21.04	33
	810	1909.8	25.93	25.50	23.79	20.44	25.54	25.11	23.40	20.05	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		22.59	22.59	22.60	22.20	22.20	22.21
	HSDPA	1	21.54	21.57	21.50	21.15	21.18	21.11
		2	21.52	21.54	21.52	21.13	21.15	21.13
		3	21.54	21.53	21.54	21.15	21.14	21.15
		4	21.48	21.52	21.36	21.09	21.13	20.97
	HSUPA	1	22.17	22.10	22.07	21.78	21.71	21.68
		2	22.10	22.11	22.04	21.71	21.72	21.65
		3	22.12	22.13	22.06	21.73	21.74	21.67
		4	22.08	22.14	22.07	21.69	21.75	21.68
		5	22.13	22.07	22.05	21.74	21.68	21.66
	HSPA+	1	22.07	22.06	22.04	21.68	21.67	21.65

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

For PCS1900 / WCDMA Band2: Antenna Gain =0.41dBi

Cable loss=0.8dB, which was provided by manufacturer.

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		22.42	22.69	22.76	22.05	22.32	22.39
	HSDPA	1	21.77	21.40	21.87	21.40	21.03	21.50
		2	21.75	21.72	21.68	21.38	21.35	21.31
		3	21.74	21.76	21.65	21.37	21.39	21.28
		4	21.76	21.73	21.57	21.39	21.36	21.20
	HSUPA	1	22.28	22.15	22.25	21.91	21.78	21.88
		2	22.14	22.16	22.14	21.77	21.79	21.77
		3	22.11	22.14	22.16	21.74	21.77	21.79
		4	22.10	22.16	22.17	21.73	21.79	21.80
		5	22.14	22.14	22.18	21.77	21.77	21.81
	HSPA+	1	22.15	22.16	22.17	21.78	21.79	21.80

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

For WCDMA Band4: Antenna Gain = 0.43dBi

Cable loss=0.8dB, which was provided by manufacturer.

The limit: EIRP≤30dBm

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

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.52	13
	Middle	3.35	13
	High	3.52	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.65	13
	Middle	3.72	13
	High	3.72	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.53	13
	Middle	3.62	13
	High	3.54	13
HSDPA (16QAM)	Low	3.53	13
	Middle	3.52	13
	High	3.56	13
HSUPA (BPSK)	Low	3.47	13
	Middle	3.48	13
	High	3.51	13
HSPA+	Low	3.42	13
	Middle	3.53	13
	High	3.55	13

PCS Band

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.53	13
	Middle	3.54	13
	High	3.47	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.52	13
	Middle	3.51	13
	High	3.52	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.44	13
	Middle	3.51	13
	High	3.52	13
HSDPA (16QAM)	Low	3.54	13
	Middle	3.57	13
	High	3.43	13
HSUPA (BPSK)	Low	3.42	13
	Middle	3.43	13
	High	3.55	13
HSPA+	Low	3.42	13
	Middle	3.52	13
	High	3.43	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.42	13
	Middle	3.47	13
	High	3.44	13
HSDPA (16QAM)	Low	3.55	13
	Middle	3.52	13
	High	3.63	13
HSUPA (BPSK)	Low	3.62	13
	Middle	3.54	13
	High	3.62	13
HSPA+	Low	3.52	13
	Middle	3.61	13
	High	3.62	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	22.55	22.55	22.41	22.16	22.16	22.02
		RB1#3	22.54	22.56	22.39	22.15	22.17	22.00
		RB1#5	22.53	22.56	22.43	22.14	22.17	22.04
		RB3#0	22.65	22.52	22.52	22.26	22.13	22.13
		RB3#3	22.60	22.51	22.51	22.21	22.12	22.12
		RB6#0	21.62	21.46	21.54	21.23	21.07	21.15
	16QAM	RB1#0	21.36	21.78	22.19	20.97	21.39	21.80
		RB1#3	21.38	21.69	22.22	20.99	21.30	21.83
		RB1#5	21.45	21.84	22.23	21.06	21.45	21.84
		RB3#0	21.64	21.44	21.41	21.25	21.05	21.02
		RB3#3	21.68	21.55	21.41	21.29	21.16	21.02
		RB6#0	20.92	20.69	20.56	20.53	20.30	20.17
3.0	QPSK	RB1#0	22.45	22.48	22.45	22.06	22.09	22.06
		RB1#8	22.46	22.41	22.40	22.07	22.02	22.01
		RB1#14	22.40	22.39	22.44	22.01	22.00	22.05
		RB6#0	21.52	21.49	21.43	21.13	21.10	21.04
		RB6#9	21.36	21.52	21.46	20.97	21.13	21.07
		RB15#0	21.61	21.48	21.54	21.22	21.09	21.15
	16QAM	RB1#0	21.77	21.92	21.21	21.38	21.53	20.82
		RB1#8	21.75	22.02	21.21	21.36	21.63	20.82
		RB1#14	21.59	21.98	21.23	21.20	21.59	20.84
		RB6#0	20.78	20.67	20.71	20.39	20.28	20.32
		RB6#9	20.58	20.68	20.76	20.19	20.29	20.37
		RB15#0	20.70	20.49	20.52	20.31	20.10	20.13

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	22.40	22.48	22.41	22.01	22.09	22.02
		RB1#13	22.38	22.54	22.41	21.99	22.15	22.02
		RB1#24	22.31	22.56	22.41	21.92	22.17	22.02
		RB15#0	21.60	21.42	21.40	21.21	21.03	21.01
		RB15#10	21.42	21.37	21.46	21.03	20.98	21.07
		RB25#0	21.46	21.40	21.42	21.07	21.01	21.03
	16QAM	RB1#0	20.82	21.67	21.18	20.43	21.28	20.79
		RB1#13	20.68	21.64	21.13	20.29	21.25	20.74
		RB1#24	20.73	21.62	21.20	20.34	21.23	20.81
		RB15#0	20.77	20.41	20.54	20.38	20.02	20.15
		RB15#10	20.55	20.42	20.61	20.16	20.03	20.22
		RB25#0	20.51	20.53	20.36	20.12	20.14	19.97
10.0	QPSK	RB1#0	22.51	22.46	22.44	22.12	22.07	22.05
		RB1#25	22.39	22.47	22.42	22.00	22.08	22.03
		RB1#49	22.32	22.48	22.44	21.93	22.09	22.05
		RB25#0	21.43	21.43	21.46	21.04	21.04	21.07
		RB25#25	21.37	21.38	21.41	20.98	20.99	21.02
		RB50#0	21.41	21.32	21.48	21.02	20.93	21.09
	16QAM	RB1#0	21.96	21.60	20.98	21.57	21.21	20.59
		RB1#25	21.84	21.53	20.99	21.45	21.14	20.60
		RB1#49	21.74	21.67	20.97	21.35	21.28	20.58
		RB25#0	20.48	21.05	20.58	20.09	20.66	20.19
		RB25#25	20.54	20.63	20.56	20.15	20.24	20.17
		RB50#0	20.54	20.57	20.56	20.15	20.18	20.17

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	22.44	22.34	22.34	22.05	21.95	21.95
		RB1#38	22.33	22.38	22.34	21.94	21.99	21.95
		RB1#74	22.30	22.43	22.43	21.91	22.04	22.04
		RB36#0	21.49	21.41	21.35	21.10	21.02	20.96
		RB36#39	21.38	21.52	21.49	20.99	21.13	21.10
		RB75#0	21.39	21.39	21.46	21.00	21.00	21.07
	16QAM	RB1#0	21.95	21.64	21.62	21.56	21.25	21.23
		RB1#38	21.76	21.69	21.63	21.37	21.30	21.24
		RB1#74	21.73	21.75	21.69	21.34	21.36	21.30
		RB36#0	20.53	20.98	20.92	20.14	20.59	20.53
		RB36#39	20.43	20.57	20.56	20.04	20.18	20.17
		RB75#0	20.53	20.62	20.51	20.14	20.23	20.12
20.0	QPSK	RB1#0	22.67	22.46	22.47	22.28	22.07	22.08
		RB1#50	22.46	22.47	22.42	22.07	22.08	22.03
		RB1#99	22.54	22.54	22.57	22.15	22.15	22.18
		RB50#0	21.48	21.43	21.42	21.09	21.04	21.03
		RB50#50	21.40	21.57	21.56	21.01	21.18	21.17
		RB100#0	21.37	21.44	21.41	20.98	21.05	21.02
	16QAM	RB1#0	21.79	21.50	22.18	21.40	21.11	21.79
		RB1#50	21.57	21.36	22.14	21.18	20.97	21.75
		RB1#99	21.63	21.50	22.17	21.24	21.11	21.78
		RB50#0	20.64	20.58	20.50	20.25	20.19	20.11
		RB50#50	20.62	20.61	20.53	20.23	20.22	20.14
		RB100#0	20.59	20.54	20.99	20.20	20.15	20.60

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

For Band2: Antenna Gain = 0.41dBi

Cable loss= 0.8dBi, which was provided by manufacturer.

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)	8.60	8.58	8.46	13	Pass
QPSK (100RB Size)	8.55	8.64	8.49	13	Pass
16QAM (1RB Size)	8.46	8.64	8.41	13	Pass
16QAM (100RB Size)	8.55	8.52	8.41	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	22.46	22.53	22.67	22.09	22.16	22.30
		RB1#3	22.49	22.53	22.73	22.12	22.16	22.36
		RB1#5	22.48	22.54	22.74	22.11	22.17	22.37
		RB3#0	22.54	22.59	22.57	22.17	22.22	22.20
		RB3#3	22.57	22.57	22.64	22.20	22.20	22.27
		RB6#0	21.50	21.49	21.66	21.13	21.12	21.29
	16QAM	RB1#0	22.19	22.26	21.52	21.82	21.89	21.15
		RB1#3	22.21	22.20	21.69	21.84	21.83	21.32
		RB1#5	22.23	22.25	21.66	21.86	21.88	21.29
		RB3#0	21.65	21.40	21.53	21.28	21.03	21.16
		RB3#3	21.63	21.42	21.67	21.26	21.05	21.30
		RB6#0	20.81	20.63	21.02	20.44	20.26	20.65
3.0	QPSK	RB1#0	22.47	22.50	22.73	22.10	22.13	22.36
		RB1#8	22.46	22.51	22.75	22.09	22.14	22.38
		RB1#14	22.45	22.59	22.77	22.08	22.22	22.40
		RB6#0	21.51	21.56	21.54	21.14	21.19	21.17
		RB6#9	21.52	21.52	21.63	21.15	21.15	21.26
		RB15#0	21.50	21.54	21.51	21.13	21.17	21.14
	16QAM	RB1#0	21.94	22.28	21.53	21.57	21.91	21.16
		RB1#8	21.89	22.26	21.59	21.52	21.89	21.22
		RB1#14	21.89	22.17	21.63	21.52	21.80	21.26
		RB6#0	20.53	20.72	21.37	20.16	20.35	21.00
		RB6#9	20.69	20.75	21.00	20.32	20.38	20.63
		RB15#0	20.67	20.60	21.17	20.30	20.23	20.80

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	22.51	22.65	22.44	22.14	22.28	22.07
		RB1#13	22.51	22.67	22.52	22.14	22.30	22.15
		RB1#24	22.48	22.64	22.56	22.11	22.27	22.19
		RB15#0	21.52	21.49	21.67	21.15	21.12	21.30
		RB15#10	21.53	21.59	21.61	21.16	21.22	21.24
		RB25#0	21.52	21.56	21.59	21.15	21.19	21.22
	16QAM	RB1#0	20.80	21.75	21.22	20.43	21.38	20.85
		RB1#13	20.72	21.71	21.21	20.35	21.34	20.84
		RB1#24	20.81	21.79	21.26	20.44	21.42	20.89
		RB15#0	20.74	20.55	20.87	20.37	20.18	20.50
		RB15#10	20.74	20.55	21.16	20.37	20.18	20.79
		RB25#0	20.76	20.69	21.06	20.39	20.32	20.69
10.0	QPSK	RB1#0	22.45	22.58	22.73	22.08	22.21	22.36
		RB1#25	22.41	22.63	22.71	22.04	22.26	22.34
		RB1#49	22.52	22.65	22.81	22.15	22.28	22.44
		RB25#0	21.57	21.61	21.49	21.20	21.24	21.12
		RB25#25	21.59	21.52	21.59	21.22	21.15	21.22
		RB50#0	21.63	21.55	21.62	21.26	21.18	21.25
	16QAM	RB1#0	21.79	21.72	21.18	21.42	21.35	20.81
		RB1#25	21.79	21.72	21.18	21.42	21.35	20.81
		RB1#49	21.76	21.73	21.27	21.39	21.36	20.90
		RB25#0	20.73	20.78	20.84	20.36	20.41	20.47
		RB25#25	21.14	20.81	21.26	20.77	20.44	20.89
		RB50#0	20.64	20.71	20.74	20.27	20.34	20.37

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	22.45	22.59	22.72	22.08	22.22	22.35
		RB1#38	22.44	22.67	22.70	22.07	22.30	22.33
		RB1#74	22.50	22.76	22.81	22.13	22.39	22.44
		RB36#0	21.54	21.61	21.62	21.17	21.24	21.25
		RB36#39	21.60	21.54	21.72	21.23	21.17	21.35
		RB75#0	21.48	21.58	21.53	21.11	21.21	21.16
	16QAM	RB1#0	21.75	21.70	22.08	21.38	21.33	21.71
		RB1#38	21.79	21.72	22.02	21.42	21.35	21.65
		RB1#74	21.79	21.84	21.93	21.42	21.47	21.56
		RB36#0	20.76	20.80	20.82	20.39	20.43	20.45
		RB36#39	20.81	21.27	20.76	20.44	20.90	20.39
		RB75#0	21.26	20.70	20.64	20.89	20.33	20.27
20.0	QPSK	RB1#0	22.59	22.47	22.57	22.22	22.10	22.20
		RB1#50	22.70	22.55	22.57	22.33	22.18	22.20
		RB1#99	22.69	22.60	22.66	22.32	22.23	22.29
		RB50#0	21.49	21.61	21.71	21.12	21.24	21.34
		RB50#50	21.52	21.53	21.68	21.15	21.16	21.31
		RB100#0	21.62	21.54	21.52	21.25	21.17	21.15
	16QAM	RB1#0	21.53	22.00	22.16	21.16	21.63	21.79
		RB1#50	21.53	21.93	22.20	21.16	21.56	21.83
		RB1#99	21.57	22.03	22.13	21.20	21.66	21.76
		RB50#0	20.78	20.76	20.72	20.41	20.39	20.35
		RB50#50	20.70	21.32	20.70	20.33	20.95	20.33
		RB100#0	20.74	20.60	20.79	20.37	20.23	20.42

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

For Band4: Antenna Gain = 0.43dBi

Cable loss=0.8dB, which was provided by manufacturer.

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)	8.60	8.58	8.60	13	Pass
QPSK (100RB Size)	8.55	8.60	8.60	13	Pass
16QAM (1RB Size)	8.43	8.35	8.58	13	Pass
16QAM (100RB Size)	8.60	8.67	8.41	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	22.88	22.79	22.83	19.50	19.41	19.45
		RB1#3	22.93	22.85	22.94	19.55	19.47	19.56
		RB1#5	22.92	22.82	22.95	19.54	19.44	19.57
		RB3#0	22.90	22.94	22.88	19.52	19.56	19.50
		RB3#3	22.97	22.91	22.87	19.59	19.53	19.49
		RB6#0	21.77	21.99	21.91	18.39	18.61	18.53
	16QAM	RB1#0	22.35	22.51	21.75	18.97	19.13	18.37
		RB1#3	22.32	22.50	21.67	18.94	19.12	18.29
		RB1#5	22.32	22.46	21.71	18.94	19.08	18.33
		RB3#0	21.95	21.75	22.03	18.57	18.37	18.65
		RB3#3	21.95	21.76	21.99	18.57	18.38	18.61
		RB6#0	21.16	20.87	21.38	17.78	17.49	18.00
3.0	QPSK	RB1#0	22.84	22.77	22.84	19.46	19.39	19.46
		RB1#8	22.84	22.88	22.85	19.46	19.50	19.47
		RB1#14	22.76	22.84	22.92	19.38	19.46	19.54
		RB6#0	21.77	21.81	21.92	18.39	18.43	18.54
		RB6#9	21.81	21.87	21.87	18.43	18.49	18.49
		RB15#0	21.88	21.84	21.90	18.50	18.46	18.52
	16QAM	RB1#0	22.19	22.46	21.60	18.81	19.08	18.22
		RB1#8	22.30	22.51	21.55	18.92	19.13	18.17
		RB1#14	22.18	22.48	21.51	18.80	19.10	18.13
		RB6#0	20.99	21.26	21.07	17.61	17.88	17.69
		RB6#9	21.01	20.90	21.39	17.63	17.52	18.01
		RB15#0	20.94	20.85	20.87	17.56	17.47	17.49

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	22.90	22.86	22.78	19.52	19.48	19.40
		RB1#13	22.81	22.99	22.76	19.43	19.61	19.38
		RB1#24	22.85	23.08	22.73	19.47	19.70	19.35
		RB15#0	21.82	21.76	21.90	18.44	18.38	18.52
		RB15#10	21.91	21.87	21.87	18.53	18.49	18.49
		RB25#0	21.85	21.93	21.88	18.47	18.55	18.50
	16QAM	RB1#0	21.03	21.95	21.41	17.65	18.57	18.03
		RB1#13	21.03	21.98	21.51	17.65	18.60	18.13
		RB1#24	21.03	21.99	21.53	17.65	18.61	18.15
		RB15#0	21.02	21.17	21.34	17.64	17.79	17.96
		RB15#10	21.03	20.81	20.84	17.65	17.43	17.46
		RB25#0	21.06	20.92	20.81	17.68	17.54	17.43
10.0	QPSK	RB1#0	22.86	23.02	22.90	19.48	19.64	19.52
		RB1#25	22.72	22.96	22.88	19.34	19.58	19.50
		RB1#49	22.83	23.01	22.77	19.45	19.63	19.39
		RB25#0	21.93	21.80	21.82	18.55	18.42	18.44
		RB25#25	22.00	22.05	21.88	18.62	18.67	18.50
		RB50#0	21.82	21.87	21.87	18.44	18.49	18.49
	16QAM	RB1#0	22.05	22.10	21.42	18.67	18.72	18.04
		RB1#25	21.93	22.04	21.48	18.55	18.66	18.10
		RB1#49	22.00	22.15	21.39	18.62	18.77	18.01
		RB25#0	20.98	21.37	21.05	17.60	17.99	17.67
		RB25#25	21.26	21.18	20.98	17.88	17.80	17.60
		RB50#0	21.08	20.90	20.90	17.70	17.52	17.52

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) – Cable loss(dB)
 For Band5: Antenna Gain = -0.73dBi = -2.88dBd (0dBd=2.15dBi)
 Cable loss= 0.5dB, which was provided by manufacturer.
 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)	8.60	8.58	8.55	13	Pass
QPSK (50RB Size)	8.49	8.60	8.64	13	Pass
16QAM (1RB Size)	8.58	8.55	8.58	13	Pass
16QAM (50RB Size)	8.58	8.64	8.38	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	21.79	21.78	21.61	21.63	21.62	21.45
		RB1#13	21.90	21.73	21.54	21.74	21.57	21.38
		RB1#24	21.88	21.81	21.57	21.72	21.65	21.41
		RB15#0	20.85	20.74	20.70	20.69	20.58	20.54
		RB15#10	20.89	20.85	20.75	20.73	20.69	20.59
		RB25#0	20.83	20.82	20.72	20.67	20.66	20.56
	16QAM	RB1#0	20.03	20.73	20.39	19.87	20.57	20.23
		RB1#13	20.07	20.85	20.38	19.91	20.69	20.22
		RB1#24	20.10	20.89	20.31	19.94	20.73	20.15
		RB15#0	19.88	19.84	19.86	19.72	19.68	19.70
		RB15#10	20.00	19.80	19.83	19.84	19.64	19.67
		RB25#0	20.07	19.93	19.73	19.91	19.77	19.57
10.0	QPSK	RB1#0	21.68	21.85	21.83	21.52	21.69	21.67
		RB1#25	21.67	21.85	21.89	21.51	21.69	21.73
		RB1#49	21.77	21.74	21.81	21.61	21.58	21.65
		RB25#0	20.83	20.80	20.74	20.67	20.64	20.58
		RB25#25	20.83	20.88	20.79	20.67	20.72	20.63
		RB50#0	20.77	20.85	20.70	20.61	20.69	20.54
	16QAM	RB1#0	21.09	20.95	20.34	20.93	20.79	20.18
		RB1#25	21.06	21.16	20.32	20.90	21.00	20.16
		RB1#49	21.00	20.87	20.28	20.84	20.71	20.12
		RB25#0	19.96	20.04	19.97	19.80	19.88	19.81
		RB25#25	19.89	20.08	19.97	19.73	19.92	19.81
		RB50#0	20.04	20.03	19.85	19.88	19.87	19.69

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	21.67	21.69	21.77	21.51	21.53	21.61
		RB1#38	21.81	21.78	21.83	21.65	21.62	21.67
		RB1#74	21.80	21.84	21.83	21.64	21.68	21.67
		RB36#0	20.80	20.87	20.80	20.64	20.71	20.64
		RB36#39	20.92	20.68	20.70	20.76	20.52	20.54
		RB75#0	20.83	20.81	20.67	20.67	20.65	20.51
	16QAM	RB1#0	21.05	21.14	20.96	20.89	20.98	20.80
		RB1#38	21.03	21.15	21.02	20.87	20.99	20.86
		RB1#74	21.13	21.22	21.09	20.97	21.06	20.93
		RB36#0	20.15	19.99	19.86	19.99	19.83	19.70
		RB36#39	20.18	20.13	19.94	20.02	19.97	19.78
		RB75#0	20.04	19.89	19.75	19.88	19.73	19.59
20.0	QPSK	RB1#0	21.81	21.86	21.89	21.65	21.70	21.73
		RB1#50	21.85	21.87	21.93	21.69	21.71	21.77
		RB1#99	21.96	21.93	21.96	21.80	21.77	21.80
		RB50#0	20.91	20.89	20.76	20.75	20.73	20.60
		RB50#50	20.76	20.83	20.74	20.60	20.67	20.58
		RB100#0	20.79	20.83	20.84	20.63	20.67	20.68
	16QAM	RB1#0	20.64	21.46	21.48	20.48	21.30	21.32
		RB1#50	20.63	21.42	21.43	20.47	21.26	21.27
		RB1#99	20.69	21.36	21.33	20.53	21.20	21.17
		RB50#0	20.05	20.10	19.89	19.89	19.94	19.73
		RB50#50	20.03	20.09	19.85	19.87	19.93	19.69
		RB100#0	20.01	19.94	19.94	19.85	19.78	19.78

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

For Band7: Antenna Gain = 0.84dBi

Cable loss=1dB, which was provided by manufacturer.

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)	8.67	8.55	8.58	13	Pass
QPSK (100RB Size)	8.60	8.58	8.58	13	Pass
16QAM (1RB Size)	8.69	8.58	8.60	13	Pass
16QAM (100RB Size)	8.52	8.41	8.60	13	Pass

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

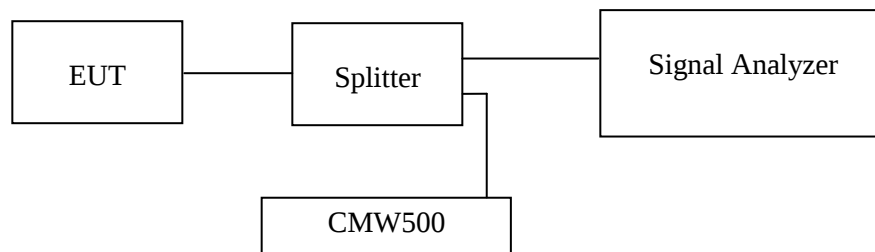
Applicable Standard

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:	28.6 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Ting Lv on 2021-10-29 and 2021-10-30.

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	316.90
	190	836.6	244.57	316.90
	251	848.8	244.57	316.90
EGPRS(8PSK)	128	824.2	247.50	321.40
	190	836.6	250.36	328.50
	251	848.8	248.91	327.10

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.15	4.71
	836.6	4.15	4.69
	846.6	4.13	4.69
HSDPA	826.4	4.15	4.69
	836.6	4.15	4.69
	846.6	4.13	4.69
HSUPA	826.4	4.15	4.69
	836.6	4.15	4.69
	846.6	4.13	4.69

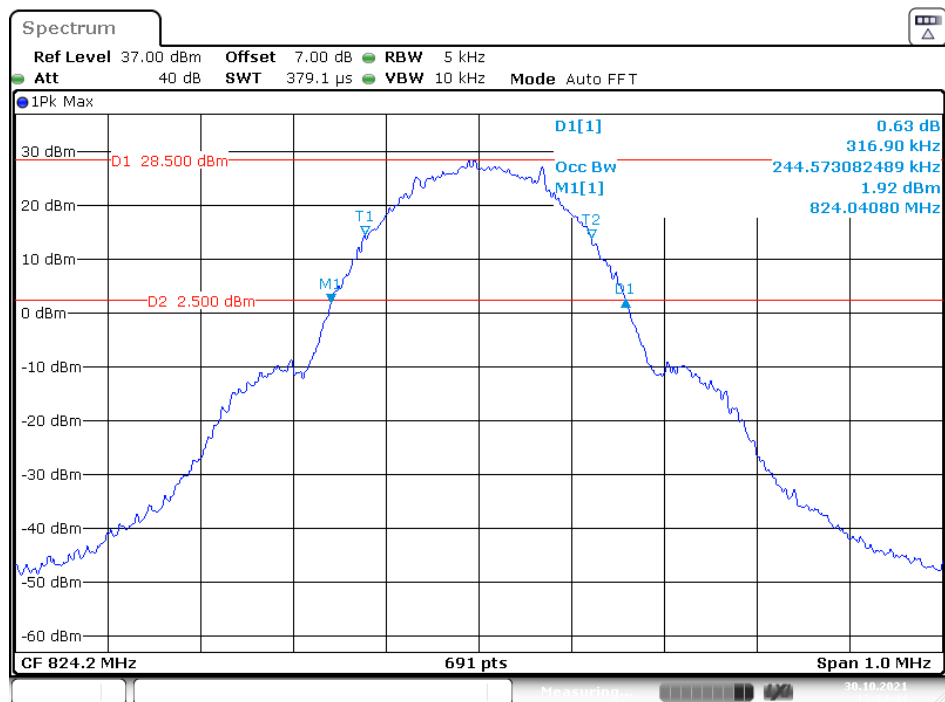
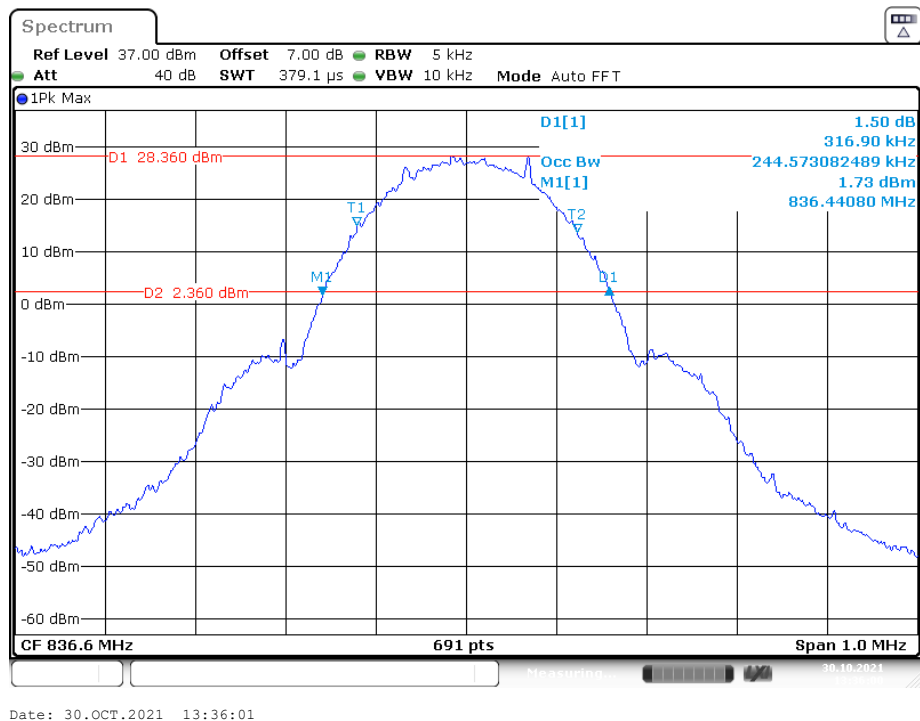
PCS Band (Part 24E)

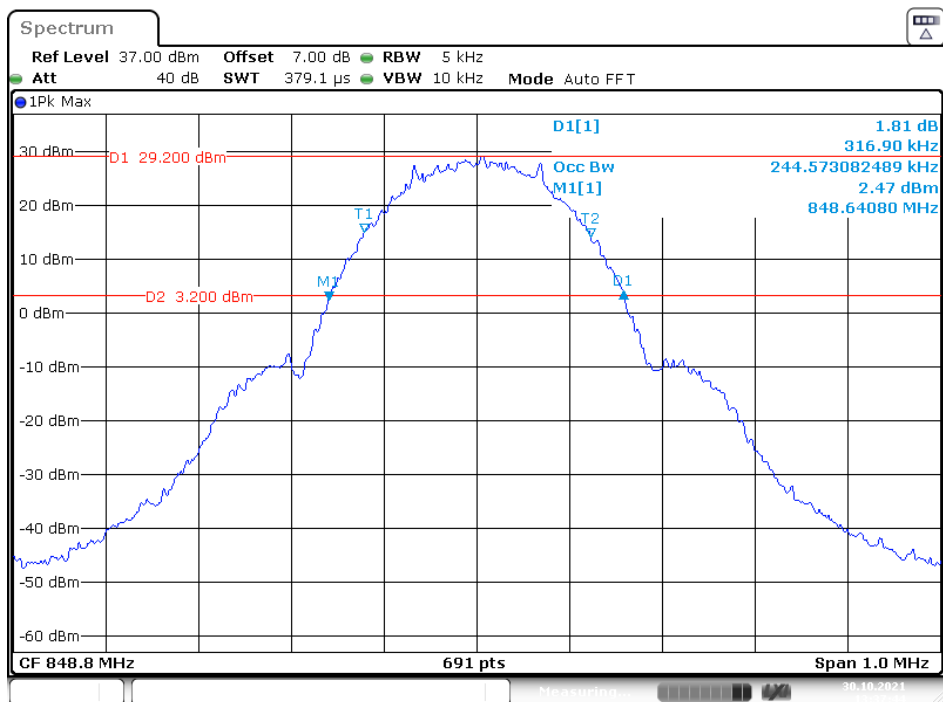
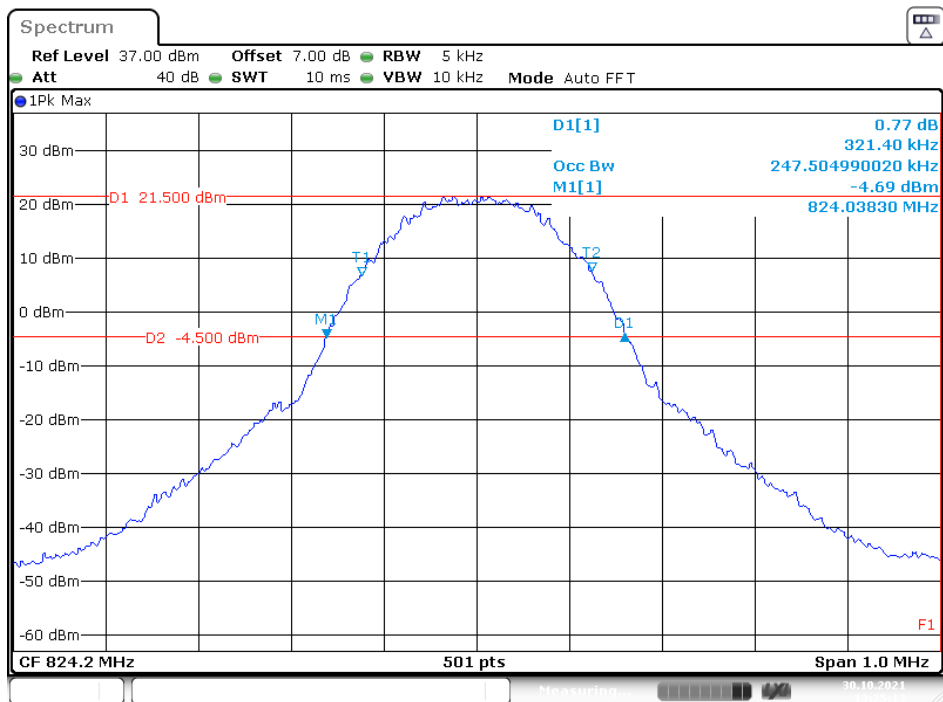
Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	243.13	318.40
	661	1880.0	244.57	318.40
	810	1909.8	243.13	318.40
EGPRS(8PSK)	512	1850.2	241.68	316.90
	661	1880.0	244.57	319.80
	810	1909.8	244.57	322.70

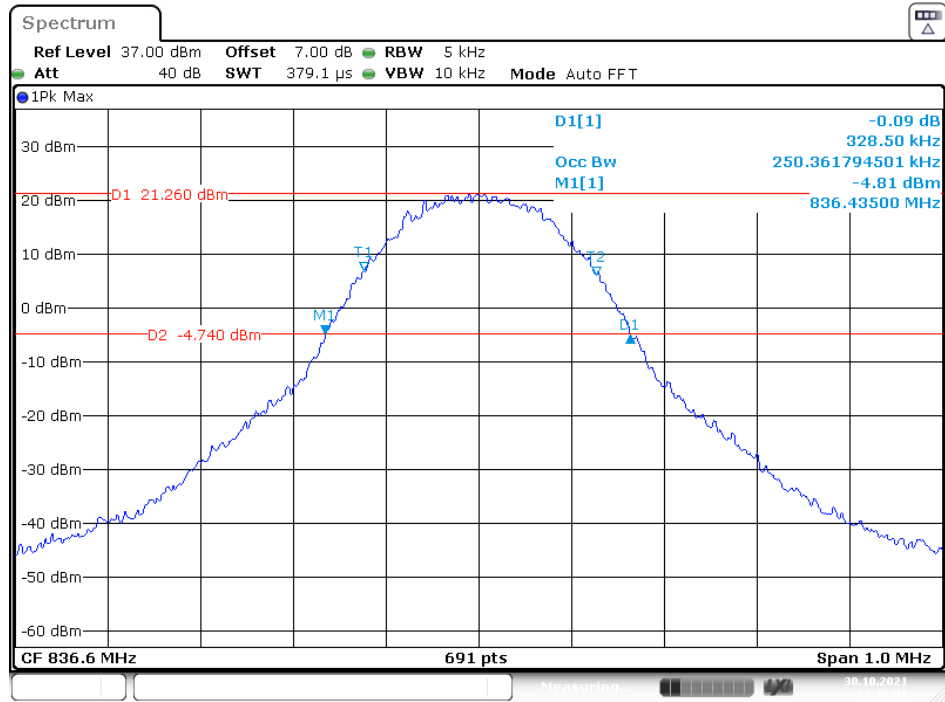
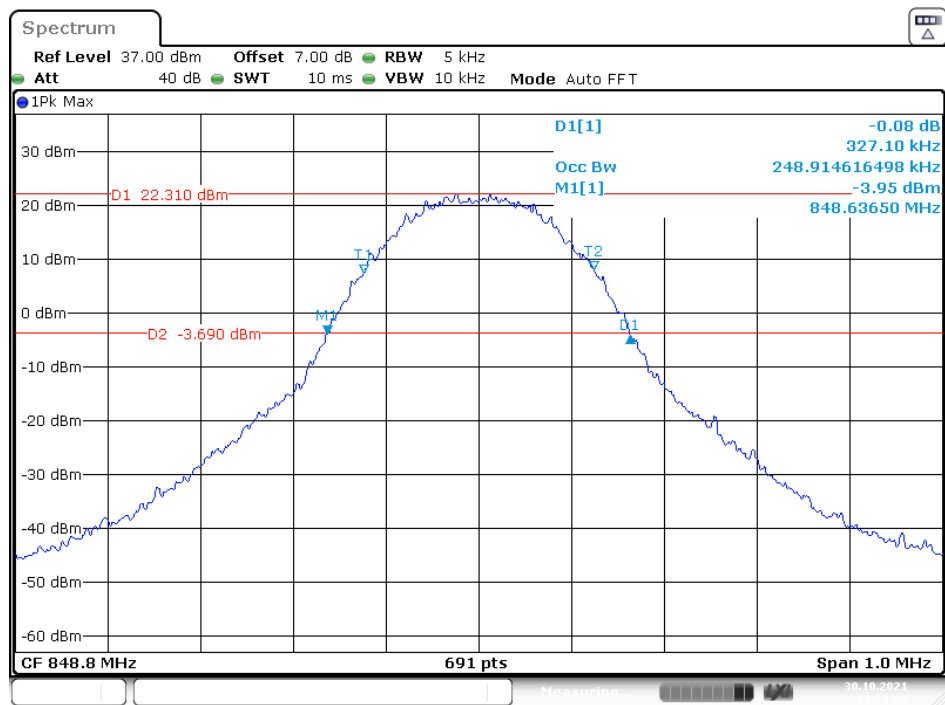
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.15	4.69
	1880.0	4.15	4.71
	1907.6	4.13	4.69
HSDPA	1852.4	4.15	4.69
	1880.0	4.15	4.69
	1907.6	4.13	4.69
HSUPA	1852.4	4.15	4.69
	1880.0	4.15	4.67
	1907.6	4.13	4.69

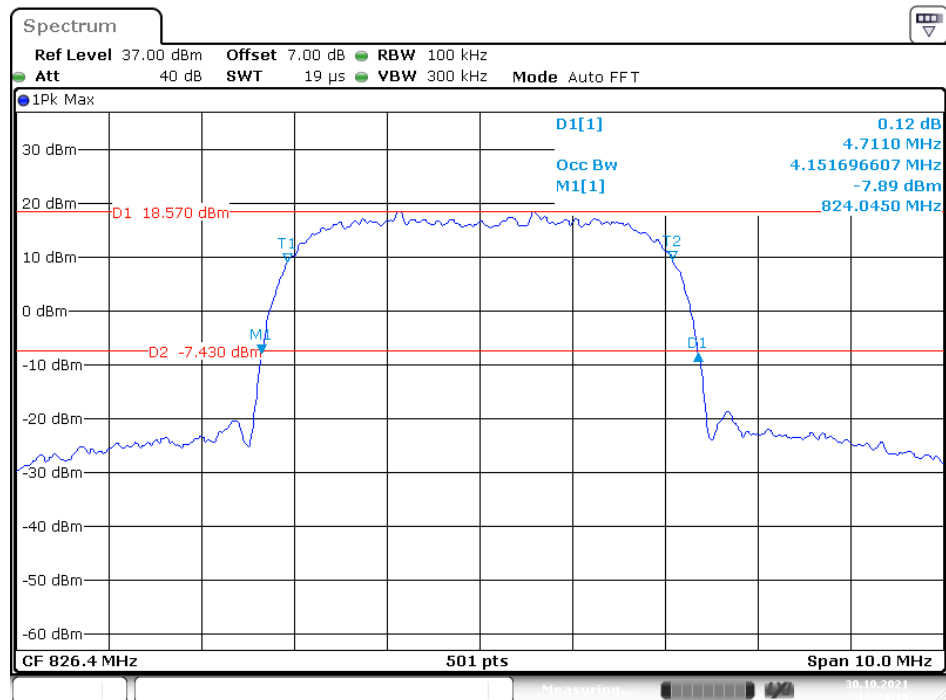
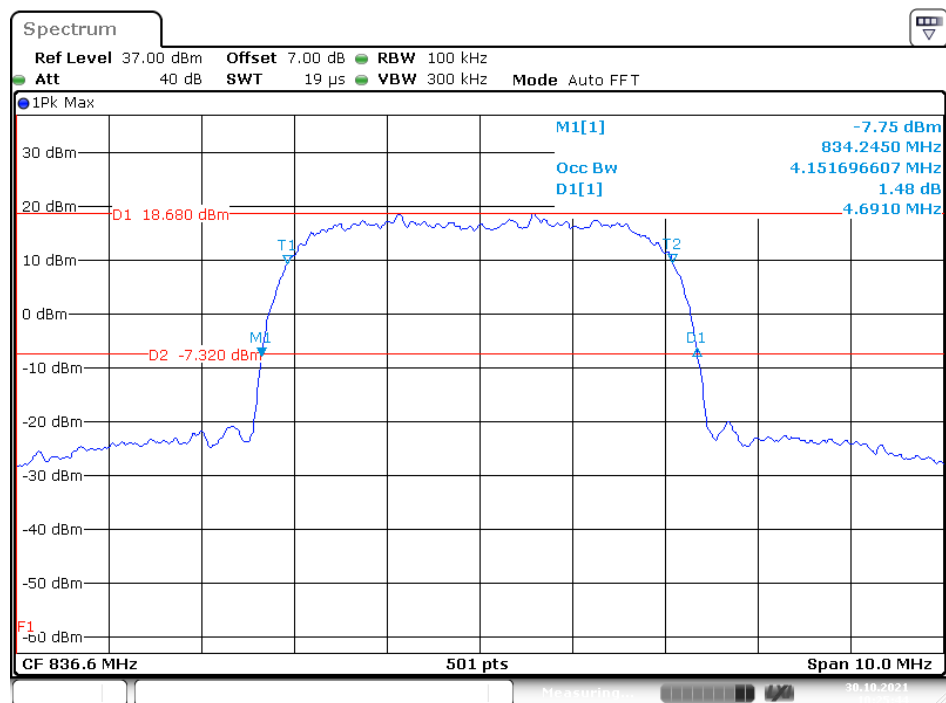
AWS Band (Part 27)

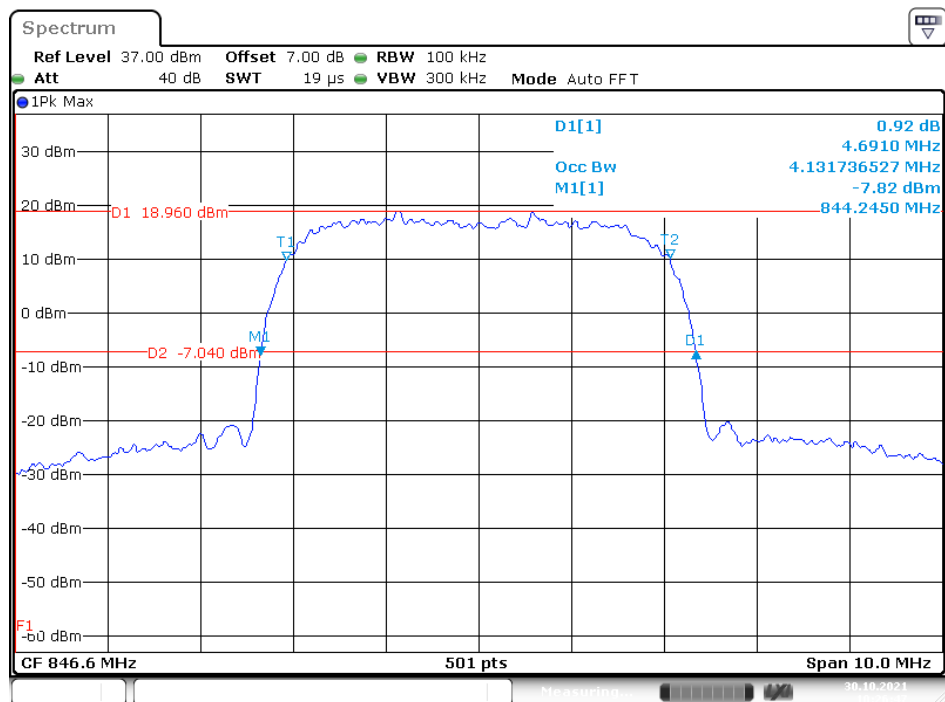
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.13	4.69
	1732.6	4.15	4.69
	1752.6	4.13	4.69
HSDPA	1712.4	4.15	4.69
	1732.6	4.15	4.69
	1752.6	4.15	4.67
HSUPA	1712.4	4.13	4.67
	1732.6	4.15	4.69
	1752.6	4.13	4.67

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**

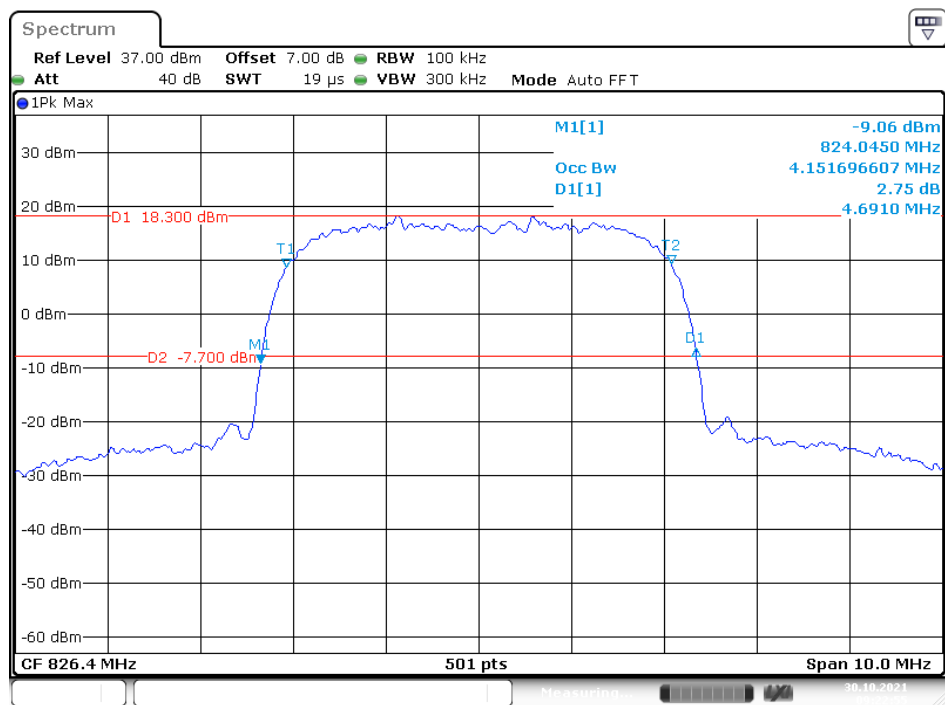
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Low channel**

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**

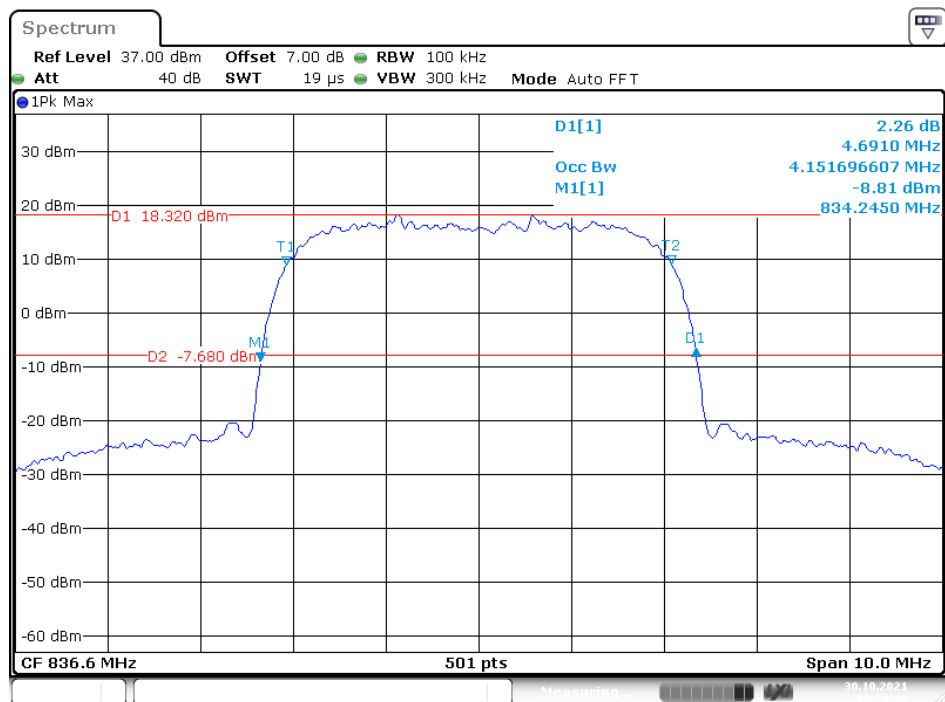
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel

Date: 30.OCT.2021 10:26:47

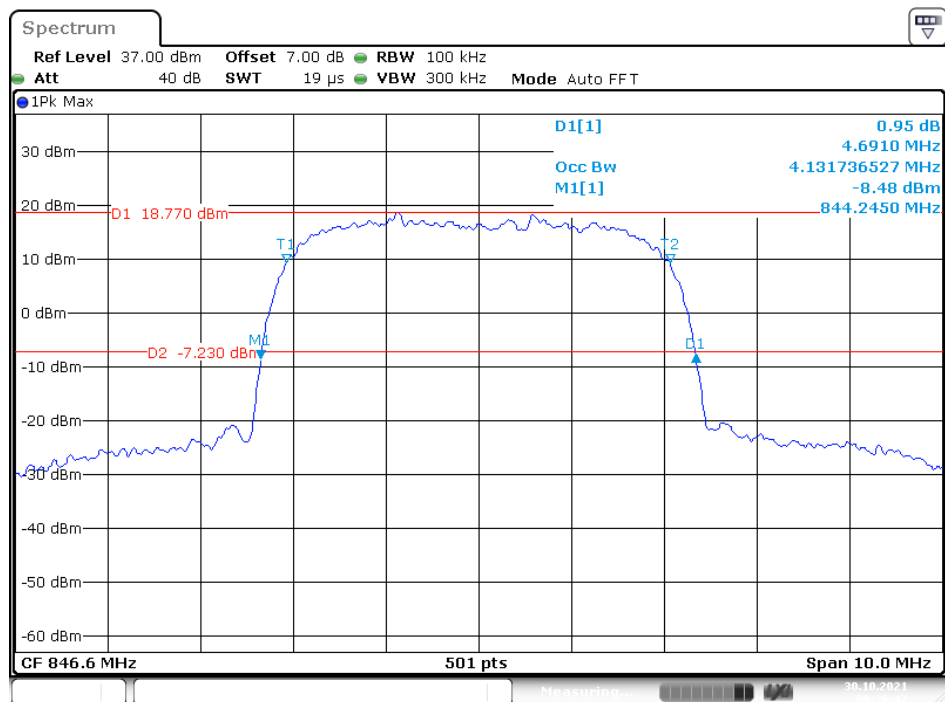
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel

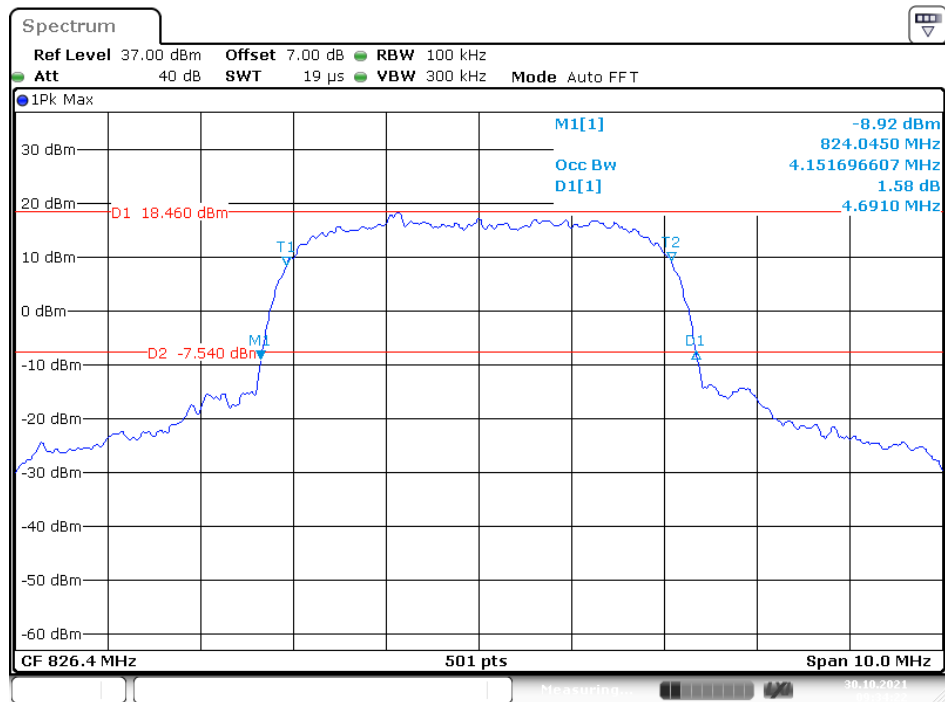
Date: 30.OCT.2021 09:22:55

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

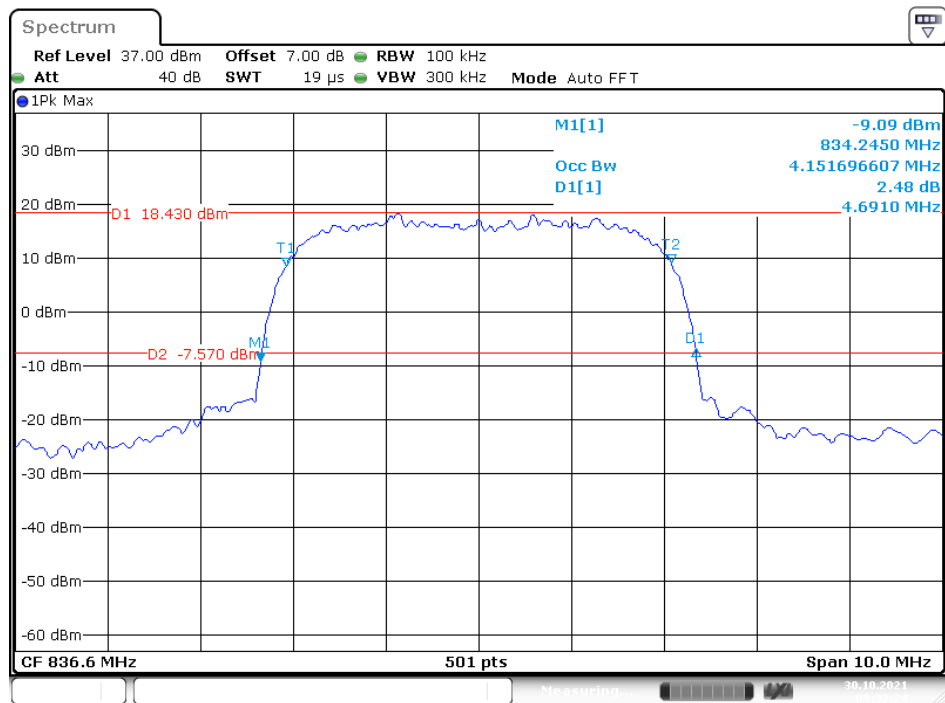


26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



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

Date: 30.OCT.2021 09:34:22

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

Date: 30.OCT.2021 09:32:25

Spectrum

Ref Level 37.00 dBm Offset 7.00 dB RBW 100 kHz
 Att 40 dB SWT 19 μ s VBW 300 kHz Mode Auto FFT

1Pk Max

D1 17.400 dBm

D2 -8.600 dBm

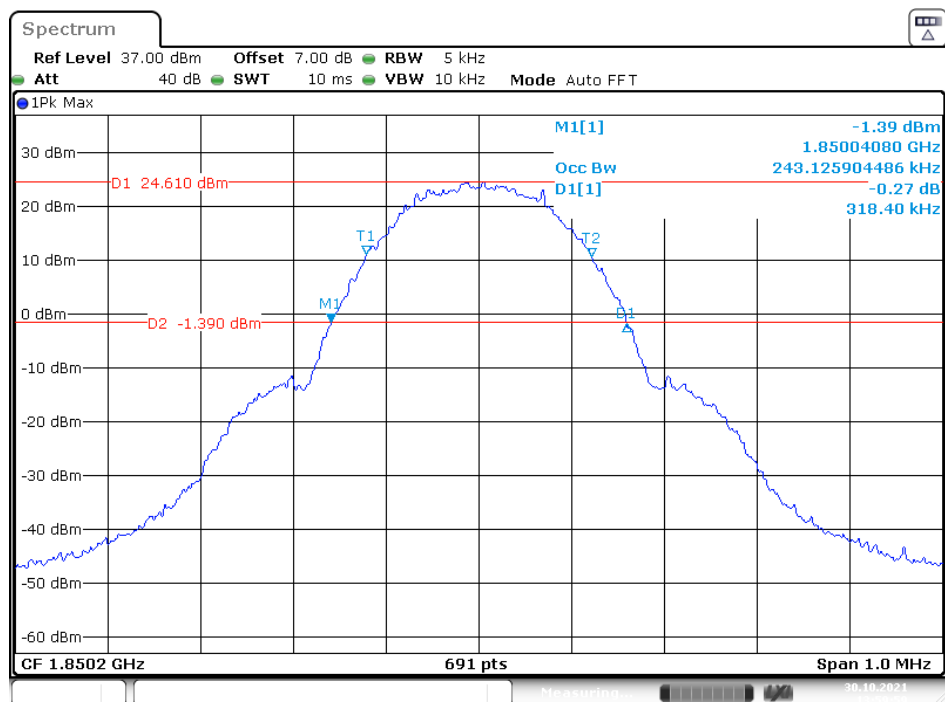
0.76 dB
 4.6910 MHz
 Occ Bw 4.131736527 MHz
 M1[1] -9.49 dBm
 844.2450 MHz

CF 846.6 MHz 501 pts Span 10.0 MHz

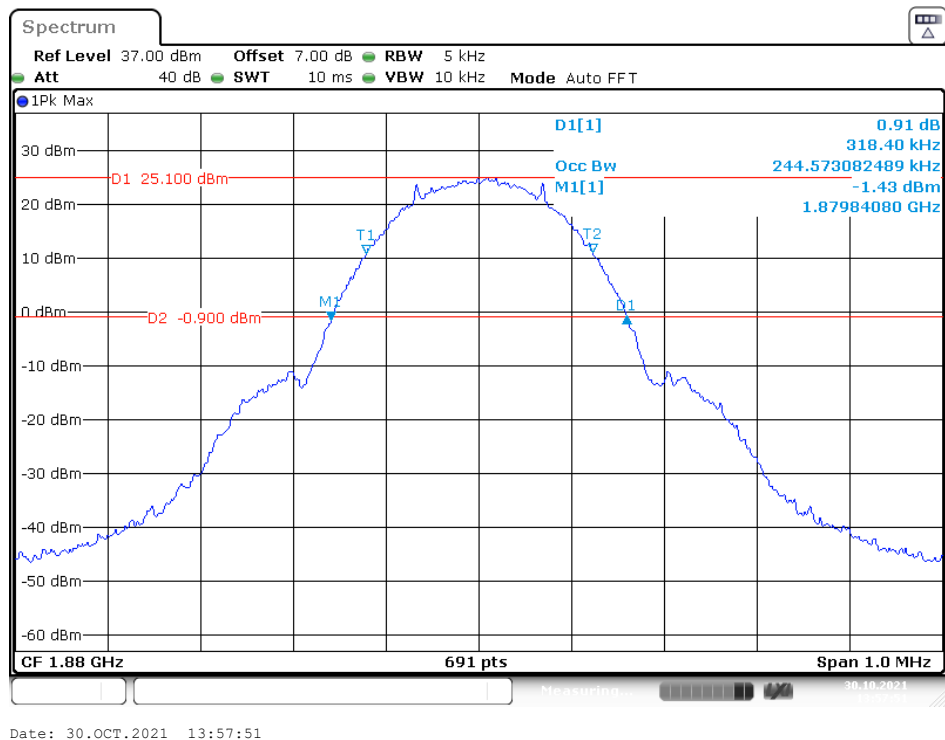
Date: 30.OCT.2021 09:29:40

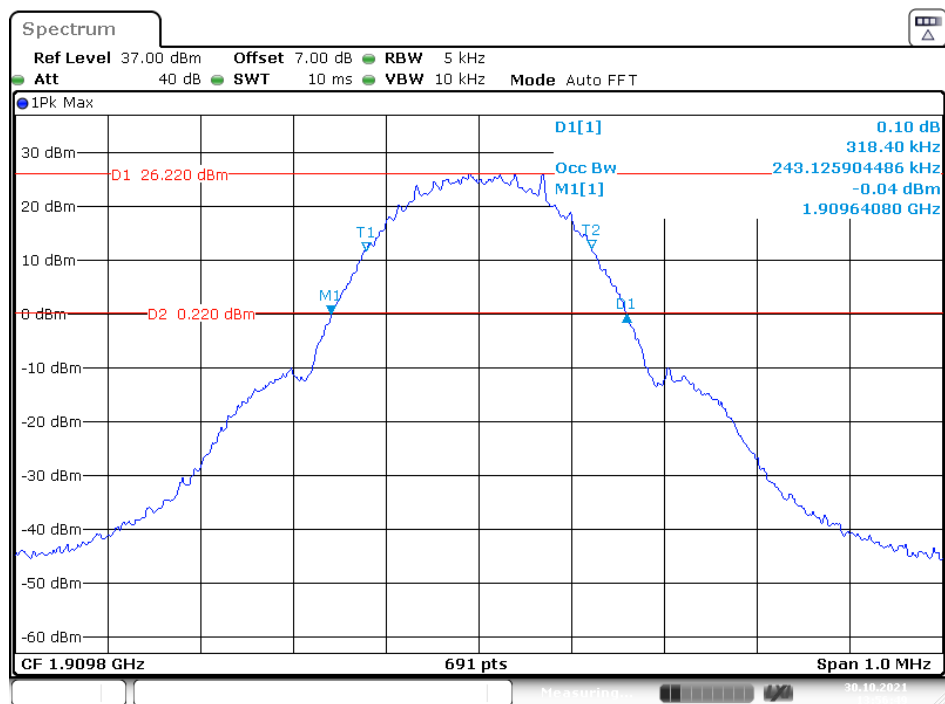
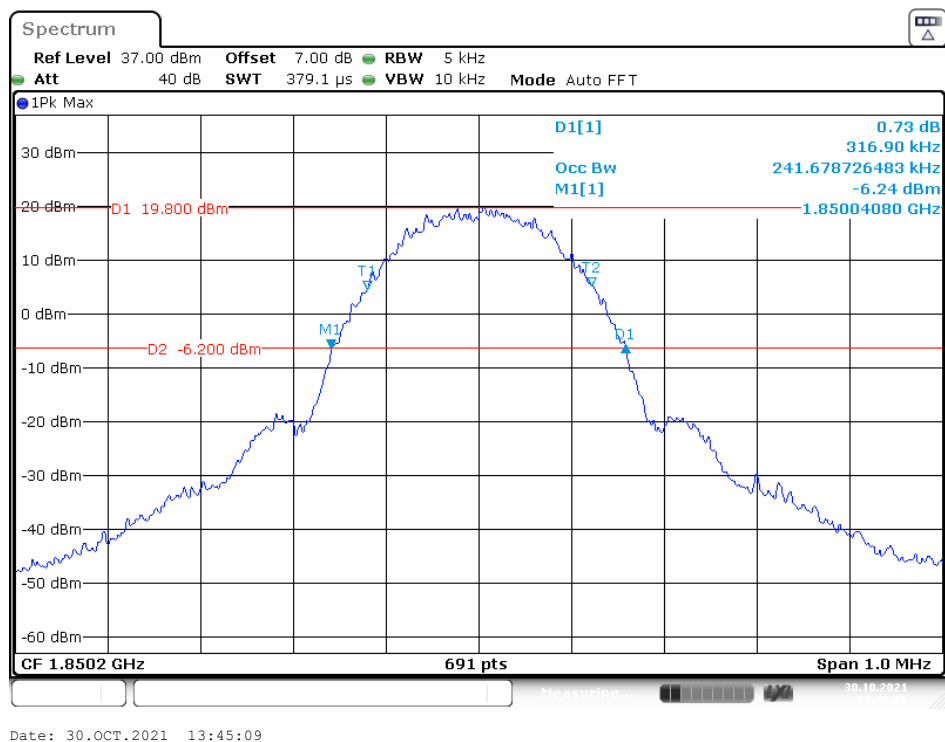
PCS Band (Part 24E)

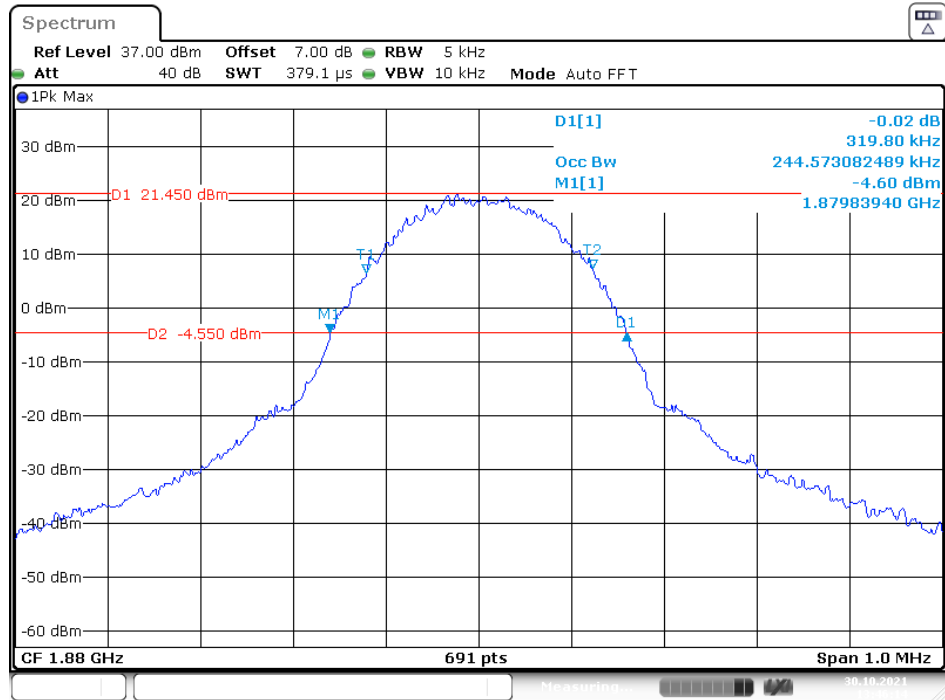
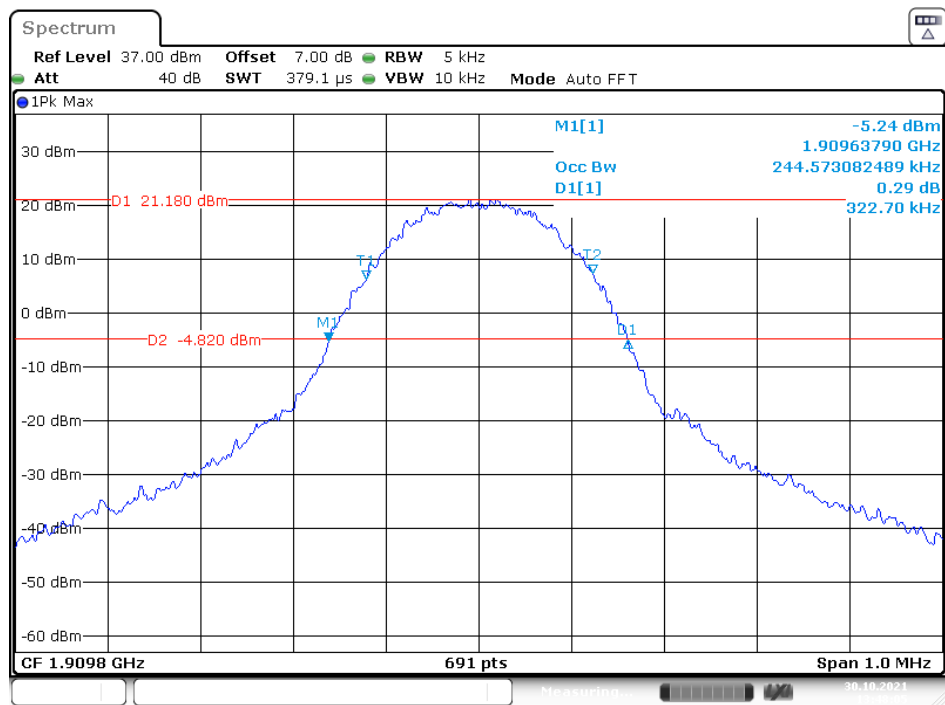
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel



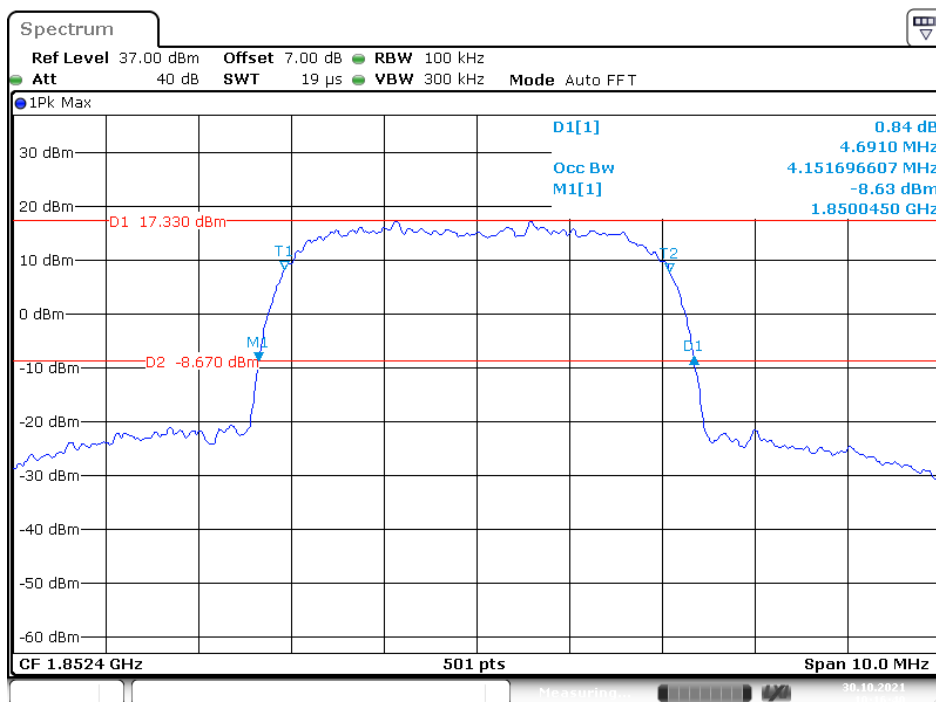
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



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

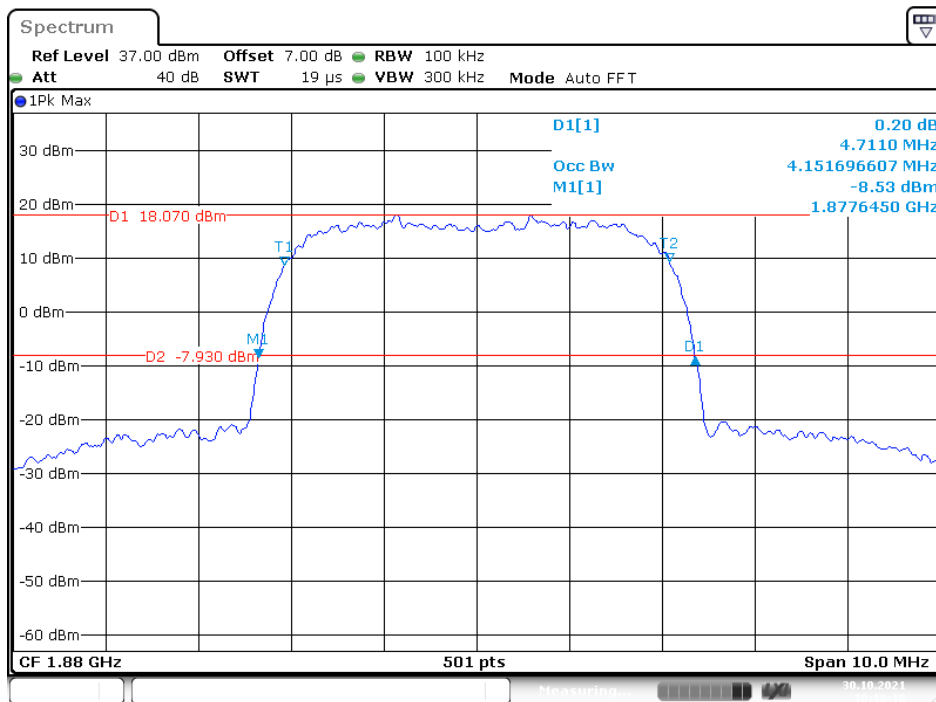
26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel**26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel**

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

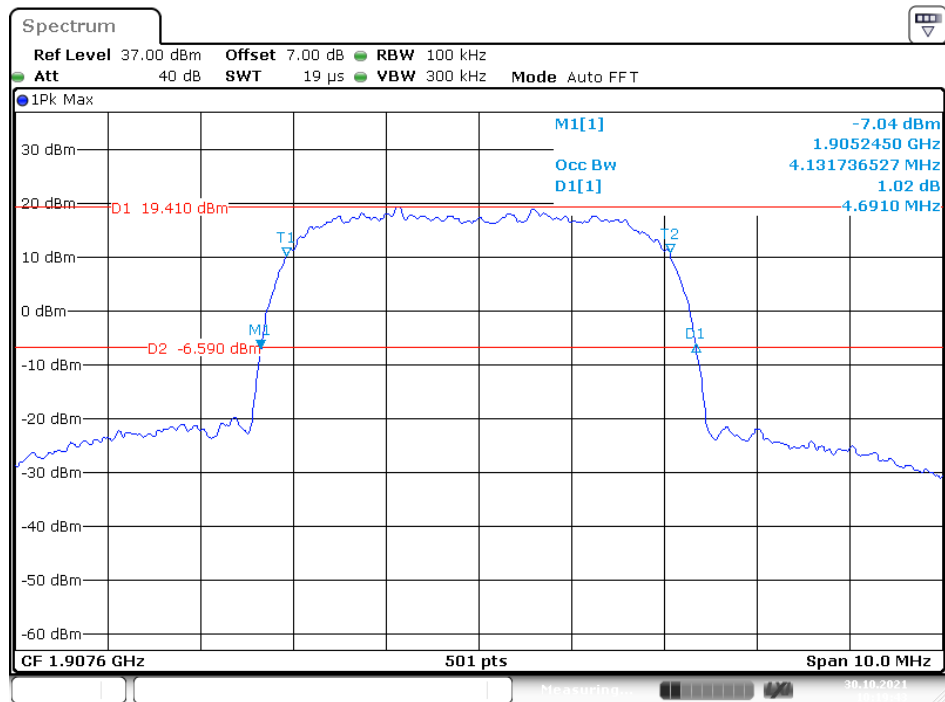


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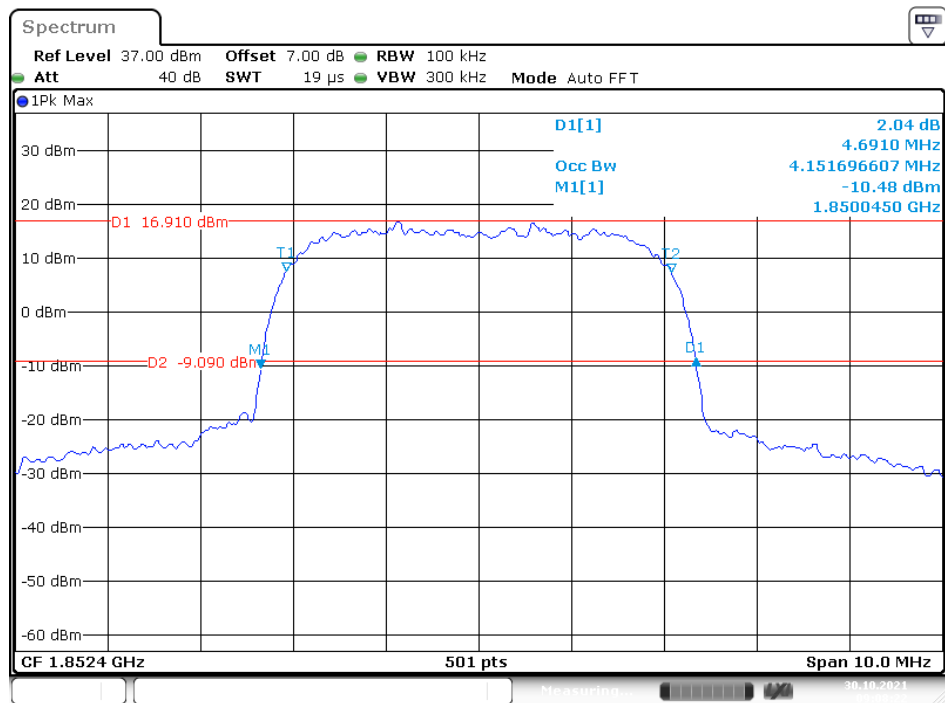
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



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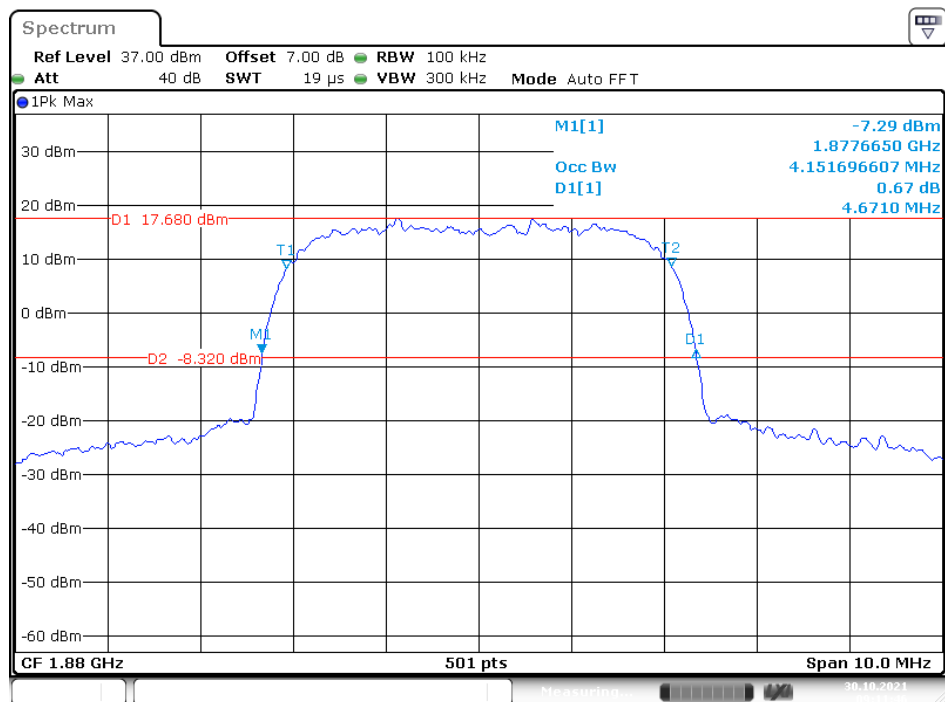
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel

Date: 30.OCT.2021 10:19:43

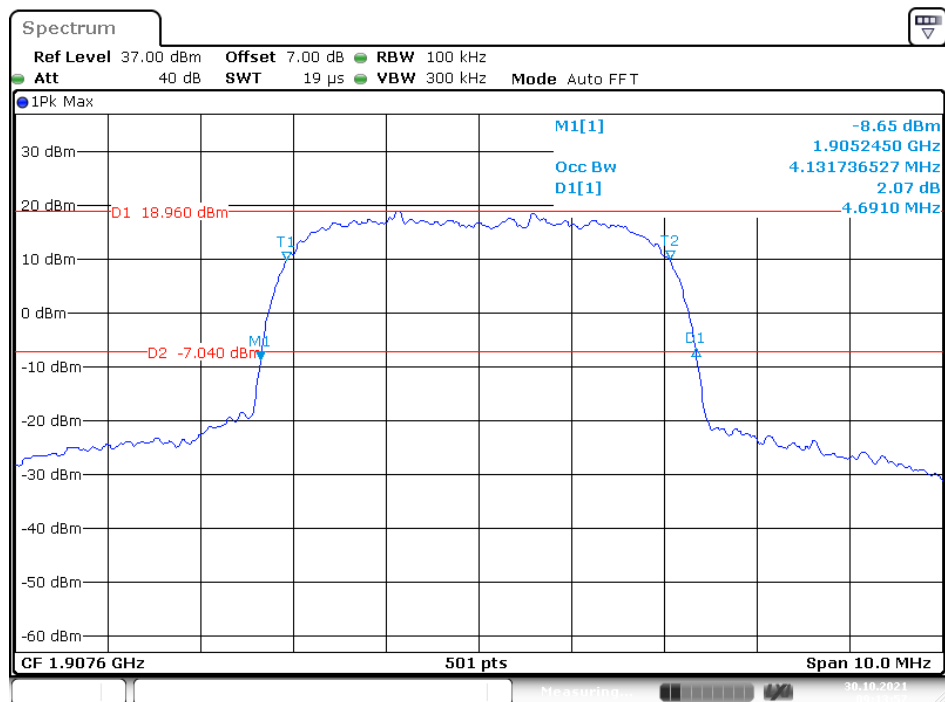
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel

Date: 30.OCT.2021 09:08:23

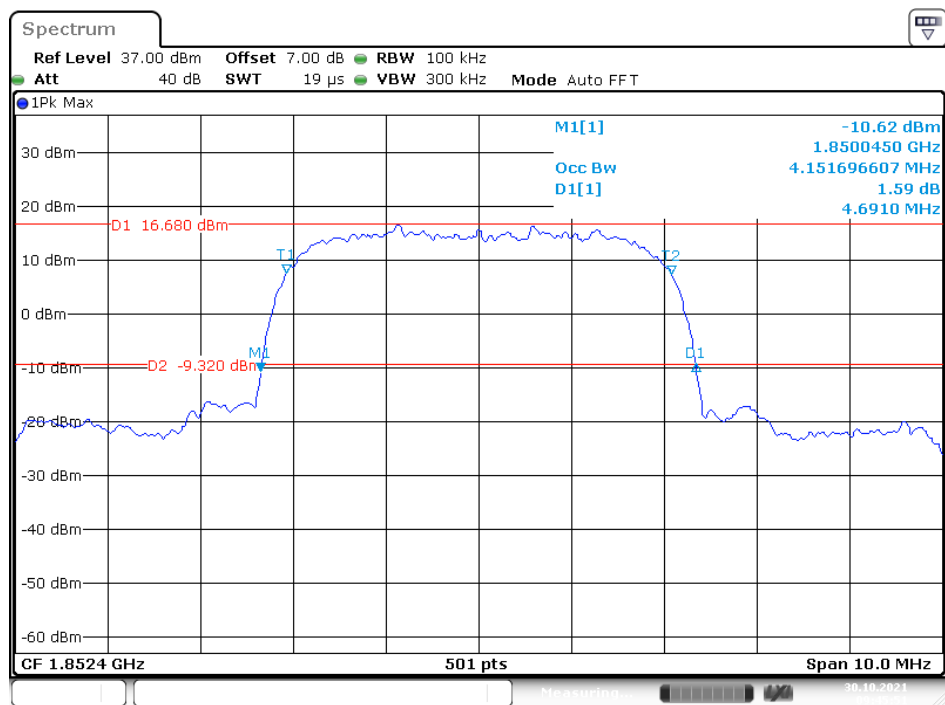
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel



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

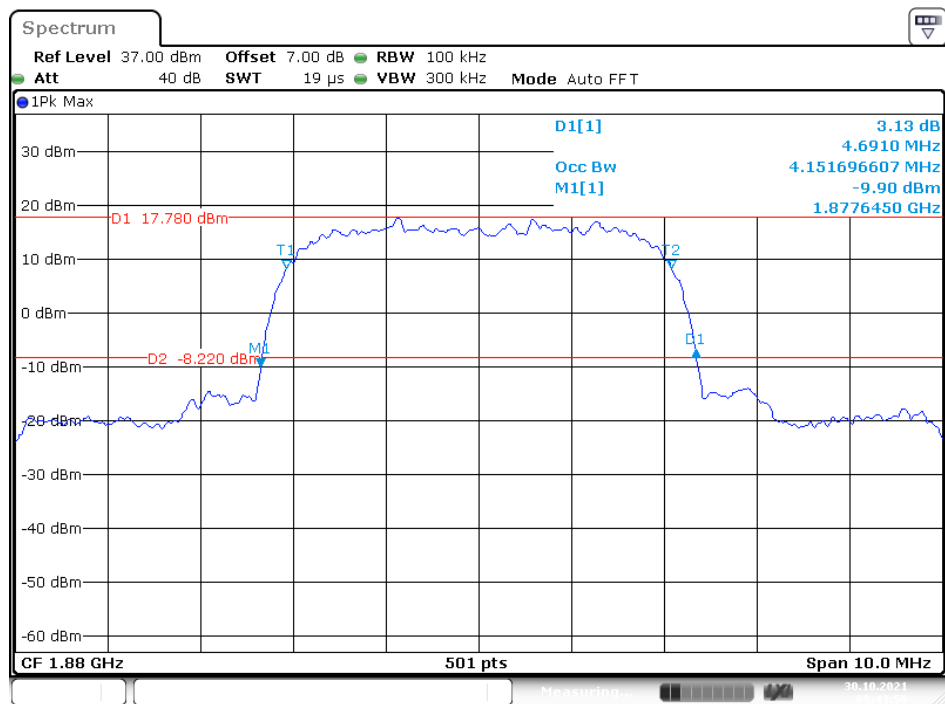


26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel

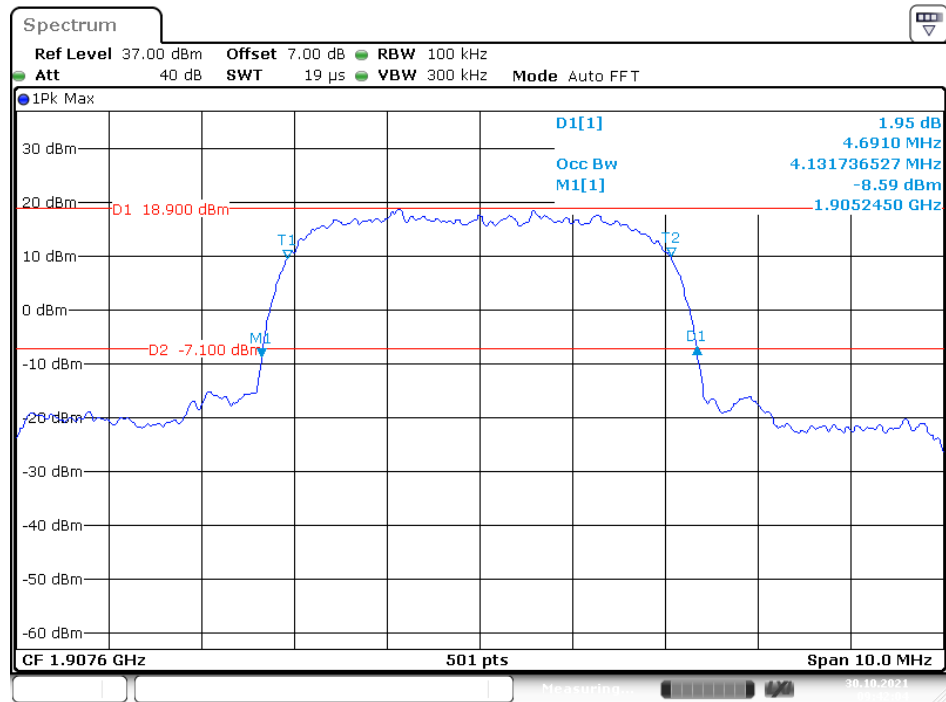


Date: 30.OCT.2021 09:45:51

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



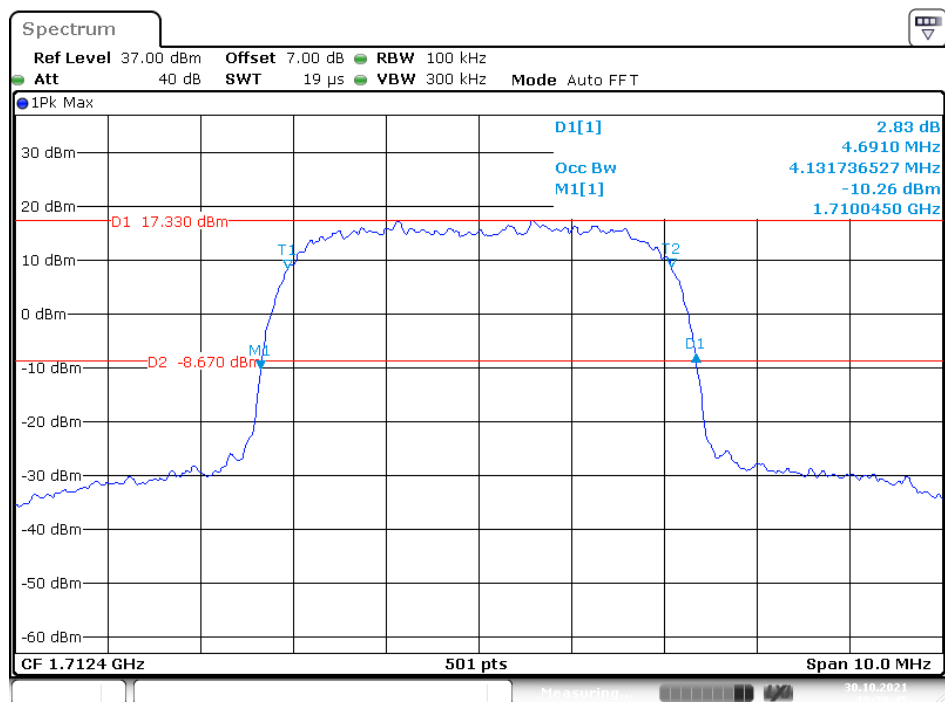
Date: 30.OCT.2021 09:43:59

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

Date: 30.OCT.2021 09:42:05

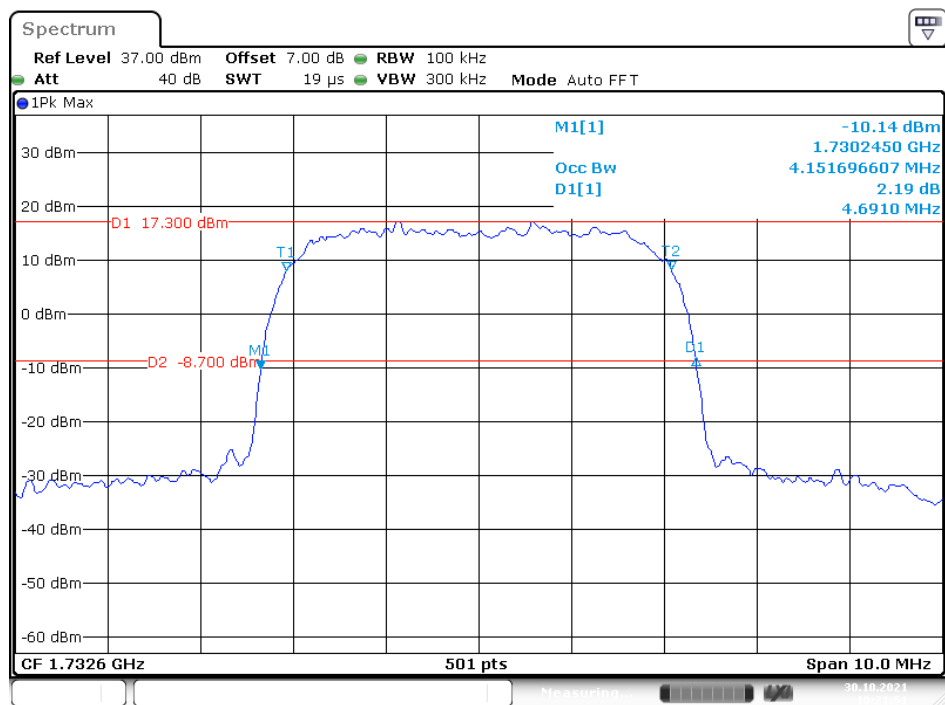
AWS Band (Part 27)

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

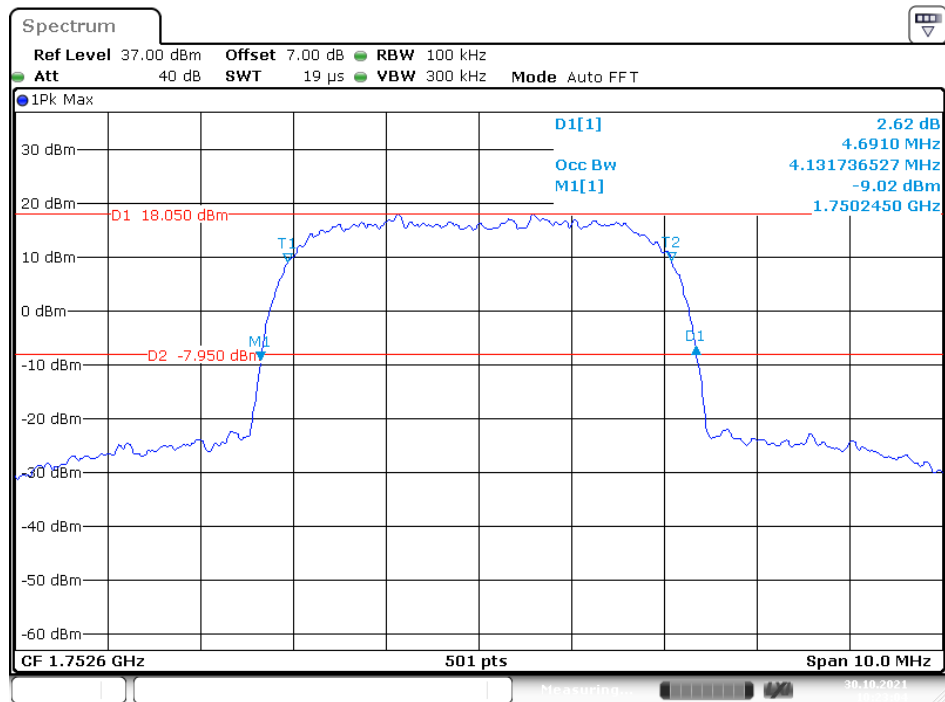
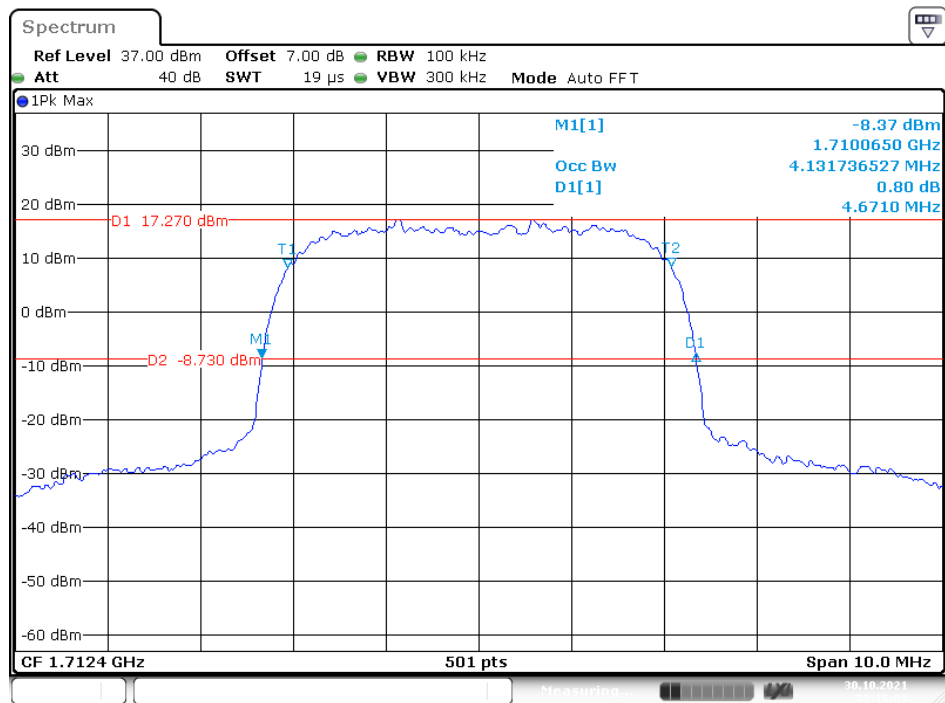


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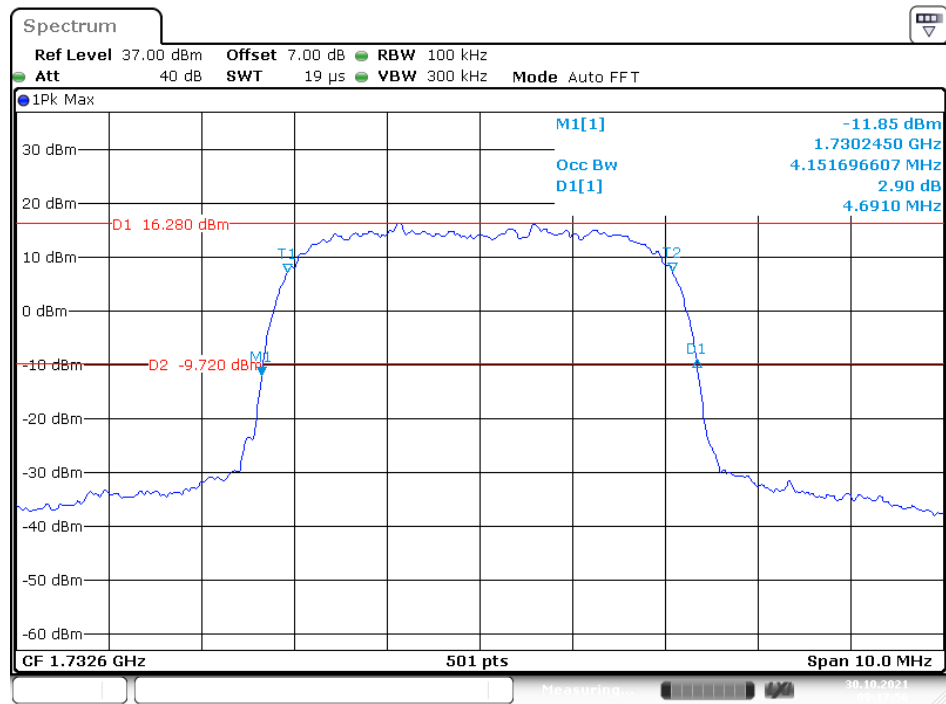
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



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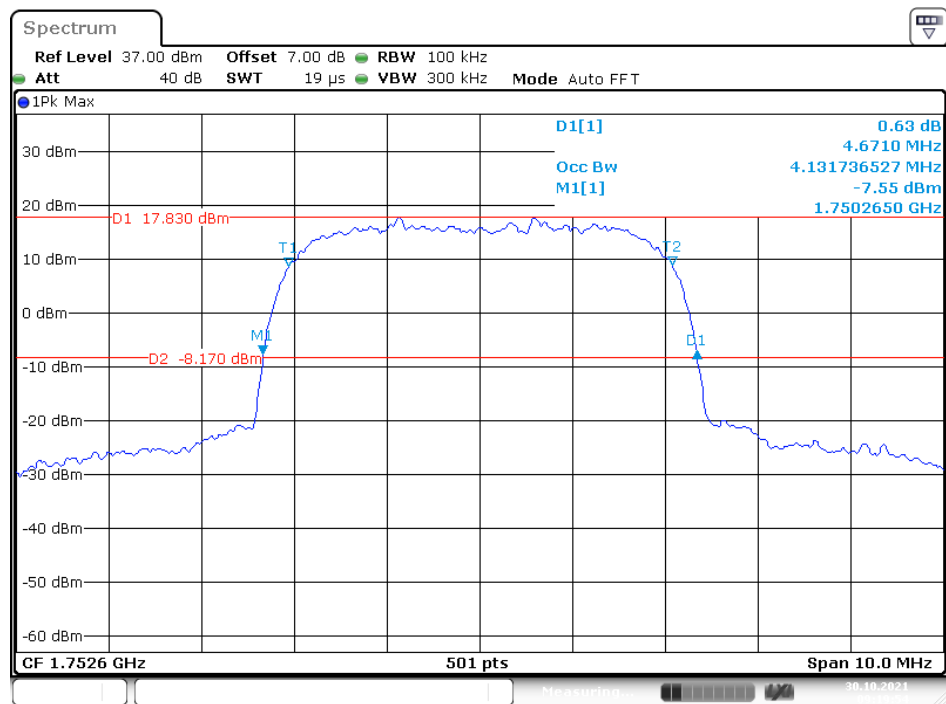
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**

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



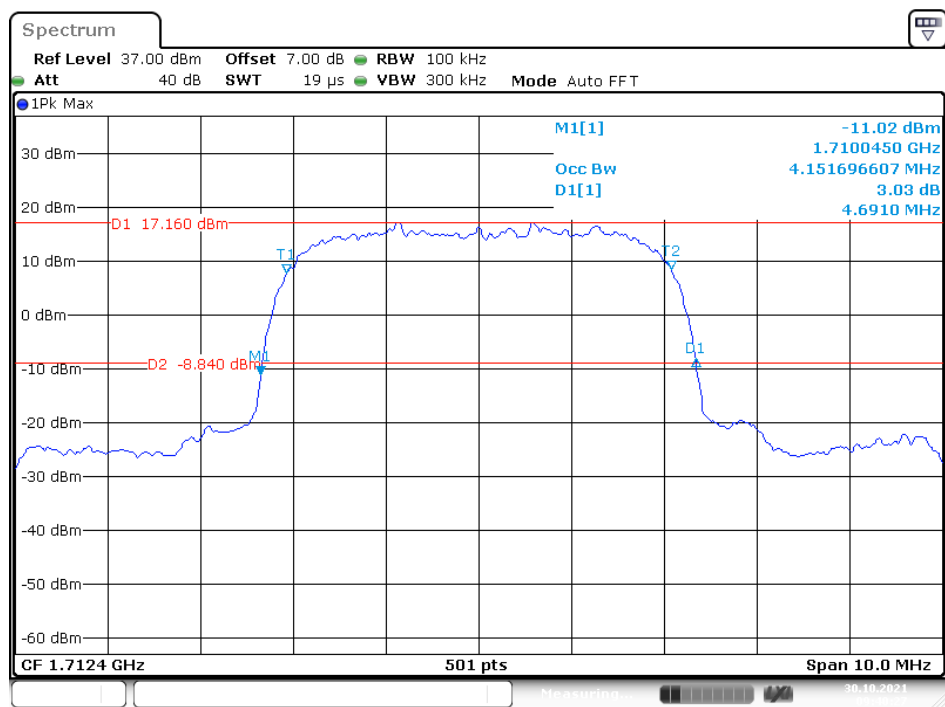
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26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



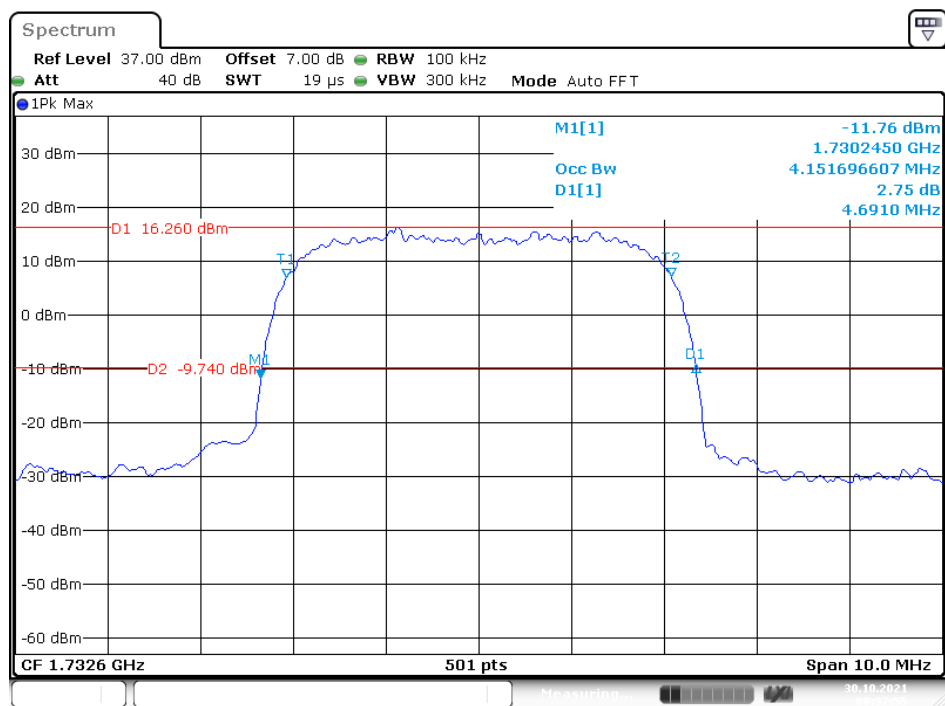
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26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel

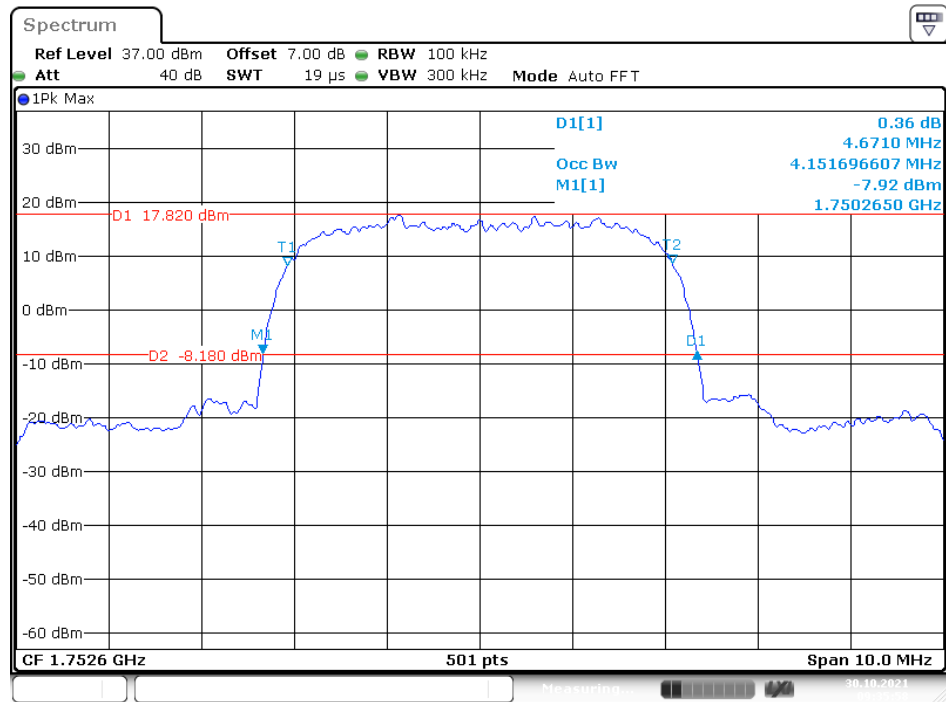


Date: 30.OCT.2021 09:40:28

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



Date: 30.OCT.2021 09:37:56

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

Date: 30.OCT.2021 09:35:59

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	1.254	1.096	1.254	1.102	1.260
	16QAM	1.102	1.230	1.102	1.260	1.090	1.248
3 MHz	QPSK	2.695	3.000	2.695	3.012	2.683	3.012
	16QAM	2.695	3.024	2.683	3.000	2.695	3.012
5 MHz	QPSK	4.531	4.980	4.511	5.020	4.511	4.980
	16QAM	4.511	5.000	4.531	5.020	4.531	5.020
10 MHz	QPSK	8.981	9.800	8.942	9.800	8.942	9.800
	16QAM	8.942	9.760	8.942	9.800	8.942	9.760
15 MHz	QPSK	13.533	15.060	13.473	15.060	13.473	15.000
	16QAM	13.533	15.000	13.533	15.060	13.533	14.940
20 MHz	QPSK	18.044	19.680	17.884	19.600	18.044	19.760
	16QAM	18.044	19.680	18.044	19.680	17.884	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	1.096	1.254	1.102	1.254	1.102	1.254
	16QAM	1.102	1.266	1.090	1.248	1.102	1.254
3 MHz	QPSK	2.695	2.988	2.695	3.012	2.695	3.012
	16QAM	2.695	3.012	2.683	3.000	2.683	3.024
5 MHz	QPSK	4.511	5.000	4.511	5.000	4.511	5.000
	16QAM	4.511	5.000	4.531	5.020	4.531	5.020
10 MHz	QPSK	8.942	9.760	8.942	9.760	8.942	9.800
	16QAM	8.942	9.760	8.942	9.800	8.942	9.880
15 MHz	QPSK	13.533	15.000	13.473	14.940	13.533	15.120
	16QAM	13.533	15.000	13.593	15.120	13.533	15.060
20 MHz	QPSK	17.964	19.520	17.964	19.680	18.044	19.920
	16QAM	17.964	19.760	17.964	19.760	17.964	19.760

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	1.254	1.102	1.248
	16QAM	1.102	1.266	1.090	1.248	1.102	1.254
3 MHz	QPSK	2.695	2.988	2.695	3.000	2.683	3.012
	16QAM	2.695	3.012	2.683	3.000	2.695	3.024
5 MHz	QPSK	4.511	5.000	4.511	5.020	4.491	4.980
	16QAM	4.511	5.000	4.531	5.020	4.531	5.020
10 MHz	QPSK	8.942	9.840	8.942	9.760	8.942	9.760
	16QAM	8.942	9.760	8.942	9.800	8.942	9.840

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	5.000	4.511	5.020	4.511	5.000
	16QAM	4.511	5.000	4.531	5.020	4.531	5.020
10 MHz	QPSK	8.942	9.760	8.942	9.800	8.982	9.800
	16QAM	8.942	9.720	8.942	9.800	8.982	9.880
15 MHz	QPSK	13.533	15.060	13.533	15.000	13.533	15.060
	16QAM	13.533	15.000	13.593	15.180	13.473	15.060
20 MHz	QPSK	17.964	19.440	17.964	19.680	17.964	19.760
	16QAM	17.964	19.760	18.044	19.840	17.884	19.520

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

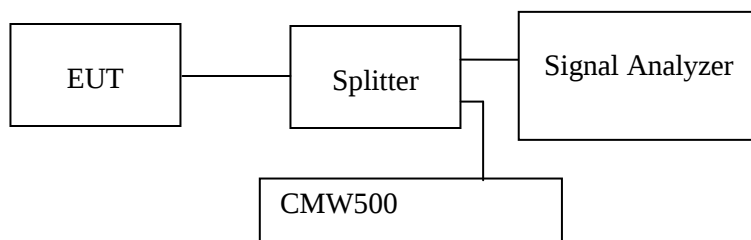
Applicable Standard

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

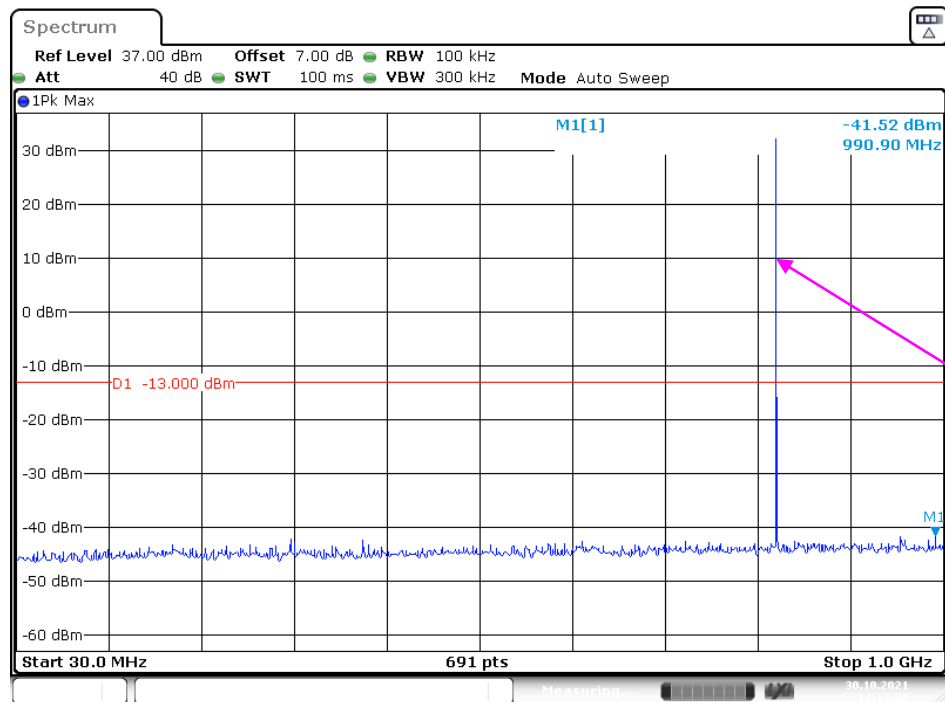
Temperature:	28.6 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Ting Lv from 2021-10-29 to 2021-11-30.

EUT operation mode: Transmitting

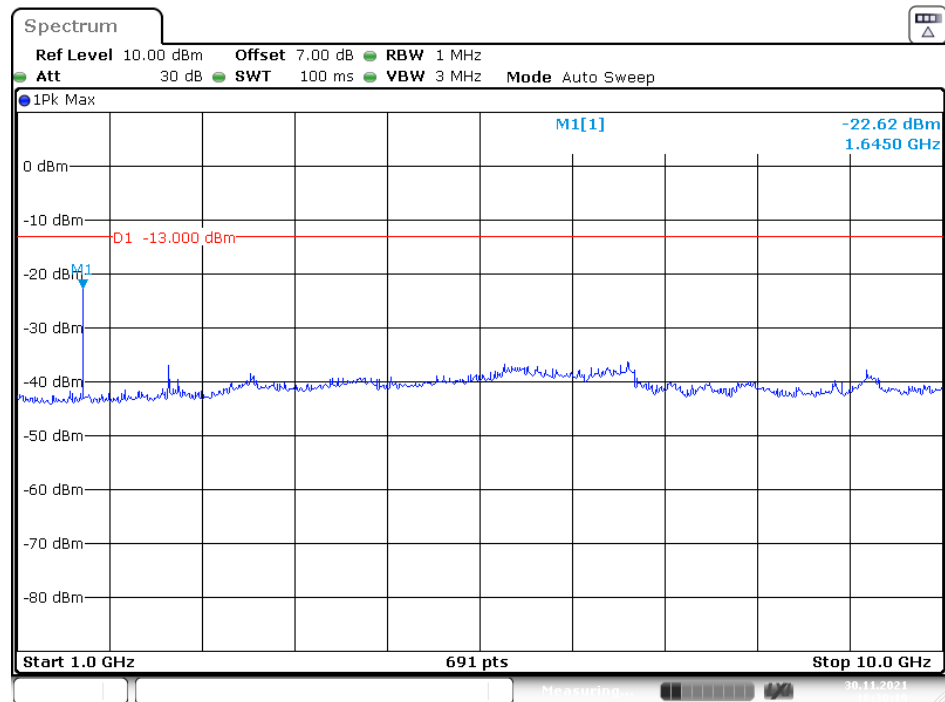
Test result: Pass

Please refer to the following plots.

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

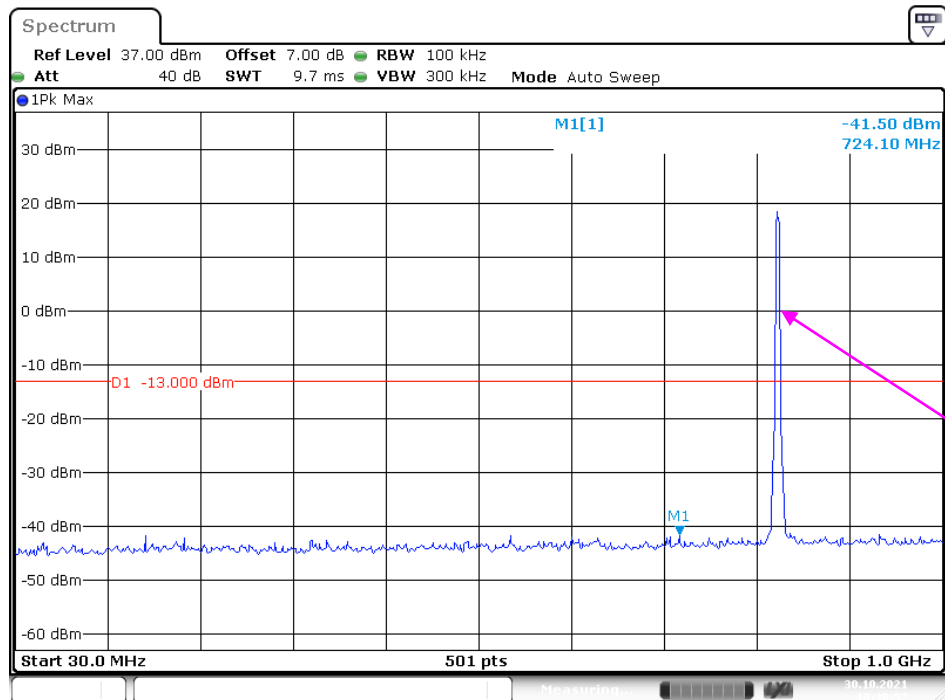
Date: 30.OCT.2021 14:13:26

Fundamental test

1 GHz – 10 GHz (GSM Mode)

Date: 30.NOV.2021 16:30:19

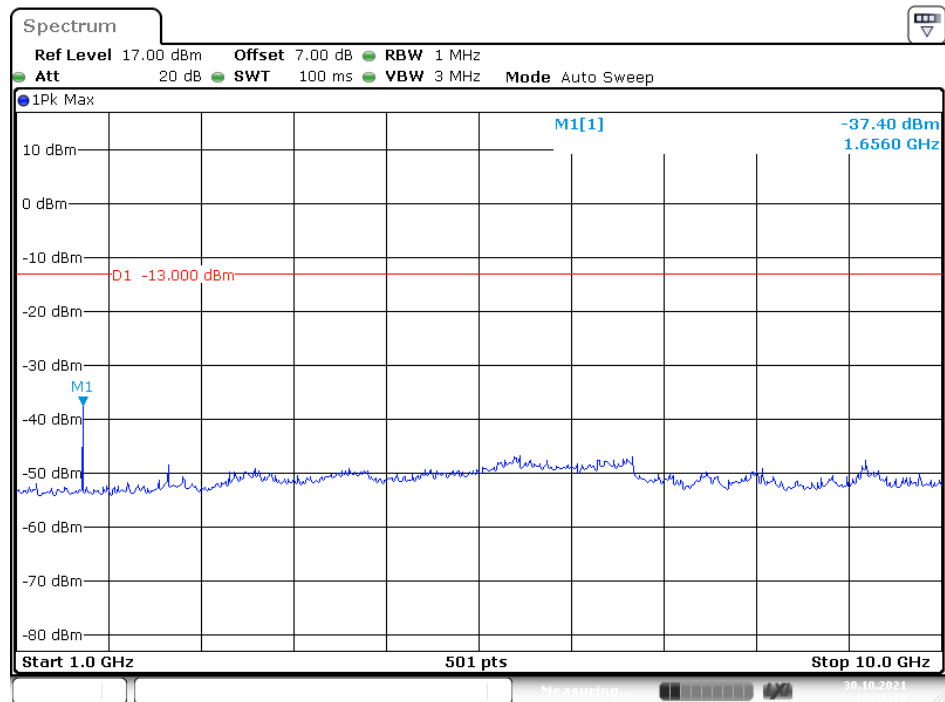
30 MHz – 1 GHz (WCDMA Mode)



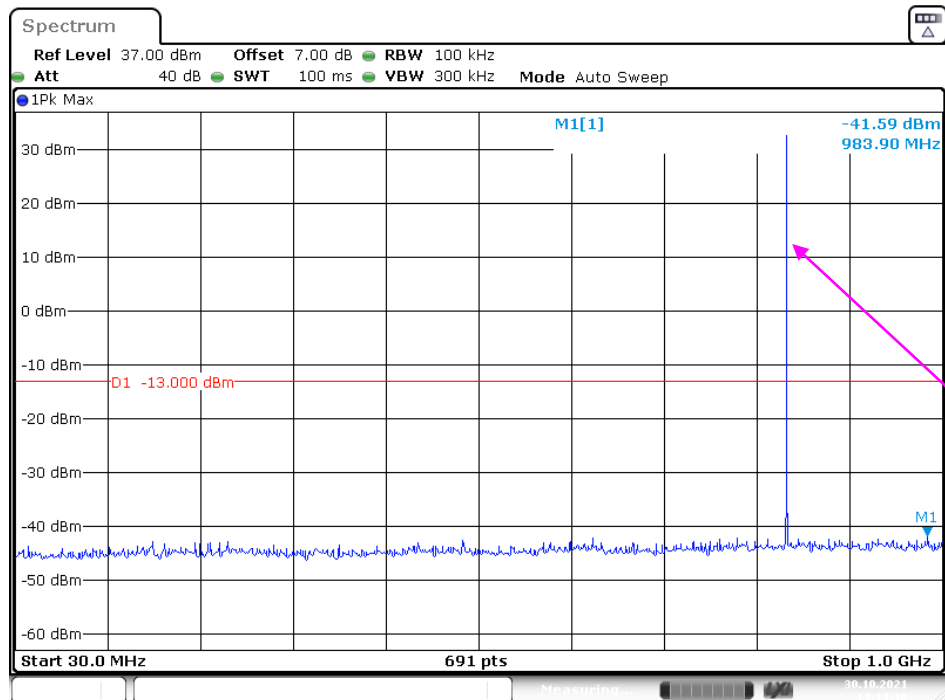
Date: 30.OCT.2021 10:30:52

Fundamental test

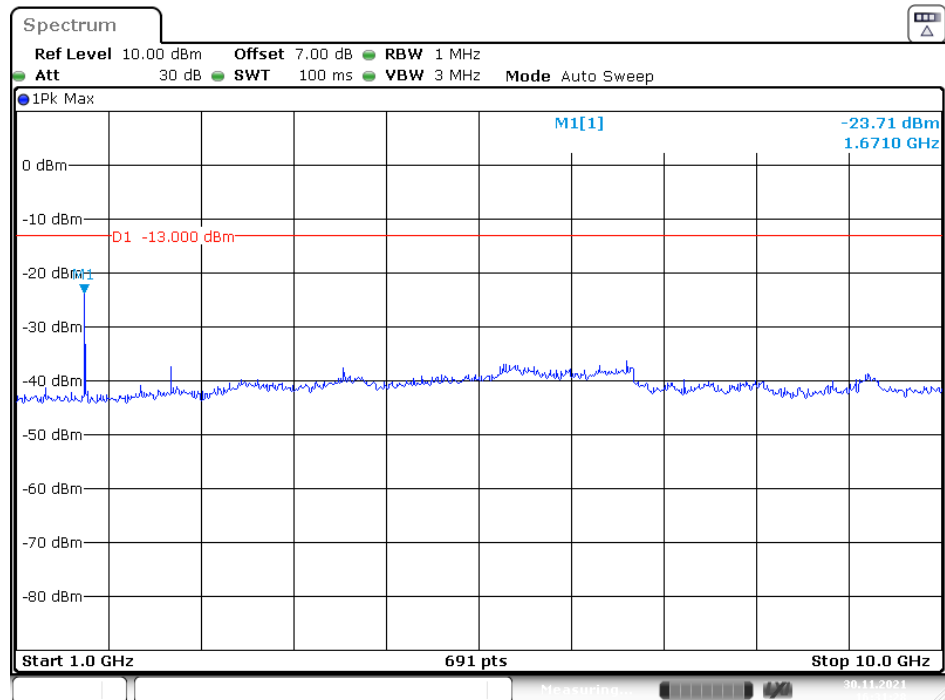
1 GHz – 2 GHz (WCDMA Mode)



Date: 30.OCT.2021 10:36:10

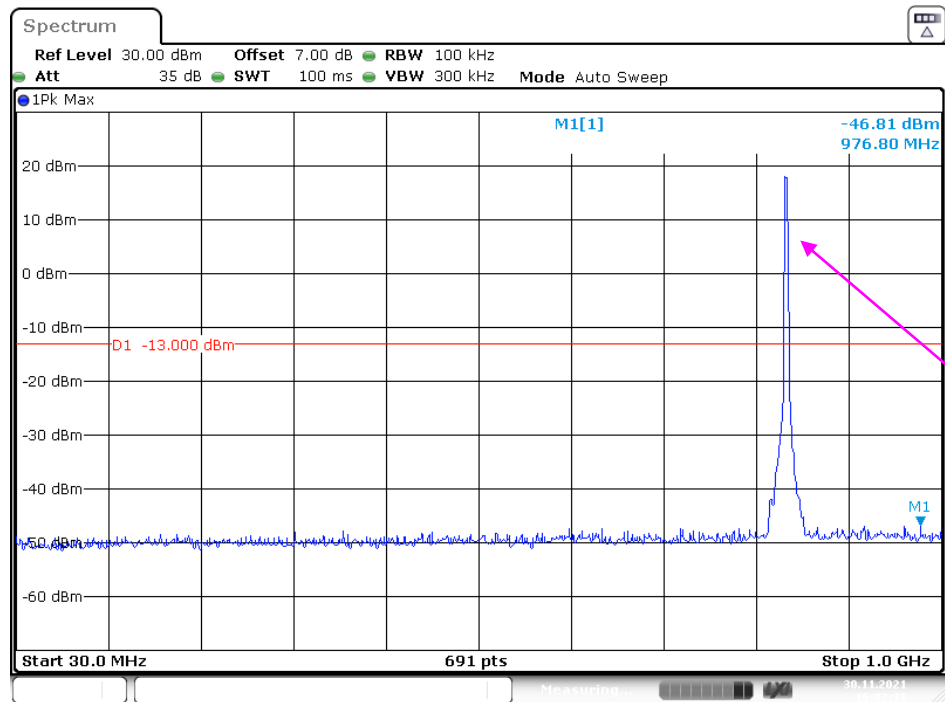
Middle Channel:**30 MHz – 1 GHz (GSM Mode)**

Date: 30.OCT.2021 14:14:18

1 GHz – 10 GHz (GSM Mode)

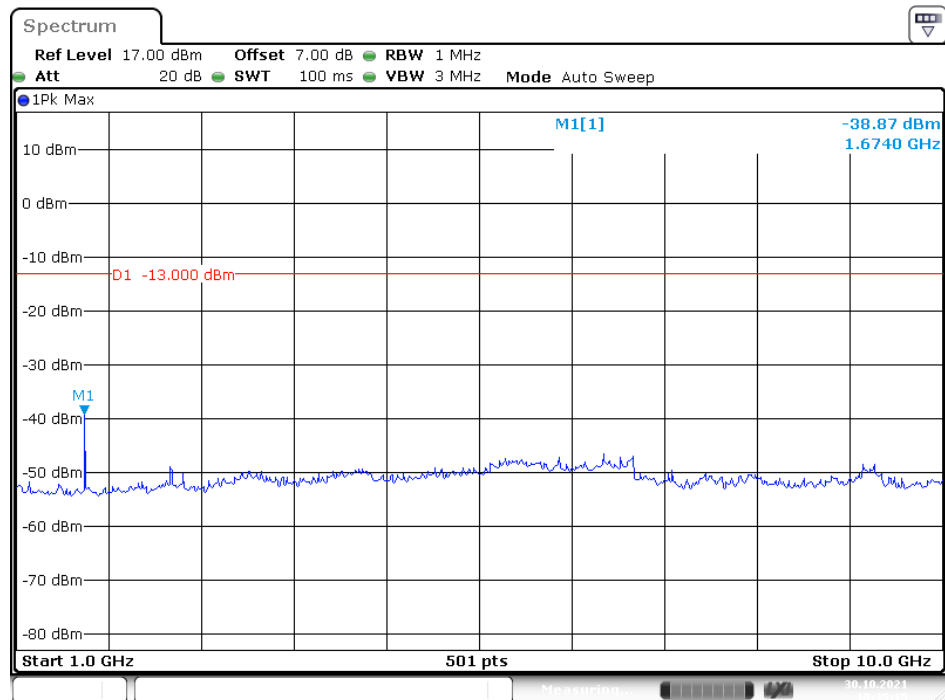
Date: 30.OCT.2021 14:14:18

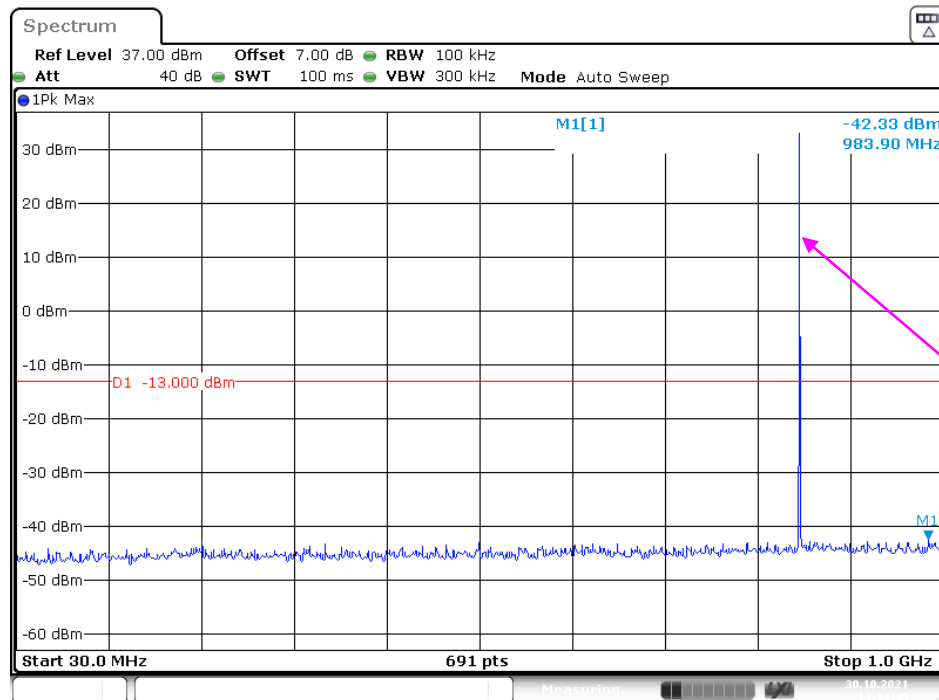
30 MHz – 1 GHz (WCDMA Mode)



Fundamental test

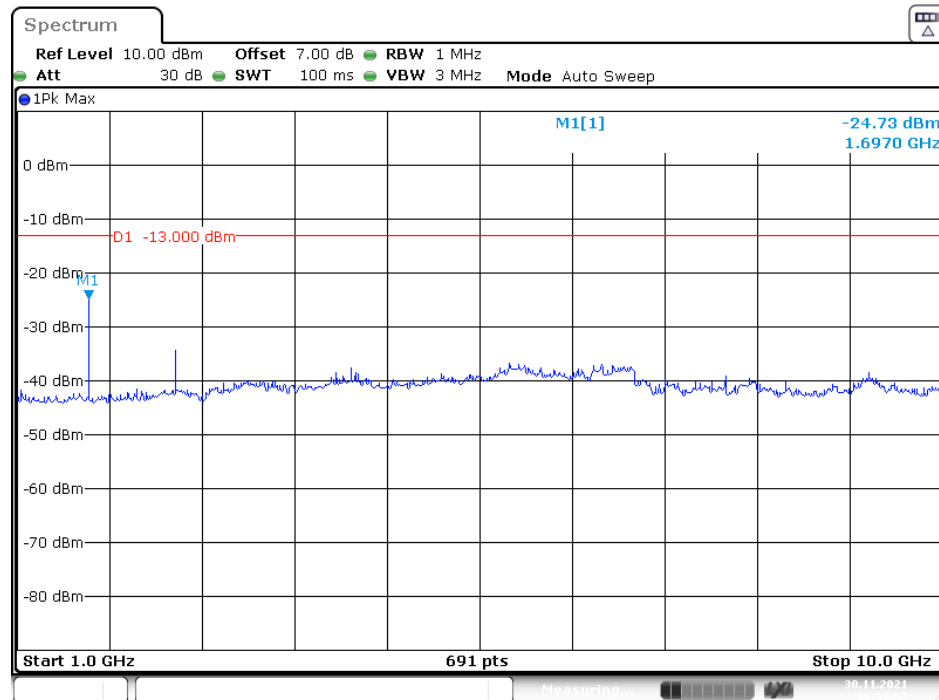
1 GHz – 20 GHz (WCDMA Mode)



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

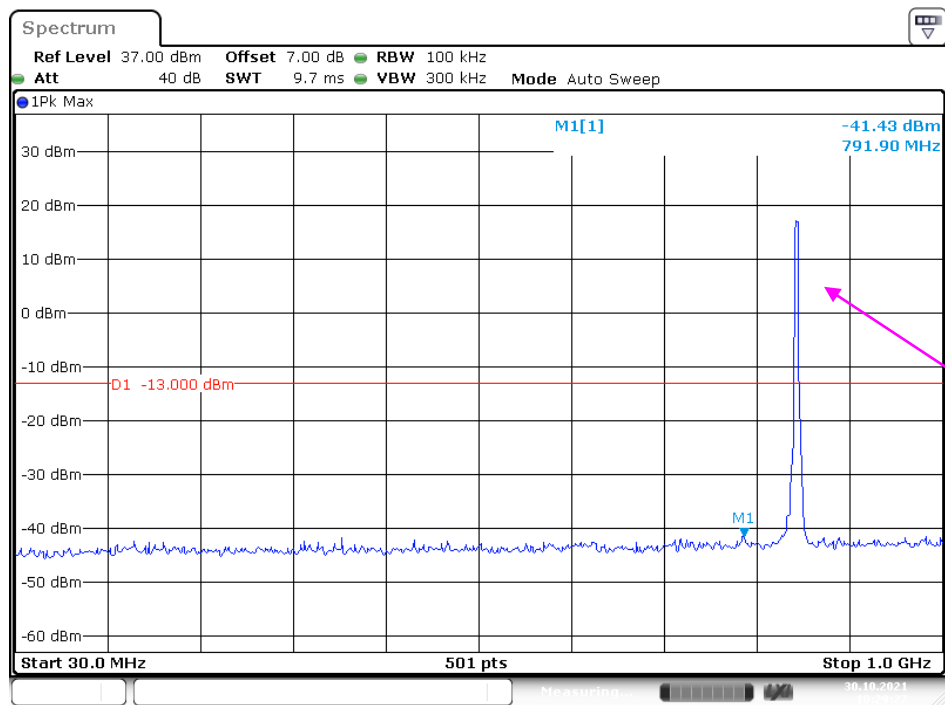
Date: 30.OCT.2021 14:14:49

Fundamental test

1 GHz – 10 GHz (GSM Mode)

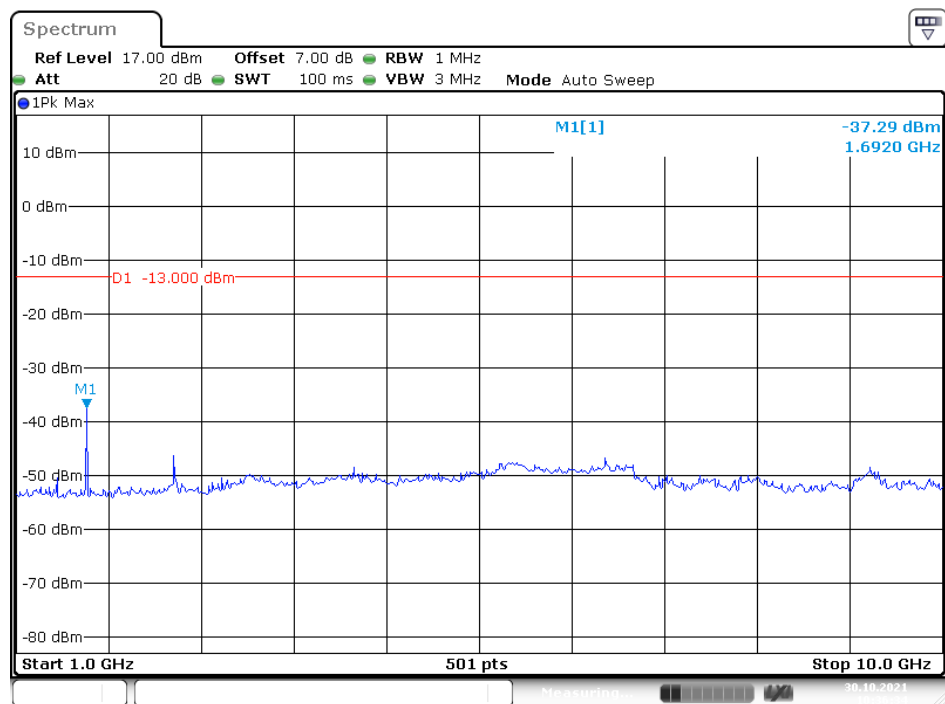
Date: 30.NOV.2021 16:31:52

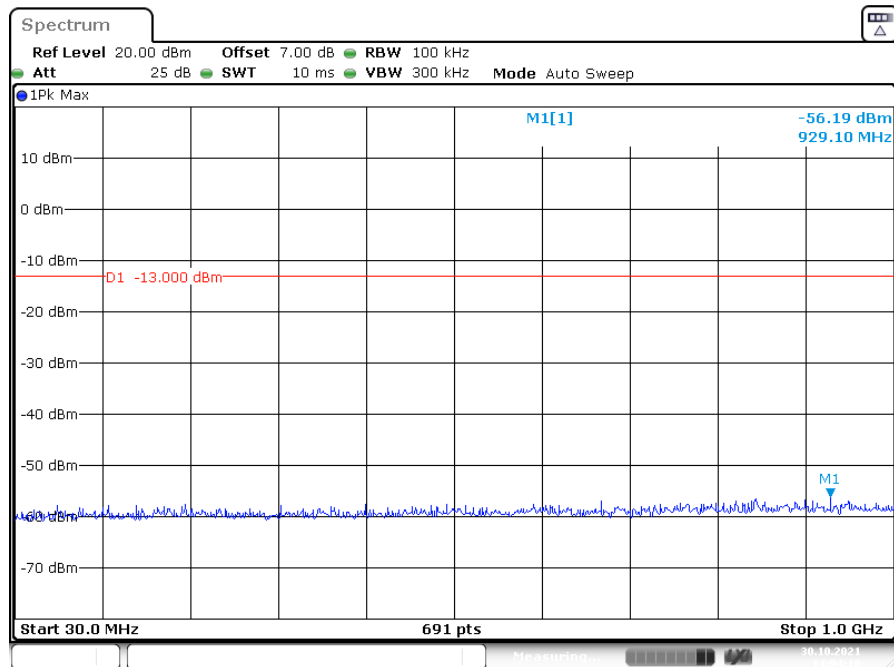
30 MHz – 1 GHz (WCDMA Mode)



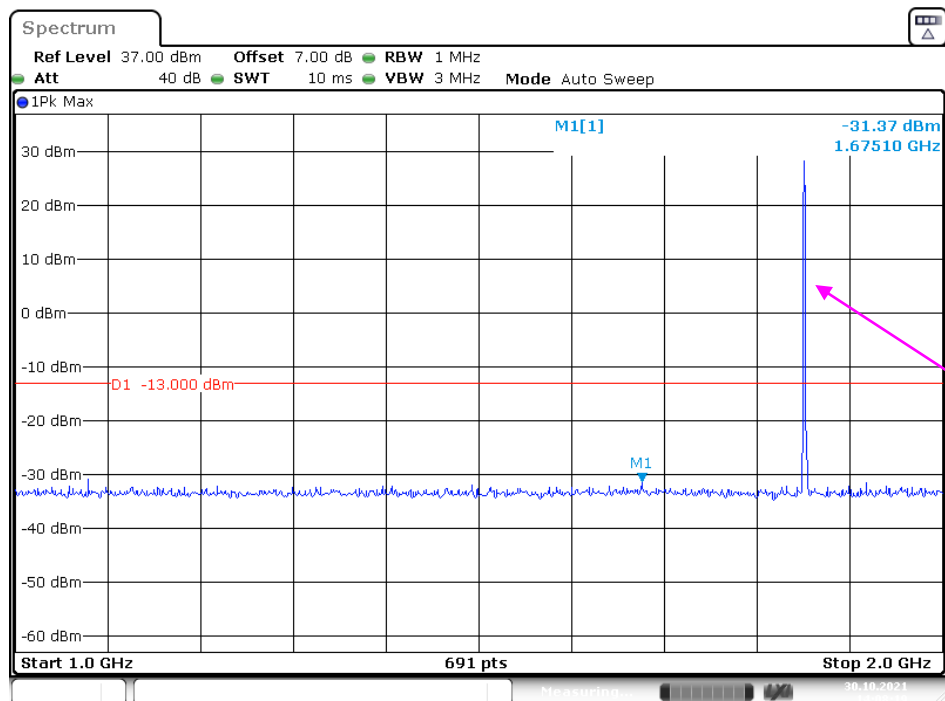
Fundamental test

1 GHz – 2 GHz (WCDMA Mode)



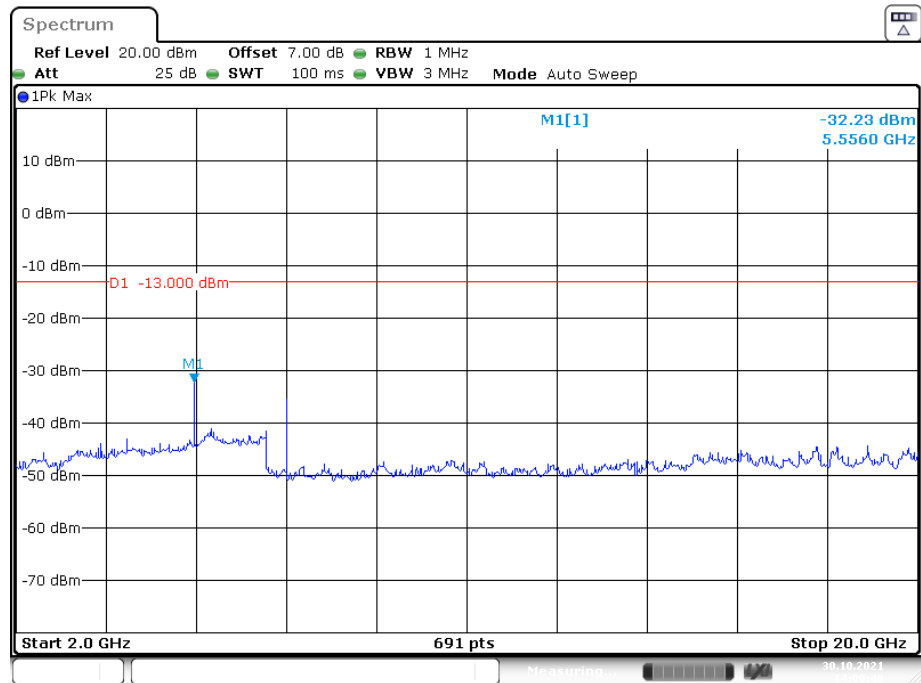
**PCS Band (Part 24E)
Low Channel:****30 MHz – 1 GHz (GSM Mode)**

Date: 30.OCT.2021 14:04:10

1 GHz – 2 GHz (GSM Mode)

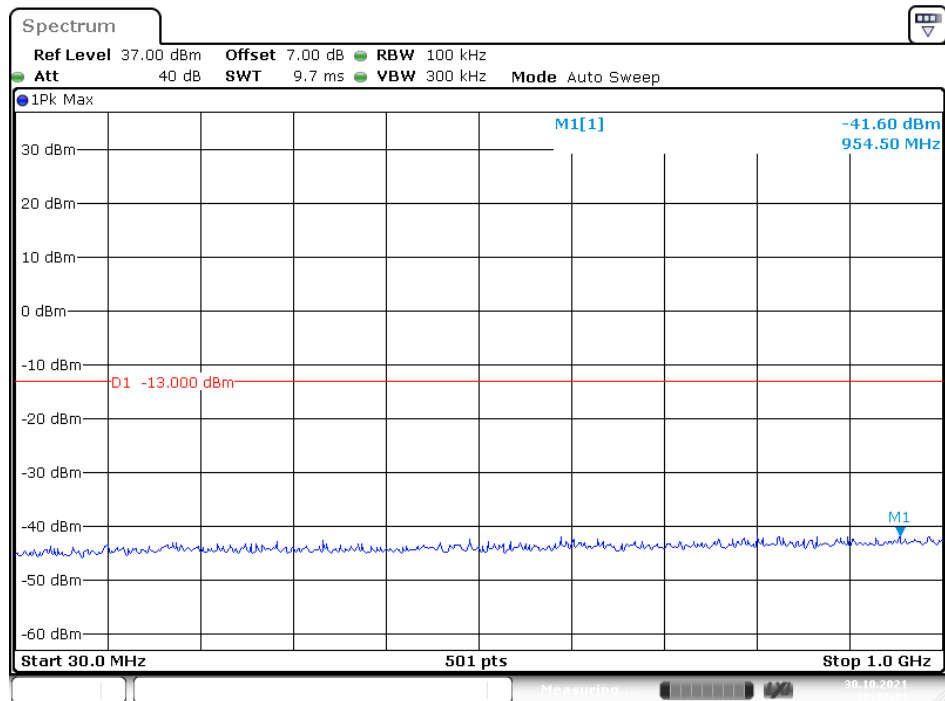
Date: 30.OCT.2021 14:08:19

2 GHz – 20 GHz (GSM Mode)



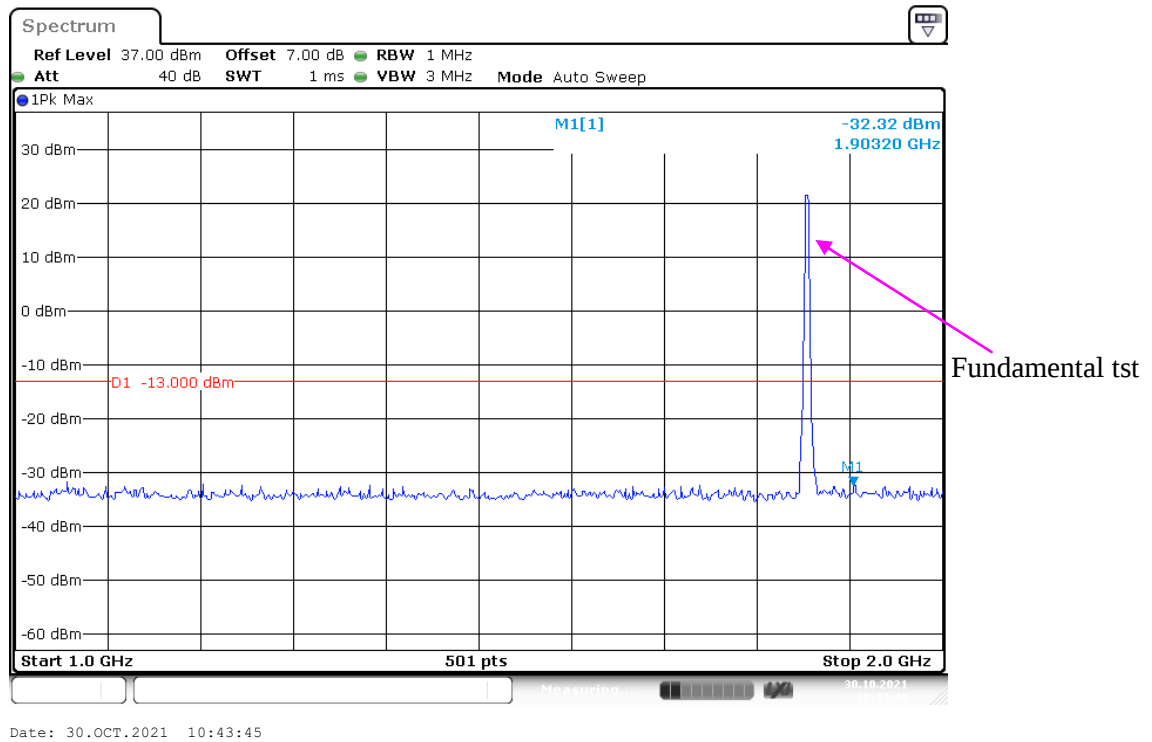
Date: 30.OCT.2021 14:09:48

30 MHz – 1 GHz (WCDMA Mode)

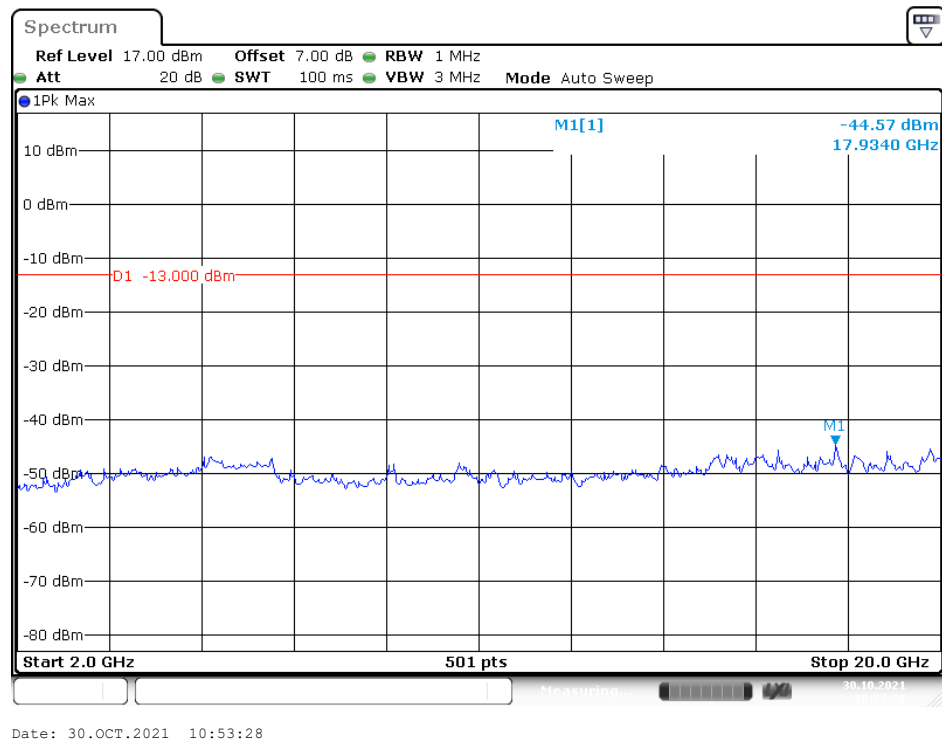


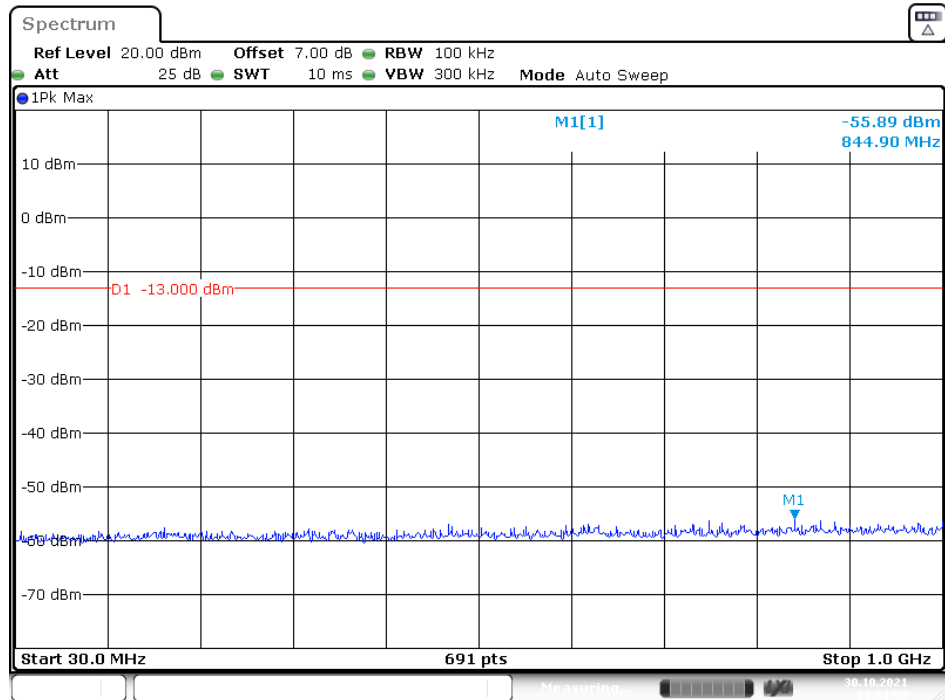
Date: 30.OCT.2021 10:42:33

1 GHz – 2 GHz (WCDMA Mode)

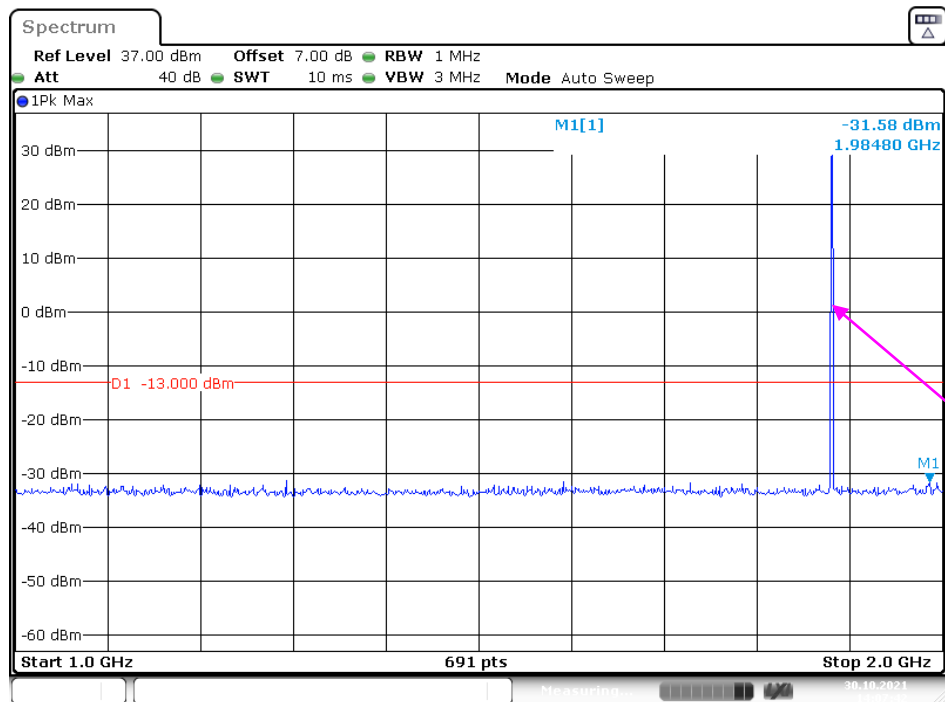


2 GHz – 20 GHz (WCDMA Mode)



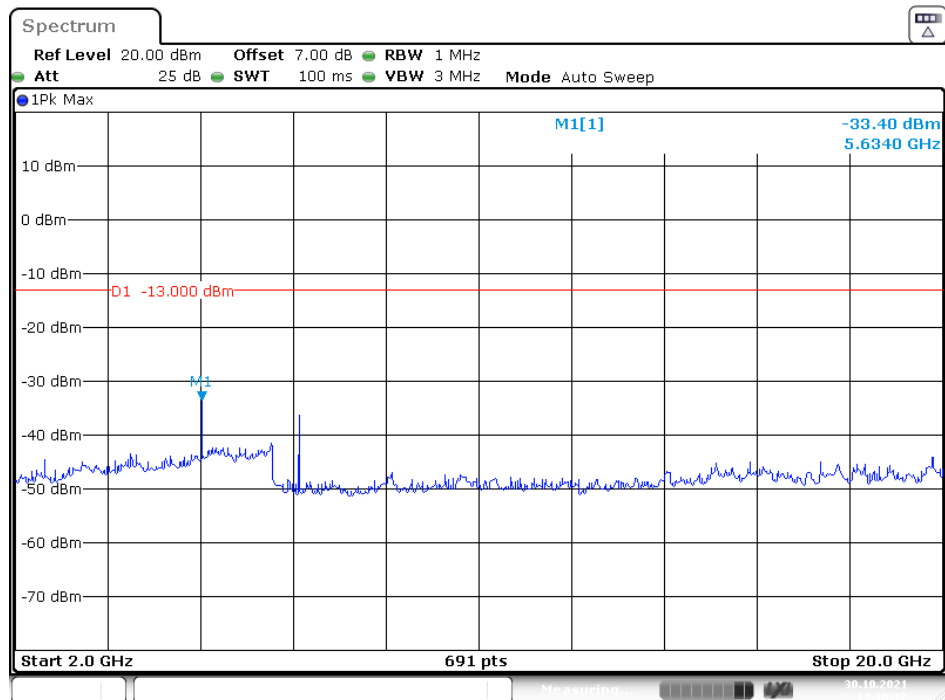
Middle Channel:**30 MHz – 1 GHz (GSM Mode)**

Date: 30.OCT.2021 14:04:50

1 GHz – 2 GHz (GSM Mode)

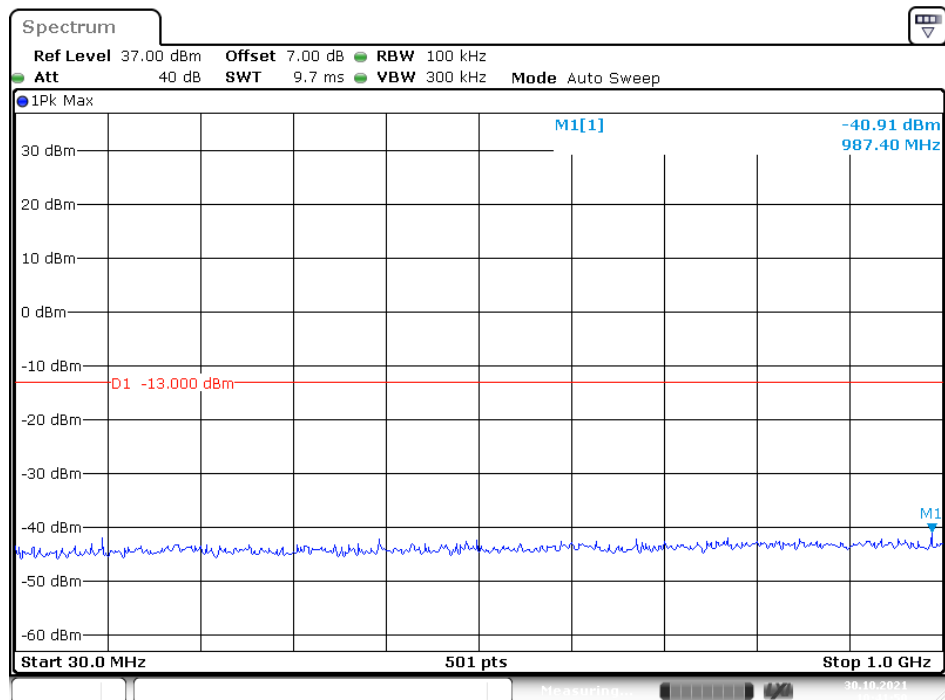
Date: 30.OCT.2021 14:07:42

2 GHz – 20 GHz (GSM Mode)



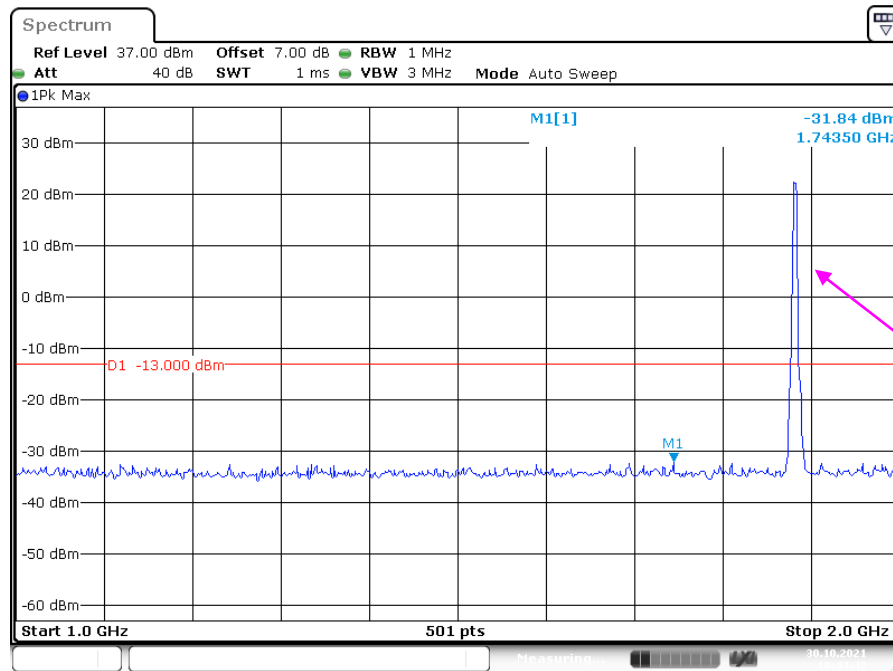
Date: 30.OCT.2021 14:10:13

30 MHz – 1 GHz (WCDMA Mode)



Date: 30.OCT.2021 10:41:49

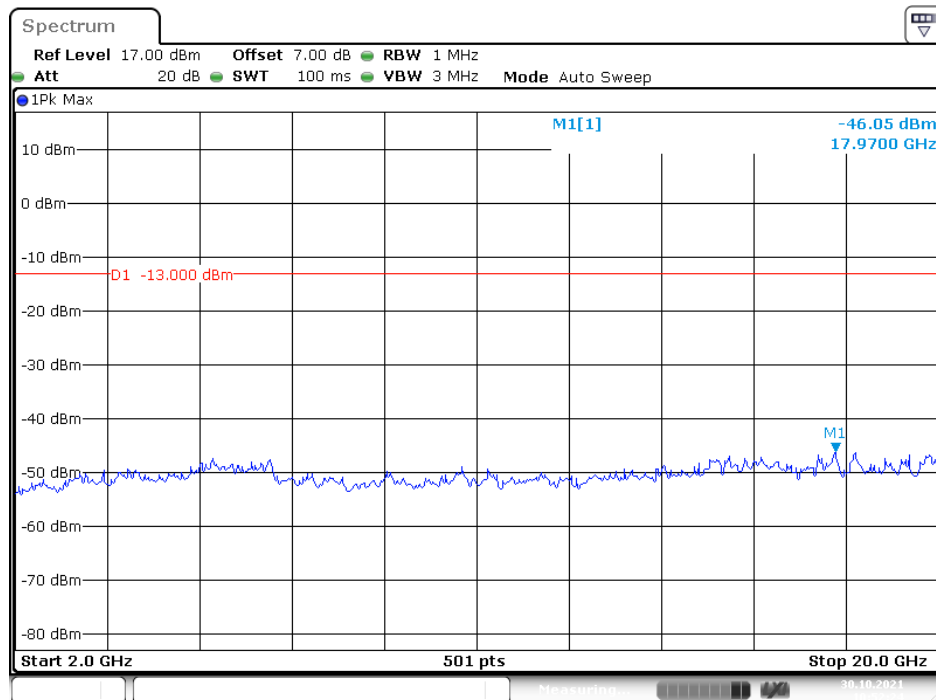
1 GHz – 2GHz (WCDMA Mode)



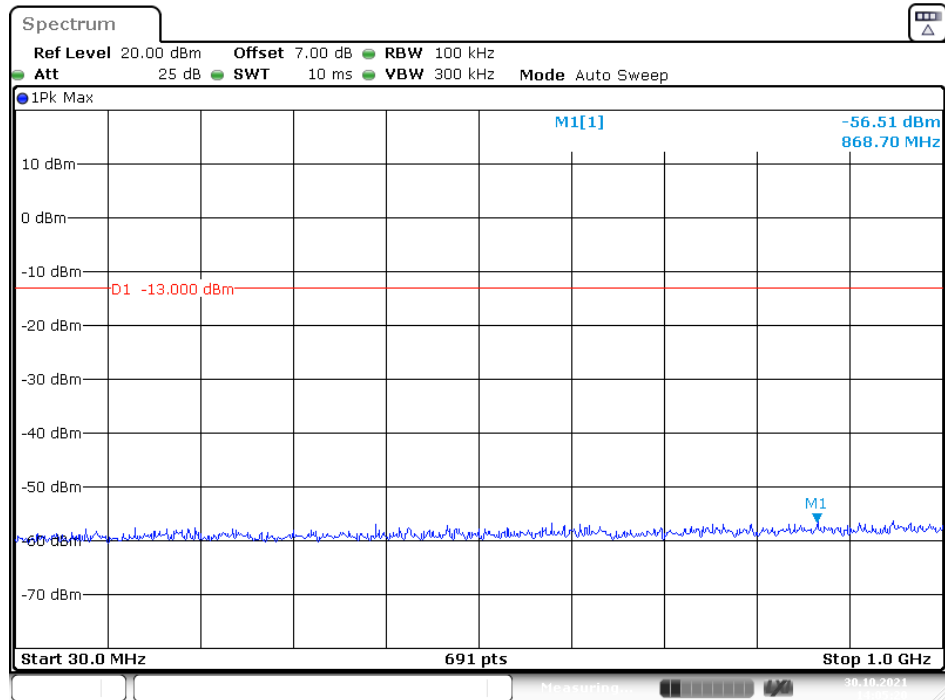
Date: 30.OCT.2021 10:44:42

Fundamental test

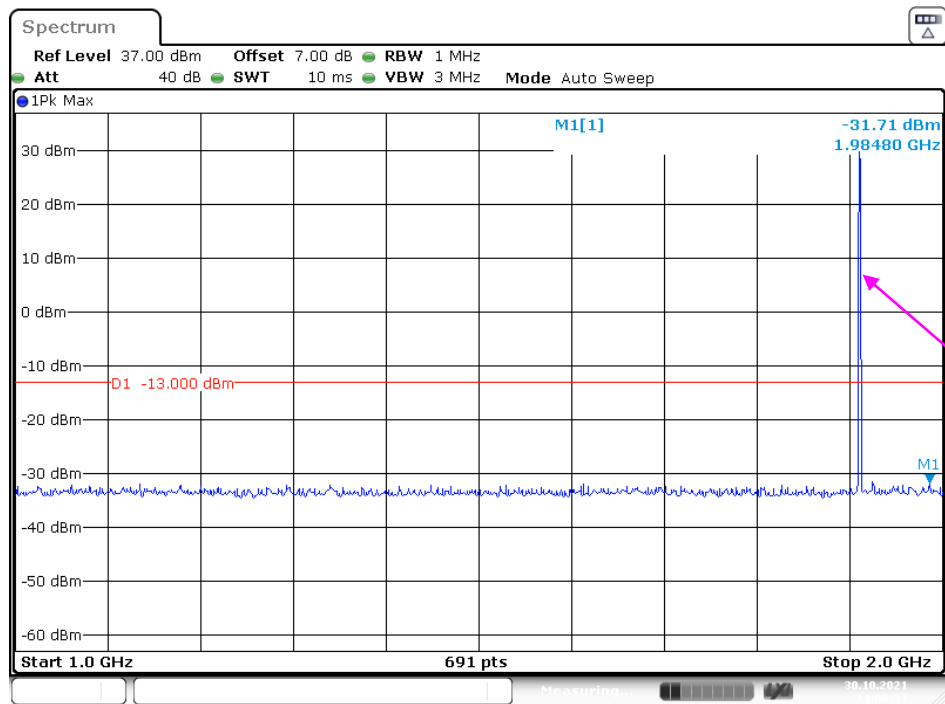
2 GHz – 20 GHz (WCDMA Mode)



Date: 30.OCT.2021 10:52:24

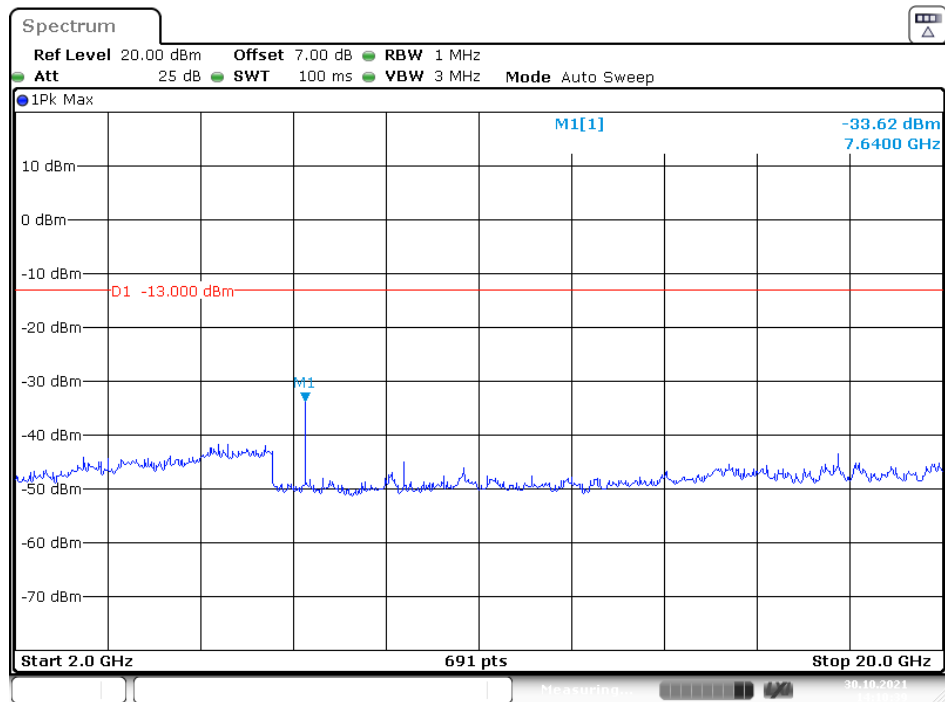
High Channel:**30 MHz – 1 GHz (GSM Mode)**

Date: 30.OCT.2021 14:05:20

1 GHz – 2 GHz (GSM Mode)

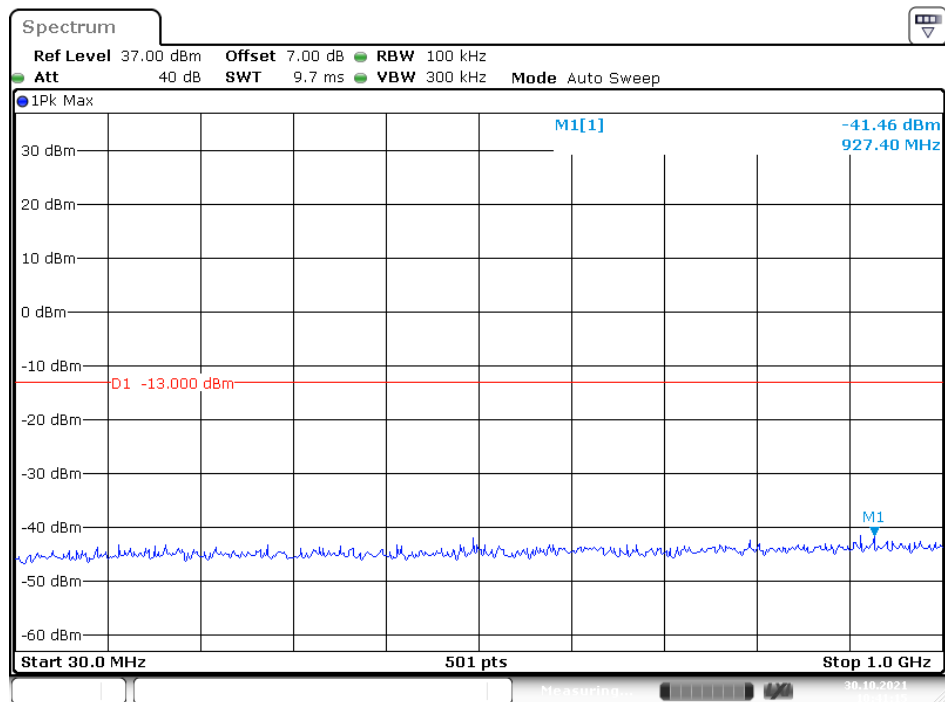
Date: 30.OCT.2021 14:06:53

2 GHz – 20 GHz (GSM Mode)



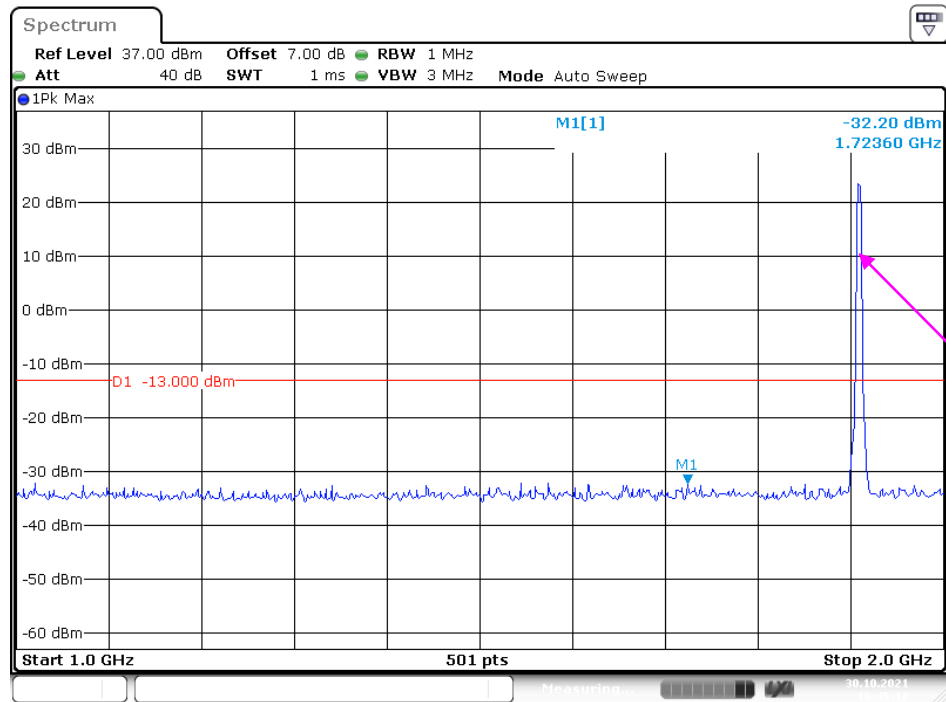
Date: 30.OCT.2021 14:10:40

30 MHz – 1 GHz (WCDMA Mode)



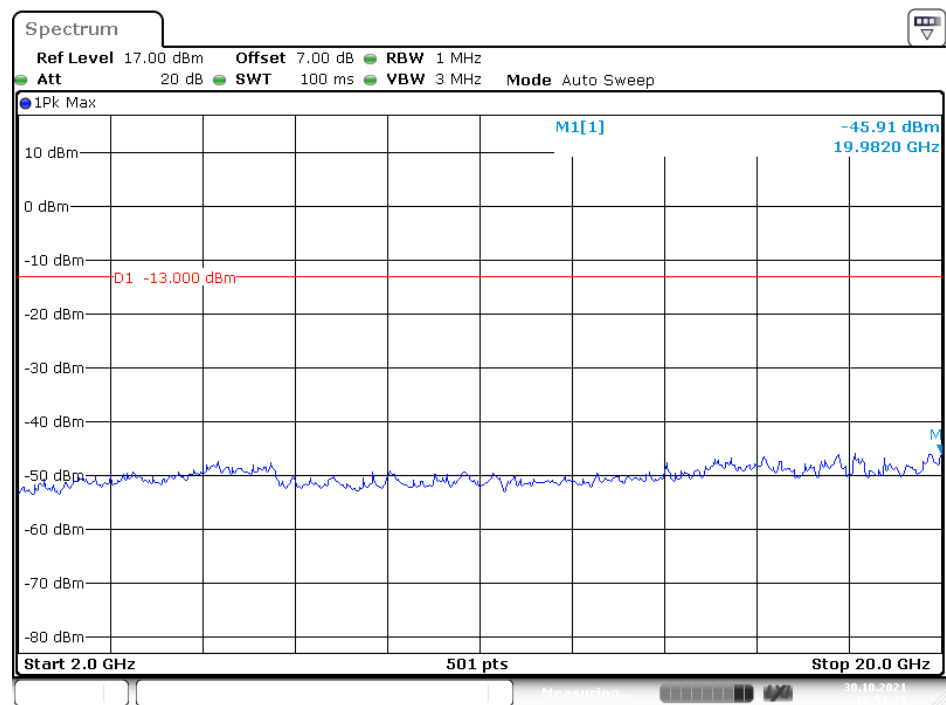
Date: 30.OCT.2021 10:41:15

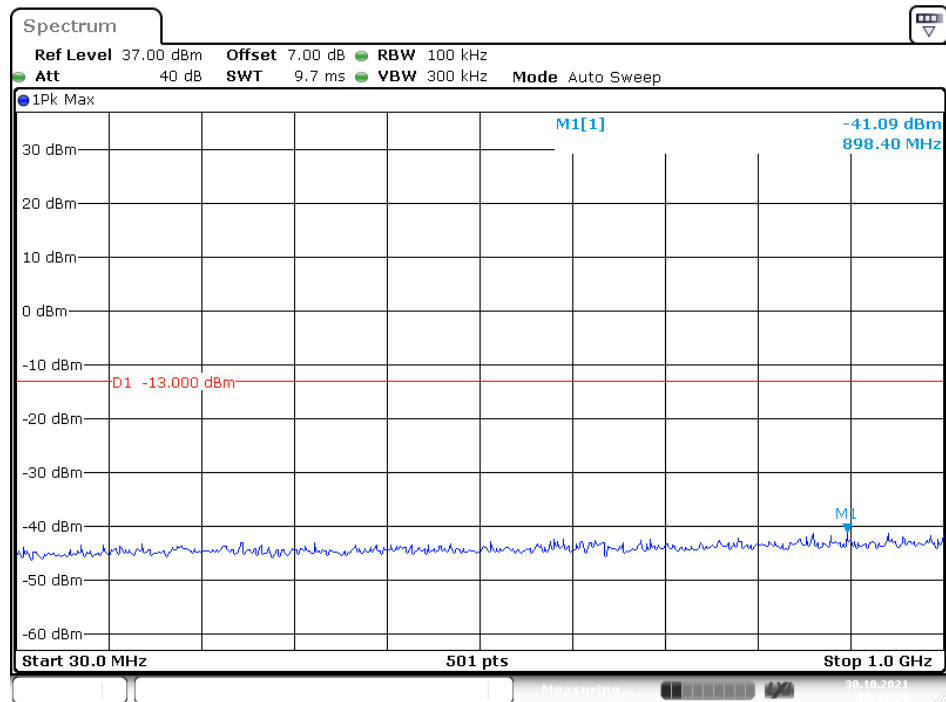
1 GHz – 2 GHz (WCDMA Mode)



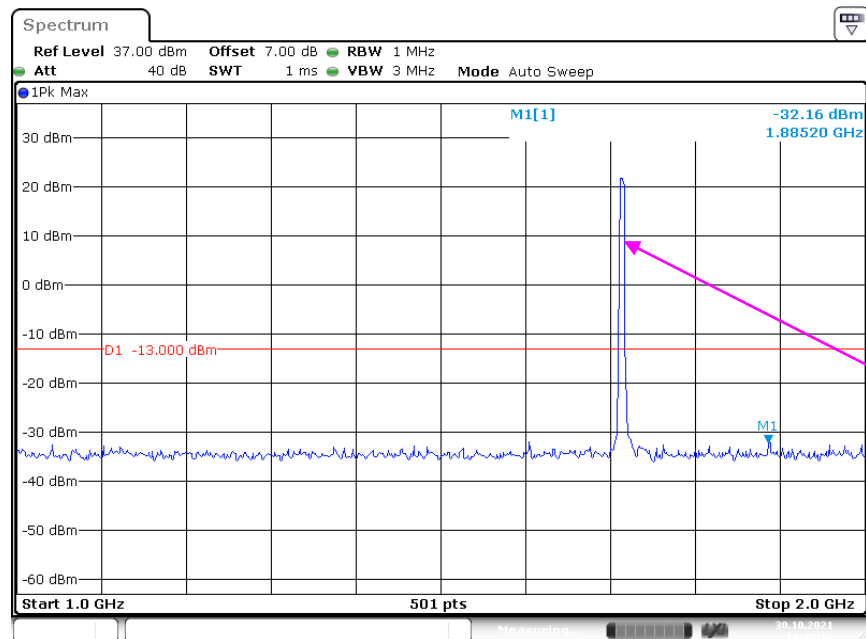
Fundamental test

2 GHz – 20 GHz (WCDMA Mode)



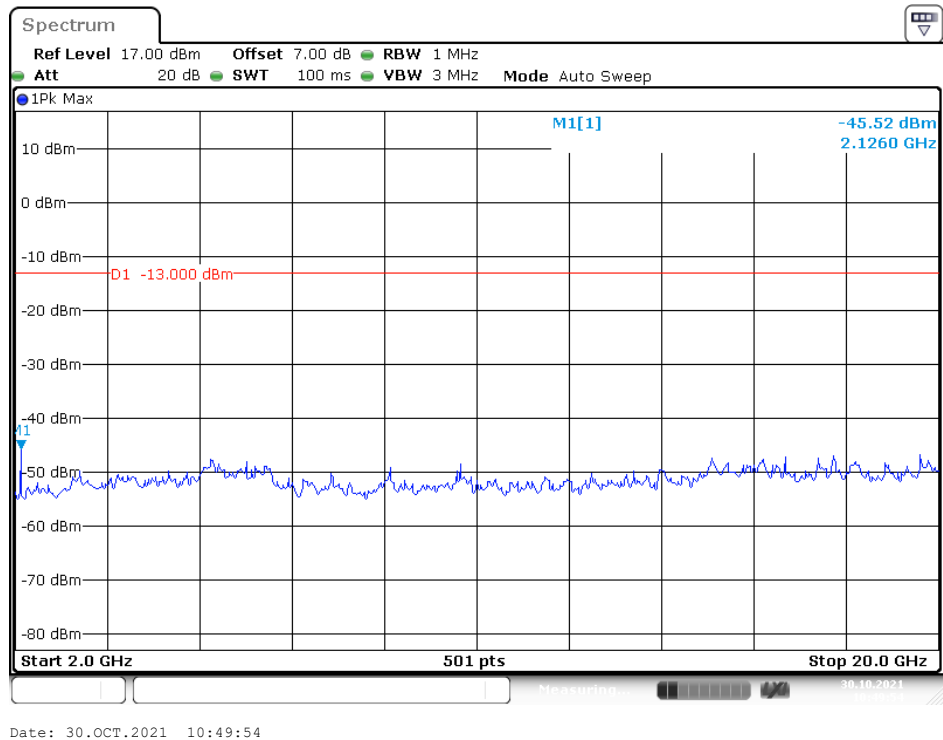
AWS Band (Part 27)
Low Channel:**30 MHz – 1 GHz (WCDMA Mode)**

Date: 30.OCT.2021 10:38:29

1 GHz – 2 GHz (WCDMA Mode)

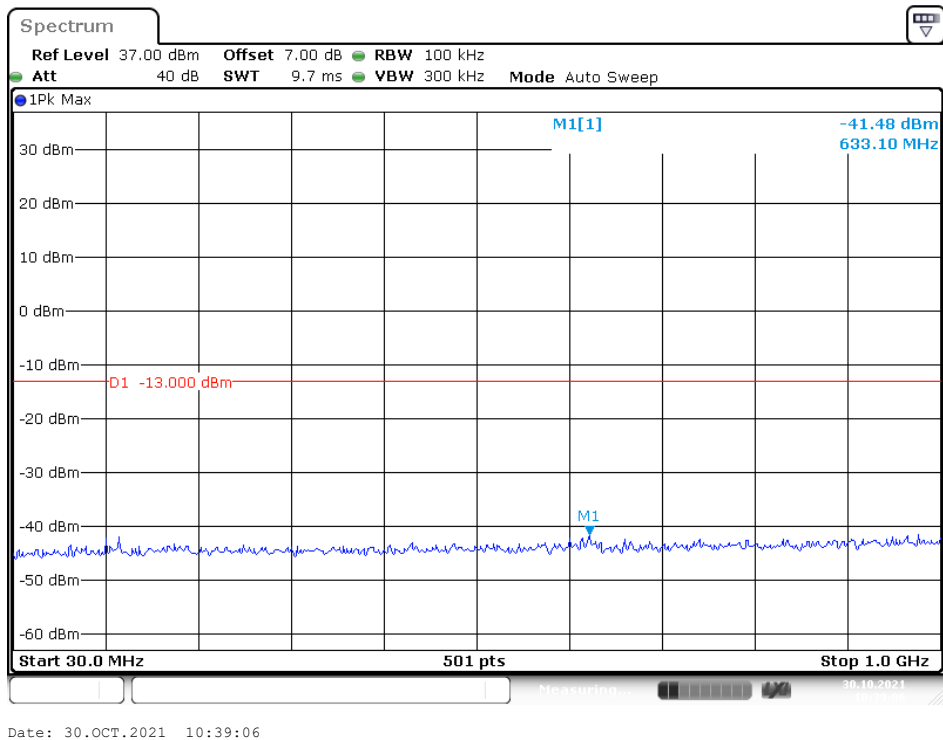
Date: 30.OCT.2021 10:48:17

2 GHz – 20 GHz (WCDMA Mode)

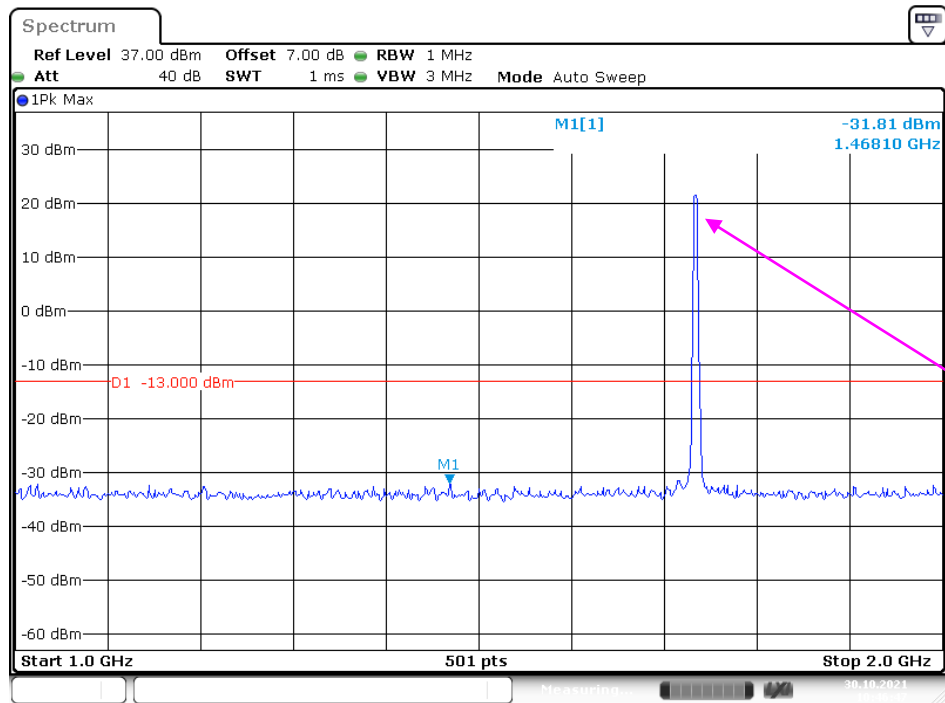


Middle Channel

30 MHz – 1 GHz (WCDMA Mode)

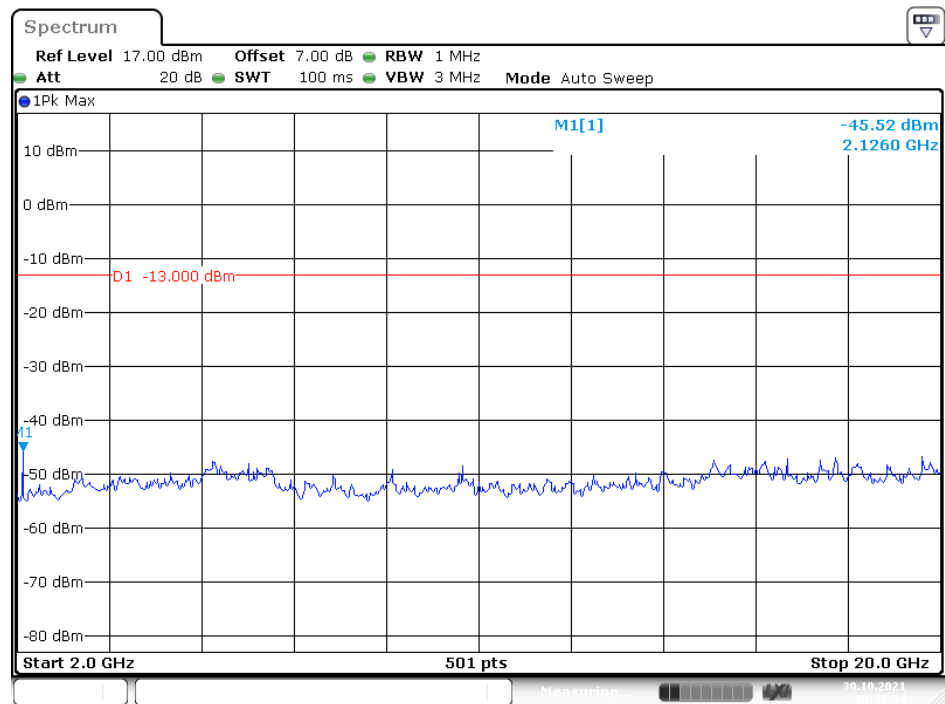


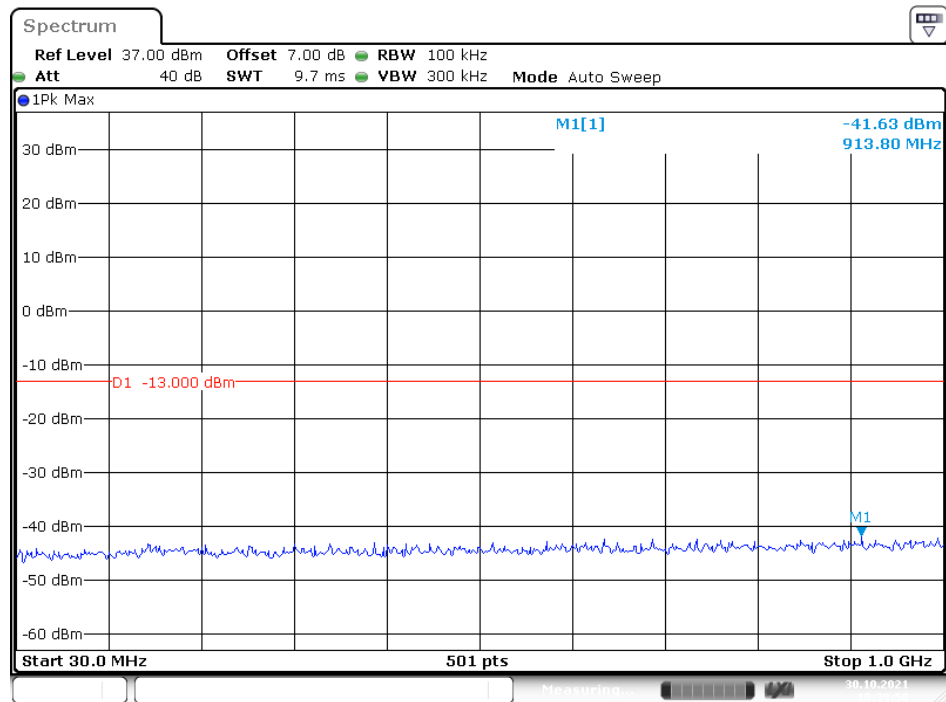
1 GHz – 2 GHz (WCDMA Mode)



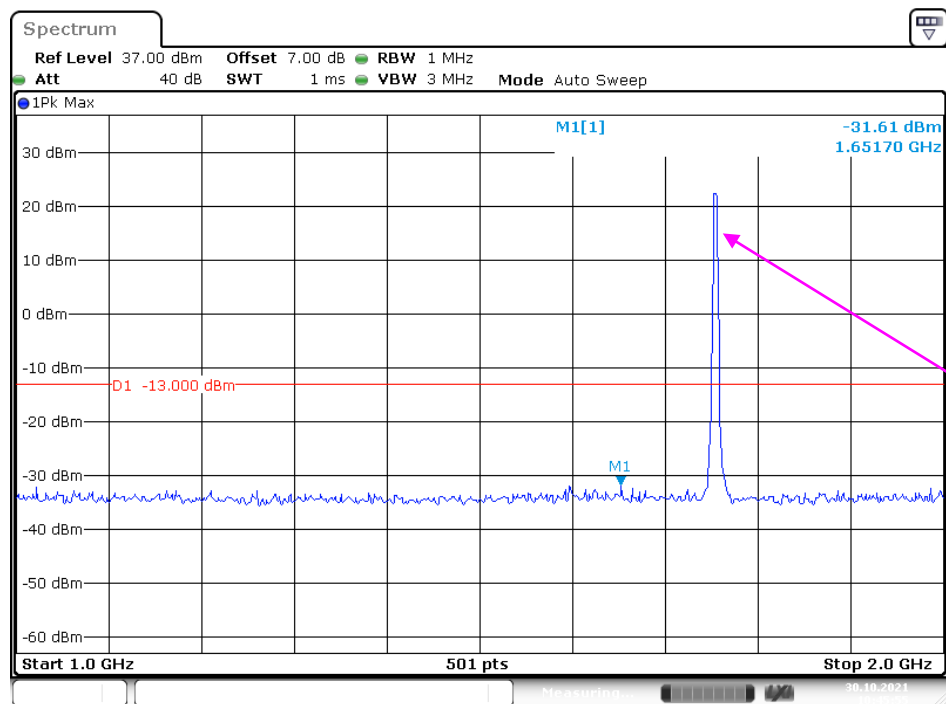
Fundamental test

2 GHz – 20 GHz (WCDMA Mode)



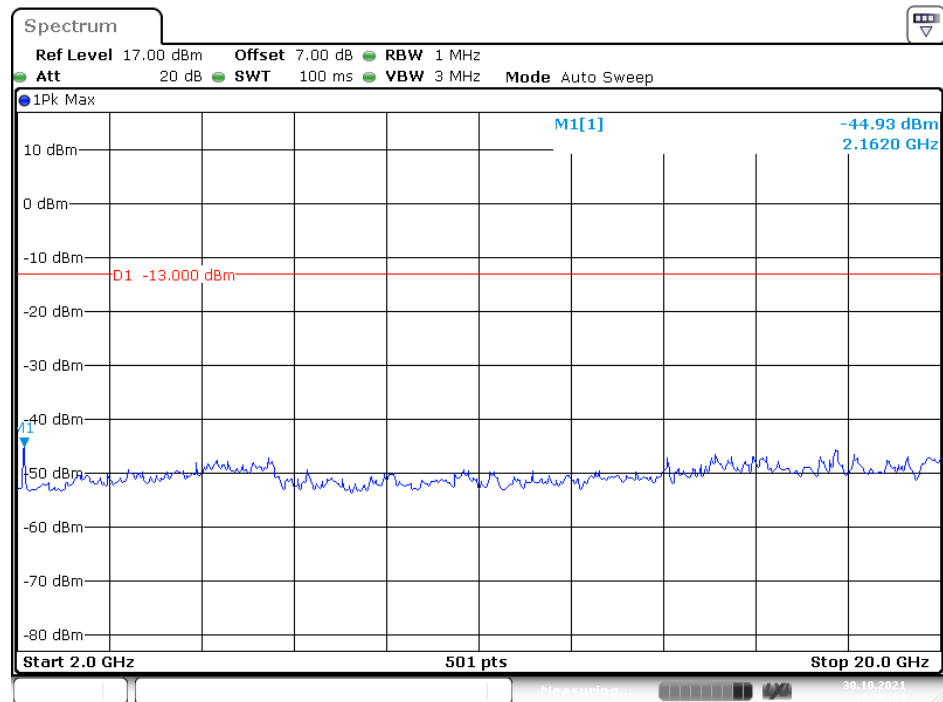
High Channel:**30 MHz – 1 GHz (WCDMA Mode)**

Date: 30.OCT.2021 10:39:50

1 GHz – 2 GHz (WCDMA Mode)

Date: 30.OCT.2021 10:45:55

2 GHz – 20 GHz (WCDMA Mode)



Date: 30.OCT.2021 10:50:52

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.

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								
159.92	-48.84	326	1.4	H	-8.41	-57.25	-13	44.25
159.92	-55.14	221	1.8	V	-3.67	-58.81	-13	45.81
1648.4	-36.68	76	1.5	H	-2.32	-39	-13	26
1648.4	-38.71	35	2	V	-2.29	-41	-13	28
2472.6	-42.76	168	1.4	H	1.16	-41.6	-13	28.6
2472.6	-39.89	110	1.1	V	1.09	-38.8	-13	25.8
3296.8	-42.35	70	2.1	H	3.25	-39.1	-13	26.1
3296.8	-40.56	234	1.3	H	3.16	-37.4	-13	24.4
Middle Channel								
160.05	-49.38	214	1.1	H	-8.41	-57.79	-13	44.79
160.05	-55.07	292	1.5	V	-3.67	-58.74	-13	45.74
1673.2	-39.72	3	1.1	H	-2.38	-42.1	-13	29.1
1673.2	-40.89	100	1.9	V	-2.31	-43.2	-13	30.2
2509.8	-46.34	119	2	H	1.34	-45	-13	32
2509.8	-43.87	104	1.2	V	1.37	-42.5	-13	29.5
3346.4	-41.42	359	1.8	H	3.32	-38.1	-13	25.1
3346.4	-38.64	348	1	V	3.24	-35.4	-13	22.4
High Channel								
160.36	-49.28	176	1.2	H	-8.41	-57.69	-13	44.69
160.36	-54.86	36	1.1	V	-3.67	-58.53	-13	45.53
1697.6	-42.72	164	1.4	H	-2.38	-45.1	-13	32.1
1697.6	-39.16	252	2	V	-2.34	-41.5	-13	28.5
2546.4	-45.38	349	1.6	H	1.38	-44	-13	31
2546.4	-42.72	156	2	V	1.42	-41.3	-13	28.3
3395.2	-41.32	13	1.7	H	3.32	-38	-13	25
3395.2	-39.71	212	1.8	V	3.21	-36.5	-13	23.5

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)								
160.49	-48.74	195	1.6	H	-8.41	-57.15	-13	44.15
160.49	-55.31	357	1	V	-3.67	-58.98	-13	45.98
1652.8	-50.98	209	1.1	H	-2.32	-53.3	-13	40.3
1652.8	-49.01	88	2	V	-2.29	-51.3	-13	38.3
Middle Channel (836.6MHz)								
160.06	-49.55	43	2	H	-8.41	-57.96	-13	44.96
160.06	-55.16	219	1.8	V	-3.67	-58.83	-13	45.83
1673.2	-49.66	326	1.1	H	-2.34	-52	-13	39
1673.2	-49.19	48	1.1	V	-2.31	-51.5	-13	38.5
High Channel (846.6MHz)								
159.90	-49.06	282	2.2	H	-8.41	-57.47	-13	44.47
159.90	-55.65	130	1.4	V	-3.67	-59.32	-13	46.32
1693.2	-50.72	50	2.1	H	-2.38	-53.1	-13	40.1
1693.2	-50.26	46	1.6	V	-2.34	-52.6	-13	39.6

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								
159.92	-48.84	326	1.4	H	-8.41	-57.25	-13	44.25
159.92	-55.14	221	1.8	V	-3.67	-58.81	-13	45.81
3700.4	-50.72	99	1.3	H	4.72	-46	-13	33
3700.4	-48.71	333	1.1	V	4.61	-44.1	-13	31.1
Middle Channel								
159.55	-49.36	307	2.2	H	-8.41	-57.77	-13	44.77
159.55	-55.01	336	2	V	-3.67	-58.68	-13	45.68
3760	-49.54	51	1.5	H	4.94	-44.6	-13	31.6
3760	-46.25	303	2.2	V	4.85	-41.4	-13	28.4
High Channel								
159.90	-49.14	296	2	H	-8.41	-57.55	-13	44.55
159.90	-55.06	40	1.1	V	-3.67	-58.73	-13	45.73
3819.6	-49.85	250	1.2	H	5.25	-44.6	-13	31.6
3819.6	-45.58	354	1.7	V	5.08	-40.5	-13	27.5
WCDMA Band 2								
Low Channel (1852.4MHz)								
159.83	-48.76	319	1.7	H	-8.41	-57.17	-13	44.17
159.83	-55.26	73	1.9	V	-3.67	-58.93	-13	45.93
3704.8	-46.15	353	1.8	H	4.75	-41.4	-13	28.4
3704.8	-43.82	151	1.8	V	4.62	-39.2	-13	26.2
Middle Channel (1880MHz)								
159.51	-49.04	349	1.5	H	-8.41	-57.45	-13	44.45
159.51	-55.26	196	1.1	V	-3.67	-58.93	-13	45.93
3760	-49.94	234	1.5	H	4.94	-45	-13	32
3760	-47.65	219	1.1	V	4.85	-42.8	-13	29.8
High Channel (1907.6MHz)								
159.70	-49.27	292	1.3	H	-8.41	-57.68	-13	44.68
159.70	-55.15	242	1.5	V	-3.67	-58.82	-13	45.82
3815.2	-46.52	339	2.2	H	5.22	-41.3	-13	28.3
3815.2	-45.05	190	2.2	V	5.05	-40	-13	27

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)								
159.66	-48.88	69	1.1	H	-8.41	-57.29	-13	44.29
159.66	-55.54	186	1	V	-3.67	-59.21	-13	46.21
3424.8	-43.86	146	1.1	H	3.26	-40.6	-13	27.6
3424.8	-41.63	349	2.2	V	3.23	-38.4	-13	25.4
Middle Channel (1732.6MHz)								
160.06	-48.69	344	2.2	H	-8.41	-57.10	-13	44.10
160.06	-55.11	157	1.4	V	-3.67	-58.78	-13	45.78
3465.2	-42.75	230	1.5	H	3.35	-39.4	-13	26.4
3465.2	-41.12	263	1.2	V	3.32	-37.8	-13	24.8
High Channel (1752.6MHz)								
160.27	-49.41	195	1	H	-8.41	-57.82	-13	44.82
160.27	-55.53	142	1.9	V	-3.67	-59.20	-13	46.20
3505.2	-39.66	164	1.2	H	3.56	-36.1	-13	23.1
3505.2	-38.28	40	1.3	V	3.48	-34.8	-13	21.8

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								
159.94	-48.70	245	1.1	H	-8.41	-57.11	-13	44.11
159.94	-55.44	50	1.6	V	-3.67	-59.11	-13	46.11
3701.40	-46.52	121	1.7	H	4.72	-41.8	-13	28.8
3701.40	-44.61	248	2.1	V	4.61	-40	-13	27
1.4MHz bandwidth, Middle Channel								
160.38	-48.86	60	1.8	H	-8.41	-57.27	-13	44.27
160.38	-55.63	78	1.7	V	-3.67	-59.30	-13	46.30
3760.00	-48.54	76	2.1	H	4.94	-43.6	-13	30.6
3760.00	-46.15	99	1.5	V	4.85	-41.3	-13	28.3
1.4MHz bandwidth, High Channel								
160.02	-49.20	232	1.3	H	-8.41	-57.61	-13	44.61
160.02	-55.25	140	1.6	V	-3.67	-58.92	-13	45.92
3818.60	-48.15	295	1.6	H	5.25	-42.9	-13	29.9
3818.60	-47.08	359	1.5	V	5.08	-42	-13	29
Band 4								
Test frequency range: 30MHz-20GHz								
1.4MHz bandwidth, Low Channel								
160.05	-49.10	16	1.1	H	-8.41	-57.51	-13	44.51
160.05	-55.43	272	1.6	V	-3.67	-59.10	-13	46.10
3421.4	-41.92	165	1.9	H	2.72	-39.2	-13	26.2
3421.4	-42.89	297	2	V	2.59	-40.3	-13	27.3
1.4MHz bandwidth, Middle Channel								
160.39	-48.62	127	1.6	H	-8.41	-57.03	-13	44.03
160.39	-55.19	318	1.3	V	-3.67	-58.86	-13	45.86
3465	-42.79	293	1.4	H	3.09	-39.7	-13	26.7
3465	-45.77	314	1.5	V	2.97	-42.8	-13	29.8
1.4MHz bandwidth, High Channel								
159.74	-49.08	128	2	H	-8.41	-57.49	-13	44.49
159.74	-55.53	326	1.6	V	-3.67	-59.20	-13	46.20
3508.6	-41.04	146	2.2	H	3.44	-37.6	-13	24.6
3508.6	-43.81	157	1.3	V	3.31	-40.5	-13	27.5

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								
159.64	-49.40	358	1.9	H	-8.41	-57.81	-13	44.81
159.64	-55.46	97	1.3	V	-3.67	-59.13	-13	46.13
1649.40	-51.31	250	2	H	-2.79	-54.1	-13	41.1
1649.40	-50.07	75	1.8	V	-2.73	-52.8	-13	39.8
1.4MHz bandwidth, Middle Channel								
159.72	-49.15	17	1.9	H	-8.41	-57.56	-13	44.56
159.72	-55.70	86	1.1	V	-3.67	-59.37	-13	46.37
1673.00	-48.56	277	1.9	H	-2.74	-51.3	-13	38.3
1673.00	-48.51	84	1	V	-2.69	-51.2	-13	38.2
1.4MHz bandwidth, High Channel								
160.48	-49.49	103	1.6	H	-8.41	-57.90	-13	44.90
160.48	-55.60	197	1.3	V	-3.67	-59.27	-13	46.27
1696.6	-46.9	347	1.1	H	-2.7	-49.6	-13	36.6
1696.6	-44.25	148	1.8	V	-2.65	-46.9	-13	33.9
Band 7								
Test frequency range: 30MHz-26.5GHz								
5MHz bandwidth, Low Channel								
160.07	-49.51	239	1.1	H	-8.41	-57.92	-25	32.92
160.07	-55.72	221	1.5	V	-3.67	-59.39	-25	34.39
5005	-42.14	191	1.1	H	9.54	-32.6	-25	7.6
5005	-41.53	267	1	V	8.33	-33.2	-25	8.2
5MHz bandwidth, Middle Channel								
160.16	-49.41	249	2.1	H	-8.41	-57.82	-25	32.82
160.16	-55.70	96	1.4	V	-3.67	-59.37	-25	34.37
5070	-41.47	133	1.9	H	9.67	-31.8	-25	6.8
5070	-39.05	356	1.5	V	8.35	-30.7	-25	5.7
5MHz bandwidth, High Channel								
160.07	-48.68	67	2.1	H	-8.41	-57.09	-25	32.09
160.07	-55.34	347	1.6	V	-3.67	-59.01	-25	34.01
5135	-43.64	104	1	H	9.84	-33.8	-25	8.8
5135	-43.96	12	2	V	8.36	-35.6	-25	10.6

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.

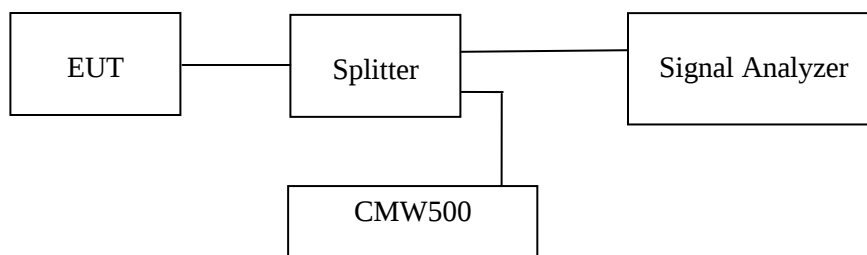
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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

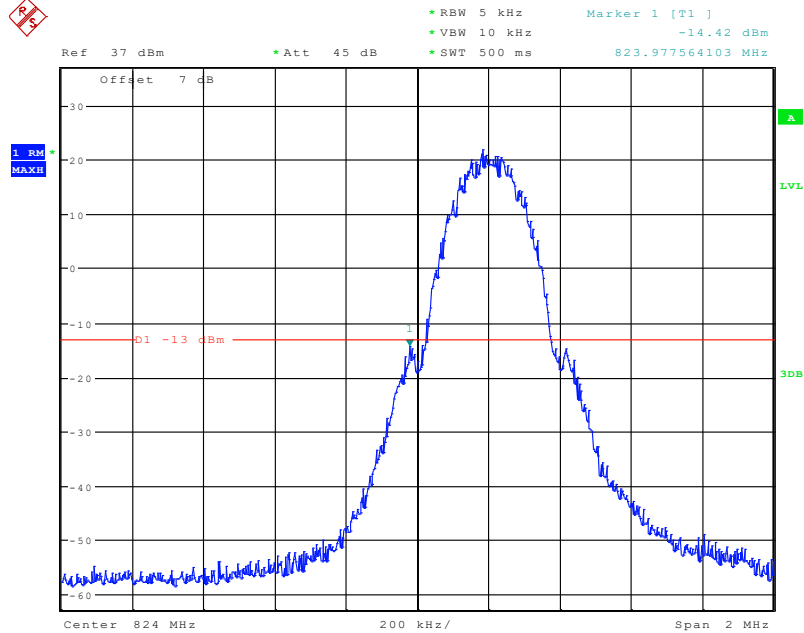
Temperature:	28.6 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Ting Lv from 2021-10-29 to 2021-12-08.

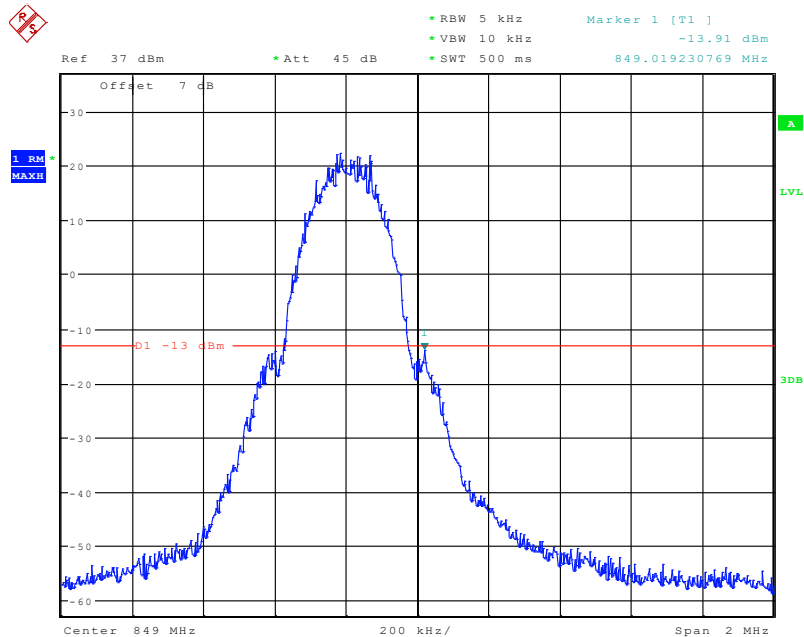
EUT operation mode: Transmitting (Worst case)

Test Result: Pass

Please refer to the following plots.

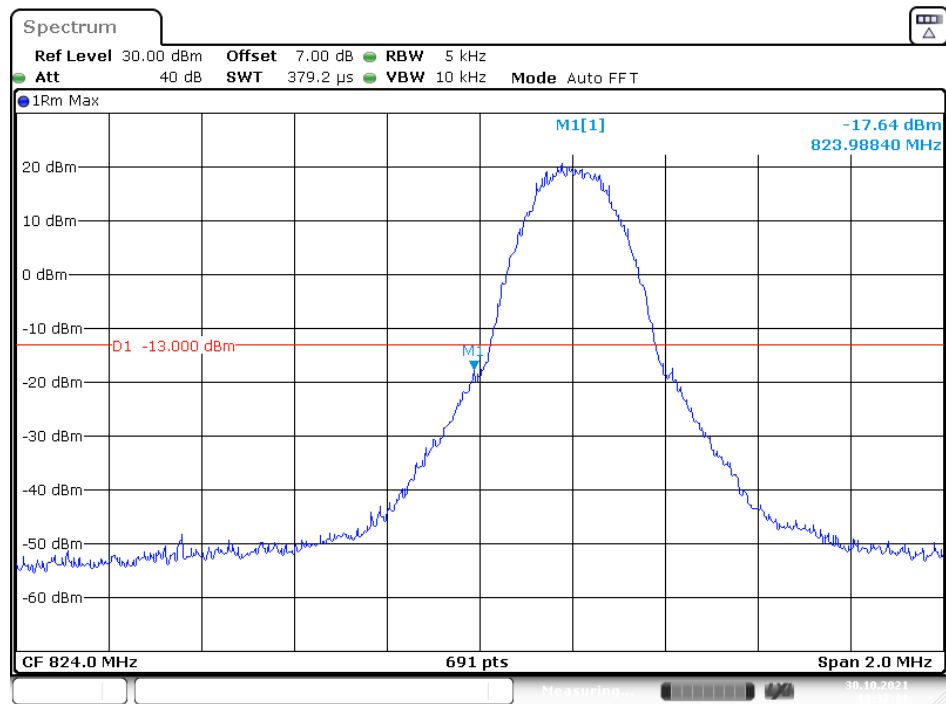
Cellular Band, Left Band Edge for GSM (GMSK) Mode

Date: 8.DEC.2021 16:29:49

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

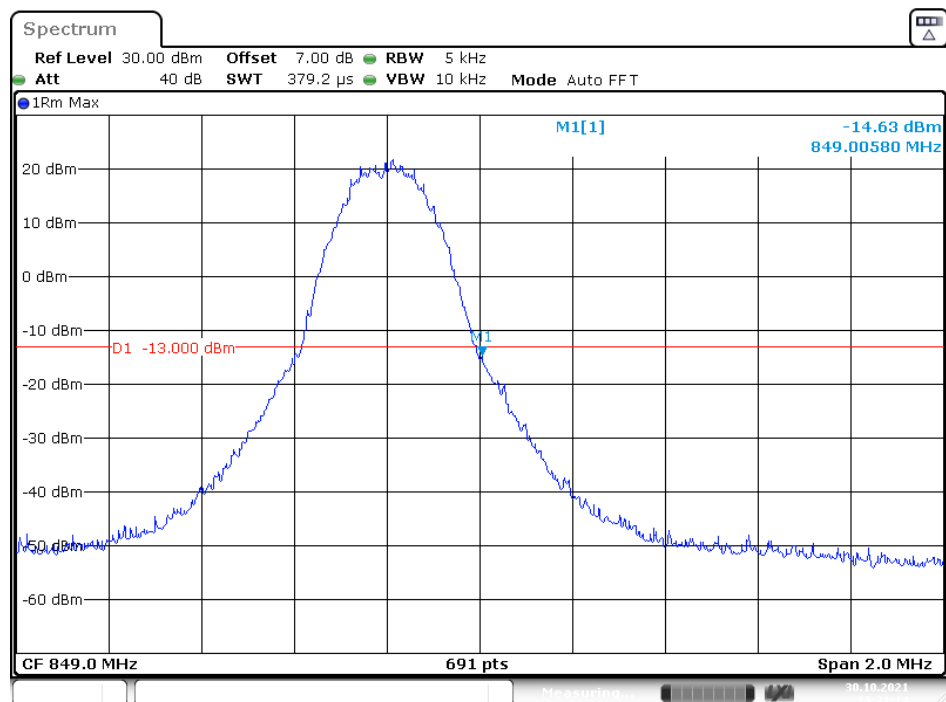
Date: 8.DEC.2021 16:30:50

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



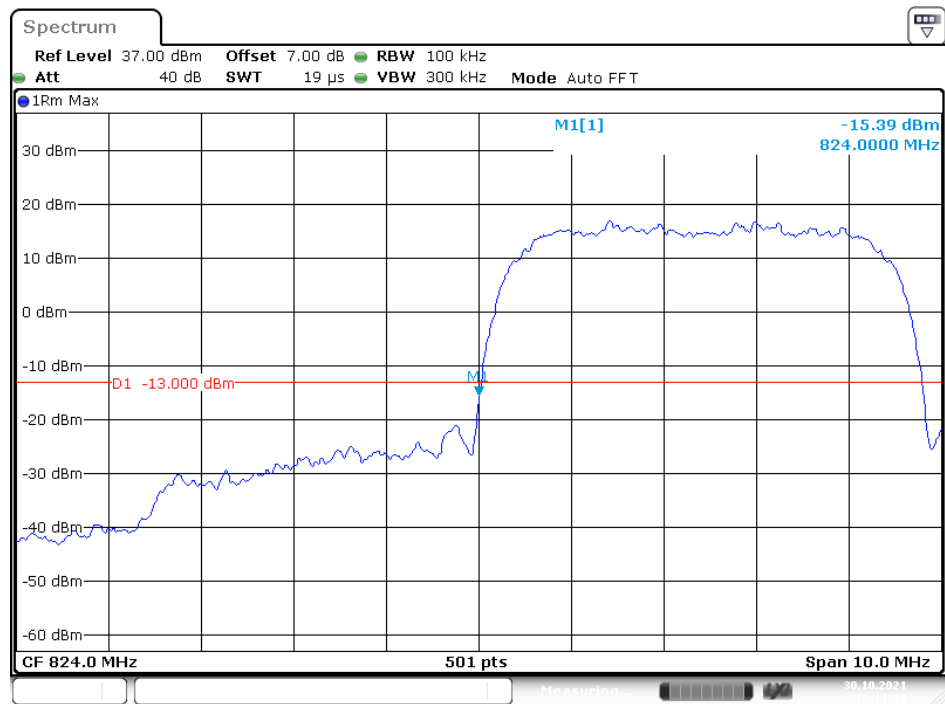
Date: 30.OCT.2021 13:32:12

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



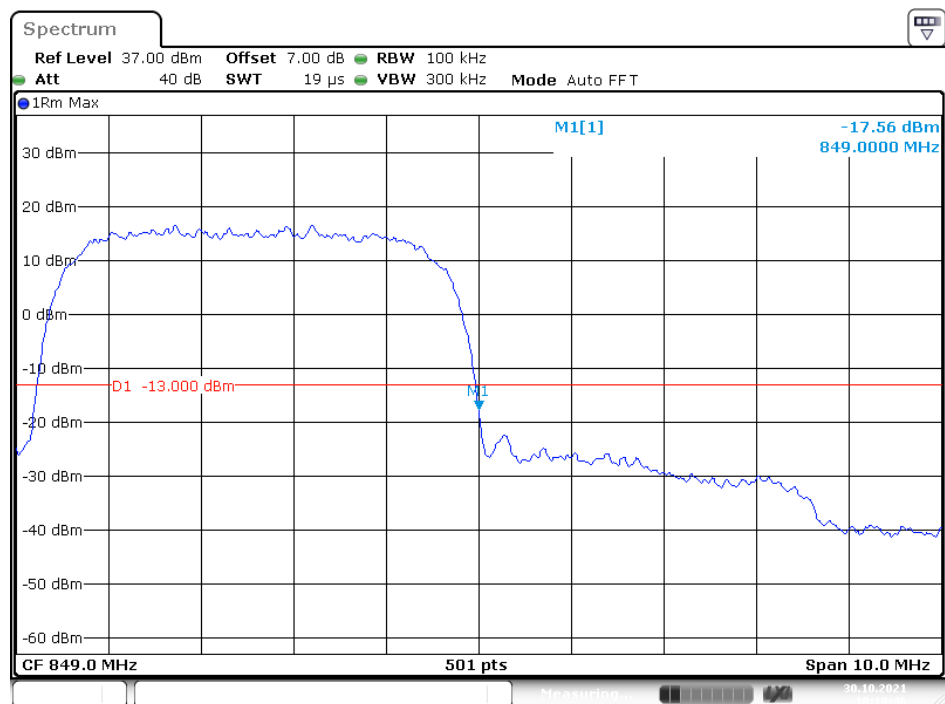
Date: 30.OCT.2021 13:31:15

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



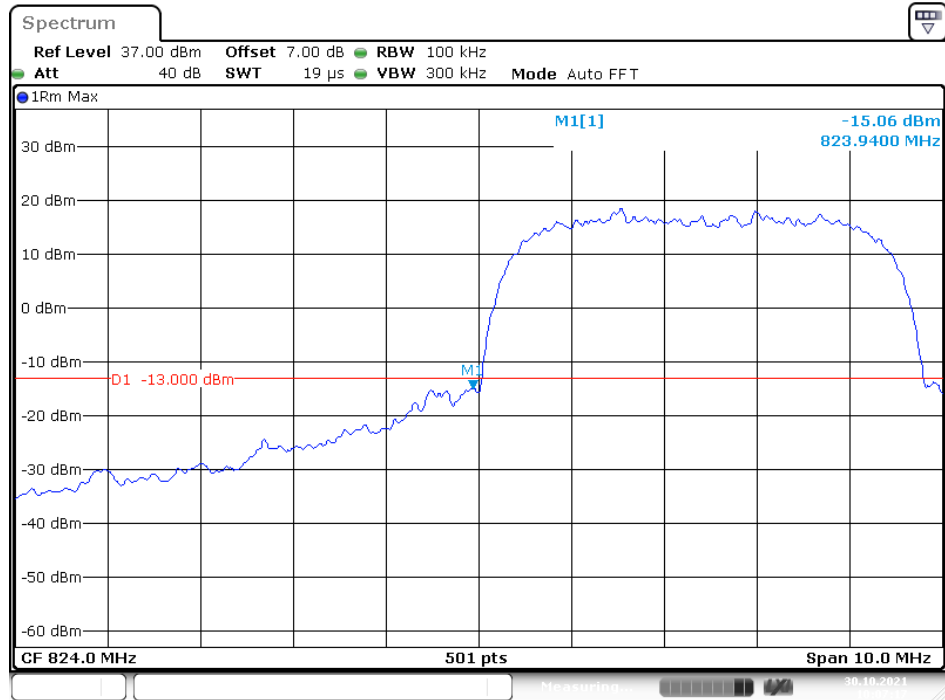
Date: 30.OCT.2021 10:11:23

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



Date: 30.OCT.2021 10:10:45

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

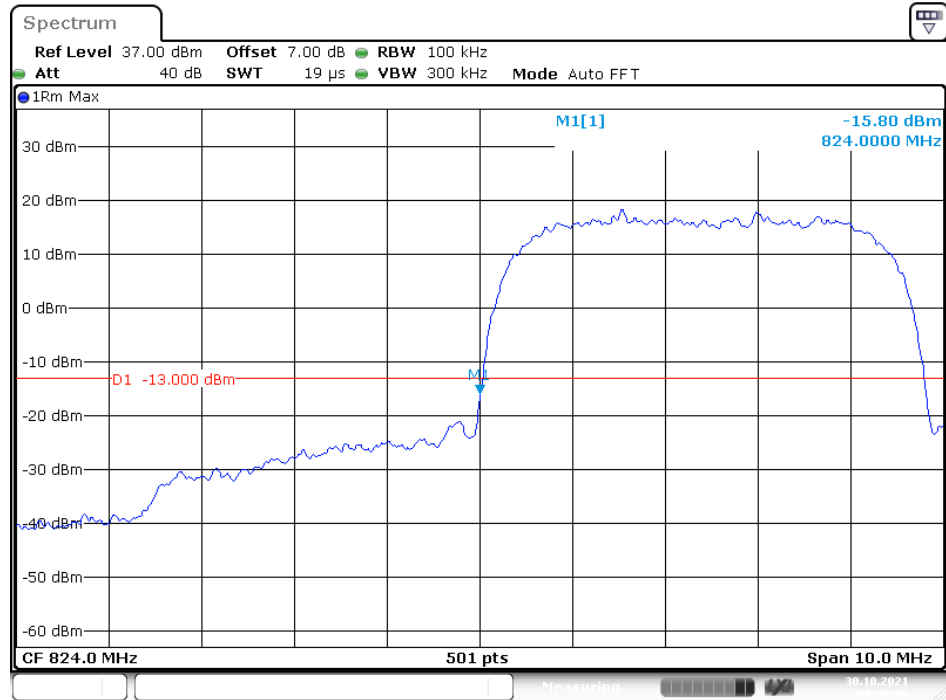


Date: 30.OCT.2021 10:07:17

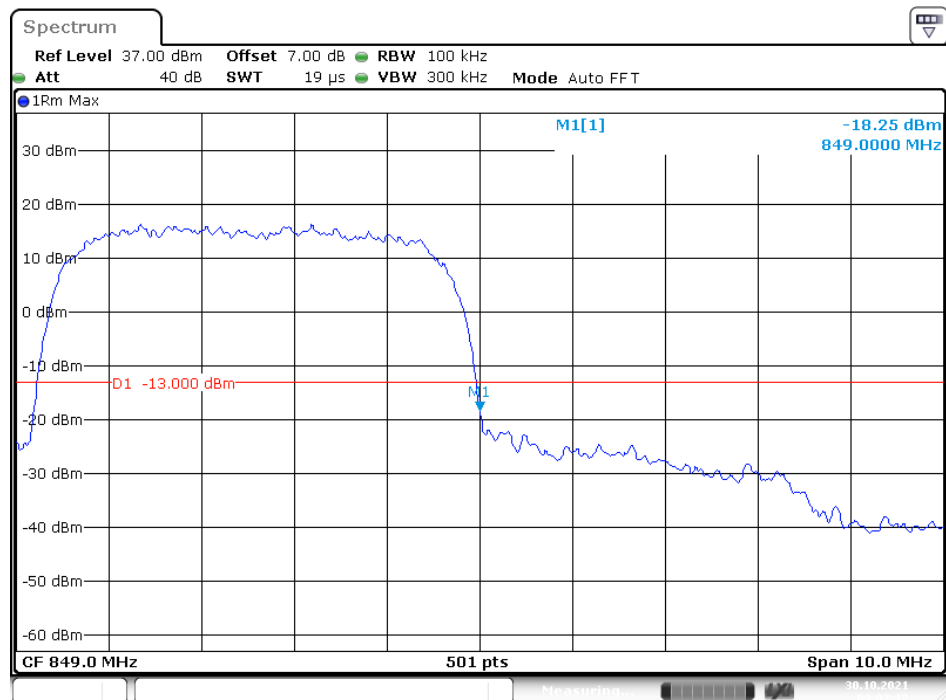
Cellular Band, Right Band Edge for HSDPA (16QAM) Mode



Date: 30.NOV.2021 15:18:12

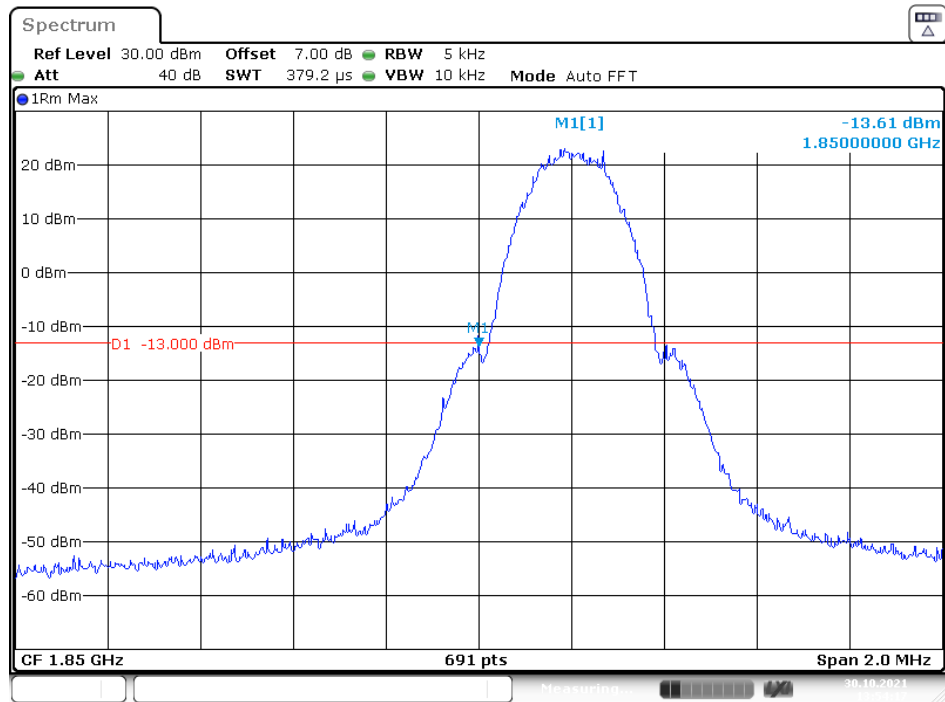
Cellular Band, Left Band Edge for HSUPA (BPSK) Mode

Date: 30.OCT.2021 09:00:37

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

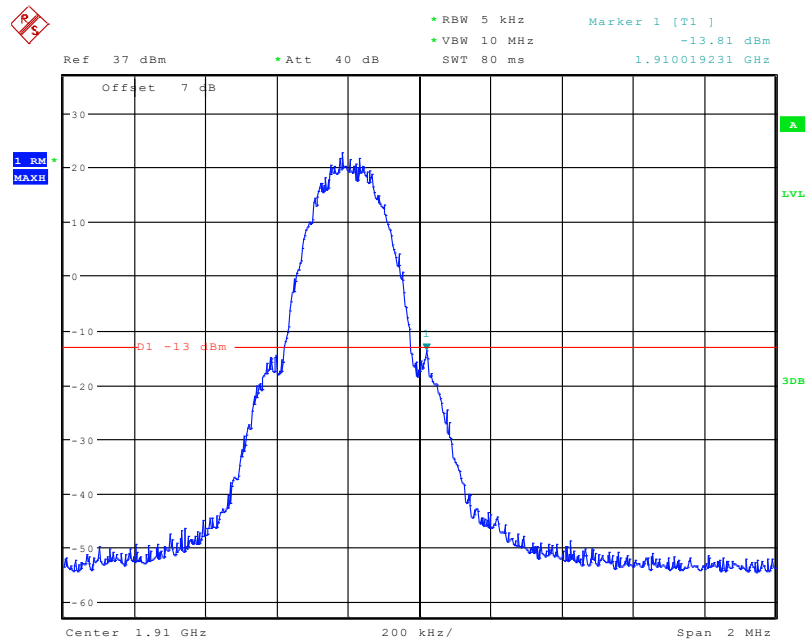
Date: 30.OCT.2021 09:02:13

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



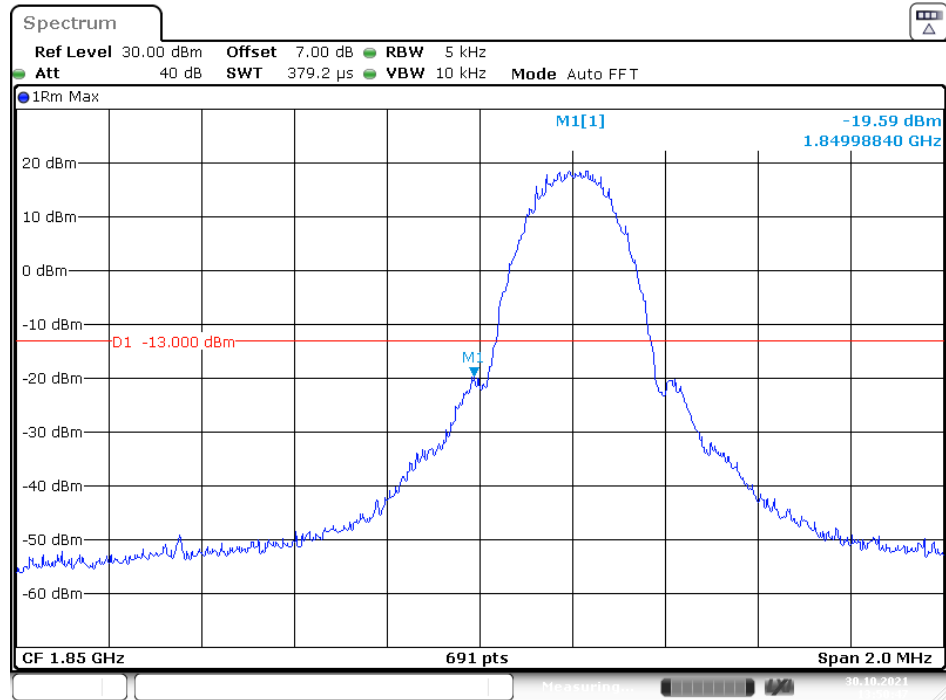
Date: 30.OCT.2021 13:54:17

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

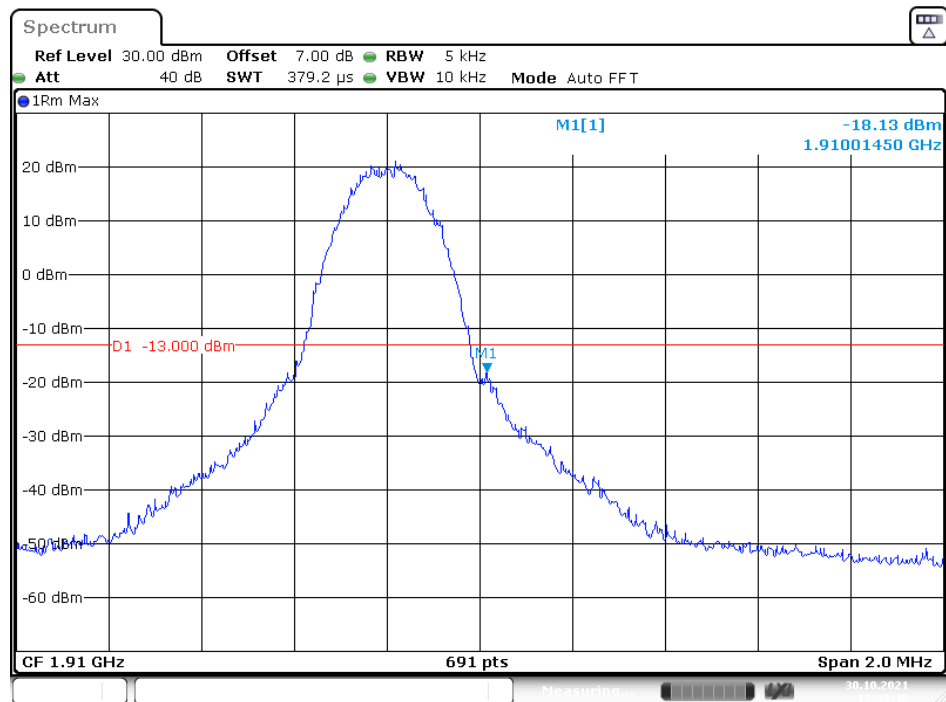


Date: 8.DEC.2021 17:40:36

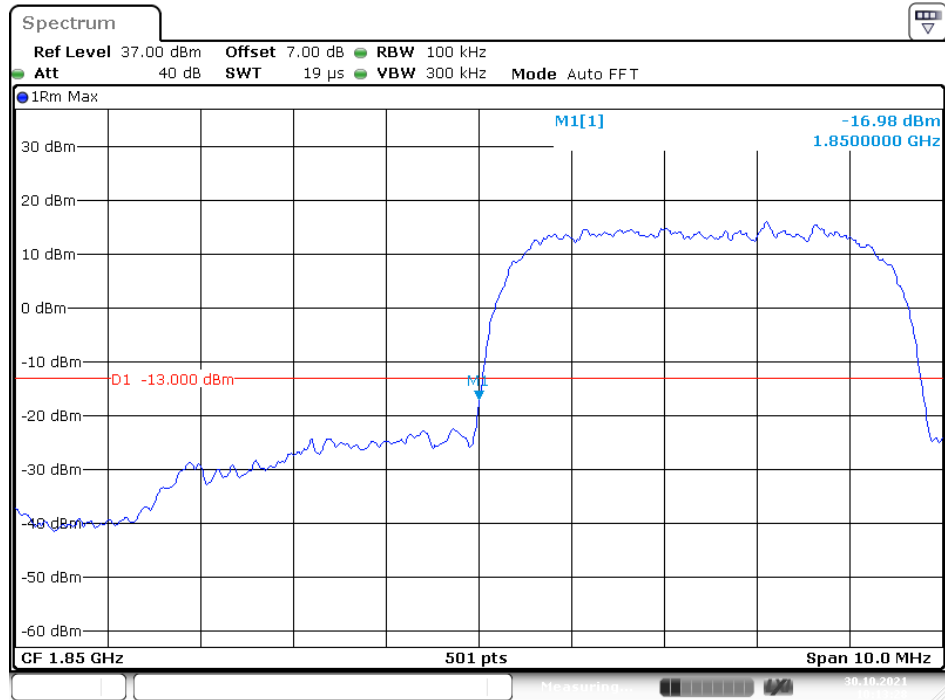
PCS Band, Left Band Edge for EGPRS (8PSK) Mode



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

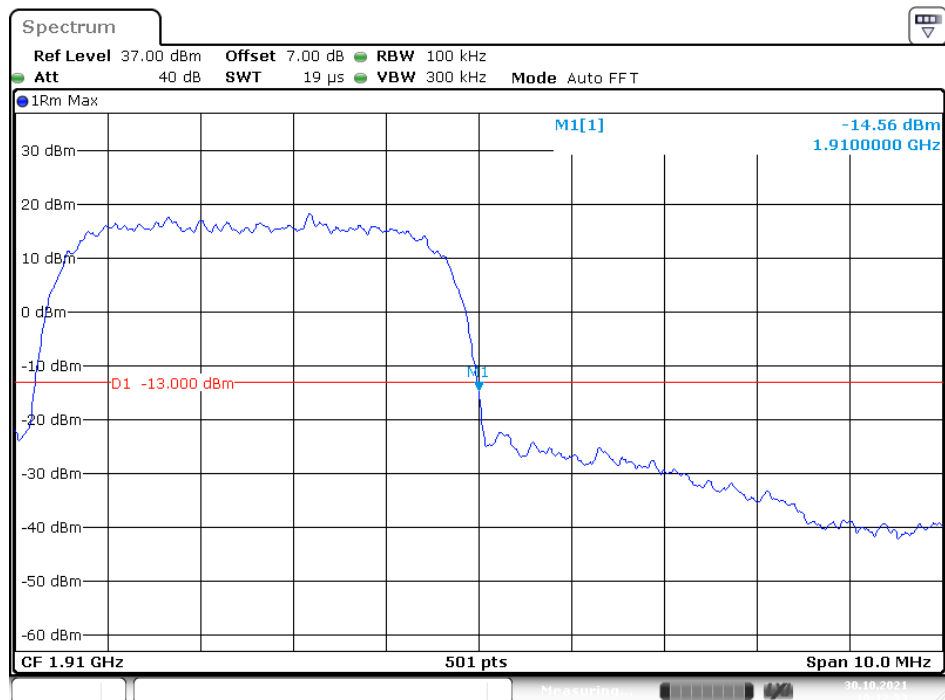


PCS Band, Left Band Edge for RMC (BPSK) Mode



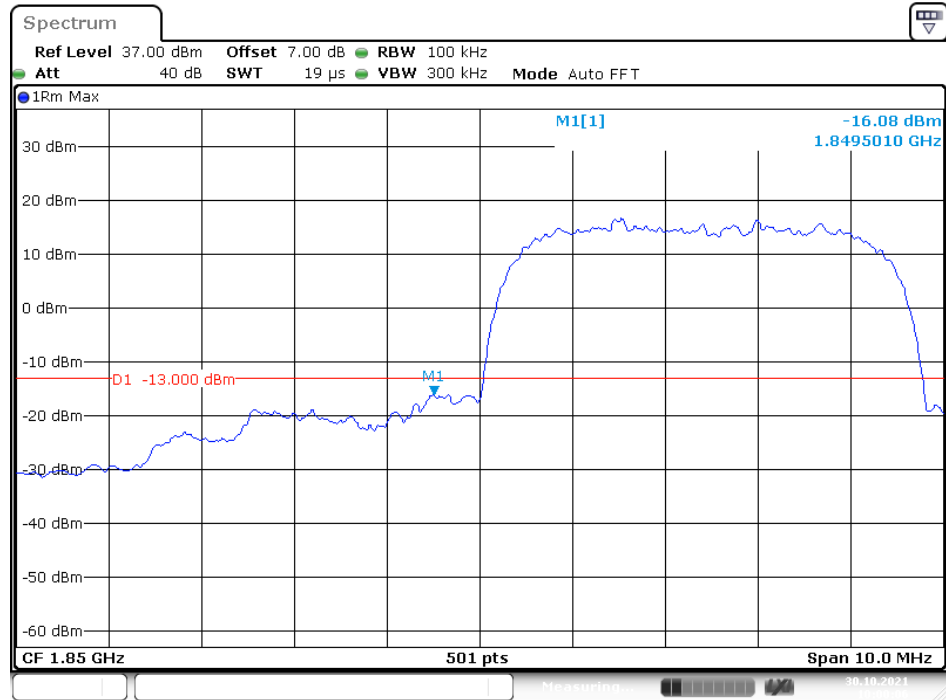
Date: 30.OCT.2021 10:13:29

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



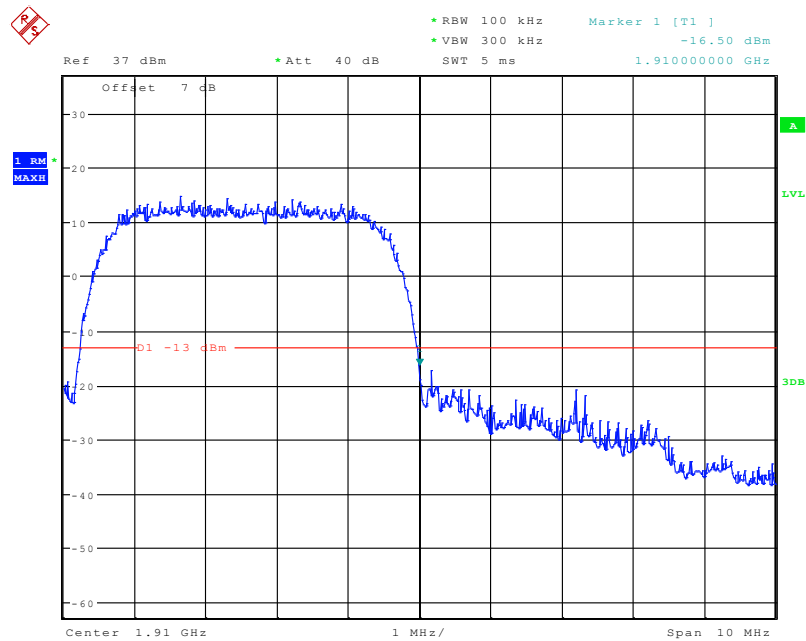
Date: 30.OCT.2021 10:12:53

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



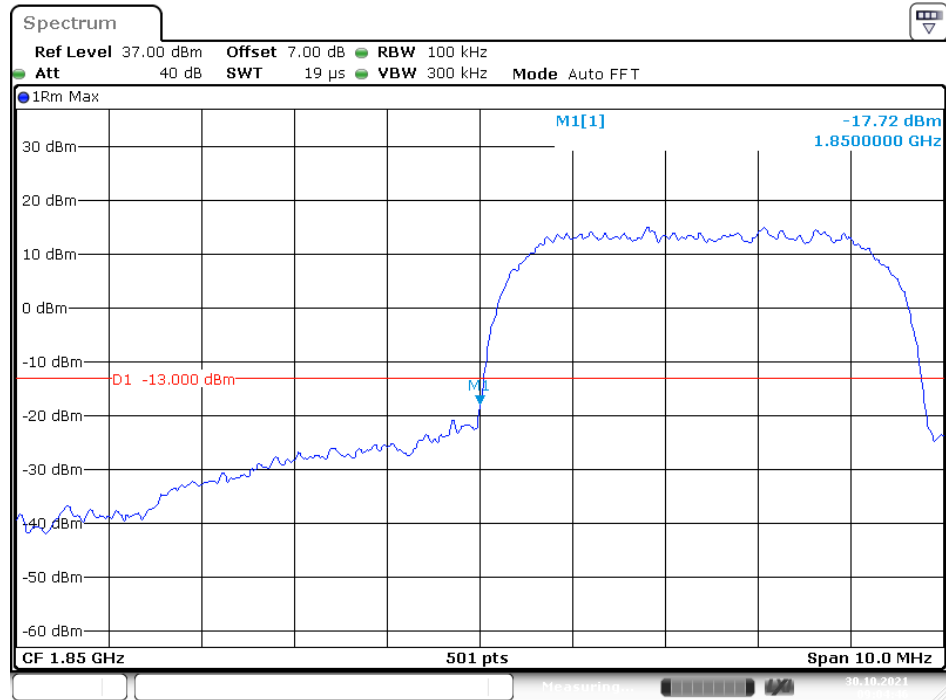
Date: 30.OCT.2021 10:00:05

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



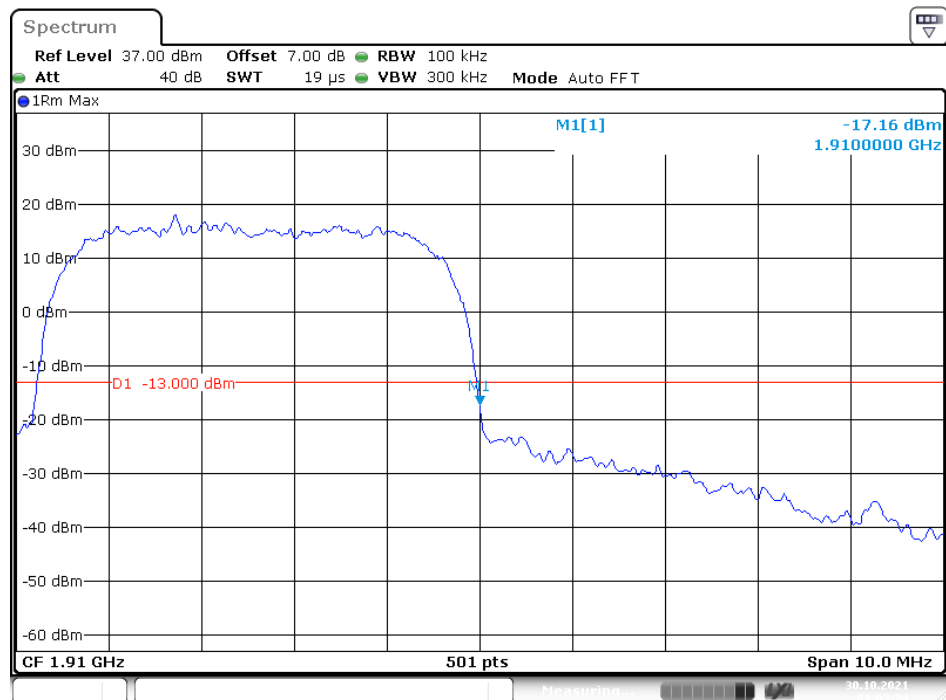
Date: 8.DEC.2021 17:10:05

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



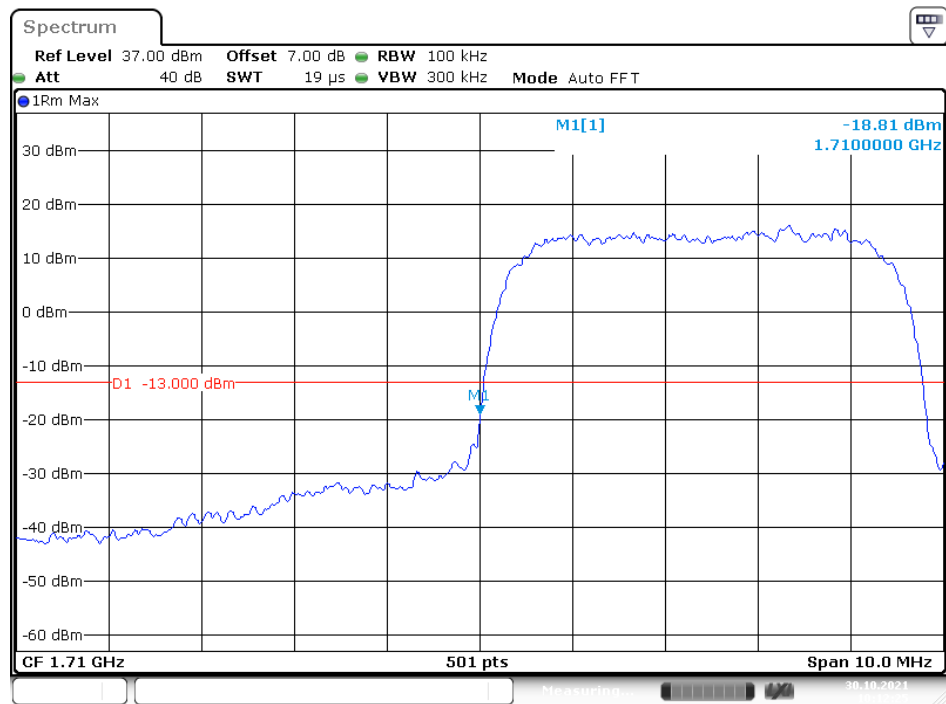
Date: 30.OCT.2021 09:04:47

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



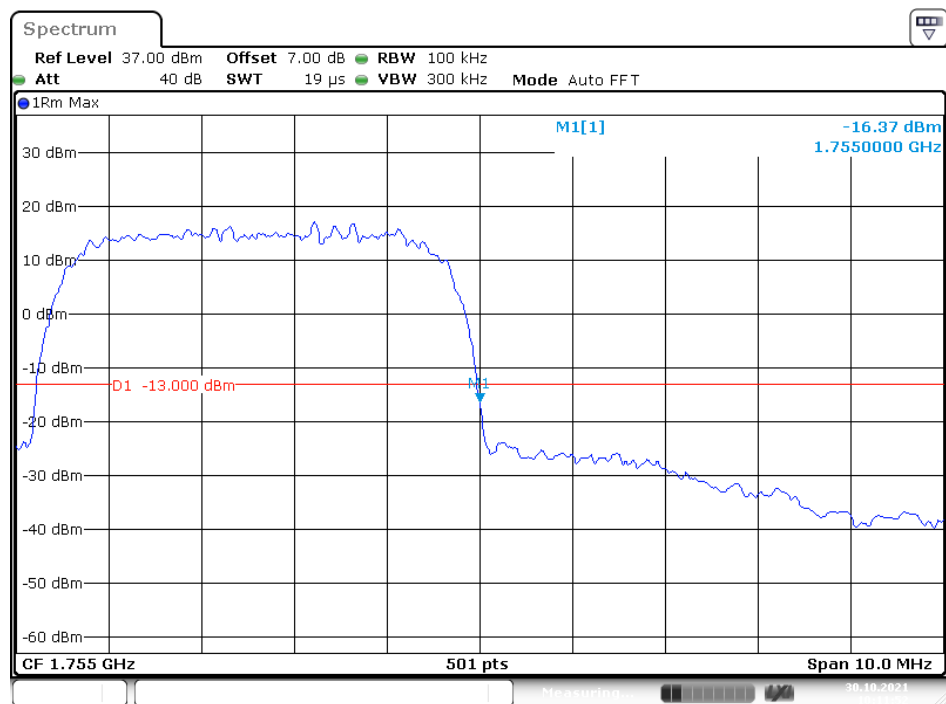
Date: 30.OCT.2021 09:05:24

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



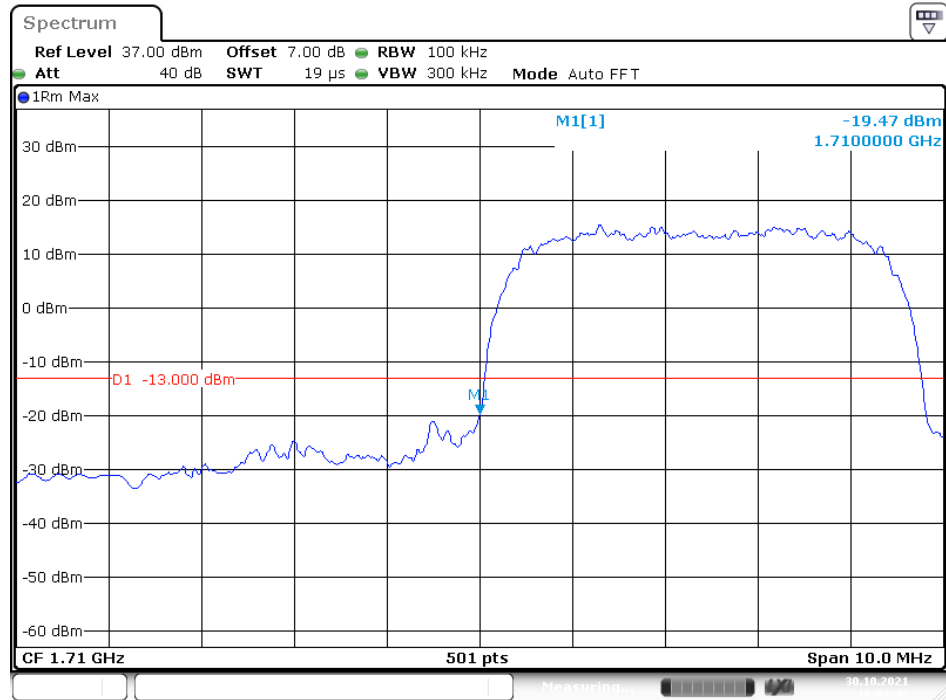
Date: 30.OCT.2021 10:12:25

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



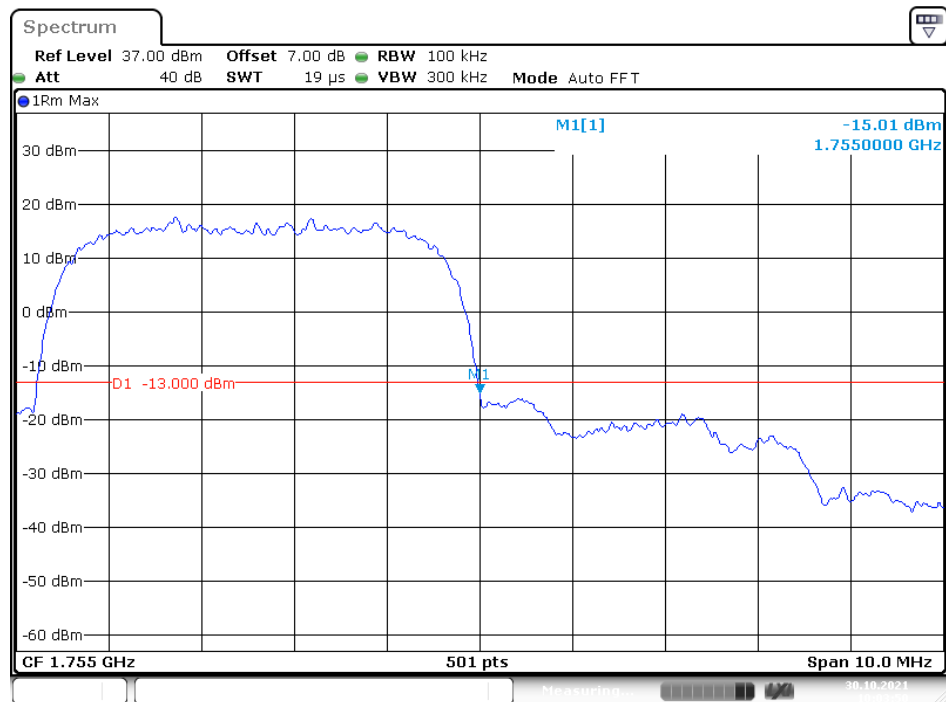
Date: 30.OCT.2021 10:11:52

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

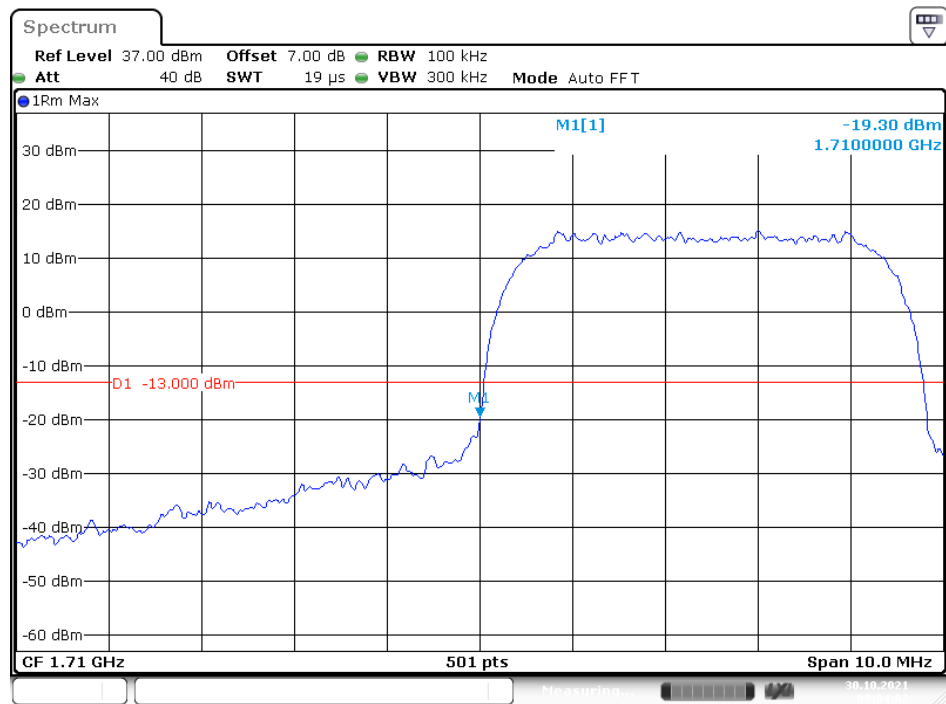
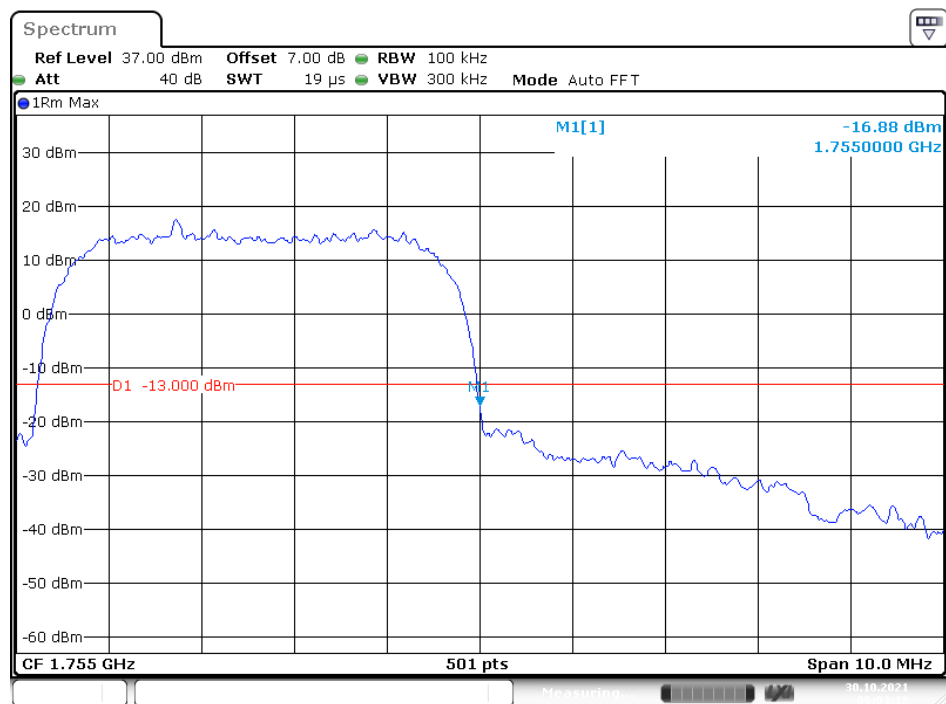


Date: 30.OCT.2021 10:02:42

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



Date: 30.OCT.2021 10:03:49

AWS Band, Left Band Edge for HSUPA (BPSK) Mode**AWS Band, Right Band Edge for HSUPA (BPSK) Mode**

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

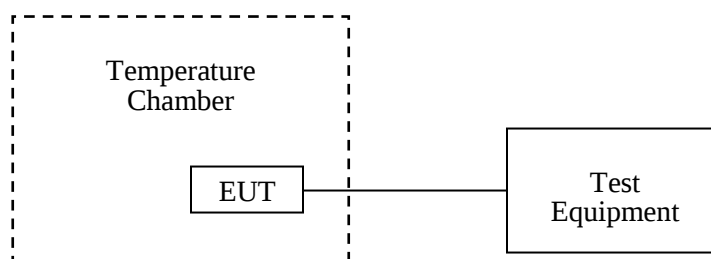
According to § 24.235 & § 27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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:	28.6 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Ting Lv from 2021-10-29 to 2021-10-30.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

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

Middle Channel, $f_o = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	5	0.0060	2.5
-20		8	0.0096	2.5
-10		2	0.0024	2.5
0		-6	-0.0072	2.5
10		-3	-0.0036	2.5
20		3	0.0036	2.5
30		6	0.0072	2.5
40		-7	-0.0084	2.5
50		-8	-0.0096	2.5
20	L.V.	4	0.0048	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.	4	0.0048	2.5
-20		-3	-0.0036	2.5
-10		8	0.0096	2.5
0		-8	-0.0096	2.5
10		-6	-0.0072	2.5
20		3	0.0036	2.5
30		7	0.0084	2.5
40		-6	-0.0072	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.	1.02	0.0012	2.5
-20		9.04	0.0108	2.5
-10		8.03	0.0096	2.5
0		5.01	0.0060	2.5
10		3.02	0.0036	2.5
20		0.21	0.0003	2.5
30		4.05	0.0048	2.5
40		5.02	0.0060	2.5
50		8.01	0.0096	2.5
20	L.V.	5.02	0.0060	2.5
	H.V.	6.01	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.	-3	-0.0016	pass
-20		-8	-0.0043	pass
-10		3	0.0016	pass
0		8	0.0043	pass
10		-2	-0.0011	pass
20		4	0.0021	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.	2	0.0011	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.	2	0.0011	pass
-20		-4	-0.0021	pass
-10		-5	-0.0027	pass
0		3	0.0016	pass
10		4	0.0021	pass
20		-9	-0.0048	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.	-1.01	-0.0005	pass
-20		-9.02	-0.0048	pass
-10		-8.03	-0.0043	pass
0		-5.13	-0.0027	pass
10		-3.12	-0.0017	pass
20		-1.46	-0.0008	pass
30		-4.05	-0.0022	pass
40		-7.03	-0.0037	pass
50		1.28	0.0007	pass
20	L.V.	2.01	0.0011	pass
	H.V.	2.02	0.0011	pass

AWS Band (Part 27)

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.0350	1754.9813	1710	1755
-20		1710.0327	1754.9725	1710	1755
-10		1710.0214	1754.8726	1710	1755
0		1710.0236	1754.8746	1710	1755
10		1710.0155	1754.8735	1710	1755
20		1710.0120	1754.8746	1710	1755
30		1710.0130	1754.8623	1710	1755
40		1710.0137	1754.8732	1710	1755
50		1710.0242	1754.8735	1710	1755
20	L.V.	1710.0222	1754.5622	1710	1755
	H.V.	1710.0252	1754.5623	1710	1755

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	4	0.0021	pass
-20		-8	-0.0043	pass
-10		-6	-0.0032	pass
0		3	0.0016	pass
10		-7	-0.0037	pass
20		-6	-0.0032	pass
30		-4	-0.0021	pass
40		7	0.0037	pass
50		-10	-0.0053	pass
20	LV	-8	-0.0043	pass
	HV	7	0.0037	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.	1710.3252	1754.8742	1710	1755
-20		1710.3154	1754.8736	1710	1755
-10		1710.2134	1754.8754	1710	1755
0		1710.2127	1754.8746	1710	1755
10		1710.2125	1754.8742	1710	1755
20		1710.3152	1754.8736	1710	1755
30		1710.3136	1754.8732	1710	1755
40		1710.2145	1754.8736	1710	1755
50		1710.2144	1754.8752	1710	1755
20	L.V.	1710.2136	1754.8754	1710	1755
	H.V.	1710.2154	1754.8726	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.	-5	-0.0060	2.5
-20		10	0.0120	2.5
-10		8	0.0096	2.5
0		-6	-0.0072	2.5
10		-10	-0.0120	2.5
20		-8	-0.0096	2.5
30		7	0.0084	2.5
40		5	0.0060	2.5
50		3	0.0036	2.5
20	L.V.	9	0.0108	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.	2500.8935	2569.986	2500	2570
-20		2500.8947	2569.9955	2500	2570
-10		2500.8836	2569.986	2500	2570
0		2500.8825	2569.9772	2500	2570
10		2500.7934	2569.9823	2500	2570
20		2500.7826	2569.9437	2500	2570
30		2500.7746	2569.9525	2500	2570
40		2500.7542	2569.9812	2500	2570
50		2500.7527	2569.9823	2500	2570
20	L.V.	2500.7427	2569.9724	2500	2570
	H.V.	2500.7470	2569.9645	2500	2570

16QAM:**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	N.V.	-9	-0.0048	pass
-20		-7	-0.0037	pass
-10		10	0.0053	pass
0		6	0.0032	pass
10		8	0.0043	pass
20		-10	-0.0053	pass
30		-7	-0.0037	pass
40		-9	-0.0048	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.	1710.2768	1754.7657	1710	1755
-20		1710.2756	1754.7538	1710	1755
-10		1710.2727	1754.7627	1710	1755
0		1710.2637	1754.7433	1710	1755
10		1710.2646	1754.7456	1710	1755
20		1710.2648	1754.7842	1710	1755
30		1710.2554	1754.7637	1710	1755
40		1710.2556	1754.7681	1710	1755
50		1710.2652	1754.7726	1710	1755
20	L.V.	1710.2654	1754.7544	1710	1755
	H.V.	1710.2637	1754.7527	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-4	-0.0048	2.5
-20		6	0.0072	2.5
-10		10	0.0120	2.5
0		-5	-0.0060	2.5
10		-7	-0.0084	2.5
20		8	0.0096	2.5
30		4	0.0048	2.5
40		6	0.0072	2.5
50		-6	-0.0072	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.	2500.7464	2569.8510	2500	2570
-20		2500.7357	2569.8543	2500	2570
-10		2500.7336	2569.8433	2500	2570
0		2500.7228	2569.8534	2500	2570
10		2500.6351	2569.8236	2500	2570
20		2500.6242	2569.7855	2500	2570
30		2500.6336	2569.7852	2500	2570
40		2500.6324	2569.8436	2500	2570
50		2500.6326	2569.8452	2500	2570
20	L.V.	2500.6237	2569.8344	2500	2570
	H.V.	2500.5431	2569.8256	2500	2570

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