




FCC PART 27
FCC PART 22H, PART 24E
TEST REPORT

For

MPS MAYORISTA DE COLOMBIA S.A.

Autop Bog Medellin Km2.5 Parque Emp. Tecnologico, Cota, Colombia

FCC ID: 2AHVR1100AS

Report Type: Original Report	Product Type: Tablet PC
Report Number: RSZ201216802-00C	
Report Date: 2020-12-28	
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GENERAL INFORMATION**Product Description for Equipment under Test (EUT)**

Product	Tablet PC
Tested Model	1100AS
Multiple Model	1100AS+, AS1100, AS1000+
Model Differences	Only model name is different.
Frequency Range	EGSM 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 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX)
Maximum Target Output Power	EGSM 850: 31.5dBm, 25.3dBm(8PSK) PCS 1900: 28.5Bm, 24.7dBm(8PSK) WCDMA Band 2: 17dBm WCDMA Band 5: 17.5dBm LTE Band 4/7:17.5dBm
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	FPC Antennas: EGSM850/ WCDMA Band5: -0.5dBi* PCS1900/ WCDMA Band 2:-2.5dBi * LTE Band 4: -2.5dBi * LTE Band 7: -2.5dBi * (provided by the applicant)
Voltage Range	DC3.7V from battery or DC 5.0V from adapter
Date of Test	2020-12-17 to 2020-12-30
Sample serial number	RSZ201216802-RF-S1(Assigned by ATC)
Received date	2020-12-17
Sample/EUT Status	Good condition
Adapter information	Model: JKX-777 INPUT: 100-240VAC, 50/60Hz, 0.5A max OUTPUT: 5V, 2000mA

Objective

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Equipment Modifications

No modification was made to the EUT.

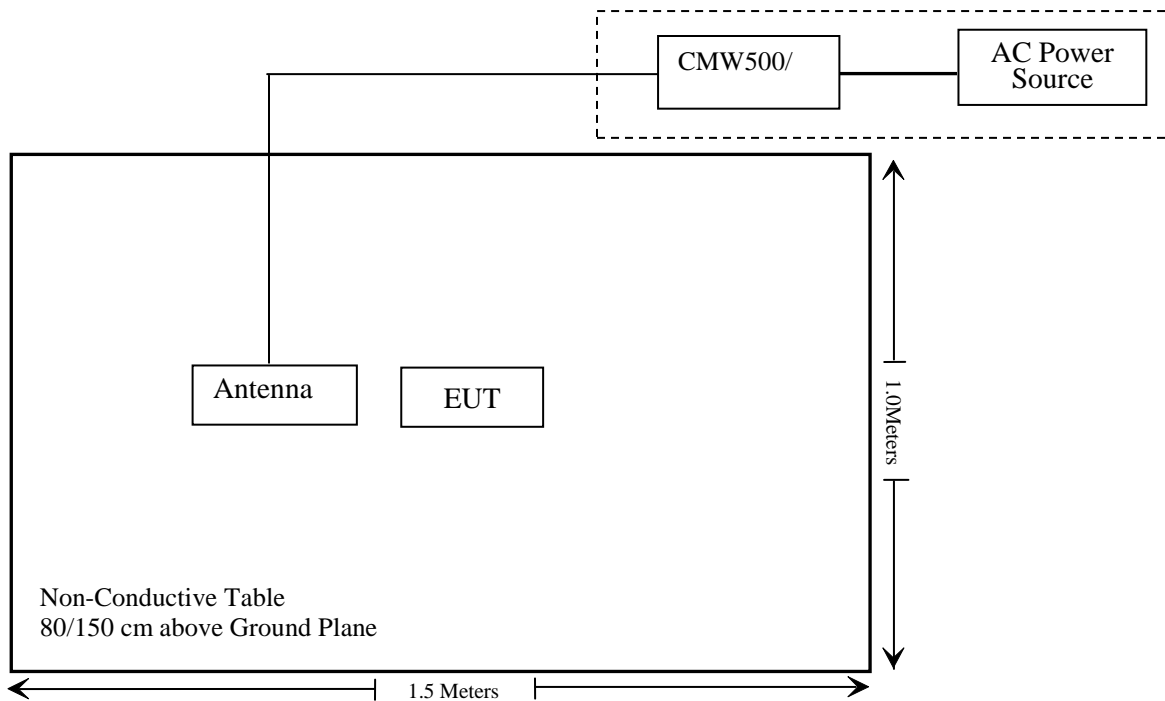
Support Equipment List and Details

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

Support Cable Description

Cable Description	Length (m)	From / Port	To
/	/	/	/

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

Note: * Please refer to SAR report number: RSZ201216802-20.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/01/04	2021/01/03
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/01/04	2021/01/03
Vector Signal Generator	AGILENT	N5182A	MY50143401	2020/01/04	2021/01/03
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2021/01/04
SCHWARZBECK	HORN ANTENNA	BBHA9120D	9120D-655	2020/01/05	2021/01/04
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-01 1304	2020/12/06	2023/12/05
Rohde&Schwarz	Pre-Amplifier	CBLU1183540 -01	3791	2020/01/04	2021/01/03
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2020/11/28	2021/11/27
Rohde& Schwarz	Test Receiver	ESR	101817	2020/01/04	2021/01/03
Agilent	Pre-Amplifier	8447D	2944A10619	2020/01/04	2021/01/03
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/01/04	2021/01/03
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2021/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2020/01/05	2021/01/04

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/01/04	2021/01/03
Rohde & Schwarz	Test Receiver	ESPI	100396/003	2020/01/04	2021/01/03
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/01/04	2021/01/03
Mini-Circuits	Power splitter	ZFRSC-183-S+	S F019401451 S	2020/01/04	2021/01/03
Gongwen	Temp. & Humid. Chamber	HSD-500	109	2020/01/02	2021/01/01
Fluke	Digital Multimeter	287	19000011	2020/07/23	2021/07/22

* 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

Compliance, please refer to the SAR report: RSZ201216802-20.

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 (c) (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(c), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

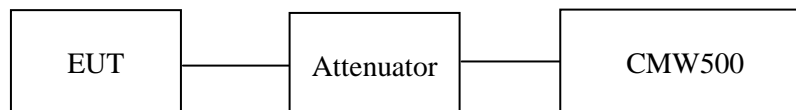
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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:	28~29.3 °C
Relative Humidity:	50~58 %
ATM Pressure:	101.0~101.1 kPa

The testing was performed by Fan Yang on 2020-12-28.

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	31.07	28.92	38.45
	190	836.6	31.05	28.9	38.45
	251	848.8	31.09	28.94	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	31.16	30.49	29.71	28.75	29.01	28.34	27.56	26.6	38.45
	190	836.6	31.04	30.45	29.40	28.21	28.89	28.3	27.25	26.06	38.45
	251	848.8	31.01	30.23	29.22	28.05	28.86	28.08	27.07	25.9	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	23.07	22.15	20.04	18.81	20.92	20	17.89	16.66	38.45
	190	836.6	24.21	23.21	21.18	19.45	22.06	21.06	19.03	17.3	38.45
	251	848.8	25.05	24.04	21.62	20.67	22.9	21.89	19.47	18.52	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		16.04	16.48	16.20	13.89	14.33	14.05
	HSDPA	1	16.84	16.18	16.34	14.69	14.03	14.19
		2	16.12	16.45	15.62	13.97	14.3	13.47
		3	16.86	16.43	16.36	14.71	14.28	14.21
		4	16.19	16.08	15.69	14.04	13.93	13.54
	HSUPA	1	16.11	16.89	15.61	13.96	14.74	13.46
		2	16.35	16.21	15.85	14.2	14.06	13.7
		3	16.93	16.86	16.43	14.78	14.71	14.28
		4	16.82	16.69	16.32	14.67	14.54	14.17
		5	16.21	16.38	15.71	14.06	14.23	13.56

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)

For GSM850 / WCDMA Band5: Antenna Gain = -0.5dBi = -1.65dBd (0dBd=2.15dBi)

For 824-894MHz, Cable Loss=0.5dB* (provided by the applicant)

Limit: ERP ≤ 38.45dBm

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	28.17	25.17	33
	661	1880.0	28.15	25.15	33
	810	1909.8	28.05	25.05	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	28.17	27.54	25.77	24.45	25.17	24.54	22.77	21.45	33
	661	1880.0	28.15	27.37	25.31	24.42	25.15	24.37	22.31	21.42	33
	810	1909.8	28.05	27.07	25.04	24.19	25.05	24.07	22.04	21.19	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	24.64	23.64	21.48	20.09	21.64	20.64	18.48	17.09	33
	661	1880.0	24.51	23.39	21.26	19.51	21.51	20.39	18.26	16.51	33
	810	1909.8	24.27	23.15	21.01	19.22	21.27	20.15	18.01	16.22	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		16.67	16.55	16.72	13.67	13.55	13.72
	HSDPA	1	16.13	16.79	16.80	13.13	13.79	13.8
		2	16.20	16.37	16.87	13.2	13.37	13.87
		3	16.67	16.51	16.23	13.67	13.51	13.23
		4	16.93	16.31	16.29	13.93	13.31	13.29
	HSUPA	1	16.07	16.56	16.23	13.07	13.56	13.23
		2	16.89	16.37	16.05	13.89	13.37	13.05
		3	16.42	16.28	16.14	13.42	13.28	13.14
		4	16.39	16.81	16.35	13.39	13.81	13.35
		5	16.04	16.68	16.42	13.04	13.68	13.42

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

For PCS1900 / WCDMA Band2: Antenna Gain = -2.5dBi

For 1850-1990MHz, Cable Loss=0.5dB*(provided by the applicant)

Limit: EIRP ≤ 33dBm

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	2.71	13
	Middle	2.79	13
	High	3.11	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.05	13
	Middle	3.33	13
	High	3.47	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.97	13
	Middle	3.10	13
	High	3.76	13
HSDPA (16QAM)	Low	3.08	13
	Middle	2.32	13
	High	3.77	13
HSUPA (BPSK)	Low	3.95	13
	Middle	3.42	13
	High	2.81	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.74	13
	Middle	2.81	13
	High	3.34	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.11	13
	Middle	3.77	13
	High	3.95	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.98	13
	Middle	2.80	13
	High	3.11	13
HSDPA (16QAM)	Low	2.84	13
	Middle	2.96	13
	High	2.97	13
HSUPA (BPSK)	Low	3.26	13
	Middle	2.92	13
	High	3.31	13

LTE Band 4

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	16.76	16.25	16.73	13.76	13.25	13.73
		RB1#2	16.29	16.51	16.80	13.29	13.51	13.8
		RB1#5	16.66	16.09	16.28	13.66	13.09	13.28
		RB3#0	16.31	16.66	16.95	13.31	13.66	13.95
		RB3#1	16.45	16.16	16.15	13.45	13.16	13.15
		RB3#2	16.63	16.08	16.78	13.63	13.08	13.78
		RB6#0	16.13	16.15	16.20	13.13	13.15	13.2
	16QAM	RB1#0	16.83	16.58	16.75	13.83	13.58	13.75
		RB1#2	16.02	16.58	16.95	13.02	13.58	13.95
		RB1#5	16.38	16.17	16.43	13.38	13.17	13.43
		RB3#0	16.43	16.39	16.70	13.43	13.39	13.7
		RB3#1	16.75	16.40	16.14	13.75	13.4	13.14
		RB3#2	16.78	16.29	16.91	13.78	13.29	13.91
		RB6#0	16.75	16.16	16.44	13.75	13.16	13.44
3.0	QPSK	RB1#0	16.73	16.40	16.34	13.73	13.4	13.34
		RB1#7	16.63	16.14	16.47	13.63	13.14	13.47
		RB1#14	16.31	16.64	16.90	13.31	13.64	13.9
		RB8#0	16.40	16.27	16.90	13.4	13.27	13.9
		RB8#4	16.96	16.12	16.53	13.96	13.12	13.53
		RB8#7	16.13	16.06	16.94	13.13	13.06	13.94
		RB15#0	16.03	16.91	16.20	13.03	13.91	13.2
	16QAM	RB1#0	16.29	16.15	16.22	13.29	13.15	13.22
		RB1#7	16.15	16.52	16.18	13.15	13.52	13.18
		RB1#14	16.59	16.43	16.24	13.59	13.43	13.24
		RB8#0	16.55	16.65	16.56	13.55	13.65	13.56
		RB8#4	16.65	16.20	16.14	13.65	13.2	13.14
		RB8#7	16.00	16.57	16.96	13	13.57	13.96
		RB15#0	16.47	16.84	16.05	13.47	13.84	13.05

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	16.69	16.48	16.18	13.69	13.48	13.18
		RB1#12	16.09	16.16	16.01	13.09	13.16	13.01
		RB1#24	16.13	16.73	16.78	13.13	13.73	13.78
		RB12#0	16.72	16.58	16.69	13.72	13.58	13.69
		RB12#6	16.22	16.73	16.40	13.22	13.73	13.4
		RB12#11	16.34	16.50	16.28	13.34	13.5	13.28
		RB25#0	16.92	16.96	16.78	13.92	13.96	13.78
	16QAM	RB1#0	16.44	16.68	16.83	13.44	13.68	13.83
		RB1#12	16.01	16.35	16.10	13.01	13.35	13.1
		RB1#24	16.28	16.59	16.84	13.28	13.59	13.84
		RB12#0	16.67	16.88	16.79	13.67	13.88	13.79
		RB12#6	16.95	16.14	16.37	13.95	13.14	13.37
		RB12#11	16.74	16.04	16.26	13.74	13.04	13.26
		RB25#0	16.79	16.08	16.64	13.79	13.08	13.64
10.0	QPSK	RB1#0	17.00	16.45	16.58	14	13.45	13.58
		RB1#24	16.77	16.65	16.44	13.77	13.65	13.44
		RB1#49	16.59	16.20	16.51	13.59	13.2	13.51
		RB25#0	16.84	16.76	16.52	13.84	13.76	13.52
		RB25#12	16.44	16.46	16.29	13.44	13.46	13.29
		RB25#24	16.93	16.00	16.07	13.93	13	13.07
		RB50#0	16.71	16.93	16.24	13.71	13.93	13.24
	16QAM	RB1#0	16.55	16.45	16.35	13.55	13.45	13.35
		RB1#24	16.60	16.08	16.24	13.6	13.08	13.24
		RB1#49	16.54	16.65	16.23	13.54	13.65	13.23
		RB25#0	16.90	16.79	16.91	13.9	13.79	13.91
		RB25#12	16.83	16.74	16.82	13.83	13.74	13.82
		RB25#24	16.05	16.31	16.06	13.05	13.31	13.06
		RB50#0	16.02	16.44	16.59	13.02	13.44	13.59

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	16.55	16.43	16.07	13.55	13.43	13.07
		RB1#37	16.63	16.90	16.23	13.63	13.9	13.23
		RB1#74	16.51	16.67	16.37	13.51	13.67	13.37
		RB36#0	16.53	16.82	16.81	13.53	13.82	13.81
		RB36#18	16.23	16.49	16.66	13.23	13.49	13.66
		RB36#37	17.00	16.86	16.21	14	13.86	13.21
		RB75#0	16.74	16.07	16.73	13.74	13.07	13.73
	16QAM	RB1#0	16.27	16.77	16.86	13.27	13.77	13.86
		RB1#37	16.74	16.64	16.62	13.74	13.64	13.62
		RB1#74	16.64	16.09	16.37	13.64	13.09	13.37
		RB36#0	16.26	16.30	16.91	13.26	13.3	13.91
		RB36#18	16.38	16.29	16.62	13.38	13.29	13.62
		RB36#37	16.79	16.58	16.60	13.79	13.58	13.6
		RB75#0	16.22	16.74	16.77	13.22	13.74	13.77
20.0	QPSK	RB1#0	16.61	16.12	16.60	13.61	13.12	13.6
		RB1#49	16.19	16.04	16.83	13.19	13.04	13.83
		RB1#99	16.93	16.95	16.89	13.93	13.95	13.89
		RB50#0	16.26	16.49	16.15	13.26	13.49	13.15
		RB50#24	16.54	16.19	16.12	13.54	13.19	13.12
		RB50#49	16.12	16.33	16.02	13.12	13.33	13.02
		RB100#0	16.25	16.59	16.18	13.25	13.59	13.18
	16QAM	RB1#0	16.88	16.26	16.65	13.88	13.26	13.65
		RB1#49	16.47	16.56	16.64	13.47	13.56	13.64
		RB1#99	16.94	16.38	16.27	13.94	13.38	13.27
		RB50#0	16.55	16.68	16.65	13.55	13.68	13.65
		RB50#24	16.50	16.11	16.02	13.5	13.11	13.02
		RB50#49	16.13	16.17	16.88	13.13	13.17	13.88
		RB100#0	16.82	16.94	16.57	13.82	13.94	13.57

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

For Band4: Antenna Gain = -2.5dBi

For 1710-2155MHz, Cable Loss=0.5dB*(provided by the applicant)

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)	4.40	4.82	3.65	13	Pass
QPSK (100RB Size)	4.99	5.31	6.01	13	Pass
16QAM (1RB Size)	5.14	4.65	4.85	13	Pass
16QAM (100RB Size)	5.73	5.82	5.50	13	Pass

LTE Band 7:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	16.27	16.48	16.54	13.27	13.48	13.54
		RB1#12	16.39	16.62	16.96	13.39	13.62	13.96
		RB1#24	16.92	16.72	16.56	13.92	13.72	13.56
		RB12#0	16.09	16.83	16.77	13.09	13.83	13.77
		RB12#6	16.55	16.08	16.09	13.55	13.08	13.09
		RB12#11	16.23	16.38	16.59	13.23	13.38	13.59
		RB25#0	16.67	16.19	16.29	13.67	13.19	13.29
	16QAM	RB1#0	16.86	16.23	16.50	13.86	13.23	13.5
		RB1#12	16.38	16.53	16.94	13.38	13.53	13.94
		RB1#24	16.49	16.60	16.65	13.49	13.6	13.65
		RB12#0	16.59	16.62	16.69	13.59	13.62	13.69
		RB12#6	16.44	16.46	16.42	13.44	13.46	13.42
		RB12#11	16.28	16.98	16.47	13.28	13.98	13.47
		RB25#0	16.27	16.46	16.02	13.27	13.46	13.02
10.0	QPSK	RB1#0	16.76	16.06	16.05	13.76	13.06	13.05
		RB1#24	16.61	16.75	16.39	13.61	13.75	13.39
		RB1#49	16.34	16.06	16.01	13.34	13.06	13.01
		RB25#0	16.18	16.85	16.32	13.18	13.85	13.32
		RB25#12	16.34	16.99	16.91	13.34	13.99	13.91
		RB25#24	16.57	16.03	16.07	13.57	13.03	13.07
		RB50#0	16.04	16.54	16.29	13.04	13.54	13.29
	16QAM	RB1#0	16.04	16.05	16.03	13.04	13.05	13.03
		RB1#24	16.24	16.32	16.28	13.24	13.32	13.28
		RB1#49	16.47	16.10	16.12	13.47	13.1	13.12
		RB25#0	16.57	16.10	16.69	13.57	13.1	13.69
		RB25#12	16.49	16.21	16.07	13.49	13.21	13.07
		RB25#24	16.82	16.07	16.85	13.82	13.07	13.85
		RB50#0	16.95	16.28	16.30	13.95	13.28	13.3

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	16.58	16.49	16.27	13.58	13.49	13.27
		RB1#37	16.85	16.20	16.64	13.85	13.2	13.64
		RB1#74	16.91	16.40	16.64	13.91	13.4	13.64
		RB36#0	16.88	16.43	16.08	13.88	13.43	13.08
		RB36#18	16.04	16.85	16.45	13.04	13.85	13.45
		RB36#37	16.58	16.56	16.60	13.58	13.56	13.6
		RB75#0	16.10	16.30	16.69	13.1	13.3	13.69
	16QAM	RB1#0	16.96	16.11	16.26	13.96	13.11	13.26
		RB1#37	16.76	16.96	16.71	13.76	13.96	13.71
		RB1#74	16.88	16.80	16.21	13.88	13.8	13.21
		RB36#0	16.55	16.40	16.84	13.55	13.4	13.84
		RB36#18	16.85	16.25	16.60	13.85	13.25	13.6
		RB36#37	16.32	16.73	16.05	13.32	13.73	13.05
		RB75#0	16.62	16.08	16.61	13.62	13.08	13.61
20.0	QPSK	RB1#0	16.84	16.23	16.63	13.84	13.23	13.63
		RB1#49	16.13	16.43	16.01	13.13	13.43	13.01
		RB1#99	16.35	16.14	16.15	13.35	13.14	13.15
		RB50#0	16.95	16.20	16.04	13.95	13.2	13.04
		RB50#24	16.23	16.38	16.27	13.23	13.38	13.27
		RB50#49	16.65	16.77	16.29	13.65	13.77	13.29
		RB100#0	16.50	16.87	16.45	13.5	13.87	13.45
	16QAM	RB1#0	16.42	16.59	16.79	13.42	13.59	13.79
		RB1#49	16.71	16.35	16.88	13.71	13.35	13.88
		RB1#99	16.06	16.72	16.75	13.06	13.72	13.75
		RB50#0	16.27	16.15	16.67	13.27	13.15	13.67
		RB50#24	16.49	16.28	16.59	13.49	13.28	13.59
		RB50#49	16.27	16.93	16.46	13.27	13.93	13.46
		RB100#0	16.22	16.74	16.26	13.22	13.74	13.26

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

For Band7: Antenna Gain = -2.5dBi

For 2500-2690MHz, Cable Loss=0.5dB*(provided by the applicant)

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)	3.76	3.85	4.27	13	Pass
QPSK (100RB Size)	5.24	5.00	5.54	13	Pass
16QAM (1RB Size)	4.51	5.34	3.99	13	Pass
16QAM (100RB Size)	6.35	6.03	5.65	13	Pass

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

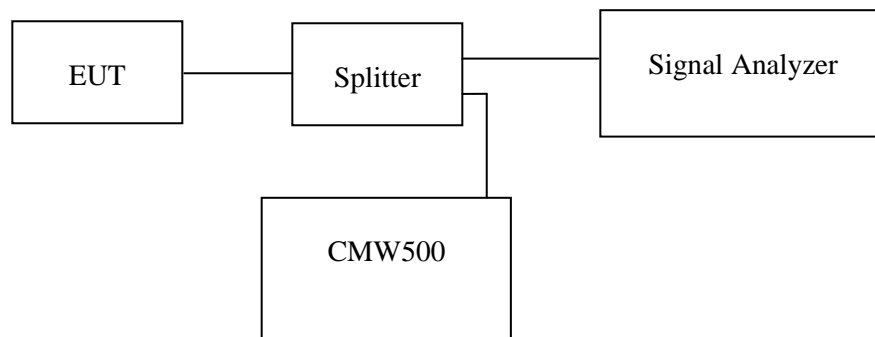
Applicable Standard

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:	23 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang from 2020-12-27 to 2020-12-30.

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	246.02	316.93
	190	836.6	244.57	315.49
	251	848.8	246.02	327.06
EGPRS(8PSK)	128	824.2	243.12	319.03
	190	836.6	241.68	309.70
	251	848.8	241.68	318.38

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.21	4.92
	836.6	4.23	4.89
	846.6	4.23	4.89
HSDPA	826.4	4.21	4.86
	836.6	4.23	4.88
	846.6	4.20	4.89
HSUPA	826.4	4.20	4.89
	836.6	4.23	4.89
	846.6	4.21	4.89

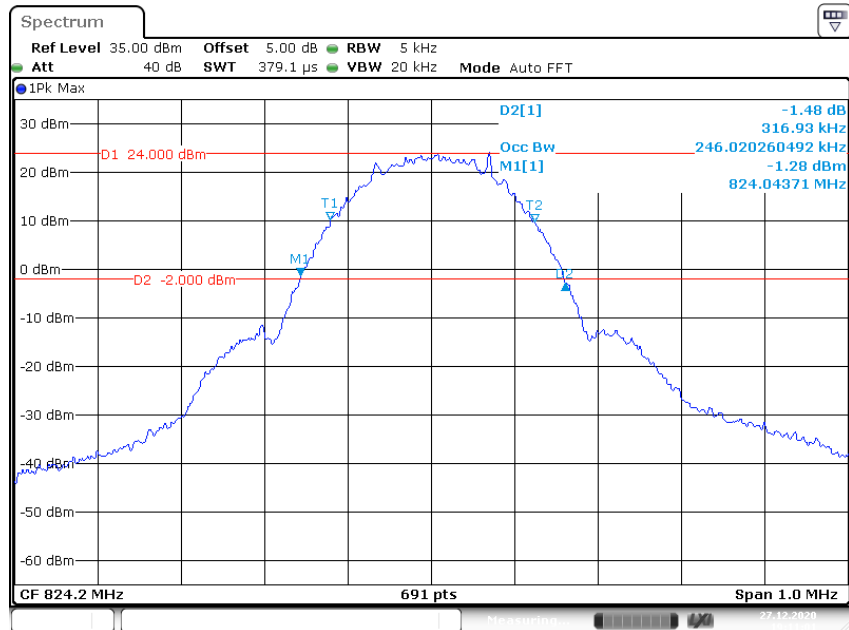
PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	246.02	318.38
	661	1880.0	244.57	305.36
	810	1909.8	246.02	241.68
EGPRS(8PSK)	512	1850.2	241.68	316.93
	661	1880.0	243.13	314.04
	810	1909.8	241.68	309.70

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.16	4.70
	1880.0	4.14	4.70
	1907.6	4.16	4.70
HSDPA	1852.4	4.16	4.70
	1880.0	4.16	4.68
	1907.6	4.16	4.70
HSUPA	1852.4	4.16	4.72
	1880.0	4.16	4.70
	1907.6	4.18	4.68

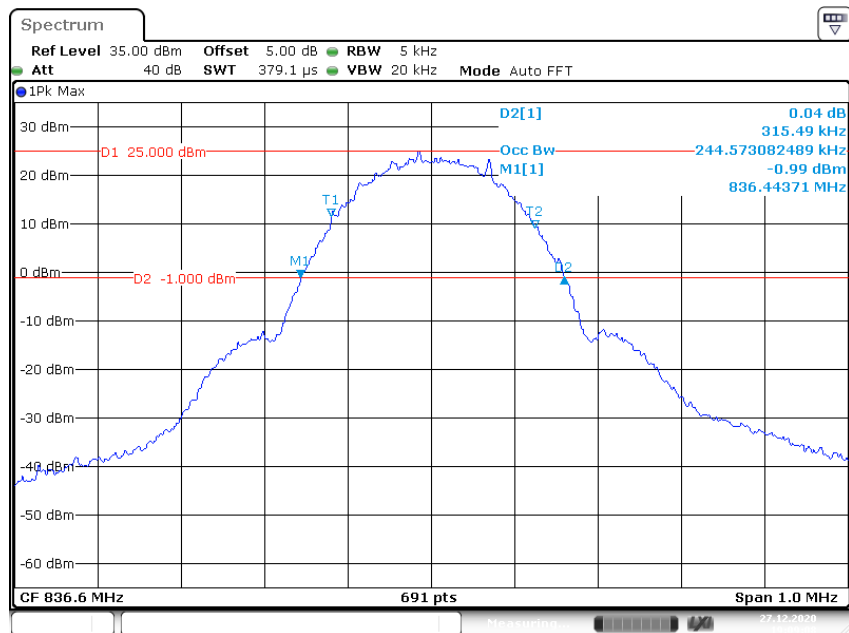
Cellular Band (Part 22H)

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



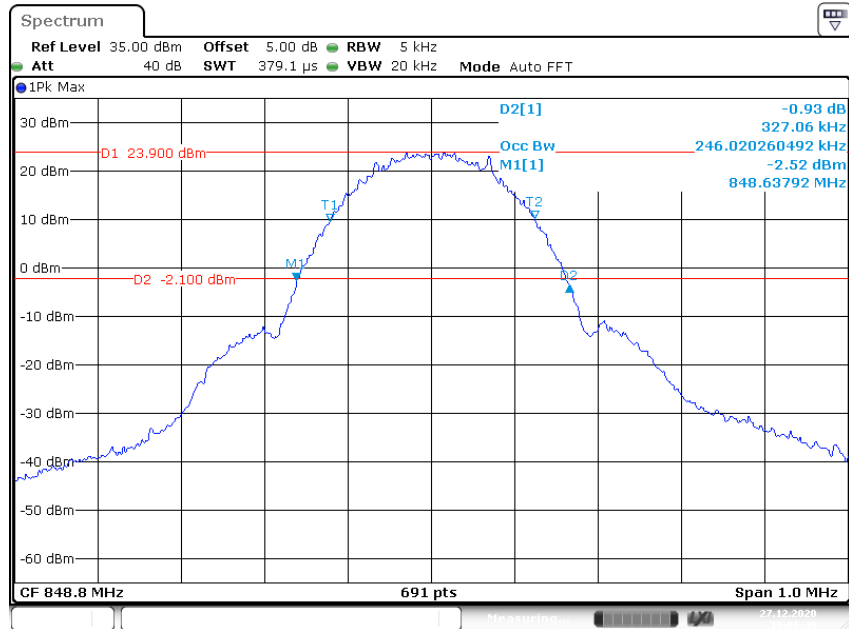
Date: 27.DEC.2020 19:11:02

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



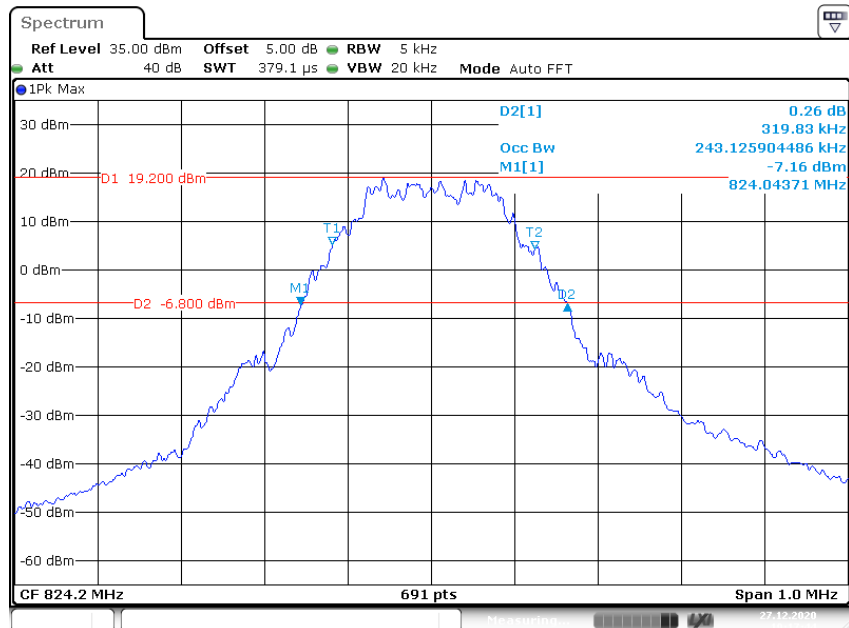
Date: 27.DEC.2020 19:09:08

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



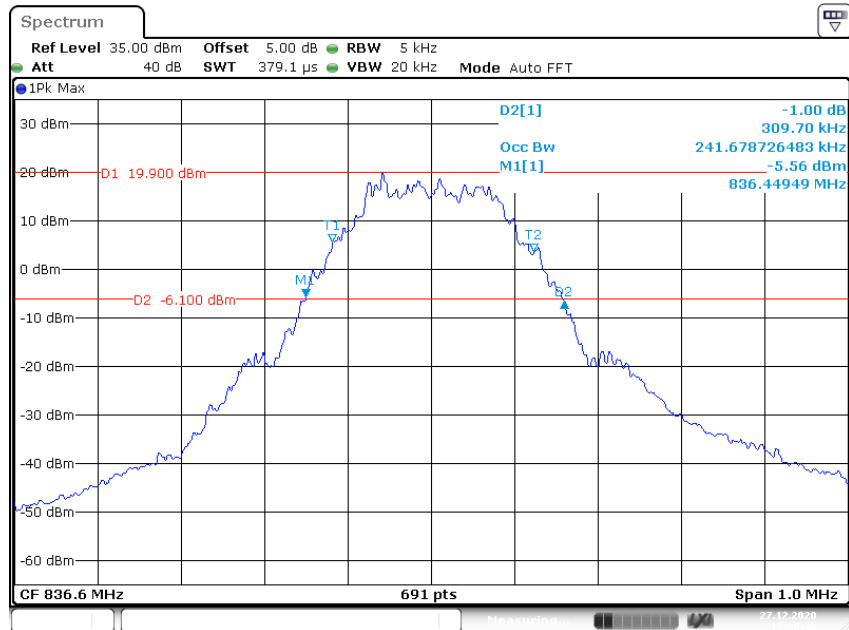
Date: 27.DEC.2020 19:06:49

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



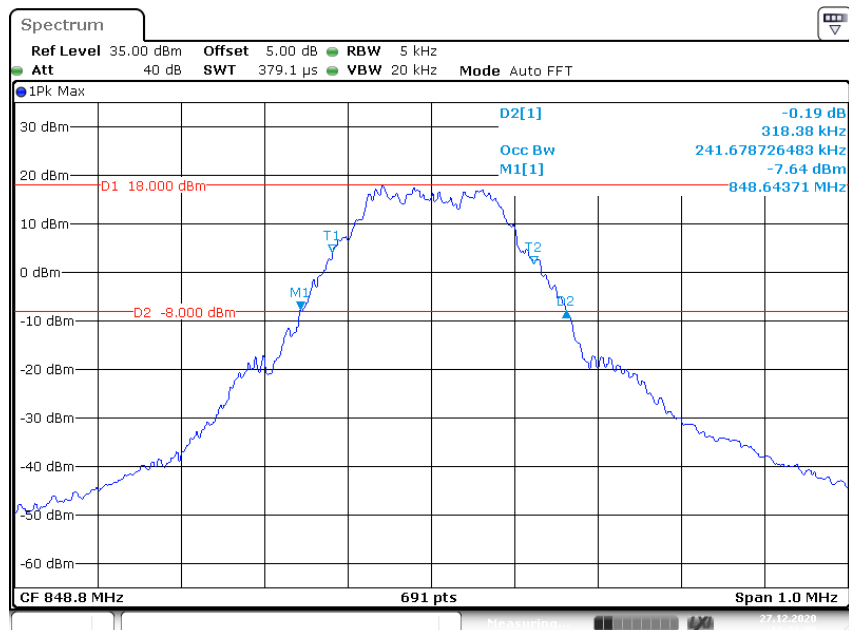
Date: 27.DEC.2020 19:17:44

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



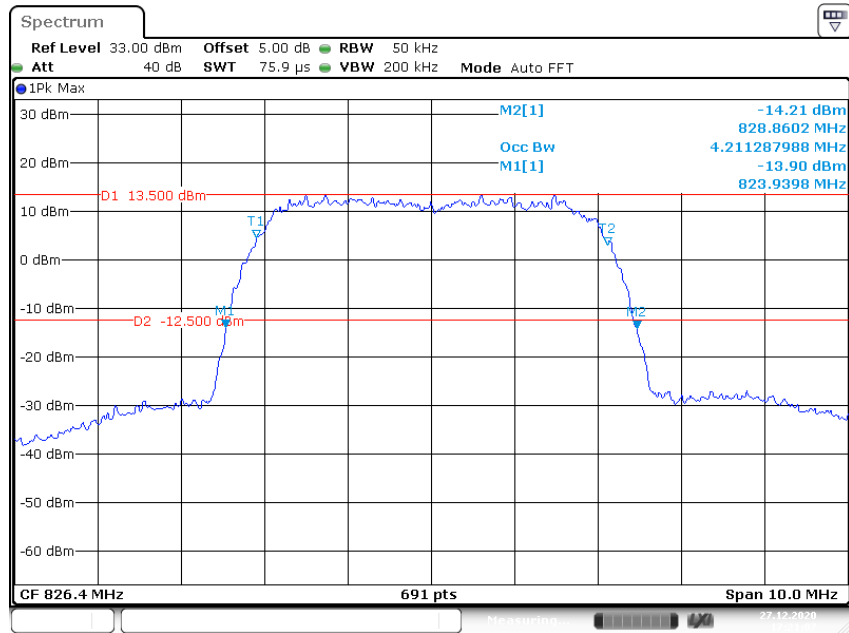
Date: 27.DEC.2020 19:20:40

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

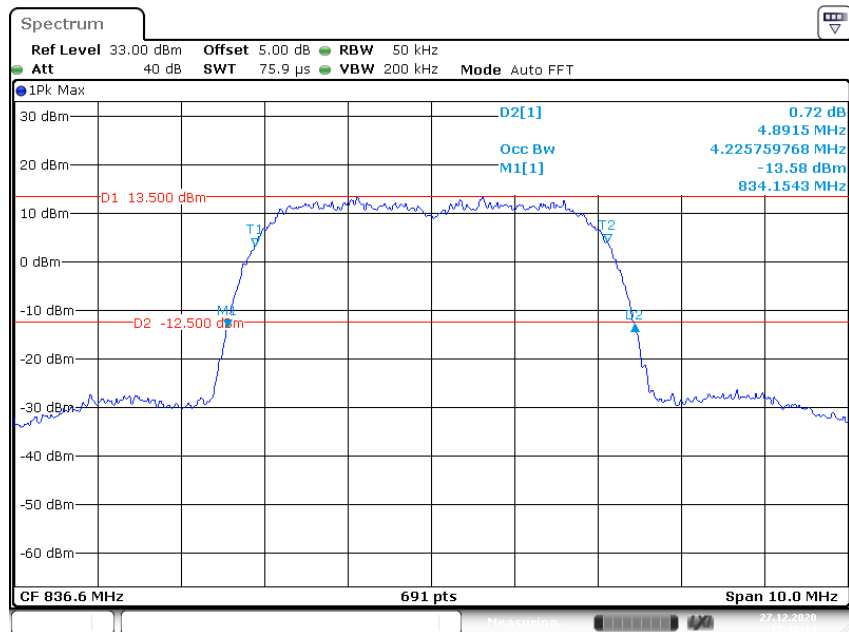


Date: 27.DEC.2020 19:23:30

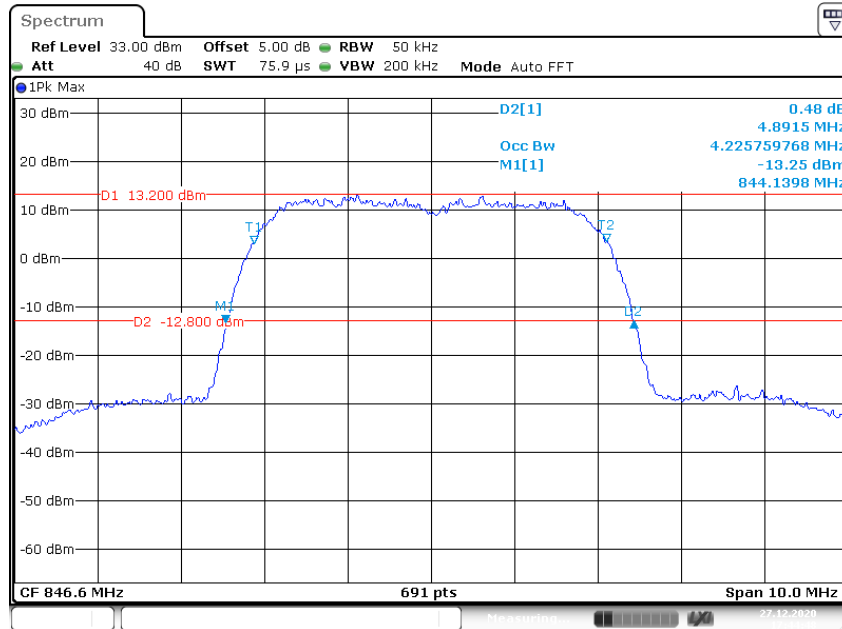
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel



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

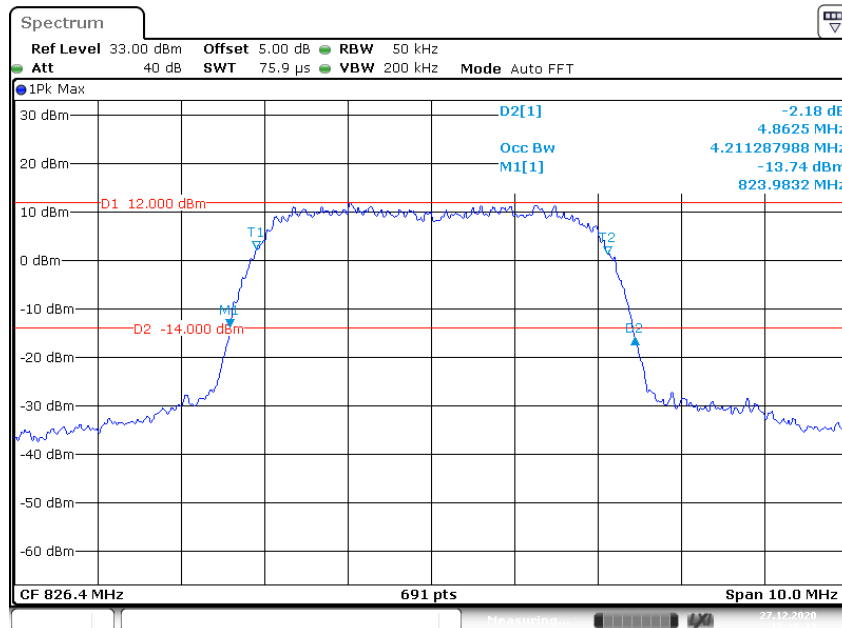


26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel



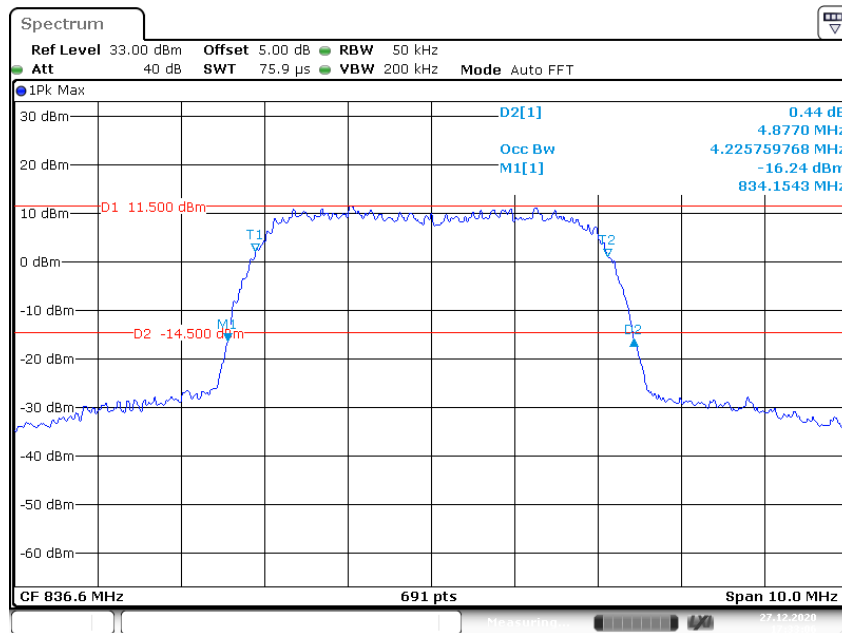
Date: 27.DEC.2020 17:44:49

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



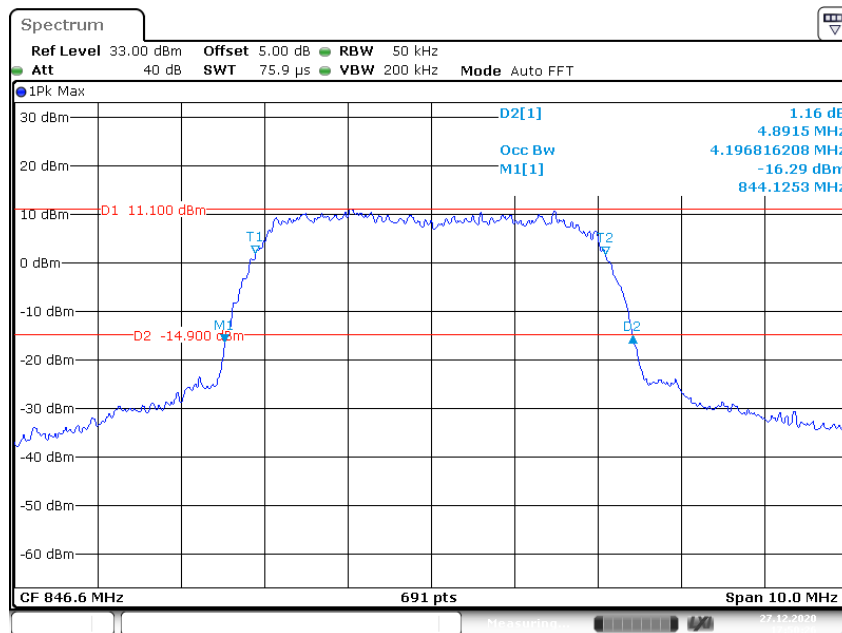
Date: 27.DEC.2020 17:28:23

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



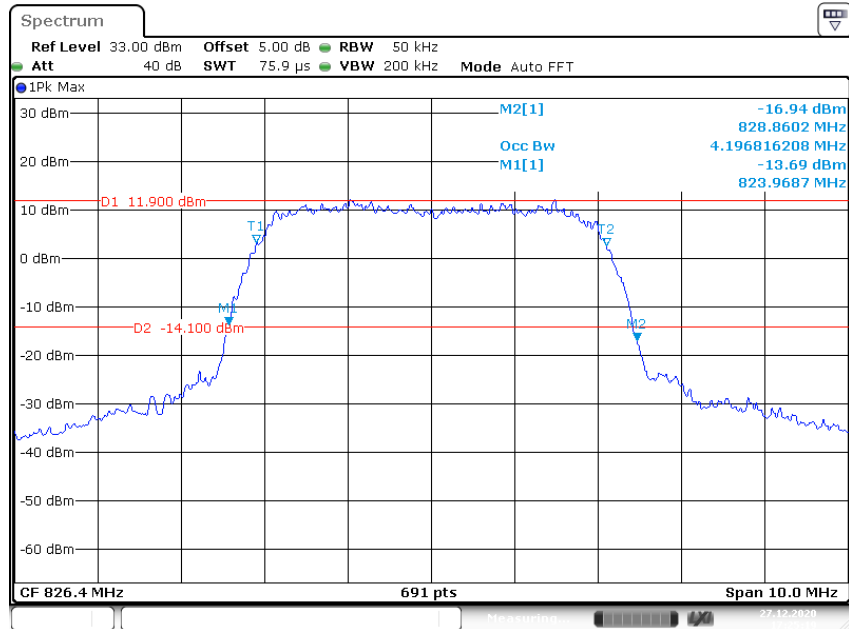
Date: 27.DEC.2020 17:33:07

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



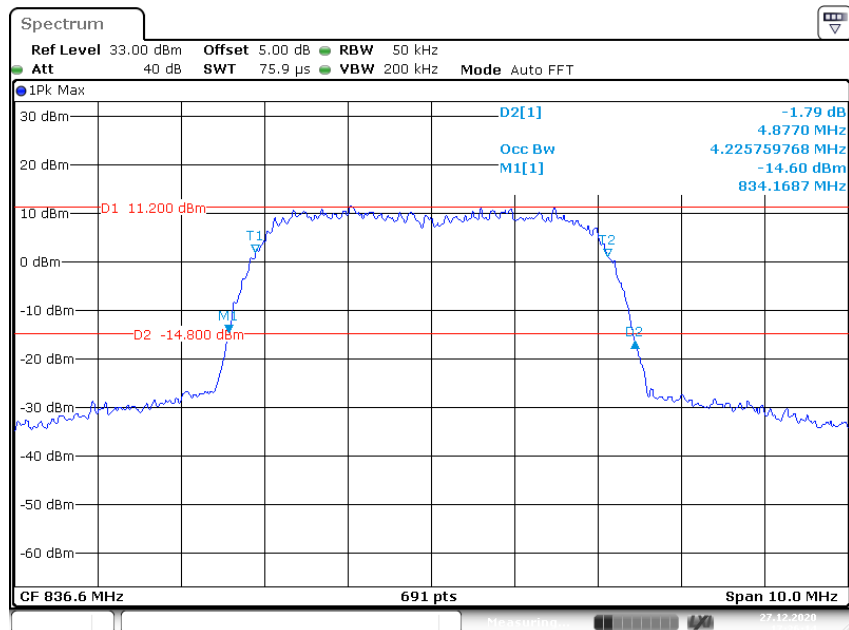
Date: 27.DEC.2020 17:50:27

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



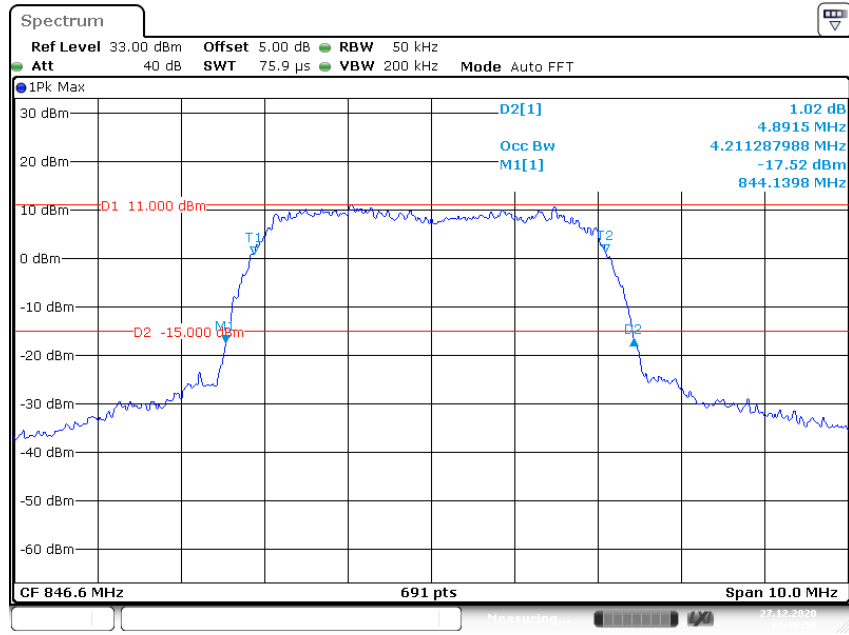
Date: 27.DEC.2020 17:25:20

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



Date: 27.DEC.2020 17:36:15

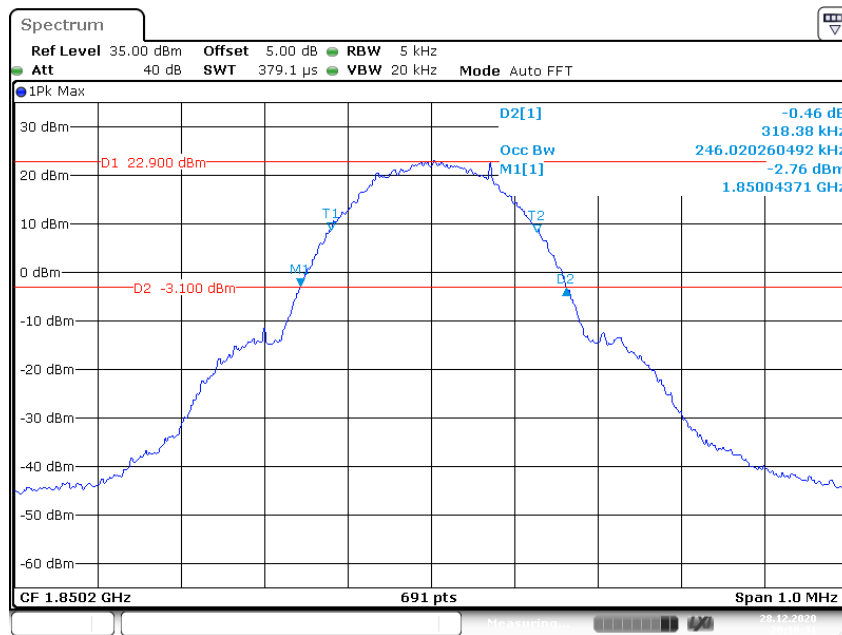
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 27.DEC.2020 17:46:51

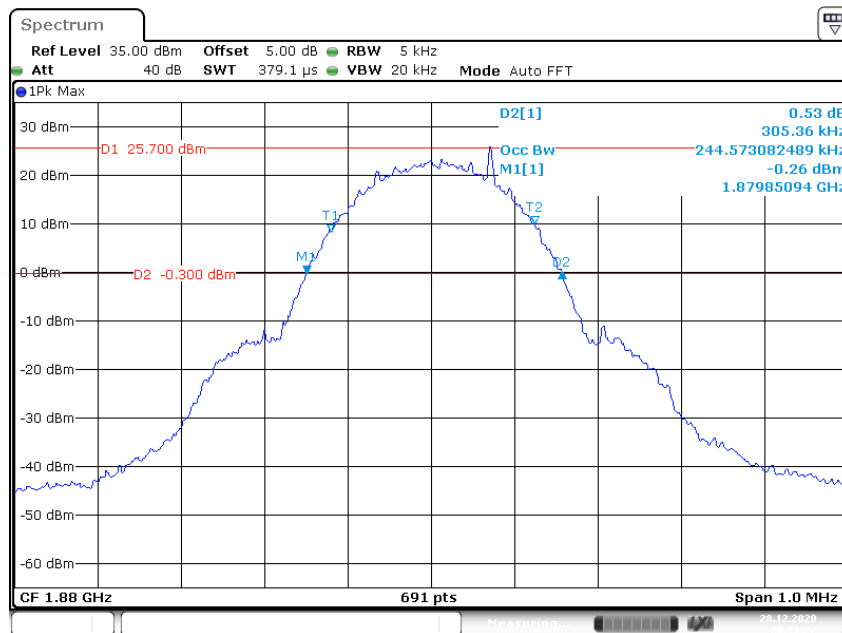
PCS Band (Part 24E)

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



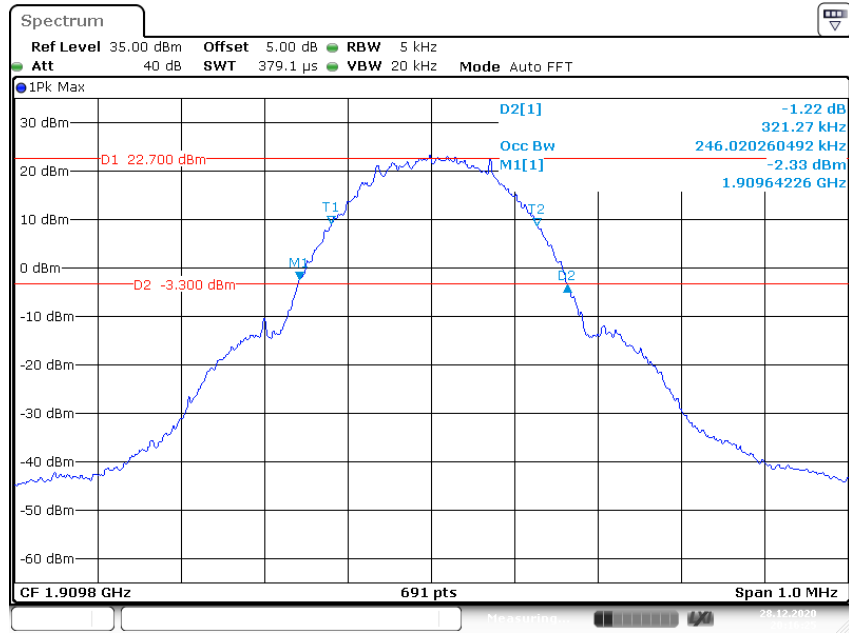
Date: 28.DEC.2020 20:10:31

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



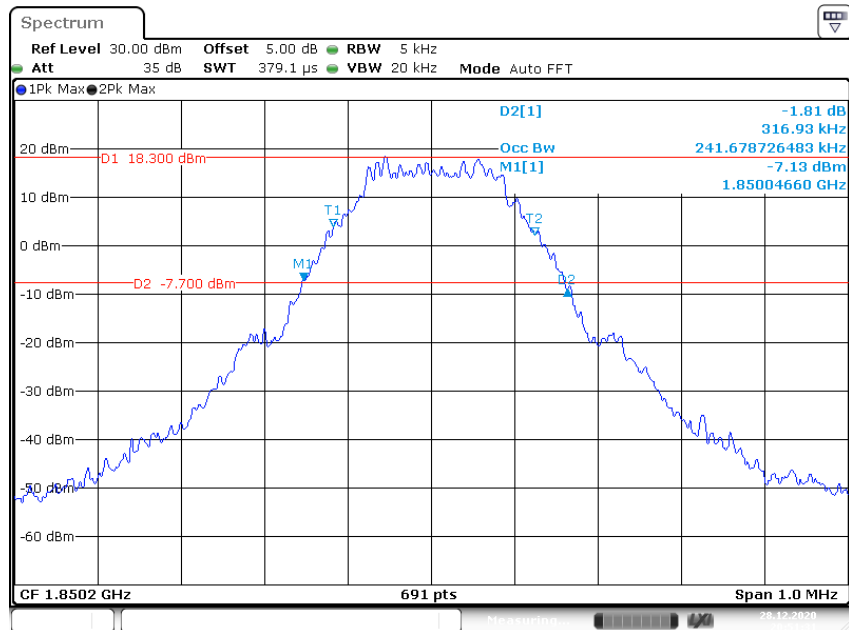
Date: 28.DEC.2020 20:13:23

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



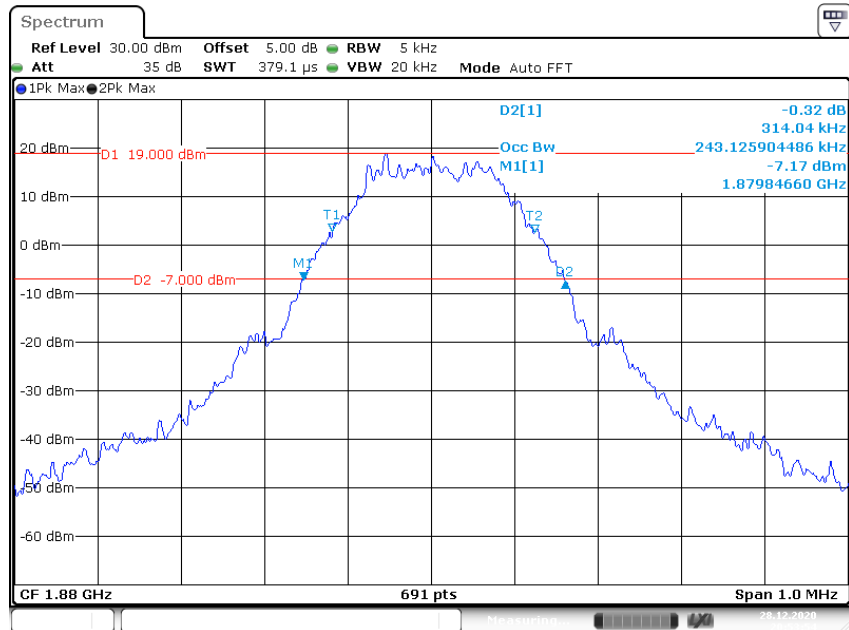
Date: 28.DEC.2020 20:16:26

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



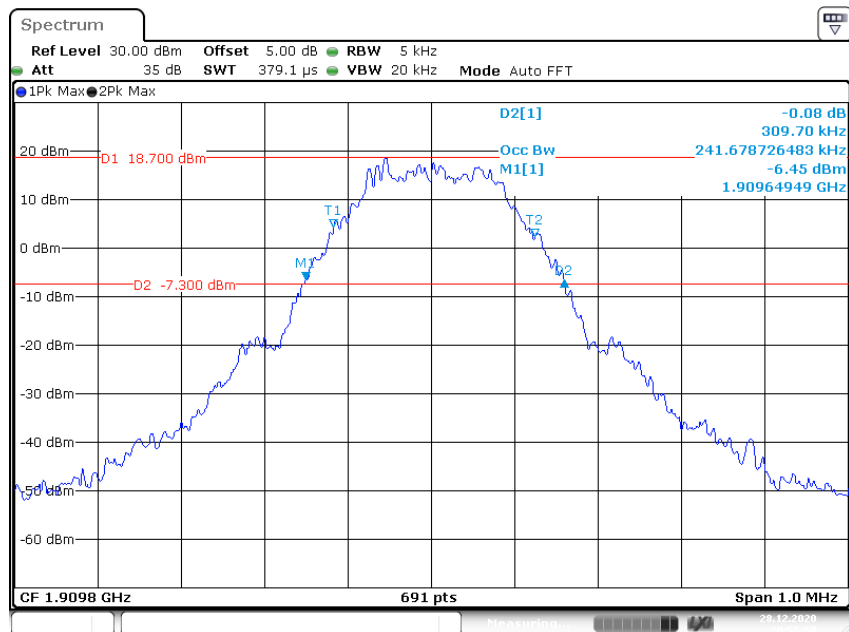
Date: 28.DEC.2020 20:51:31

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



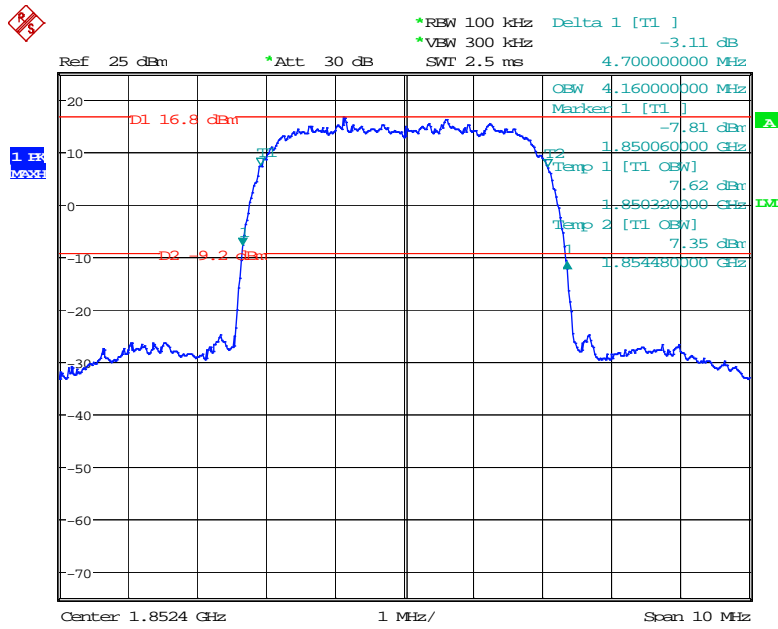
Date: 28.DEC.2020 20:53:55

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



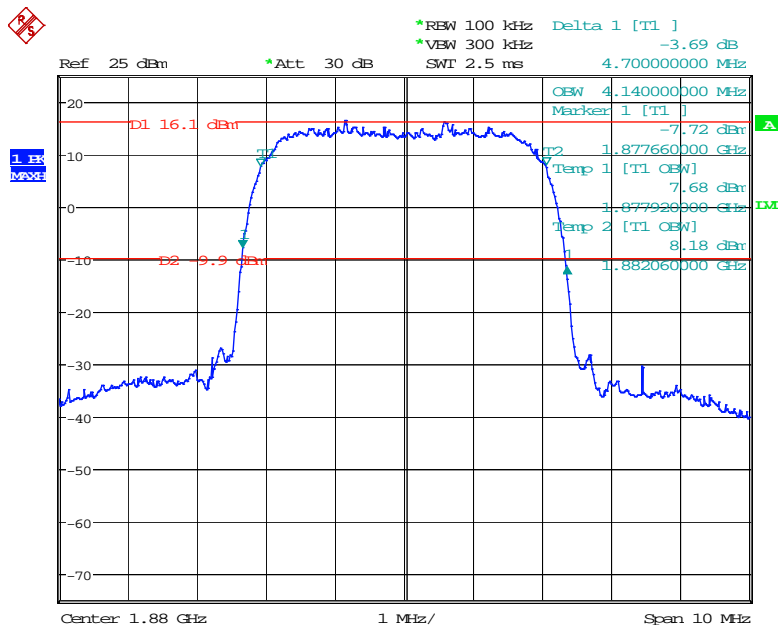
Date: 28.DEC.2020 20:55:51

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



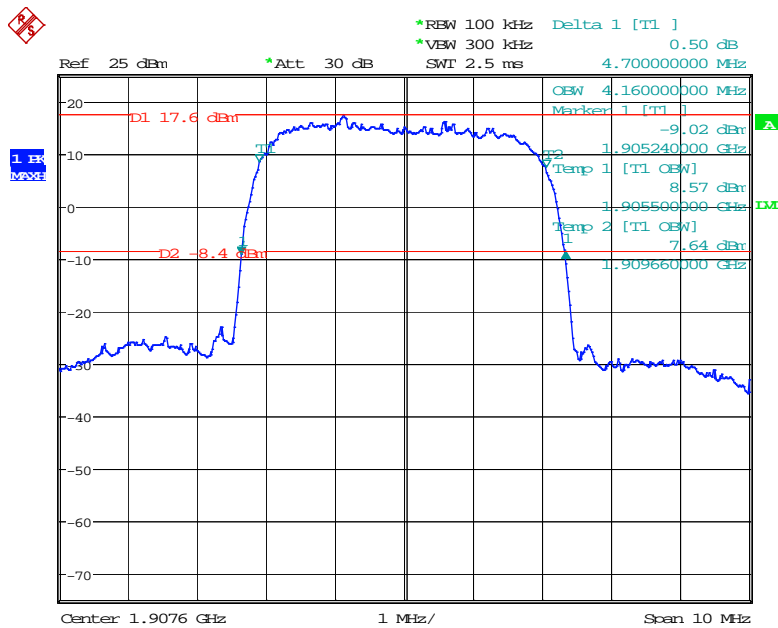
Date: 29.DEC.2020 16:11:24

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



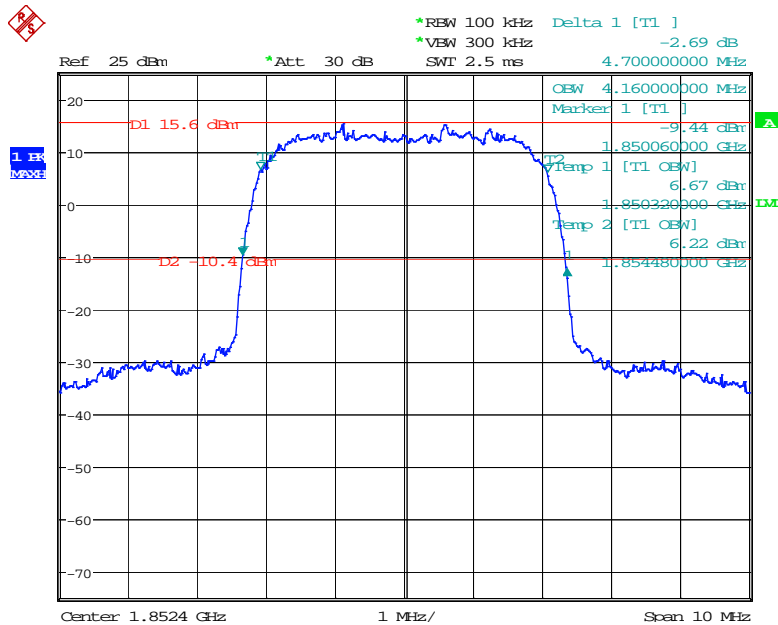
Date: 29.DEC.2020 16:14:49

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



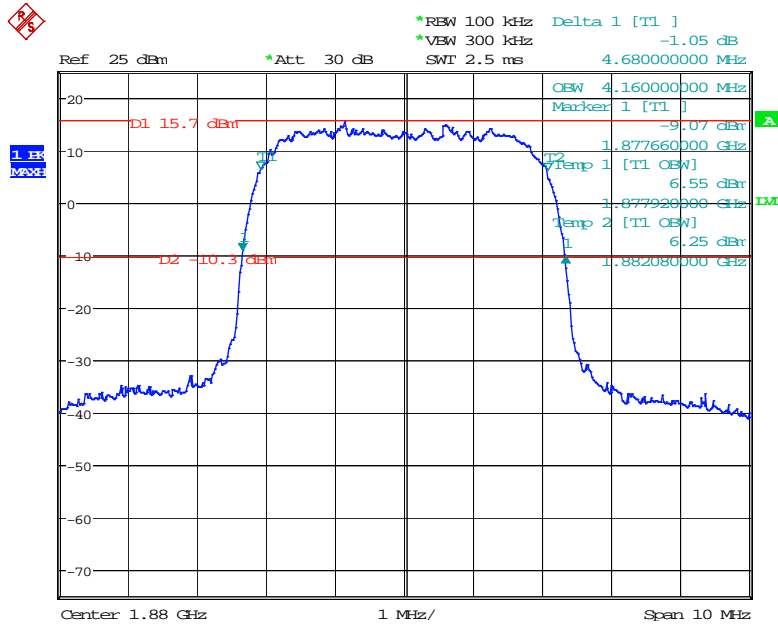
Date: 29.DEC.2020 16:18:14

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



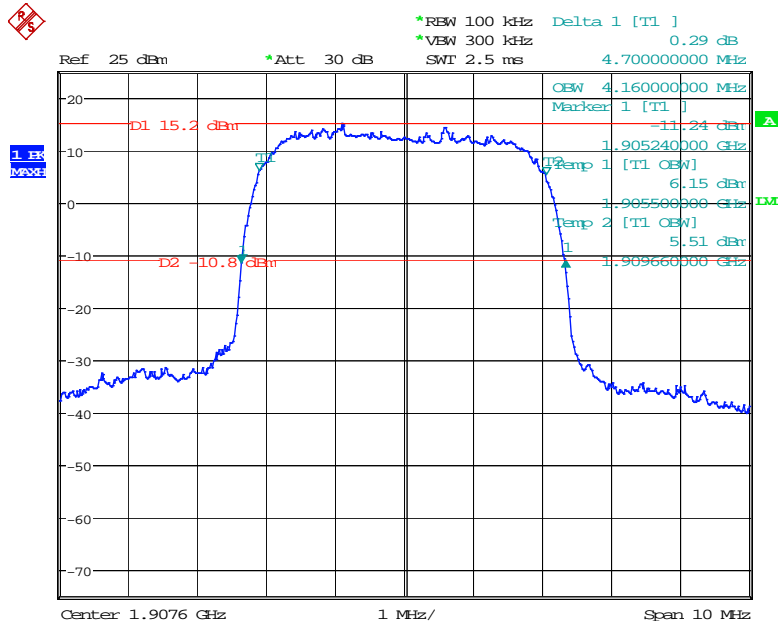
Date: 29.DEC.2020 16:41:07

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



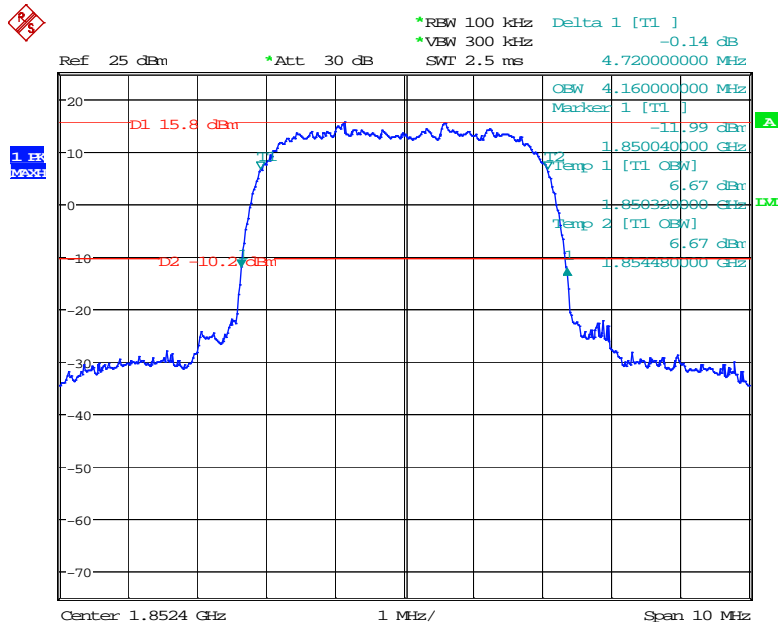
Date: 29.DEC.2020 16:38:56

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



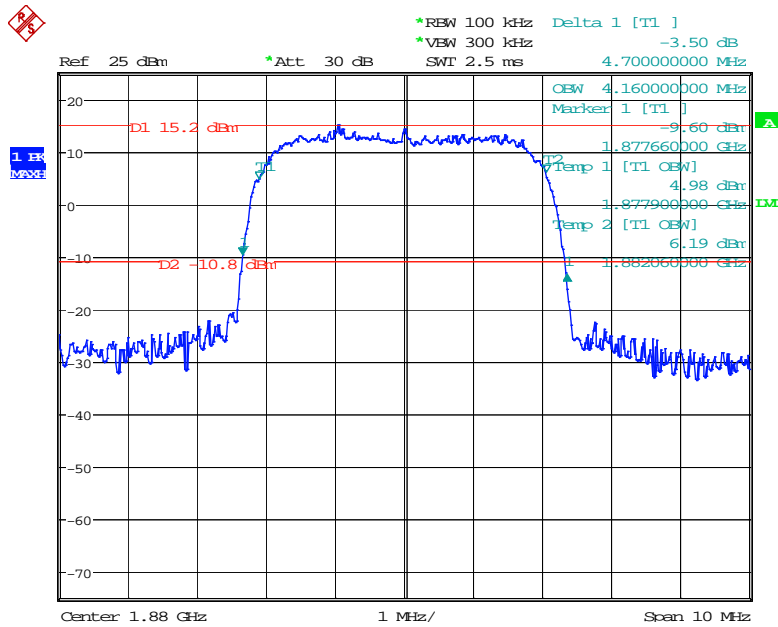
Date: 29.DEC.2020 16:27:09

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



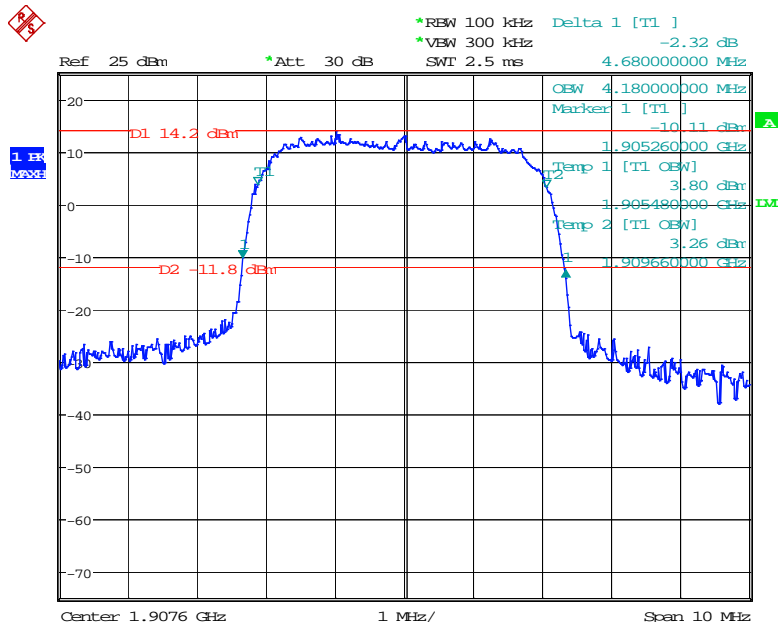
Date: 29.DEC.2020 16:48:35

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



Date: 29.DEC.2020 16:58:30

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

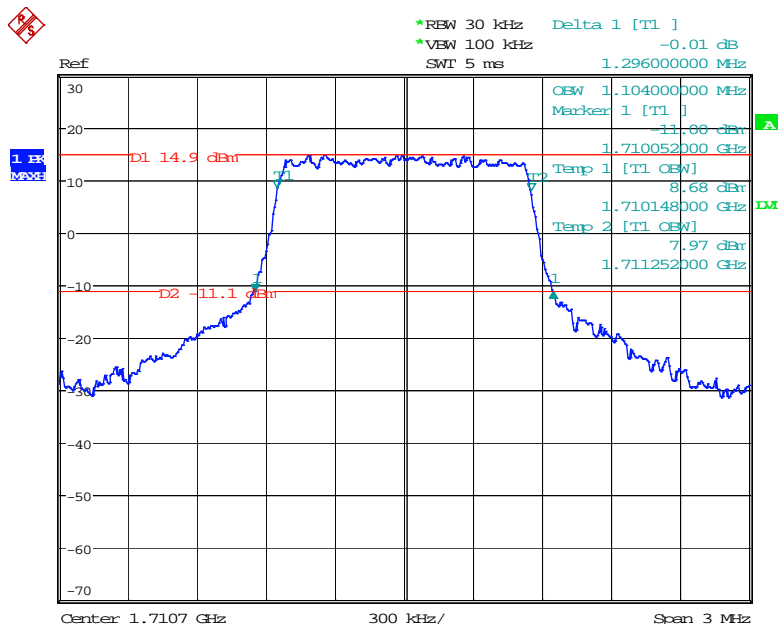


Date: 29.DEC.2020 17:00:48

LTE Band 4:

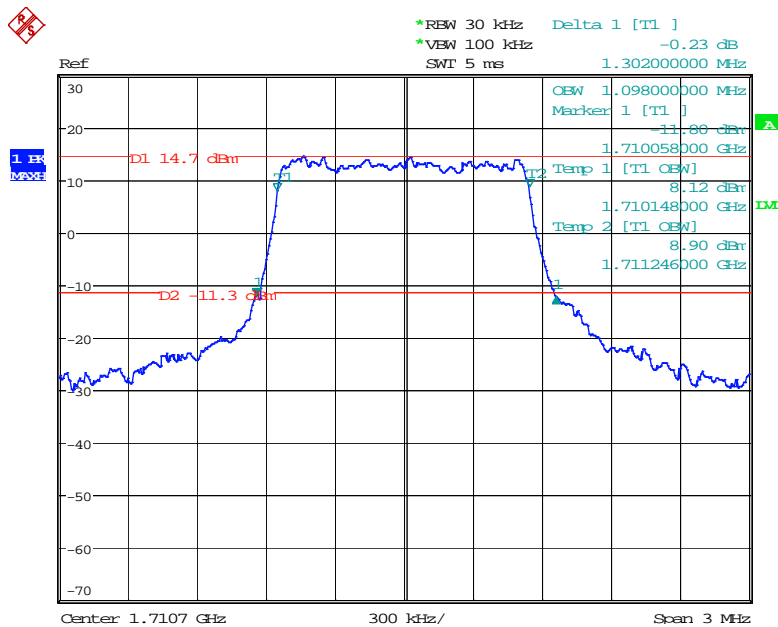
Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.10	1.30
		Middle	1.11	1.31
		High	1.11	1.31
	16QAM	Low	1.10	1.30
		Middle	1.10	1.24
		High	1.10	1.31
3	QPSK	Low	2.70	3.04
		Middle	2.70	3.02
		High	2.70	3.02
	16QAM	Low	2.70	3.02
		Middle	2.70	2.98
		High	2.70	3.04
5	QPSK	Low	4.56	5.26
		Middle	4.56	5.92
		High	4.54	5.26
	16QAM	Low	4.54	5.38
		Middle	4.56	5.48
		High	4.56	5.40
10	QPSK	Low	8.96	9.78
		Middle	9.0	9.96
		High	9.0	9.80
	16QAM	Low	9.0	9.96
		Middle	9.0	10.16
		High	8.96	9.80
15	QPSK	Low	13.56	15.60
		Middle	13.62	16.20
		High	13.62	15.66
	16QAM	Low	13.62	15.54
		Middle	13.56	15.17
		High	13.62	15.30
20	QPSK	Low	18.00	20.12
		Middle	18.08	20.14
		High	18.08	20.14
	16QAM	Low	18.08	20.00
		Middle	18.08	20.32
		High	17.95	19.97

QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



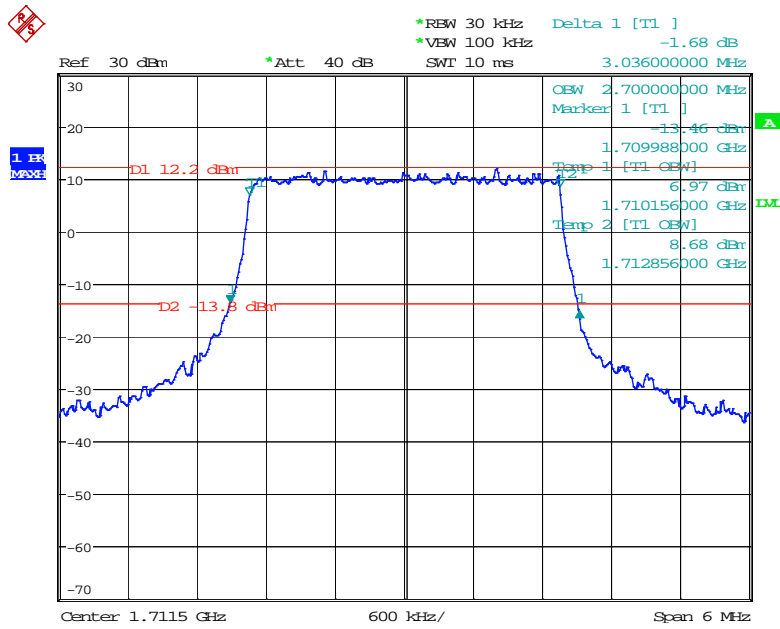
Date: 30.DEC.2020 10:05:14

16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



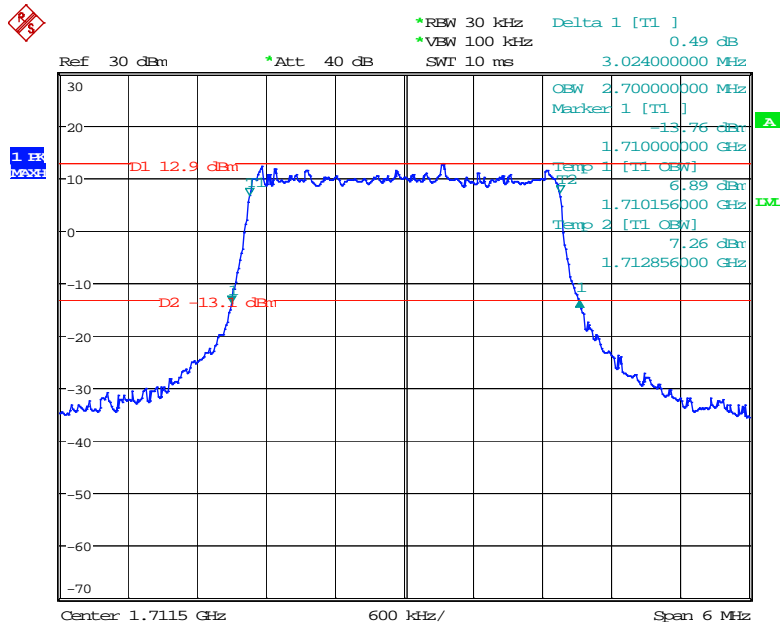
Date: 30.DEC.2020 10:03:11

QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



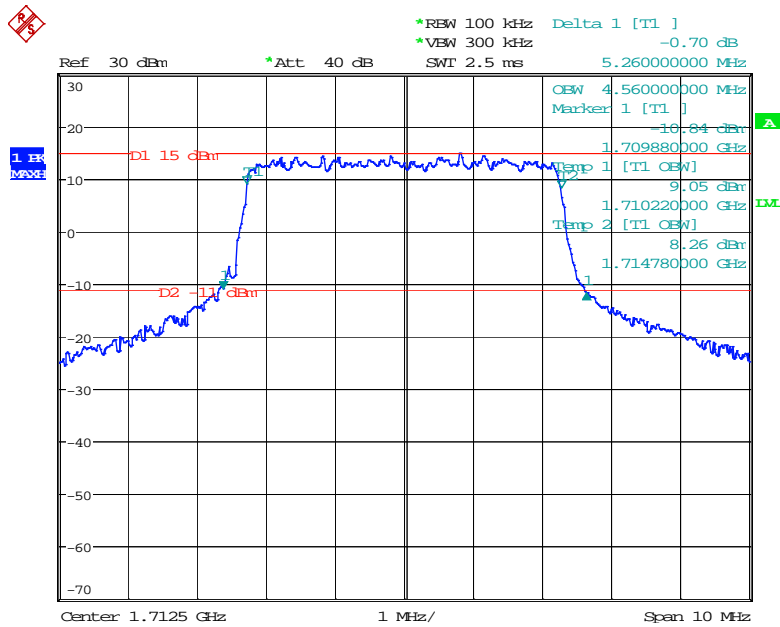
Date: 29.DEC.2020 19:32:35

16-QAM (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



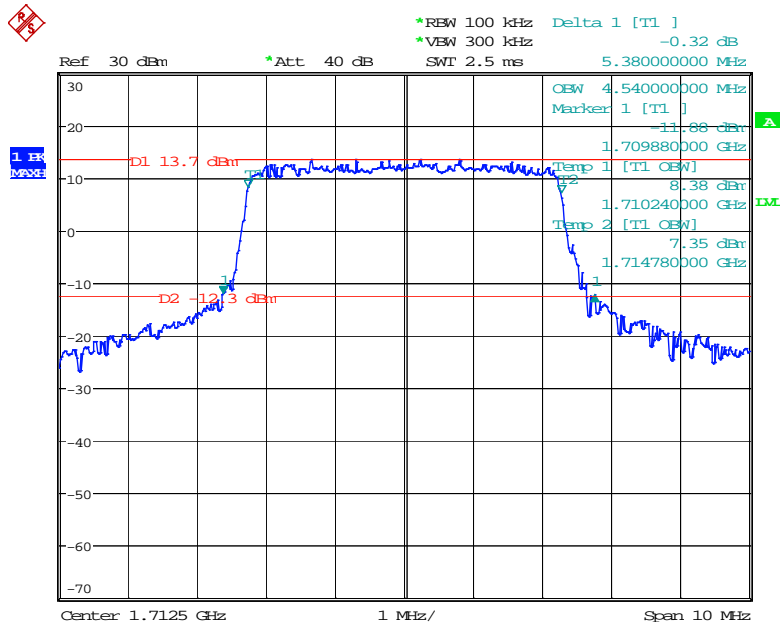
Date: 29.DEC.2020 19:40:31

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



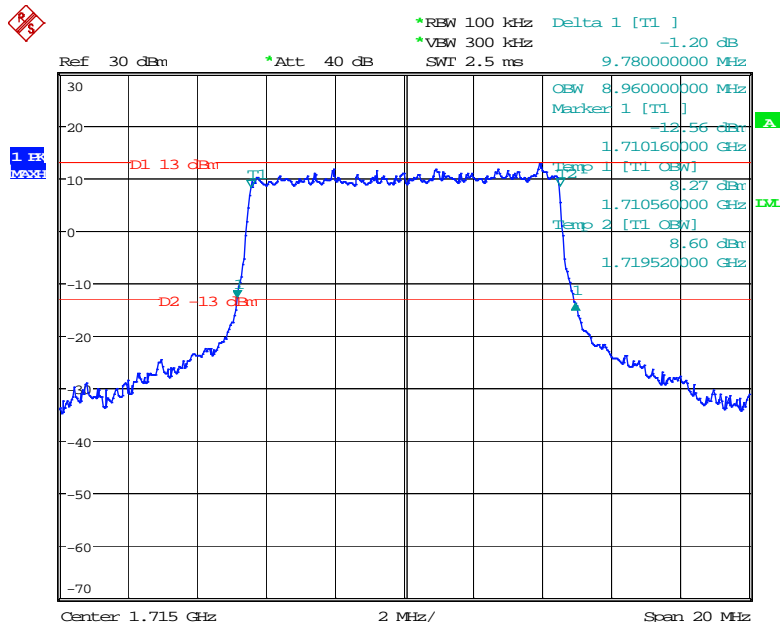
Date: 29.DEC.2020 20:00:09

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



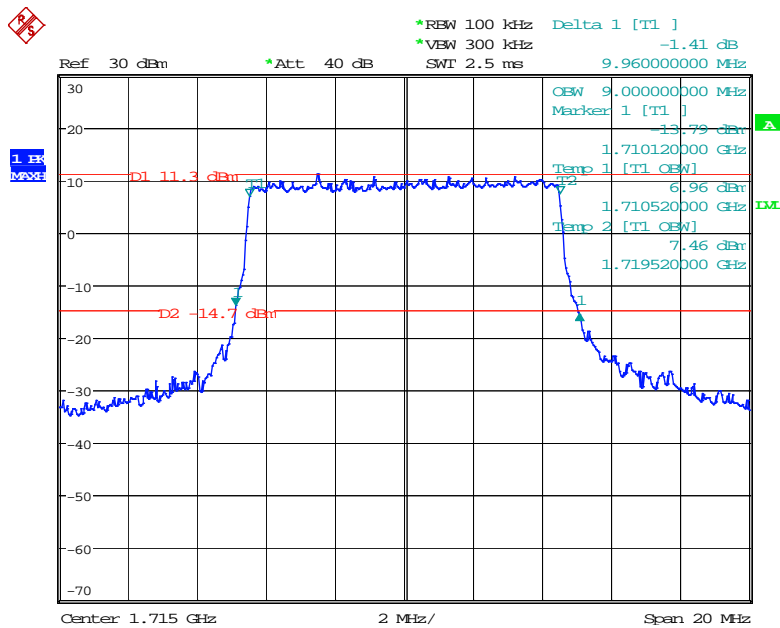
Date: 29.DEC.2020 20:01:26

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



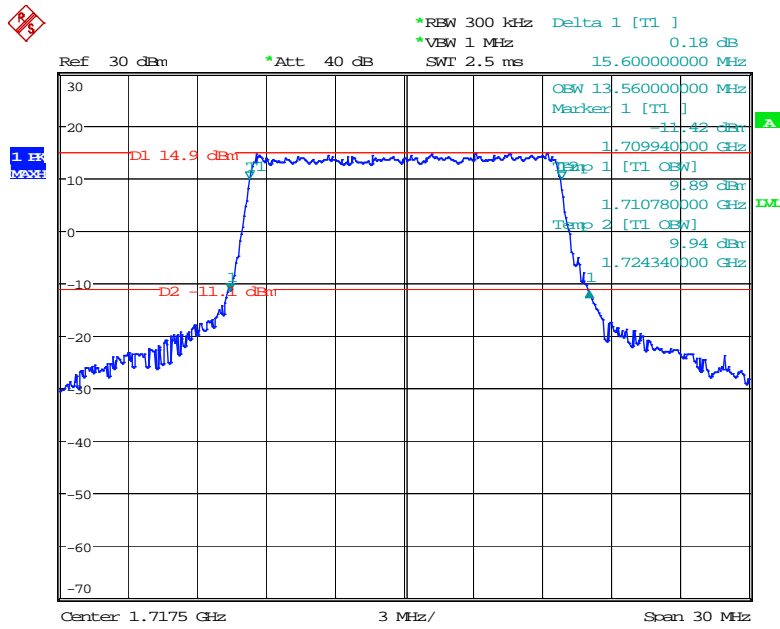
Date: 29.DEC.2020 20:04:17

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



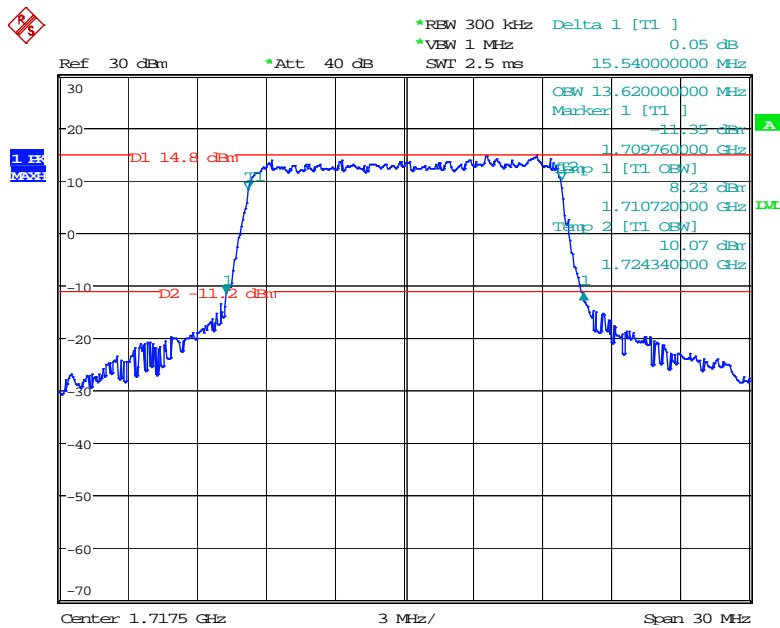
Date: 29.DEC.2020 20:06:18

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



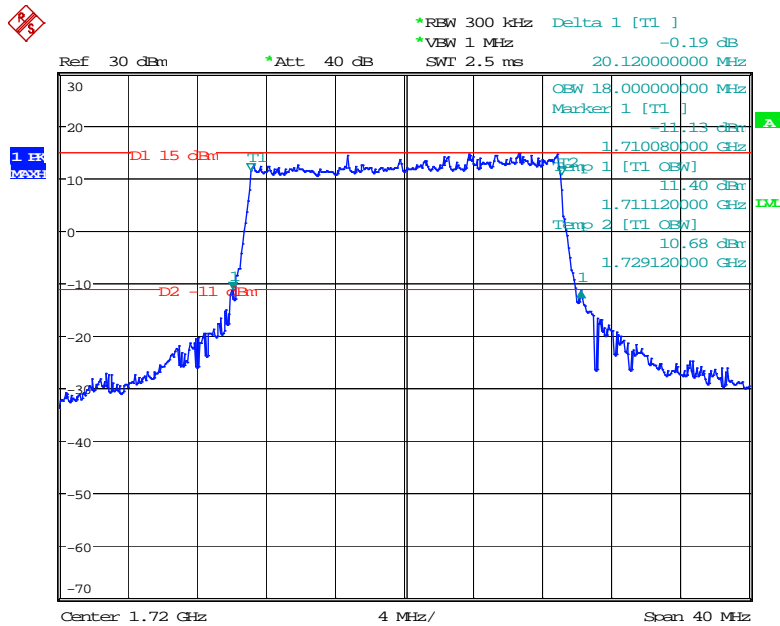
Date: 29.DEC.2020 20:17:31

16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel

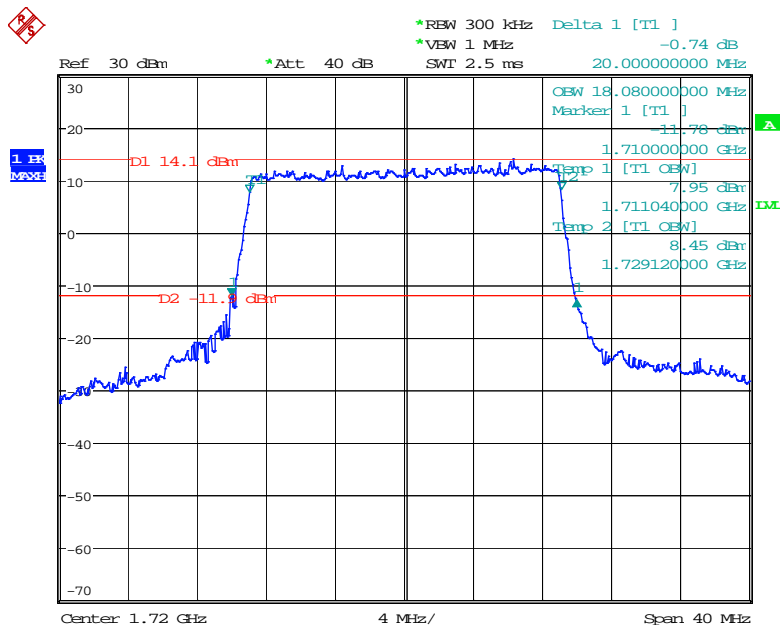


Date: 29.DEC.2020 20:19:52

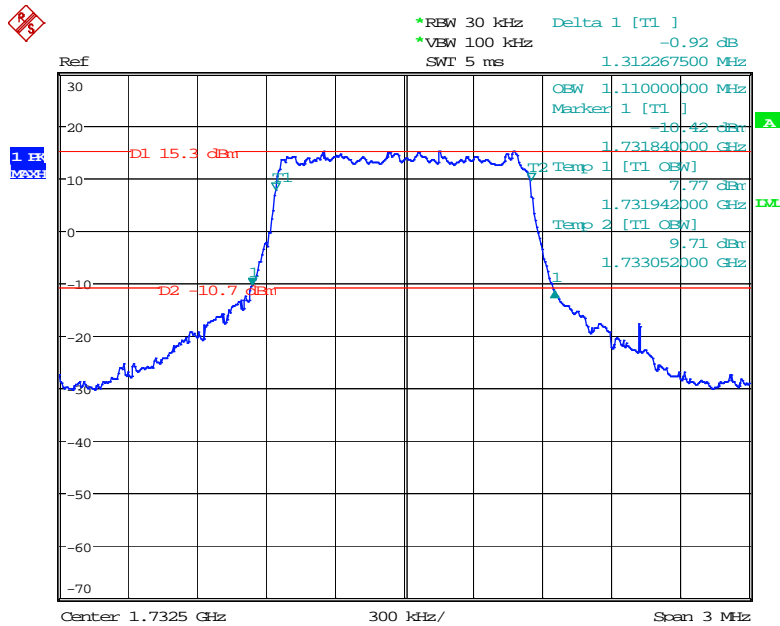
QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel

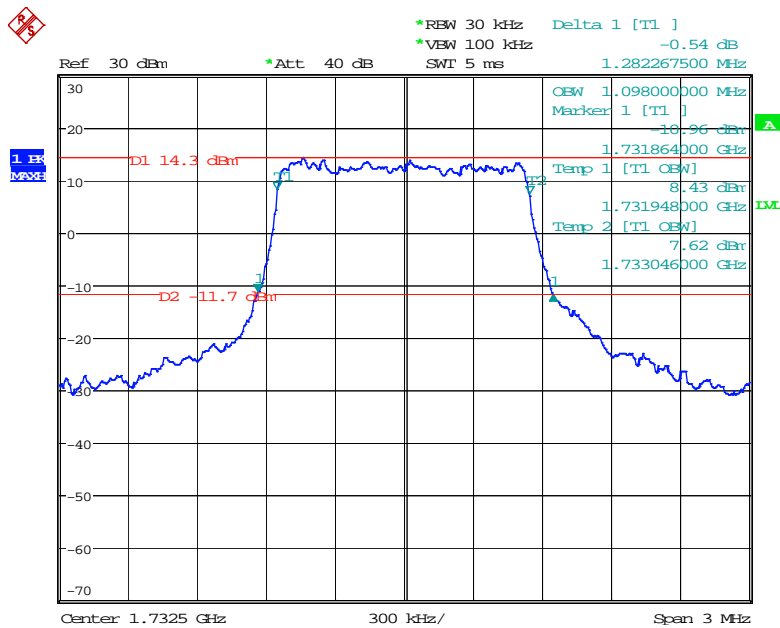


QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



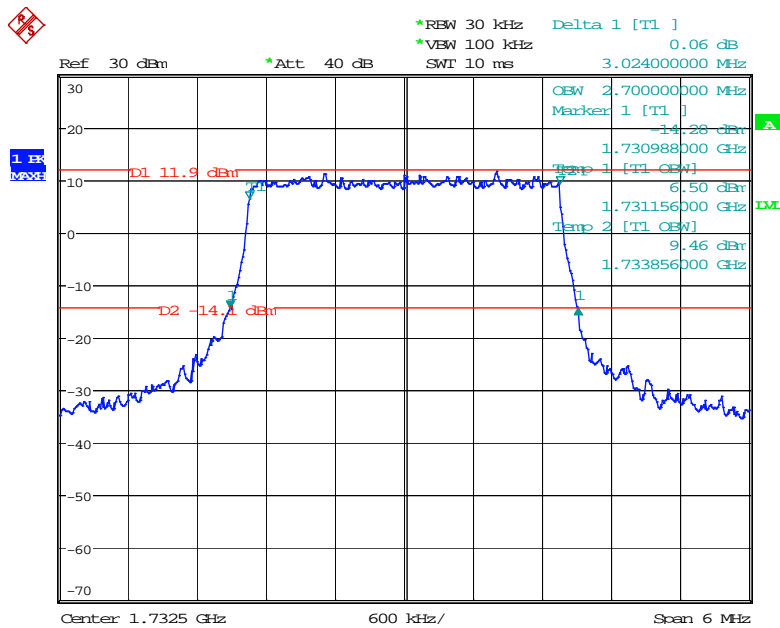
Date: 30.DEC.2020 10:07:06

16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



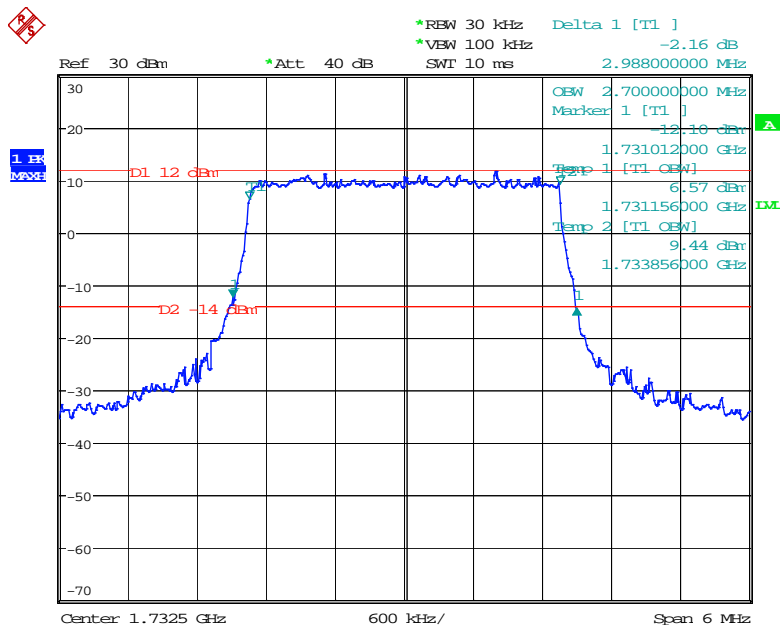
Date: 29.DEC.2020 19:24:18

QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



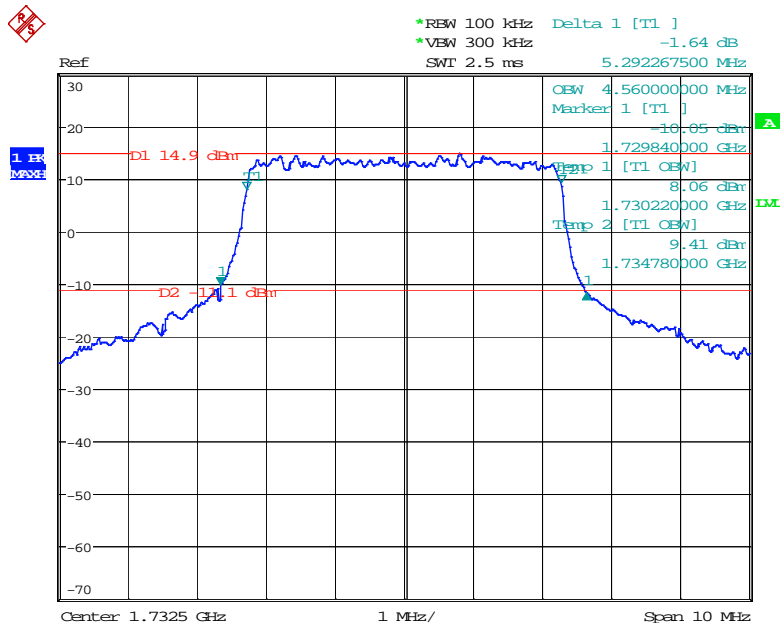
Date: 29.DEC.2020 19:43:15

16-QAM (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



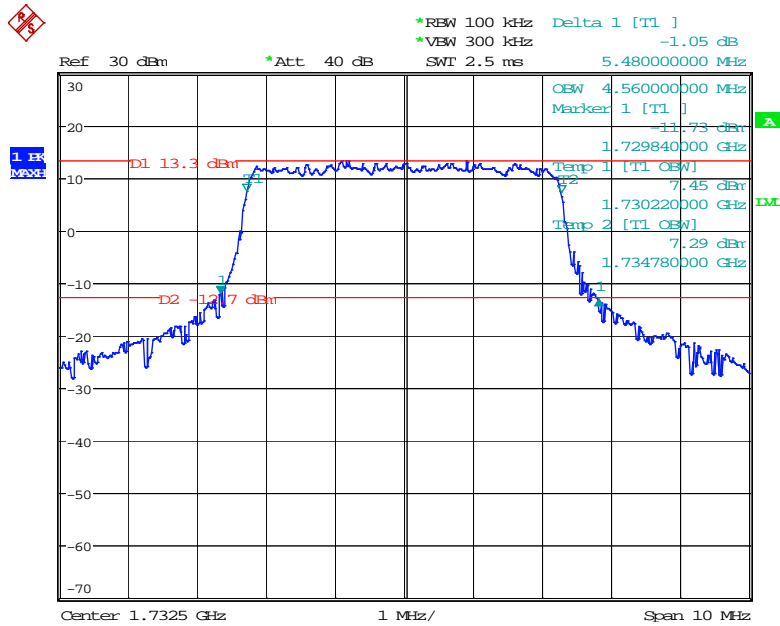
Date: 29.DEC.2020 19:42:13

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



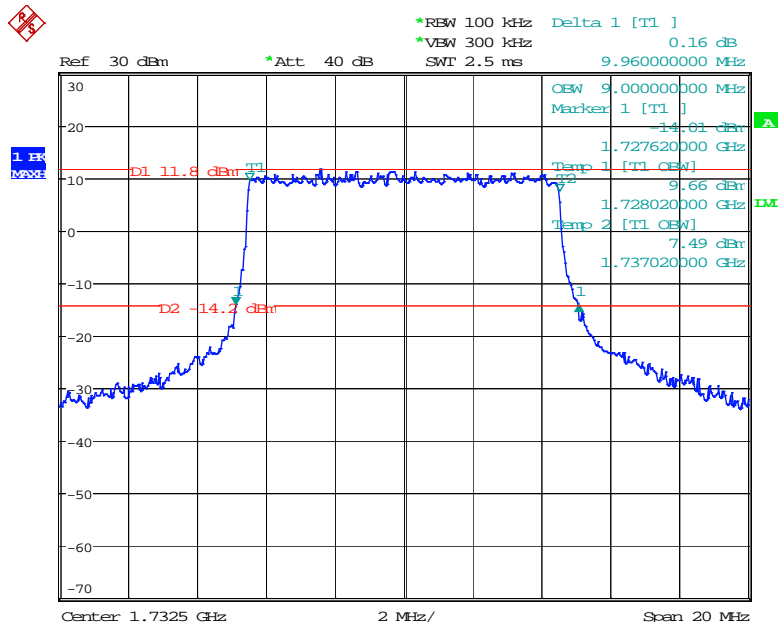
Date: 30.DEC.2020 10:10:29

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



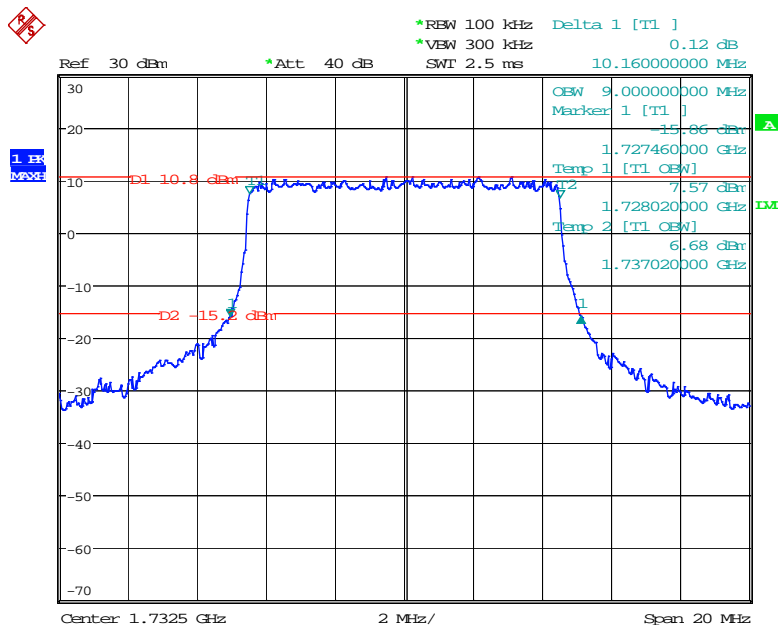
Date: 29.DEC.2020 19:55:40

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



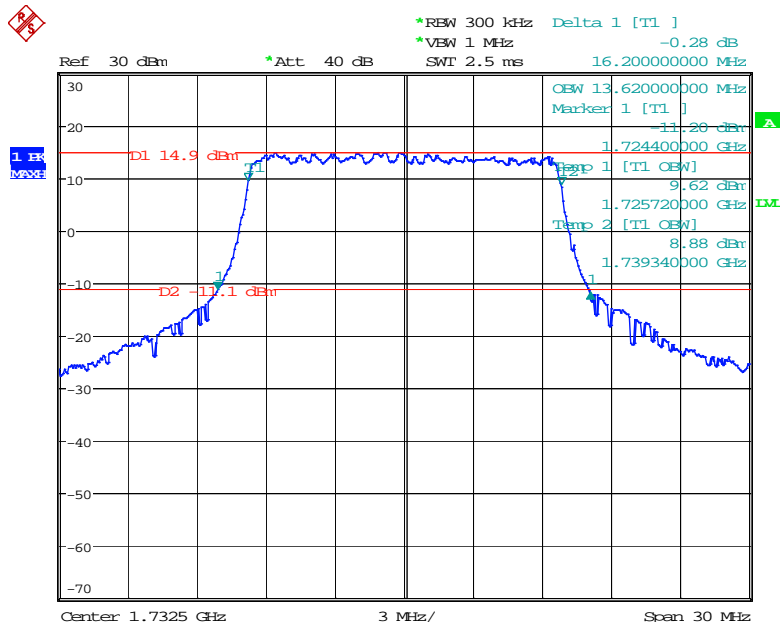
Date: 29.DEC.2020 20:10:34

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



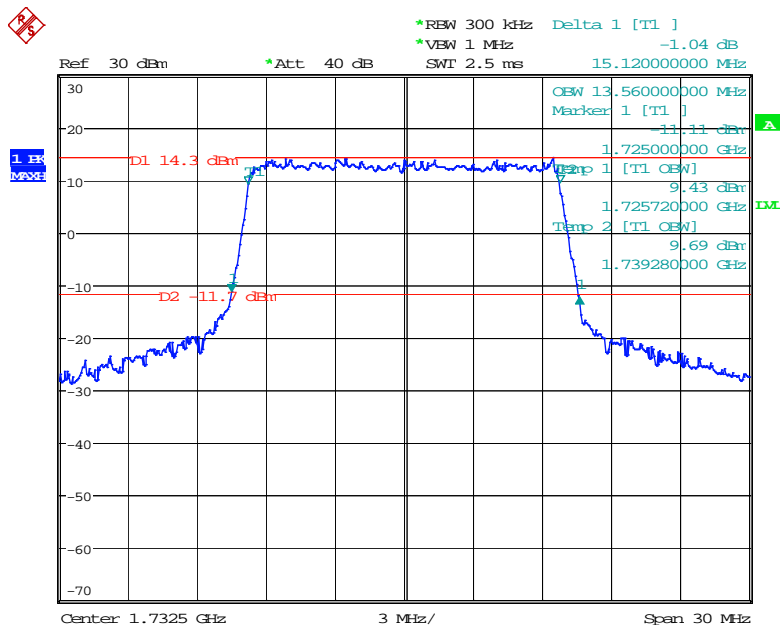
Date: 29.DEC.2020 20:09:00

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



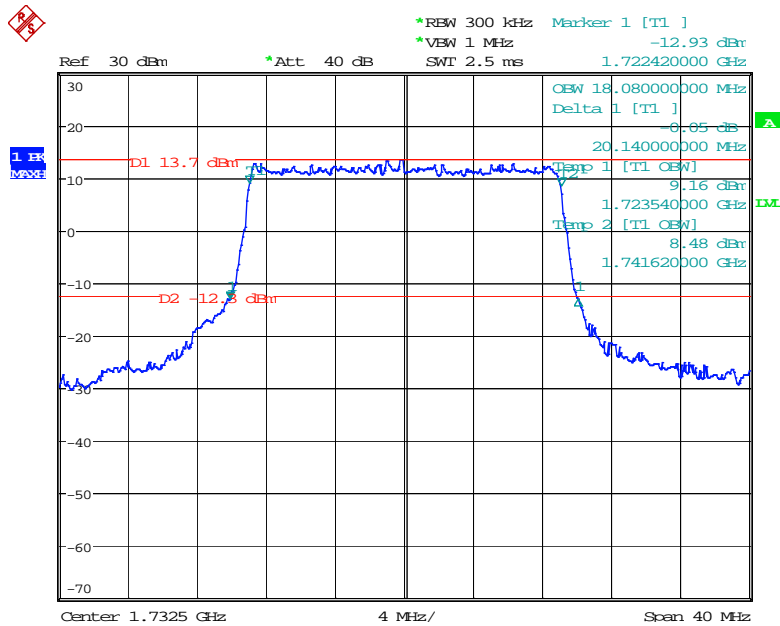
Date: 29.DEC.2020 20:23:48

16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



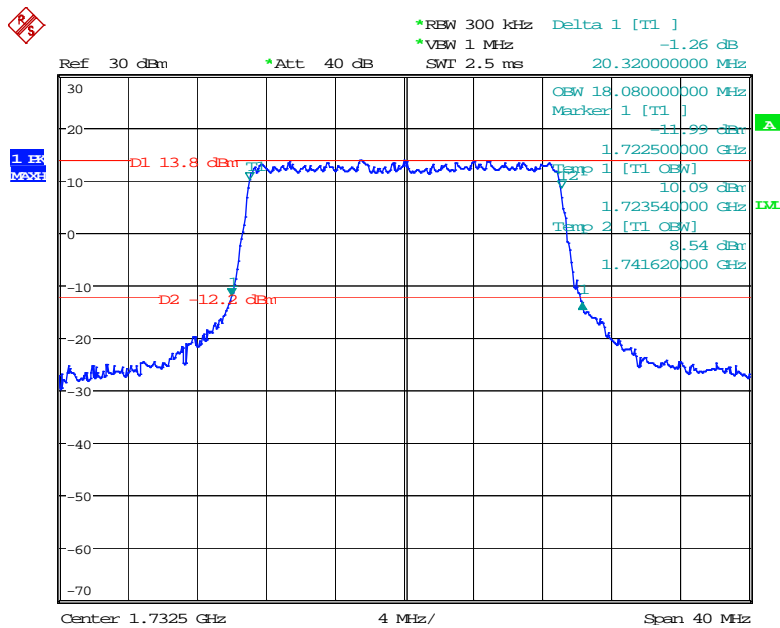
Date: 29.DEC.2020 20:21:30

QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



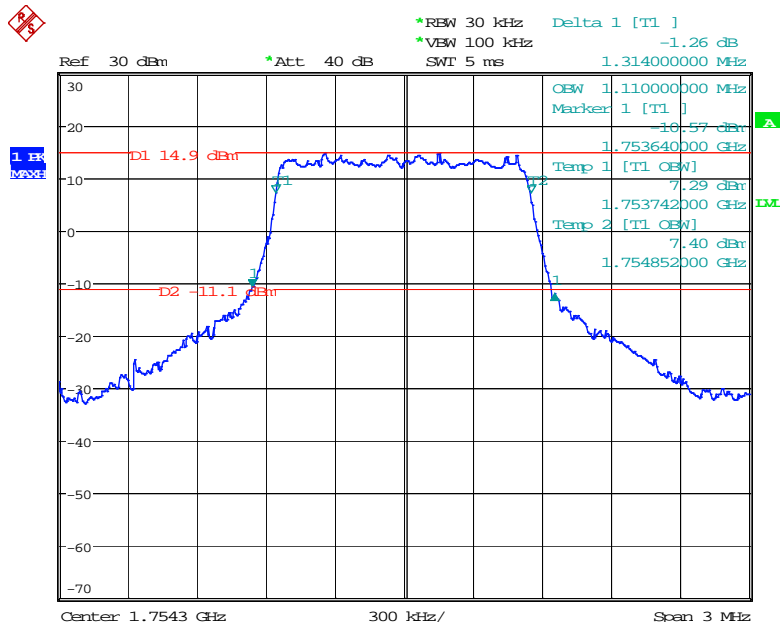
Date: 29.DEC.2020 20:33:52

16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



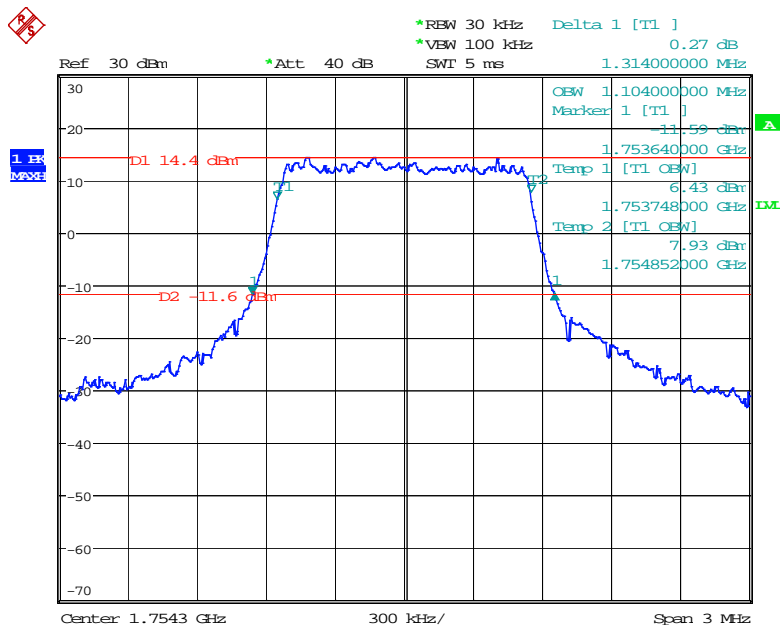
Date: 29.DEC.2020 20:35:50

QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



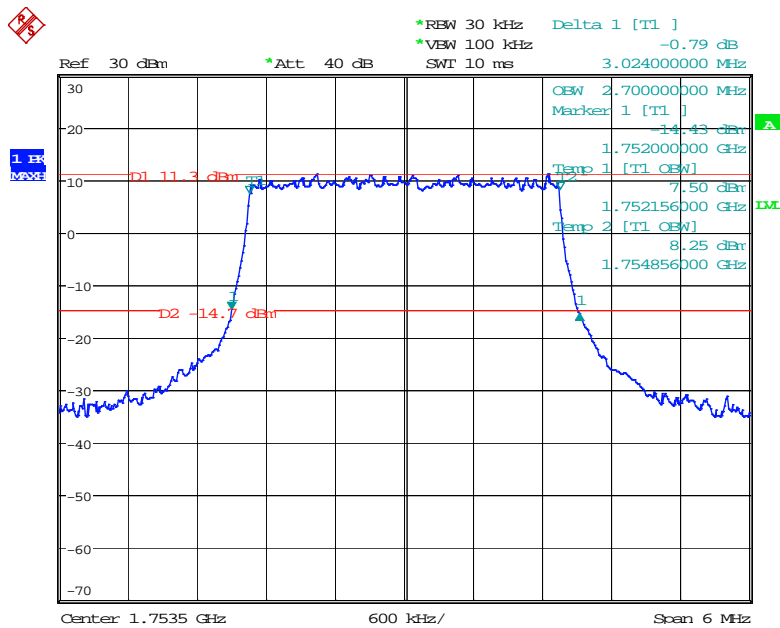
Date: 29.DEC.2020 19:27:14

16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



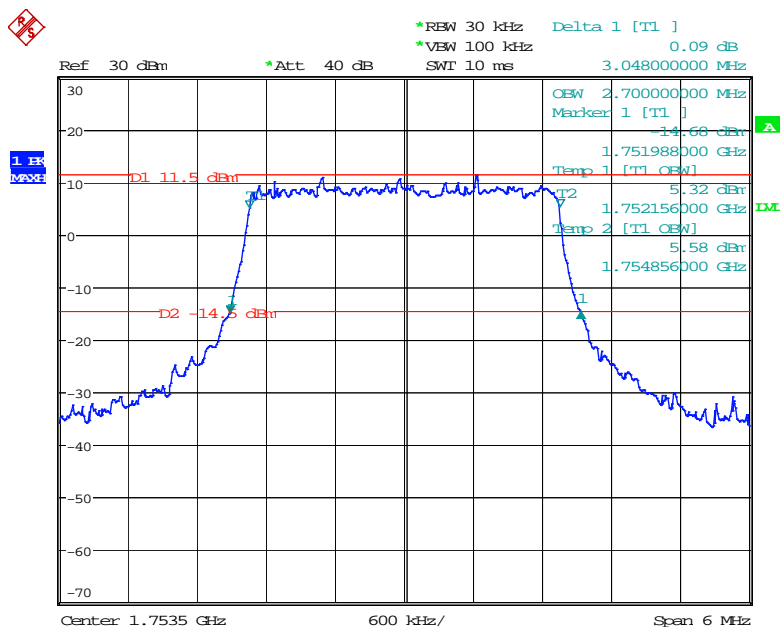
Date: 29.DEC.2020 19:28:40

QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



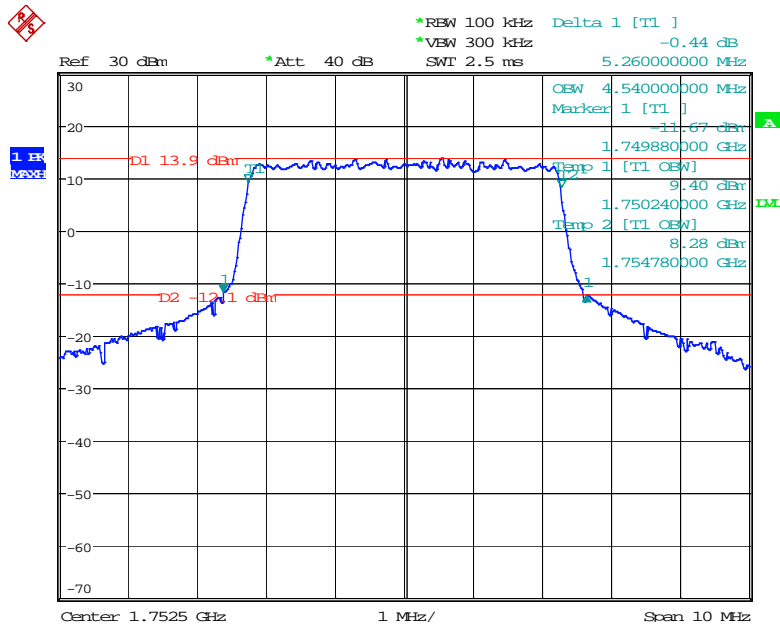
Date: 29.DEC.2020 19:45:26

16-QAM (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



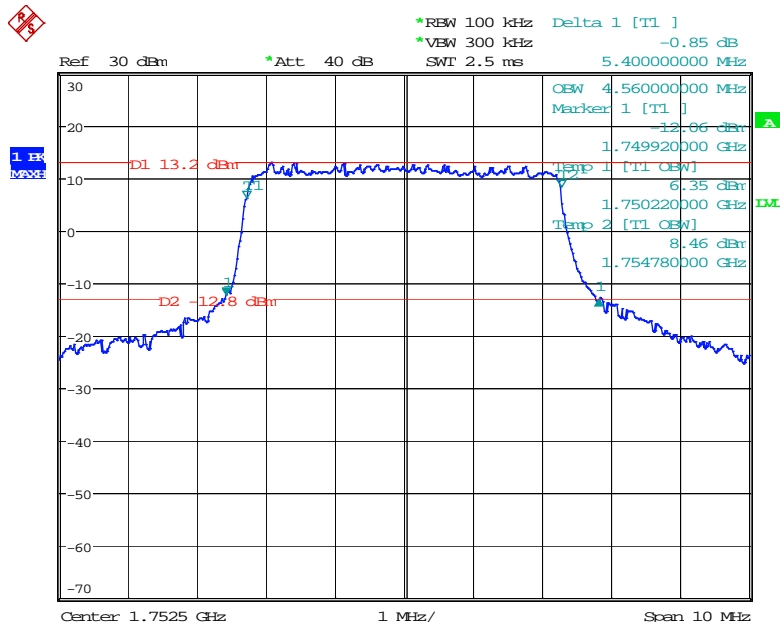
Date: 29.DEC.2020 19:48:54

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



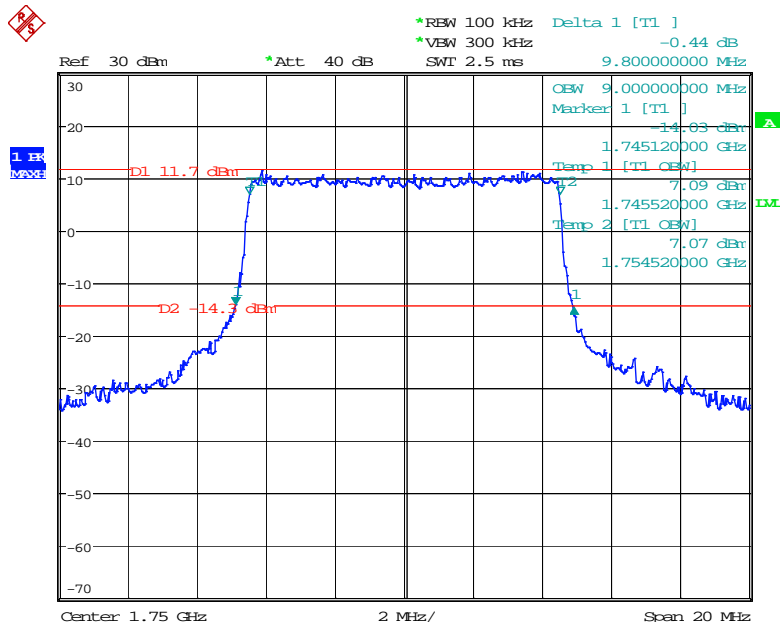
Date: 29.DEC.2020 19:52:07

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



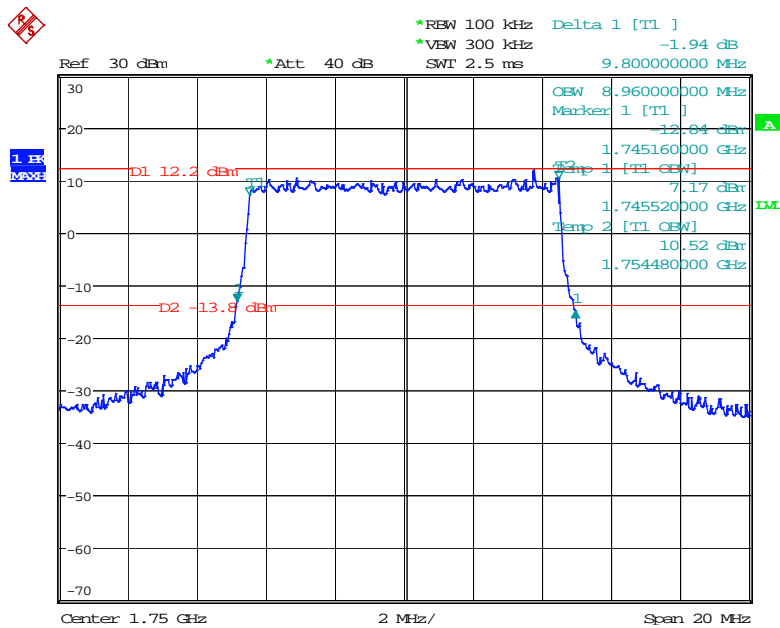
Date: 29.DEC.2020 19:53:53

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



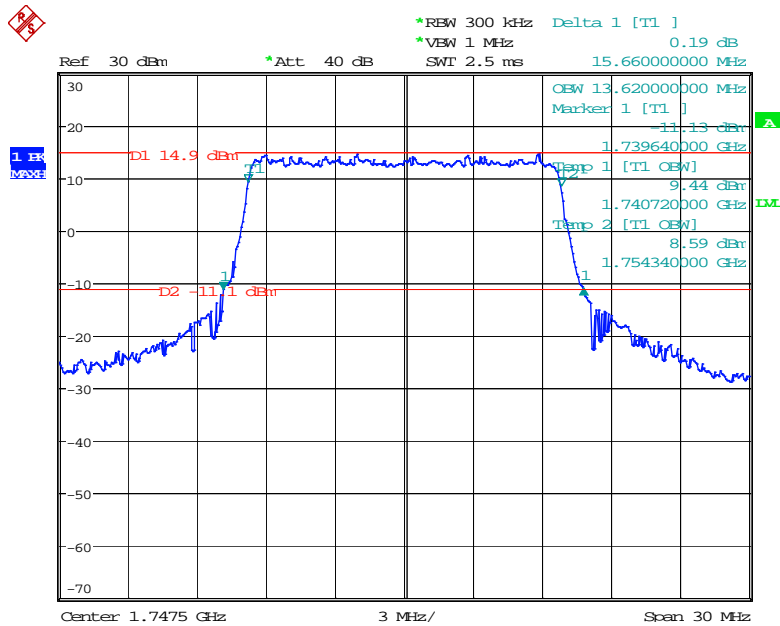
Date: 29.DEC.2020 20:12:18

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



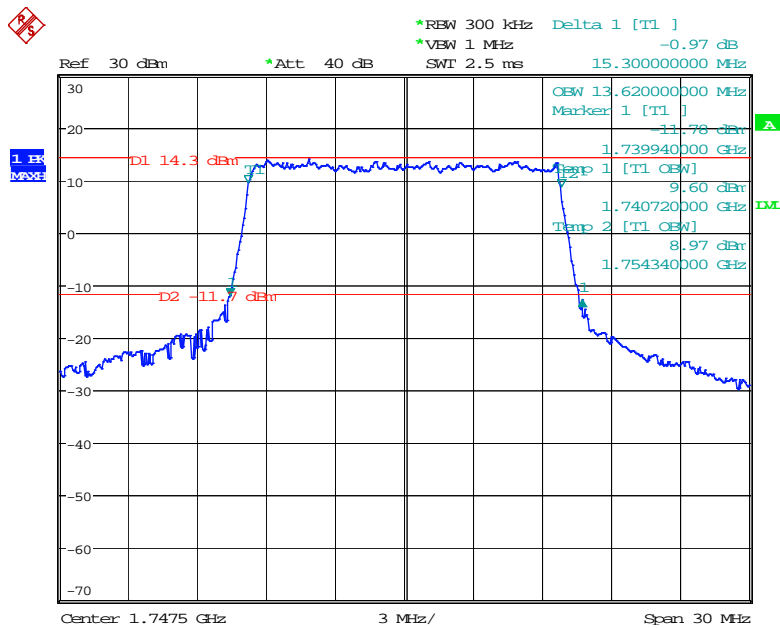
Date: 29.DEC.2020 20:14:00

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



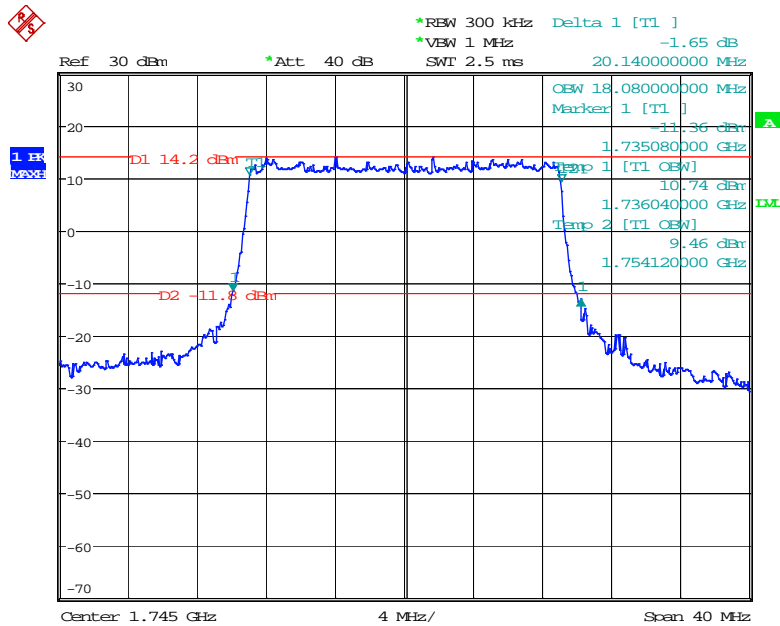
Date: 29.DEC.2020 20:25:34

16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



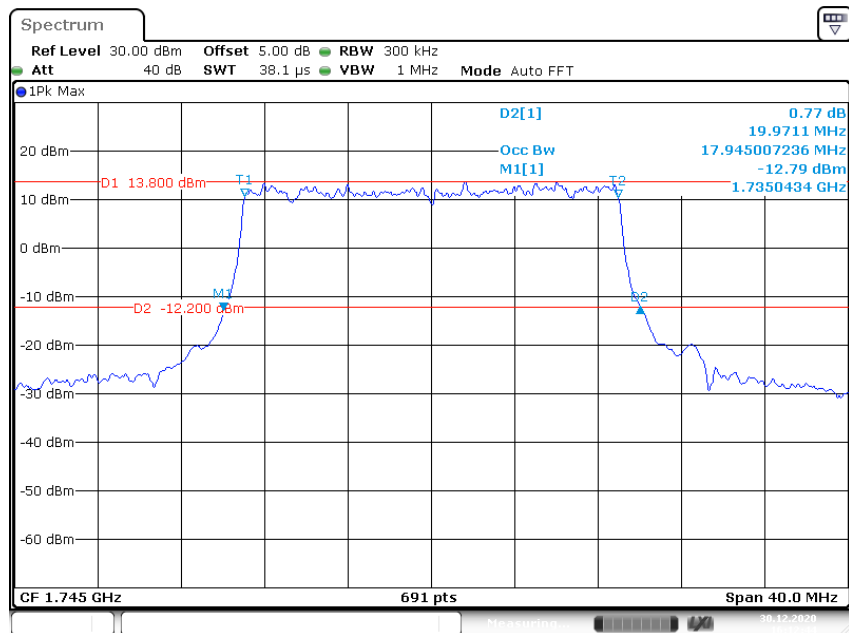
Date: 29.DEC.2020 20:27:47

QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



Date: 29.DEC.2020 20:37:44

16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel

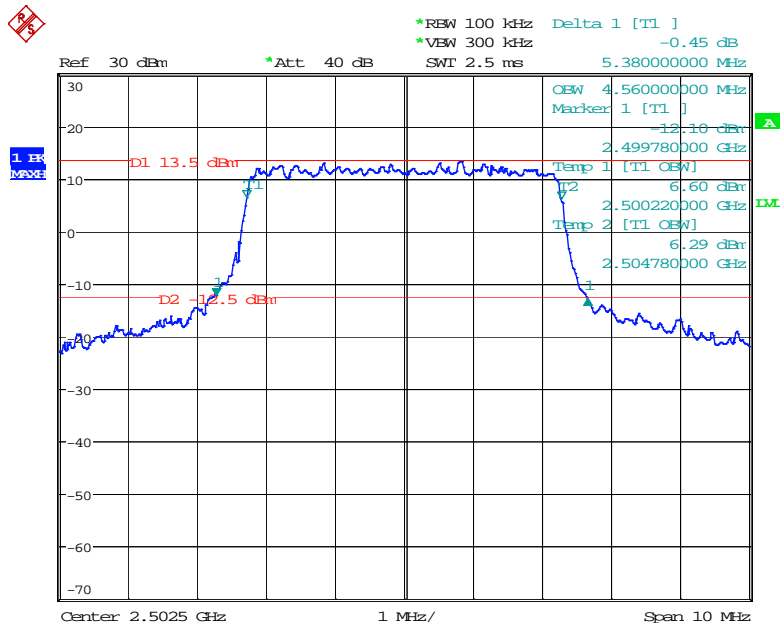


Date: 30.DEC.2020 16:12:44

LTE Band 7

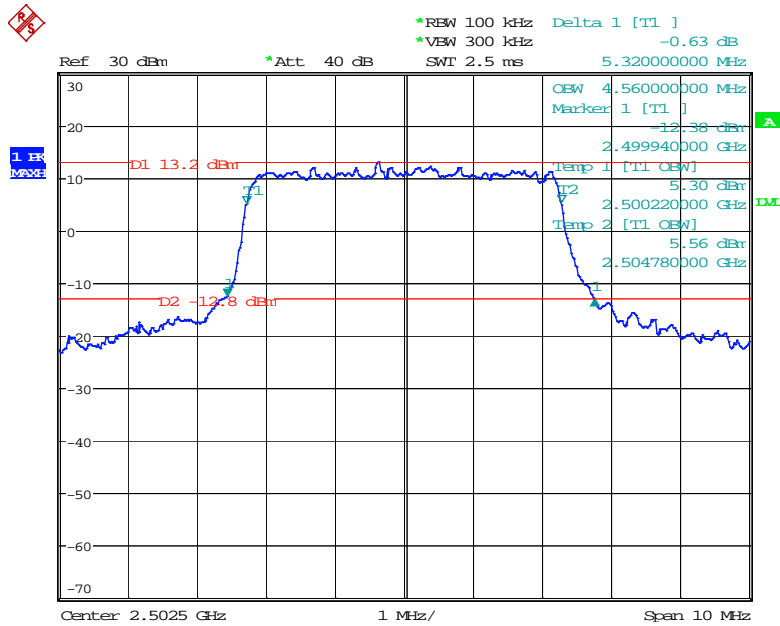
Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.56	5.38
		Middle	4.54	5.32
		High	4.52	5.44
	16QAM	Low	4.56	5.32
		Middle	4.56	5.46
		High	4.56	5.44
10	QPSK	Low	9.0	9.80
		Middle	9.0	10.12
		High	9.80	10.42
	16QAM	Low	9.0	9.80
		Middle	9.0	10.04
		High	9.12	10.18
15	QPSK	Low	13.56	15.42
		Middle	13.62	15.96
		High	13.62	16.02
	16QAM	Low	13.68	15.48
		Middle	13.56	15.12
		High	13.62	15.18
20	QPSK	Low	18.0	20.36
		Middle	18.0	20.36
		High	18.08	20.16
	16QAM	Low	18.08	20.24
		Middle	18.08	20.20
		High	18.16	20.24

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



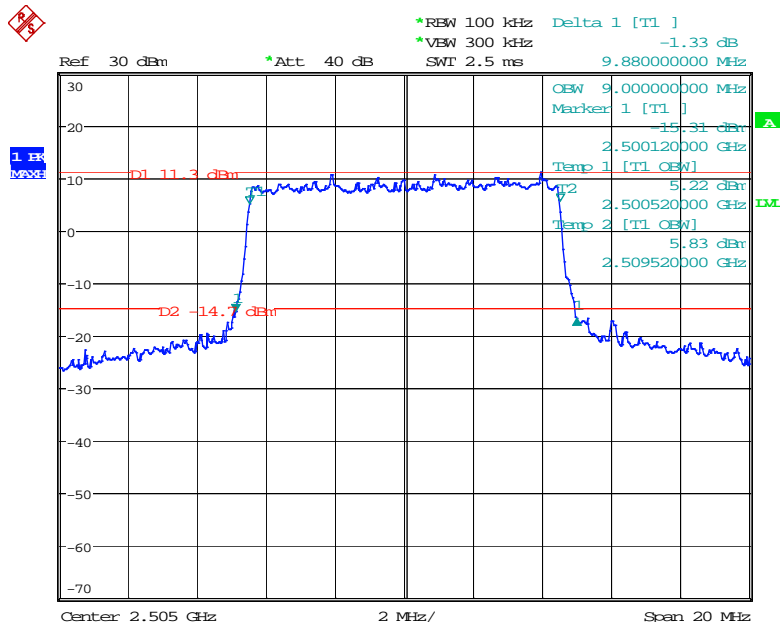
Date: 29.DEC.2020 20:48:01

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



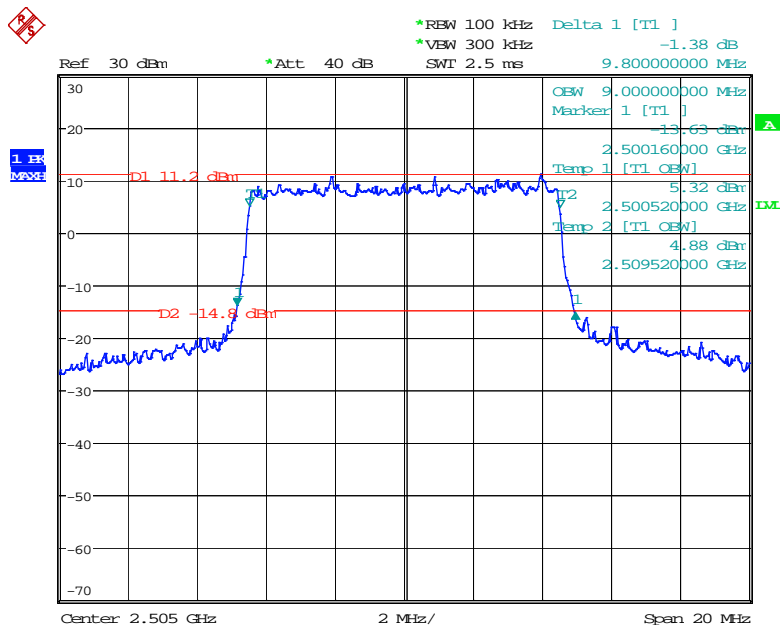
Date: 29.DEC.2020 20:45:19

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



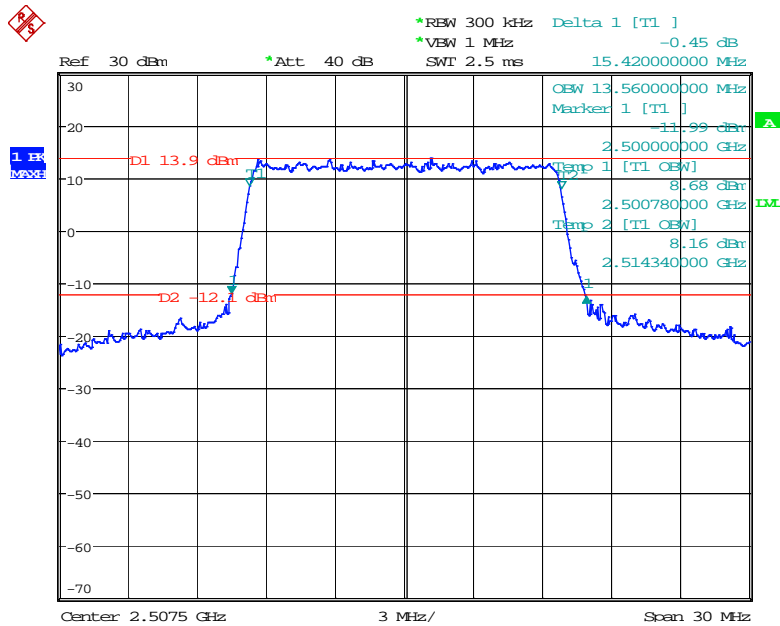
Date: 29.DEC.2020 21:02:19

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



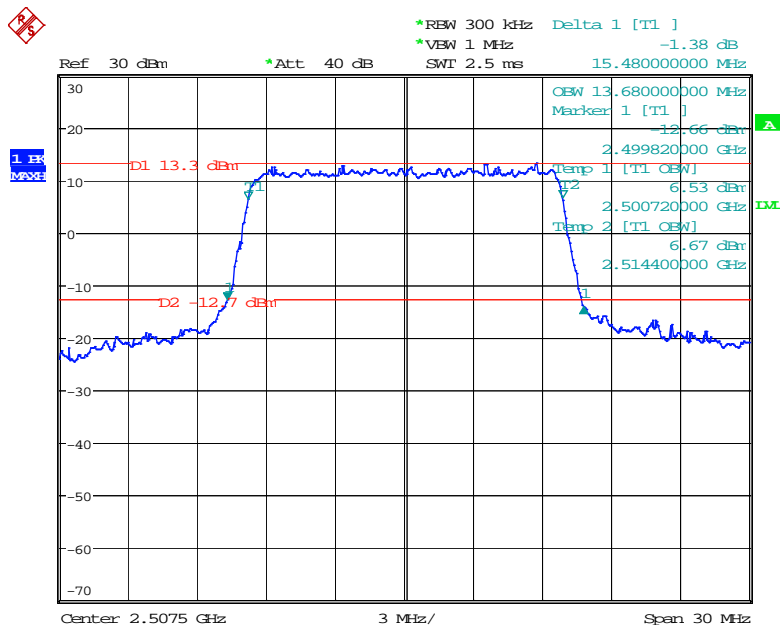
Date: 29.DEC.2020 21:04:37

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



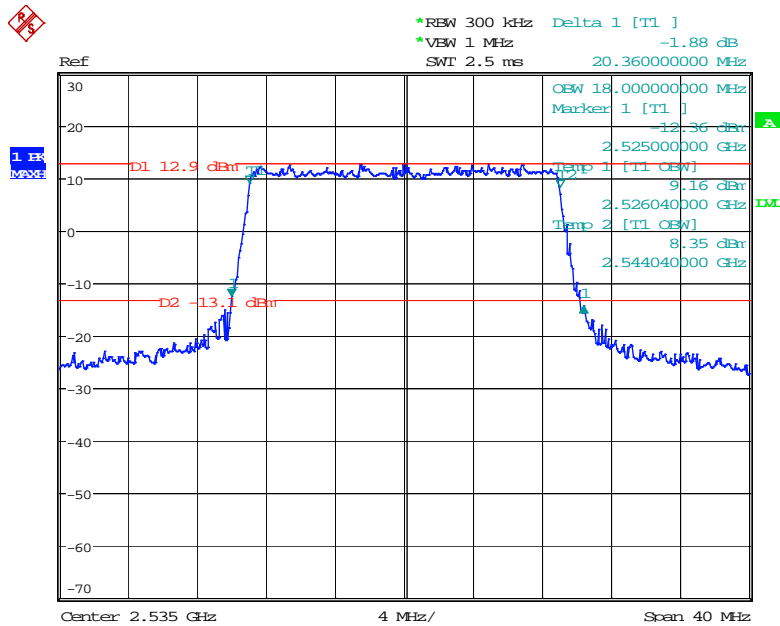
Date: 29.DEC.2020 21:20:25

16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



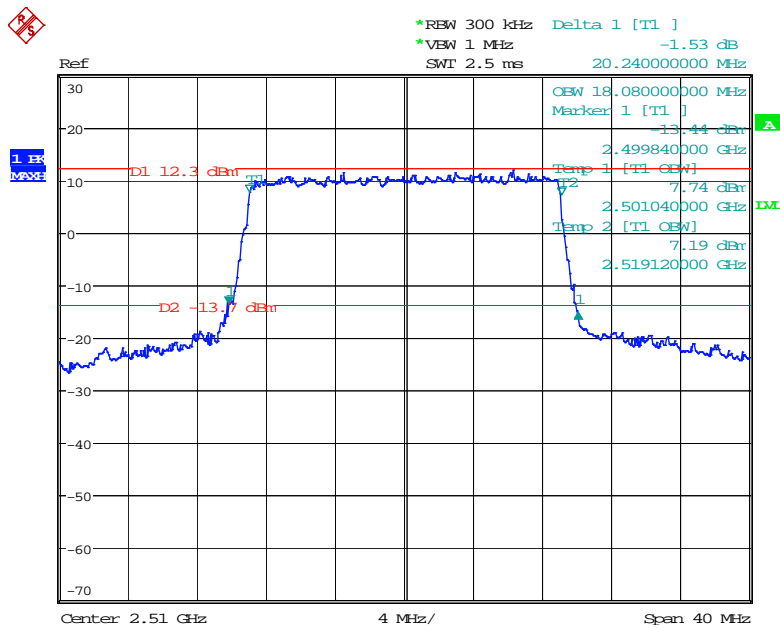
Date: 29.DEC.2020 21:18:34

QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



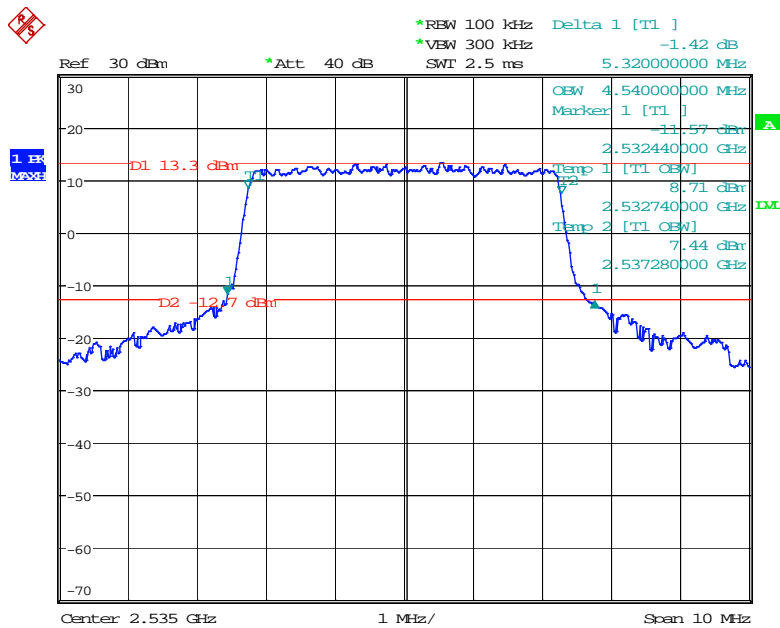
Date: 30.DEC.2020 08:57:25

16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



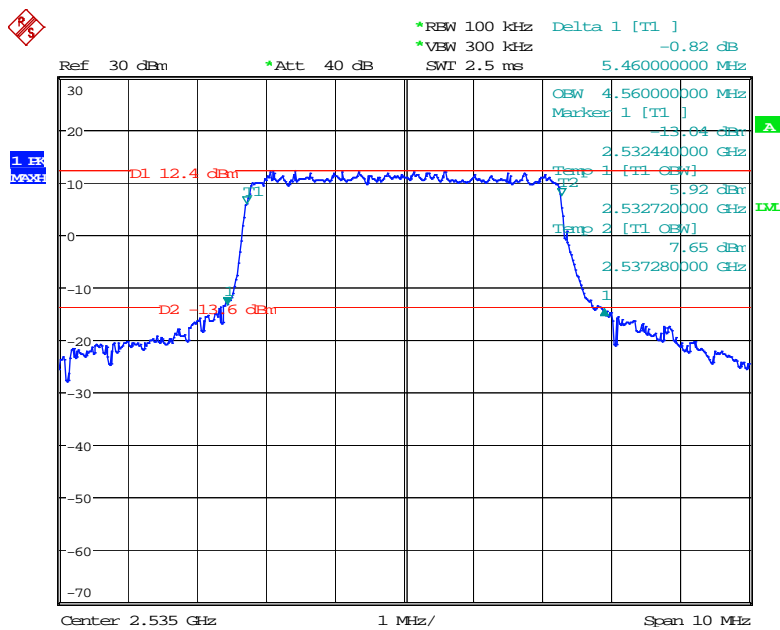
Date: 30.DEC.2020 10:00:04

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



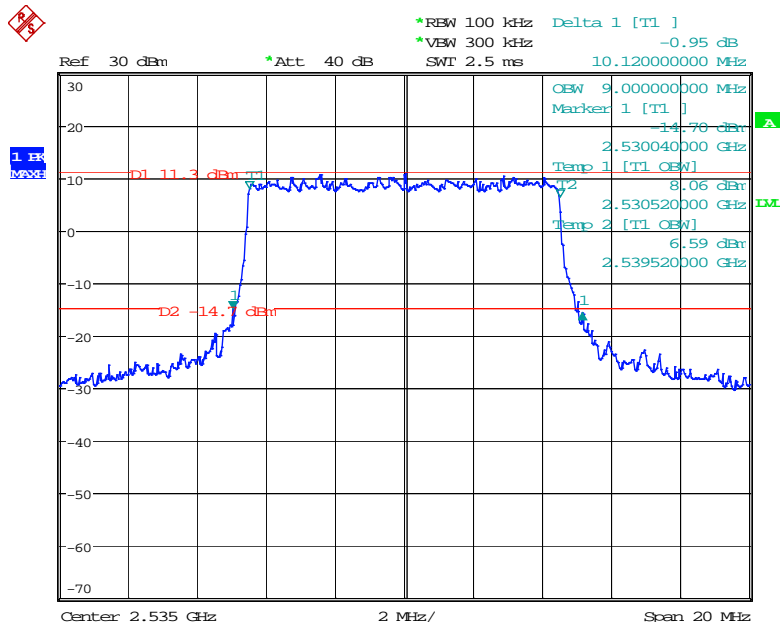
Date: 29.DEC.2020 20:50:26

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



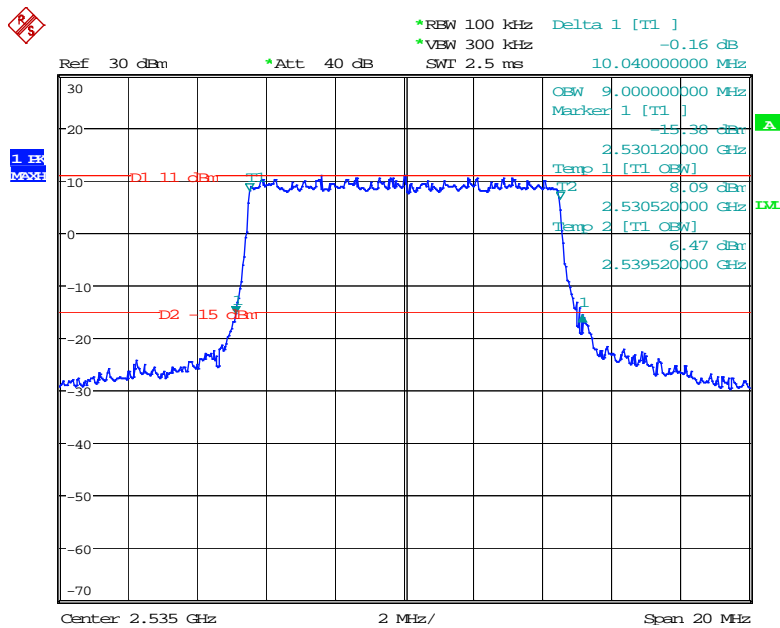
Date: 29.DEC.2020 20:51:51

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



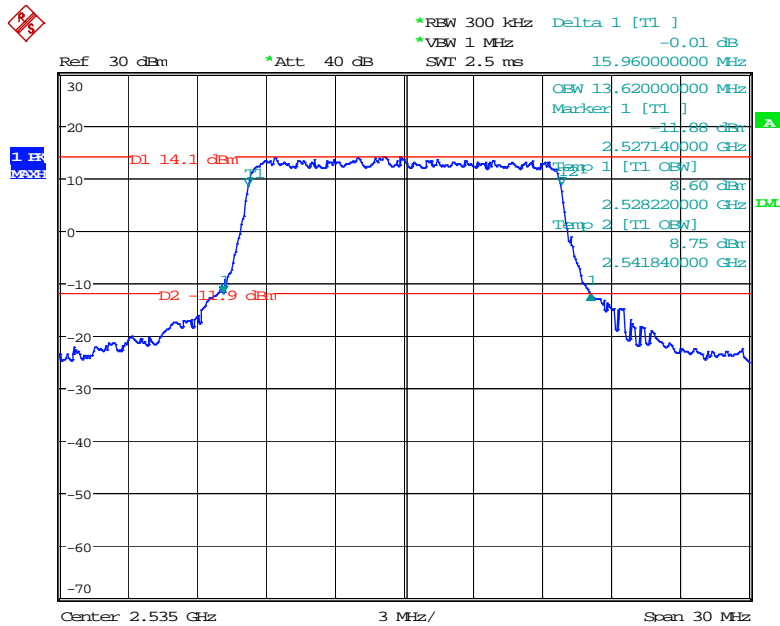
Date: 29.DEC.2020 21:08:27

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



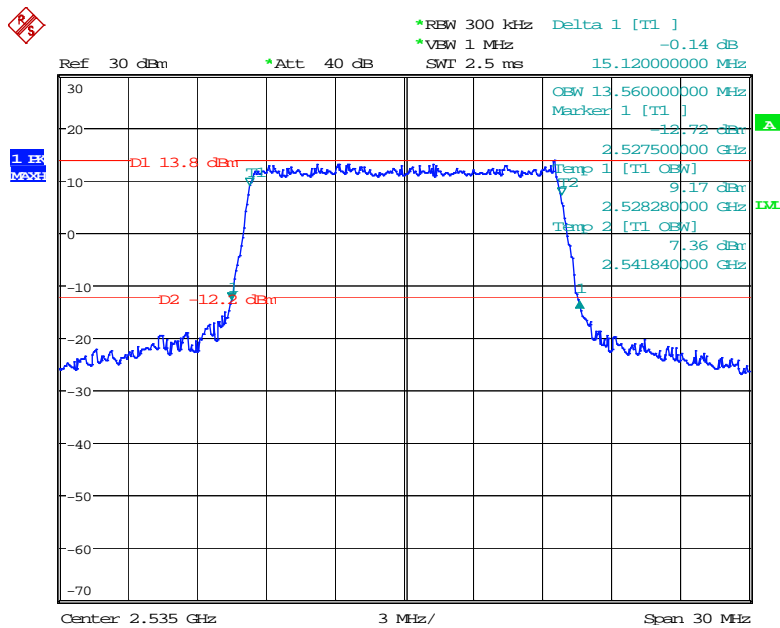
Date: 29.DEC.2020 21:06:30

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



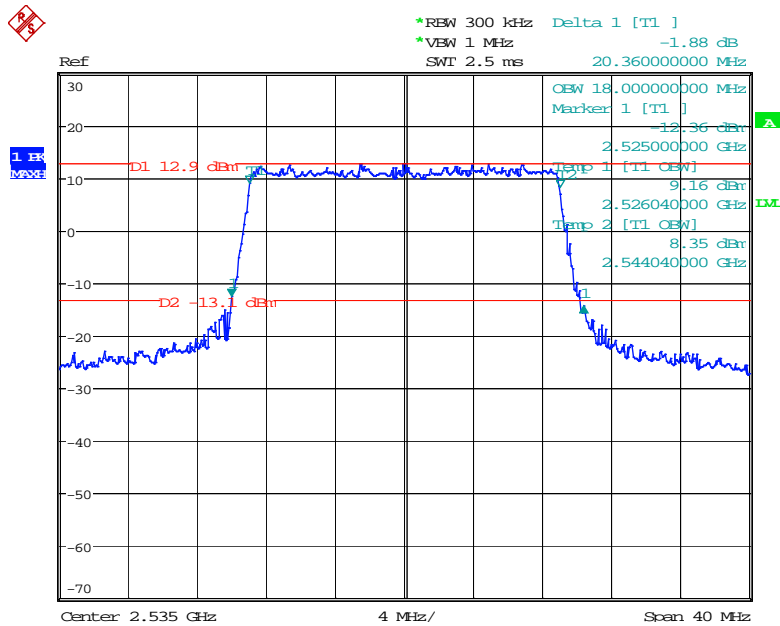
Date: 29.DEC.2020 21:22:30

16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



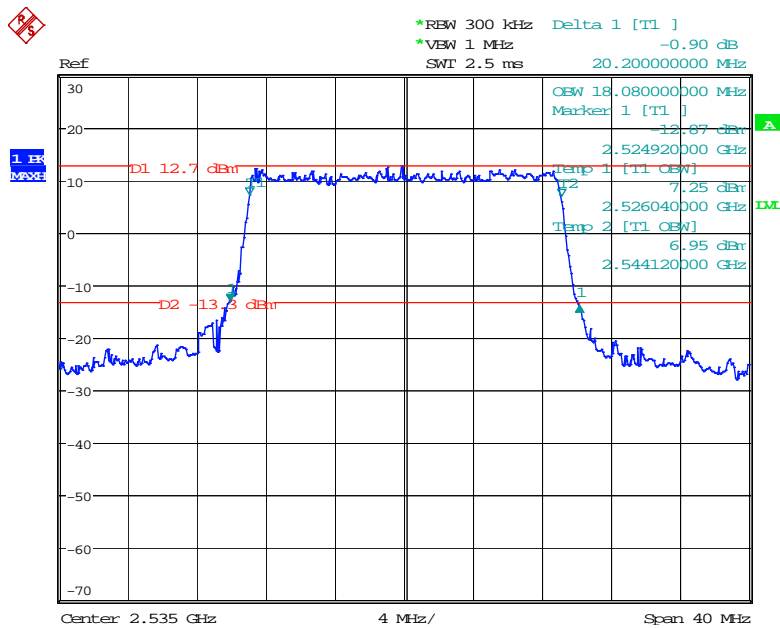
Date: 29.DEC.2020 21:23:37

QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



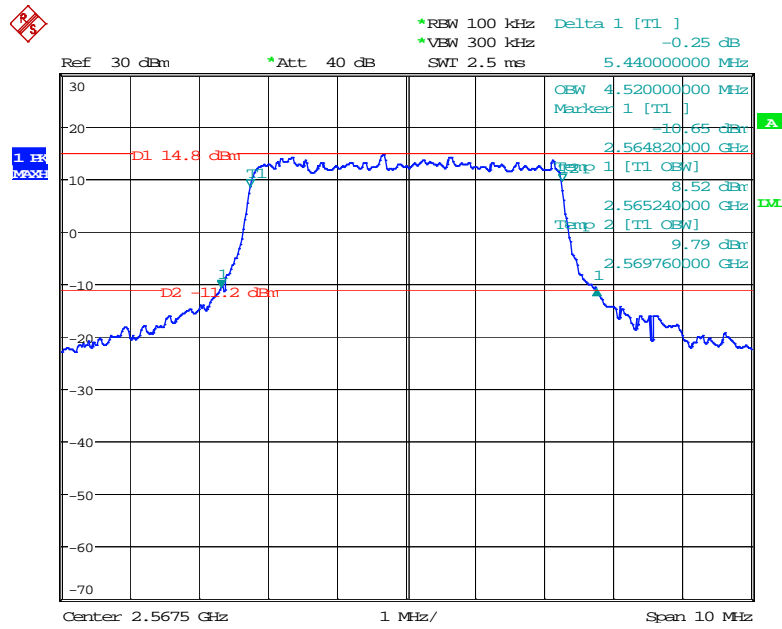
Date: 30.DEC.2020 08:57:25

16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



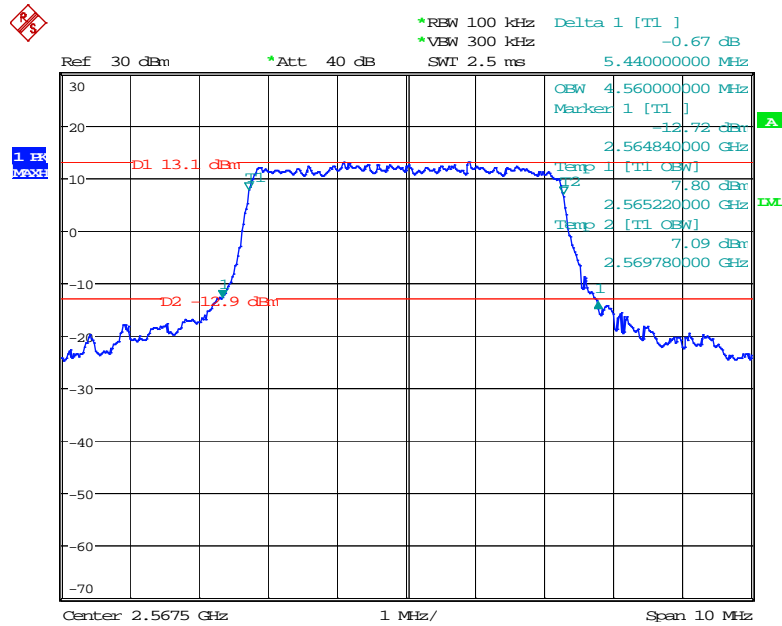
Date: 30.DEC.2020 08:59:16

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



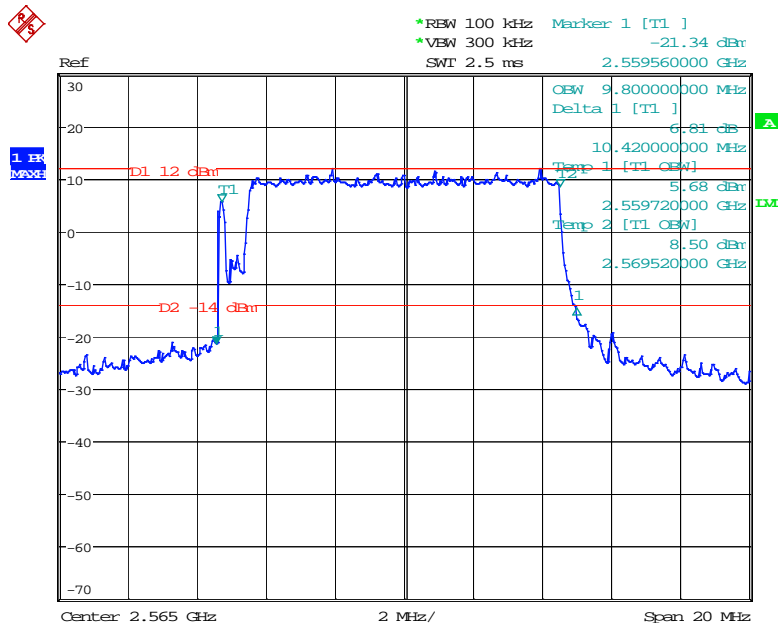
Date: 29.DEC.2020 20:58:51

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



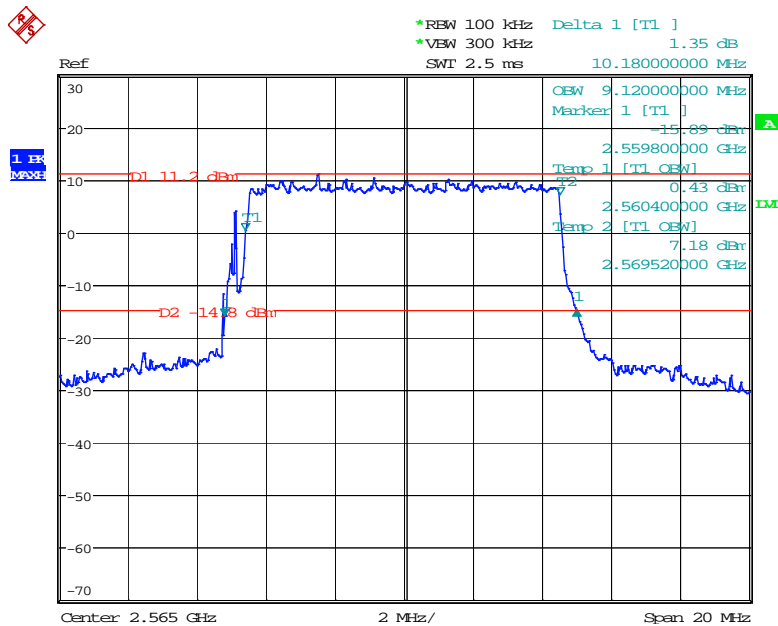
Date: 29.DEC.2020 20:54:52

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



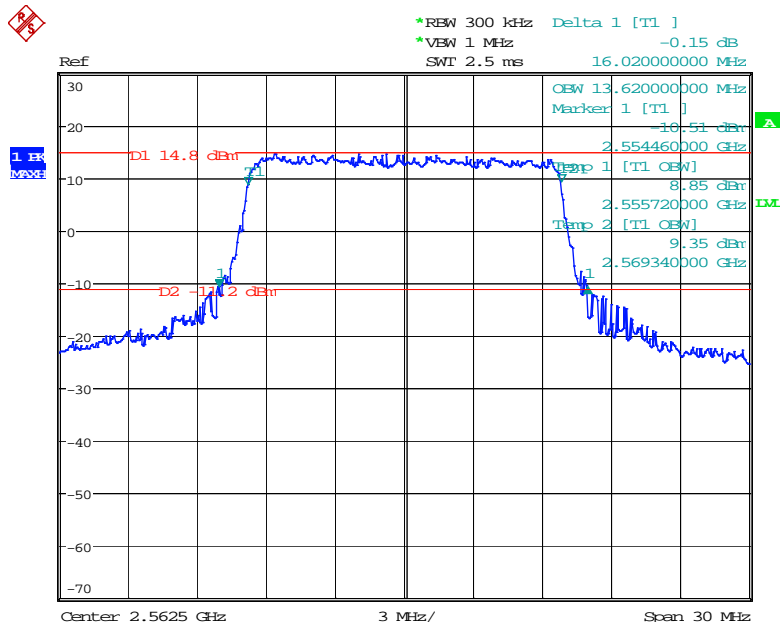
Date: 30.DEC.2020 08:51:24

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



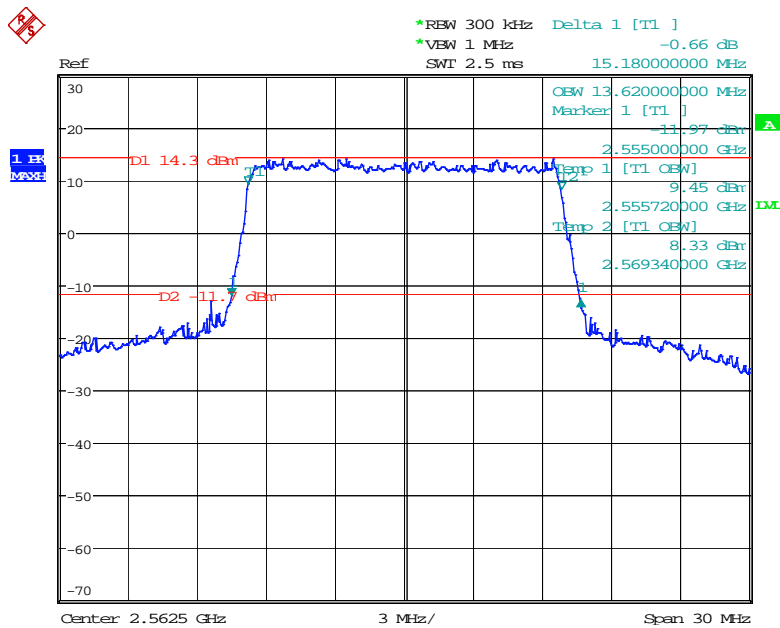
Date: 30.DEC.2020 08:48:36

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



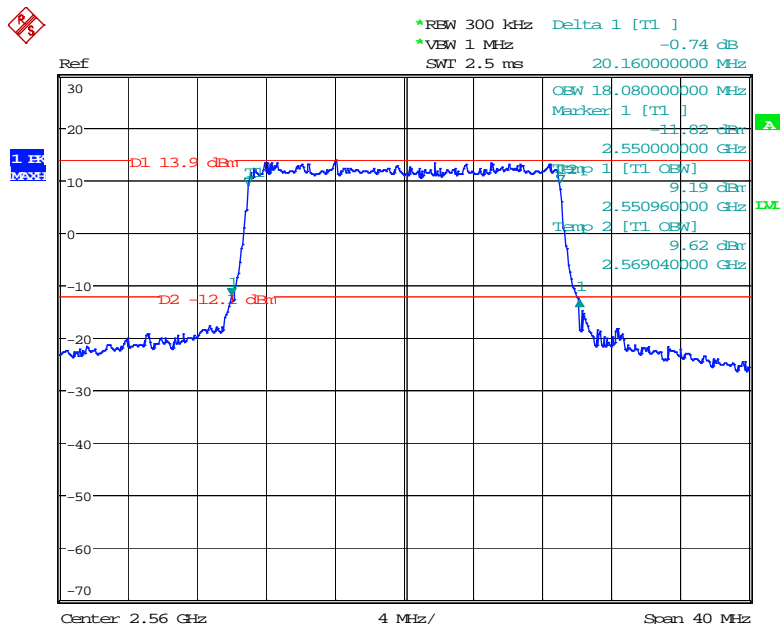
Date: 30.DEC.2020 08:42:36

16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



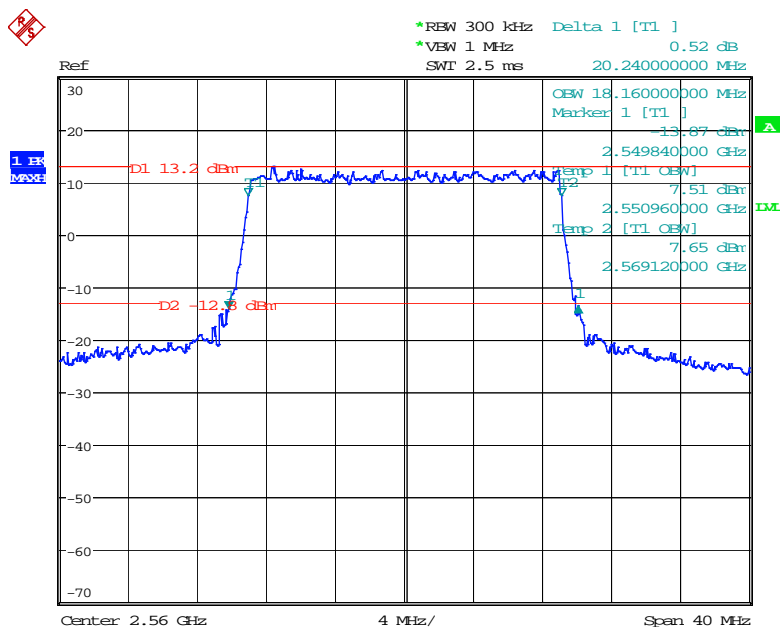
Date: 30.DEC.2020 08:44:16

QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



Date: 30.DEC.2020 09:02:27

16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



Date: 30.DEC.2020 09:00:56

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

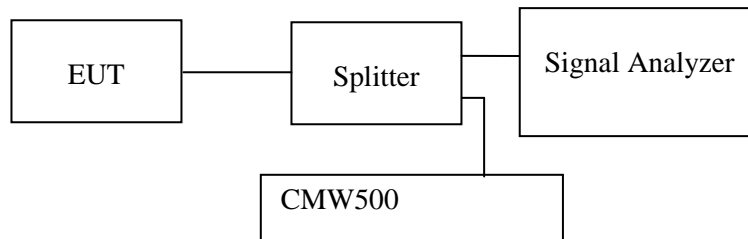
Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(a) and §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:	23-25 °C
Relative Humidity:	51-55 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang on 2020-12-27 to 2020-12-29.

EUT operation mode: Transmitting

Test result: Pass

Test plots refer to the appendix.

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

Applicable Standard

FCC § 2.1053, §22.917(a) and § 24.238(a) and § 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:	28~29.3 °C
Relative Humidity:	50~58 %
ATM Pressure:	101.0~101.1 kPa

The testing was performed by Fan Yang from 2020-12-24 to 2020-12-25.

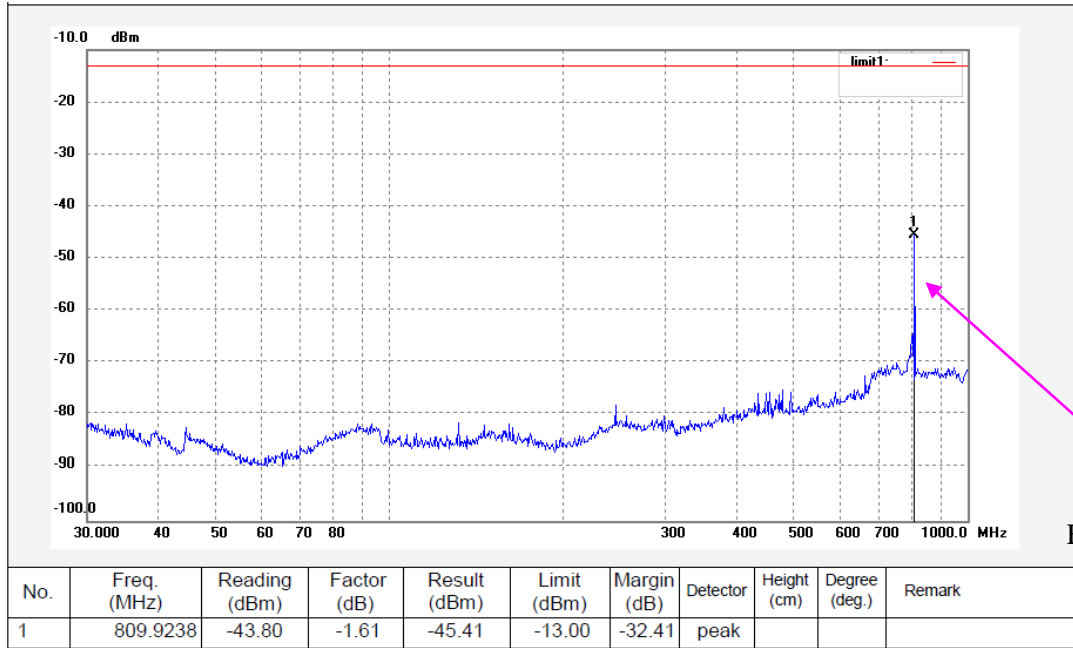
EUT operation mode: Transmitting

Pre-scan with Low, Middle and High channel, the worst case is as below:

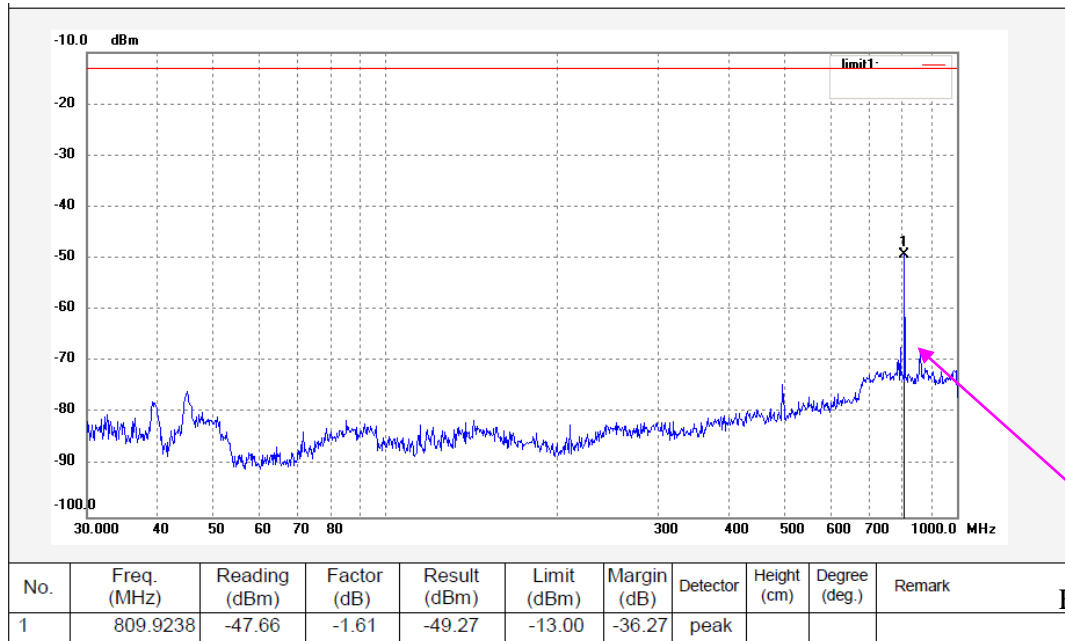
30 MHz ~ 1GHz:

Cellular Band (Part 22H)

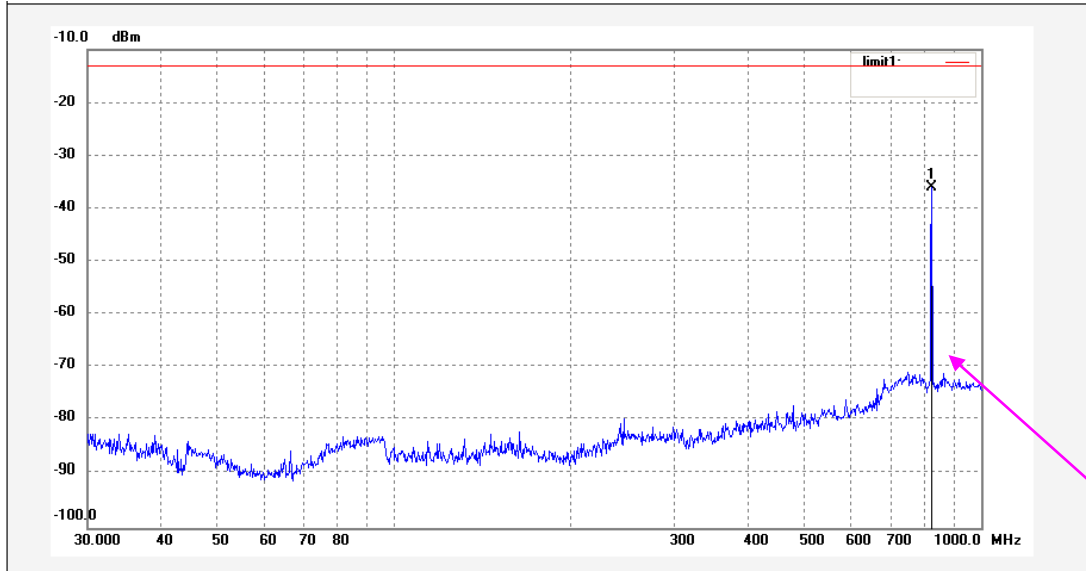
GSM Mode
Low channel
Horizontal



Vertical



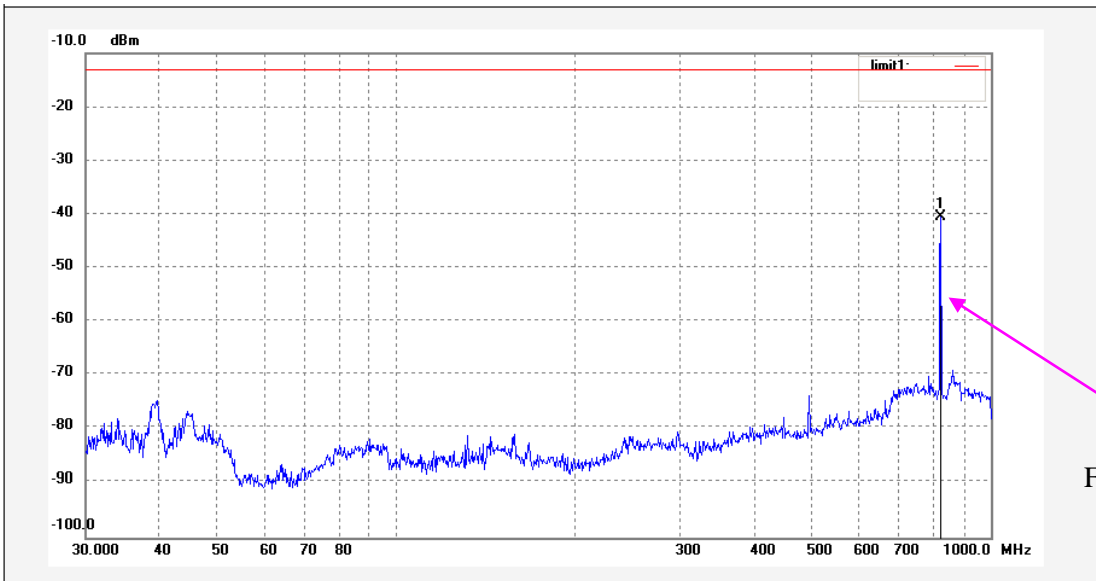
Middle channel
Horizontal



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	824.2782	-34.50	-1.53	-36.03	-13.00	-23.03	peak			

Fundamental test

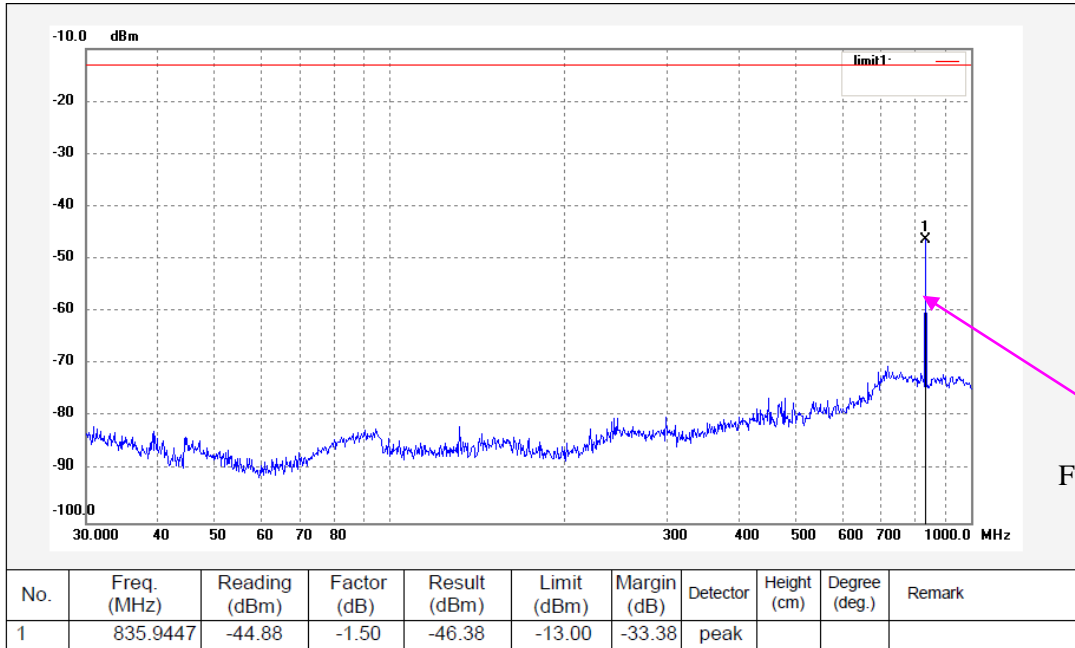
Vertical



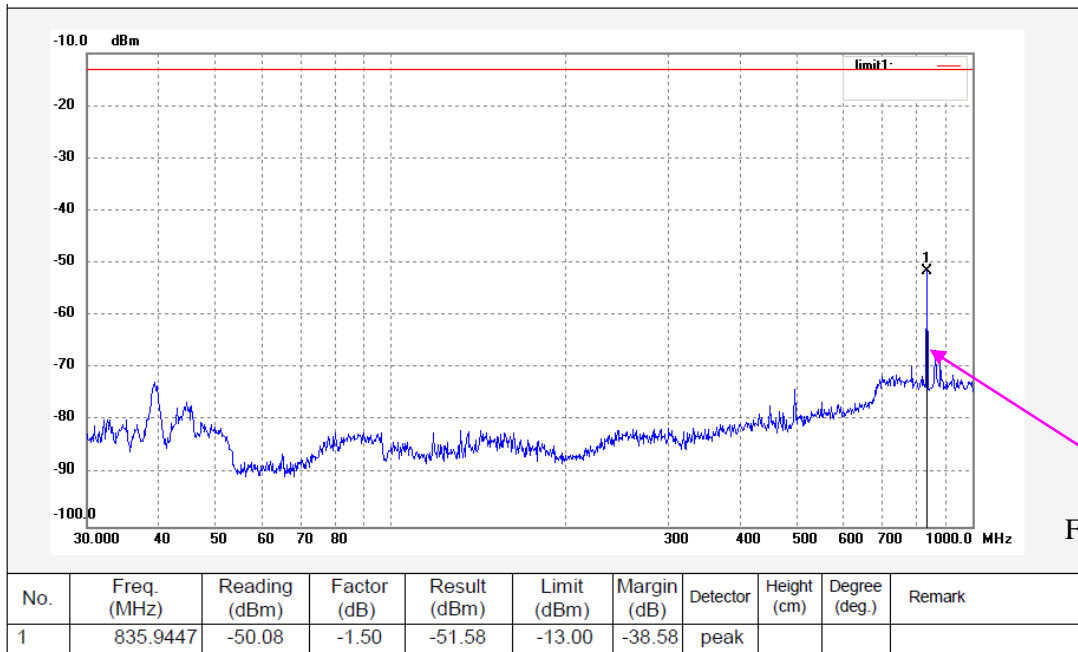
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	824.2782	-38.93	-1.53	-40.46	-13.00	-27.46	peak			

Fundamental test

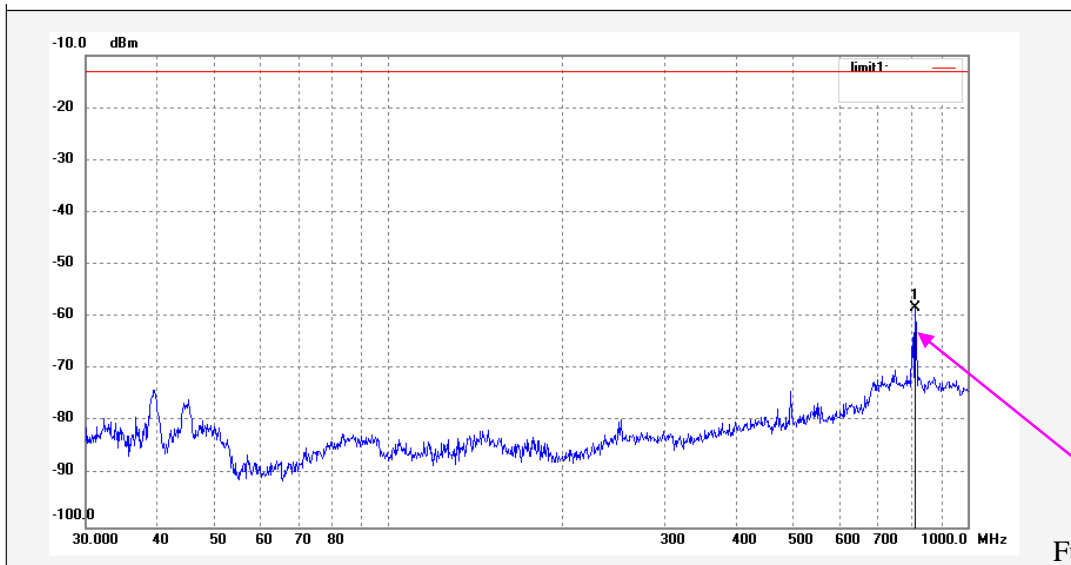
High channel
Horizontal



Vertical

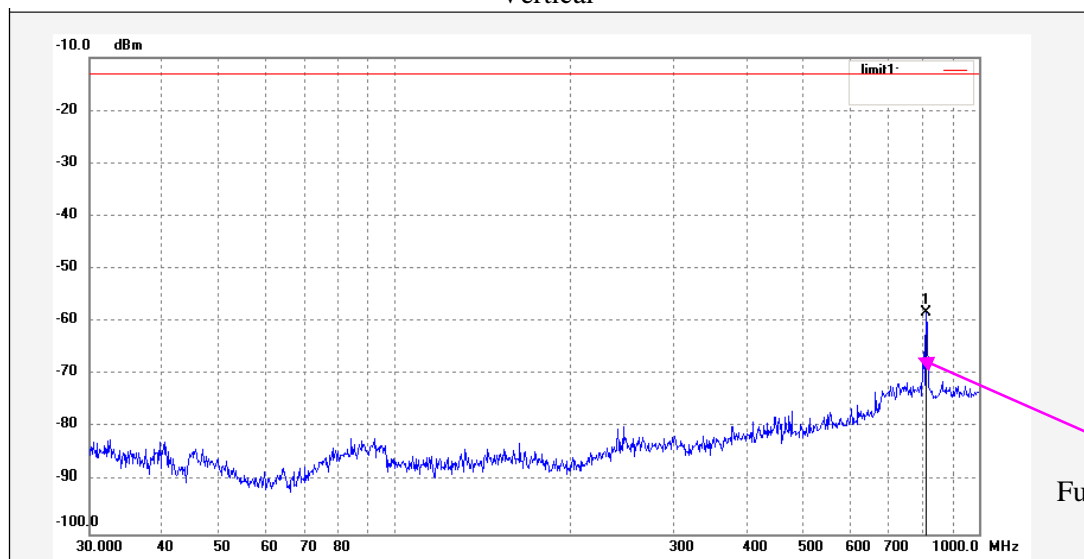


WCDMA Mode
Low channel
Horizontal



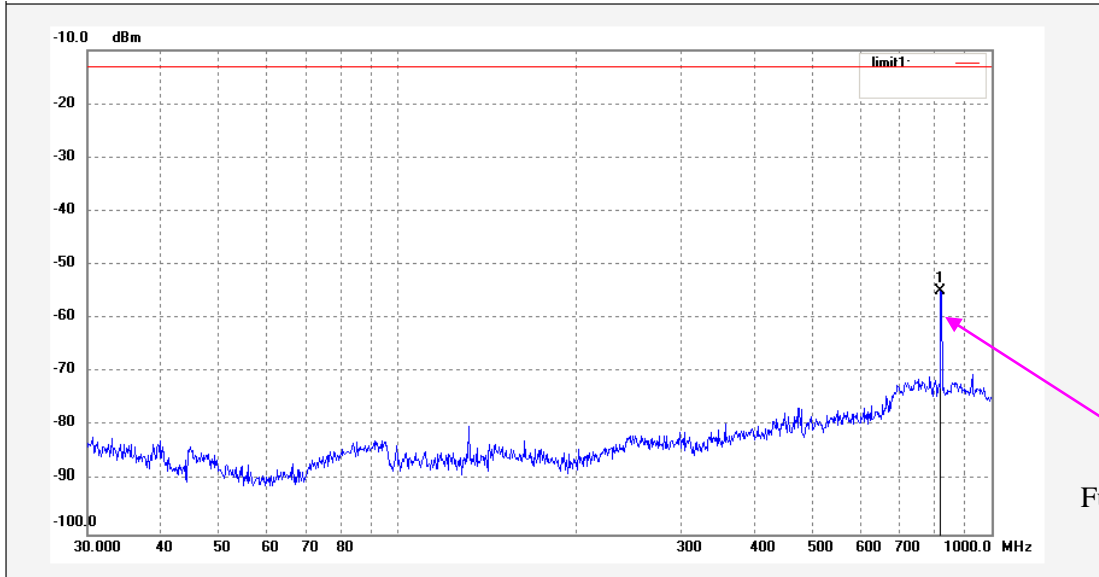
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	812.7745	-56.76	-1.59	-58.35	-13.00	-45.35	peak			

Vertical



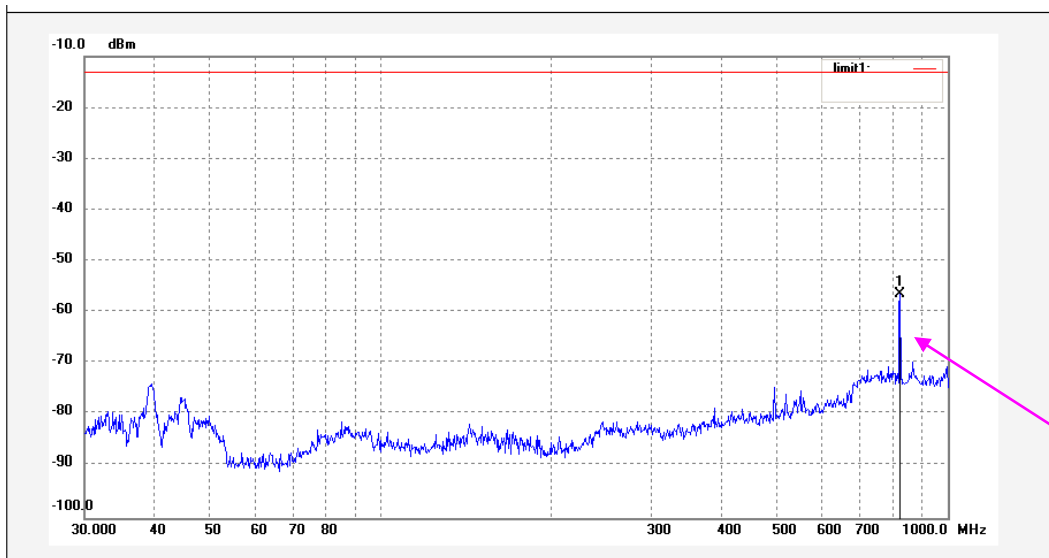
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	812.7745	-56.60	-1.59	-58.19	-13.00	-45.19	peak			

Middle channel
Horizontal



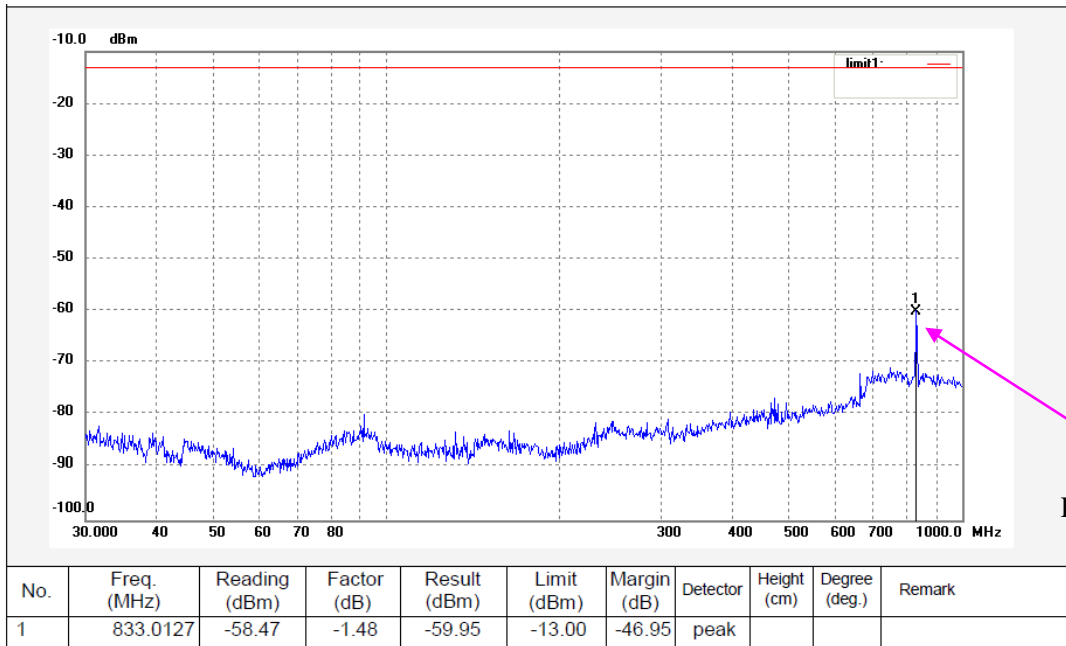
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	821.3871	-53.31	-1.56	-54.87	-13.00	-41.87	peak			

Vertical

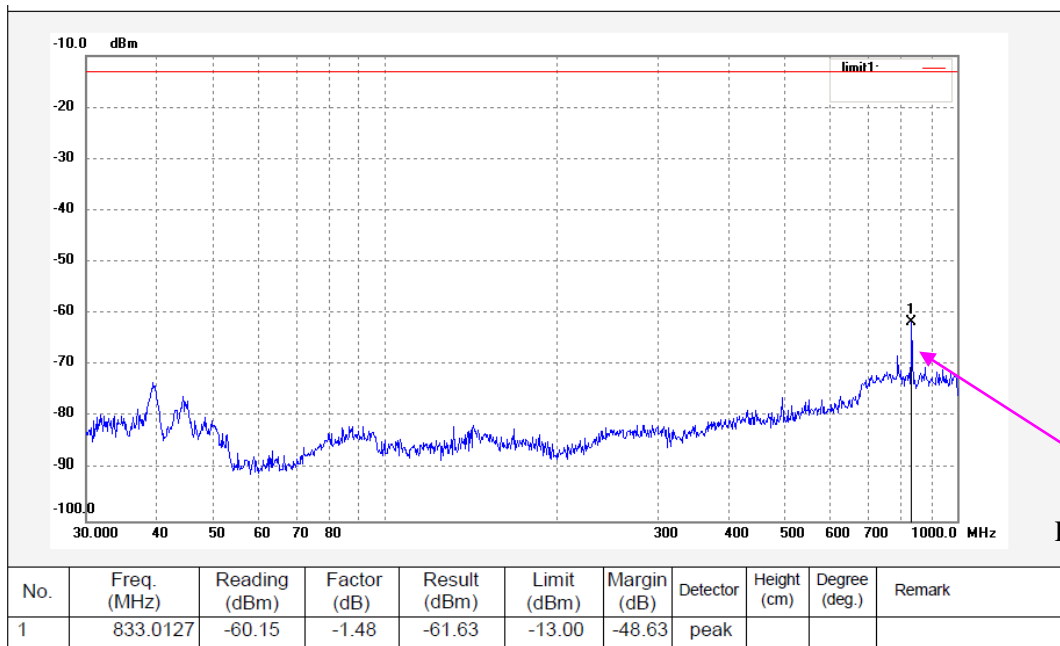


No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	824.2782	-54.82	-1.53	-56.35	-13.00	-43.35	peak			

High channel
Horizontal

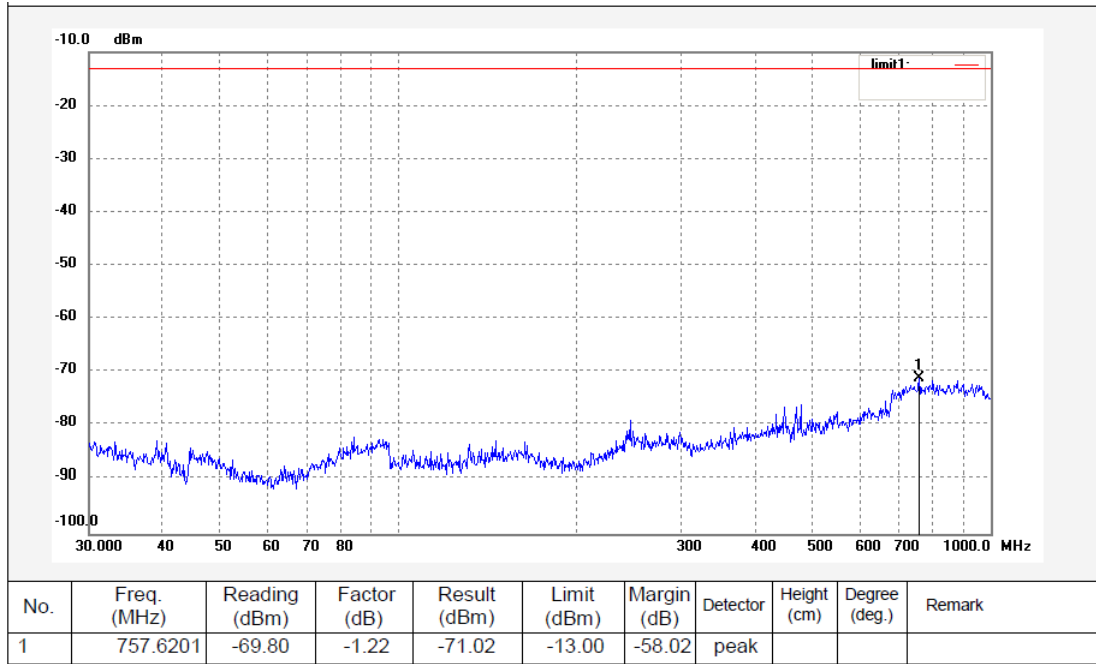


Vertical

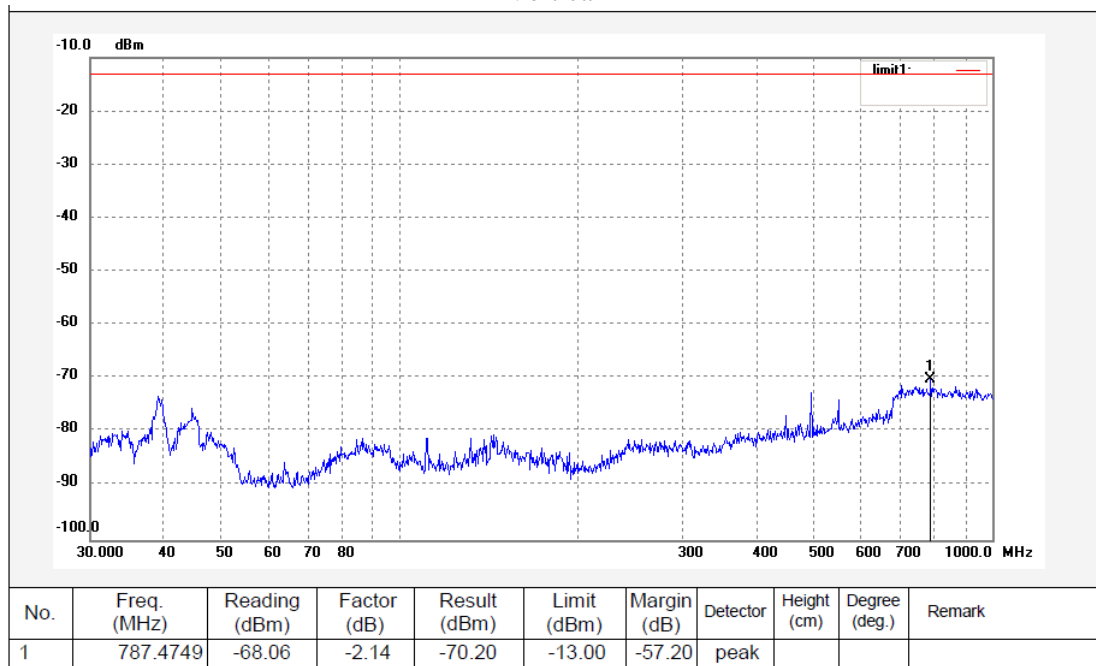


PCS Band (Part 24E)

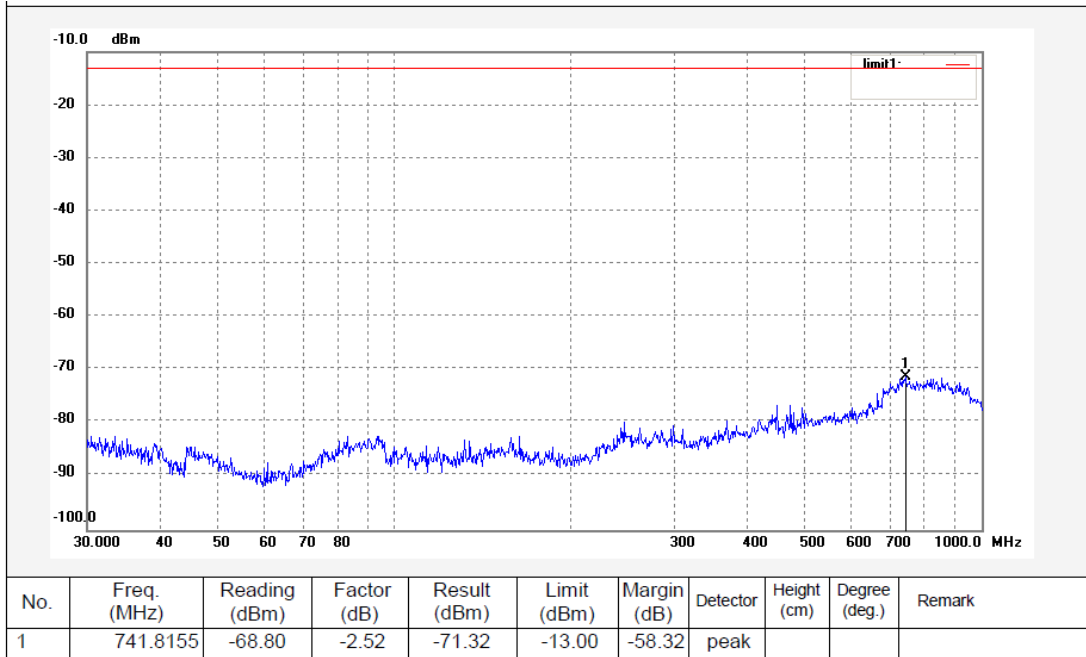
GSM Mode
Low channel
Horizontal



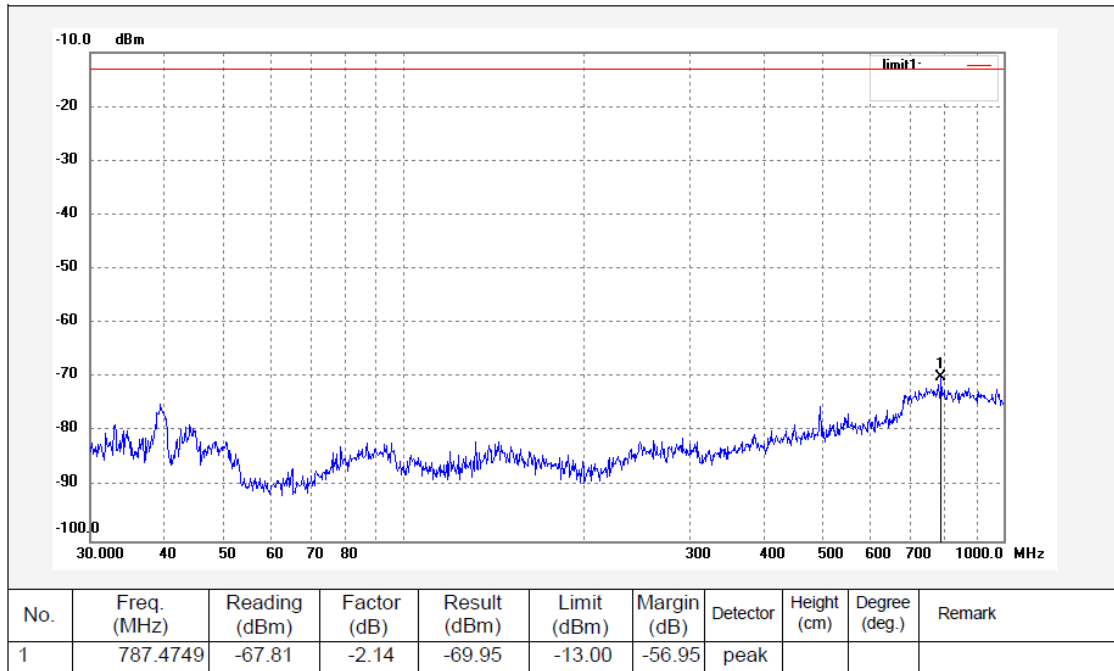
Vertical



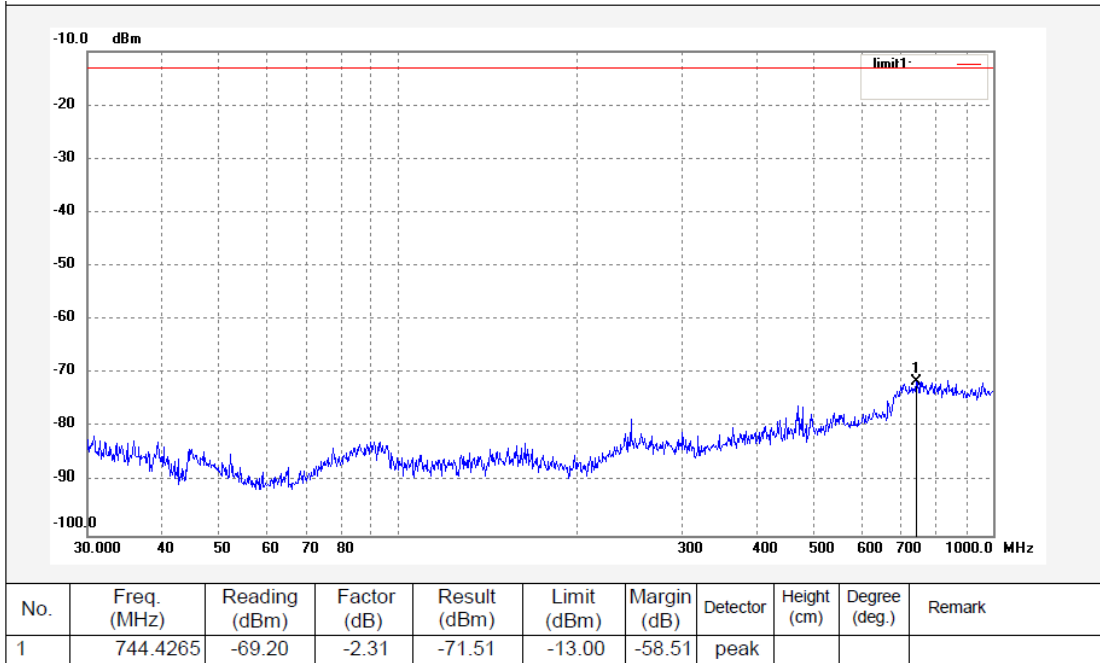
Middle channel
Horizontal



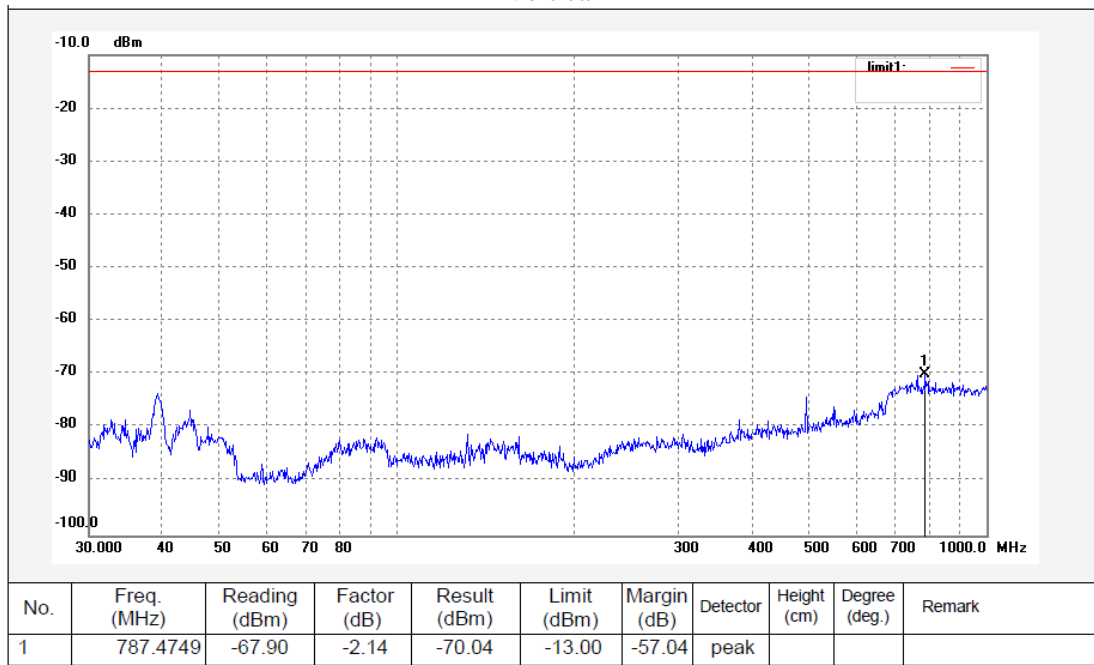
Vertical



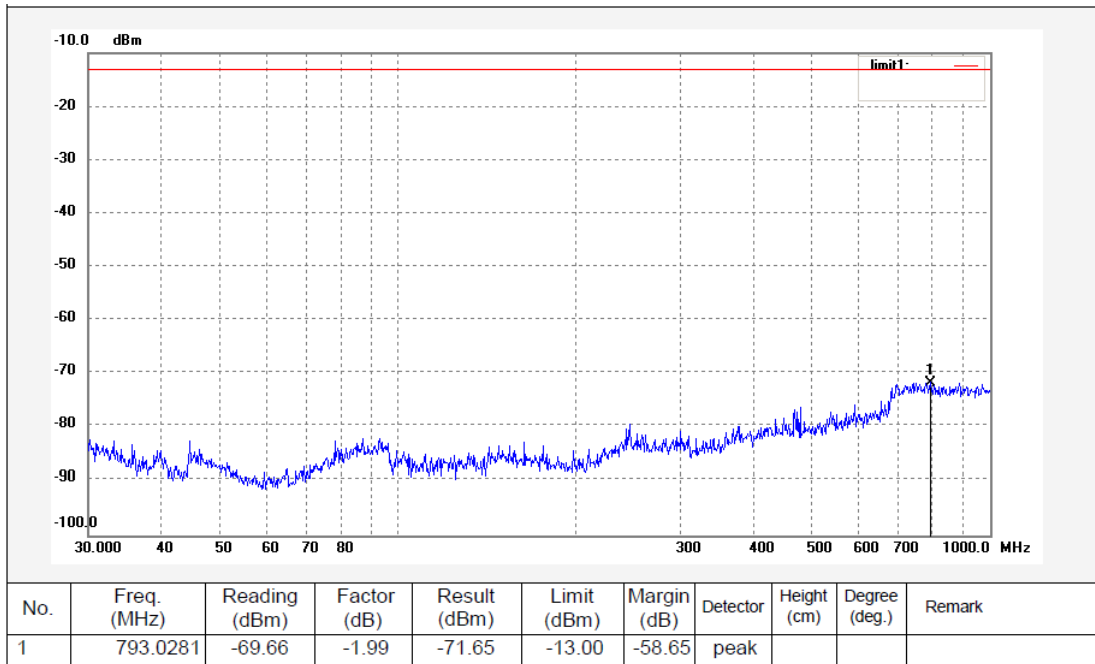
High channel
Horizontal



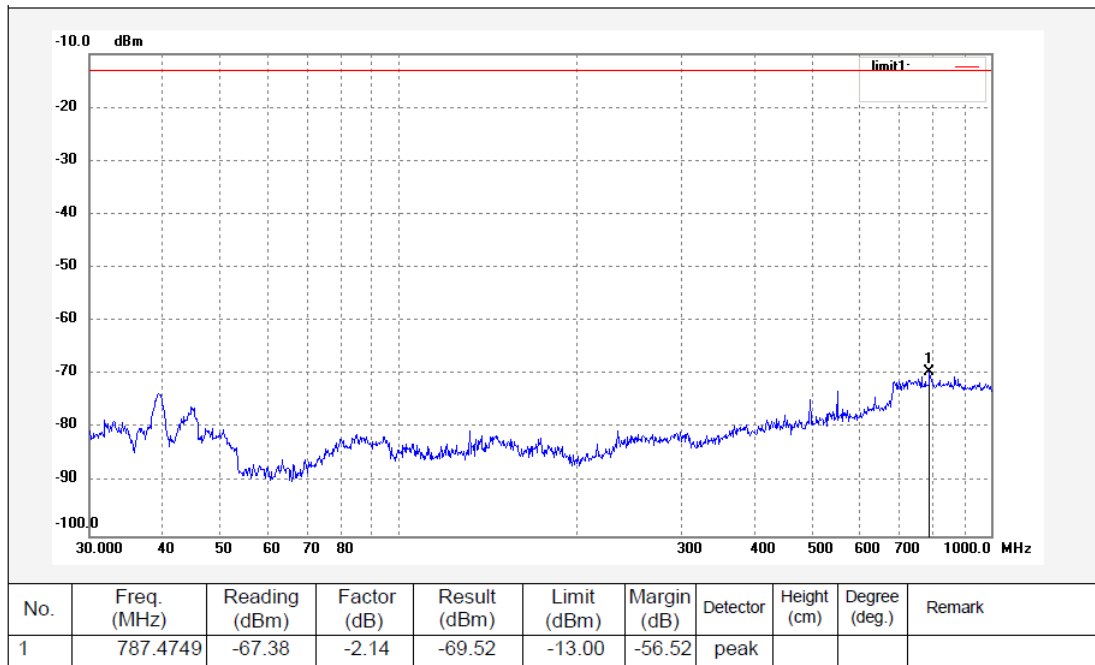
Vertical



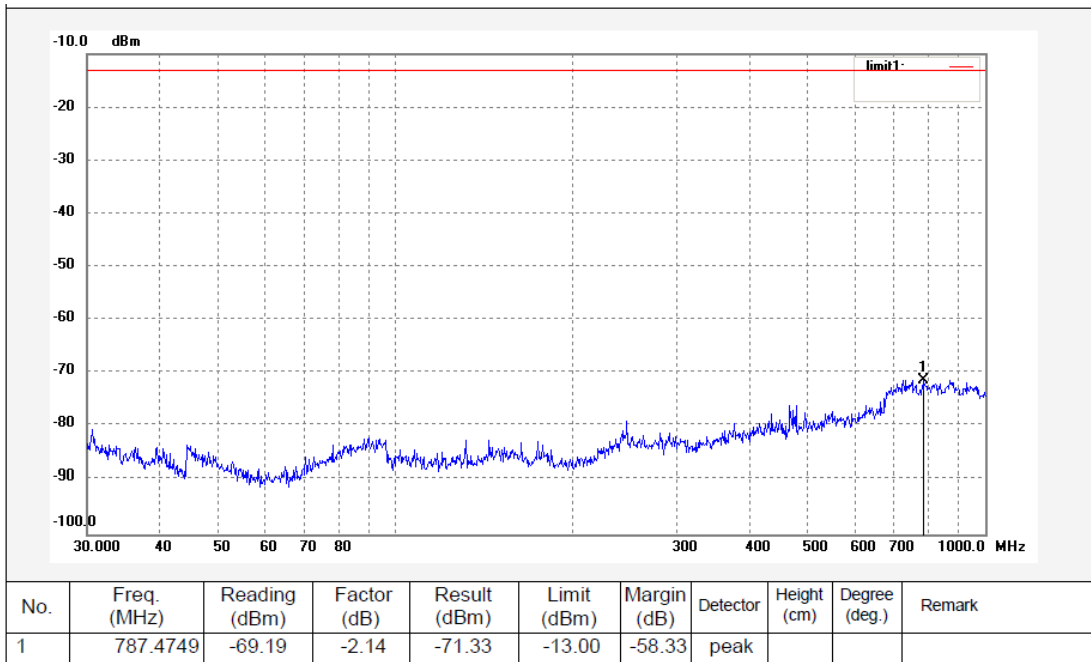
WCDMA Mode
Low channel
Horizontal



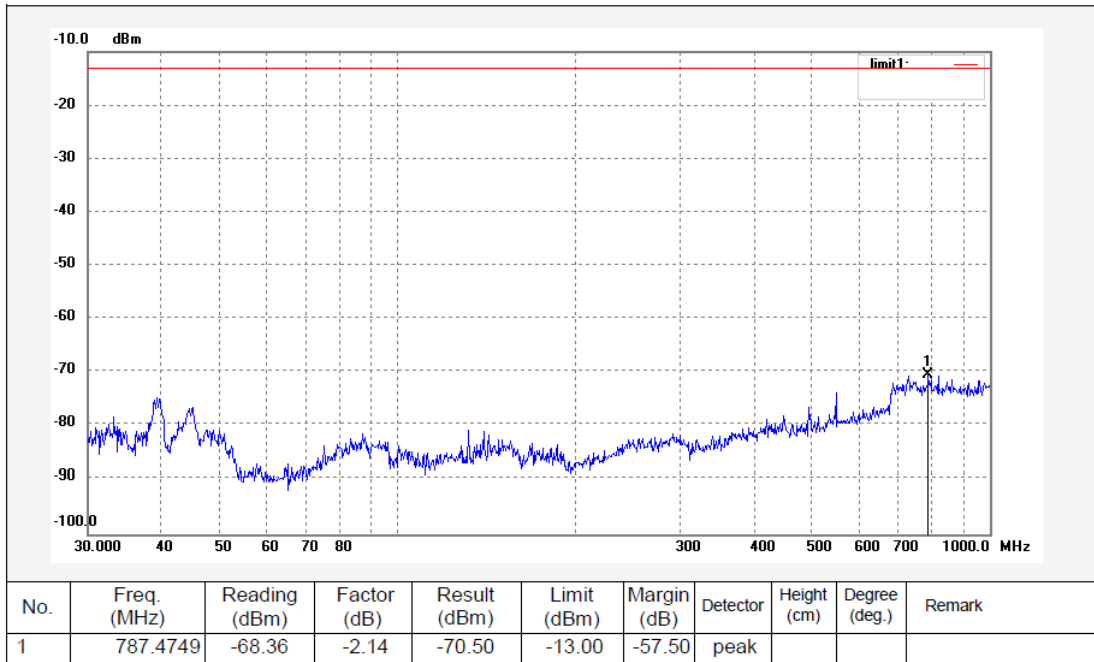
Vertical



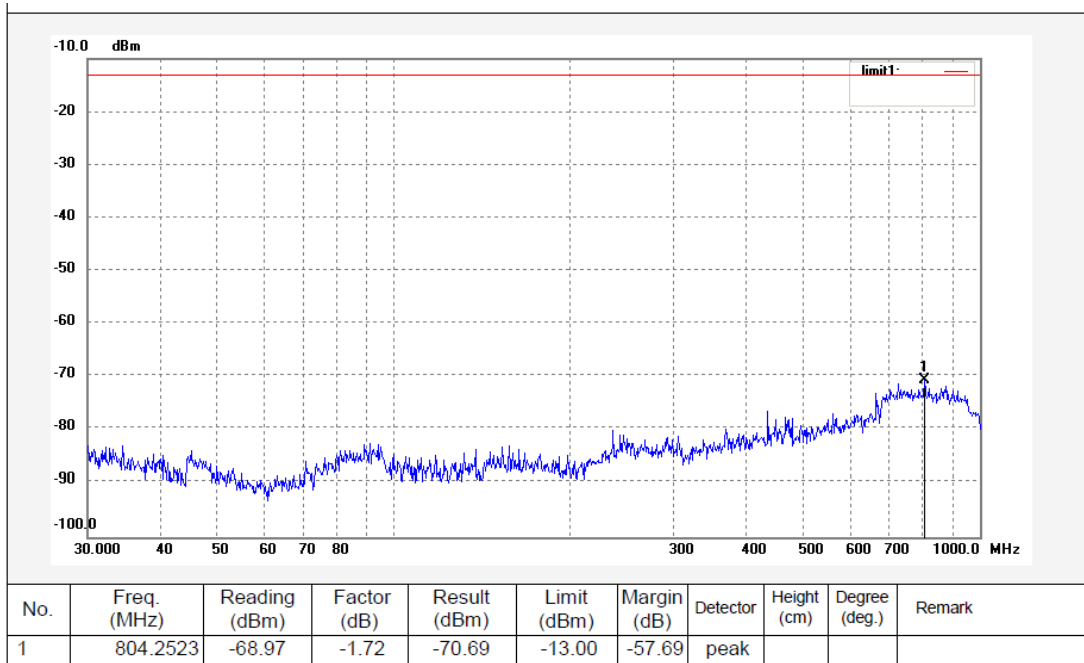
Middle channel
Horizontal



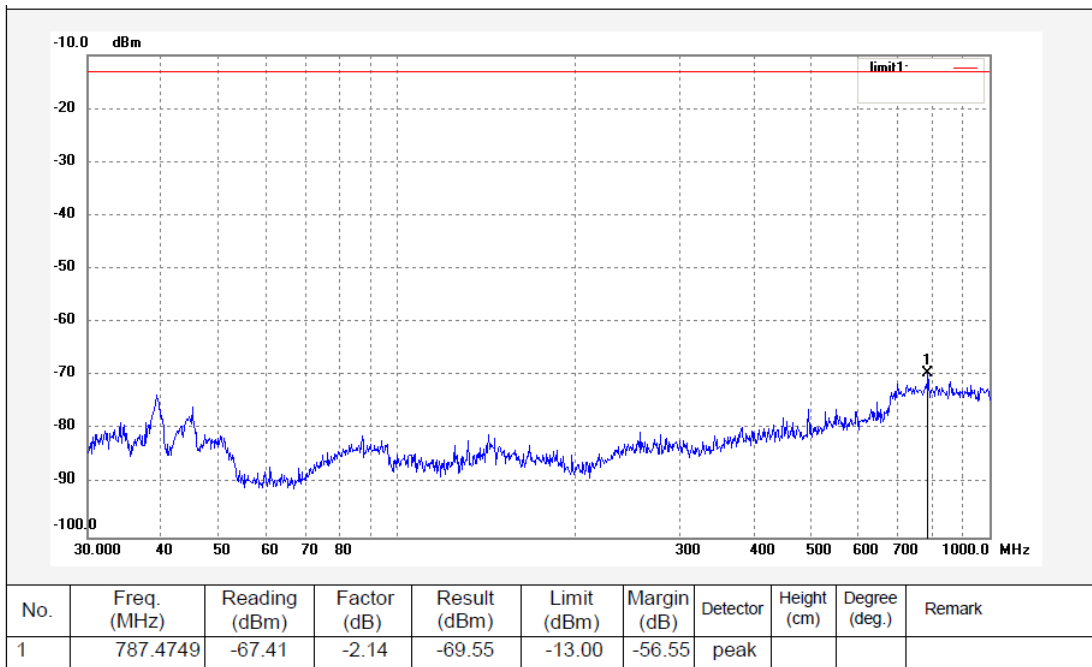
Vertical



High channel
Horizontal



Vertical



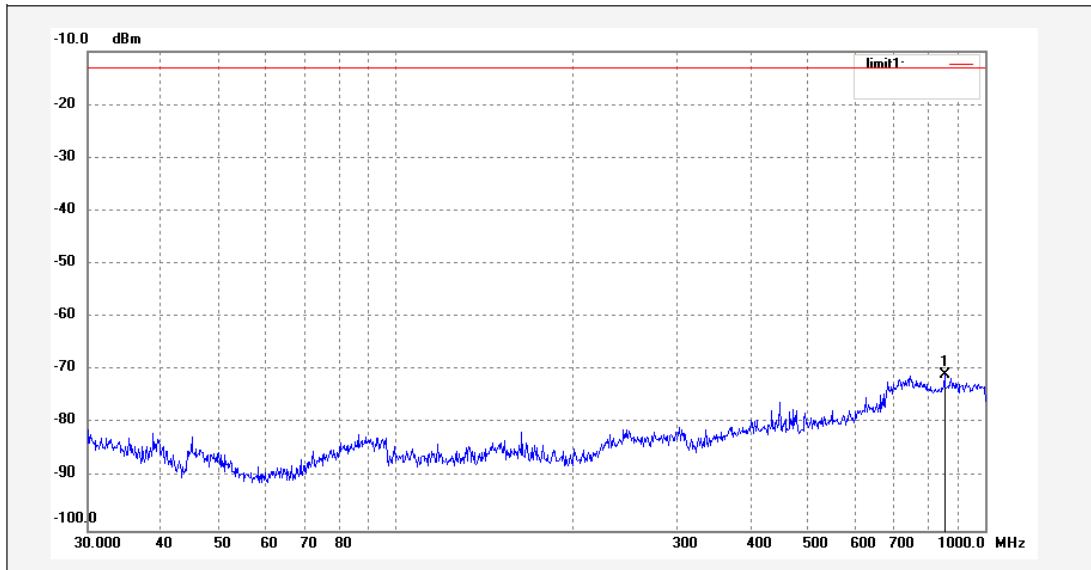
LTE Band: (Pre-scan with all the bandwidth, and worst case as below)

Band 4

Test frequency range: 30 MHz ~ 1 GHz

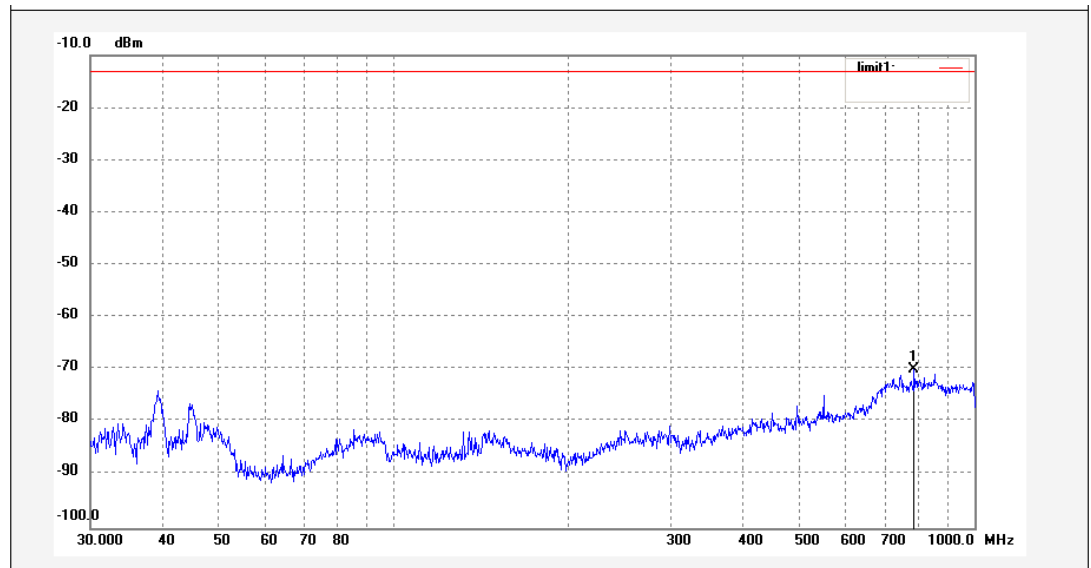
1.4 MHz, Low channel

Horizontal



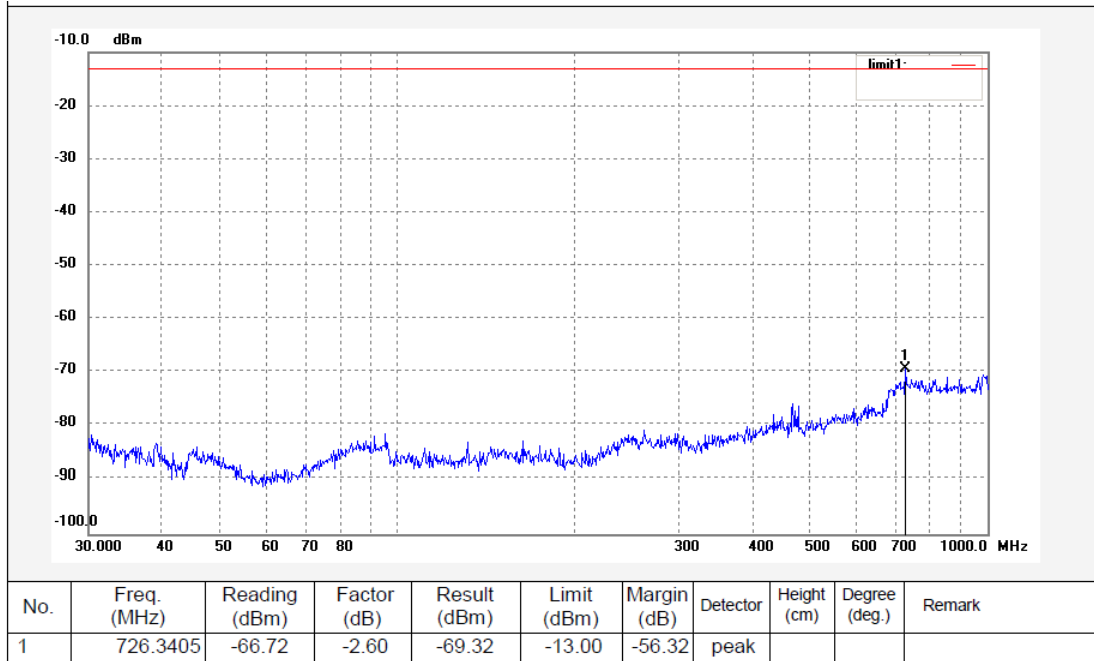
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	853.7545	-68.85	-1.98	-70.83	-13.00	-57.83	peak			

Vertical

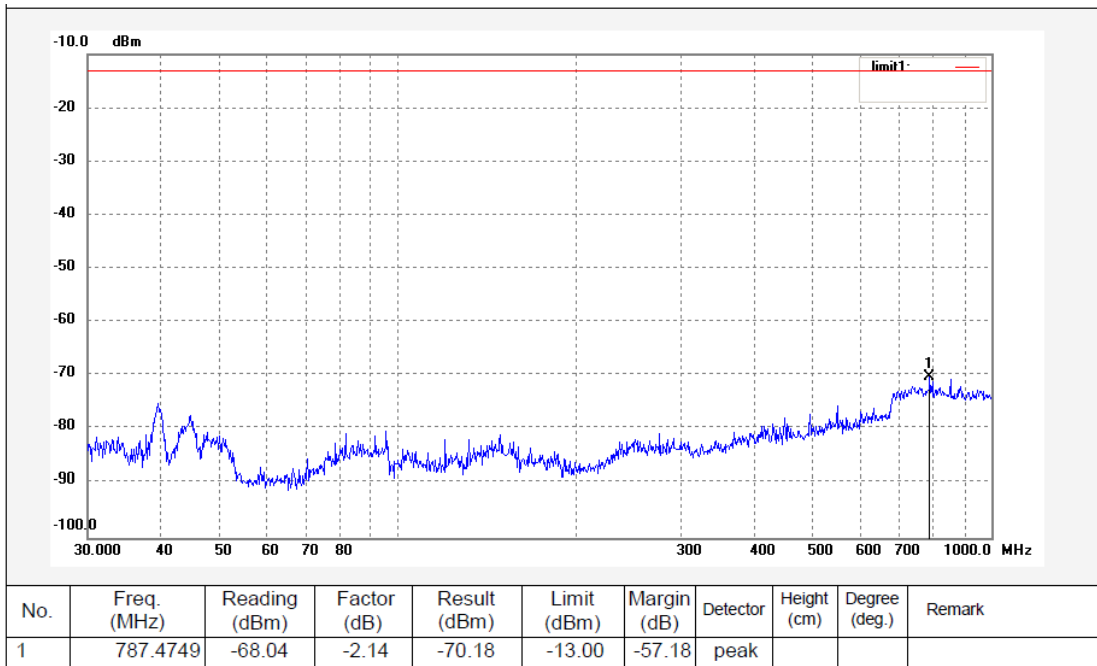


No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	787.4749	-67.72	-2.14	-69.86	-13.00	-56.86	peak			

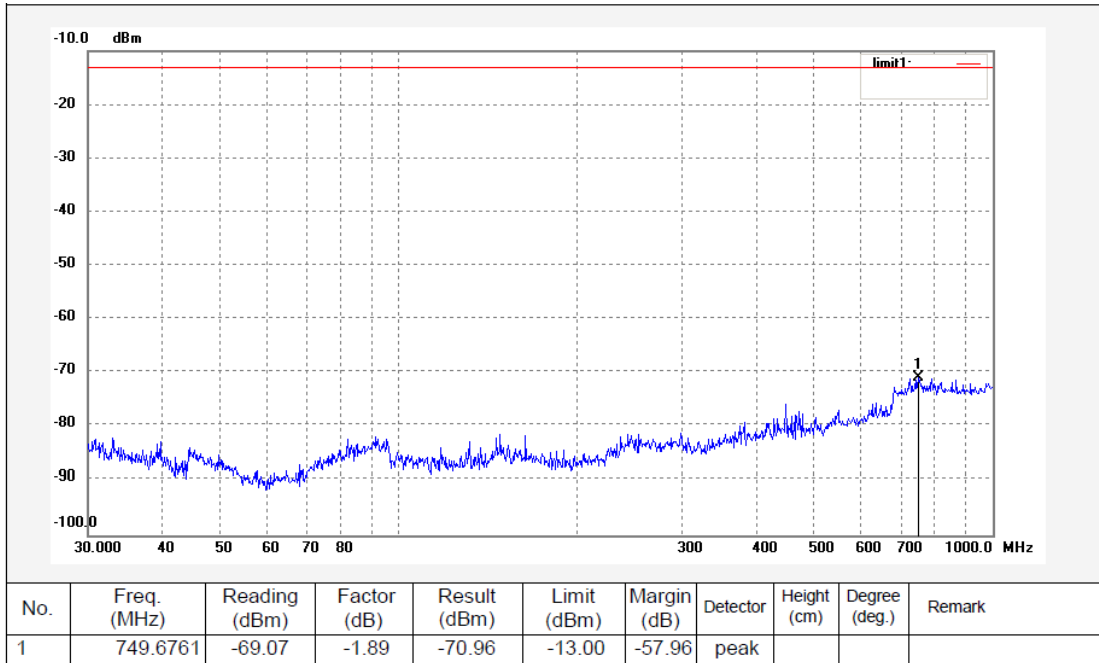
1.4 MHz, Middle channel
Horizontal



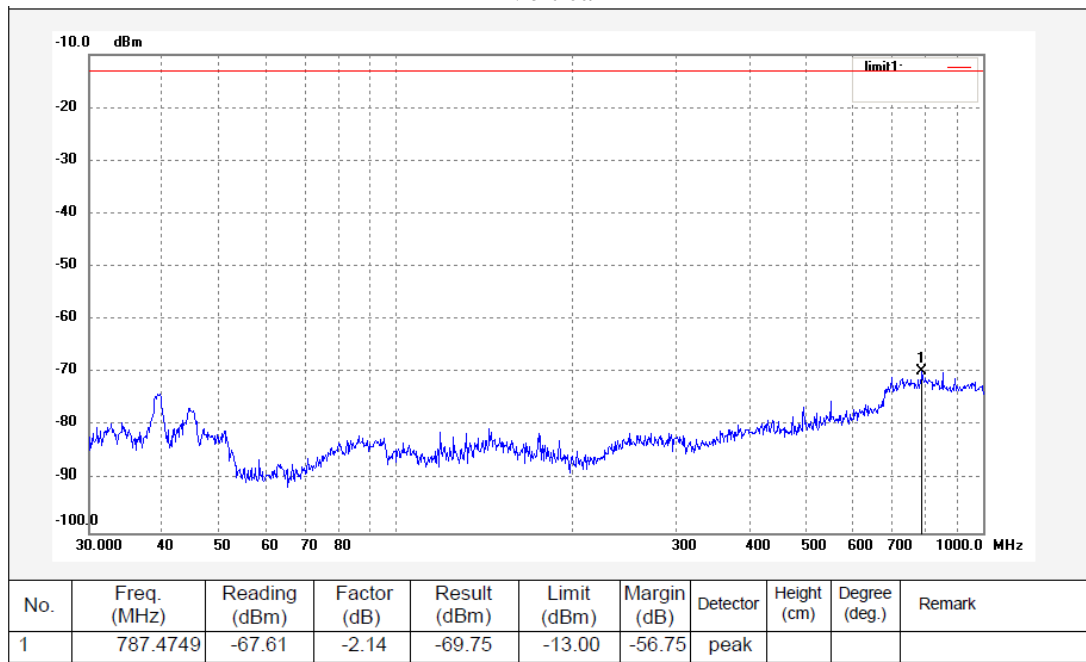
Vertical



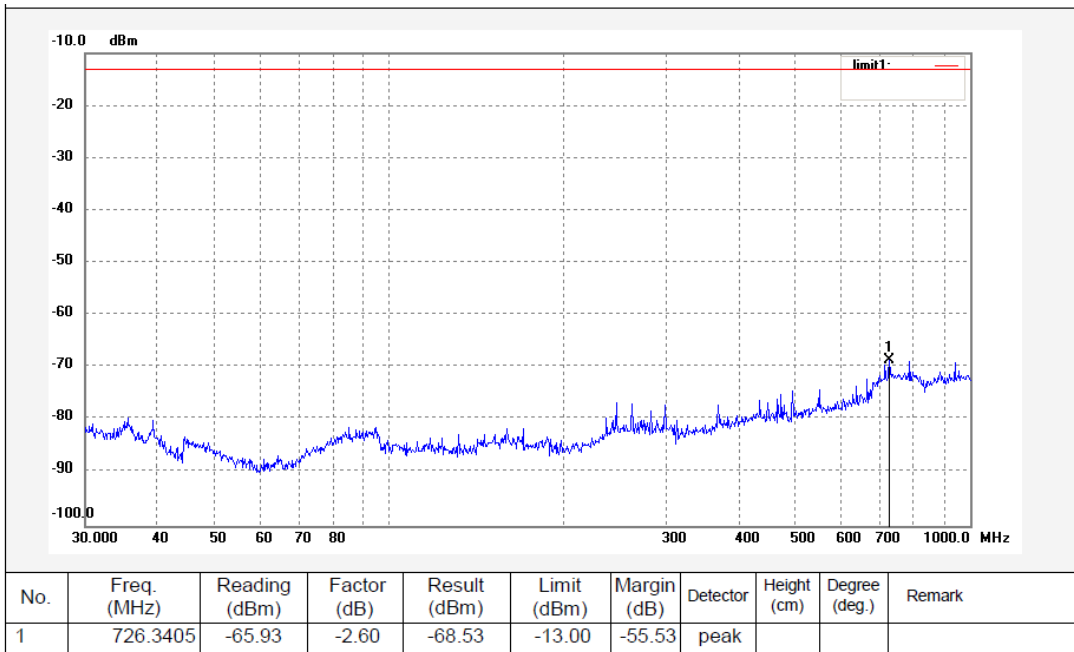
1.4 MHz, High channel
Horizontal



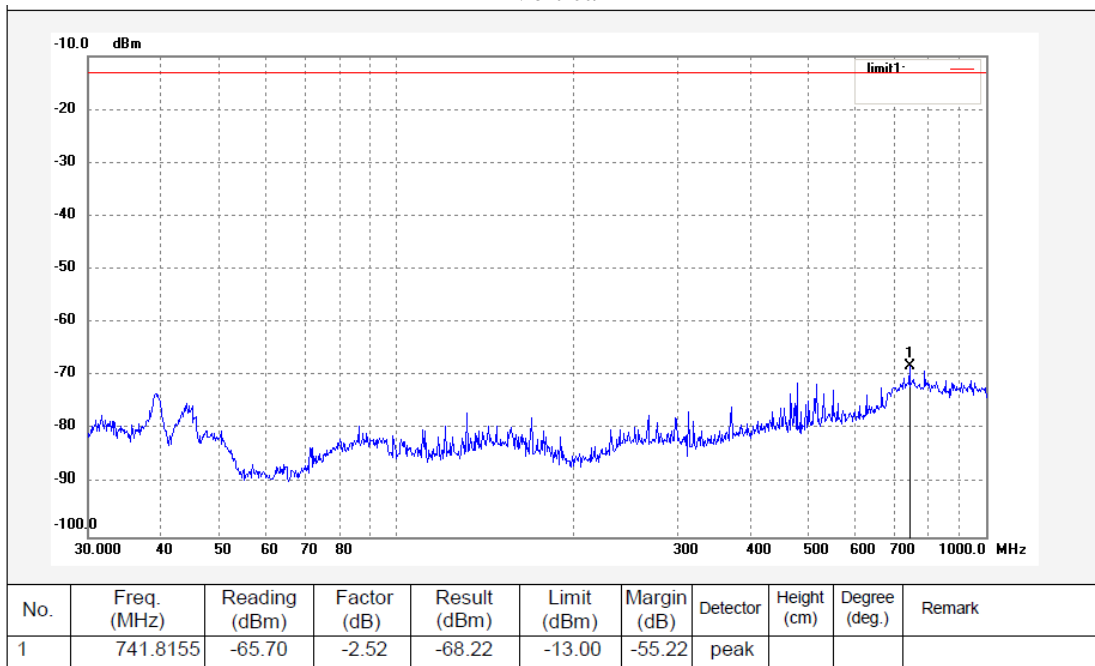
Vertical



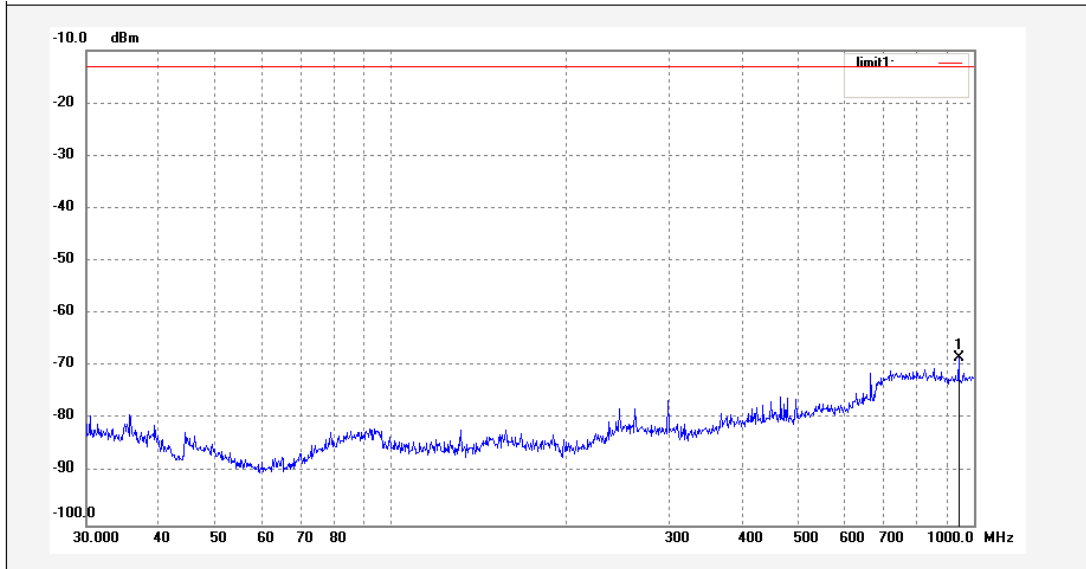
Band 7
 Test frequency range: 30 MHz ~ 1 GHz
 5 MHz, Low channel
 Horizontal



Vertical

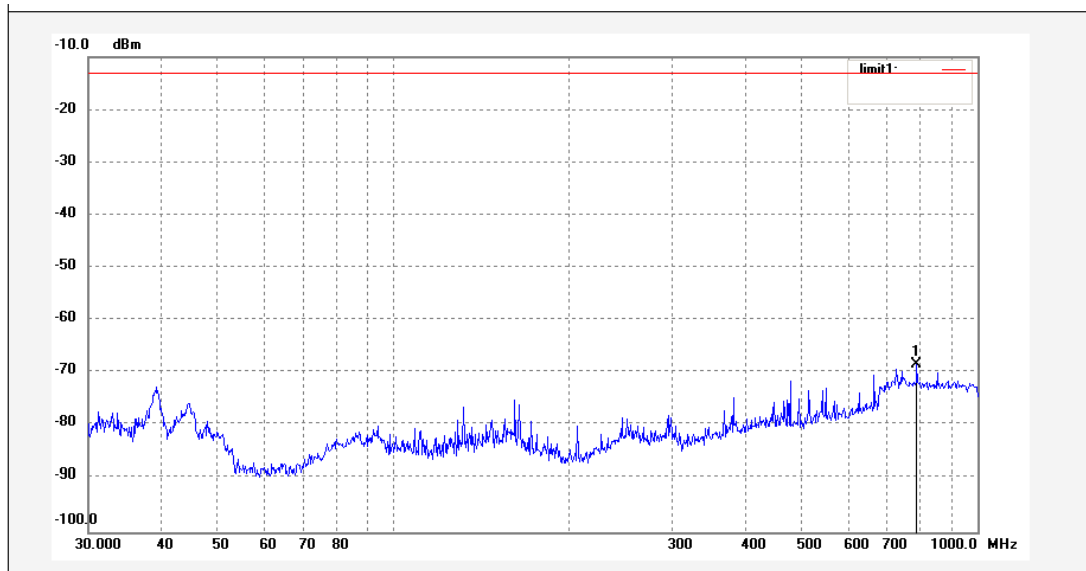


5 MHz, Middle channel
Horizontal



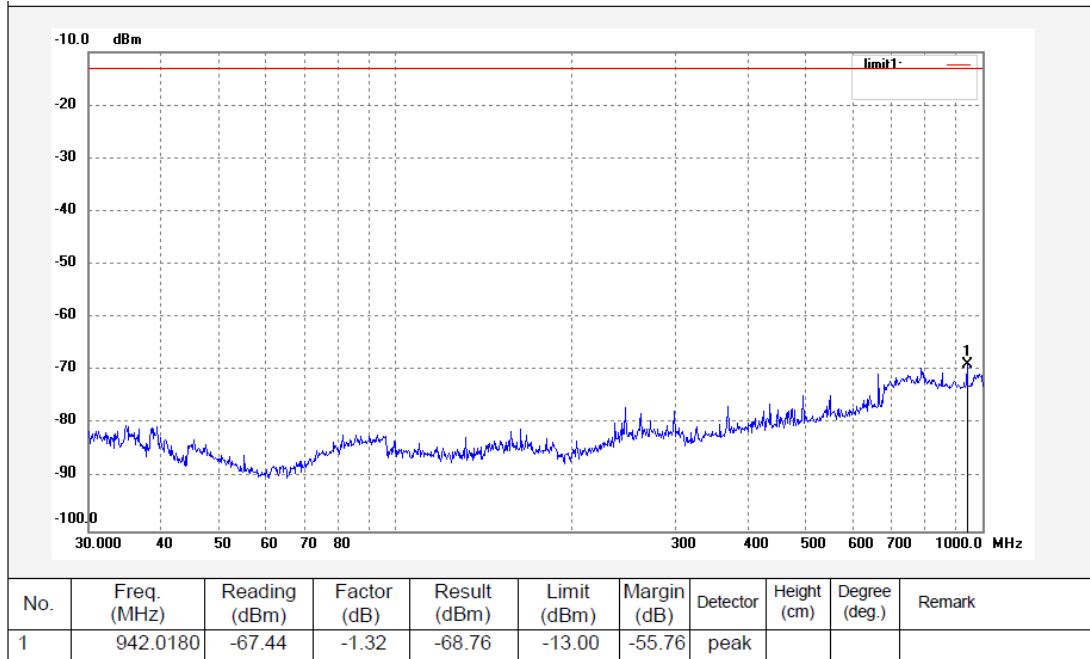
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	942.0180	-67.00	-1.32	-68.32	-13.00	-55.32	peak			

Vertical

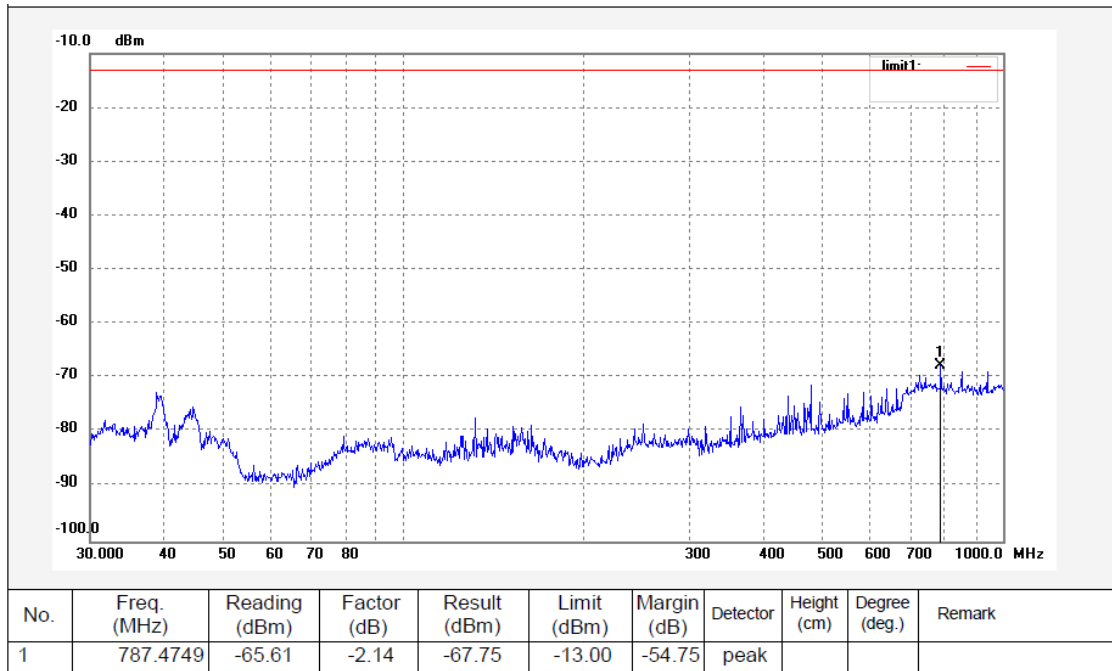


No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	787.4749	-66.20	-2.14	-68.34	-13.00	-55.34	peak			

5 MHz, High channel
Horizontal



Vertical

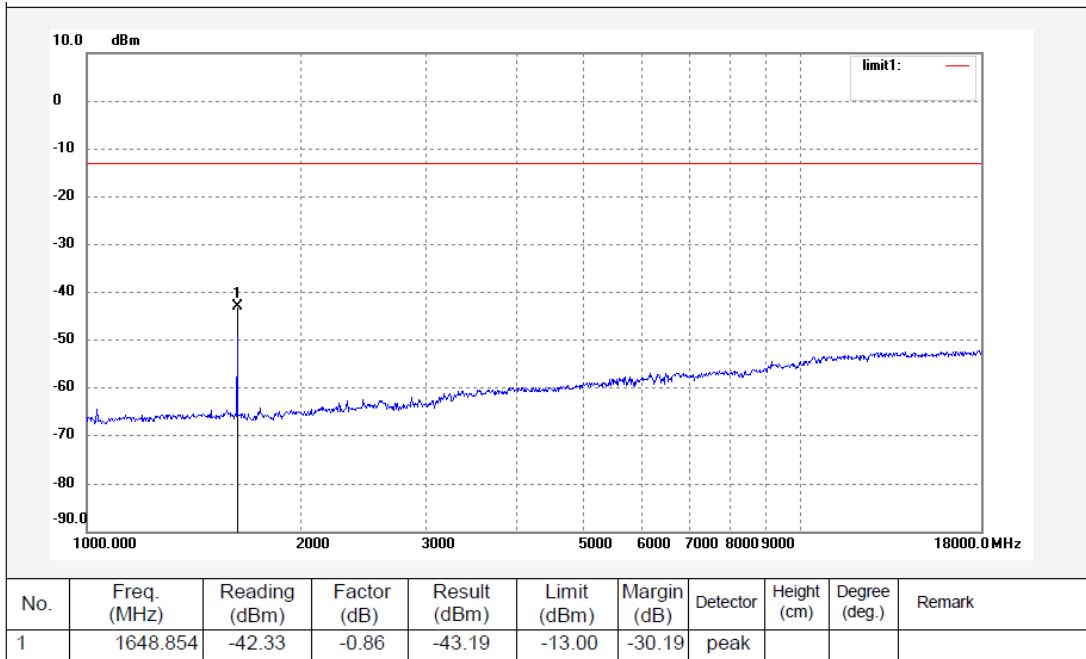


Above 1 GHz:

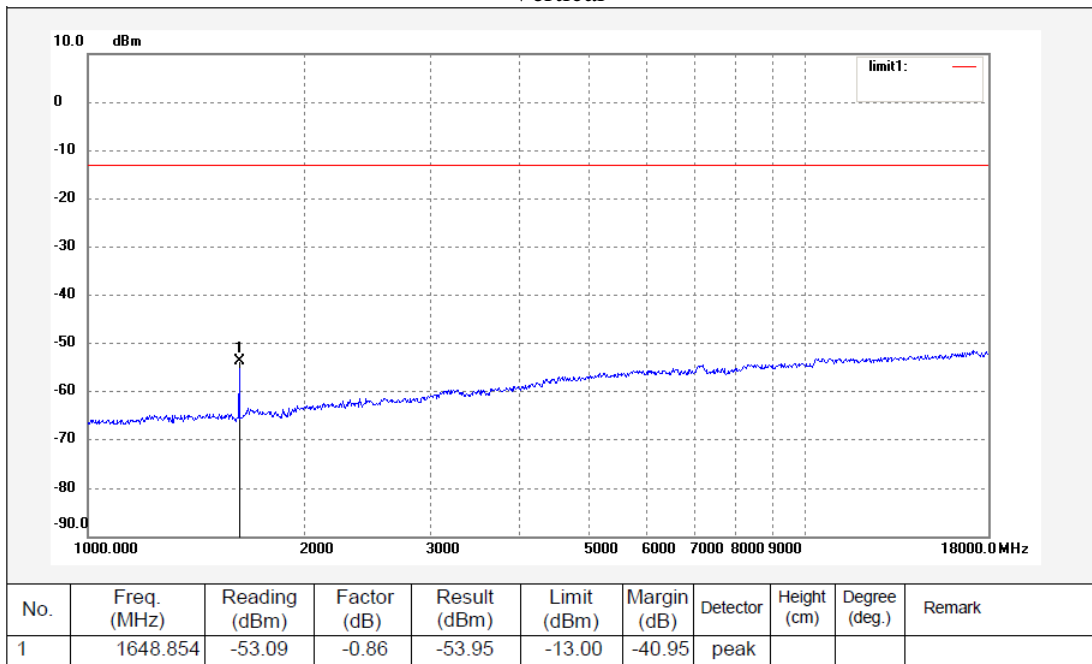
Test frequency range: 1 MHz ~ 18 GHz

Cellular Band (Part 22H)

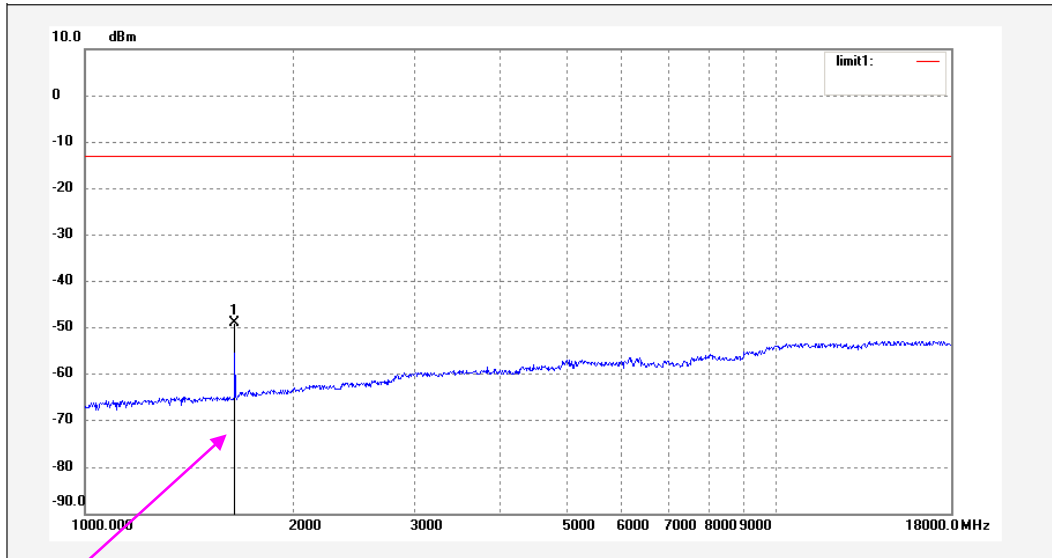
GSM Mode
Low channel
Horizontal



Vertical



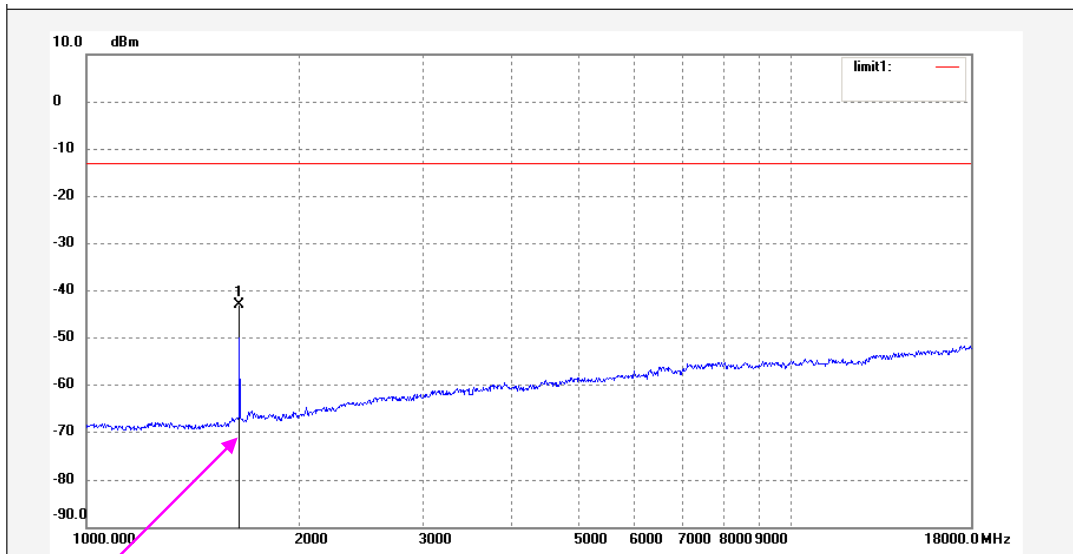
Middle channel
Horizontal



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1673.291	-49.14	-0.07	-49.21	-13.00	-36.21	peak			

Fundamental test

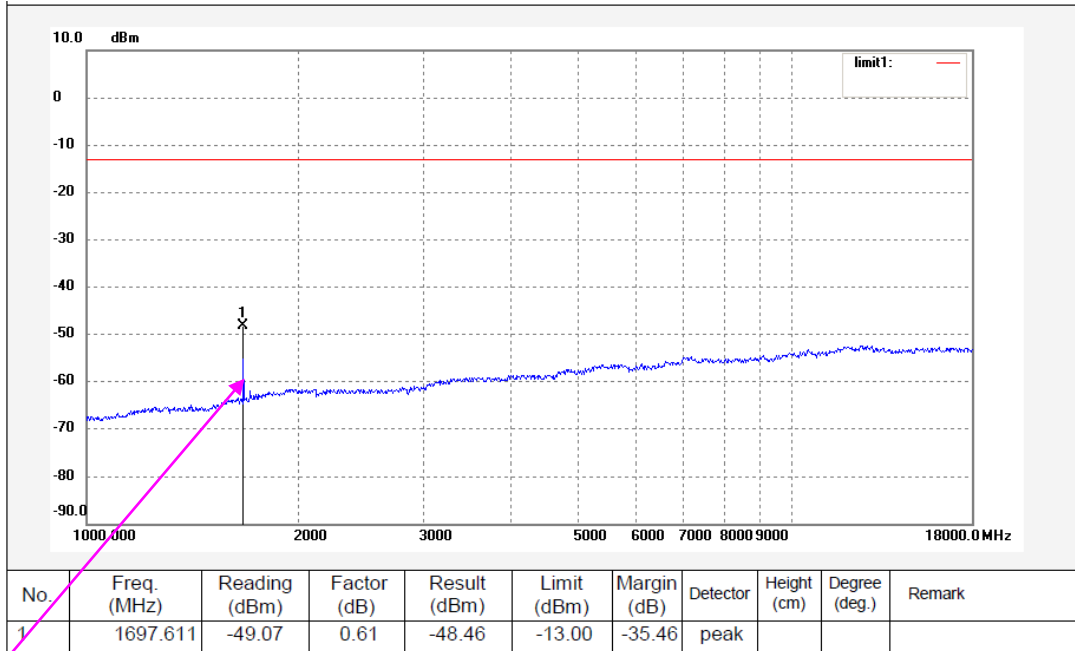
Vertical



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1673.291	-43.15	-0.07	-43.22	-13.00	-30.22	peak			

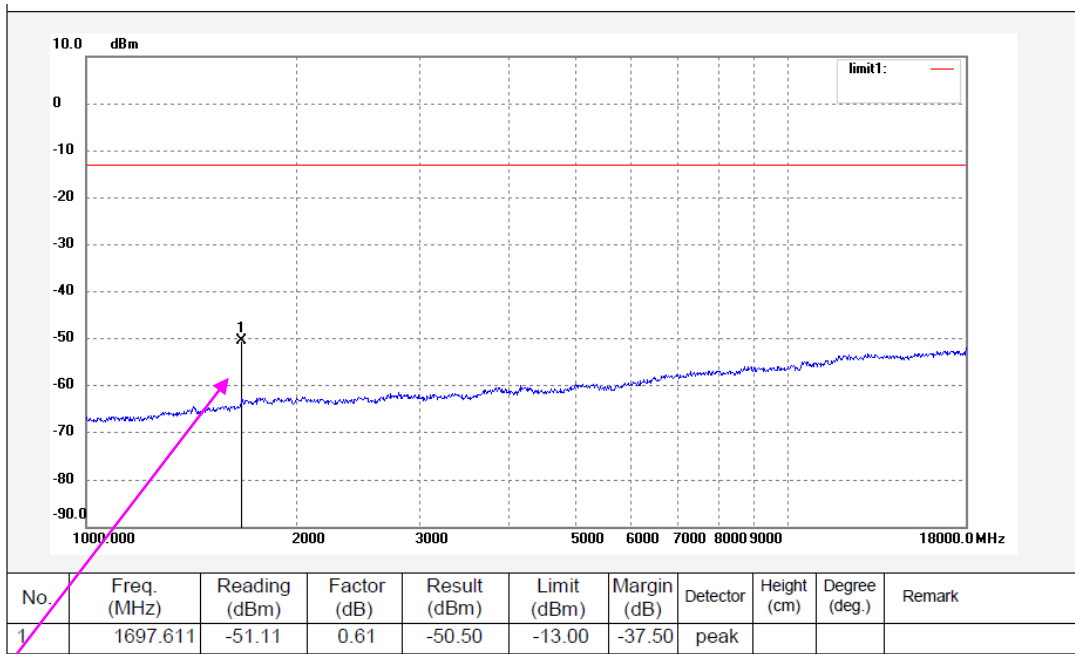
Fundamental test

High channel
Horizontal



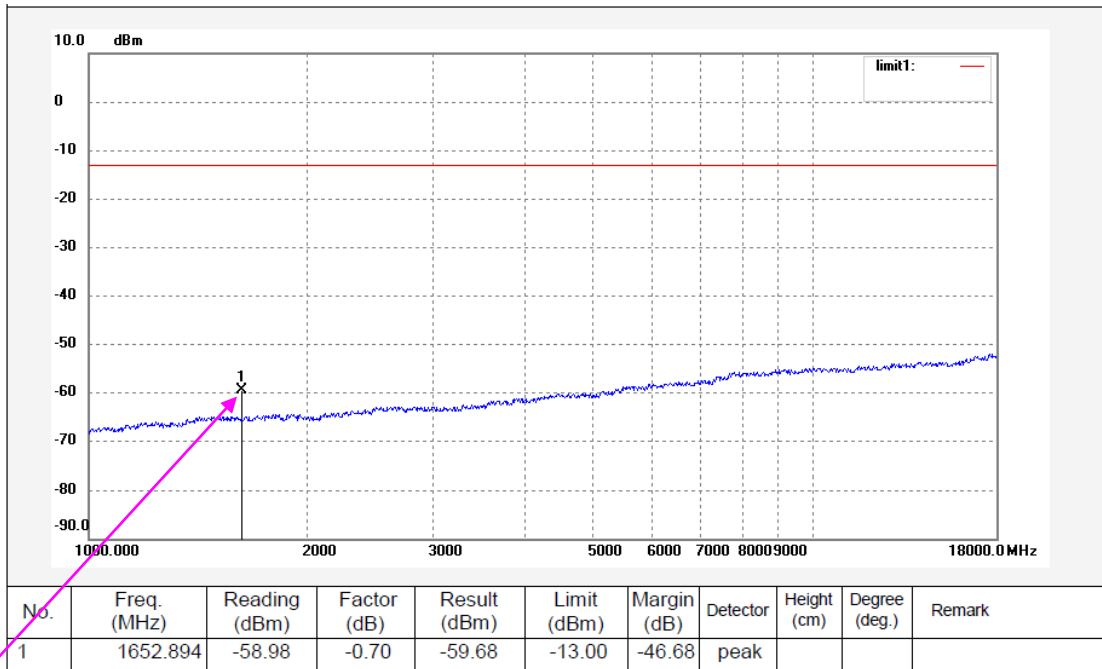
Fundamental test

Vertical



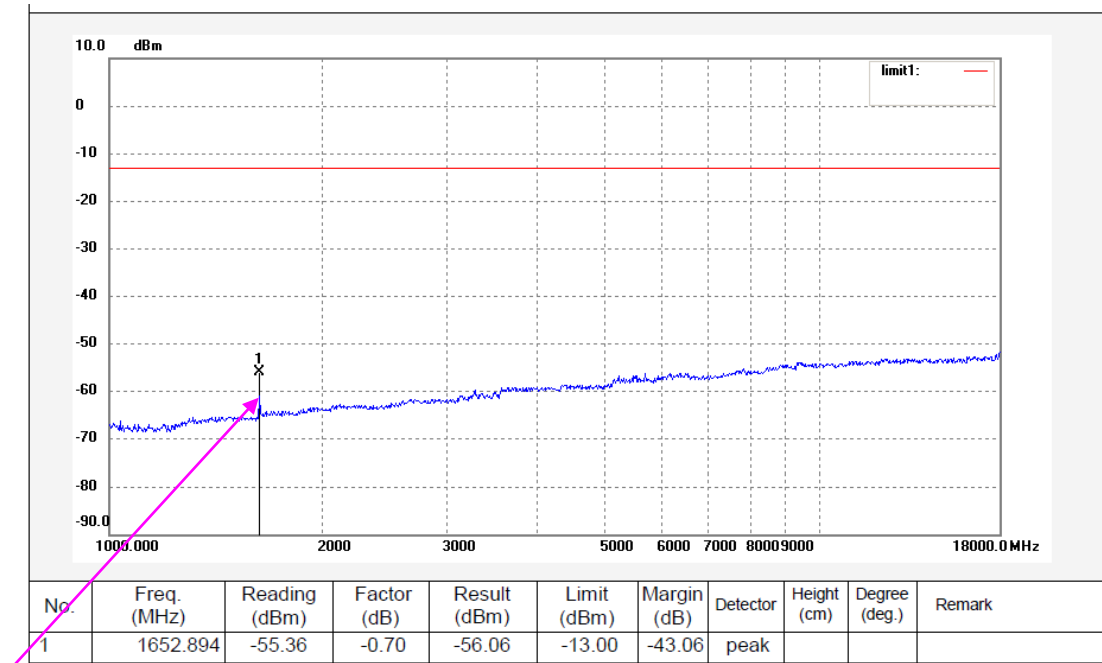
Fundamental test

WCDMA Mode
Low channel
Horizontal



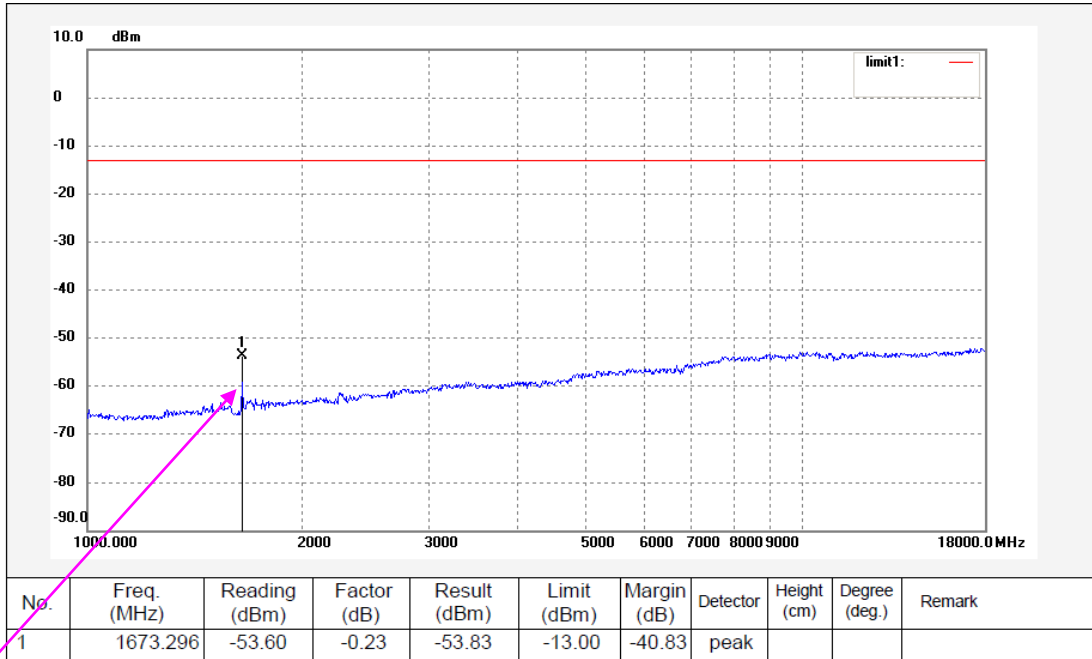
Fundamental test

Vertical



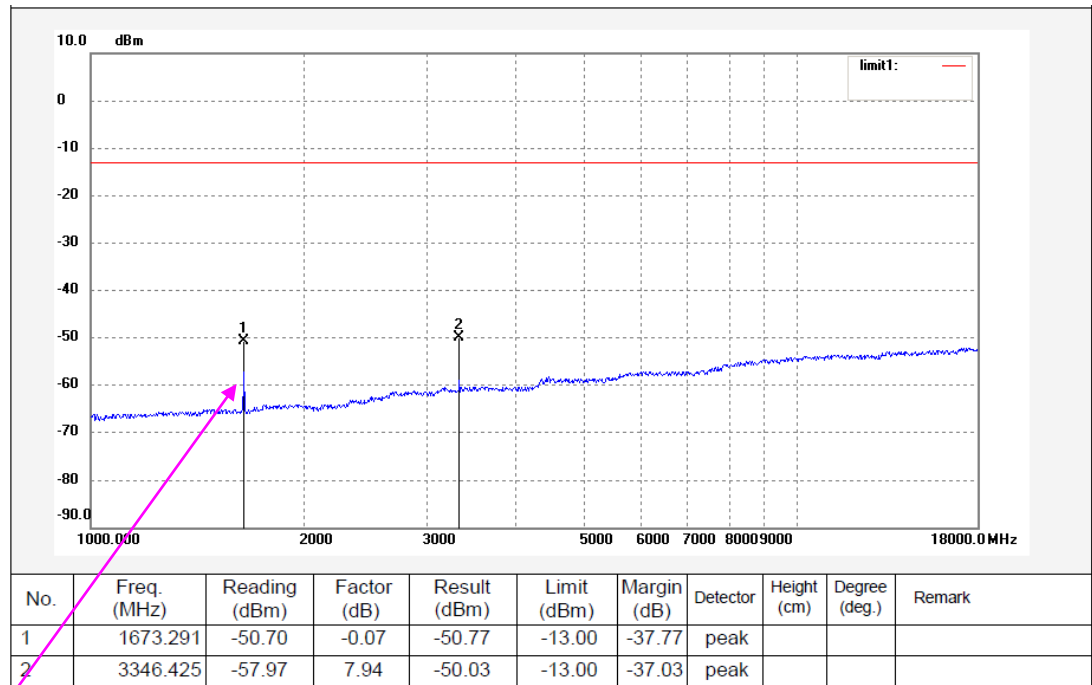
Fundamental test

Middle channel
Horizontal



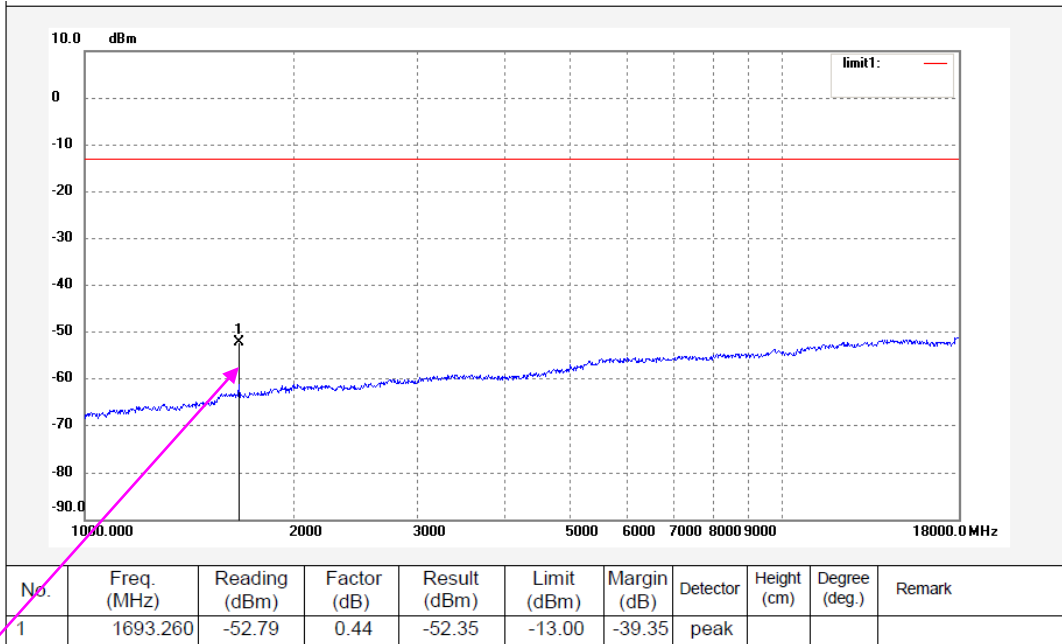
Fundamental test

Vertical



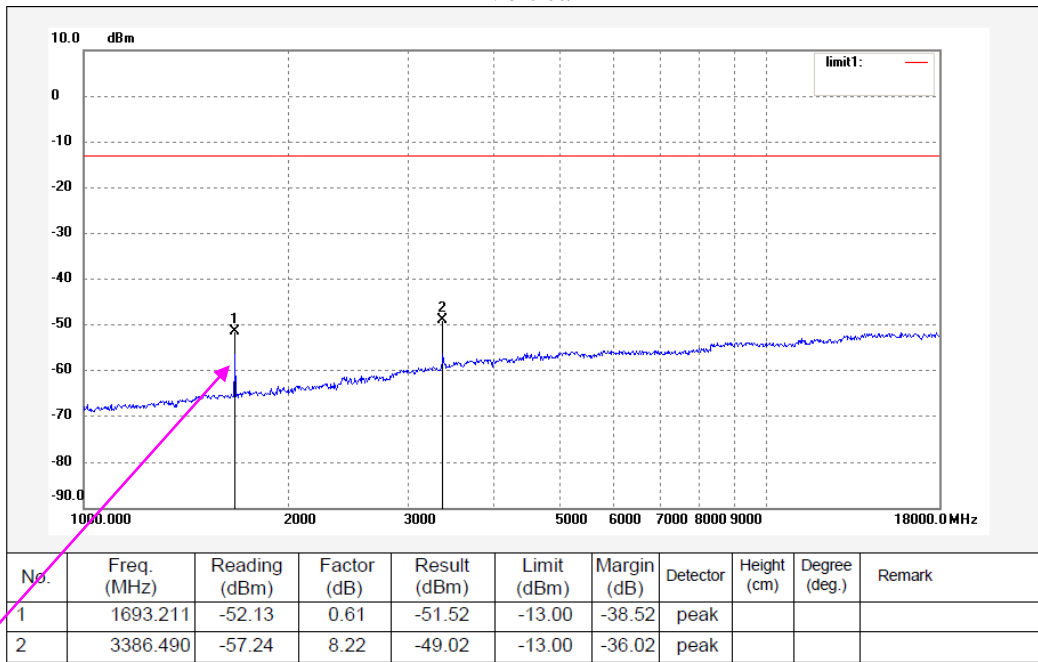
Fundamental test

High channel
Horizontal



Fundamental test

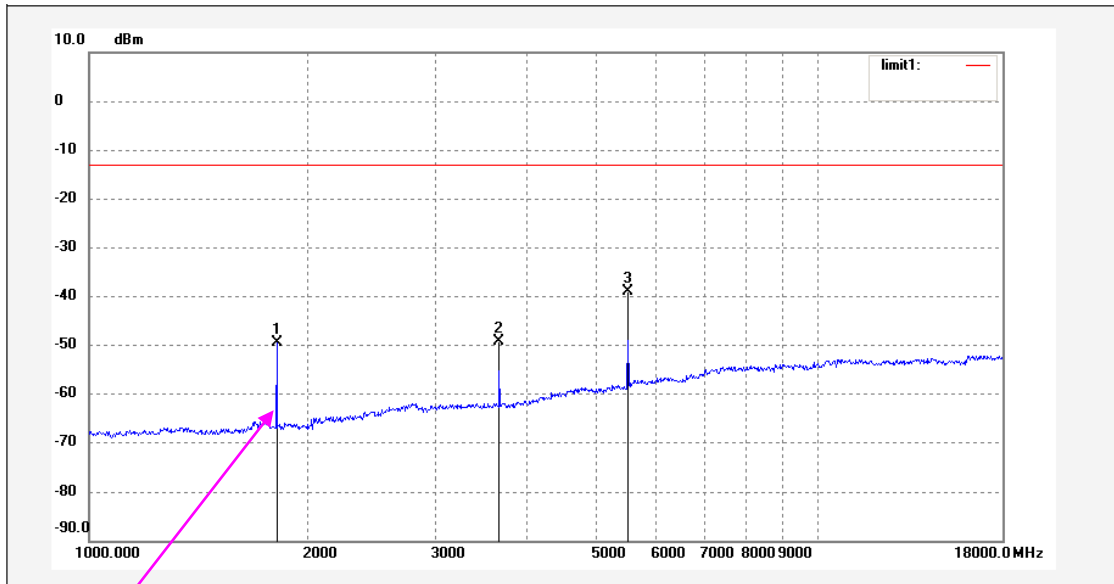
Vertical



Fundamental test

PCS Band (Part 24E)

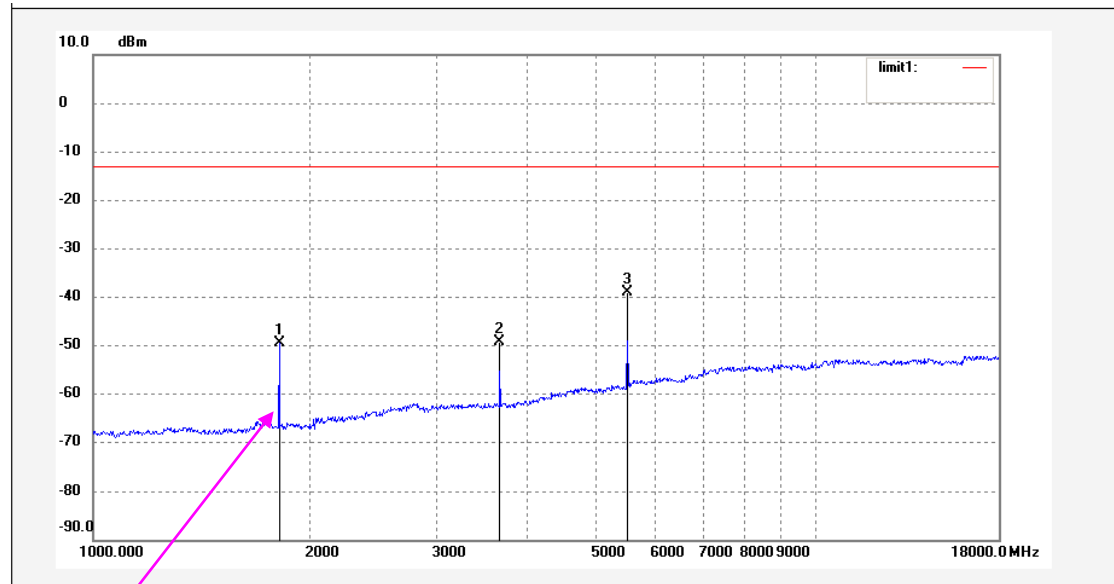
GSM Mode
Low channel
Horizontal



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1850.242	-50.31	0.74	-49.57	-13.00	-36.57	peak			
2	3700.473	-58.90	9.60	-49.30	-13.00	-36.30	peak			
3	5550.625	-53.60	14.51	-39.09	-13.00	-26.09	peak			

Fundamental test

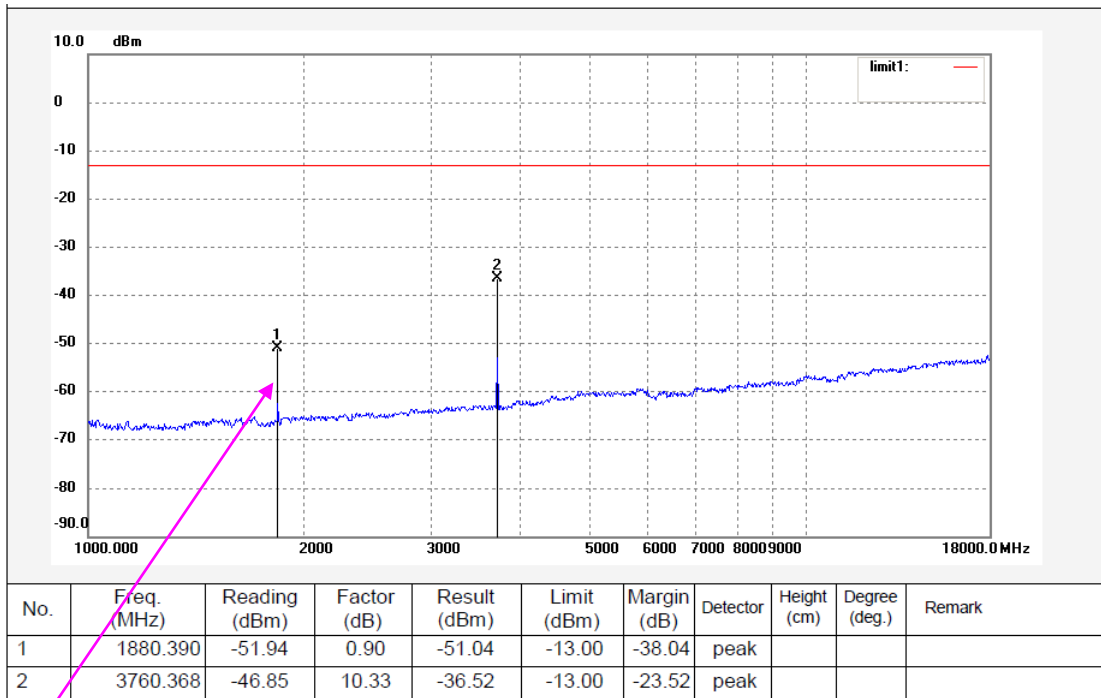
Vertical



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1850.242	-50.31	0.74	-49.57	-13.00	-36.57	peak			
2	3700.473	-58.90	9.60	-49.30	-13.00	-36.30	peak			
3	5550.625	-53.60	14.51	-39.09	-13.00	-26.09	peak			

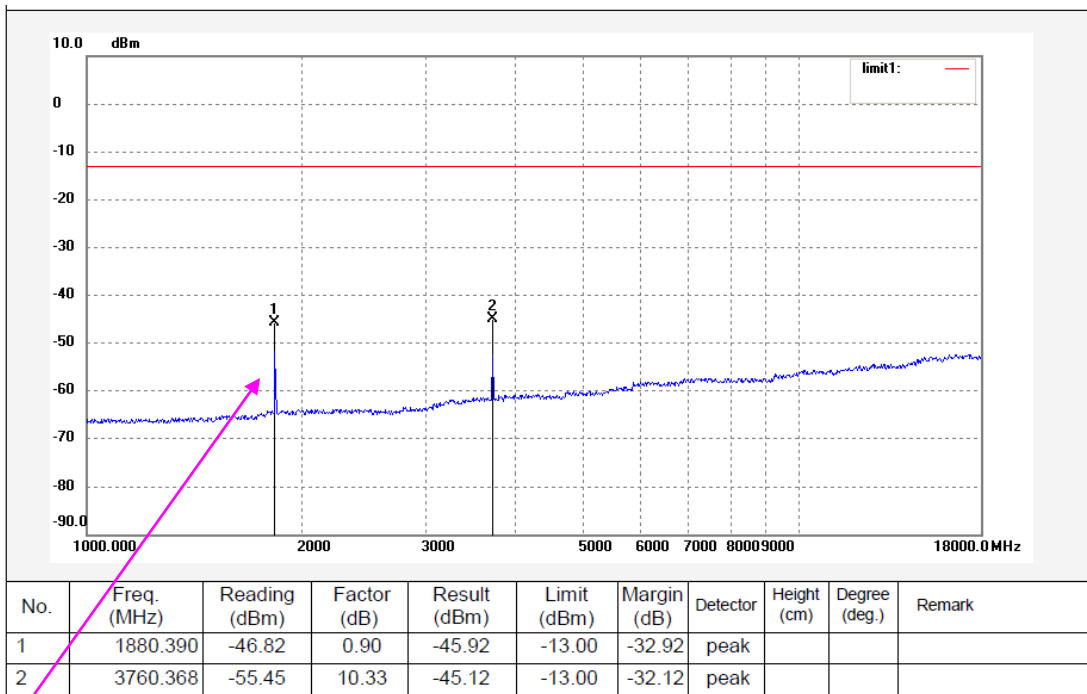
Fundamental test

Middle channel
Horizontal



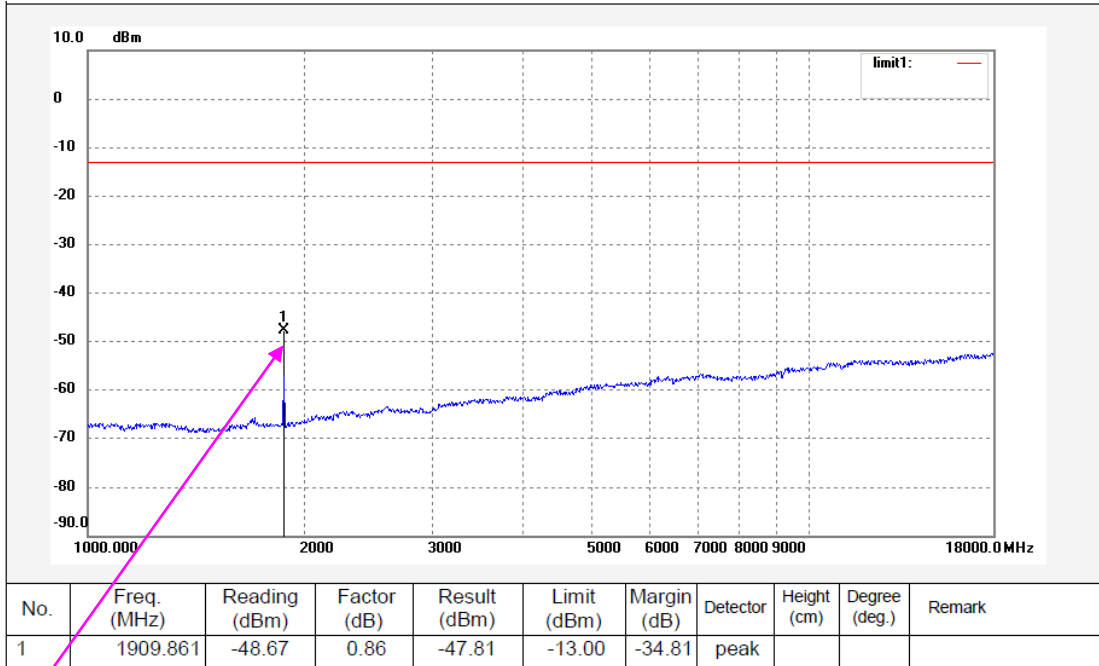
Fundamental test

Vertical



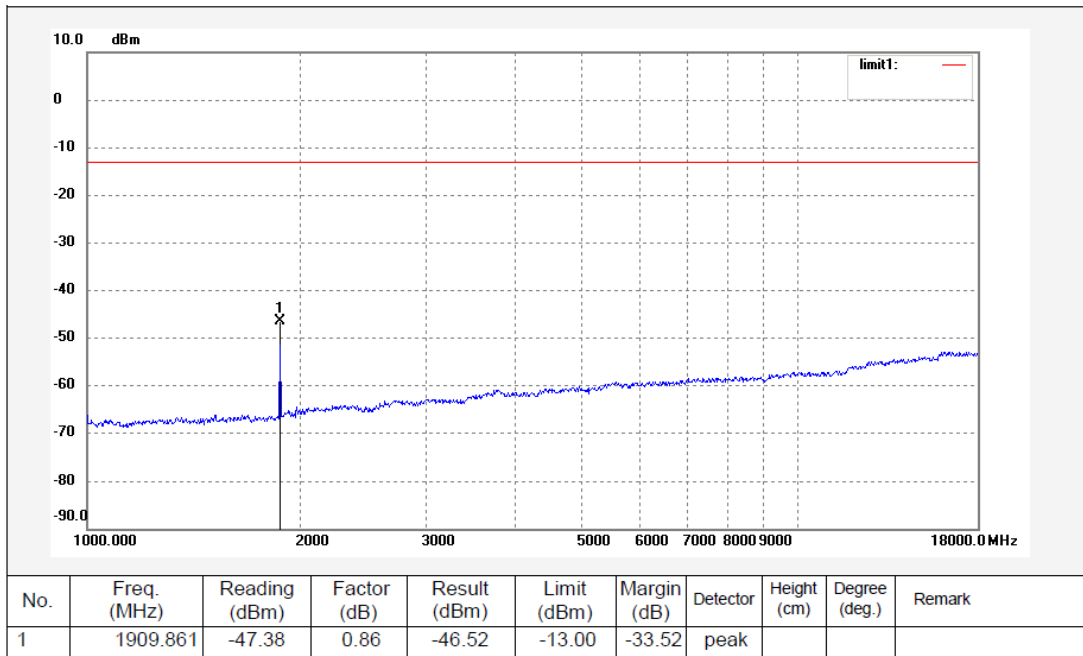
Fundamental test

High channel
Horizontal

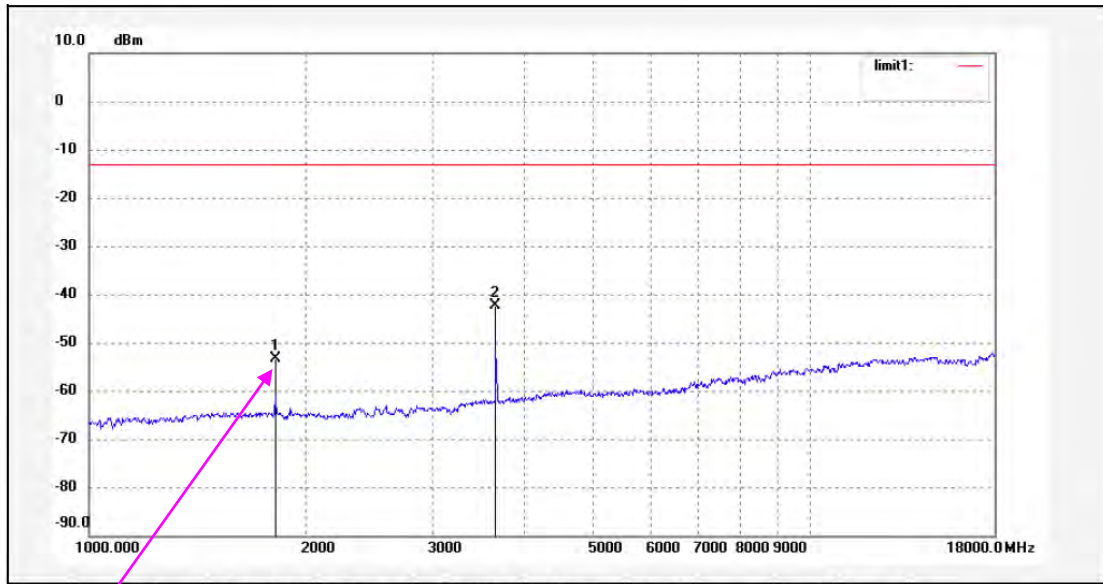


Fundamental test

Vertical



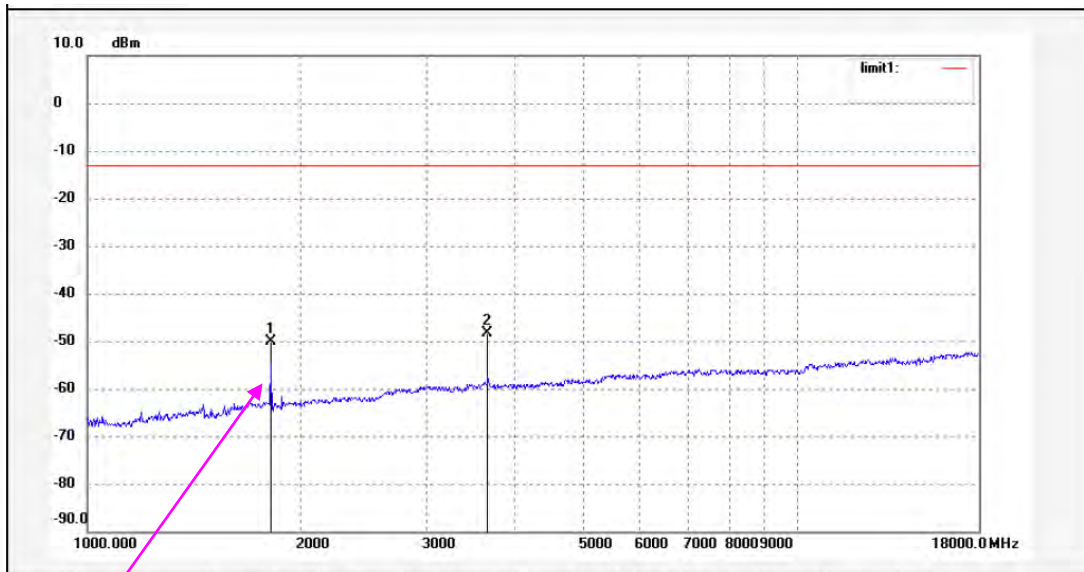
WCDMA Mode
Low channel
Horizontal



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1852.443	-53.99	0.74	-53.25	-13.00	-40.25	peak			
2	3704.873	-52.03	9.60	-42.43	-13.00	-29.43	peak			

Fundamental test

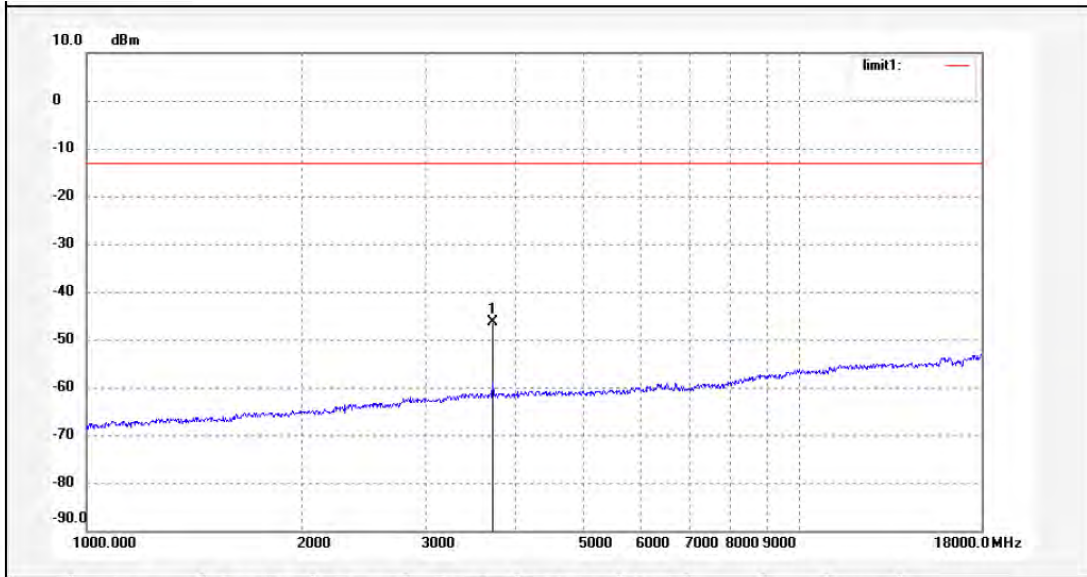
Vertical



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1852.443	-50.86	0.74	-50.12	-13.00	-37.12	peak			
2	3704.873	-58.03	9.60	-48.43	-13.00	-35.43	peak			

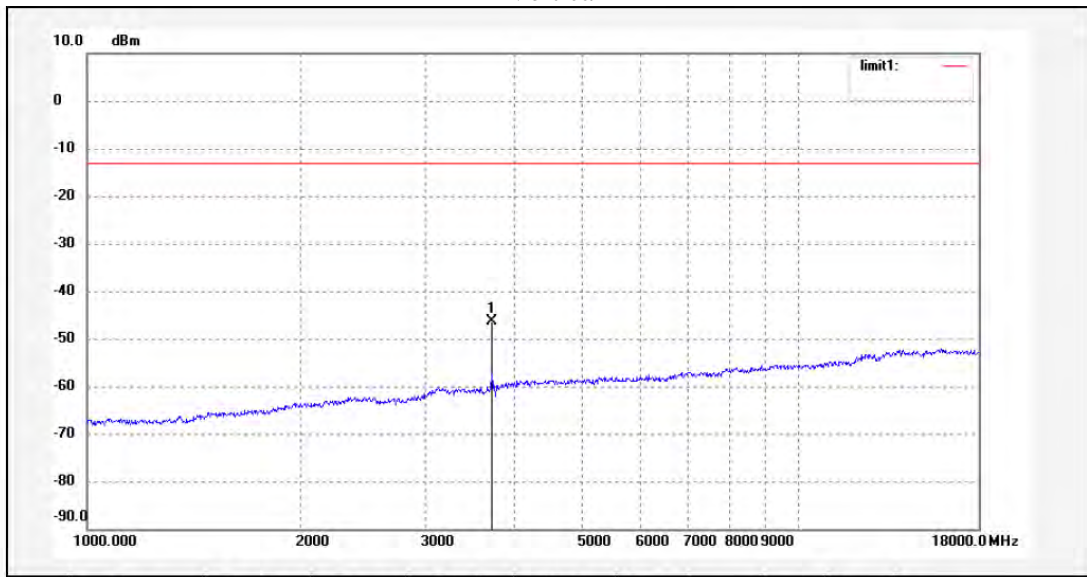
Fundamental test

Middle channel
Horizontal



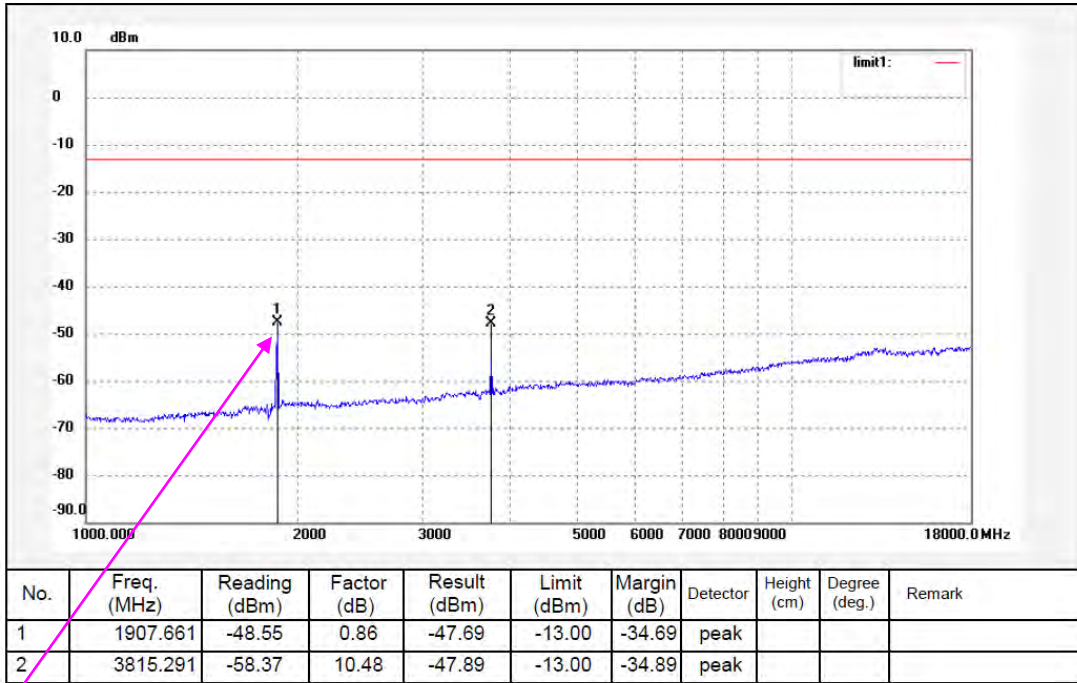
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	3760.368	-56.78	10.33	-46.45	-13.00	-33.45	peak			

Vertical



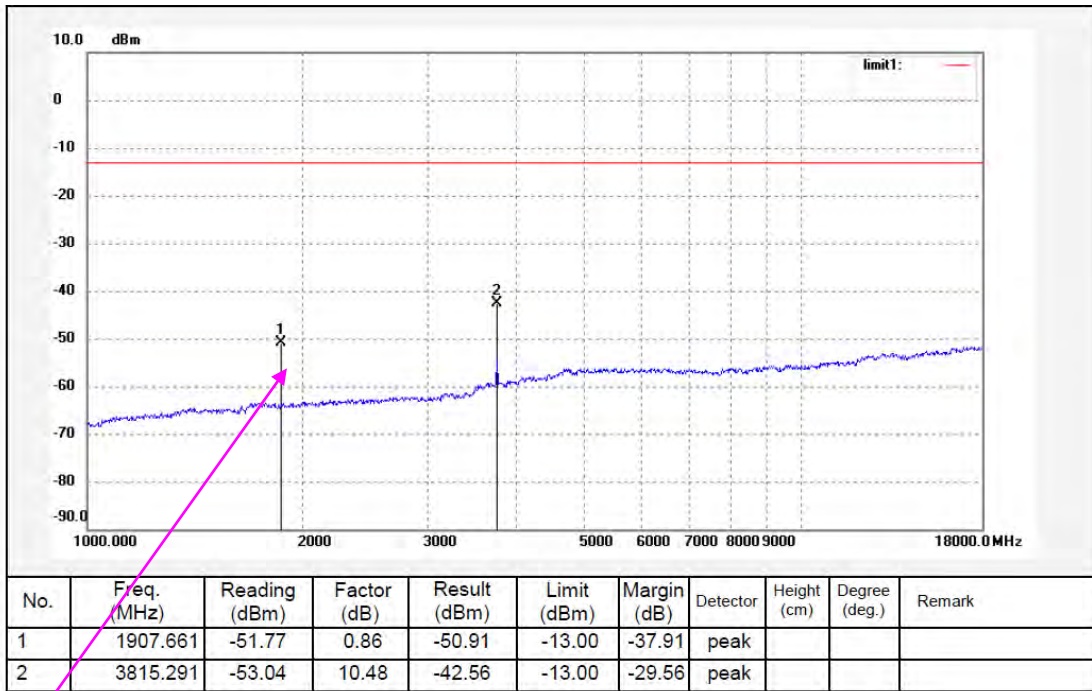
No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	3760.368	-56.80	10.33	-46.47	-13.00	-33.47	peak			

High channel
Horizontal



Fundamental test

Vertical

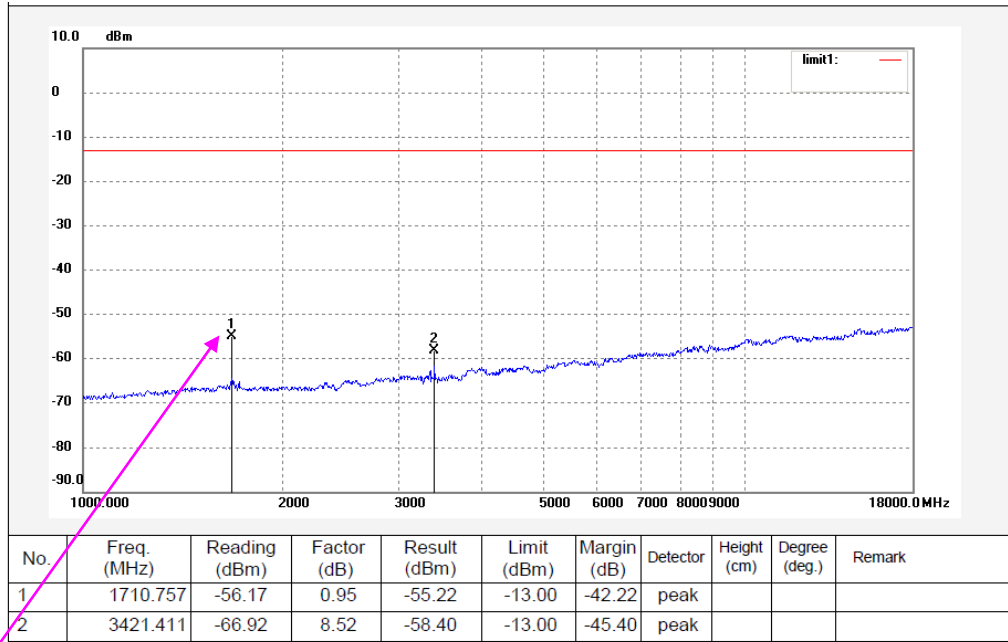


Fundamental test

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

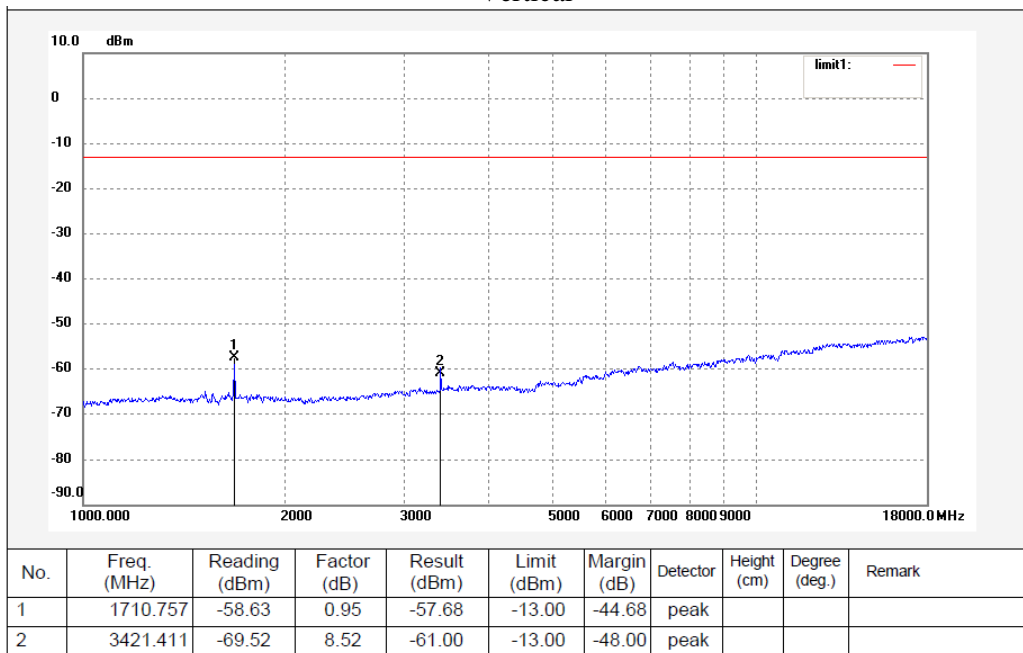
Test frequency range: 1 GHz ~ 18 GHz

Band 4
1.4 MHz, Low channel
Horizontal

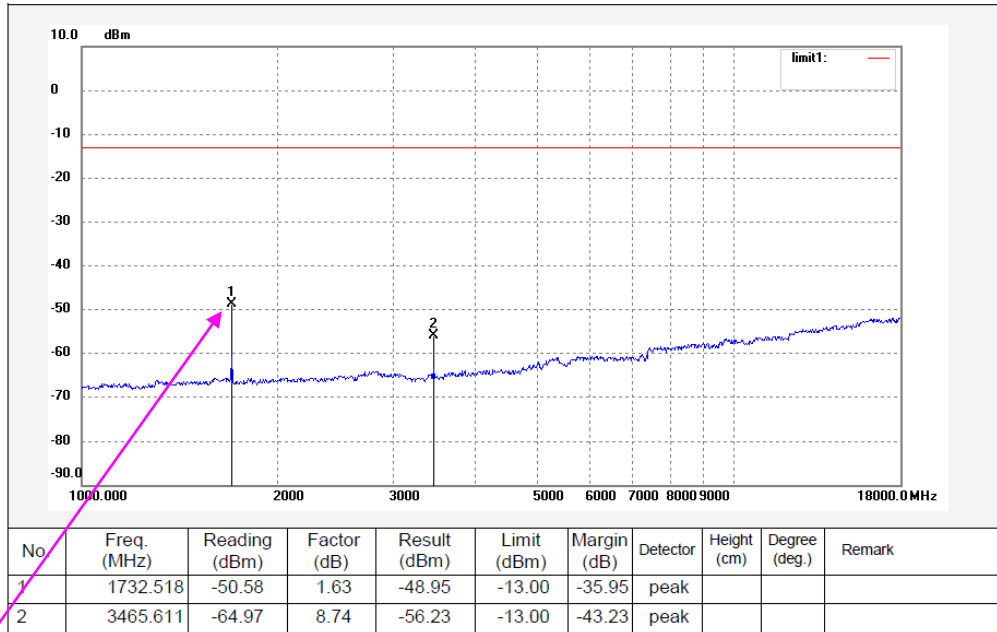


Fundamental test

Vertical

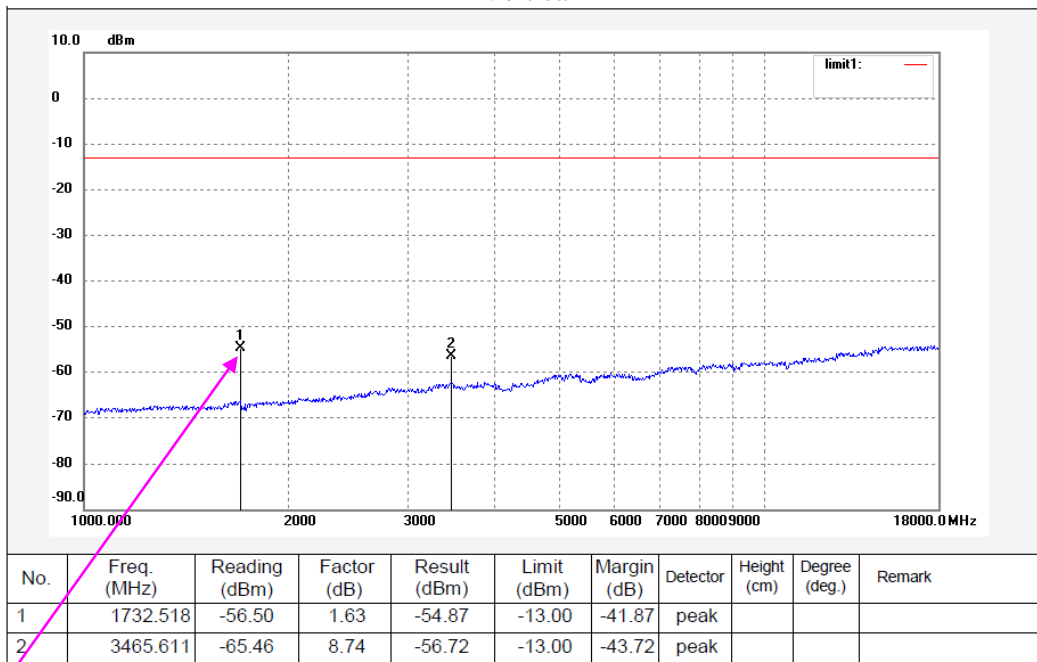


1.4 MHz, Middle channel
Horizontal



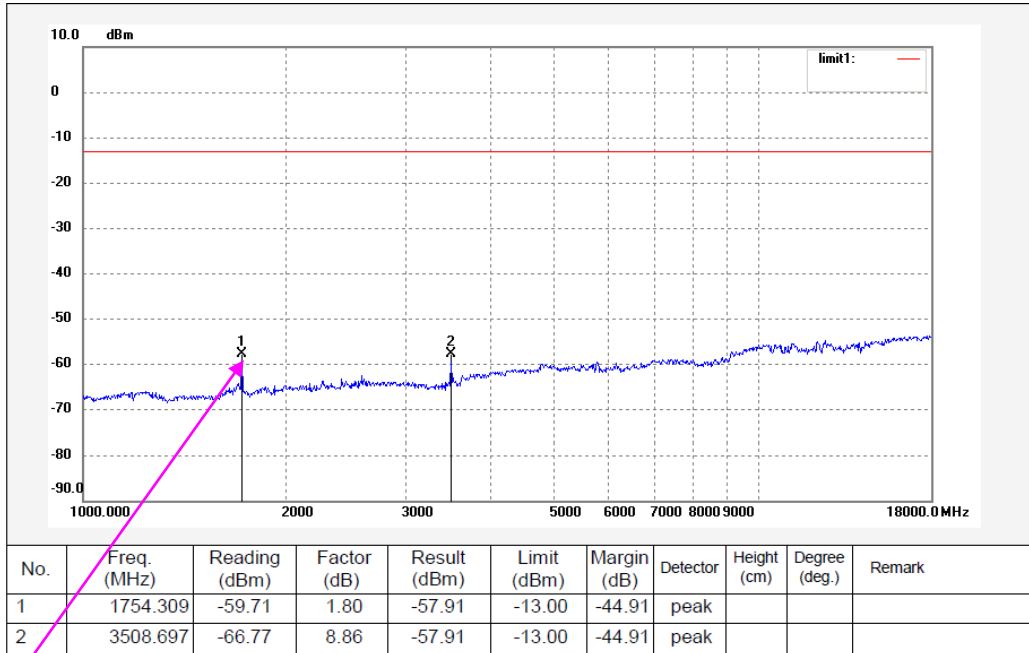
Fundamental test

Vertical



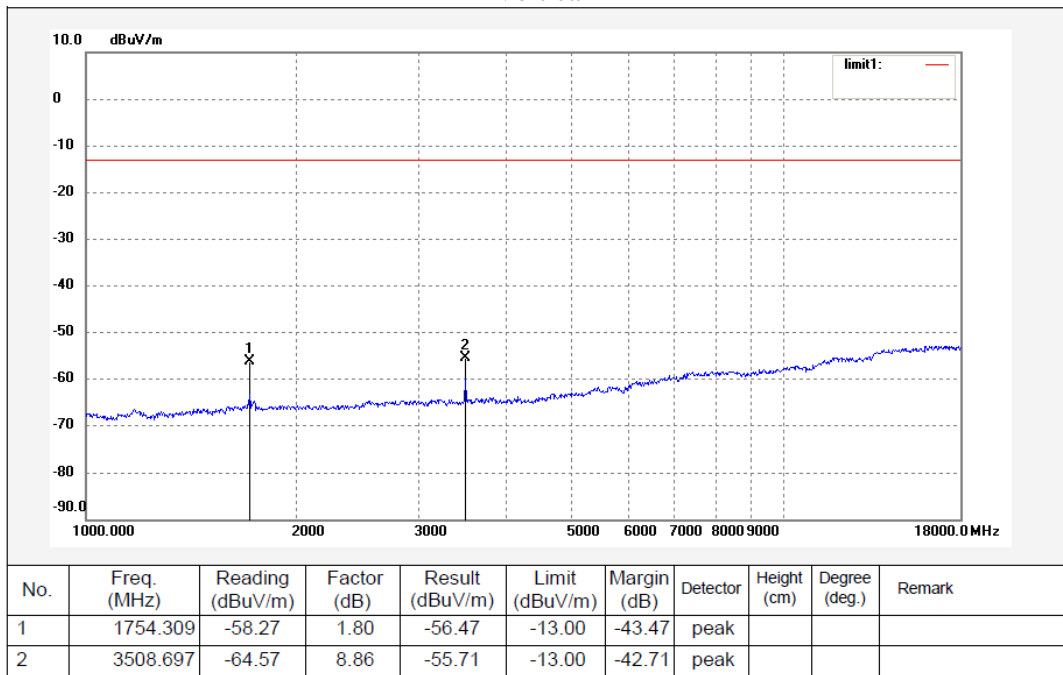
Fundamental test

1.4 MHz, High channel
Horizontal

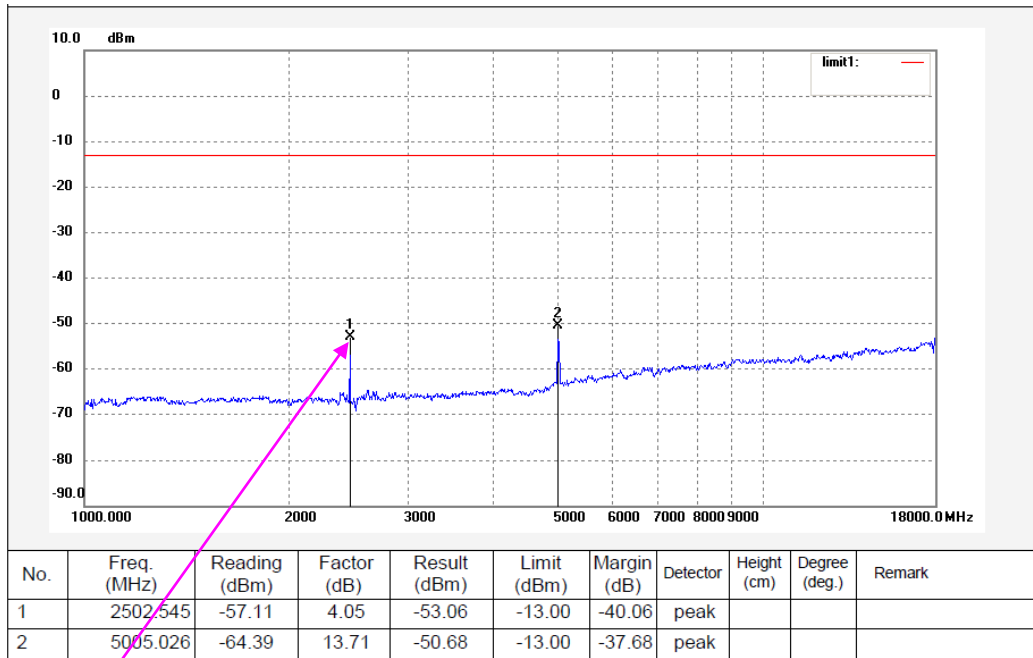


Fundamental test

Vertical

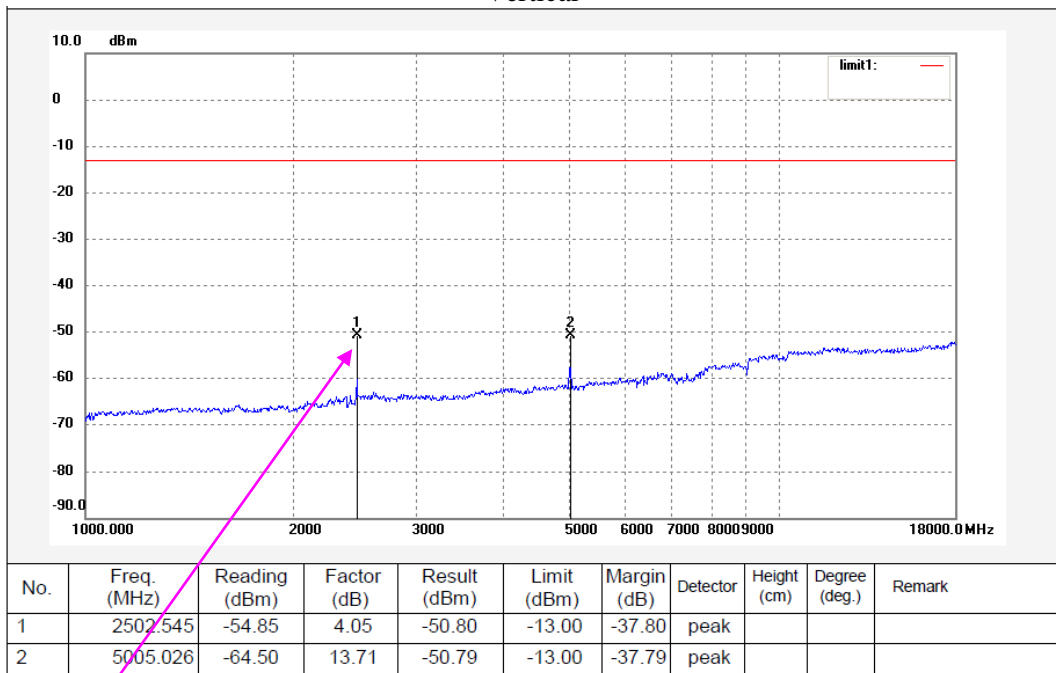


Band 7
5 MHz, Low channel
Horizontal



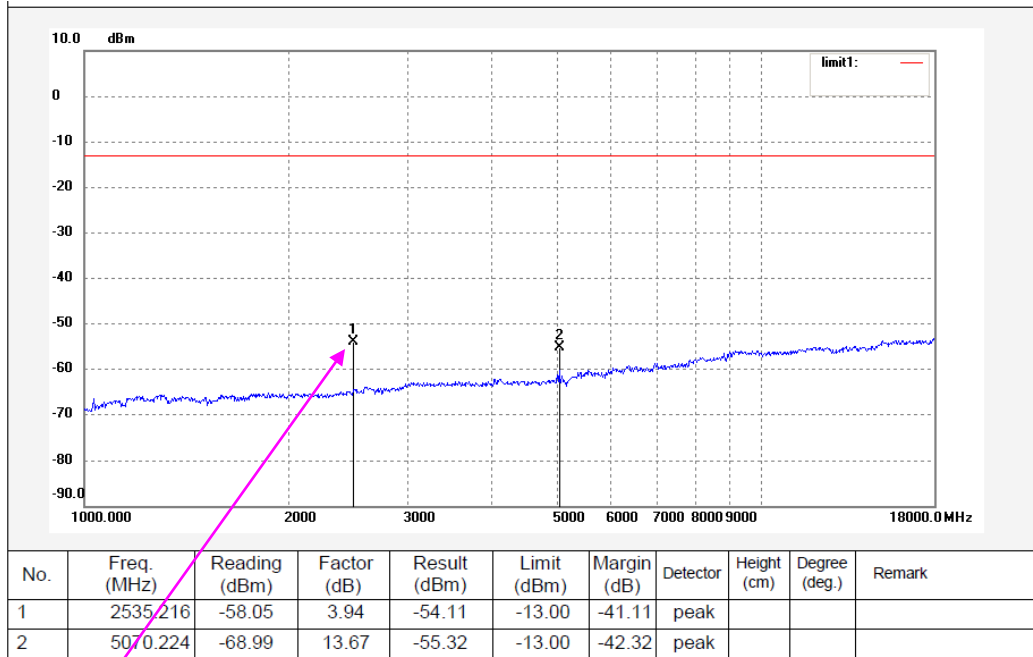
Fundamental test

Vertical



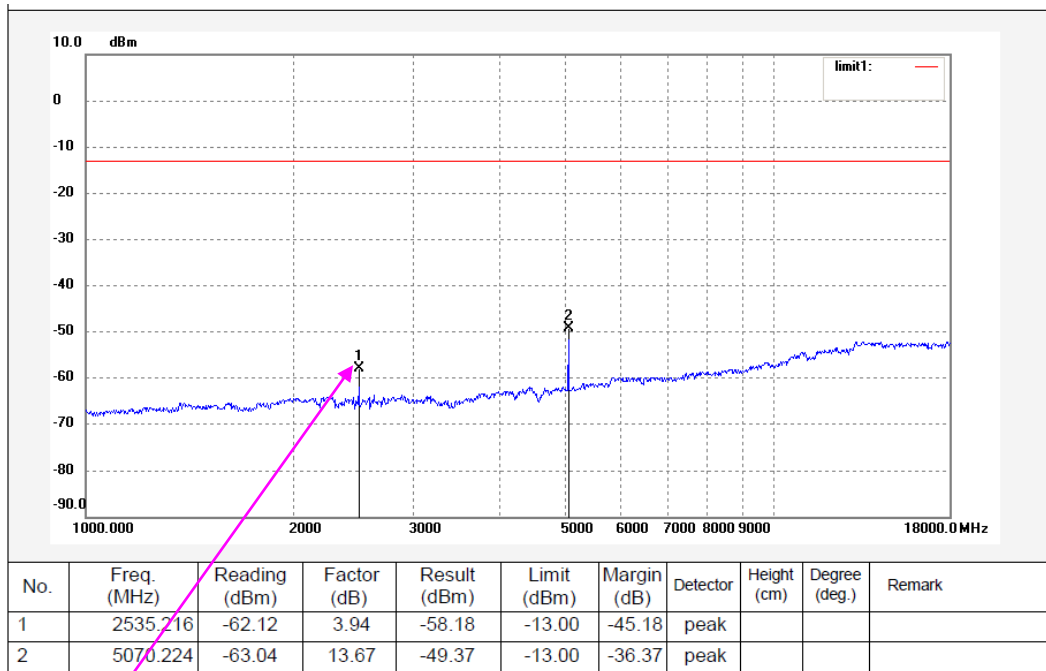
Fundamental test

5 MHz, Middle channel
Horizontal



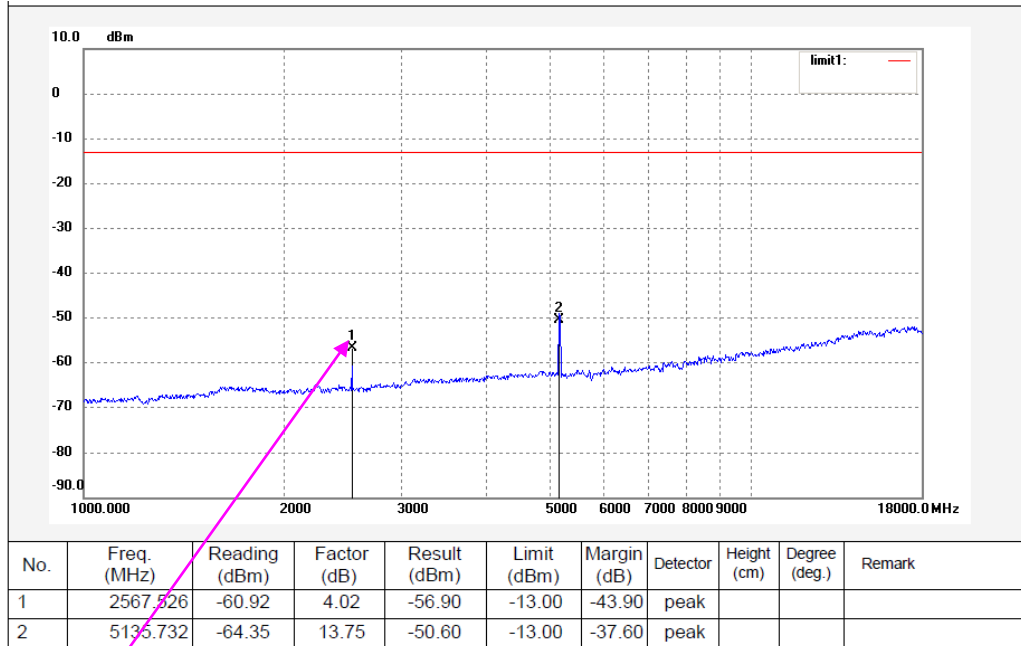
Fundamental test

Vertical



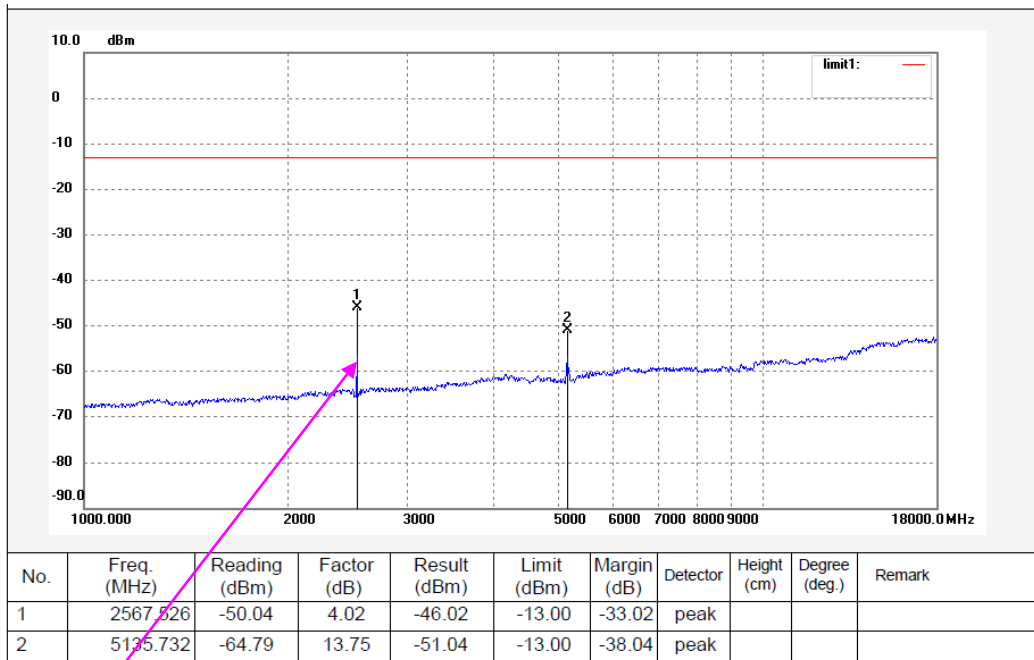
Fundamental test

5 MHz, High channel
Horizontal



Fundamental test

Vertical



Fundamental test

Note:

- 1) Result = Reading + Factor
- 2) Margin = Result - Limit
- 3) Factor = Air loss + Cable loss Limit - Amp - Antenna gain

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.

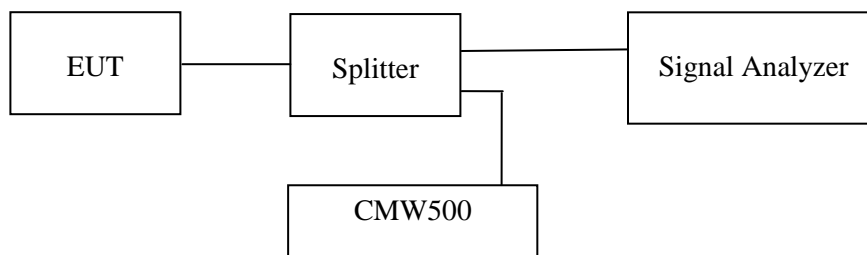
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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:	23 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

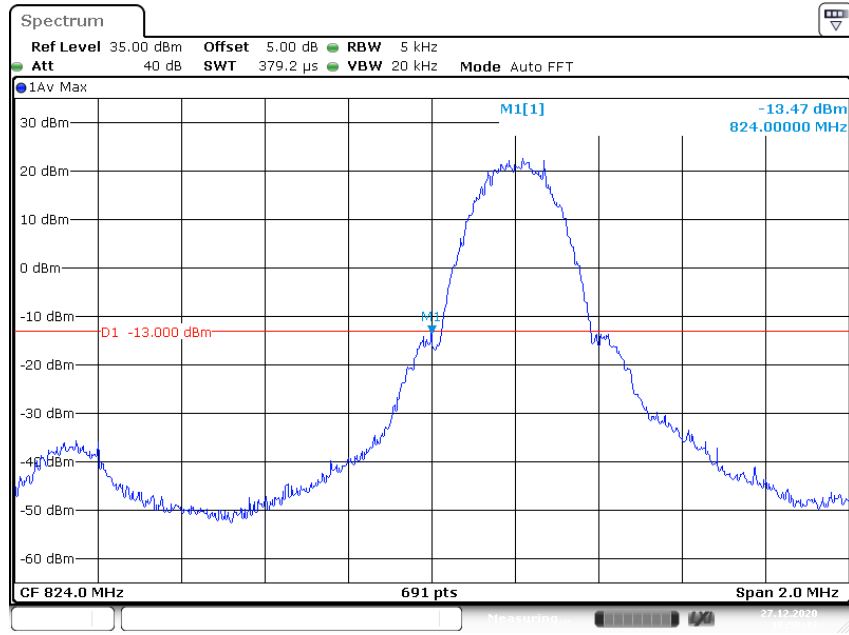
The testing was performed by Fan Yang from 2020-12-27 to 2020-12-30.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

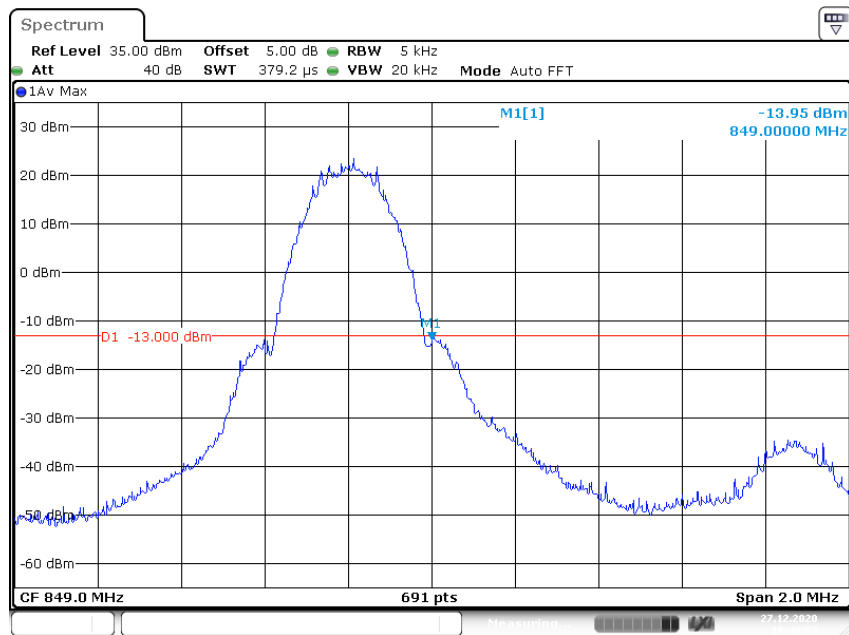
Please refer to the following plots.

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



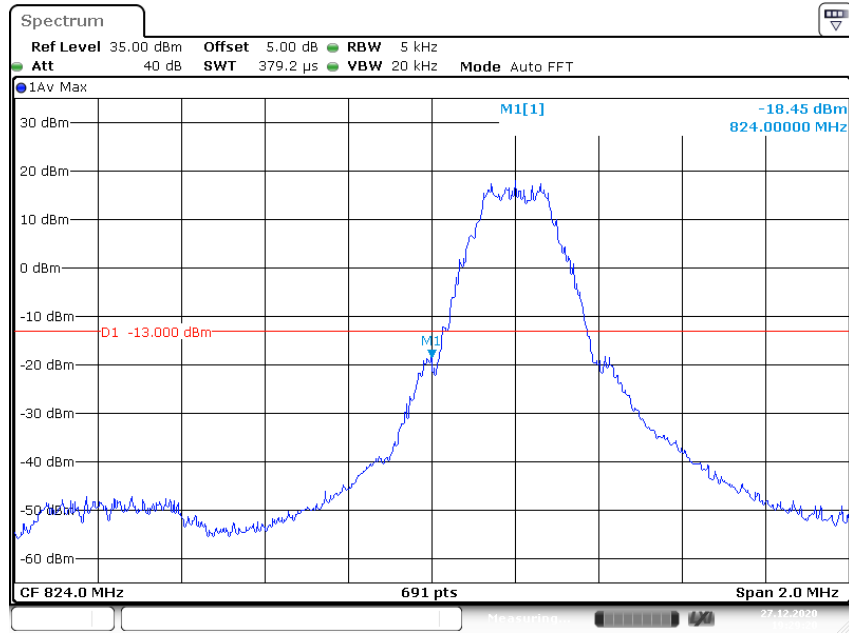
Date: 27.DEC.2020 18:50:43

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



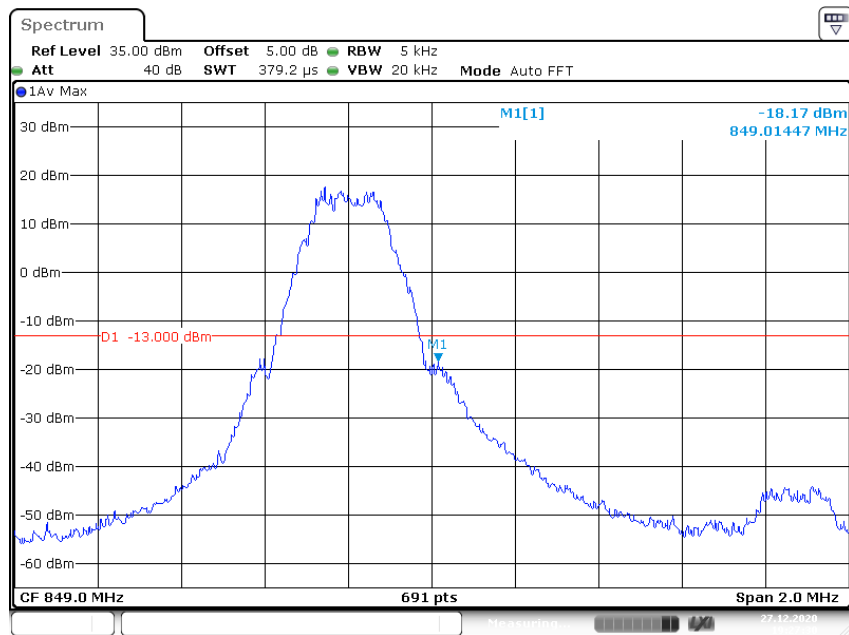
Date: 27.DEC.2020 18:49:06

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



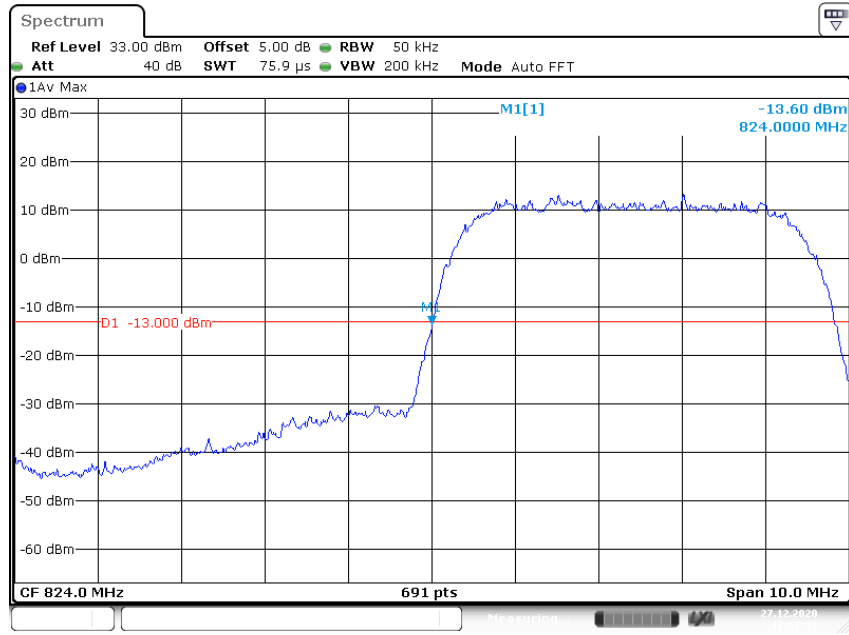
Date: 27.DEC.2020 19:29:20

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



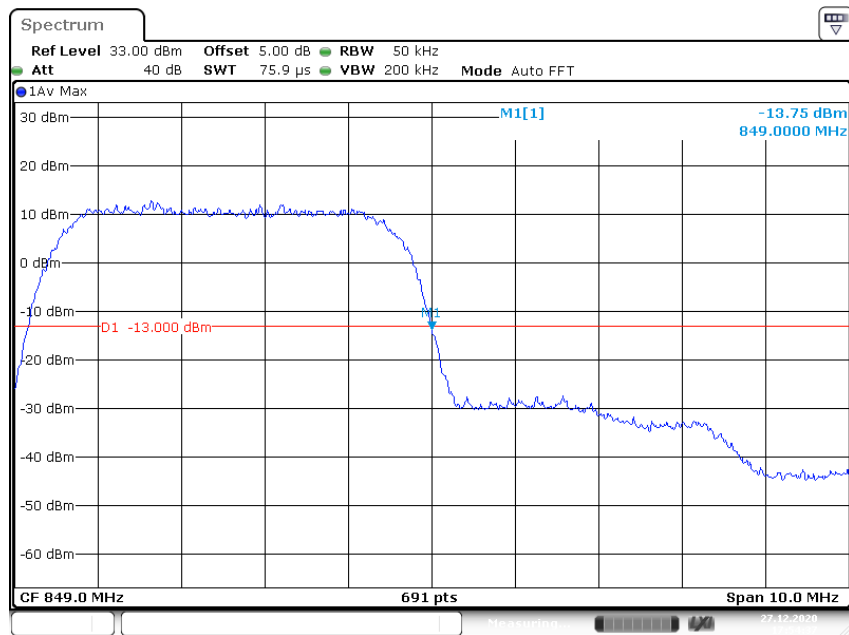
Date: 27.DEC.2020 19:27:31

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



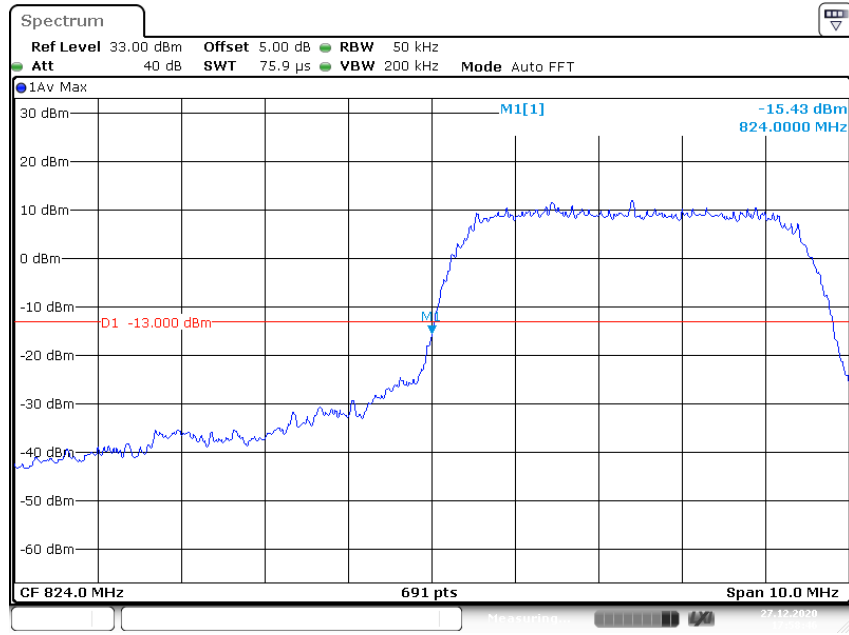
Date: 27.DEC.2020 17:57:34

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



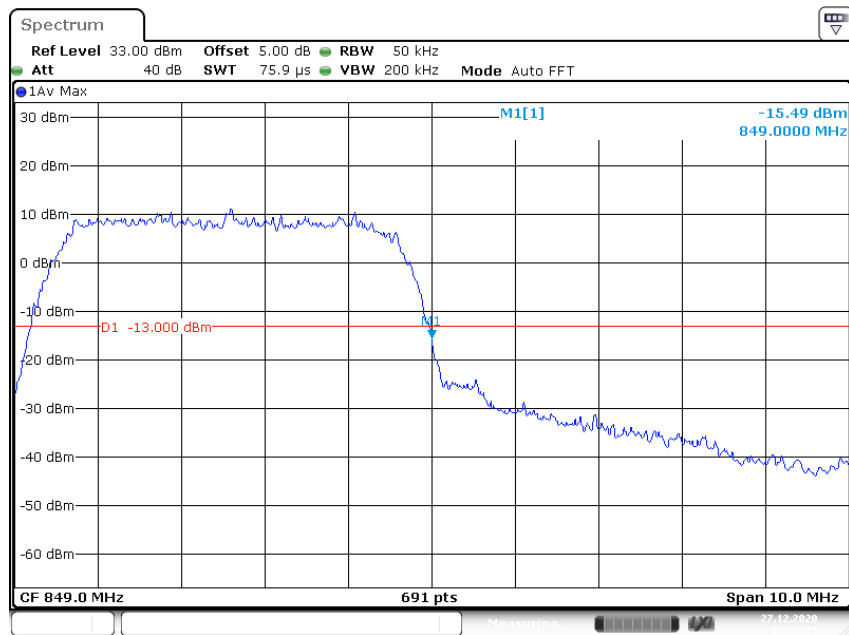
Date: 27.DEC.2020 17:54:38

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



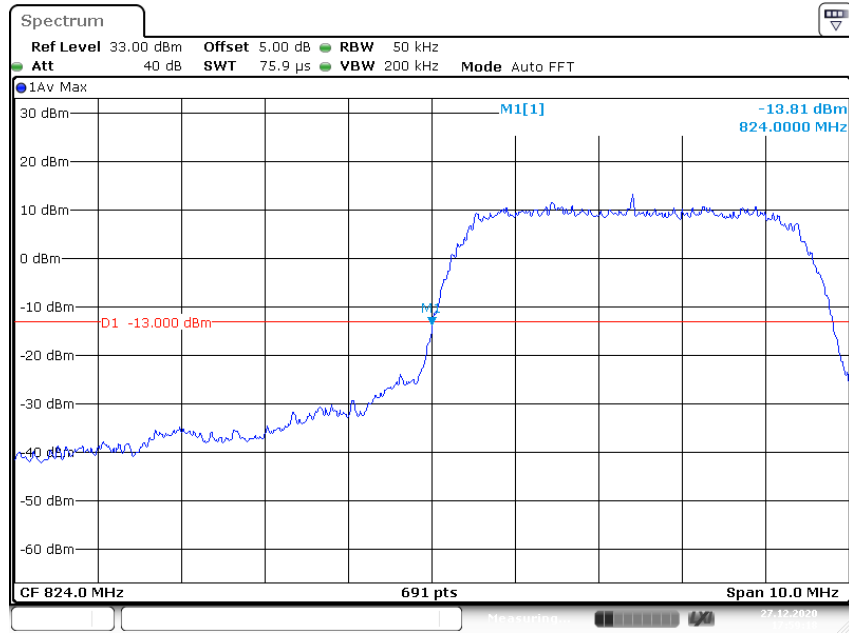
Date: 27.DEC.2020 17:58:46

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



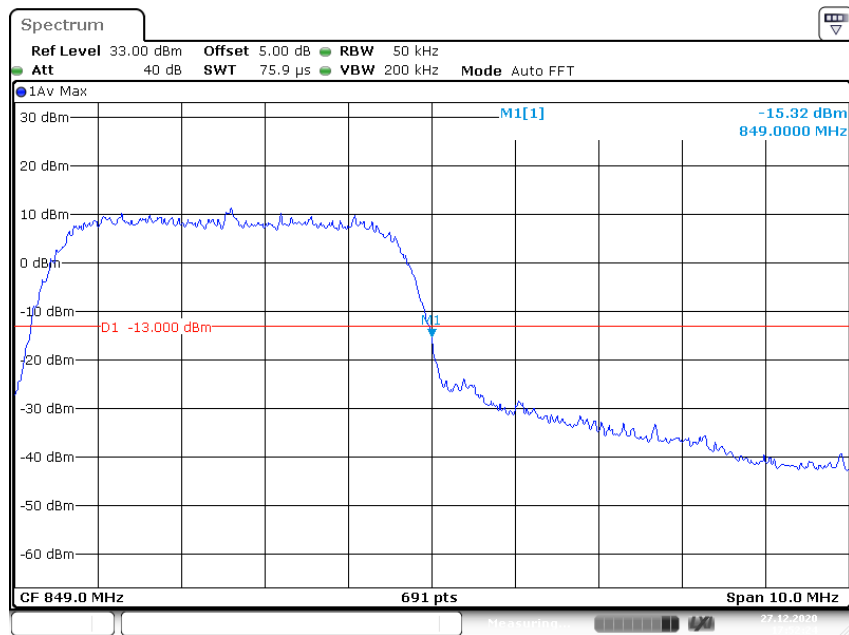
Date: 27.DEC.2020 17:53:21

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



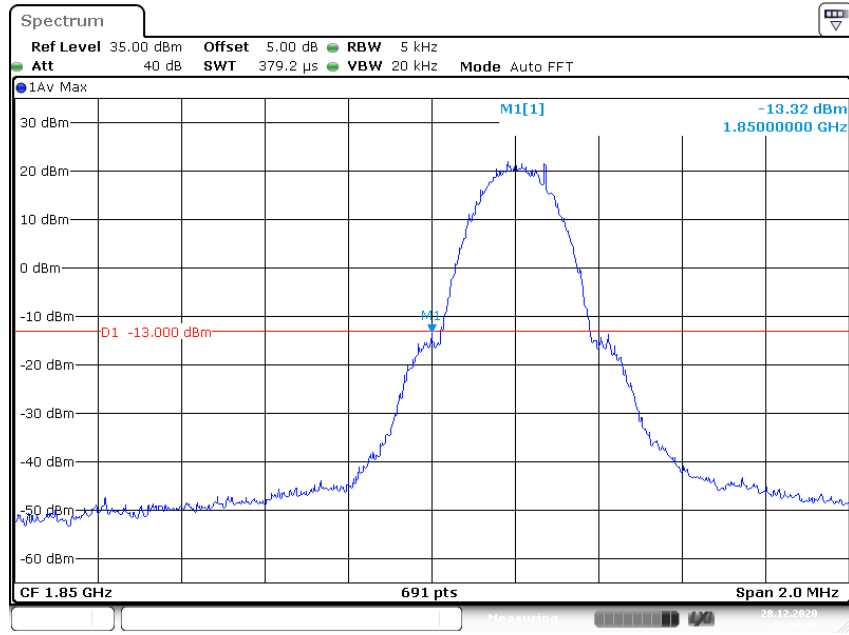
Date: 27.DEC.2020 17:59:18

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



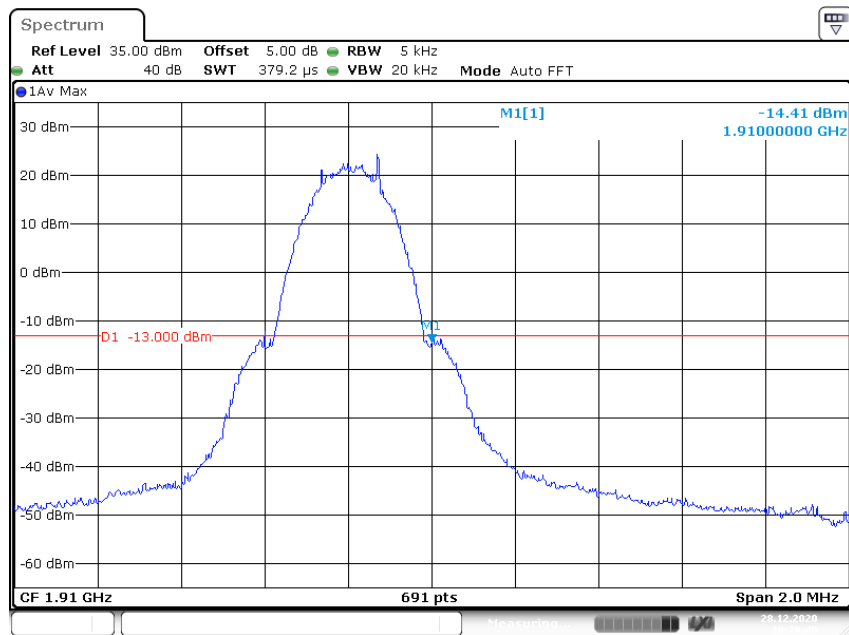
Date: 27.DEC.2020 17:52:25

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



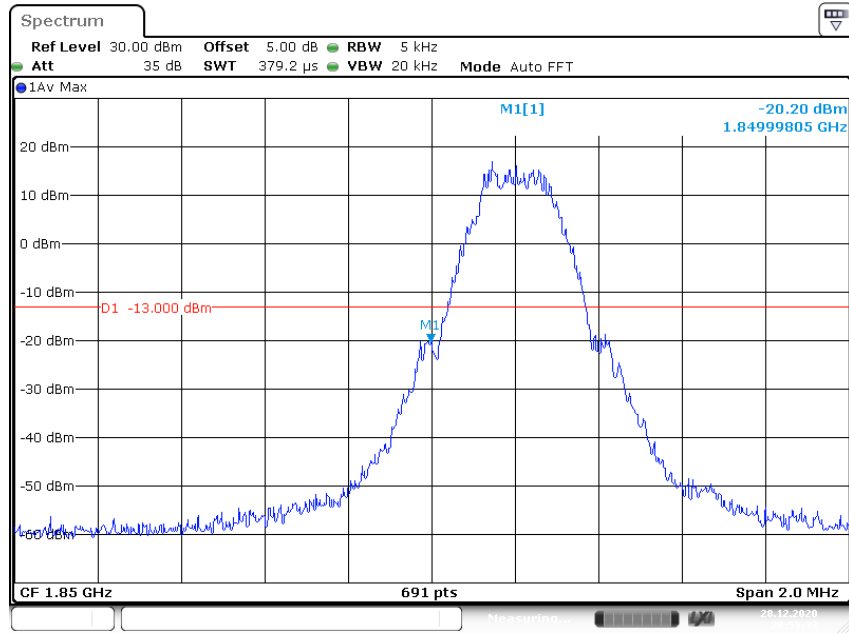
Date: 28.DEC.2020 20:39:00

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



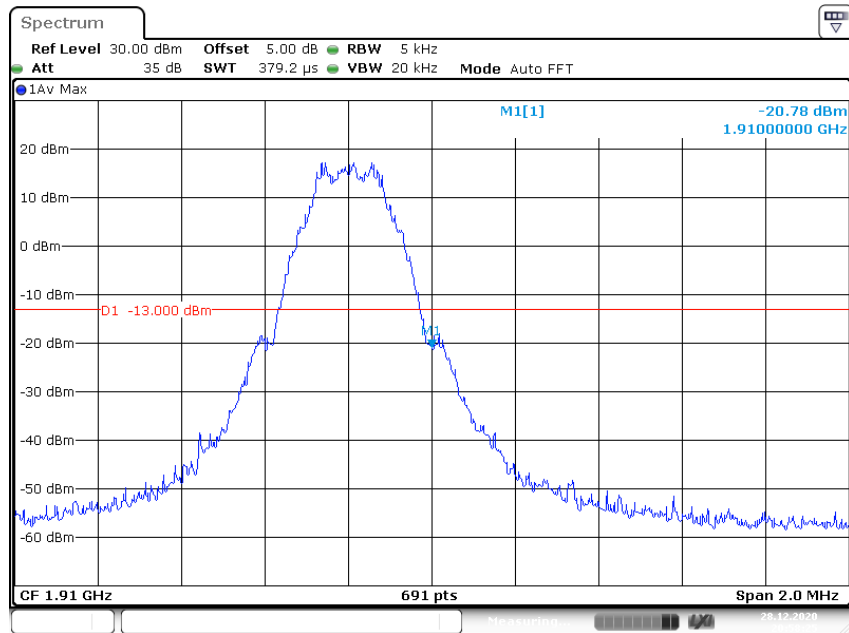
Date: 28.DEC.2020 20:28:46

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



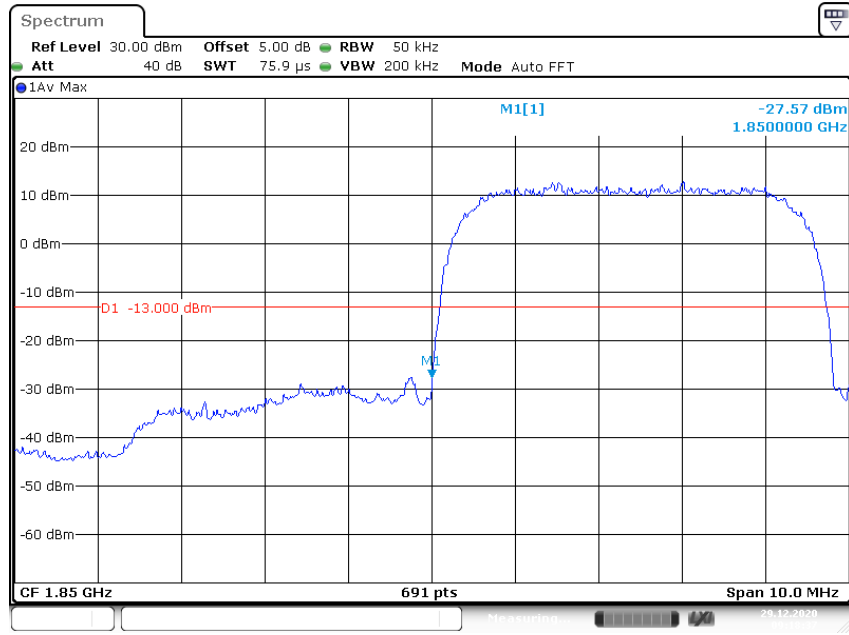
Date: 28.DEC.2020 20:59:34

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



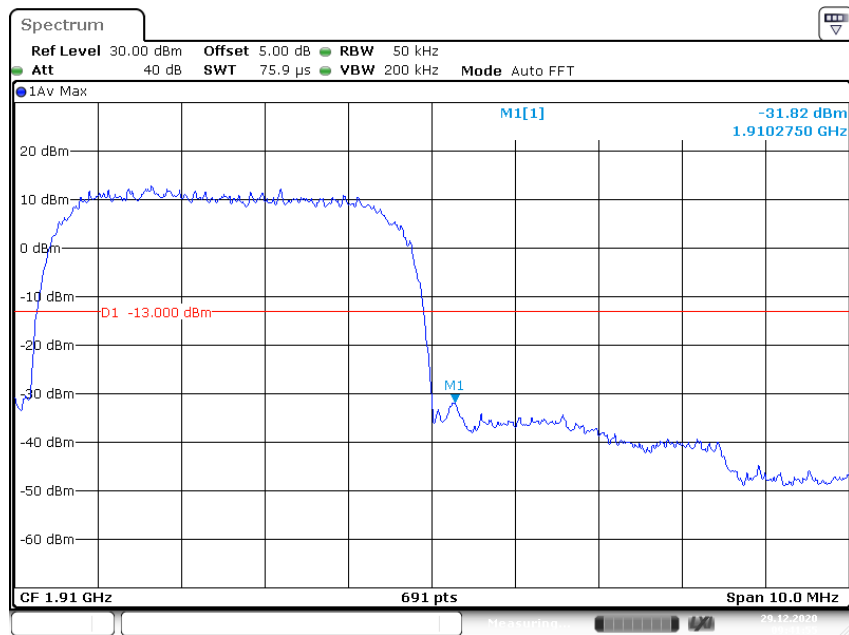
Date: 28.DEC.2020 20:58:26

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



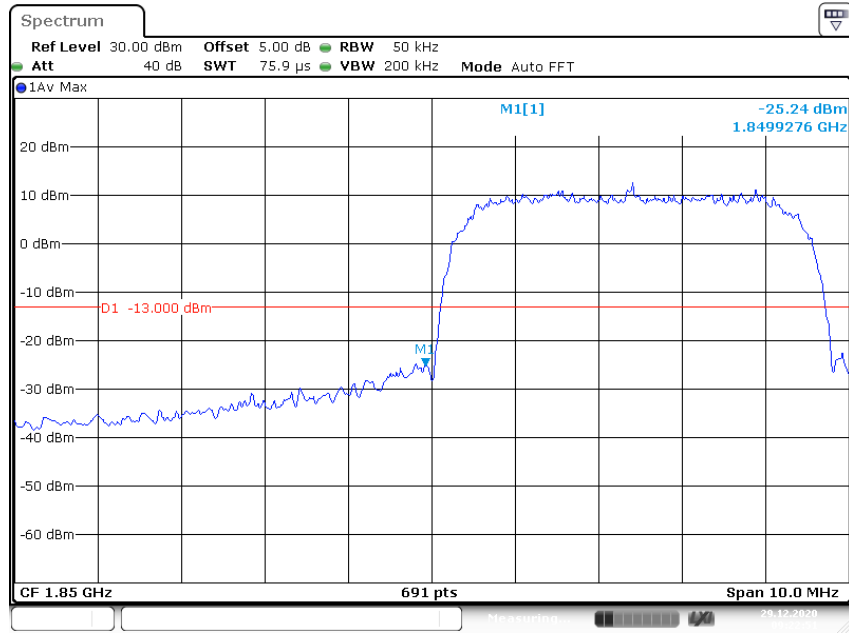
Date: 29.DEC.2020 09:18:37

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



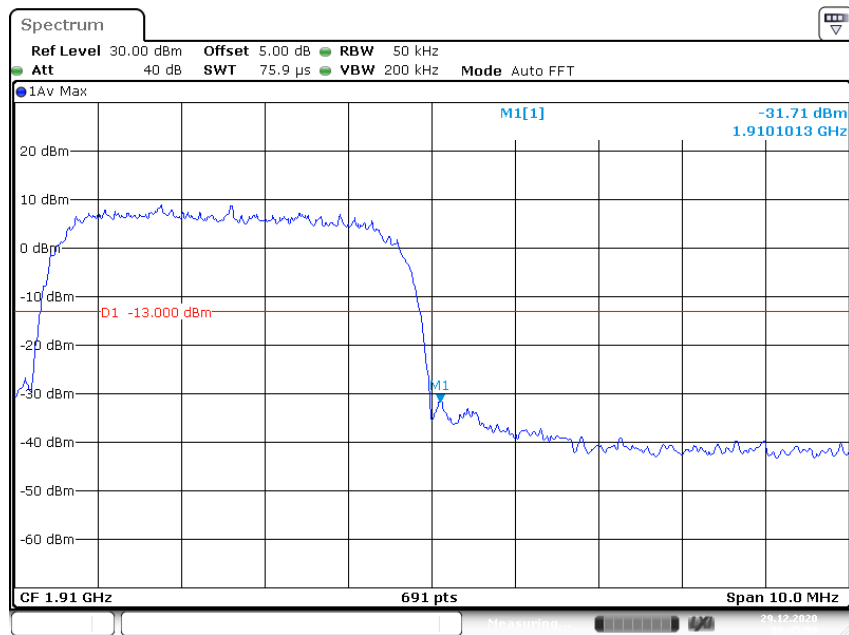
Date: 29.DEC.2020 09:41:55

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



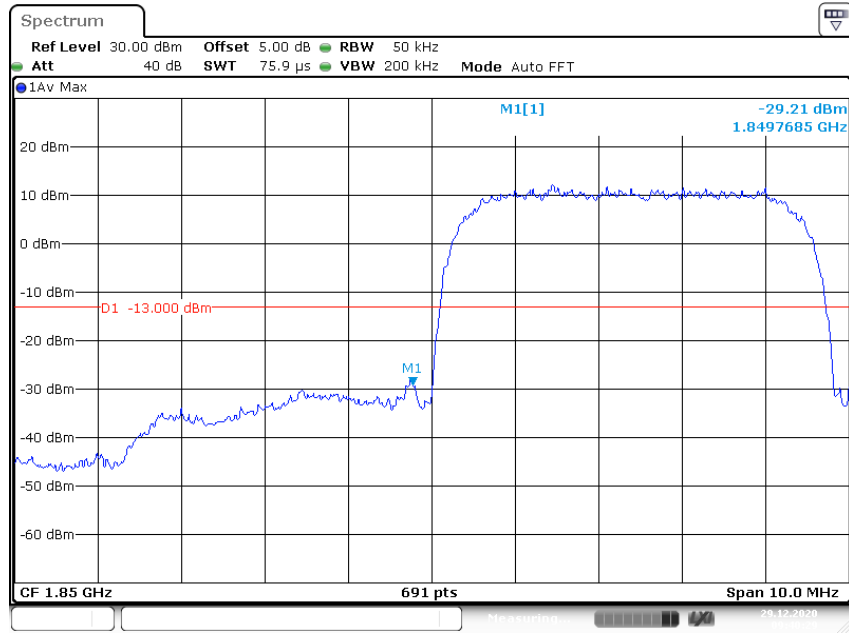
Date: 29.DEC.2020 09:22:50

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



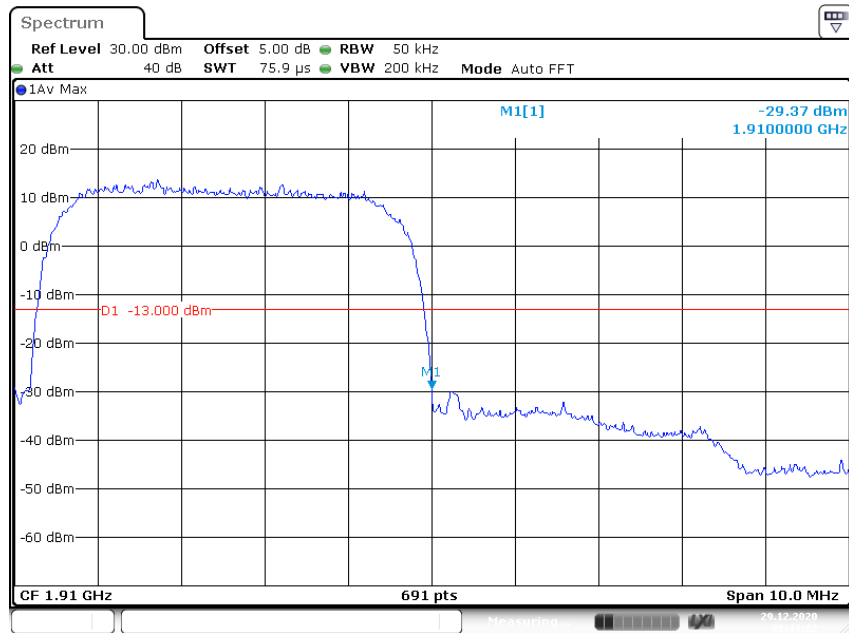
Date: 29.DEC.2020 09:45:00

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



Date: 29.DEC.2020 09:40:29

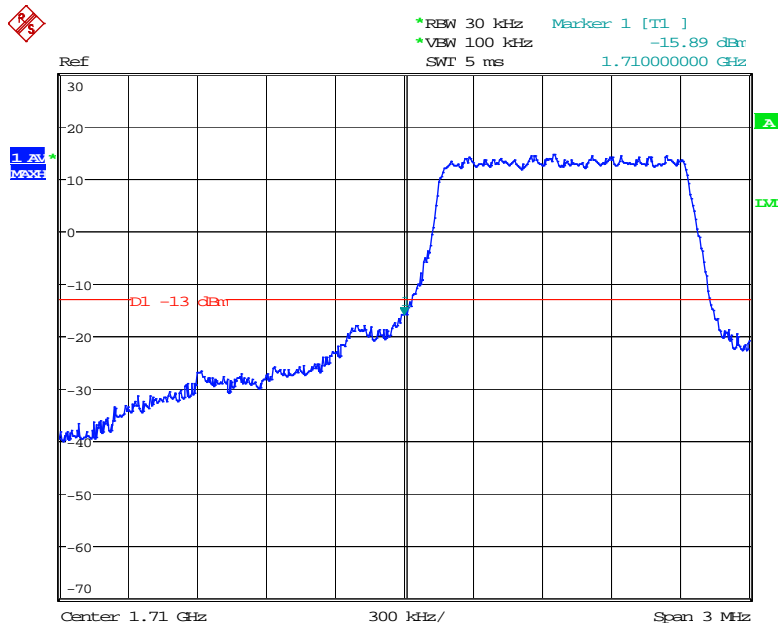
PCS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 29.DEC.2020 09:43:32

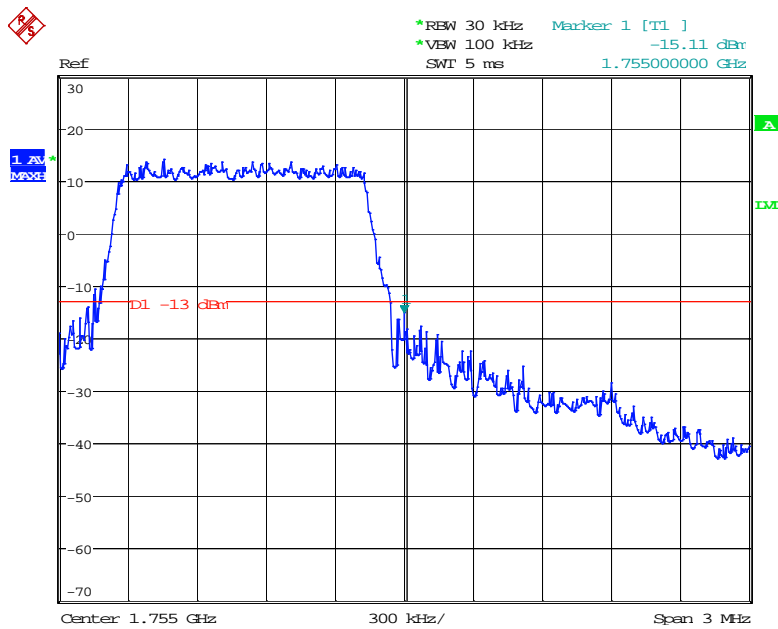
Band 4:

QPSK (1.4 MHz, FULL RB) - Left Band Edge



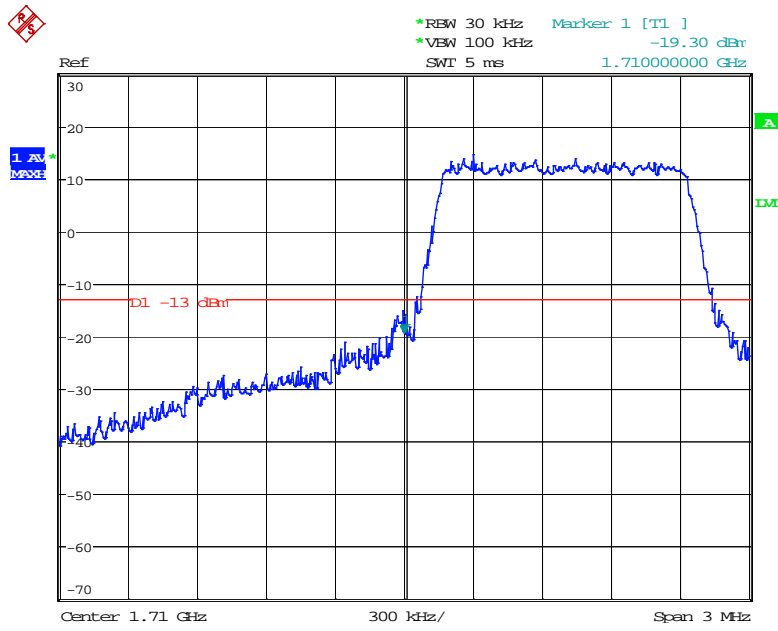
Date: 30.DEC.2020 10:46:31

QPSK (1.4 MHz, FULL RB) - Right Band Edge



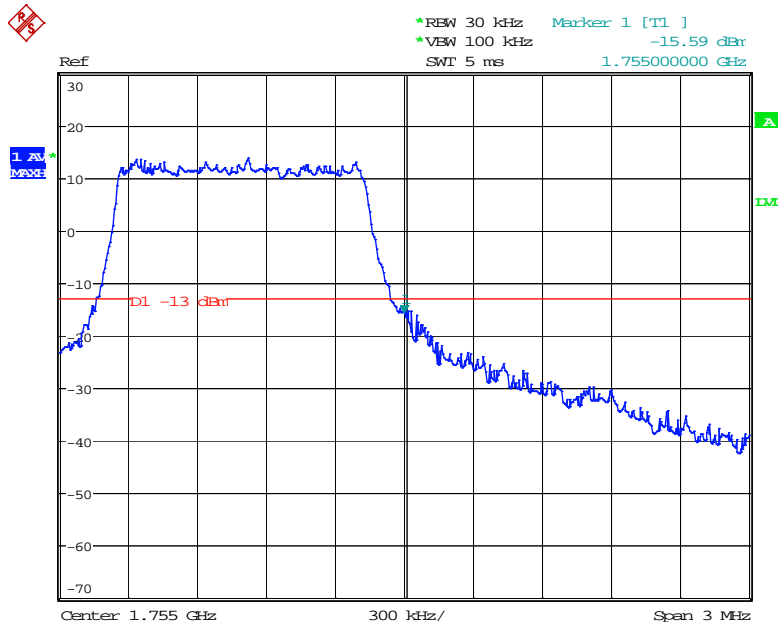
Date: 30.DEC.2020 10:48:45

16-QAM (1.4 MHz, FULL RB) - Left Band Edge



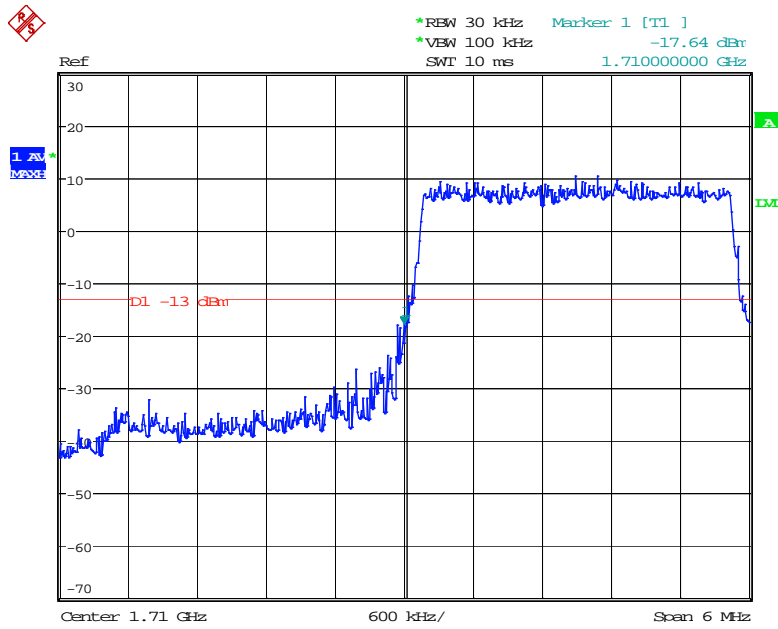
Date: 30.DEC.2020 10:47:16

16-QAM (1.4 MHz, FULL RB) - Right Band Edge



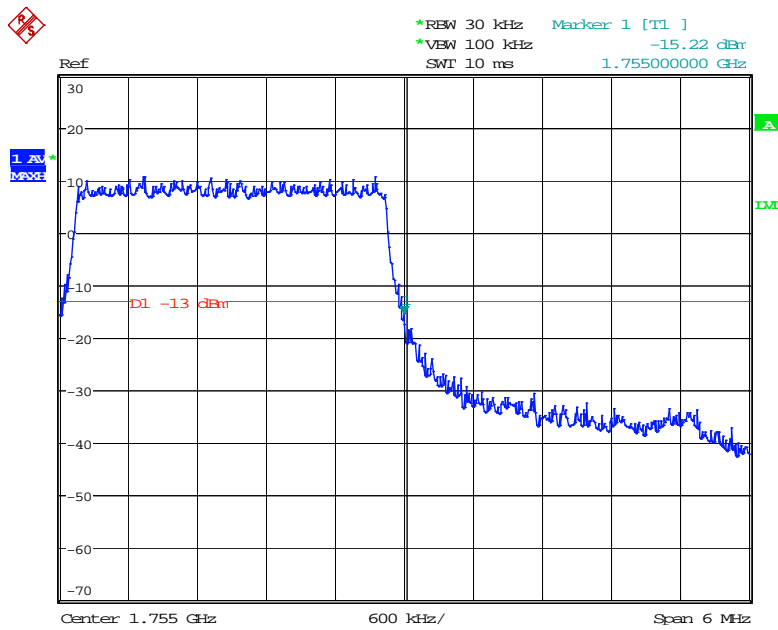
Date: 30.DEC.2020 10:48:15

QPSK (3.0 MHz, FULL RB) - Left Band Edge



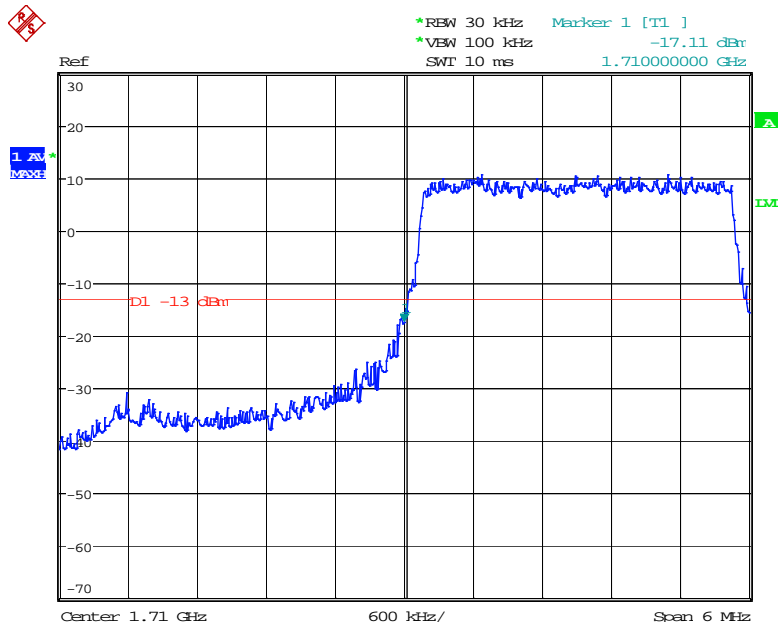
Date: 30.DEC.2020 10:50:15

QPSK (3.0 MHz, FULL RB) - Right Band Edge



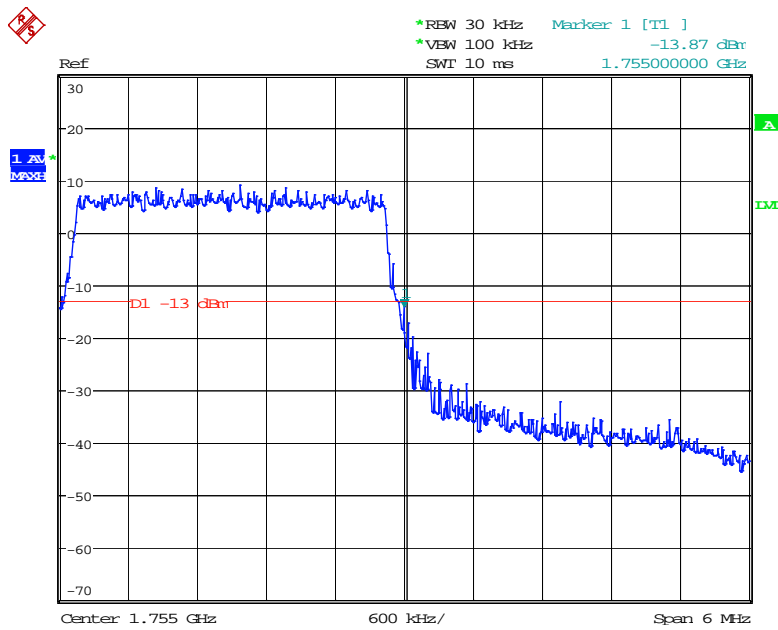
Date: 30.DEC.2020 10:51:25

16-QAM (3.0 MHz, FULL RB) - Left Band Edge



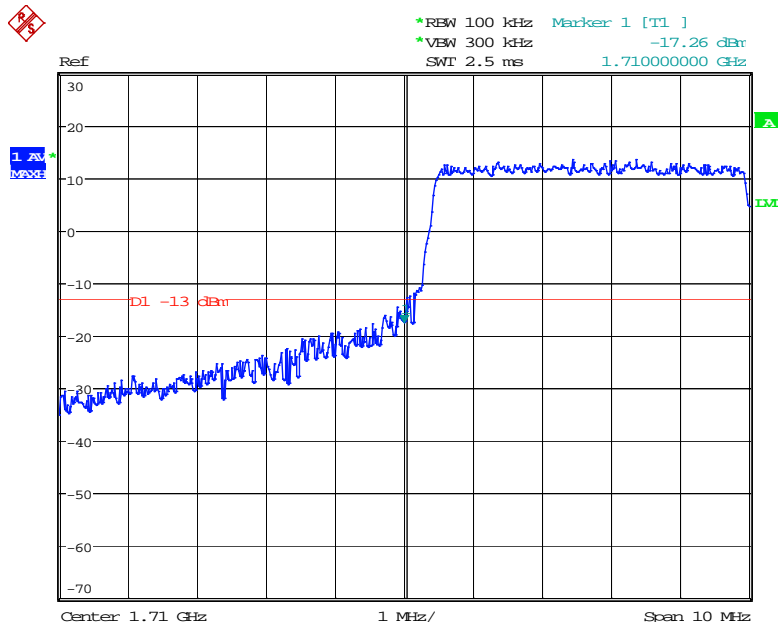
Date: 30.DEC.2020 10:50:35

16-QAM (3.0 MHz, FULL RB) - Right Band Edge



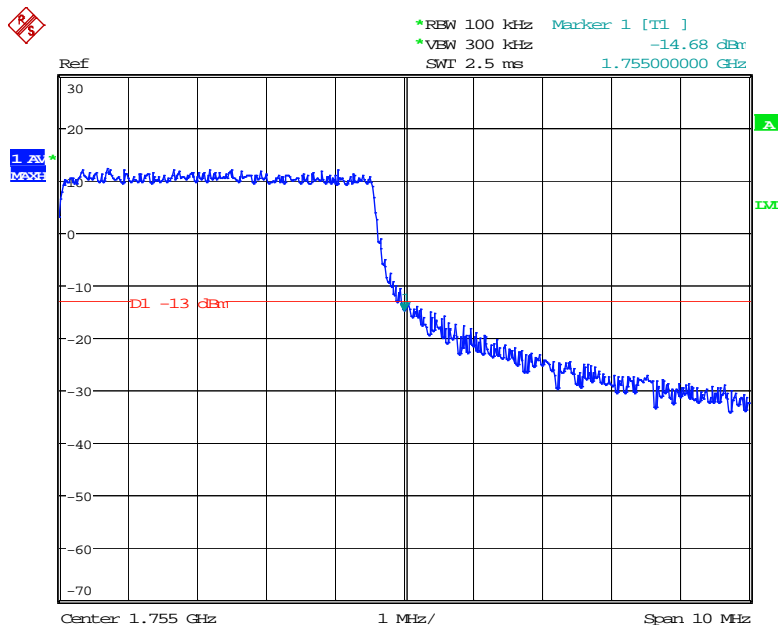
Date: 30.DEC.2020 10:52:02

QPSK (5.0 MHz, FULL RB) - Left Band Edge



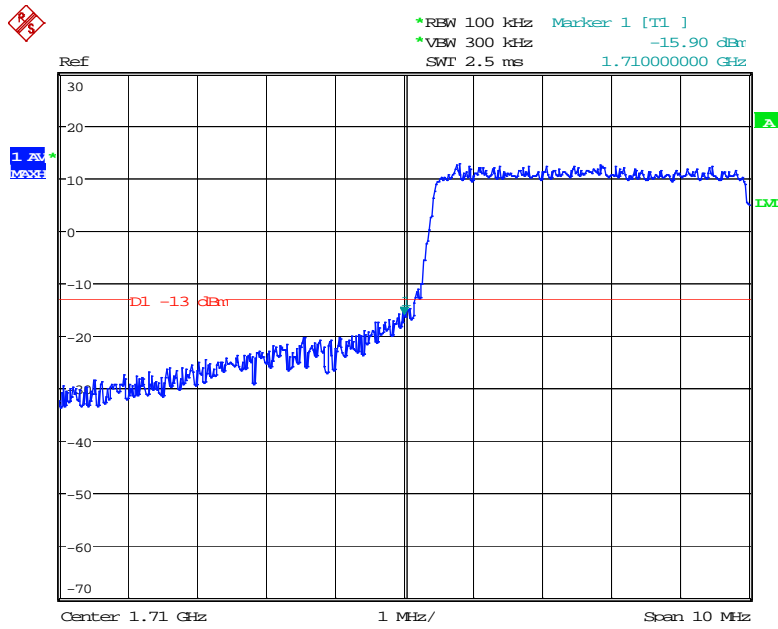
Date: 30.DEC.2020 11:02:40

QPSK (5.0 MHz, FULL RB) - Right Band Edge



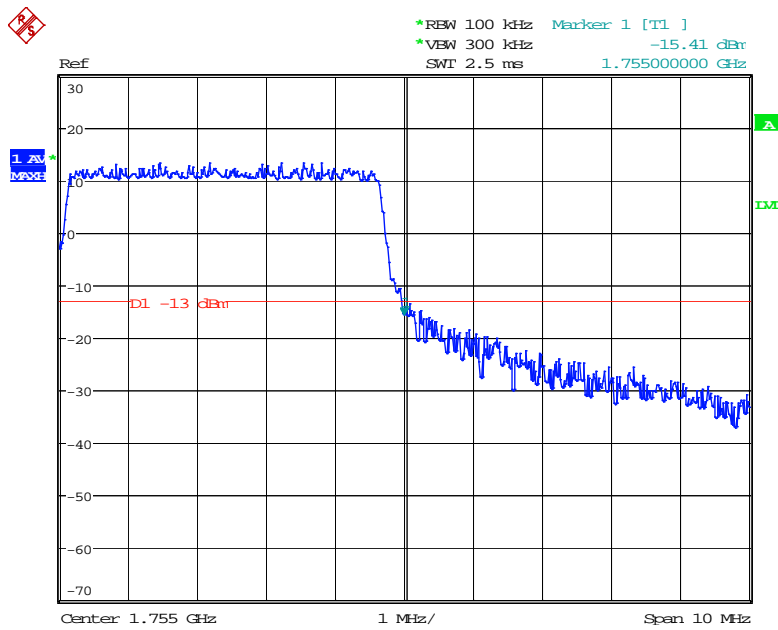
Date: 30.DEC.2020 10:57:19

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



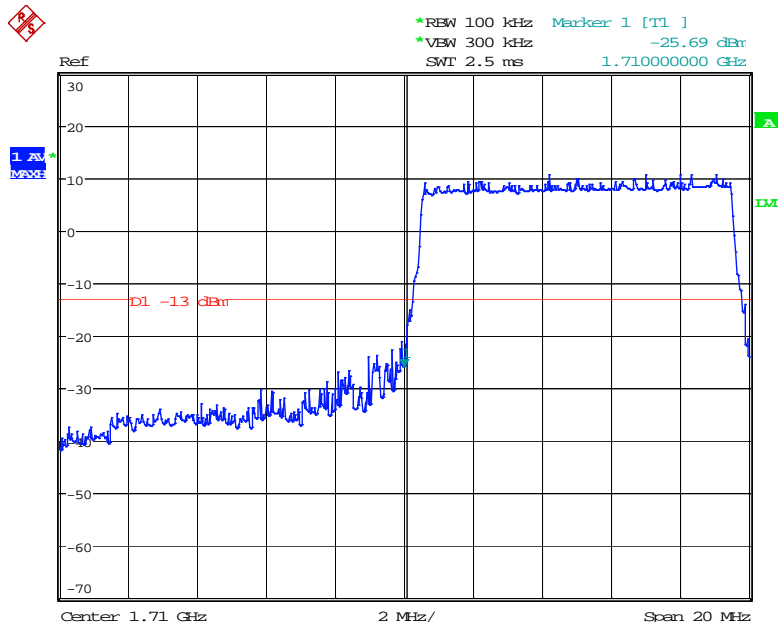
Date: 30.DEC.2020 11:00:44

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



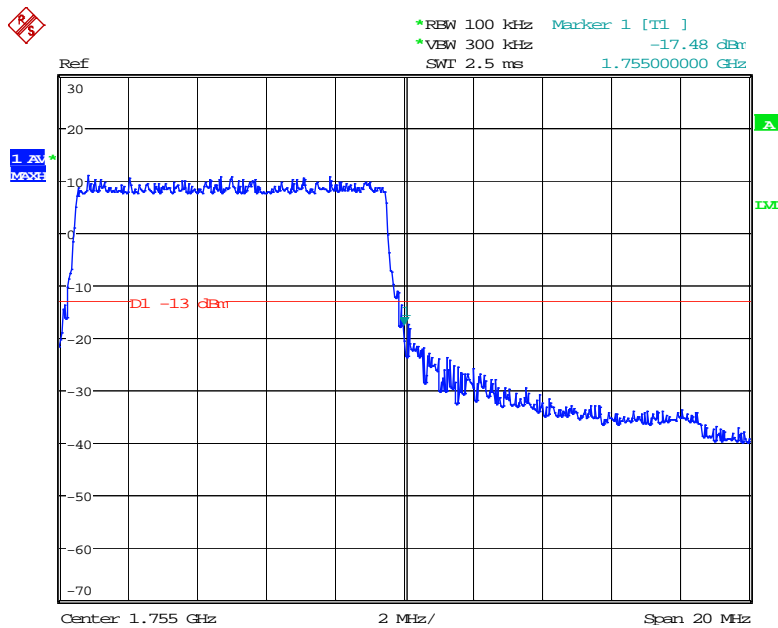
Date: 30.DEC.2020 10:55:22

QPSK (10.0 MHz, FULL RB) - Left Band Edge



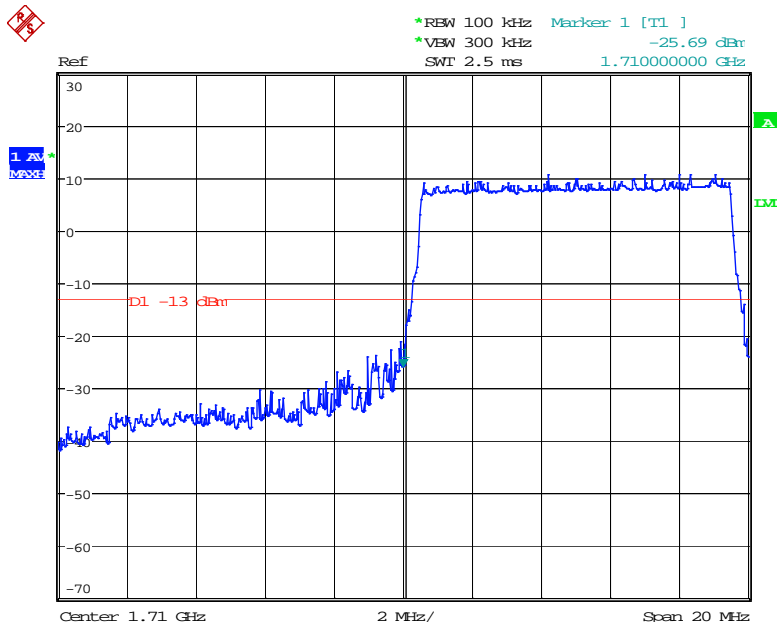
Date: 30.DEC.2020 11:04:34

QPSK (10.0 MHz, FULL RB) - Right Band Edge



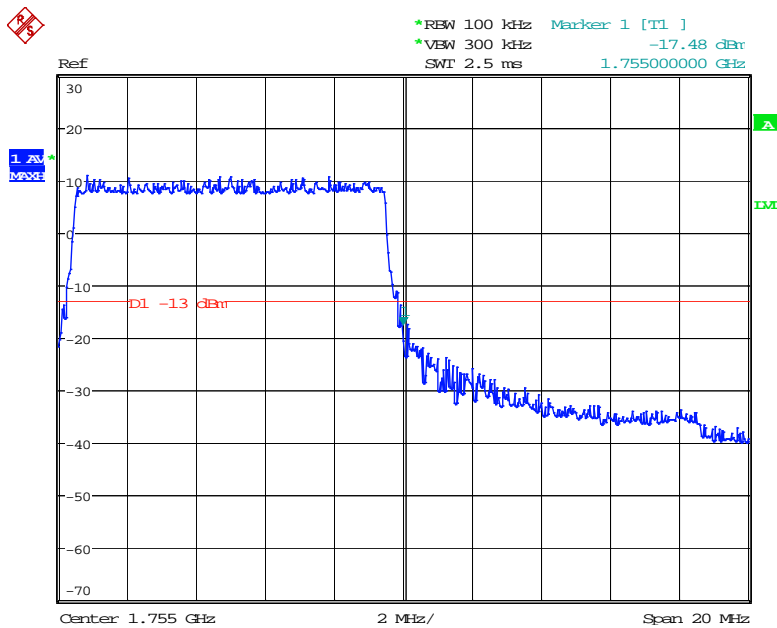
Date: 30.DEC.2020 11:05:28

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



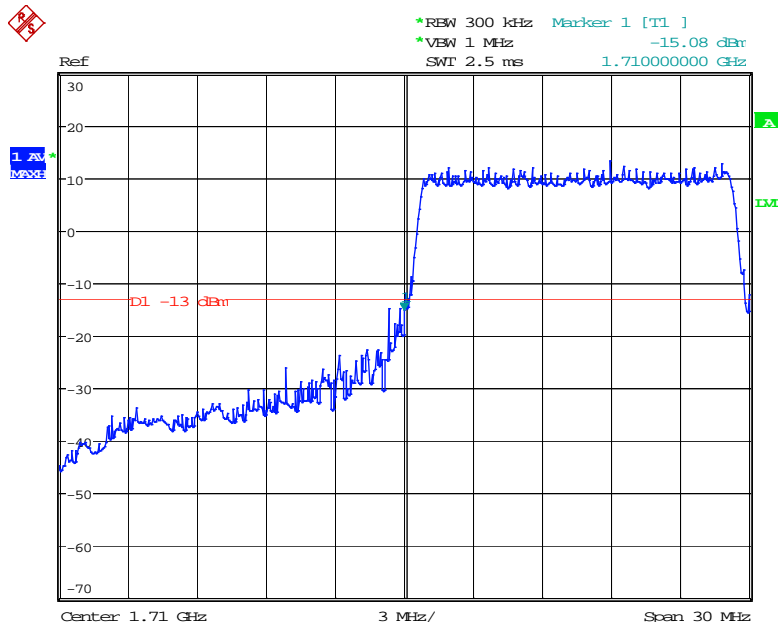
Date: 30.DEC.2020 11:04:34

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



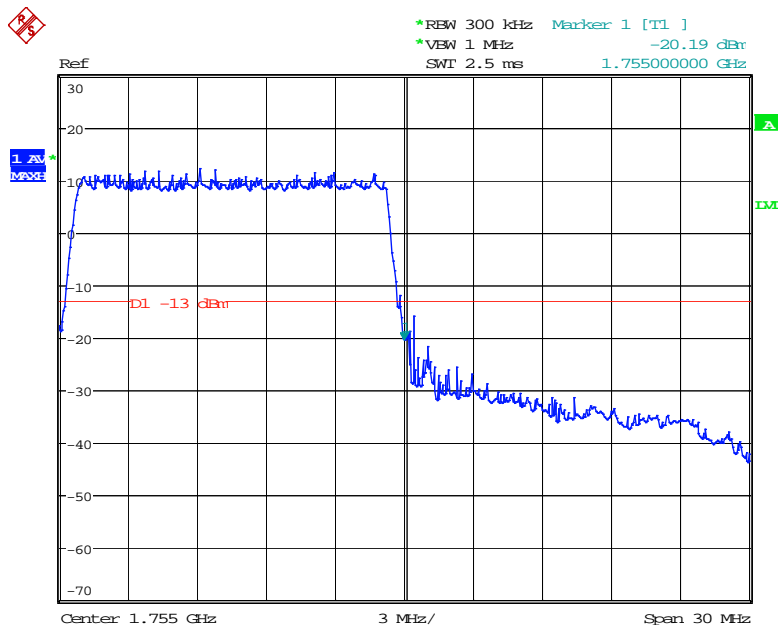
Date: 30.DEC.2020 11:05:28

QPSK (15.0 MHz, FULL RB) - Left Band Edge



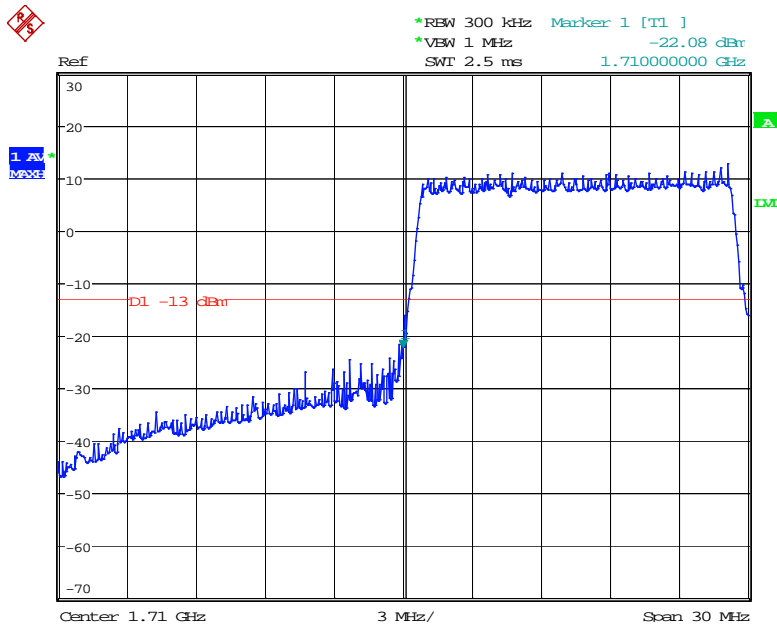
Date: 30.DEC.2020 11:09:18

QPSK (15.0 MHz, FULL RB) - Right Band Edge



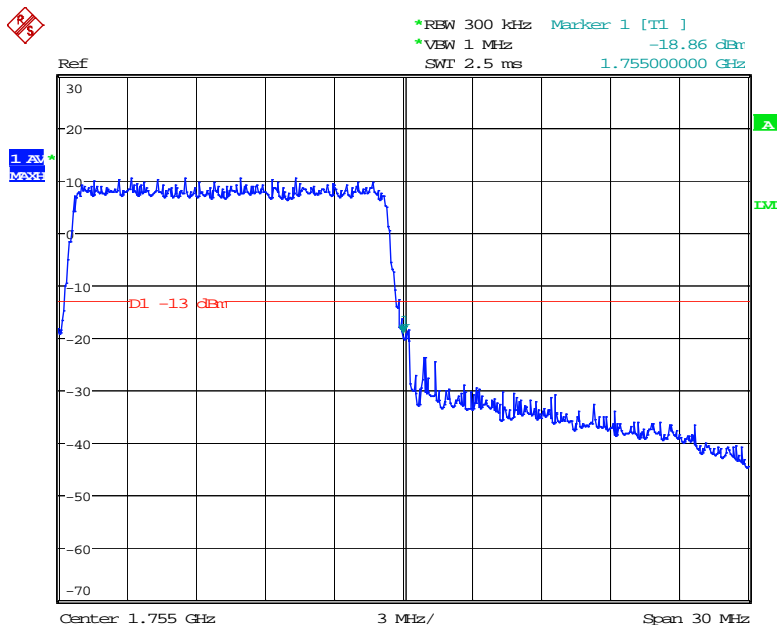
Date: 30.DEC.2020 11:07:16

16-QAM (15.0 MHz, FULL RB) - Left Band Edge



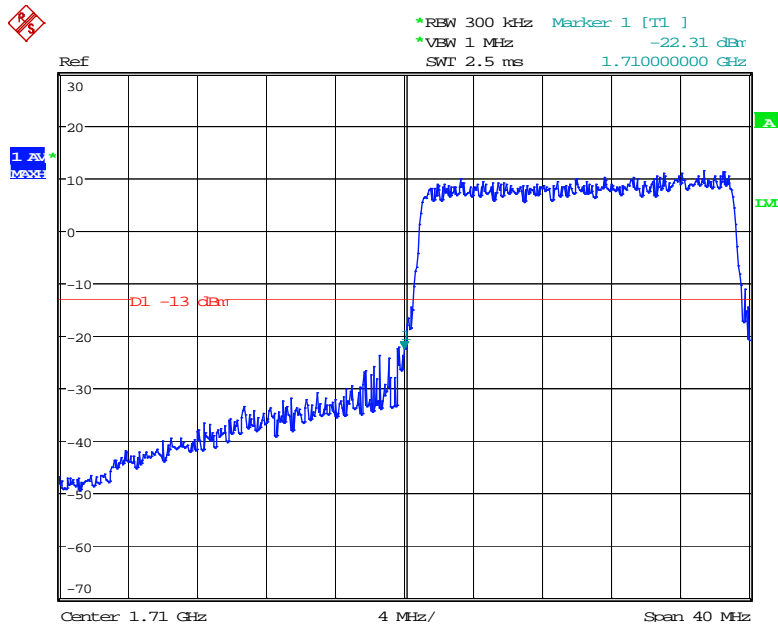
Date: 30.DEC.2020 11:08:31

16-QAM (15.0 MHz, FULL RB) - Right Band Edge



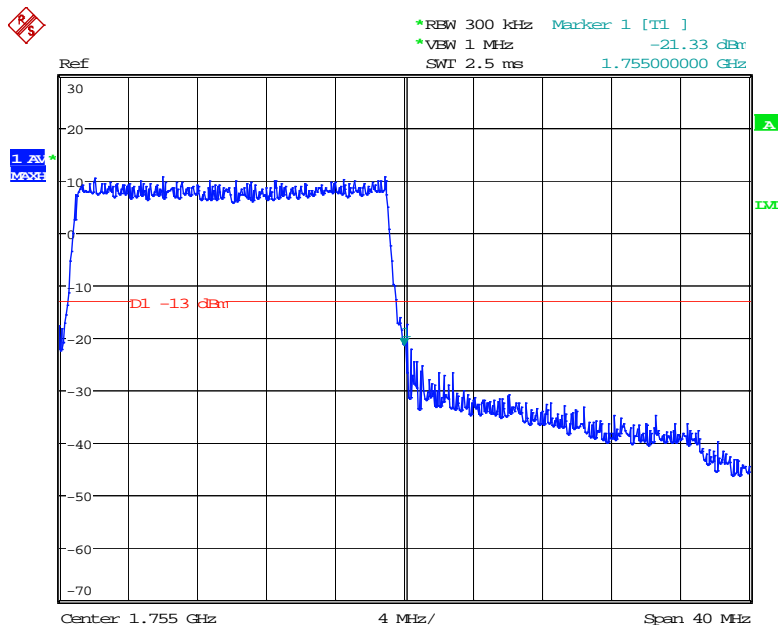
Date: 30.DEC.2020 11:07:46

QPSK (20.0 MHz, FULL RB) - Left Band Edge



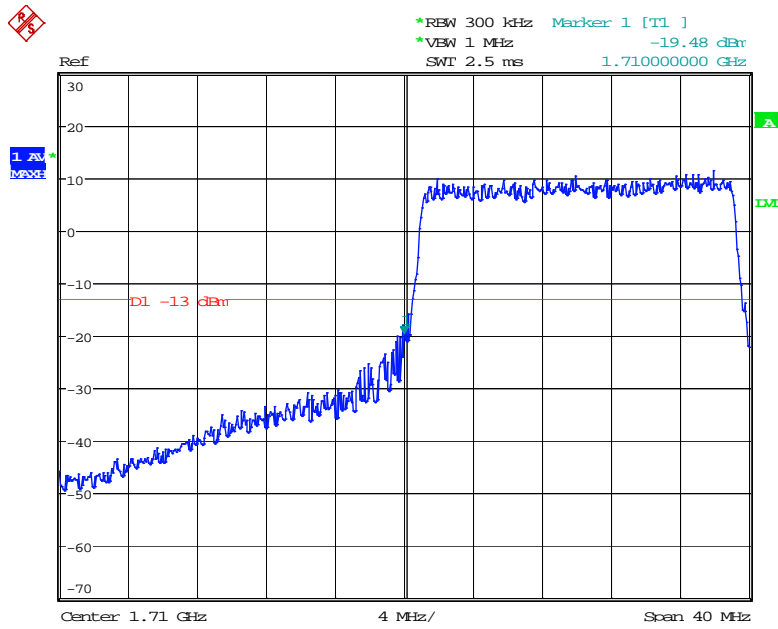
Date: 30.DEC.2020 11:12:15

QPSK (20.0 MHz, FULL RB) - Right Band Edge



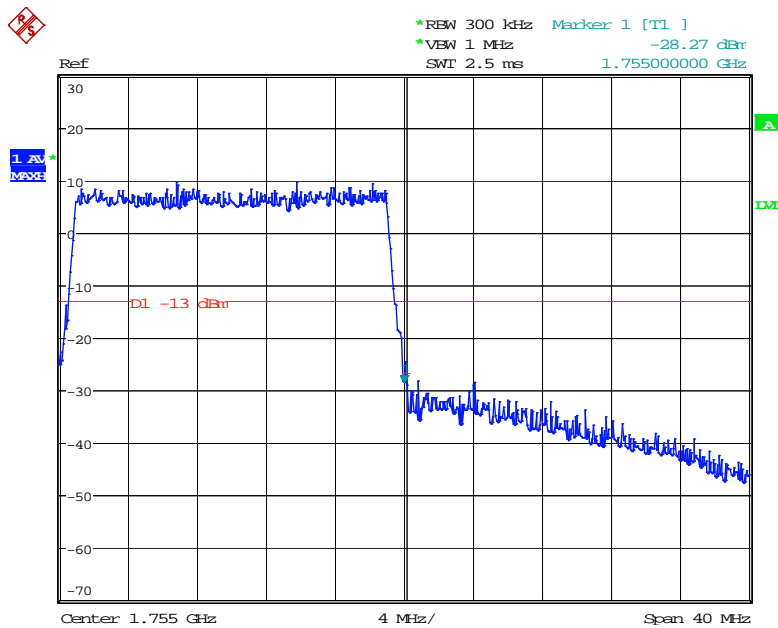
Date: 30.DEC.2020 11:13:15

16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 30.DEC.2020 11:11:12

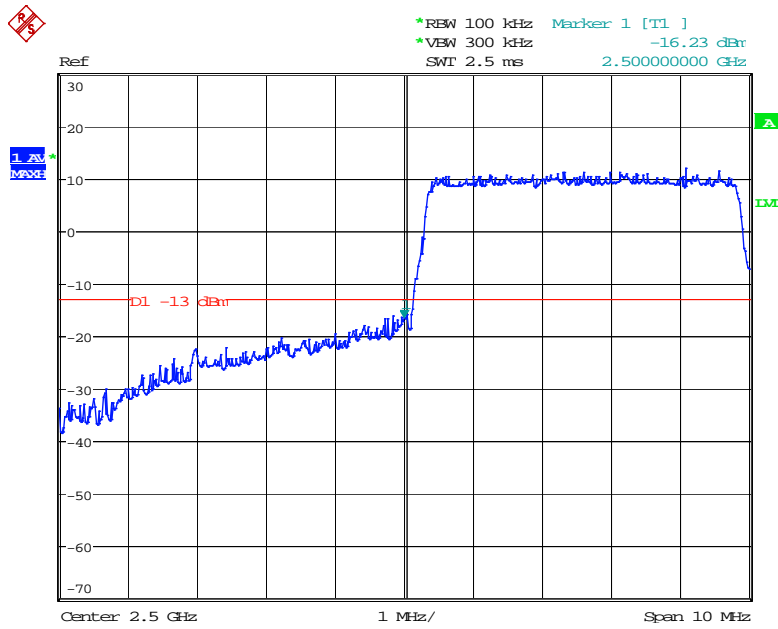
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 30.DEC.2020 11:13:48

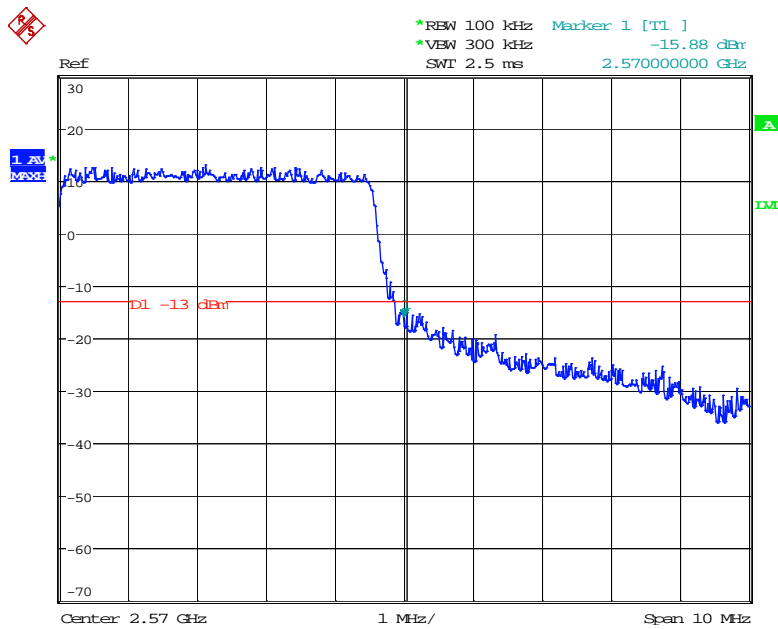
Band 7:

QPSK (5.0 MHz, FULL RB) - Left Band Edge



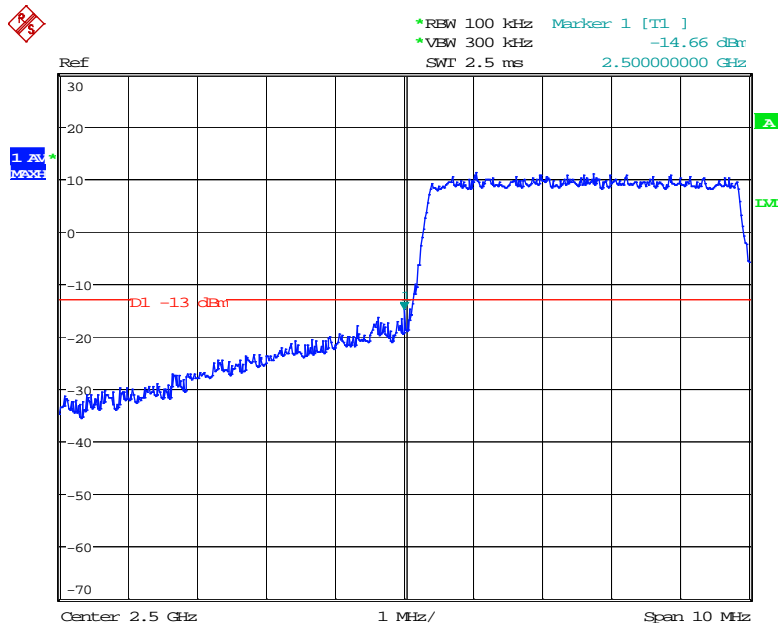
Date: 30.DEC.2020 10:18:51

QPSK (5.0 MHz, FULL RB) - Right Band Edge



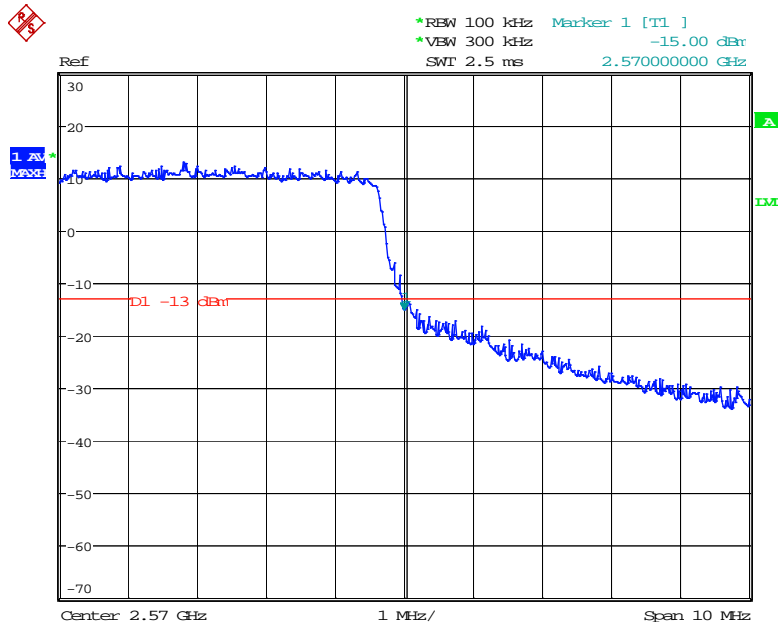
Date: 30.DEC.2020 10:28:20

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



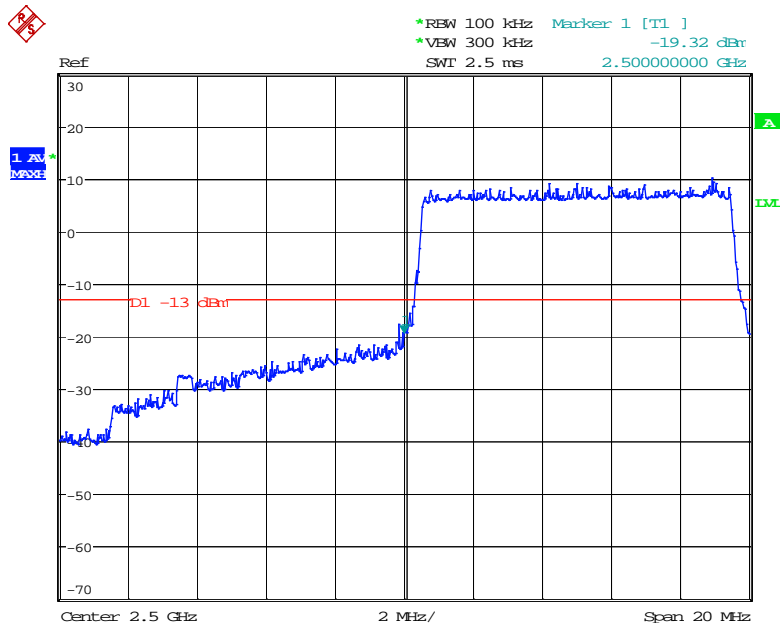
Date: 30.DEC.2020 10:20:14

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



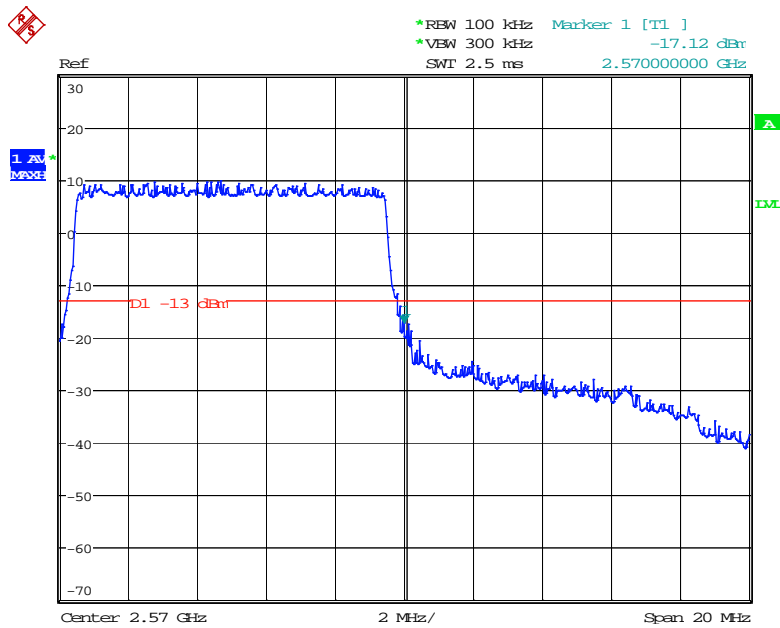
Date: 30.DEC.2020 10:26:29

QPSK (10.0 MHz, FULL RB) - Left Band Edge



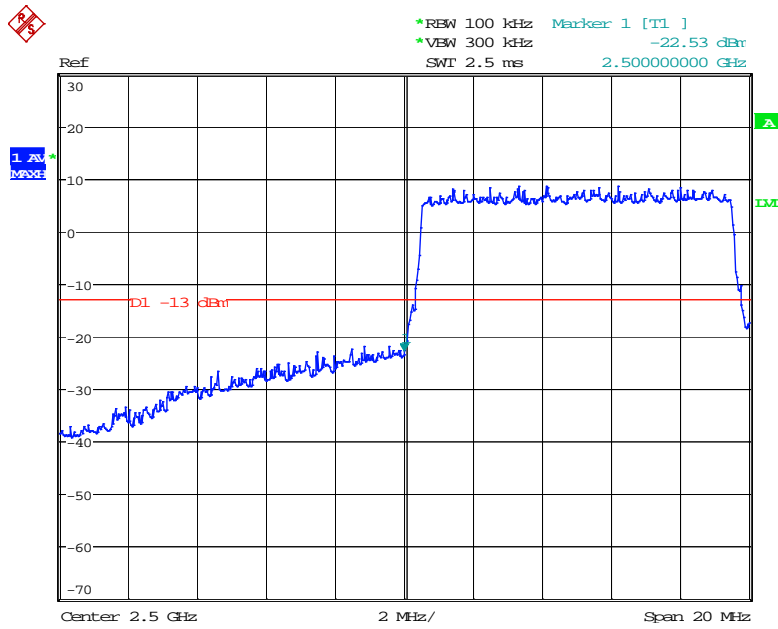
Date: 30.DEC.2020 10:32:13

QPSK (10.0 MHz, FULL RB) - Right Band Edge



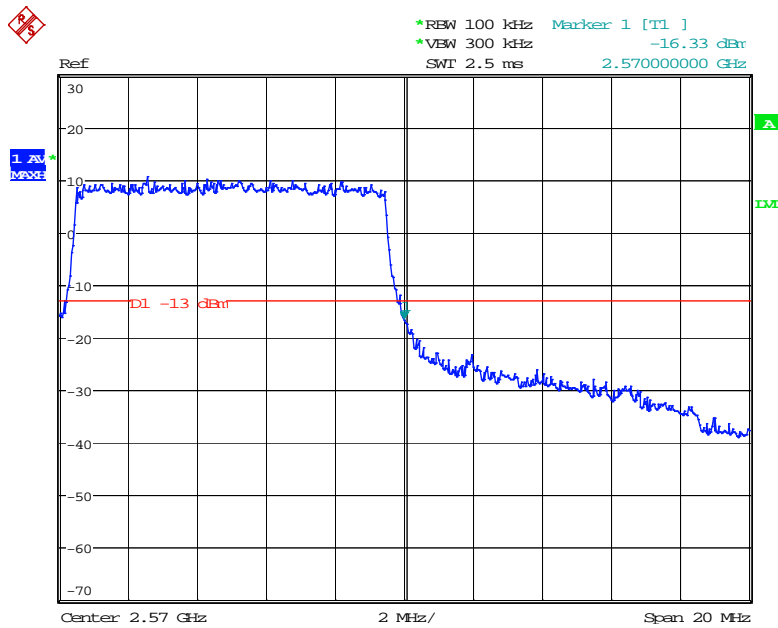
Date: 30.DEC.2020 10:33:52

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



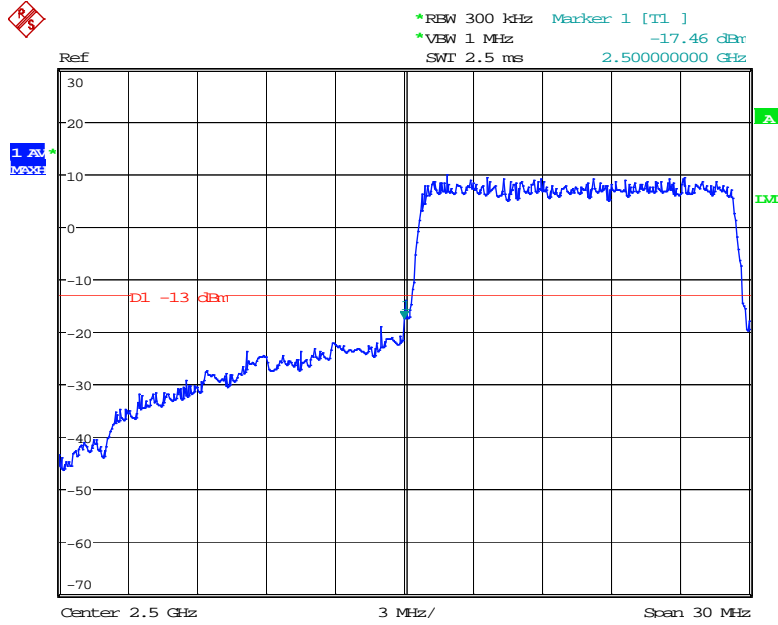
Date: 30.DEC.2020 10:31:05

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



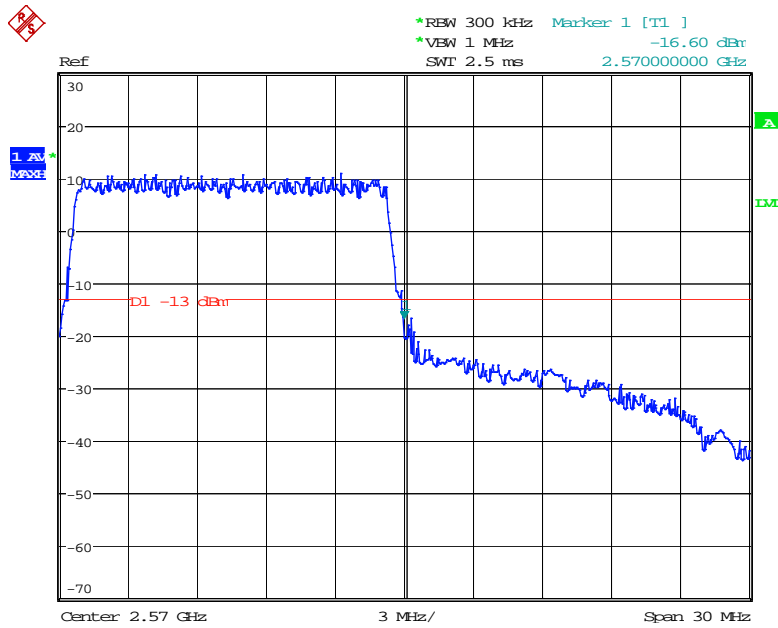
Date: 30.DEC.2020 10:35:45

QPSK (15.0 MHz, FULL RB) - Left Band Edge



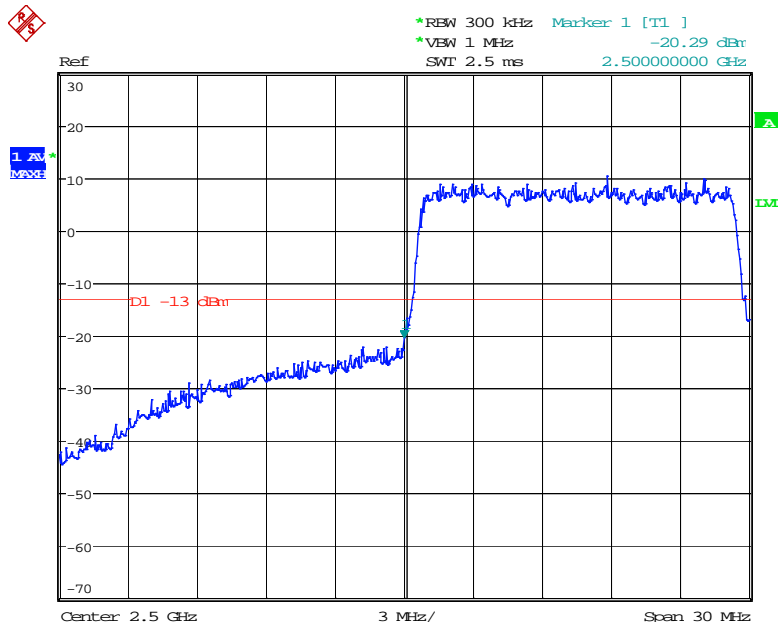
Date: 30.DEC.2020 10:40:24

QPSK (15.0 MHz, FULL RB) - Right Band Edge



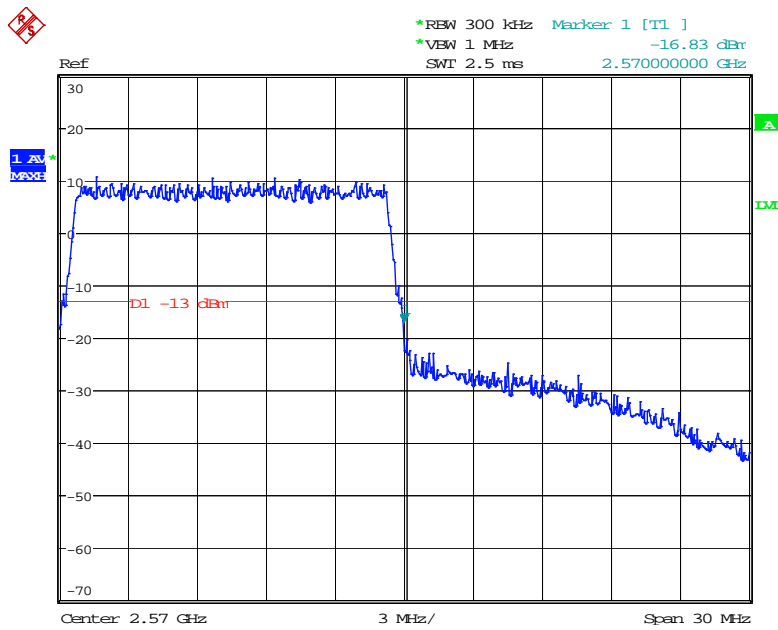
Date: 30.DEC.2020 10:37:53

16-QAM (15.0 MHz, FULL RB) - Left Band Edge



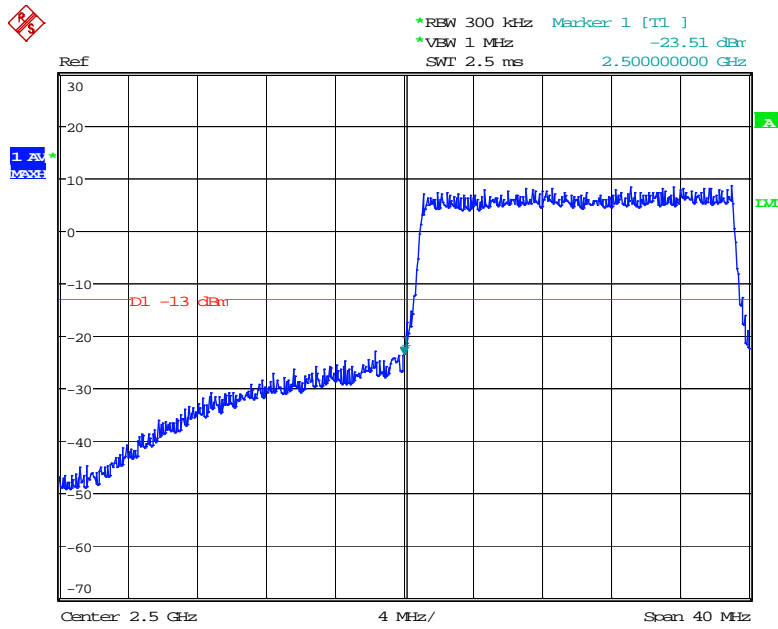
Date: 30.DEC.2020 10:39:58

16-QAM (15.0 MHz, FULL RB) - Right Band Edge



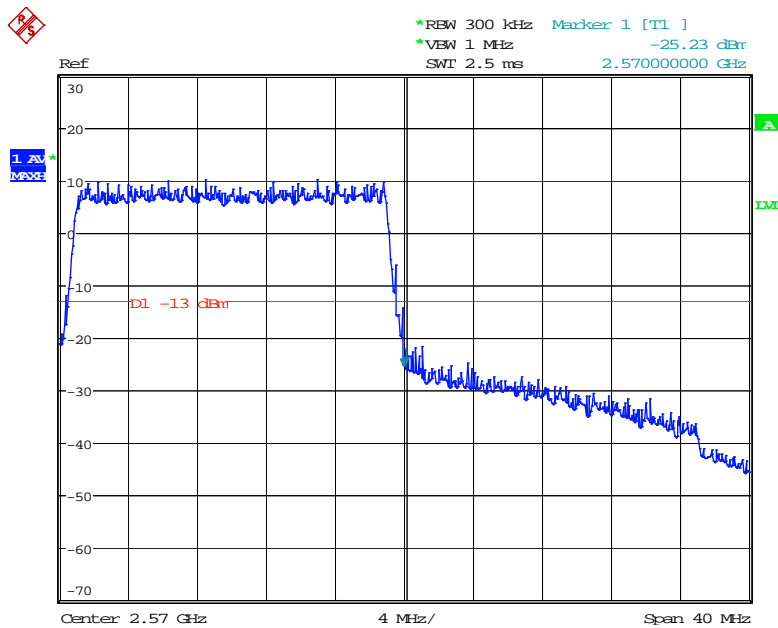
Date: 30.DEC.2020 10:38:47

QPSK (20.0 MHz, FULL RB) - Left Band Edge



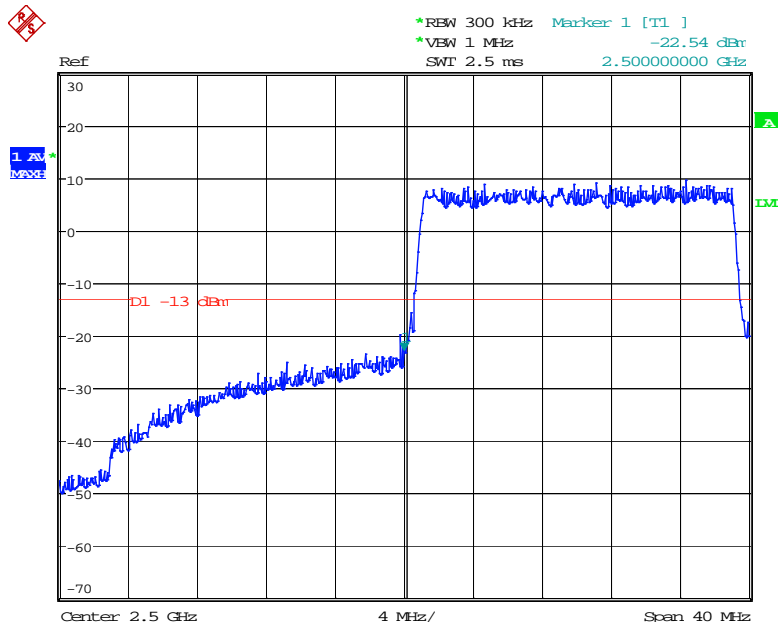
Date: 30.DEC.2020 10:41:49

QPSK (20.0 MHz, FULL RB) - Right Band Edge



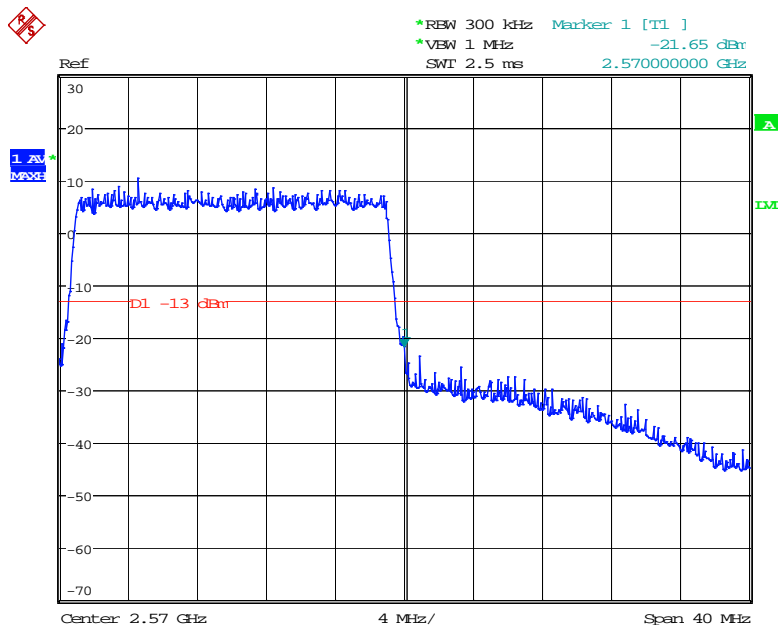
Date: 30.DEC.2020 10:43:03

16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 30.DEC.2020 10:42:21

16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 30.DEC.2020 10:43:41

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

Applicable Standard

FCC § 2.1055, §22.355, §24.235 and & §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

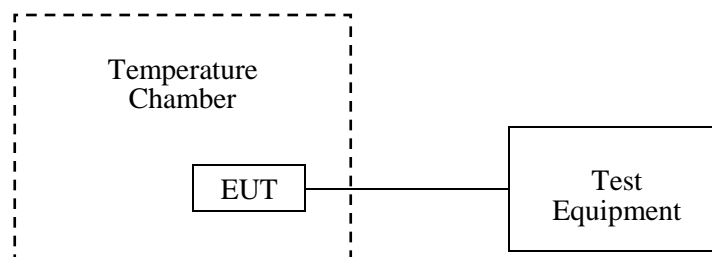
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC 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 DC 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:	20 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Fan Yang on 2020-12-29.

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	3.7	5	0.0060	2.5
-20		4	0.0048	2.5
-10		2	0.0024	2.5
0		2	0.0024	2.5
10		4	0.0048	2.5
20		5	0.0060	2.5
30		6	0.0072	2.5
40		4	0.0048	2.5
50		6	0.0072	2.5
20		V min.= 3.5	3	0.0036
	V max.= 4.2	2	0.0024	2.5

EDGE Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	4	0.0048	2.5
-20		5	0.0060	2.5
-10		7	0.0084	2.5
0		4	0.0048	2.5
10		5	0.0060	2.5
20		7	0.0084	2.5
30		9	0.0108	2.5
40		6	0.0072	2.5
50		3	0.0036	2.5
20		V min.= 3.5	5	0.0060
	V max.= 4.2	8	0.0096	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	3.7	-4	-0.0048	2.5
-20		3	0.0036	2.5
-10		-3	-0.0036	2.5
0		1	0.0012	2.5
10		6	0.0072	2.5
20		5	0.0060	2.5
30		2	0.0024	2.5
40		5	0.0060	2.5
50		3	0.0036	2.5
20		V min.= 3.5	3	0.0036
	V max.= 4.2	5	0.0060	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	3.7	3	0.0016	pass
-20		3	0.0016	pass
-10		5	0.0027	pass
0		1	0.0005	pass
10		-6	-0.0032	pass
20		2	0.0011	pass
30		-4	-0.0021	pass
40		-6	-0.0032	pass
50		-3	-0.0016	pass
20		V min.= 3.5	-5	-0.0027
	V max.= 4.2	-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	3.7	-4	-0.0021	pass
-20		-5	-0.0027	pass
-10		6	0.0032	pass
0		4	0.0021	pass
10		-3	-0.0016	pass
20		-5	-0.0027	pass
30		-2	-0.0011	pass
40		-6	-0.0032	pass
50		-3	-0.0016	pass
20		V min.= 3.5	-9	-0.0048
	V max.= 4.2	-3	-0.0016	pass

WCDMA Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	6	0.0032	pass
-20		2	0.0011	pass
-10		4	0.0021	pass
0		6	0.0032	pass
10		2	0.0011	pass
20		5	0.0027	pass
30		5	0.0027	pass
40		7	0.0037	pass
50		3	0.0016	pass
20		V min.= 3.5	4	0.0021
	V max.= 4.2	2	0.0011	pass

LTE:
QPSK:
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	3.7	1710.4415	1754.5429	1710	1755
-20		1710.4412	1754.5416	1710	1755
-10		1710.4423	1754.5466	1710	1755
0		1710.4414	1754.5413	1710	1755
10		1710.4422	1754.5436	1710	1755
20		1710.4452	1754.5424	1710	1755
30		1710.4453	1754.5445	1710	1755
40		1710.4411	1754.5432	1710	1755
50		1710.4424	1754.5451	1710	1755
20		V min.= 3.5	1710.4476	1754.5424	1710
	V max.= 4.2	1710.4399	1754.5429	1710	1755

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	3.7	2500.4651	2569.5239	2500	2570
-20		2500.4593	2569.5221	2500	2570
-10		2500.4633	2569.5225	2500	2570
0		2500.4676	2569.5230	2500	2570
10		2500.4626	2569.5242	2500	2570
20		2500.4629	2569.5251	2500	2570
30		2500.4636	2569.5266	2500	2570
40		2500.4693	2569.5283	2500	2570
50		2500.4625	2569.5256	2500	2570
20		V min.= 3.5	2500.4620	2569.5282	2500
	V max.= 4.2	2500.4662	2569.5257	2500	2570

**16QAM:
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	3.7	1710.4372	1754.5678	1710	1755
-20		1710.4353	1754.5633	1710	1755
-10		1710.4393	1754.5642	1710	1755
0		1710.4326	1754.5628	1710	1755
10		1710.4359	1754.5629	1710	1755
20		1710.4401	1754.5644	1710	1755
30		1710.4336	1754.5620	1710	1755
40		1710.4409	1754.5644	1710	1755
50		1710.4349	1754.5637	1710	1755
20		V min.= 3.5	1710.4333	1754.5666	1710
	V max.= 4.2	1710.4344	1754.5679	1710	1755

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	3.7	2500.4610	2569.5234	2500	2570
-20		2500.4662	2569.5282	2500	2570
-10		2500.4603	2569.5213	2500	2570
0		2500.4653	2569.5275	2500	2570
10		2500.4633	2569.5234	2500	2570
20		2500.4673	2569.5262	2500	2570
30		2500.4646	2569.5243	2500	2570
40		2500.4626	2569.5246	2500	2570
50		2500.4636	2569.5244	2500	2570
20		V min.= 3.5	2500.4619	2569.5266	2500
	V max.= 4.2	2500.4660	2569.52169	2500	2570

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