FCC PART 27

FCC PART 22H, PART 24E

TEST REPORT

For

Ultimate Health Plans Corporate

1244 Mariner Boulevard Spring Hill, FL 34609, United States

FCC ID:2AYLKULT291

Report Type:	**Product Type:**
Original Report	Ultimate

Report Number:	RSZ201224003-00D
Report Date:	2021-02-04
Reviewed By:	Jacob Kong RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Ultimate
Tested Model	Ultimate FU
Frequency Range	PCS1900/WCDMA Band 2/LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4/LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) GSM850/WCDMA Band 5/LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 17: 704-716MHz(TX); 734-746MHz(RX)
Maximum Target Output Power	GSM850: 33.5dBm(GMSK), 26.3dBm(8PSK) PCS1900: 29.3 dBm(GMSK), 25.1dBm(8PSK) WCDMA B2: 22.2dBm;WCDMA B4:22.3dBm WCDMA B5: 23.1dBm LTE Band 2: 22.6dBm LTE Band 4: 22.5dBm LTE Band 5: 22.4dBm LTE Band 7: 22.1dBm LTE Band 17: 22.2dBm
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA B5/LTE B5:-1.23dBi; PCS1900/WCDMA B2/LTE B2: 1.07dBi ; WCDMA B4/LTE B4:0.56dBi; LTE B7： 1.89 dBi; LTE B17 :-1.88dBi (provided by the applicant)
Voltage Range	DC3.85V from battery or DC 5.0V from adapter
Date of Test	2021-01-01 to 2021-02-04
Sample serial number	RSZ201224003-RF-S1(Assigned by BACL, Shenzhen)
Received date	2020-12-24
Sample/EUT Status	Good condition
Adapter information	Model: HJ-0501000B2-US Input: AC 100-240V, 50/60Hz, 0.15A Output: DC 5V, 1A

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 Commissions 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 Bay Area Compliance Laboratories Corp. (Shenzhen). 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
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1℃
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 Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, 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.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The EUT has two antennas for WWAN, the main antenna and the AUX antenna, detail refer to EUT photo.

The GSM850& WCDMA B5& LTE B5/B7/B17 transmit on main antenna.

The DCS1900& WCDMA B2/B4& LTE B2/B4 transmit on AUX antenna.

Test was performed as below table:

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM850	0.25	824.2	836.6	848.8
DCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
WCDMA B4	4.2	1712.4	1732.6	1752.6
WCDMA B5	4.2	826.4	836.6	846.6
LTE B2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE B4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE B5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE B7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
LTE B17	5	706.5	710	713.5
	10	709	710	711

Equipment Modifications

No modification was made to the EUT.

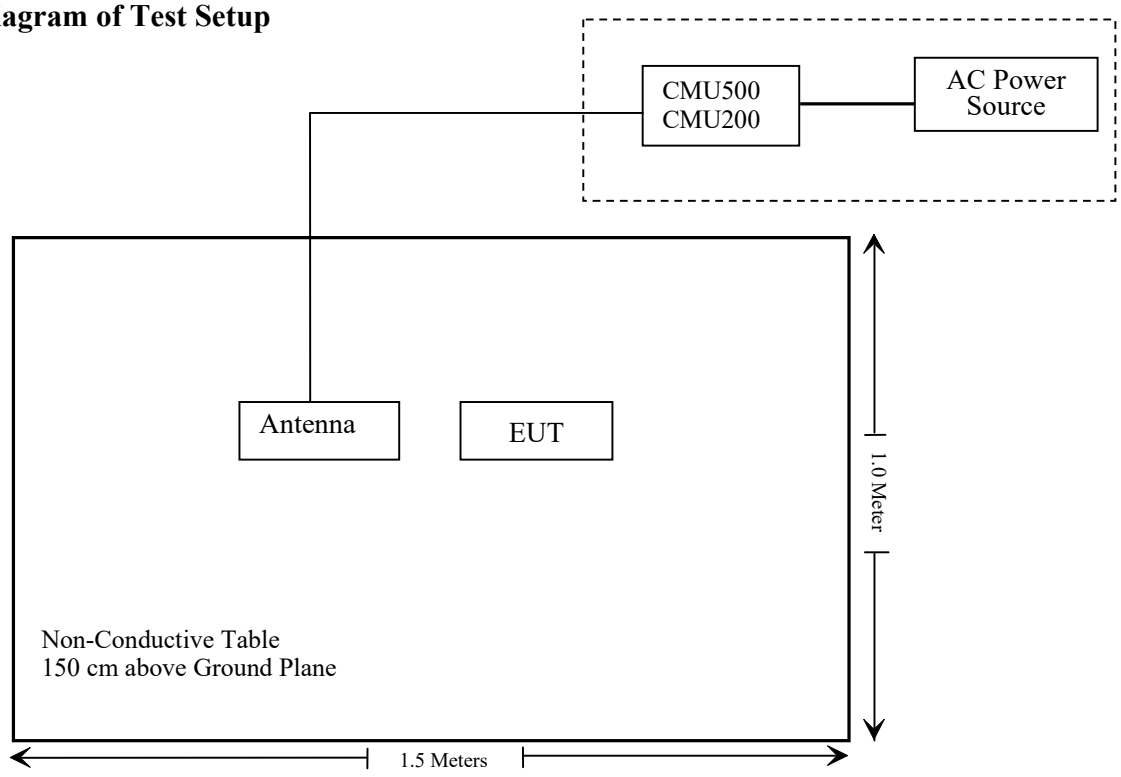
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-116218-UY
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605

Support Cable Description

Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	CMW500/ CMU200

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307(b), §2.1093	RF Exposure	Compliance
§2.1046; § 22.913 (a); § 24.232 (c); §27.50 (b)(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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2020/12/22	2023/12/21
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2020/11/29	2021/11/28
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	DRH-118	A052604	2020/12/22	2023/12/21
A.H.System	Horn Antenna	SAS-200/571	135	2018/09/01	2021/08/31
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28
MICRO-TRONICS	Passband filter	HPM50111	F-19-EM006	2020/04/20	2021/04/20
Unknown	High Pass filter	1.3GHz	101120	2020/04/20	2021/04/20
Ducommun Technolagies	Horn antenna	ARH-4223-02	1007726-02 1304	2020/12/06	2023/12/05
Ducommun Technolagies	Horn antenna	ARH-4223-02	1007726-01 1304	2020/12/06	2023/12/05
Agilent	Signal Generator	N5183A	MY51040755	2021/01/14	2022/01/13

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2020/04/03	2021/04/02
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/08/04	2021/08/03
Unknown	RF Cable	Unknown	2301 276	2020/11/29	2021/11/28
Unknown	RF Cable	Unknown	DLO J5/W6102	2020/11/29	2021/11/28
Weinschel	Power divider	1515	MY628	2020/11/29	2021/11/28
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	115500	2020/07/31	2021/07/30
instek	DC Power Supply	GPS-3030DD	EM832096	NCR	NCR
Fluke	Digital Multimeter	287	19000011	2020/07/23	2021/07/22

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) 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: RSZ201224003-SA.

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), the maximum EIRP must not exceed 3Watts (34.77dBm) for 698-746MHz.

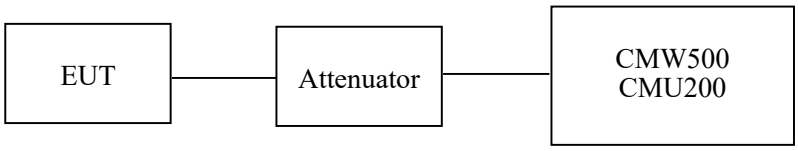
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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/CMU200 through sufficient attenuation.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Coco Liu from 2021-01-08 to 2021-01-30.

Conducted Power

Cellular 850

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	32.4	28.52	38.45
	190	836.6	32.8	28.92	38.45
	251	848.8	33.2	29.32	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	31.91	30.16	28.14	25.94	28.03	26.28	24.26	22.06	38.45
	190	836.6	32.42	30.72	28.65	26.49	28.54	26.84	24.77	22.61	38.45
	251	848.8	32.92	31.32	29.23	27.09	29.04	27.44	25.35	23.21	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	
EDGE	128	824.2	25.68	24.48	22.66	20.86	21.80	20.60	18.78	16.98	38.45
	190	836.6	25.73	24.65	22.45	20.79	21.85	20.77	18.57	16.91	38.45
	251	848.8	25.88	24.29	22.23	20.97	22.00	20.41	18.35	17.09	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		22.54	22.78	22.76	18.66	18.9	18.88
	HSDPA	1	21.55	21.75	21.70	17.67	17.87	17.82
		2	21.35	21.36	21.87	17.47	17.48	17.99
		3	21.69	21.49	21.16	17.81	17.61	17.28
		4	20.94	20.55	20.49	17.06	16.67	16.61
	HSUPA	1	21.50	21.80	21.69	17.62	17.92	17.81
		2	21.16	21.59	21.43	17.28	17.71	17.55
		3	21.49	21.29	21.16	17.61	17.41	17.28
		4	20.76	20.46	20.89	16.88	16.58	17.01
		5	20.59	20.51	20.28	16.71	16.63	16.40
	HSPA+	1	21.68	21.72	21.86	17.8	17.84	17.98

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) -Cable Loss(dB)
For GSM850 / WCDMA Band5: Antenna Gain = -1.23dBi = -3.38dBd (0dBd=2.15dBi)
For 700MHz-1GHz range, Cable loss is 0.5dB, which was provided by applicant.
Limit: ERP≤38.45dBm

PCS 1900

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	28.3	29.37	33
	661	1880.0	29.0	30.07	33
	810	1909.8	28.7	29.77	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.12	27.01	25.20	23.61	30.19	28.08	26.27	24.68	33
	661	1880.0	29.21	27.06	25.57	23.72	30.28	28.13	26.64	24.79	33
	810	1909.8	29.43	27.12	25.64	23.79	30.50	28.19	26.71	24.86	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	
EDGE	512	1850.2	24.81	23.55	21.36	20.56	25.88	24.62	22.43	21.63	33
	661	1880.0	24.56	23.28	21.43	20.72	25.63	24.35	22.50	21.79	33
	810	1909.8	24.58	23.16	21.25	20.64	25.65	24.23	22.32	21.71	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		21.59	21.79	21.92	22.66	22.86	22.99
	HSDPA	1	20.72	20.65	20.58	21.79	21.72	21.65
		2	20.64	20.49	20.36	21.71	21.56	21.43
		3	20.53	20.24	20.25	21.60	21.31	21.32
		4	20.21	20.12	20.16	21.28	21.19	21.23
	HSUPA	1	20.46	20.35	20.15	21.53	21.42	21.22
		2	20.46	20.35	20.06	21.53	21.42	21.13
		3	20.46	20.35	20.01	21.53	21.42	21.08
		4	20.46	20.35	20.23	21.53	21.42	21.30
		5	20.46	20.35	20.15	21.53	21.42	21.22
	HSPA+	1	20.46	20.35	20.15	21.53	21.42	21.22

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable Loss(dB)
For PCS1900 / WCDMA Band2: Antenna Gain = 1.07dBi, Cable loss is 0dB, which was provided by applicant.
Limit: EIRP≤33dBm

AWS Band4

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 4)	RMC12.2k		21.94	21.08	21.54	22.50	21.64	22.10
	HSDPA	1	20.75	20.54	20.66	21.31	21.10	21.22
		2	20.46	20.62	20.59	21.02	21.18	21.15
		3	20.28	20.43	20.48	20.84	20.99	21.04
		4	20.06	20.31	20.14	20.62	20.87	20.70
	HSUPA	1	20.79	20.34	20.54	21.35	20.90	21.10
		2	20.58	20.38	20.57	21.14	20.94	21.13
		3	20.26	20.29	20.49	20.82	20.85	21.05
		4	20.18	20.16	20.36	20.74	20.72	20.92
		5	20.05	20.04	20.16	20.61	20.60	20.72
	HSPA+	1	20.82	20.43	20.59	21.38	20.99	21.15

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable Loss(dB)
For Band4: Antenna Gain = 0.56dBi, Cable loss is 0dB, which was provided by applicant.
Limit: EIRP≤30dBm

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	4.23	13
	Middle	4.56	13
	High	3.26	13
EGPRS	Low	4.1	13
	Middle	4.23	13
	High	4.26	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.26	13
	Middle	3.86	13
	High	3.46	13
HSDPA (16QAM)	Low	3.76	13
	Middle	3.26	13
	High	3.56	13
HSUPA (BPSK)	Low	3.65	13
	Middle	3.89	13
	High	3.36	13
HSPA+	Low	3.46	13
	Middle	3.87	13
	High	3.46	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.46	13
	Middle	3.28	13
	High	3.56	13
EGPRS	Low	3.31	13
	Middle	3.16	13
	High	3.87	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.24	13
	Middle	3.49	13
	High	3.28	13
HSDPA (16QAM)	Low	3.23	13
	Middle	3.56	13
	High	3.89	13
HSUPA (BPSK)	Low	3.19	13
	Middle	3.34	13
	High	3.46	13
HSPA+	Low	3.41	13
	Middle	3.31	13
	High	3.49	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.56	13
	Middle	3.36	13
	High	3.55	13
HSDPA (16QAM)	Low	3.86	13
	Middle	3.49	13
	High	3.59	13
HSUPA (BPSK)	Low	3.92	13
	Middle	3.15	13
	High	3.59	13
HSPA+	Low	3.42	13
	Middle	3.56	13
	High	3.15	13

LTE Band 2

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	21.12	20.92	20.46	22.72	22.96	22.90
		RB1#2	21.17	20.96	20.52	23.19	23.23	23.40
		RB1#5	21.14	20.94	20.46	23.20	23.27	23.38
		RB3#0	21.19	21.02	20.56	23.19	23.24	23.39
		RB3#1	21.11	21.02	20.57	23.15	23.22	23.36
		RB3#2	20.06	19.51	19.50	23.21	23.22	23.35
		RB6#0	20.09	19.55	19.53	23.17	23.24	23.38
	16QAM	RB1#0	20.18	19.62	19.61	23.18	23.24	23.40
		RB1#2	21.65	21.46	21.64	23.19	23.28	23.39
		RB1#5	21.82	21.60	22.05	23.19	23.25	23.34
		RB3#0	20.74	20.75	20.66	23.16	23.23	23.35
		RB3#1	21.00	20.94	21.04	23.17	23.25	23.37
		RB3#2	21.03	21.07	20.96	23.16	23.26	23.38
		RB6#0	20.50	20.72	20.53	23.20	23.22	23.37
3.0	QPSK	RB1#0	21.73	21.79	21.71	23.16	23.24	23.32
		RB1#7	20.52	20.62	20.69	23.15	23.25	23.33
		RB1#14	20.75	20.75	21.10	23.18	23.23	23.37
		RB8#0	21.01	21.26	21.32	23.17	23.23	23.35
		RB8#4	20.83	20.59	20.67	23.14	23.22	23.32
		RB8#7	21.55	21.99	21.86	23.15	23.24	23.33
		RB15#0	20.36	20.77	20.47	23.14	23.22	23.36
	16QAM	RB1#0	20.90	20.95	20.93	23.15	23.21	23.35
		RB1#7	20.83	21.41	21.07	23.16	23.22	23.33
		RB1#14	20.54	20.56	20.55	23.16	23.27	23.35
		RB8#0	21.46	21.53	21.46	23.15	23.22	23.33
		RB8#4	21.34	21.48	21.34	23.15	23.24	23.35
		RB8#7	21.54	21.47	21.54	23.14	23.26	23.35
		RB15#0	21.69	21.75	21.69	23.19	23.24	23.35

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	21.58	21.80	20.69	22.65	22.87	21.76
		RB1#12	20.49	20.40	20.81	21.56	21.47	21.88
		RB1#24	20.76	20.88	20.48	21.83	21.95	21.55
		RB12#0	21.15	21.22	20.76	22.22	22.29	21.83
		RB12#6	20.55	20.64	20.70	21.62	21.71	21.77
		RB12#11	21.58	21.80	20.69	22.65	22.87	21.76
		RB25#0	20.49	20.40	20.81	21.56	21.47	21.88
	16QAM	RB1#0	21.80	21.66	21.80	22.87	22.73	22.87
		RB1#12	20.54	20.69	20.54	21.61	21.76	21.61
		RB1#24	20.90	20.94	20.90	21.97	22.01	21.97
		RB12#0	20.96	21.24	20.96	22.03	22.31	22.03
		RB12#6	21.61	21.93	21.51	22.68	23.00	22.58
		RB12#11	21.76	21.85	21.70	22.83	22.92	22.77
		RB25#0	21.59	21.91	21.62	22.66	22.98	22.69
10.0	QPSK	RB1#0	21.78	21.47	21.45	22.85	22.54	22.52
		RB1#24	21.85	21.87	20.70	22.92	22.94	21.77
		RB1#49	21.38	21.62	20.65	22.45	22.69	21.72
		RB25#0	21.48	21.80	20.62	22.55	22.87	21.69
		RB25#12	21.97	20.59	20.79	23.04	21.66	21.86
		RB25#24	20.54	20.88	20.85	21.61	21.95	21.92
		RB50#0	20.69	21.33	20.74	21.76	22.40	21.81
	16QAM	RB1#0	20.91	21.63	21.55	21.98	22.70	22.62
		RB1#24	20.69	21.70	21.07	21.76	22.77	22.14
		RB1#49	20.73	20.84	20.72	21.80	21.91	21.79
		RB25#0	20.87	21.12	20.93	21.94	22.19	22.00
		RB25#12	20.65	20.64	20.80	21.72	21.71	21.87
		RB25#24	20.73	20.84	20.72	21.80	21.91	21.79
		RB50#0	20.58	20.70	20.78	21.65	21.77	21.85

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	21.83	21.24	21.73	22.90	22.31	22.80
		RB1#37	21.94	22.04	21.74	23.01	23.11	22.81
		RB1#74	21.63	21.76	21.58	22.70	22.83	22.65
		RB36#0	21.83	21.98	21.45	22.90	23.05	22.52
		RB36#18	21.32	21.48	20.52	22.39	22.55	21.59
		RB36#37	21.45	21.77	20.78	22.52	22.84	21.85
		RB75#0	21.75	21.43	20.73	22.82	22.50	21.80
	16QAM	RB1#0	21.64	21.74	20.63	22.71	22.81	21.70
		RB1#37	20.76	20.63	20.56	21.83	21.70	21.63
		RB1#74	20.69	20.92	20.75	21.76	21.99	21.82
		RB36#0	21.12	21.39	20.81	22.19	22.46	21.88
		RB36#18	20.57	20.55	20.77	21.64	21.62	21.84
		RB36#37	21.83	21.24	21.73	22.90	22.31	22.80
		RB75#0	21.94	22.04	21.74	23.01	23.11	22.81
20.0	QPSK	RB1#0	21.67	21.52	21.48	22.74	22.59	22.55
		RB1#49	21.73	22.22	21.85	22.80	23.29	22.92
		RB1#99	21.81	21.64	21.54	22.88	22.71	22.61
		RB50#0	21.56	21.91	21.69	22.63	22.98	22.76
		RB50#24	21.65	21.41	20.74	22.72	22.48	21.81
		RB50#49	21.39	21.72	20.93	22.46	22.79	22.00
		RB100#0	21.53	21.50	20.76	22.60	22.57	21.83
	16QAM	RB1#0	21.71	21.93	20.93	22.78	23.00	22.00
		RB1#49	20.57	20.65	20.82	21.64	21.72	21.89
		RB1#99	20.90	20.90	20.69	21.97	21.97	21.76
		RB50#0	21.04	21.17	20.83	22.11	22.24	21.90
		RB50#24	20.69	20.91	20.42	21.76	21.98	21.49
		RB50#49	21.67	21.52	21.48	22.74	22.59	22.55
		RB100#0	21.73	22.22	21.85	22.80	23.29	22.92

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)
For Band2: Antenna Gain = 1.07dBi, Cable loss is 0dB, which was provided by 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)	4.25	4.06	4.11	13	Pass
QPSK (100RB Size)	5.16	5.46	5.26	13	Pass
16QAM (1RB Size)	4.26	4.18	4.29	13	Pass
16QAM (100RB Size)	6.62	6.46	6.49	13	Pass

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	21.87	21.42	22.03	22.43	21.98	22.59
		RB1#2	21.47	21.76	21.92	22.03	22.32	22.48
		RB1#5	21.44	21.07	21.88	22.00	21.63	22.44
		RB3#0	21.71	21.60	21.83	22.27	22.16	22.39
		RB3#1	21.06	21.08	21.74	21.62	21.64	22.30
		RB3#2	21.39	21.49	21.81	21.95	22.05	22.37
		RB6#0	21.36	21.53	21.61	21.92	22.09	22.17
	16QAM	RB1#0	21.84	21.18	21.50	22.40	21.74	22.06
		RB1#2	21.55	21.36	21.90	22.11	21.92	22.46
		RB1#5	21.50	21.36	21.88	22.06	21.92	22.44
		RB3#0	21.44	21.41	21.88	22.00	21.97	22.44
		RB3#1	21.29	21.46	21.76	21.85	22.02	22.32
		RB3#2	21.22	21.20	21.63	21.78	21.76	22.19
		RB6#0	21.51	21.18	21.64	22.07	21.74	22.20
3.0	QPSK	RB1#0	21.29	21.66	21.60	21.85	22.22	22.16
		RB1#7	21.57	21.38	21.62	22.13	21.94	22.18
		RB1#14	21.56	21.16	21.62	22.12	21.72	22.18
		RB8#0	21.57	21.34	21.91	22.13	21.90	22.47
		RB8#4	21.82	21.69	21.68	22.38	22.25	22.24
		RB8#7	21.73	21.83	21.91	22.29	22.39	22.47
		RB15#0	21.69	21.28	21.65	22.25	21.84	22.21
	16QAM	RB1#0	21.53	21.14	21.74	22.09	21.70	22.30
		RB1#7	21.26	21.06	21.70	21.82	21.62	22.26
		RB1#14	21.64	21.28	21.88	22.20	21.84	22.44
		RB8#0	21.32	21.42	21.57	21.88	21.98	22.13
		RB8#4	21.51	21.44	21.87	22.07	22.00	22.43
		RB8#7	21.31	21.34	21.97	21.87	21.90	22.53
		RB15#0	21.73	21.59	21.92	22.29	22.15	22.48

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	21.65	21.22	22.16	22.21	21.78	22.72
		RB1#12	21.84	21.57	21.99	22.40	22.13	22.55
		RB1#24	21.64	21.13	21.92	22.20	21.69	22.48
		RB12#0	21.53	21.39	21.76	22.09	21.95	22.32
		RB12#6	21.21	21.15	21.85	21.77	21.71	22.41
		RB12#11	21.33	21.35	21.53	21.89	21.91	22.09
		RB25#0	21.18	21.63	21.75	21.74	22.19	22.31
	16QAM	RB1#0	21.87	21.64	21.64	22.43	22.20	22.20
		RB1#12	21.35	21.28	22.06	21.91	21.84	22.62
		RB1#24	21.83	21.52	21.98	22.39	22.08	22.54
		RB12#0	21.59	21.69	22.07	22.15	22.25	22.63
		RB12#6	21.35	21.13	21.71	21.91	21.69	22.27
		RB12#11	21.33	21.52	21.44	21.89	22.08	22.00
		RB25#0	21.19	21.21	21.67	21.75	21.77	22.23
10.0	QPSK	RB1#0	21.59	21.44	21.64	22.15	22.00	22.20
		RB1#24	21.61	21.48	21.61	22.17	22.04	22.17
		RB1#49	21.58	21.39	21.58	22.14	21.95	22.14
		RB25#0	21.28	21.56	21.28	21.84	22.12	21.84
		RB25#12	21.18	21.48	21.18	21.74	22.04	21.74
		RB25#24	21.32	21.14	21.32	21.88	21.70	21.88
		RB50#0	21.62	21.56	21.62	22.18	22.12	22.18
	16QAM	RB1#0	21.45	21.33	21.45	22.01	21.89	22.01
		RB1#24	21.46	21.39	21.46	22.02	21.95	22.02
		RB1#49	21.40	21.22	21.51	21.96	21.78	22.07
		RB25#0	21.62	21.47	21.85	22.18	22.03	22.41
		RB25#12	21.27	21.13	21.46	21.83	21.69	22.02
		RB25#24	21.59	21.33	21.65	22.15	21.89	22.21
		RB50#0	21.19	21.43	21.80	21.75	21.99	22.36

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	21.66	21.41	21.71	22.22	21.97	22.27
		RB1#37	21.72	21.50	22.12	22.28	22.06	22.68
		RB1#74	21.40	21.22	21.51	21.96	21.78	22.07
		RB36#0	21.62	21.47	21.85	22.18	22.03	22.41
		RB36#18	21.27	21.13	21.46	21.83	21.69	22.02
		RB36#37	21.56	21.29	21.45	22.12	21.85	22.01
		RB75#0	21.64	21.47	21.60	22.20	22.03	22.16
	16QAM	RB1#0	21.44	21.04	21.46	22.00	21.60	22.02
		RB1#37	21.53	21.36	21.68	22.09	21.92	22.24
		RB1#74	21.43	21.55	21.71	21.99	22.11	22.27
		RB36#0	21.56	21.31	21.48	22.12	21.87	22.04
		RB36#18	21.43	21.07	21.68	21.99	21.63	22.24
		RB36#37	21.53	21.42	22.04	22.09	21.98	22.60
		RB75#0	21.15	21.61	21.89	21.71	22.17	22.45
20.0	QPSK	RB1#0	21.58	21.53	21.73	22.14	22.09	22.29
		RB1#49	21.71	21.58	21.67	22.27	22.14	22.23
		RB1#99	21.80	21.60	21.69	22.36	22.16	22.25
		RB50#0	21.25	21.22	21.87	21.81	21.78	22.43
		RB50#24	21.49	21.14	21.69	22.05	21.70	22.25
		RB50#49	21.41	21.21	21.77	21.97	21.77	22.33
		RB100#0	21.45	21.64	21.73	22.01	22.20	22.29
	16QAM	RB1#0	21.71	21.43	21.70	22.27	21.99	22.26
		RB1#49	21.38	21.40	22.13	21.94	21.96	22.69
		RB1#99	20.54	20.49	20.00	21.10	21.05	20.56
		RB50#0	20.27	20.11	20.28	20.83	20.67	20.84
		RB50#24	20.08	20.25	20.26	20.64	20.81	20.82
		RB50#49	20.28	20.05	20.40	20.84	20.61	20.96
		RB100#0	20.42	20.13	20.53	20.98	20.69	21.09

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)
For Band4: Antenna Gain = 0.56dBi, Cable loss is 0dB, which was provided by 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)	4.26	4.21	4.26	13	Pass
QPSK (100RB Size)	5.56	5.01	5.12	13	Pass
16QAM (1RB Size)	5.24	5.47	5.46	13	Pass
16QAM (100RB Size)	6.28	6.26	6.45	13	Pass

LTE Band5

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	21.46	21.82	21.78	17.58	17.94	17.9
		RB1#2	21.71	21.48	21.50	17.83	17.6	17.62
		RB1#5	21.46	21.17	21.82	17.58	17.29	17.94
		RB3#0	20.68	20.52	20.03	16.8	16.64	16.15
		RB3#1	20.15	20.11	20.18	16.27	16.23	16.3
		RB3#2	19.98	20.31	20.23	16.1	16.43	16.35
		RB6#0	20.11	19.88	20.47	16.23	16	16.59
	16QAM	RB1#0	20.51	19.99	20.78	16.63	16.11	16.9
		RB1#2	20.80	20.42	20.54	16.92	16.54	16.66
		RB1#5	20.91	20.41	20.79	17.03	16.53	16.91
		RB3#0	20.83	20.70	20.78	16.95	16.82	16.9
		RB3#1	20.55	20.47	20.69	16.67	16.59	16.81
		RB3#2	20.57	20.57	20.70	16.69	16.69	16.82
		RB6#0	21.46	21.29	21.83	17.58	17.41	17.95
3.0	QPSK	RB1#0	21.69	21.67	21.82	17.81	17.79	17.94
		RB1#7	21.28	21.16	21.97	17.4	17.28	18.09
		RB1#14	20.49	20.40	20.10	16.61	16.52	16.22
		RB8#0	20.20	19.99	20.48	16.32	16.11	16.6
		RB8#4	20.15	20.17	20.27	16.27	16.29	16.39
		RB8#7	20.28	20.27	20.48	16.4	16.39	16.6
		RB15#0	20.21	20.32	20.57	16.33	16.44	16.69
	16QAM	RB1#0	20.49	20.32	20.73	16.61	16.44	16.85
		RB1#7	20.66	20.43	20.53	16.78	16.55	16.65
		RB1#14	20.75	20.62	20.55	16.87	16.74	16.67
		RB8#0	21.43	21.43	21.73	17.55	17.55	17.85
		RB8#4	21.49	21.38	21.81	17.61	17.5	17.93
		RB8#7	21.51	21.14	22.01	17.63	17.26	18.13
		RB15#0	20.57	20.49	19.77	16.69	16.61	15.89

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	21.49	21.38	21.81	17.61	17.5	17.93
		RB1#12	21.51	21.14	22.01	17.63	17.26	18.13
		RB1#24	20.57	20.49	19.77	16.69	16.61	15.89
		RB12#0	20.54	20.24	20.23	16.66	16.36	16.35
		RB12#6	20.15	20.52	20.30	16.27	16.64	16.42
		RB12#11	21.42	21.50	21.52	17.54	17.62	17.64
		RB25#0	21.51	21.58	21.71	17.63	17.7	17.83
	16QAM	RB1#0	21.45	21.21	22.12	17.57	17.33	18.24
		RB1#12	20.68	20.58	19.98	16.8	16.7	16.1
		RB1#24	20.24	20.15	20.39	16.36	16.27	16.51
		RB12#0	20.39	20.20	20.53	16.51	16.32	16.65
		RB12#6	20.36	19.83	20.39	16.48	15.95	16.51
		RB12#11	20.32	20.14	20.72	16.44	16.26	16.84
		RB25#0	20.46	20.37	20.72	16.58	16.49	16.84
10.0	QPSK	RB1#0	20.97	20.53	20.68	17.09	16.65	16.8
		RB1#24	20.86	20.58	20.81	16.98	16.7	16.93
		RB1#49	20.79	20.82	20.88	16.91	16.94	17
		RB25#0	21.02	20.43	20.72	17.14	16.55	16.84
		RB25#12	20.47	20.58	20.83	16.59	16.7	16.95
		RB25#24	21.42	21.50	21.52	17.54	17.62	17.64
		RB50#0	21.51	21.58	21.71	17.63	17.7	17.83
	16QAM	RB1#0	21.55	21.71	21.80	17.67	17.83	17.92
		RB1#24	21.80	21.70	21.52	17.92	17.82	17.64
		RB1#49	21.63	21.15	22.07	17.75	17.27	18.19
		RB25#0	20.53	20.50	19.93	16.65	16.62	16.05
		RB25#12	20.43	20.18	20.17	16.55	16.3	16.29
		RB25#24	20.05	20.15	20.23	16.17	16.27	16.35
		RB50#0	20.28	19.99	20.33	16.4	16.11	16.45

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
For Band5: Antenna Gain = -1.23dBi = -3.38dBd (0dBd=2.15dBi)
For 700MHz-1GHz range, Cable loss is 0.5dB, which was provided by applicant.
Limit: ERP≤38.45dBm

Peak-to-average ratio (PAR)

10MHz bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.46	4.45	4.49	13	Pass
QPSK (50RB Size)	5.28	5.31	5.25	13	Pass
16QAM (1RB Size)	5.49	4.79	5.58	13	Pass
16QAM (50RB Size)	6.58	6.49	6.49	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	20.47	20.6	20.8	21.16	21.29	21.49
		RB1#12	20.70	20.9	20.7	21.39	21.59	21.39
		RB1#24	20.86	20.44	20.7	21.55	21.13	21.39
		RB12#0	20.87	20.45	20.5	21.56	21.14	21.19
		RB12#6	20.73	20.70	20.5	21.42	21.39	21.19
		RB12#11	21.00	20.57	20.4	21.69	21.26	21.09
		RB25#0	20.76	20.58	20.8	21.45	21.27	21.49
	16QAM	RB1#0	20.55	20.6	21.1	21.24	21.29	21.79
		RB1#12	20.94	21.0	20.9	21.63	21.69	21.59
		RB1#24	20.68	20.53	20.8	21.37	21.22	21.49
		RB12#0	20.59	20.52	20.7	21.28	21.21	21.39
		RB12#6	20.70	20.65	20.9	21.39	21.34	21.59
		RB12#11	20.55	20.32	20.7	21.24	21.01	21.39
		RB25#0	20.53	20.60	20.8	21.22	21.29	21.49
10.0	QPSK	RB1#0	20.54	20.67	20.8	21.23	21.36	21.49
		RB1#24	20.55	20.6	21.1	21.24	21.29	21.79
		RB1#49	20.59	20.8	20.9	21.28	21.49	21.59
		RB25#0	20.83	20.50	20.8	21.52	21.19	21.49
		RB25#12	20.97	20.34	20.7	21.66	21.03	21.39
		RB25#24	20.68	20.64	20.6	21.37	21.33	21.29
		RB50#0	20.66	20.64	20.7	21.35	21.33	21.39
	16QAM	RB1#0	20.55	20.62	20.8	21.24	21.31	21.49
		RB1#24	20.51	20.47	20.5	21.2	21.16	21.19
		RB1#49	20.47	20.6	21.1	21.16	21.29	21.79
		RB25#0	20.96	21.0	20.8	21.65	21.69	21.49
		RB25#12	20.71	20.34	20.5	21.4	21.03	21.19
		RB25#24	20.75	20.52	20.7	21.44	21.21	21.39
		RB50#0	20.91	20.47	20.8	21.6	21.16	21.49

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	21.78	21.53	21.58	22.47	22.22	22.27
		RB1#37	21.39	21.04	21.77	22.08	21.73	22.46
		RB1#74	20.74	20.74	20.07	21.43	21.43	20.76
		RB36#0	20.39	20.18	20.33	21.08	20.87	21.02
		RB36#18	20.01	20.18	20.50	20.7	20.87	21.19
		RB36#37	20.45	19.99	20.47	21.14	20.68	21.16
		RB75#0	20.68	20.02	20.51	21.37	20.71	21.2
	16QAM	RB1#0	20.96	20.36	20.70	21.65	21.05	21.39
		RB1#37	20.67	20.12	20.56	21.36	20.81	21.25
		RB1#74	20.76	20.55	20.41	21.45	21.24	21.1
		RB36#0	20.66	20.60	20.51	21.35	21.29	21.2
		RB36#18	20.81	20.64	20.57	21.5	21.33	21.26
		RB36#37	20.22	20.08	20.29	20.91	20.77	20.98
		RB75#0	20.33	20.17	20.42	21.02	20.86	21.11
20.0	QPSK	RB1#0	20.34	20.09	20.45	21.03	20.78	21.14
		RB1#49	20.28	20.20	20.09	20.97	20.89	20.78
		RB1#99	20.44	20.28	20.65	21.13	20.97	21.34
		RB50#0	20.58	20.01	20.35	21.27	20.7	21.04
		RB50#24	20.78	20.39	20.52	21.47	21.08	21.21
		RB50#49	20.61	20.46	20.83	21.3	21.15	21.52
		RB100#0	20.77	20.52	20.65	21.46	21.21	21.34
	16QAM	RB1#0	20.46	20.60	19.78	21.15	21.29	20.47
		RB1#49	20.29	20.33	20.53	20.98	21.02	21.22
		RB1#99	20.07	20.48	20.26	20.76	21.17	20.95
		RB50#0	20.43	19.94	20.42	21.12	20.63	21.11
		RB50#24	20.65	20.05	20.67	21.34	20.74	21.36
		RB50#49	20.85	20.33	20.66	21.54	21.02	21.35
		RB100#0	20.63	20.40	20.56	21.32	21.09	21.25

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)
For Band7: Antenna Gain = 1.89dBi
For 2.3GHz-2.7GHz range, Cable loss is 1.2dB, which was provided by 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)	4.28	4.46	3.56	13	Pass
QPSK (100RB Size)	5.49	5.27	5.55	13	Pass
16QAM (1RB Size)	5.69	5.59	4.89	13	Pass
16QAM (100RB Size)	6.79	6.49	6.34	13	Pass

LTE Band 17

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5	QPSK	RB1#0	20.56	20.67	20.82	16.03	16.14	16.29
		RB1#13	20.73	20.92	20.73	16.2	16.39	16.2
		RB1#24	20.77	20.63	20.66	16.24	16.1	16.13
		RB15#0	20.61	20.22	20.82	16.08	15.69	16.29
		RB15#10	20.67	20.81	20.71	16.14	16.28	16.18
		RB25#0	20.85	20.68	20.53	16.32	16.15	16
		RB1#0	20.57	20.51	20.70	16.04	15.98	16.17
	16QAM	RB1#13	20.51	20.34	20.69	15.98	15.81	16.16
		RB1#24	21.04	21.21	20.74	16.51	16.68	16.21
		RB15#0	20.81	20.22	20.60	16.28	15.69	16.07
		RB15#10	20.92	20.68	20.77	16.39	16.15	16.24
		RB25#0	20.73	20.71	20.61	16.2	16.18	16.08
		RB1#0	20.86	20.47	20.91	16.33	15.94	16.38
		RB1#13	20.55	20.66	20.72	16.02	16.13	16.19
10	QPSK	RB1#0	21.43	21.7	21.7	16.9	17.17	17.17
		RB1#25	21.70	21.9	21.7	17.17	17.37	17.17
		RB1#49	20.77	20.60	20.84	16.24	16.07	16.31
		RB25#0	20.68	21.23	20.82	16.15	16.7	16.29
		RB25#25	20.75	20.49	20.54	16.22	15.96	16.01
		RB50#0	20.92	20.20	20.68	16.39	15.67	16.15
		RB1#0	20.95	20.61	20.76	16.42	16.08	16.23
	16QAM	RB1#25	20.76	20.37	20.48	16.23	15.84	15.95
		RB1#49	21.06	20.44	20.78	16.53	15.91	16.25
		RB25#0	20.64	20.63	20.61	16.11	16.1	16.08
		RB25#25	20.73	20.50	20.57	16.2	15.97	16.04
		RB50#0	20.90	20.76	20.63	16.37	16.23	16.1
		RB1#0	20.51	20.44	20.74	15.98	15.91	16.21
		RB1#25	20.49	20.70	20.73	15.96	16.17	16.2

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
For Band17: Antenna Gain = -1.88dBi = -4.03dBd (0dBd=2.15dBi)
For 700MHz-1GHz range, Cable loss is 0.5dB, which was provided by applicant.
Limit: ERP≤34.77dBm

Peak-to-average ratio (PAR)

10MHz bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.48	4.31	4.49	13	Pass
QPSK (50RB Size)	5.28	5.58	5.79	13	Pass
16QAM (1RB Size)	5.67	5.46	5.28	13	Pass
16QAM (50RB Size)	6.79	6.82	6.68	13	Pass

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

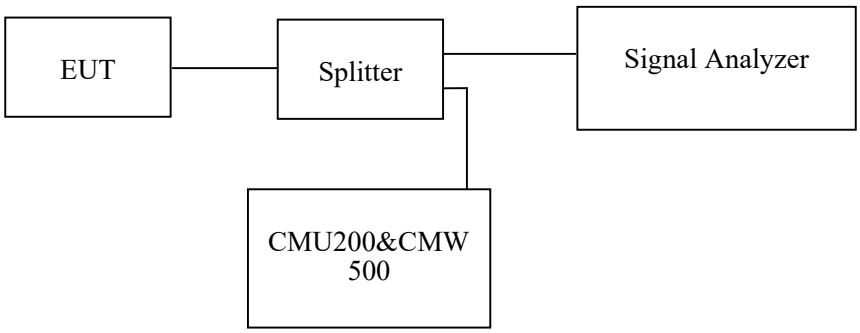
Applicable Standard

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:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Coco Liu from 2021-01-08 to 2021-02-04.

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	245.19	315.06
	190	836.6	245.19	314.42
	251	848.8	246.79	296.79
EGPRS(8PSK)	128	824.2	246.00	318.54
	190	836.6	244.00	320.51
	251	848.8	246.00	311.81

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.21	4.86
	836.6	4.21	4.87
	846.6	4.21	4.90
HSDPA	826.4	4.21	4.87
	836.6	4.20	4.88
	846.6	4.21	4.88
HSUPA	826.4	4.21	4.86
	836.6	4.20	4.86
	846.6	4.21	4.84

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	246.79	317.63
	661	1880.0	246.79	316.02
	810	1909.8	245.19	317.63
EGPRS(8PSK)	512	1850.2	243.59	309.62
	661	1880.0	246.79	300.96
	810	1909.8	243.59	307.05

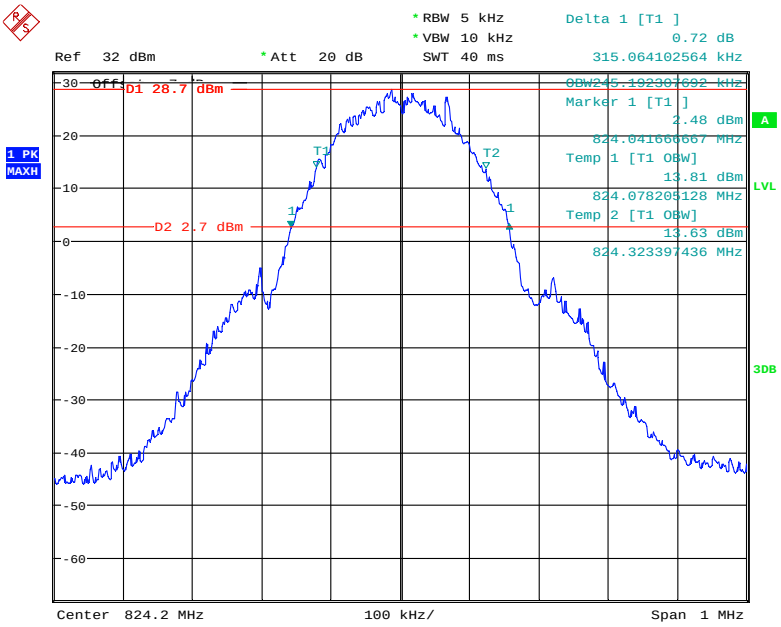
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.21	4.86
	1880.0	4.17	4.74
	1907.6	4.21	4.89
HSDPA	1852.4	4.21	4.86
	1880.0	4.21	4.89
	1907.6	4.21	4.90
HSUPA	1852.4	4.21	4.84
	1880.0	4.25	4.86
	1907.6	4.21	4.84

AWS Band (Part 27)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.23	4.86
	1732.6	4.21	4.85
	1752.6	4.23	4.88
HSDPA	1712.4	4.23	4.89
	1732.6	4.21	4.87
	1752.6	4.23	4.87
HSUPA	1712.4	4.20	4.90
	1732.6	4.21	4.88
	1752.6	4.23	4.89

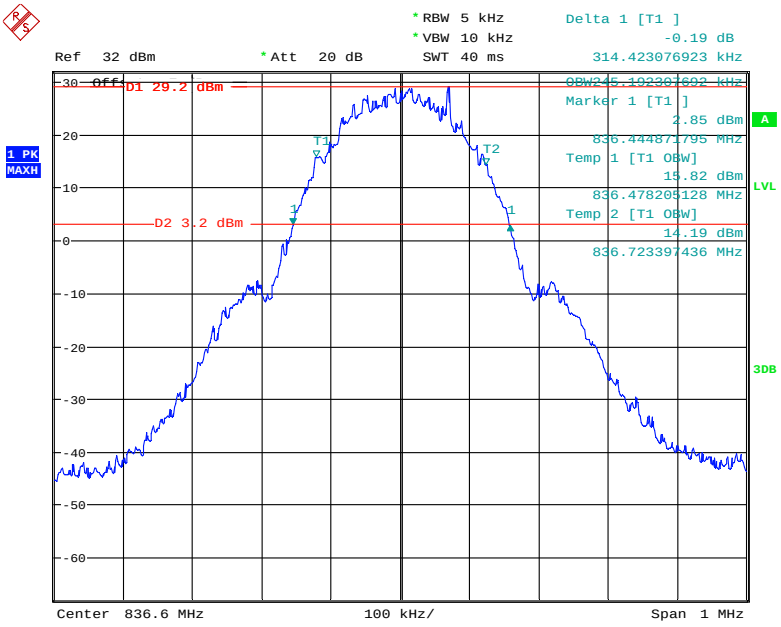
Cellular Band (Part 22H)

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



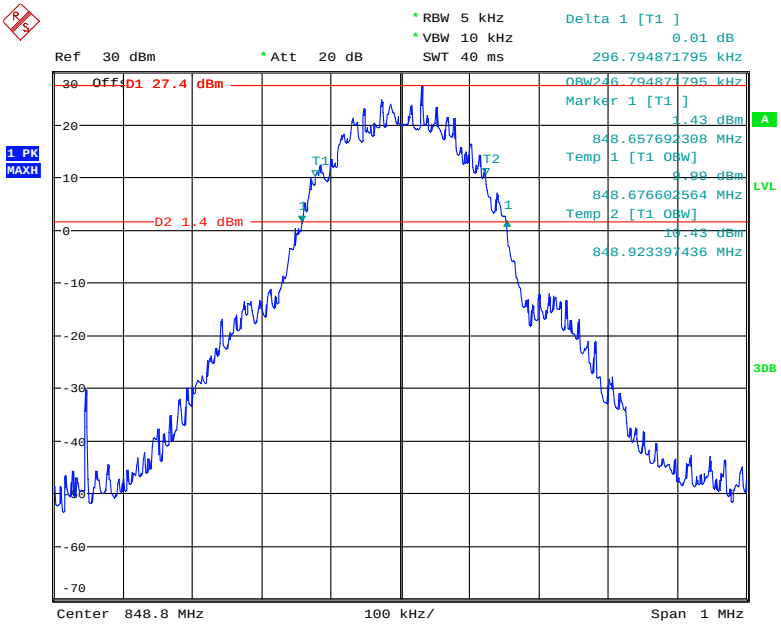
Date: 16.JAN.2021 18:36:19

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



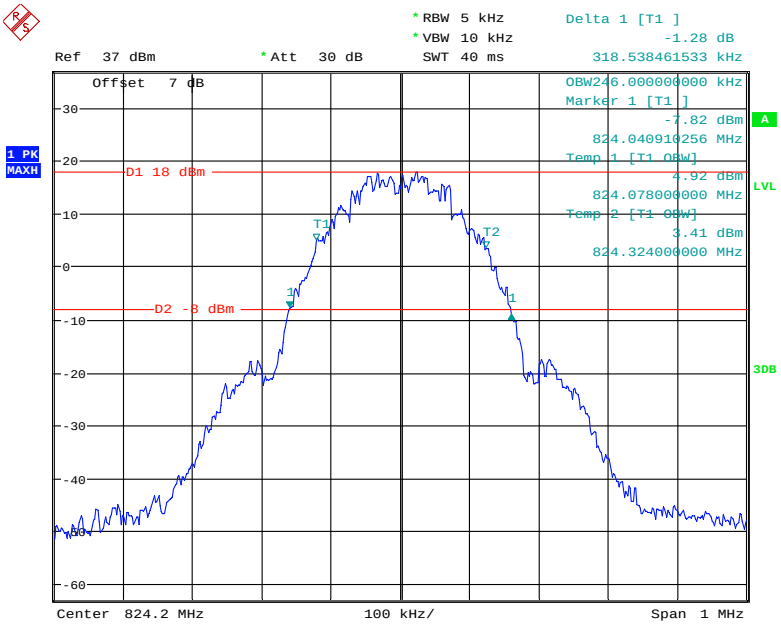
Date: 16.JAN.2021 18:34:01

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



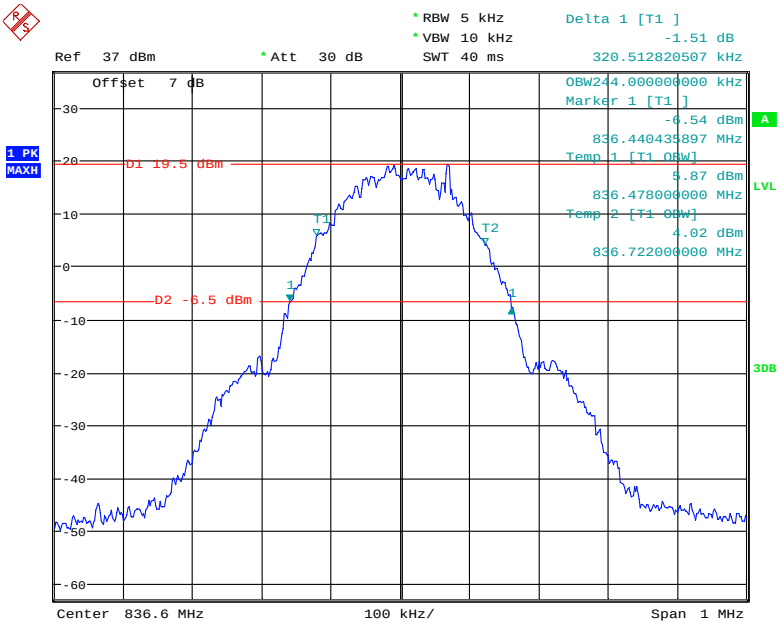
Date: 16.JAN.2021 18:30:09

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



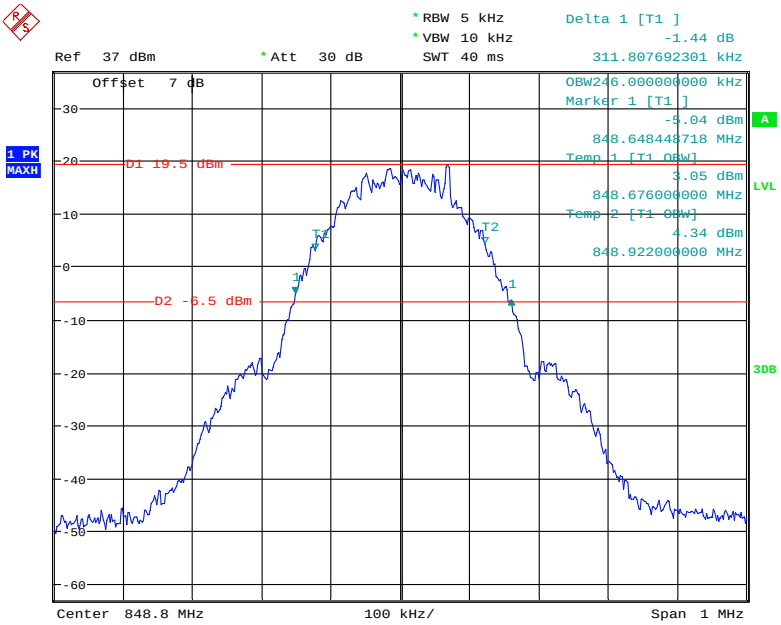
Date: 30.JAN.2021 10:58:00

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



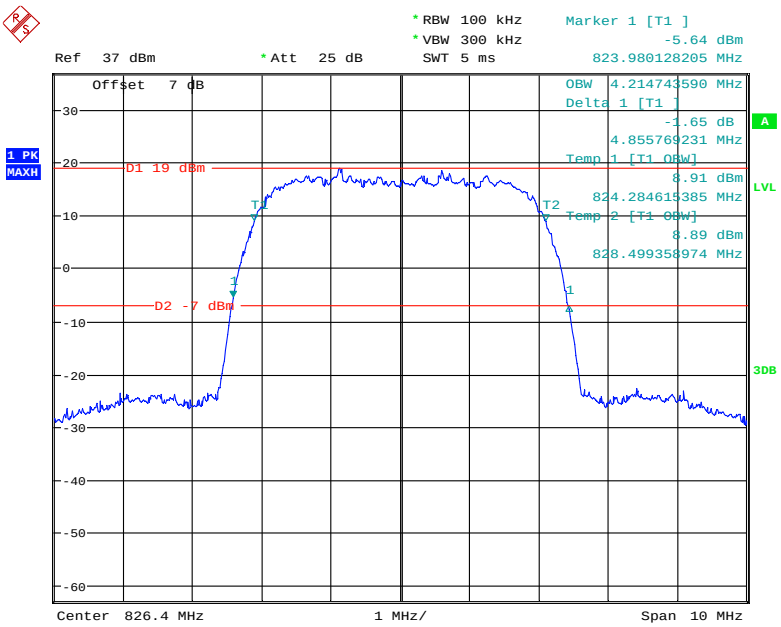
Date: 30.JAN.2021 10:56:33

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



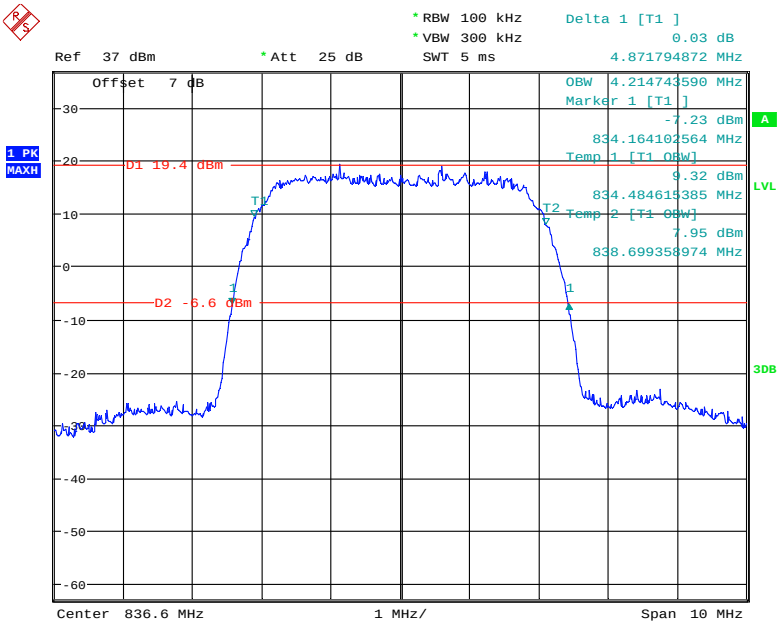
Date: 30.JAN.2021 10:59:06

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



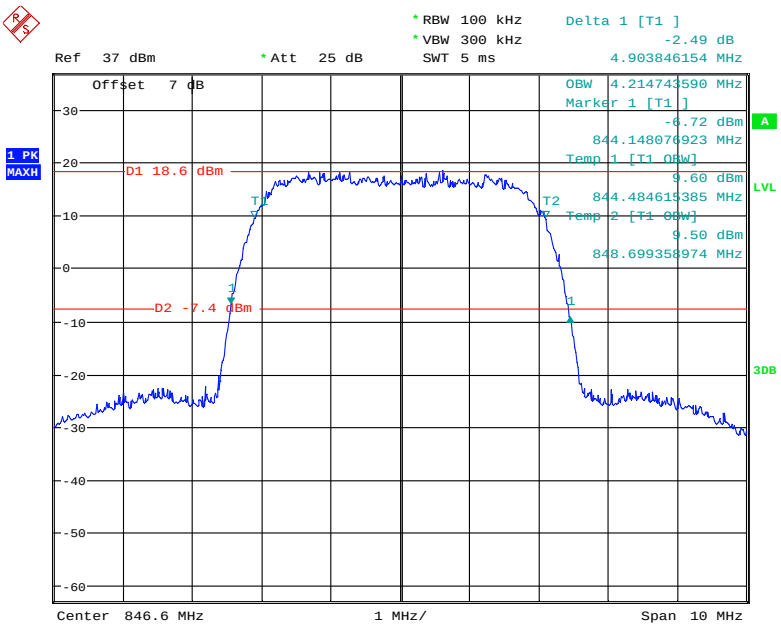
Date: 29.JAN.2021 21:16:50

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



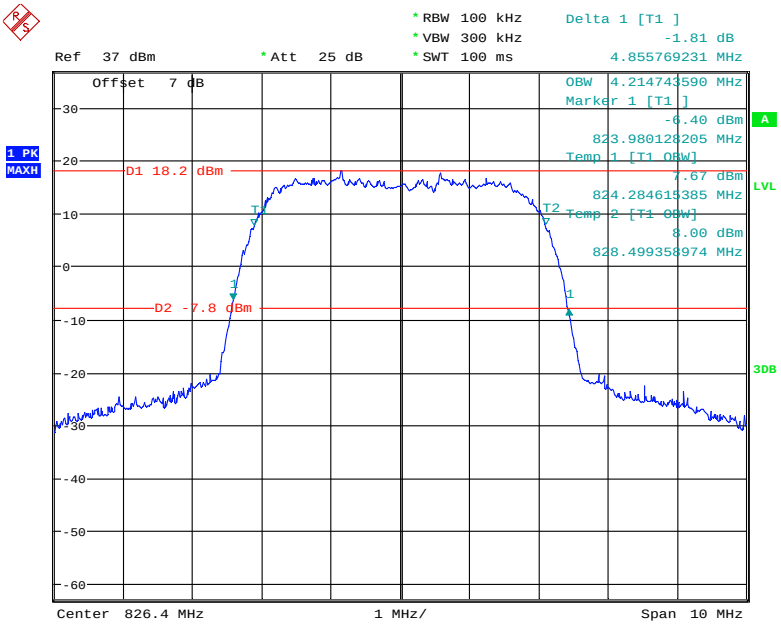
Date: 29.JAN.2021 21:14:35

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



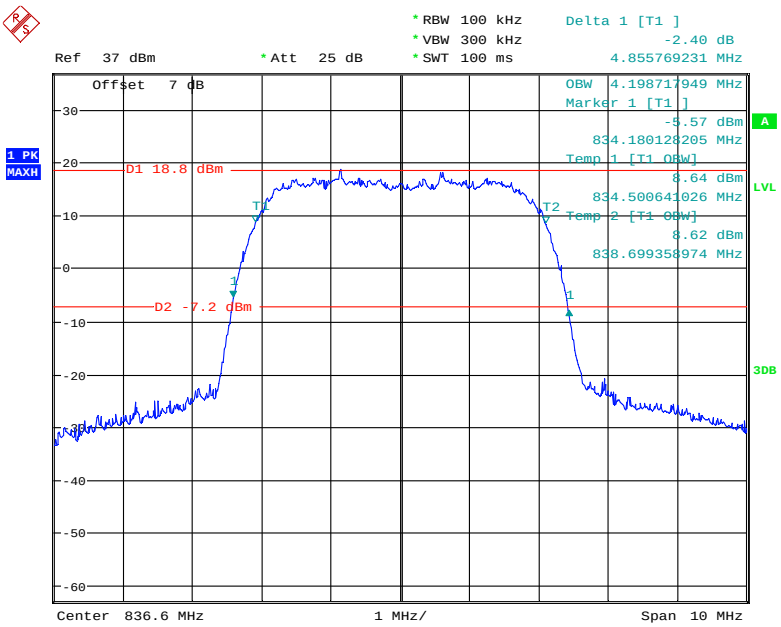
Date: 29.JAN.2021 21:12:44

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



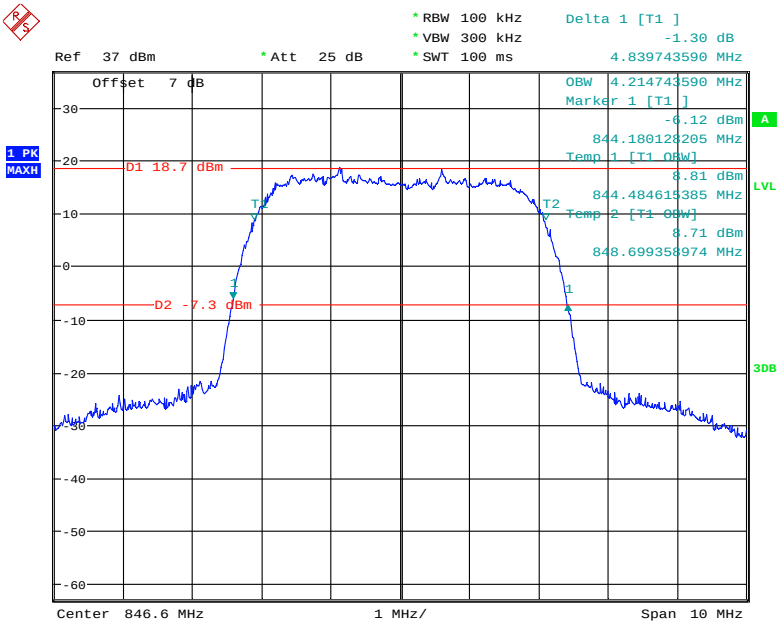
Date: 29.JAN.2021 21:25:25

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



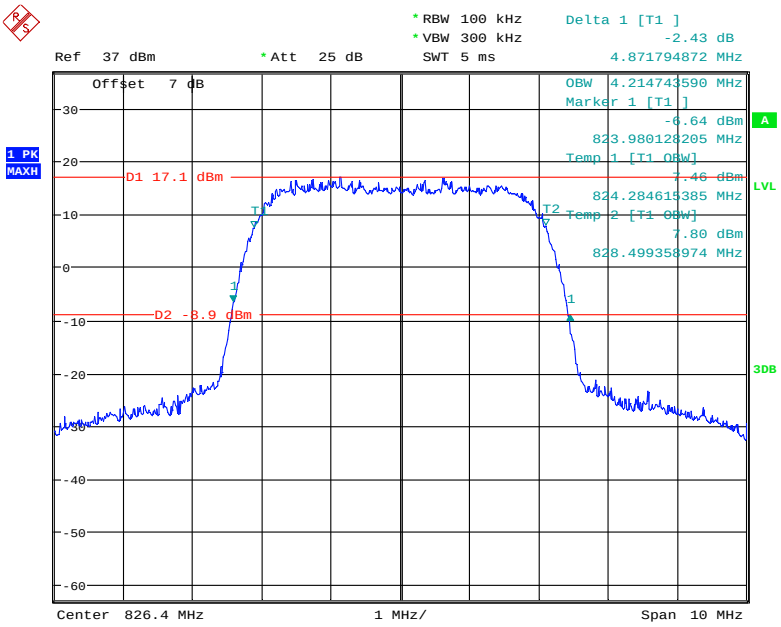
Date: 29.JAN.2021 21:24:00

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



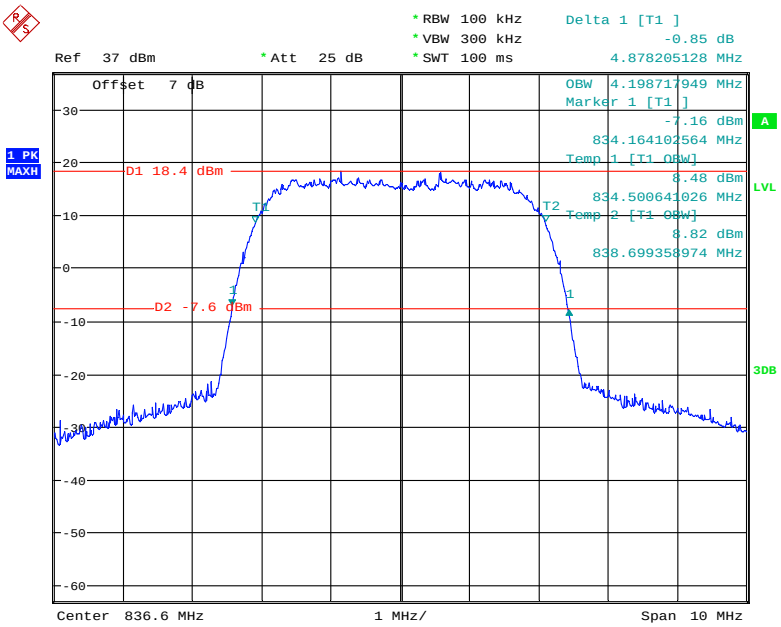
Date: 29.JAN.2021 21:22:52

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



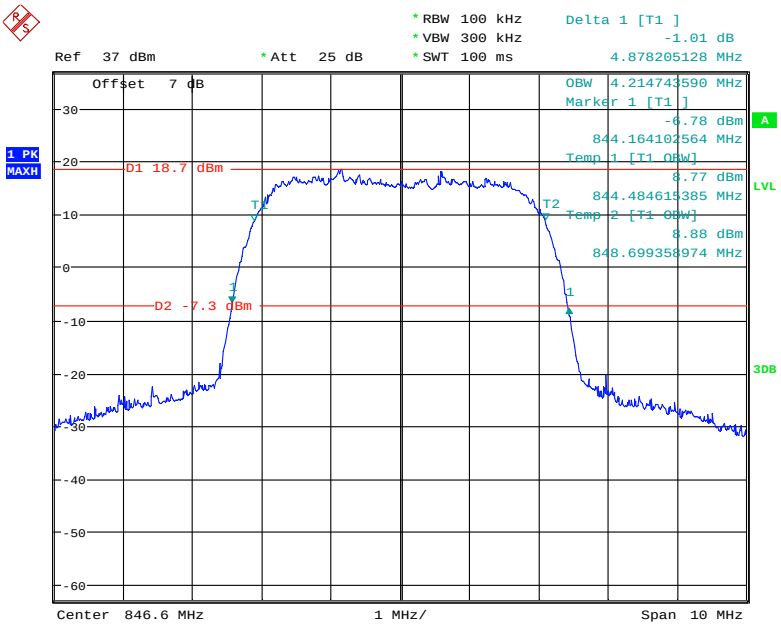
Date: 29.JAN.2021 21:33:49

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



Date: 29.JAN.2021 21:27:45

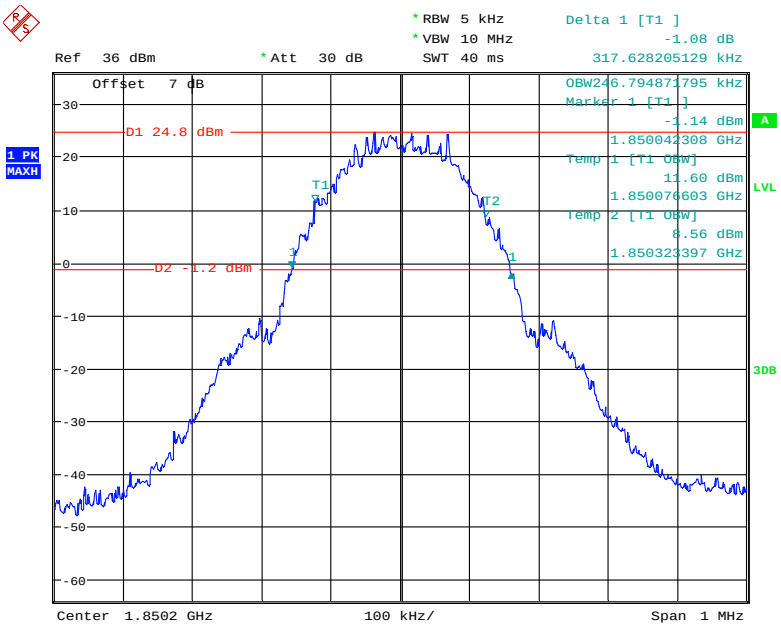
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 29.JAN.2021 21:29:10

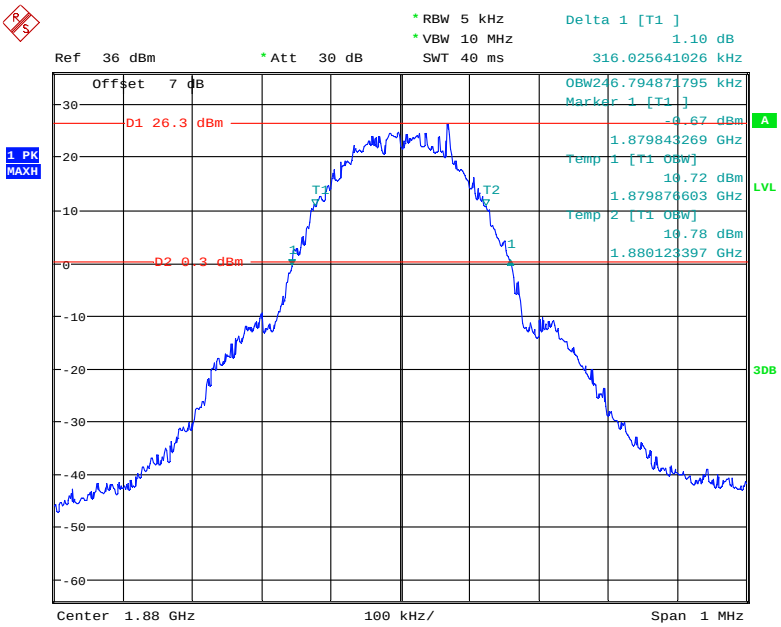
PCS Band (Part 24E)

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



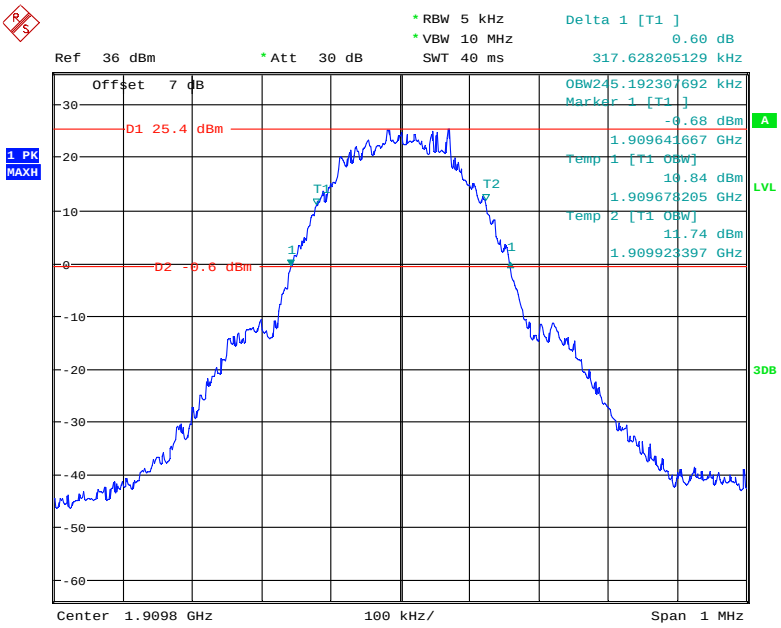
Date: 16.JAN.2021 19:15:15

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



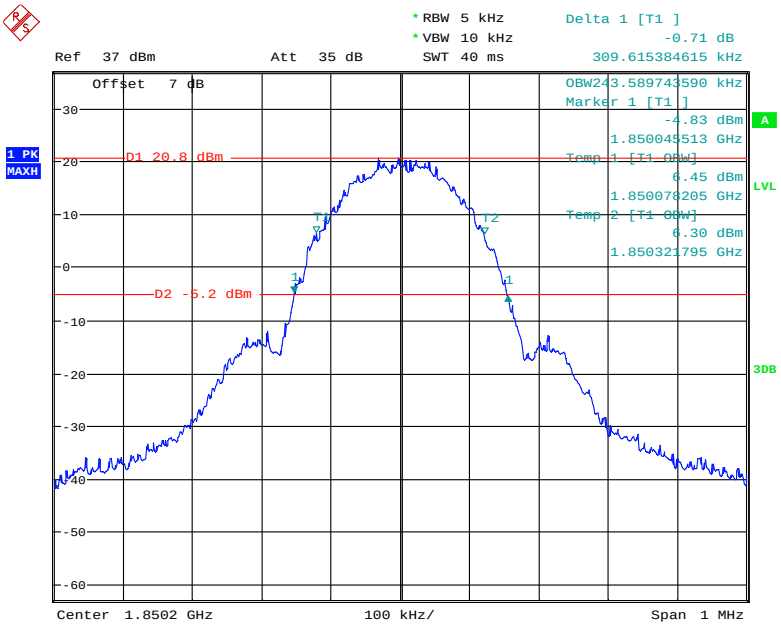
Date: 16.JAN.2021 19:17:49

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



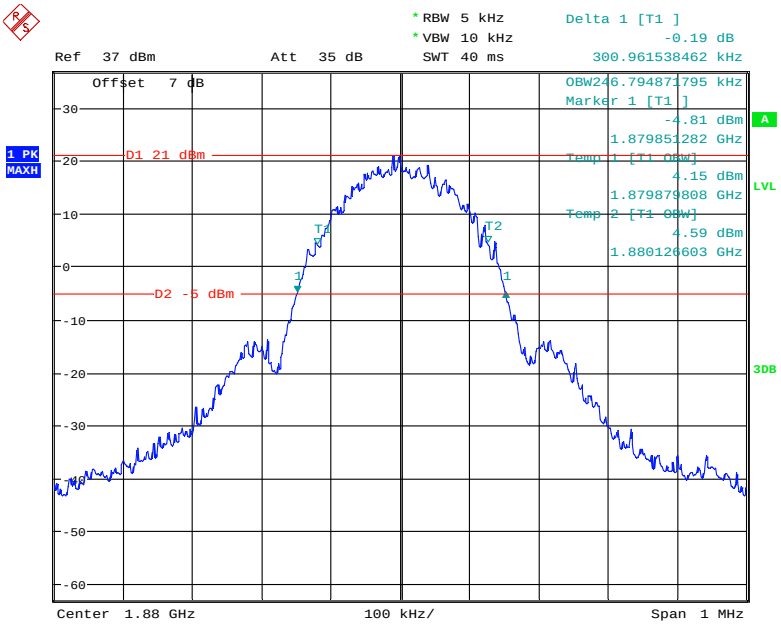
Date: 16.JAN.2021 19:19:45

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



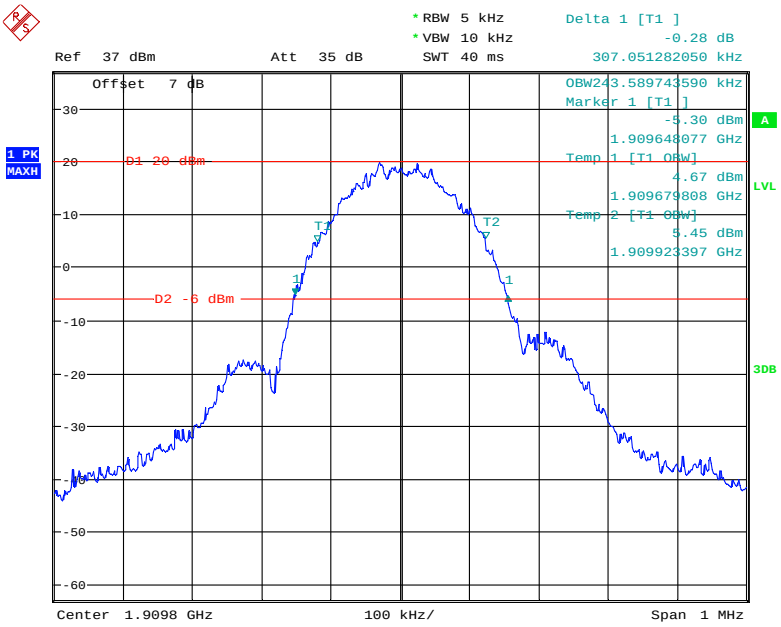
Date: 16.JAN.2021 19:43:00

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



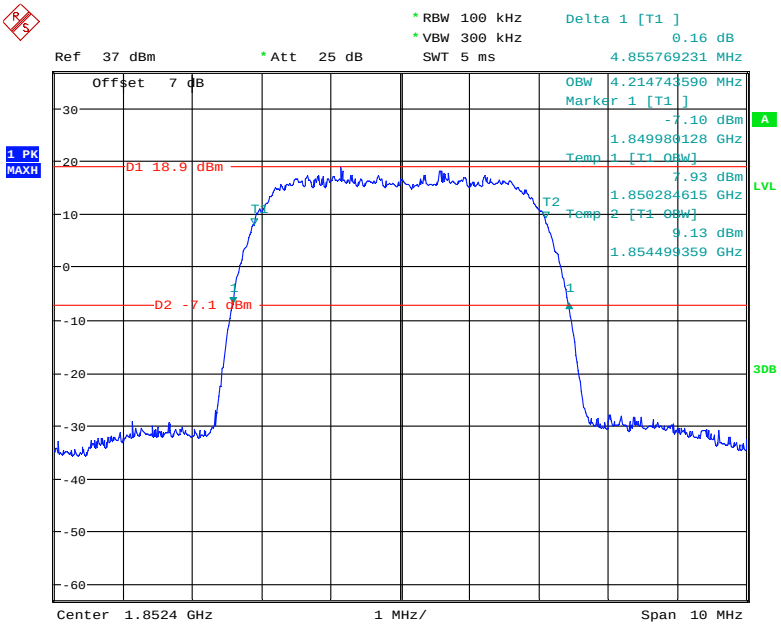
Date: 16.JAN.2021 19:53:47

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



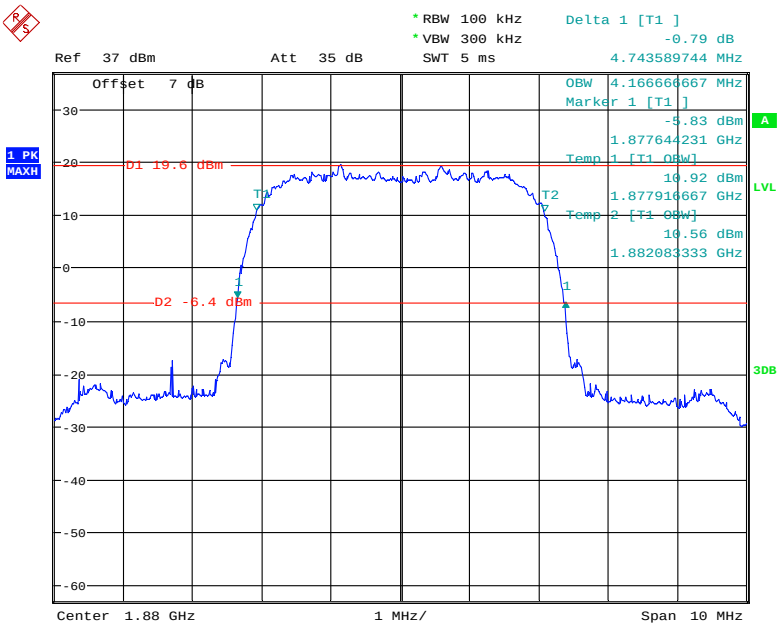
Date: 16.JAN.2021 19:57:14

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



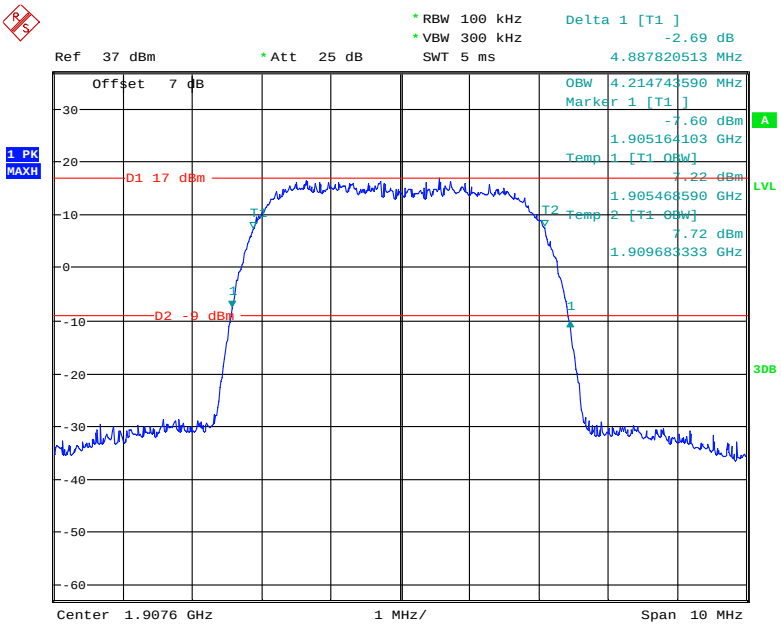
Date: 29.JAN.2021 20:29:42

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



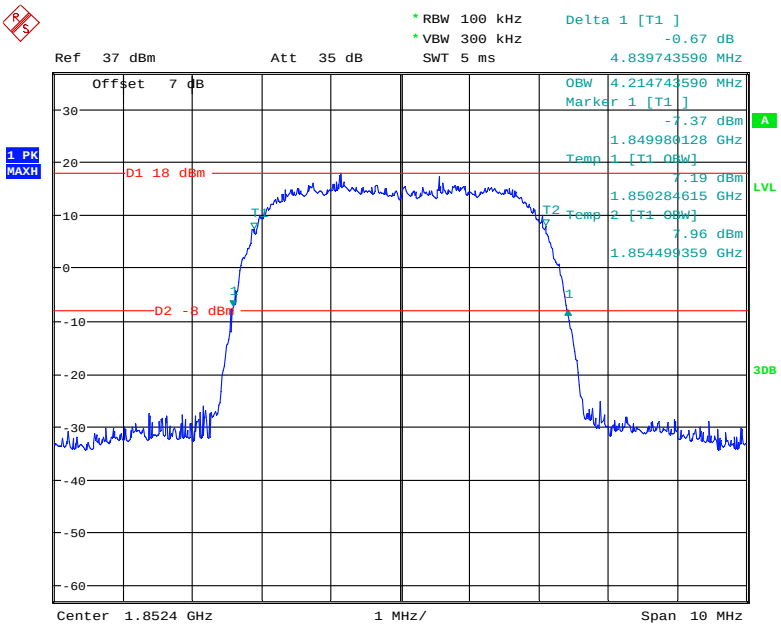
Date: 4.FEB.2021 20:31:16

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



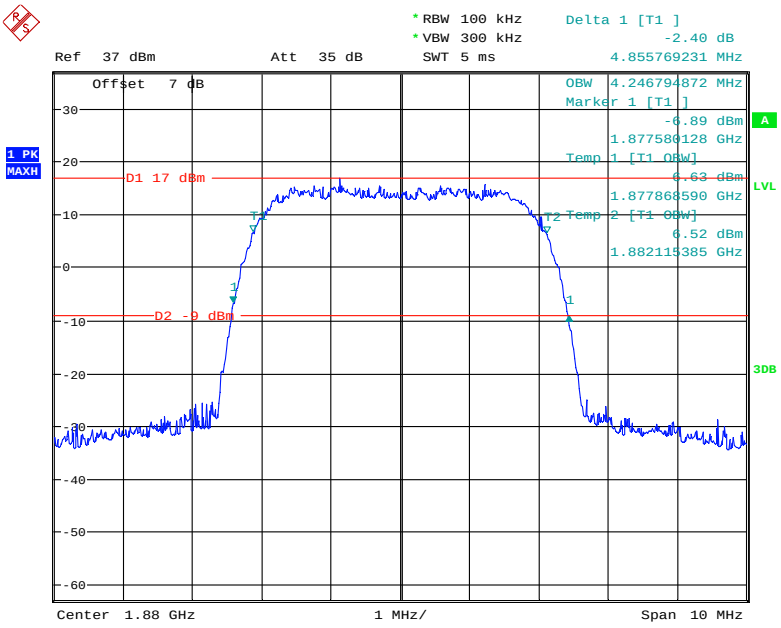
Date: 29.JAN.2021 20:31:29

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



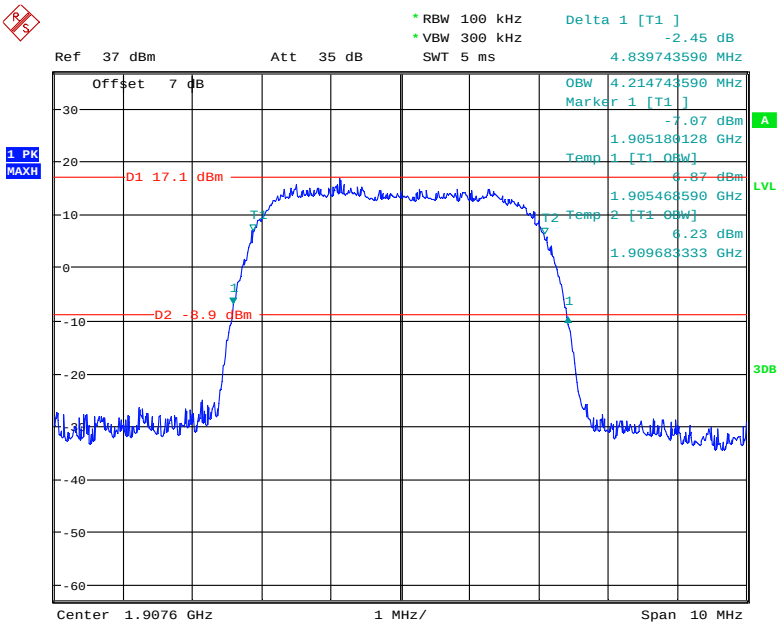
Date: 29.JAN.2021 20:15:15

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



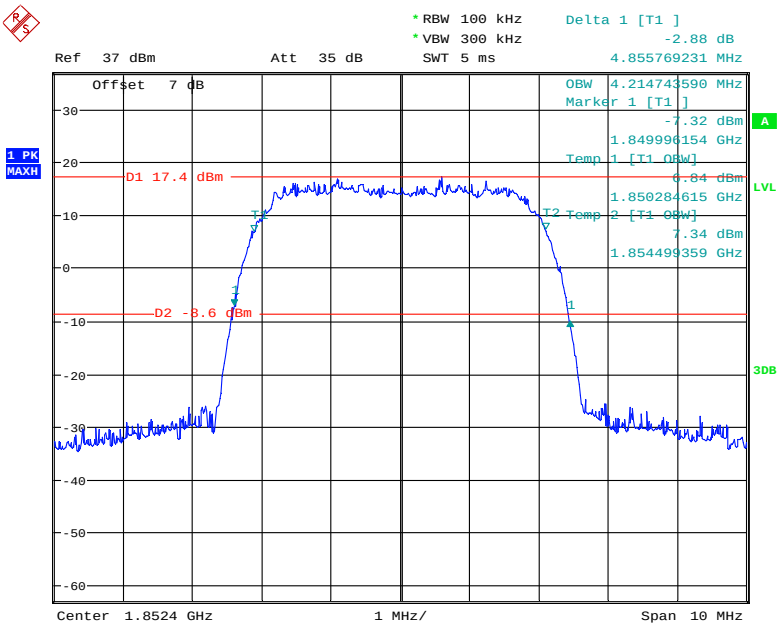
Date: 29.JAN.2021 20:14:30

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



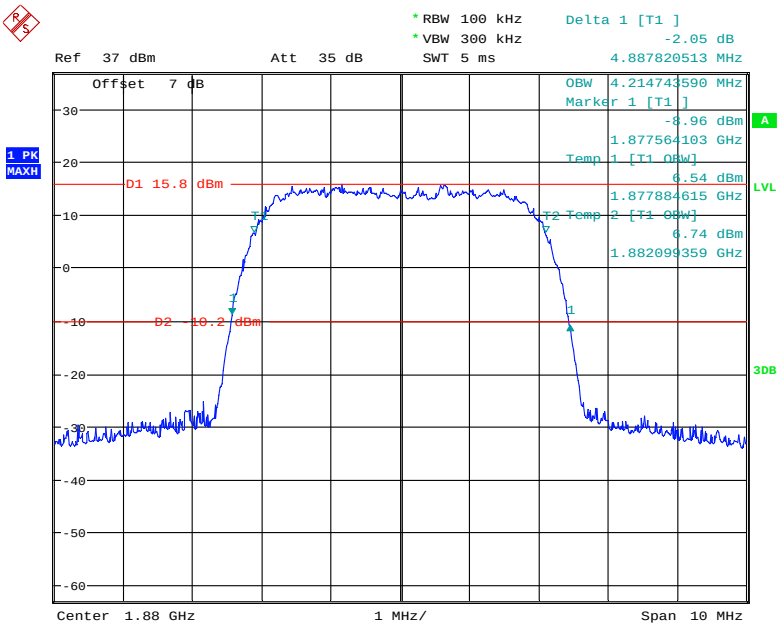
Date: 29.JAN.2021 20:12:54

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



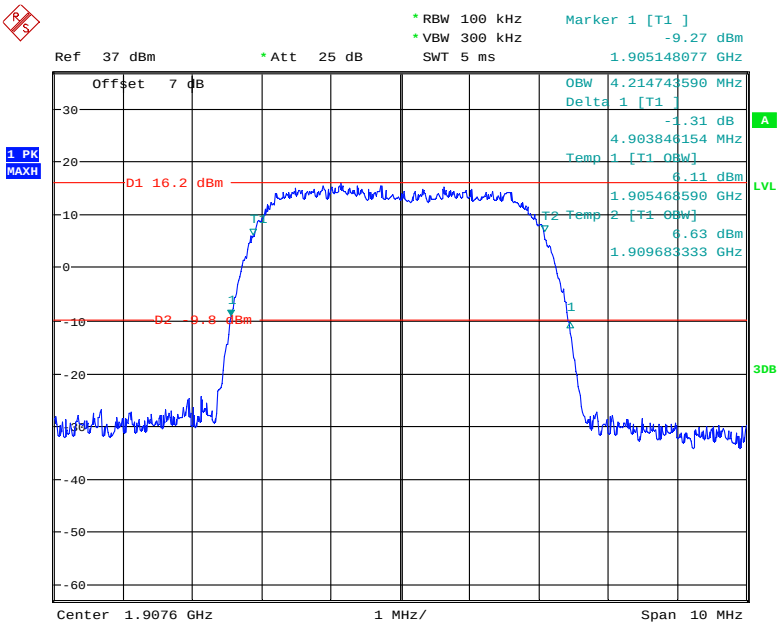
Date: 29.JAN.2021 20:16:32

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



Date: 29.JAN.2021 20:17:39

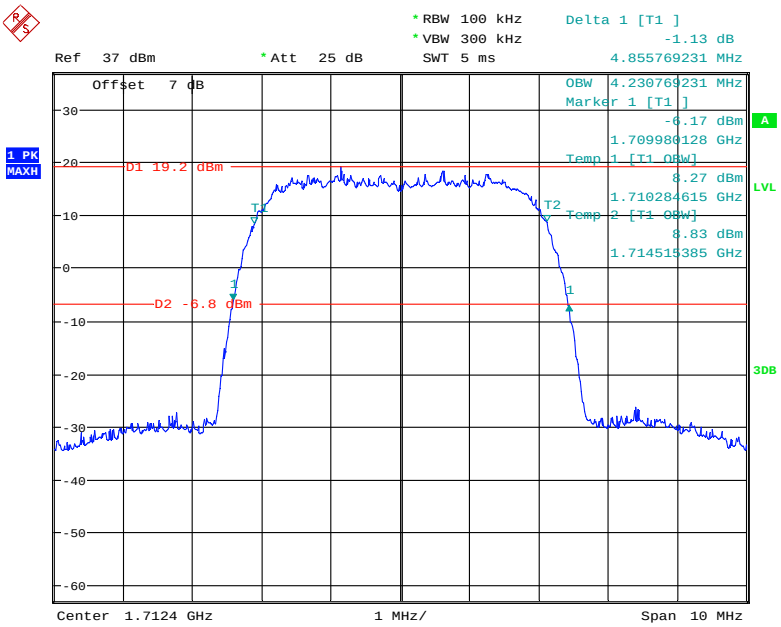
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 29.JAN.2021 20:24:10

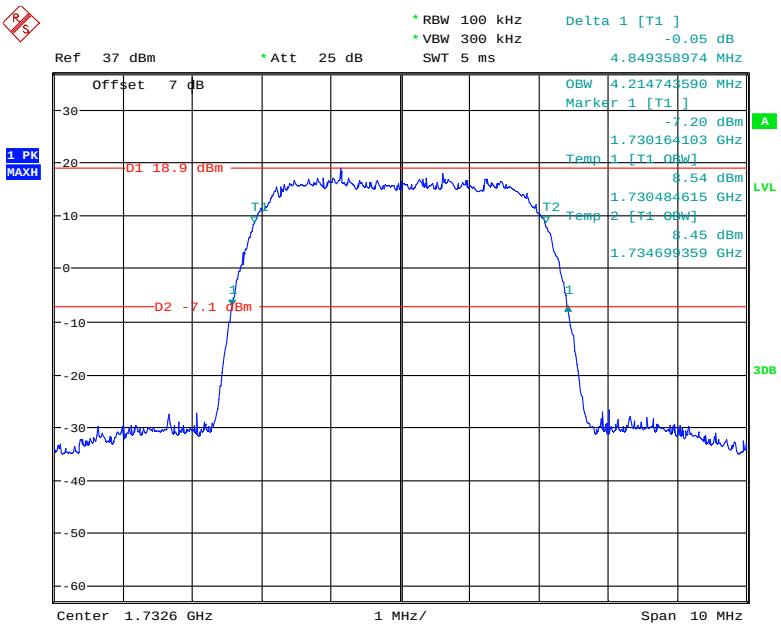
AWS Band (Part 27)

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



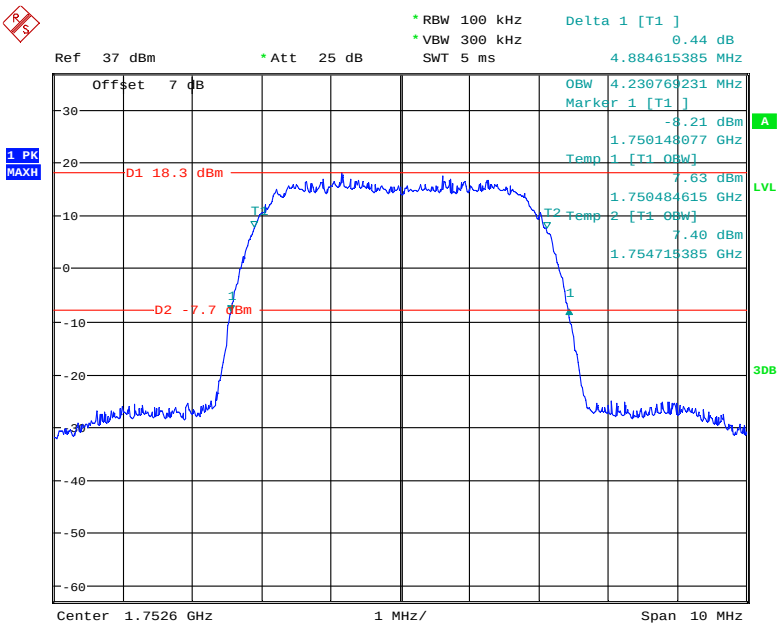
Date: 29.JAN.2021 20:43:27

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



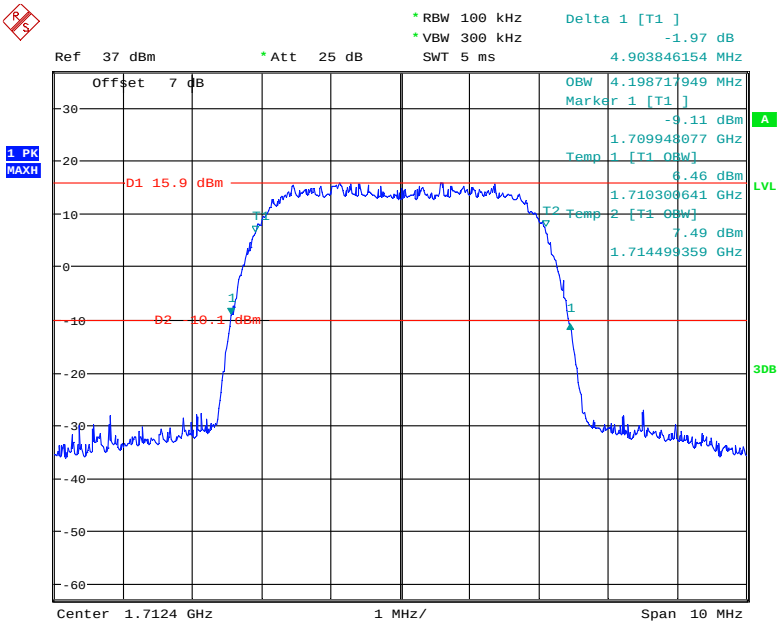
Date: 29.JAN.2021 20:45:18

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



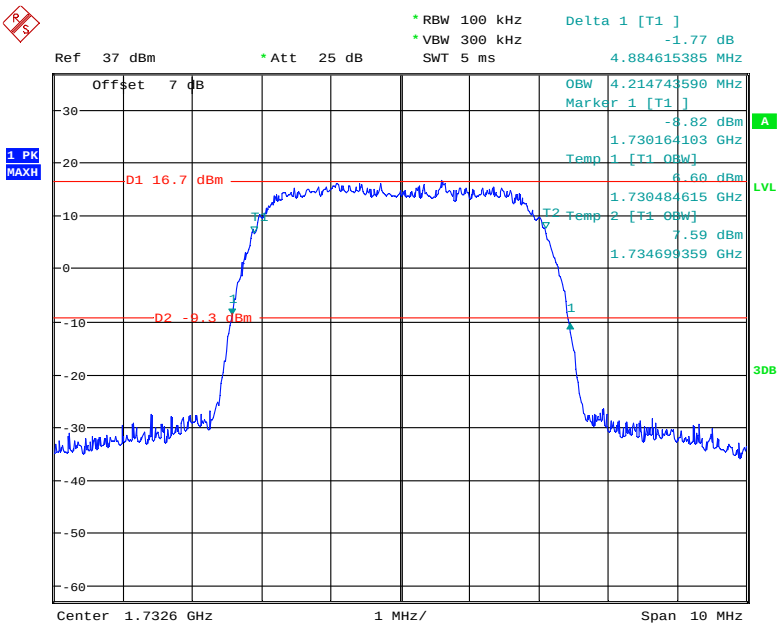
Date: 29.JAN.2021 20:46:24

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



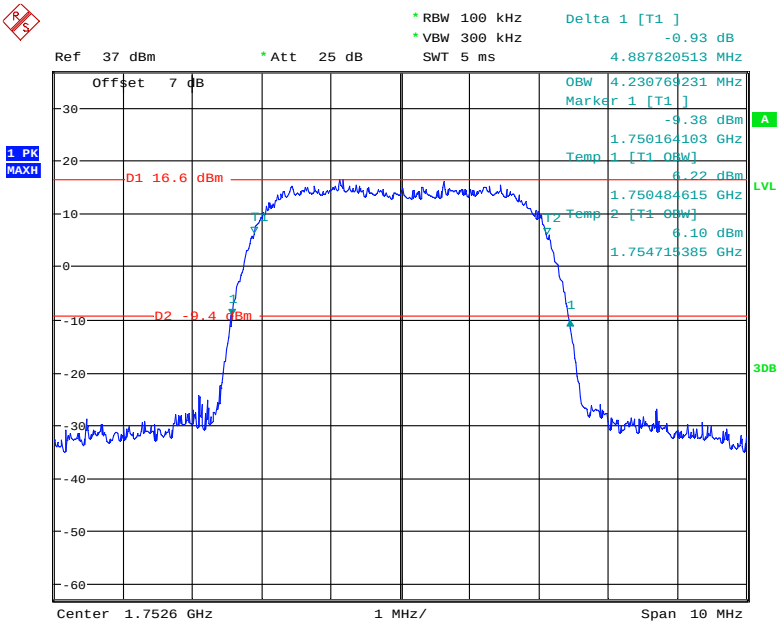
Date: 29.JAN.2021 20:53:07

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



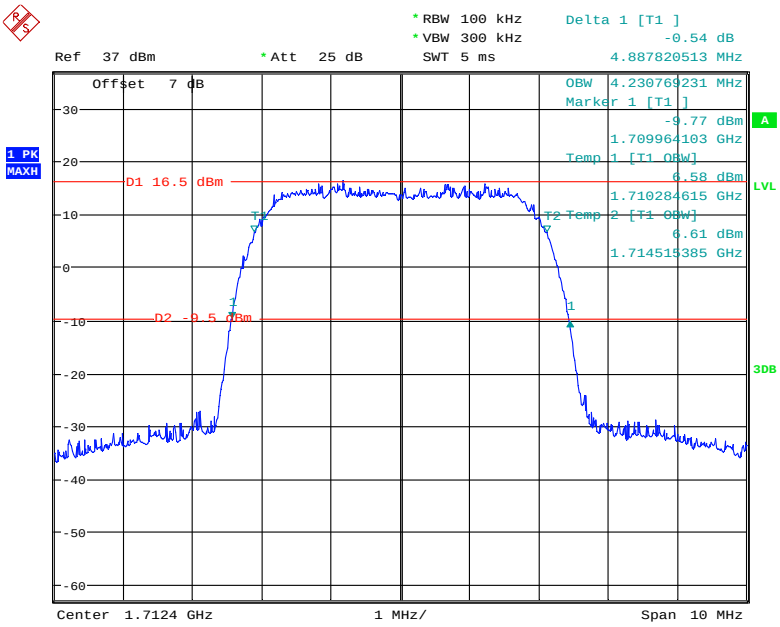
Date: 29.JAN.2021 20:54:25

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



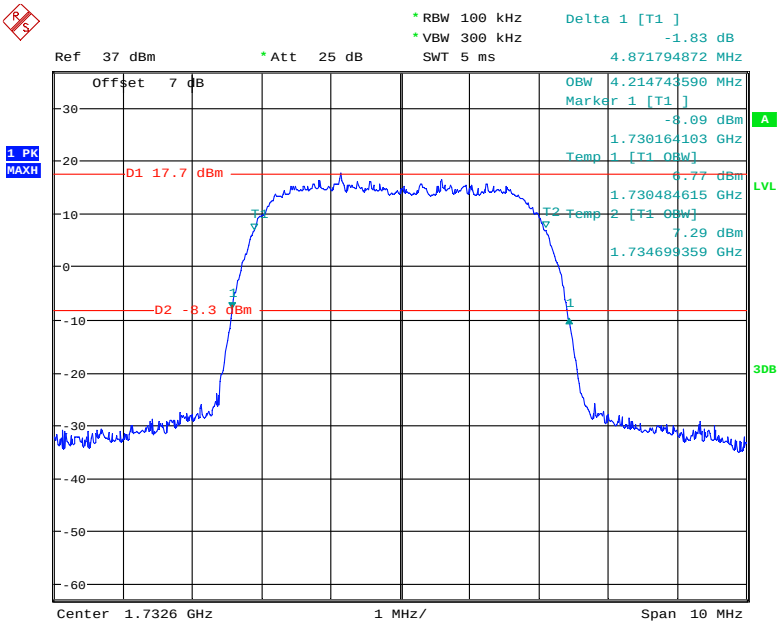
Date: 29.JAN.2021 20:56:08

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



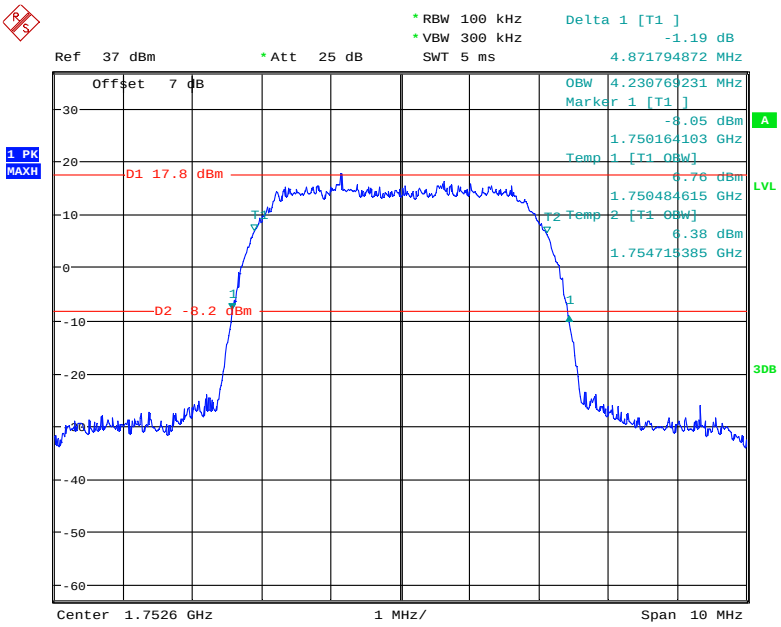
Date: 29.JAN.2021 21:01:54

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



Date: 29.JAN.2021 21:00:37

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



Date: 29.JAN.2021 20:57:35

LTE Band 2:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.10	1.28
		Middle	1.10	1.28
		High	1.11	1.28
	16QAM	Low	1.10	1.28
		Middle	1.10	1.28
		High	1.10	1.27
3	QPSK	Low	2.69	2.95
		Middle	2.69	2.94
		High	2.69	2.93
	16QAM	Low	2.69	2.94
		Middle	2.69	2.93
		High	2.69	2.93
5	QPSK	Low	4.56	5.08
		Middle	4.52	5.06
		High	4.56	5.08
	16QAM	Low	4.54	5.14
		Middle	4.52	5.10
		High	4.56	5.12
10	QPSK	Low	9.00	9.84
		Middle	8.96	9.80
		High	8.96	9.80
	16QAM	Low	8.96	9.76
		Middle	8.96	9.76
		High	8.96	9.68
15	QPSK	Low	13.56	15.00
		Middle	13.56	15.12
		High	13.56	15.06
	16QAM	Low	13.50	14.94
		Middle	13.50	14.94
		High	13.56	14.94
20	QPSK	Low	18.00	19.60
		Middle	18.00	19.52
		High	17.92	19.36
	16QAM	Low	18.00	19.60
		Middle	18.00	19.68
		High	18.00	19.44

LTE Band 4:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.10	1.28
		Middle	1.10	1.27
		High	1.10	1.28
	16QAM	Low	1.10	1.28
		Middle	1.10	1.29
		High	1.10	1.28
3	QPSK	Low	2.70	2.90
		Middle	2.69	2.94
		High	2.69	2.93
	16QAM	Low	2.69	2.92
		Middle	2.69	2.94
		High	2.69	2.92
5	QPSK	Low	4.52	5.10
		Middle	4.52	5.04
		High	4.56	5.12
	16QAM	Low	4.56	5.10
		Middle	4.54	5.12
		High	4.54	5.12
10	QPSK	Low	8.96	9.84
		Middle	8.96	9.76
		High	8.96	9.84
	16QAM	Low	8.96	9.76
		Middle	8.96	9.76
		High	8.96	9.80
15	QPSK	Low	13.62	15.06
		Middle	13.50	15.06
		High	13.56	15.18
	16QAM	Low	13.56	15.00
		Middle	13.50	14.94
		High	13.56	14.94
20	QPSK	Low	18.00	19.52
		Middle	18.00	19.84
		High	18.00	19.52
	16QAM	Low	18.00	19.68
		Middle	18.00	19.60
		High	18.00	19.68

LTE Band 5:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.10	1.27
		Middle	1.10	1.27
		High	1.11	1.27
	16QAM	Low	1.10	1.28
		Middle	1.10	1.28
		High	1.10	1.28
3	QPSK	Low	2.69	2.93
		Middle	2.69	2.93
		High	2.69	2.93
	16QAM	Low	2.69	2.92
		Middle	2.69	2.92
		High	2.69	2.93
5	QPSK	Low	4.56	5.10
		Middle	4.52	5.04
		High	4.54	5.10
	16QAM	Low	4.52	5.12
		Middle	4.52	5.08
		High	4.52	5.04
10	QPSK	Low	8.96	9.80
		Middle	8.96	9.76
		High	9.00	9.68
	16QAM	Low	8.96	9.68
		Middle	8.96	9.80
		High	8.96	9.68

LTE Band 7:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.52	5.08
		Middle	4.52	5.06
		High	4.52	5.08
	16QAM	Low	4.54	5.10
		Middle	4.56	5.08
		High	4.54	5.10
10	QPSK	Low	8.96	9.84
		Middle	8.96	9.72
		High	8.96	9.84
	16QAM	Low	8.96	9.72
		Middle	8.96	9.76
		High	8.96	9.76
15	QPSK	Low	13.56	15.12
		Middle	13.50	15.00
		High	13.56	15.06
	16QAM	Low	13.56	15.00
		Middle	13.56	14.94
		High	13.56	15.00
20	QPSK	Low	18.00	19.44
		Middle	18.00	19.60
		High	18.00	19.36
	16QAM	Low	18.00	19.60
		Middle	18.00	19.60
		High	18.00	19.60

LTE Band 17

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.54	5.12
		Middle	4.54	5.06
		High	4.54	5.08
	16QAM	Low	4.52	5.08
		Middle	4.54	5.06
		High	4.52	5.06
10	QPSK	Low	8.96	9.84
		Middle	8.96	9.72
		High	8.96	9.84
	16QAM	Low	8.96	9.76
		Middle	8.96	9.76
		High	8.96	9.76

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

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

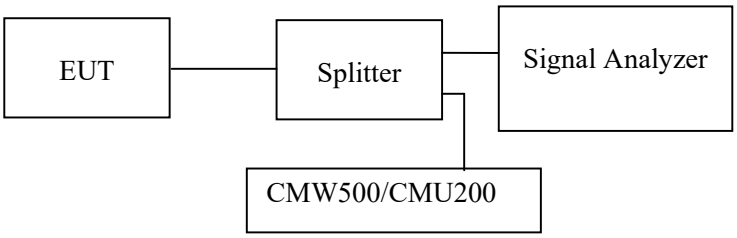
Applicable Standard

FCC §2.1051, §22.917(a) 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 10^{th} harmonic.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Coco Liu from 2021-01-16 to 2021-01-29.

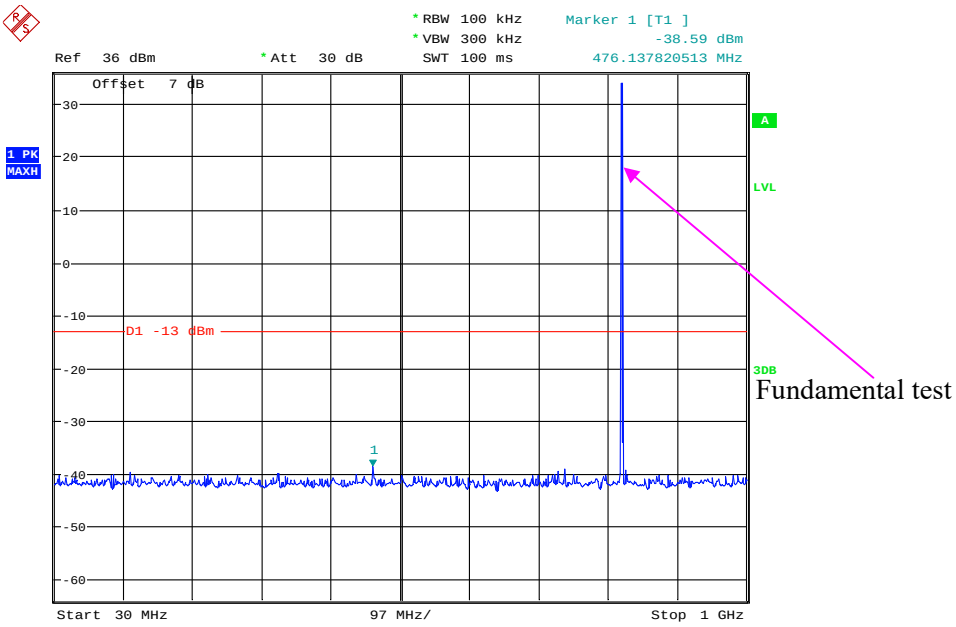
EUT operation mode: Transmitting

Test result: Pass

Please refer to the following plots.

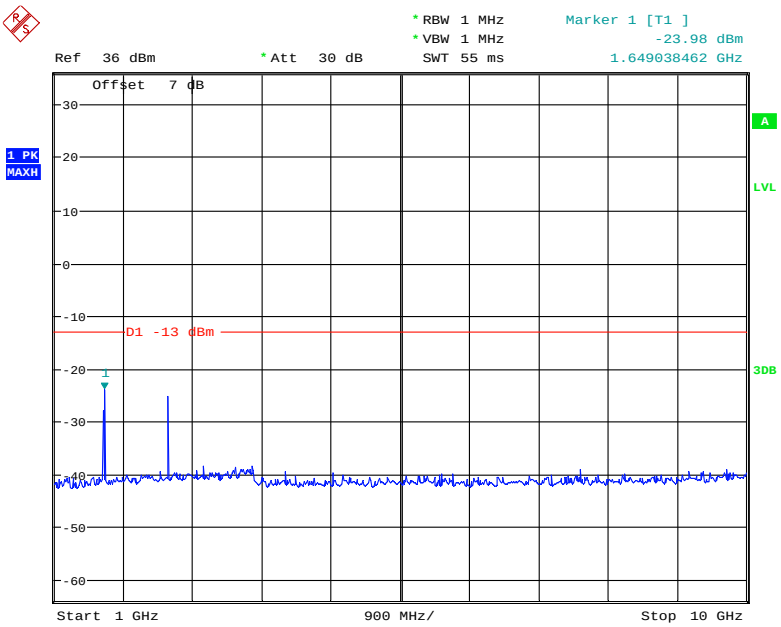
Cellular Band (Part 22H)
Low Channel:

30 MHz – 1 GHz (GSM Mode)



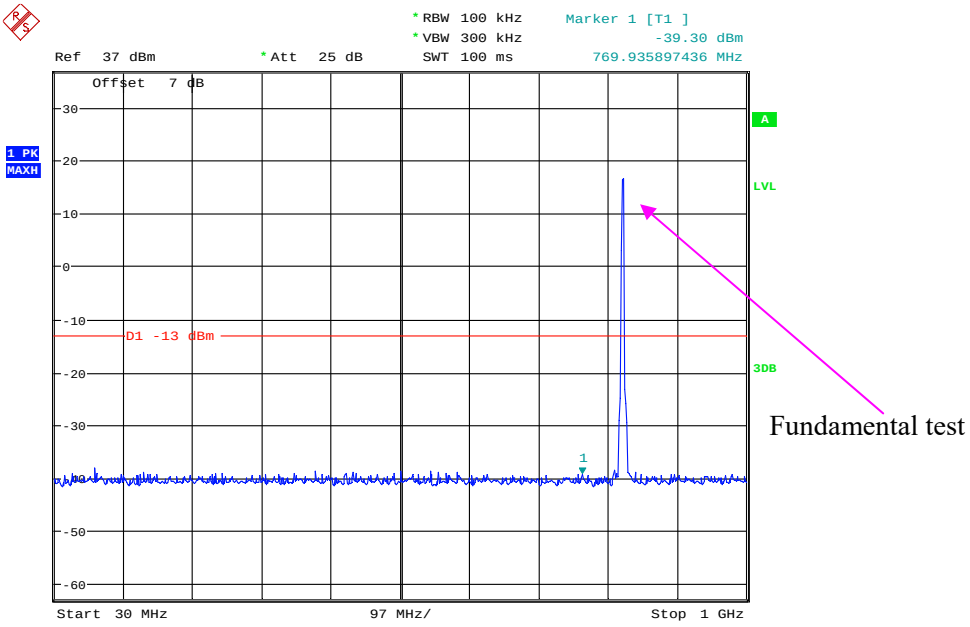
Date: 16.JAN.2021 18:52:59

1 GHz – 10 GHz (GSM Mode)



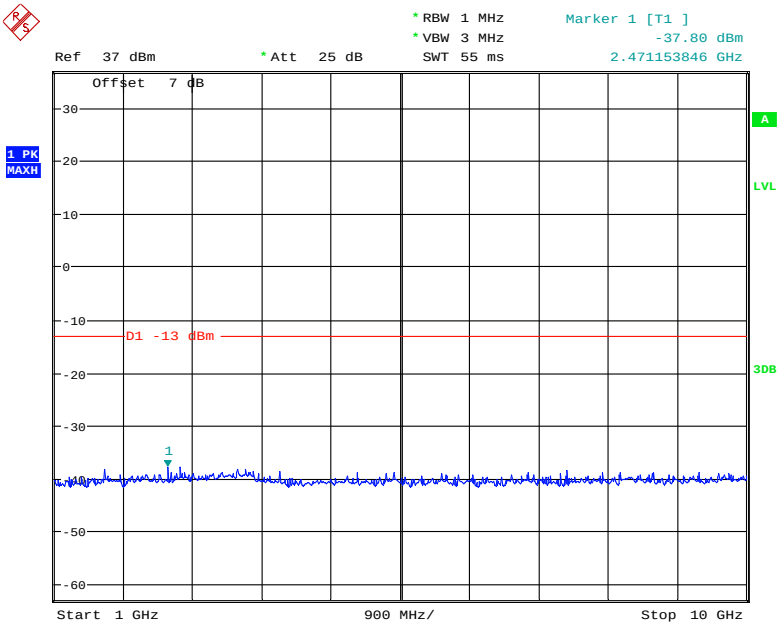
Date: 16.JAN.2021 18:53:52

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:06:29

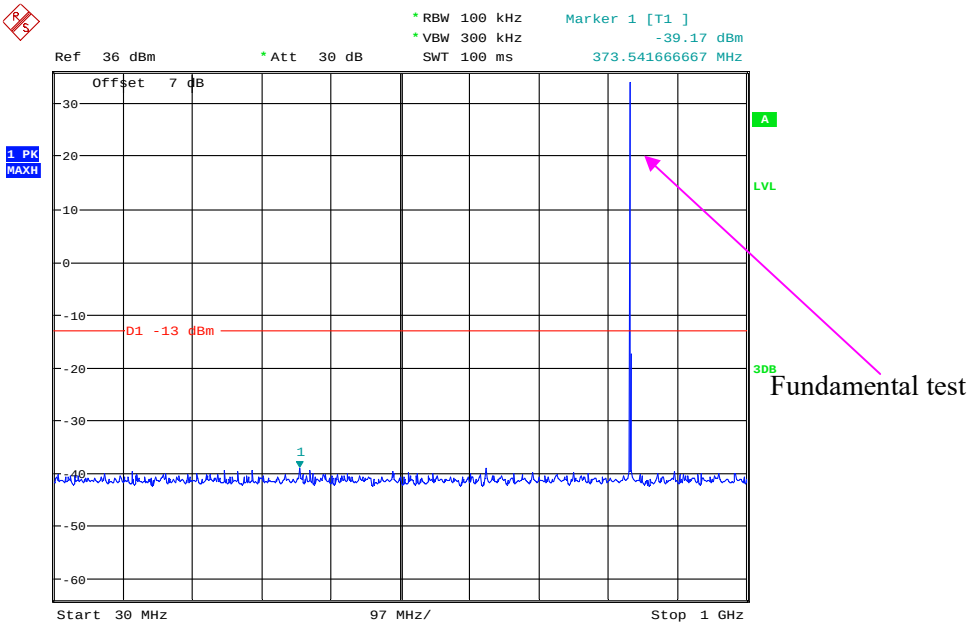
1 GHz – 10 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:06:55

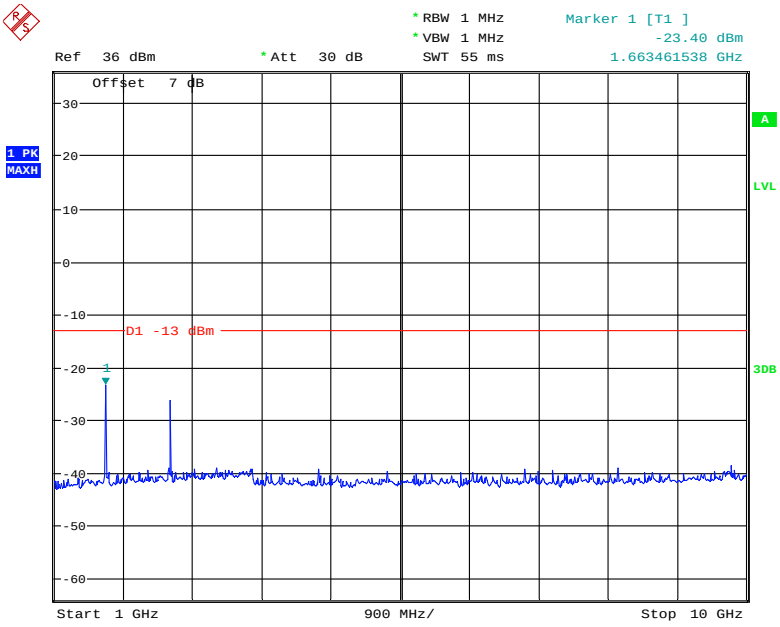
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



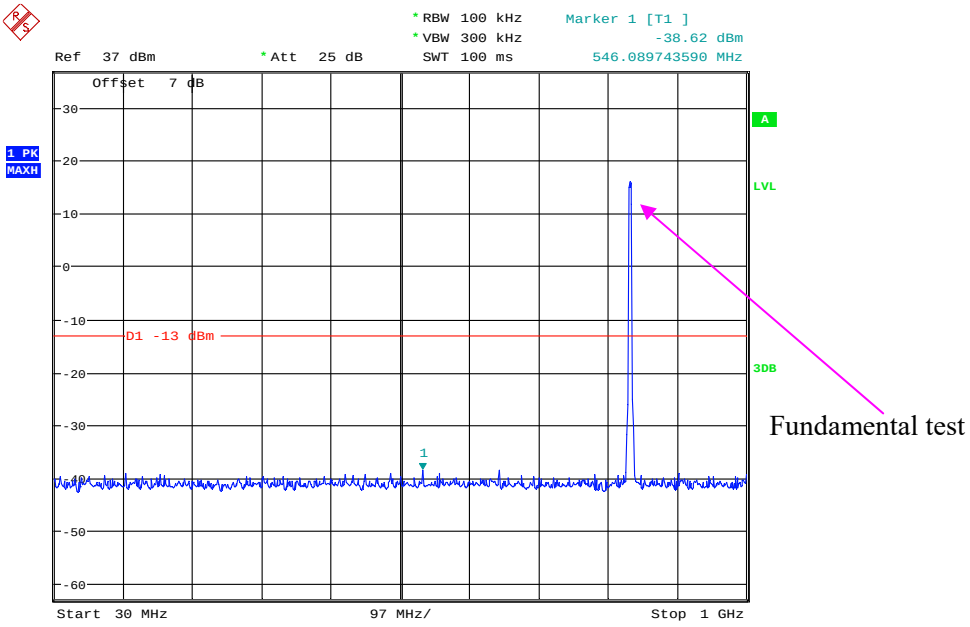
Date: 16.JAN.2021 18:52:23

1 GHz – 10 GHz (GSM Mode)



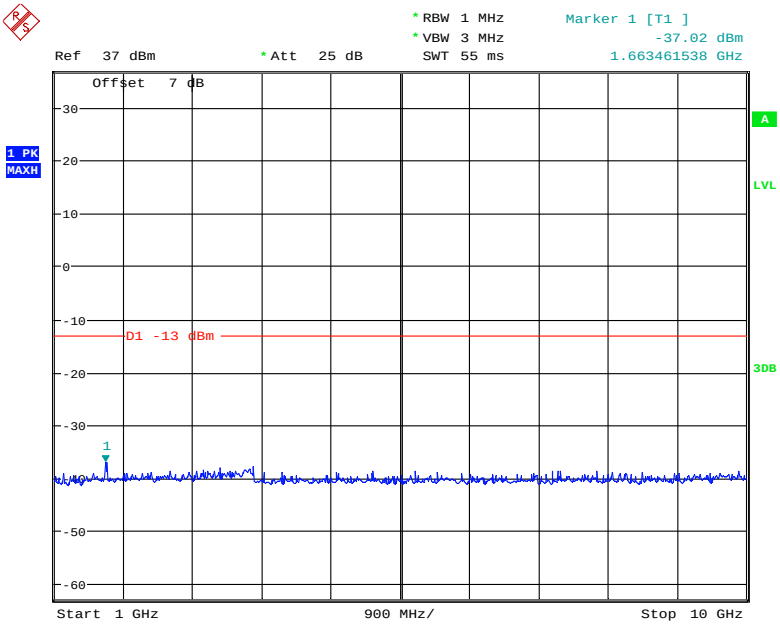
Date: 16.JAN.2021 18:54:20

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:08:05

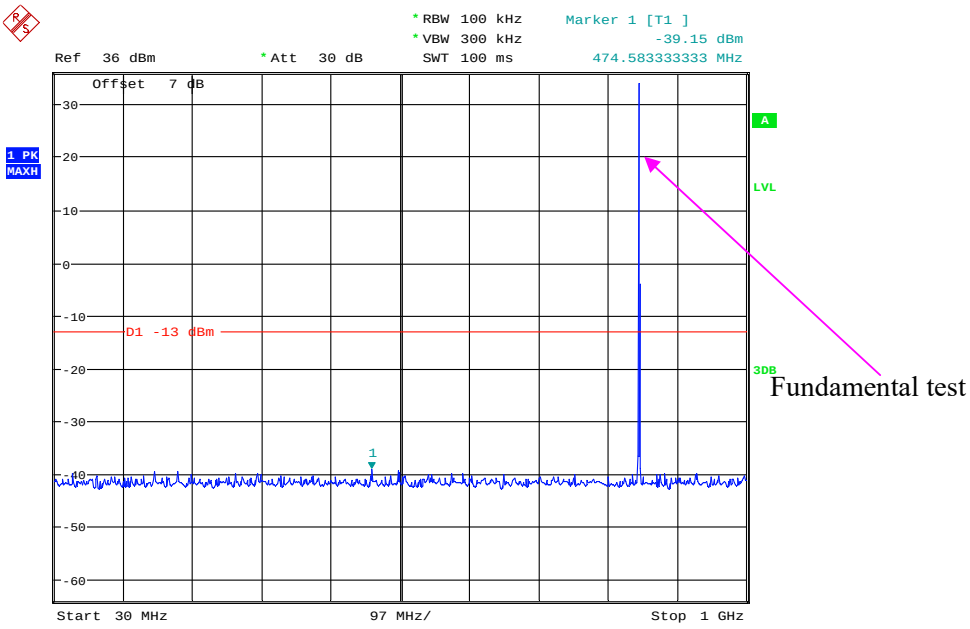
1 GHz – 10 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:07:36

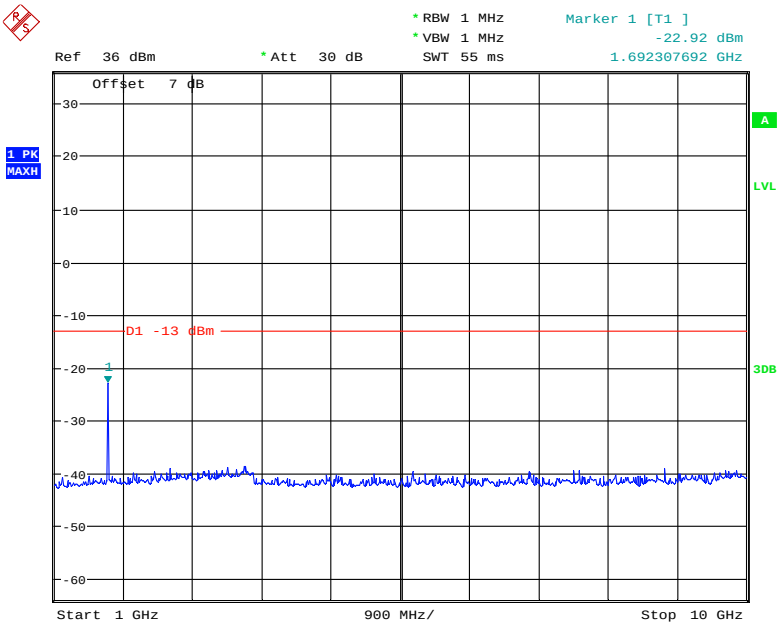
High Channel:

30 MHz – 1 GHz (GSM Mode)



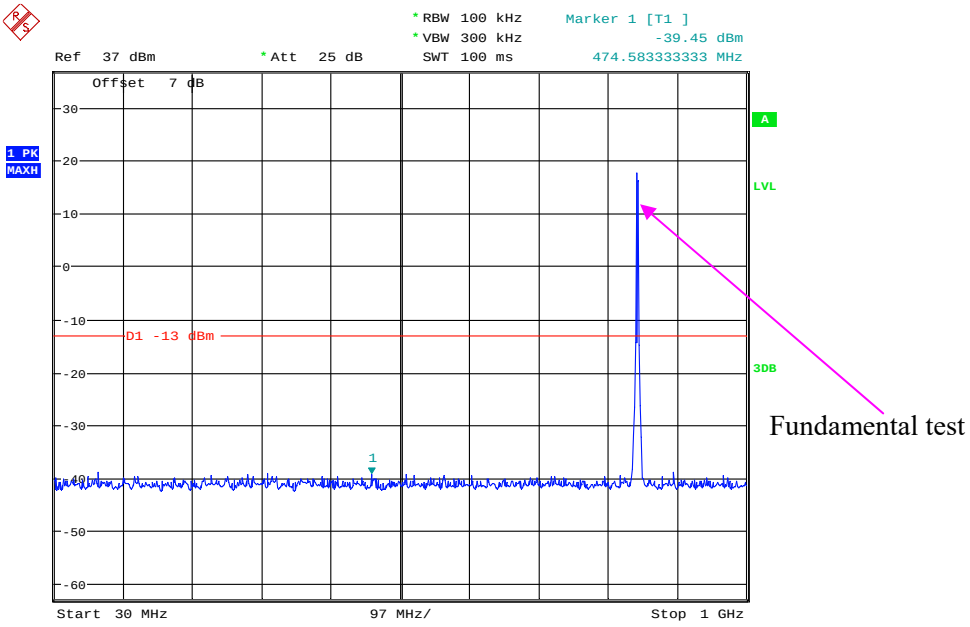
Date: 16.JAN.2021 18:50:41

1 GHz – 10 GHz (GSM Mode)



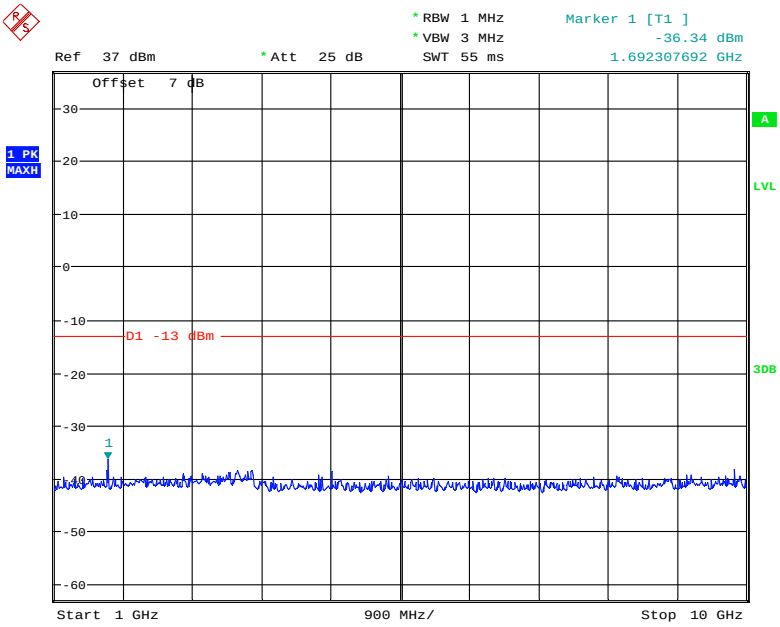
Date: 16.JAN.2021 18:55:03

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:08:40

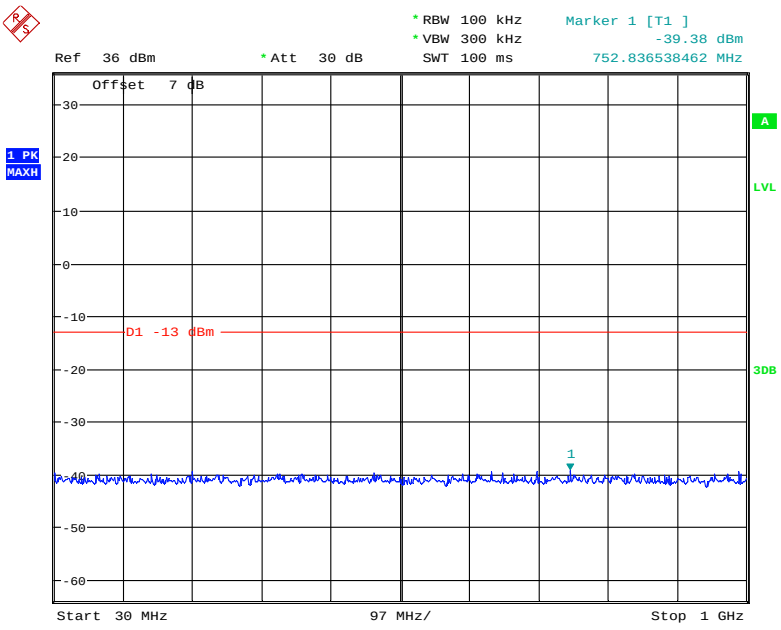
1 GHz – 10 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:09:00

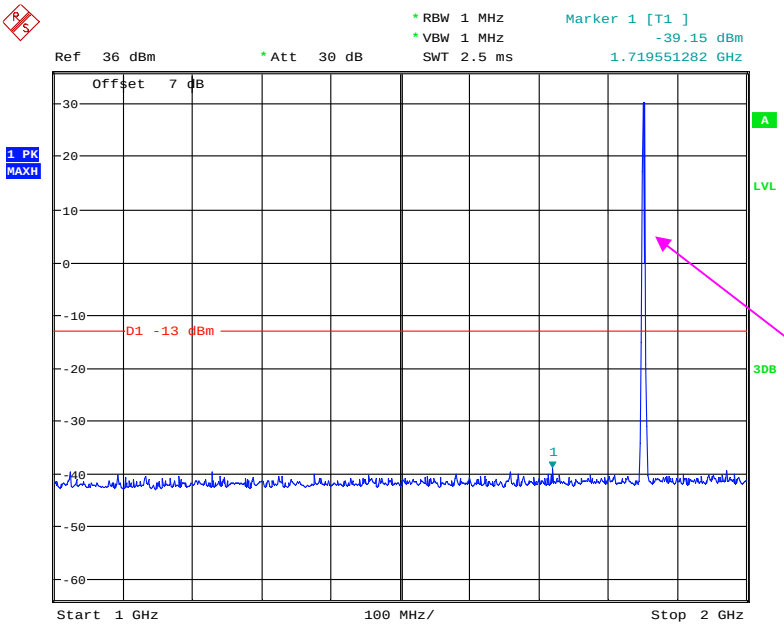
PCS Band (Part 24E)
Low Channel:

30 MHz – 1 GHz (GSM Mode)



Date: 16.JAN.2021 19:05:09

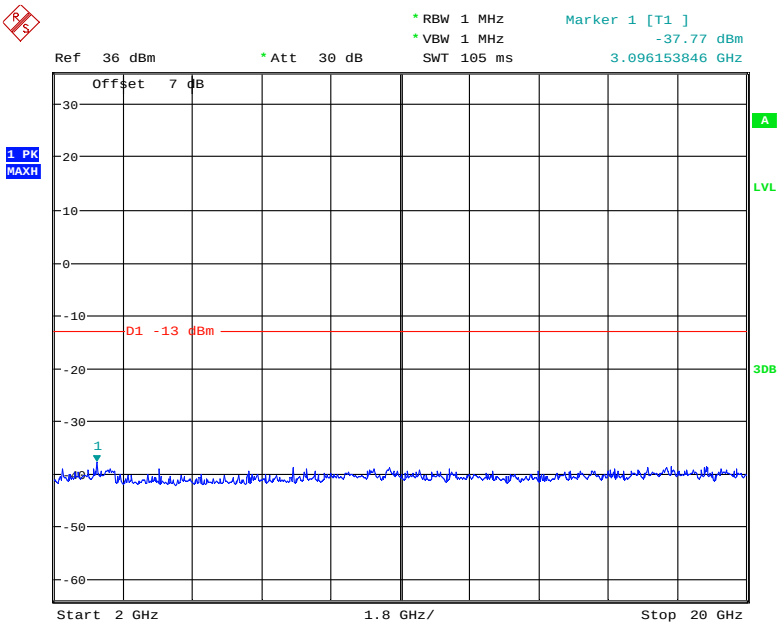
1 GHz – 2 GHz (GSM Mode)



Fundamental test

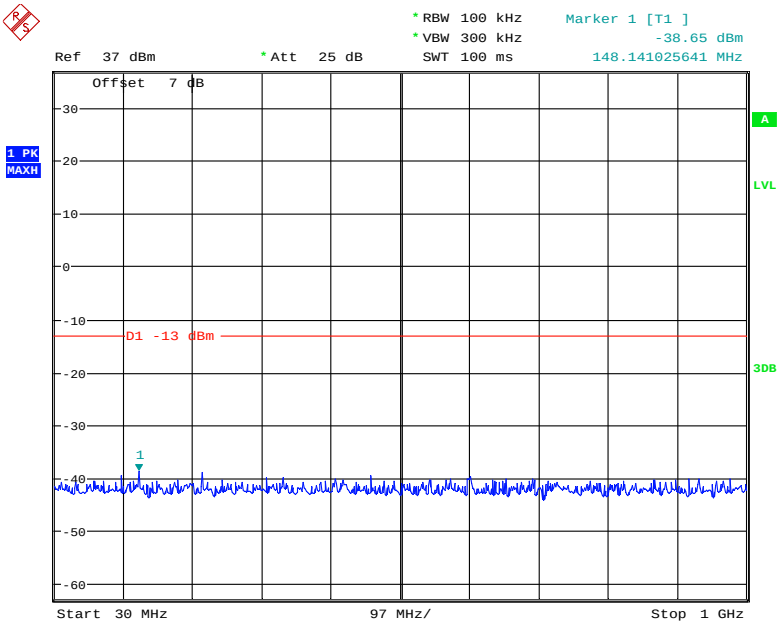
Date: 16.JAN.2021 19:03:28

2 GHz – 2 0GHz (GSM Mode)



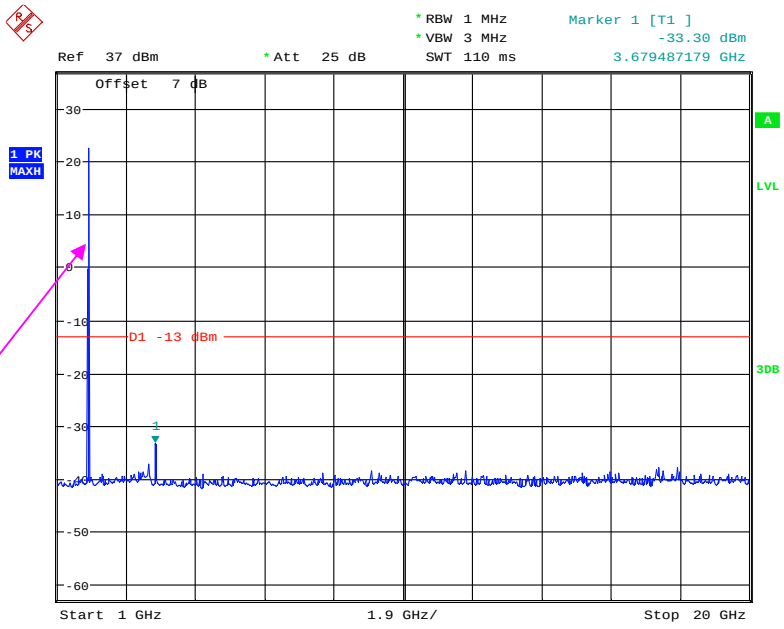
Date: 16.JAN.2021 18:58:46

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 20:34:12

1 GHz – 20 GHz (WCDMA Mode)

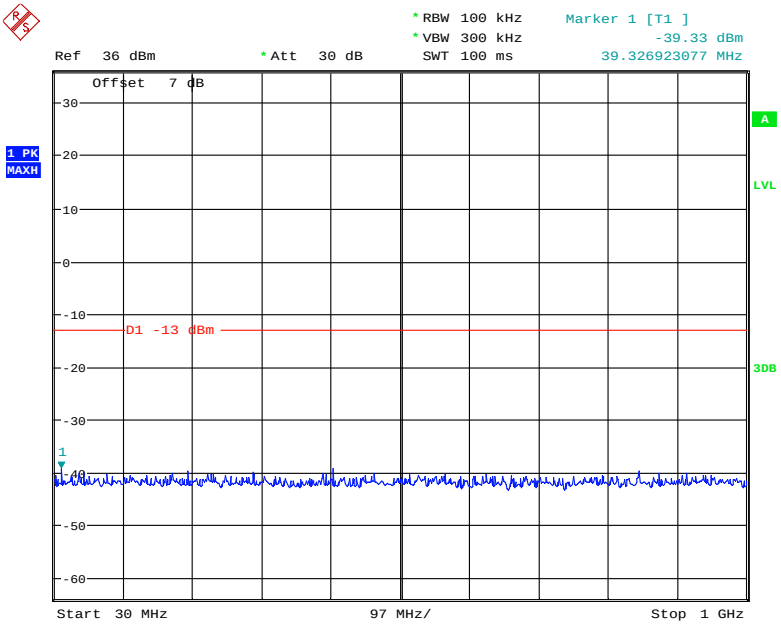


Fundamental test

Date: 29.JAN.2021 20:34:45

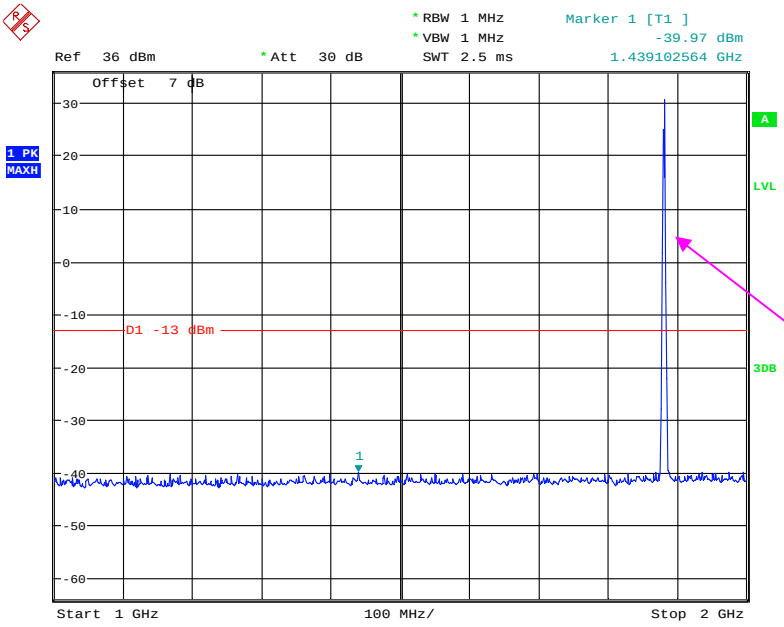
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



Date: 16.JAN.2021 19:05:45

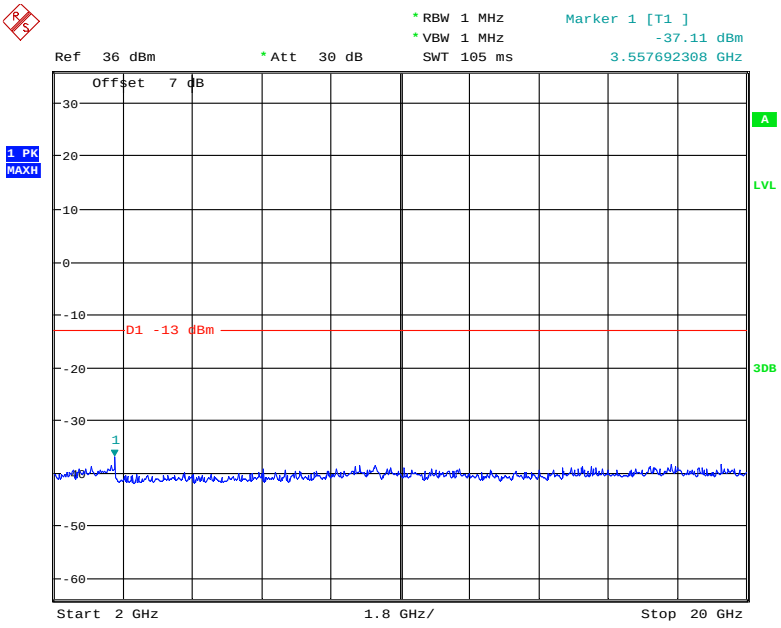
1 GHz – 2 GHz (GSM Mode)



Fundamental test

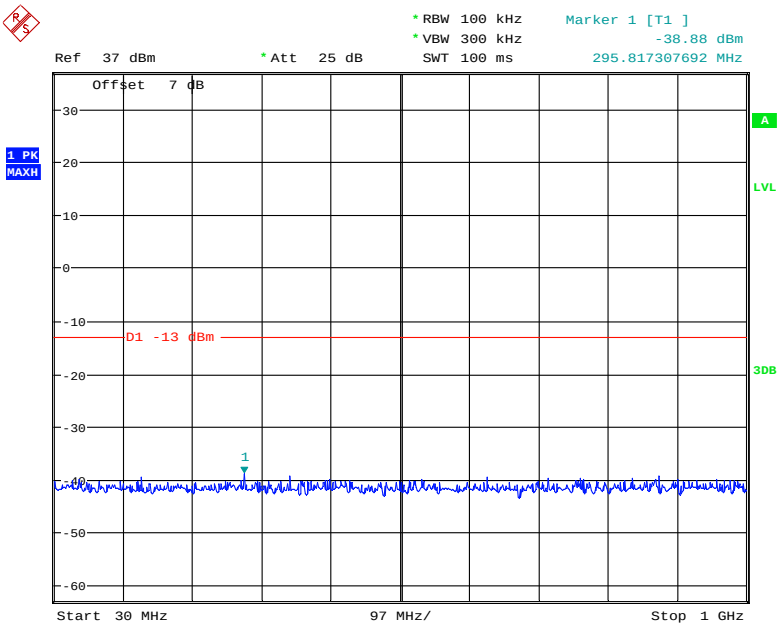
Date: 16.JAN.2021 19:02:30

2 GHz – 20GHz (GSM Mode)



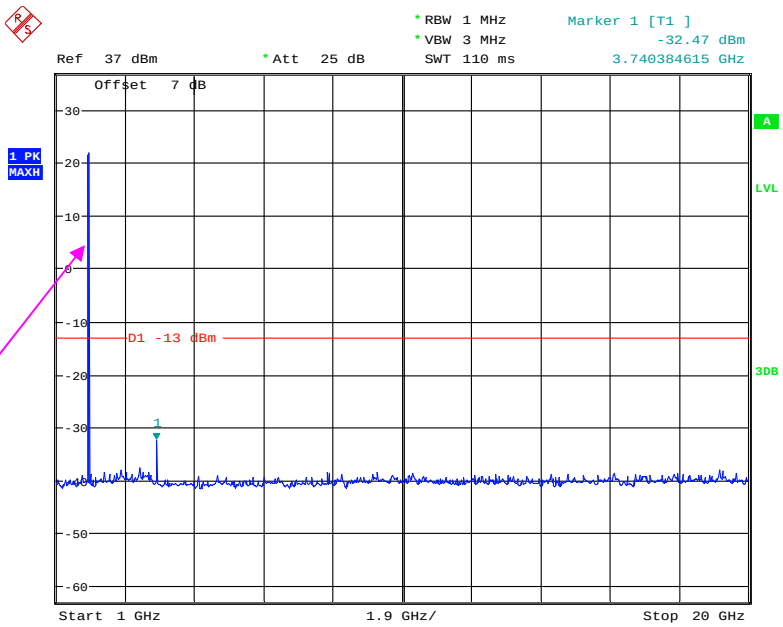
Date: 16.JAN.2021 18:59:41

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 20:33:49

1 GHz – 20 GHz (WCDMA Mode)

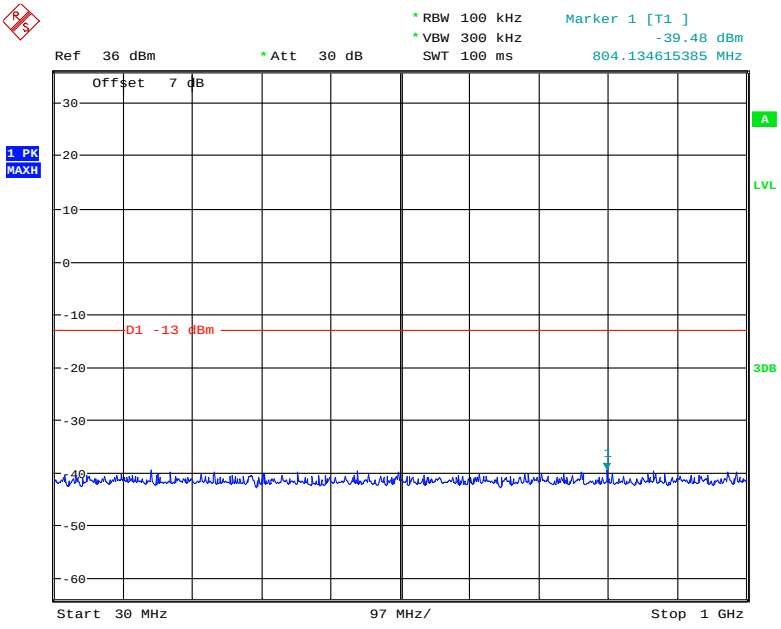


Fundamental test

Date: 29.JAN.2021 20:33:29

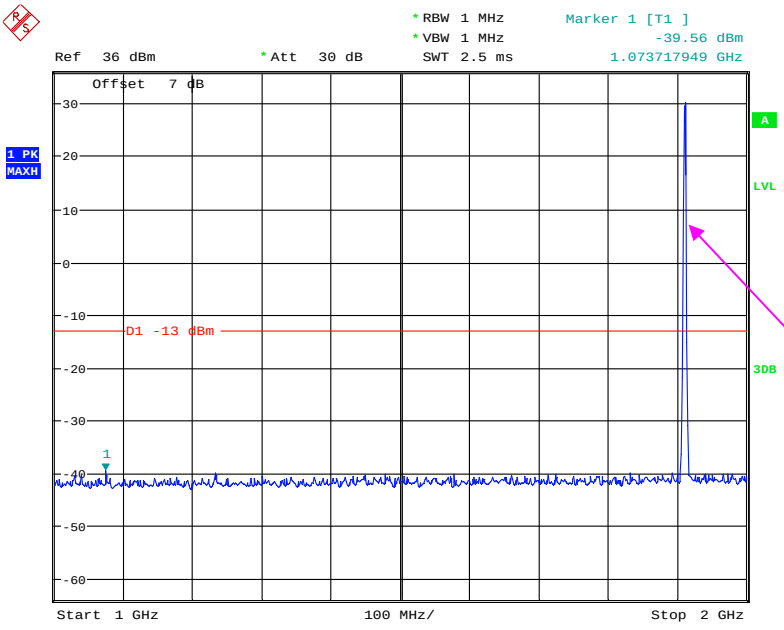
High Channel:

30 MHz – 1 GHz (GSM Mode)



Date: 16.JAN.2021 19:06:22

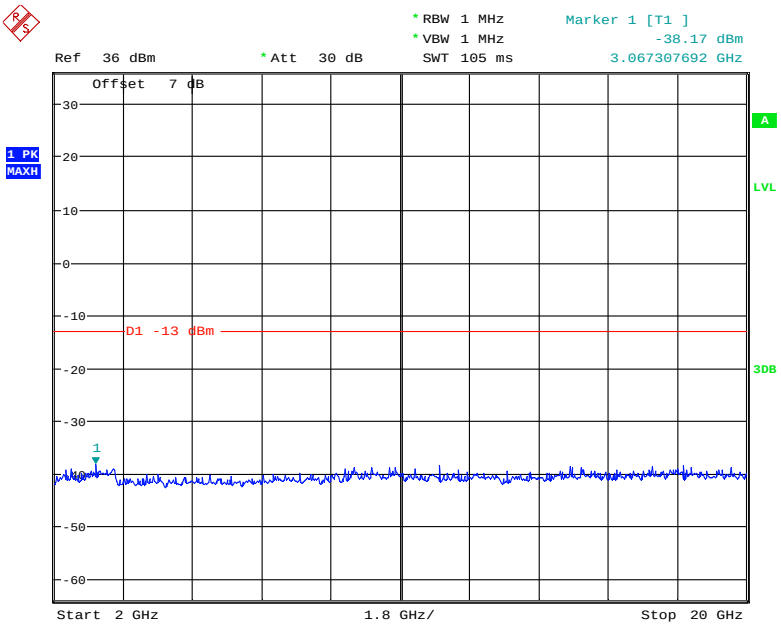
1 GHz – 2 GHz (GSM Mode)



Fundamental test

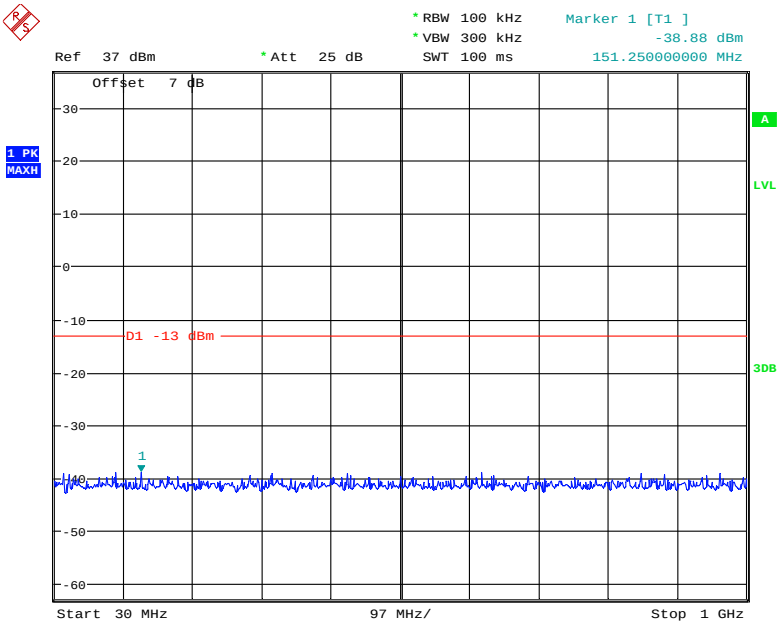
Date: 16.JAN.2021 19:01:30

2 GHz – 20GHz (GSM Mode)



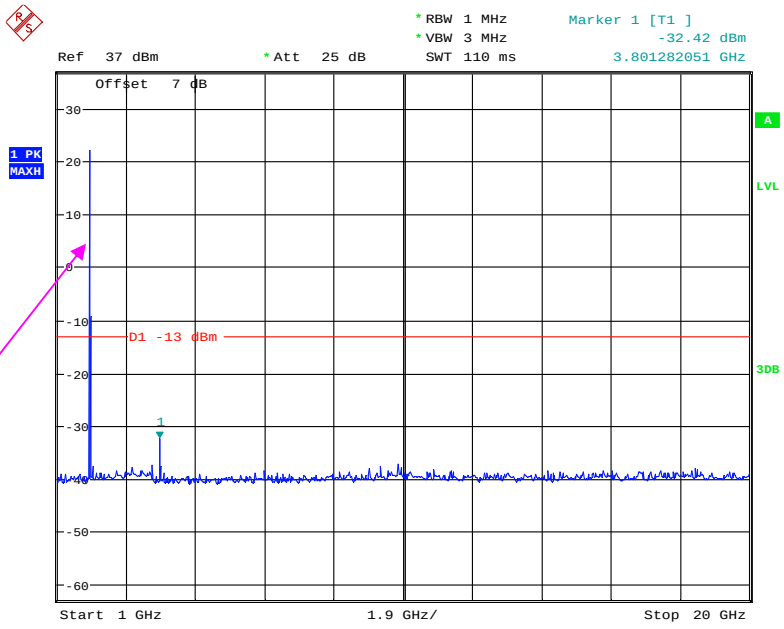
Date: 16.JAN.2021 19:00:06

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 20:32:22

1 GHz – 20 GHz (WCDMA Mode)

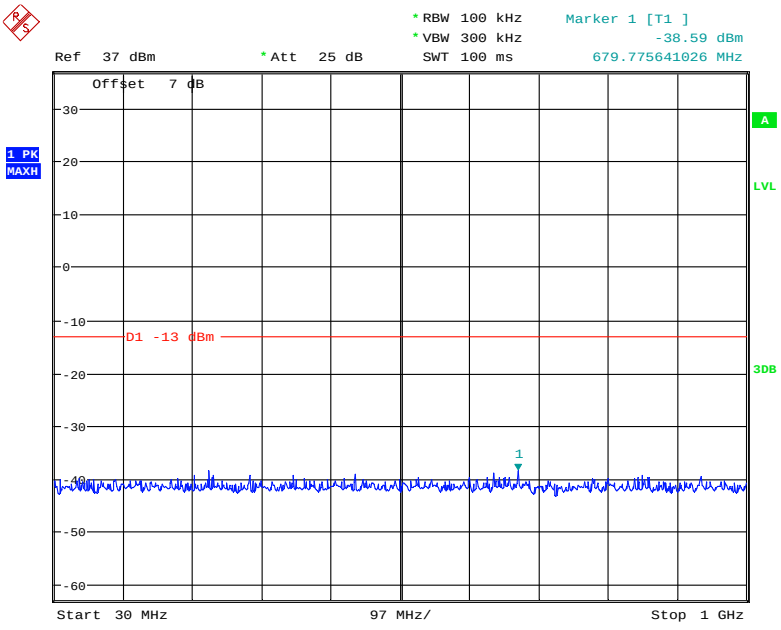


Fundamental test

Date: 29.JAN.2021 20:33:08

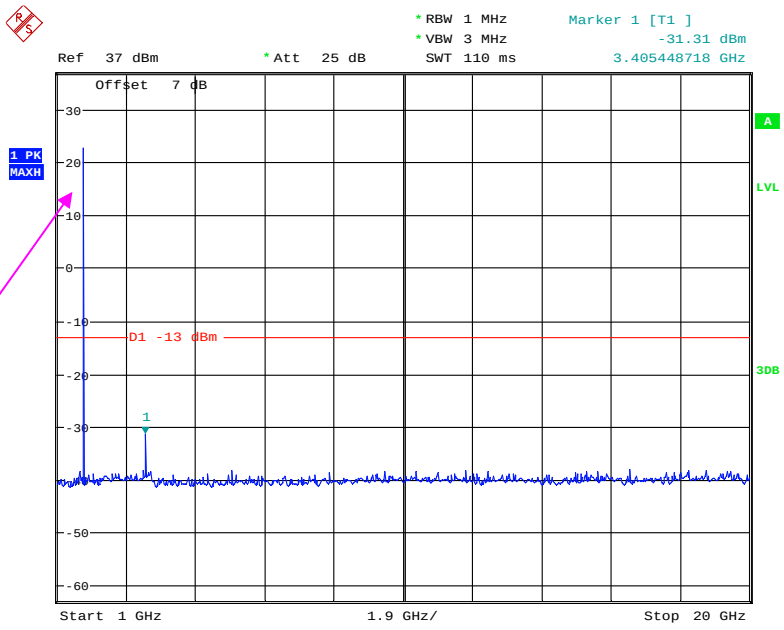
AWS Band (Part 27)
Low Channel:

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 20:42:02

1 GHz – 20 GHz (WCDMA Mode)

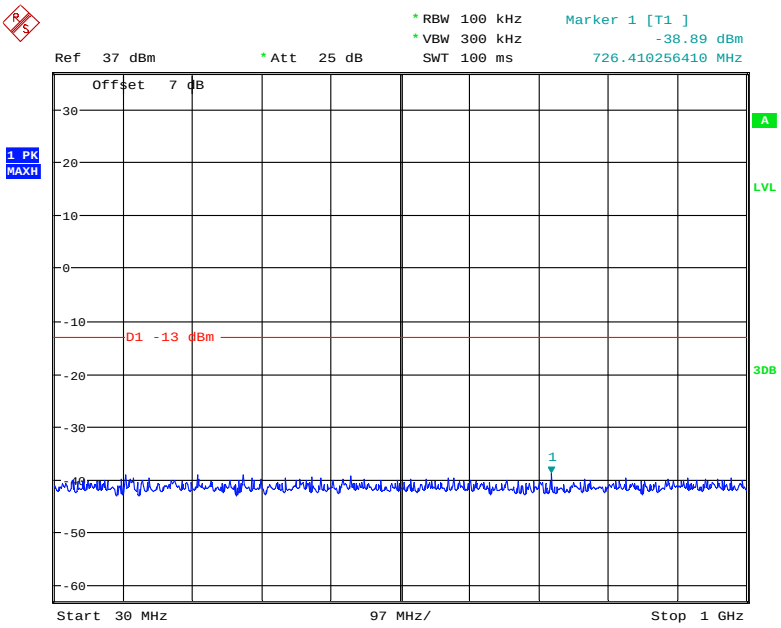


Fundamental test

Date: 29.JAN.2021 20:41:29

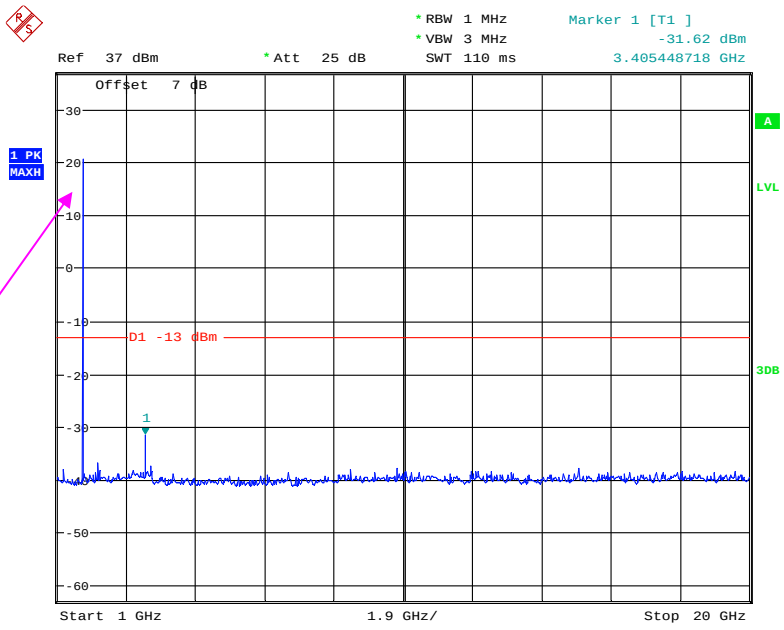
Middle Channel

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:03:00

1 GHz – 20 GHz (WCDMA Mode)

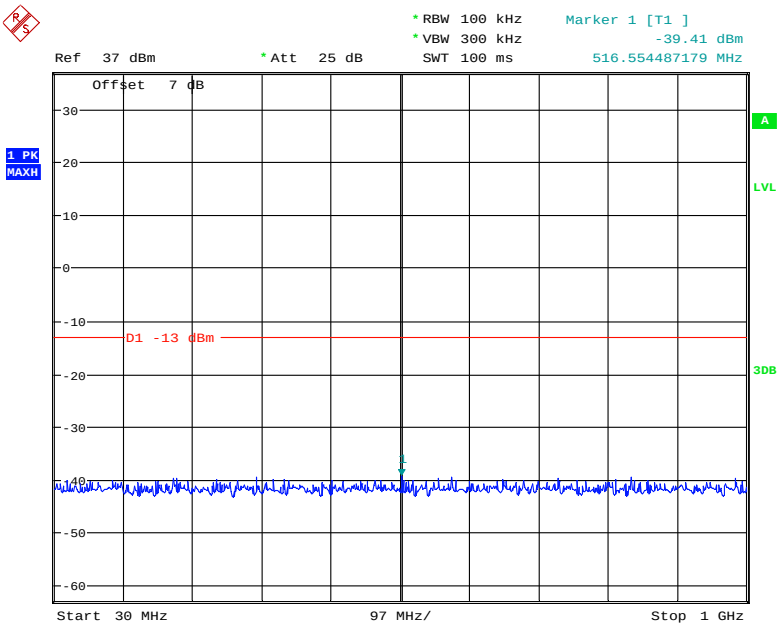


Fundamental test

Date: 29.JAN.2021 21:03:28

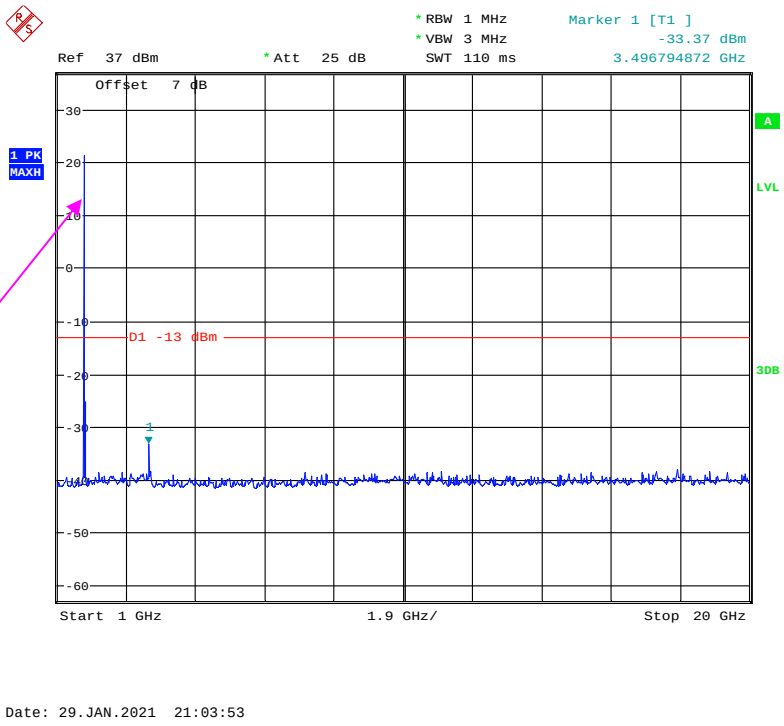
High Channel:

30 MHz – 1 GHz (WCDMA Mode)



Date: 29.JAN.2021 21:04:14

1 GHz – 20 GHz (WCDMA Mode)



Fundamental test

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

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

Applicable Standard

FCC § 2.1053, §22.917(a) 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:	20.8~24 ℃
Relative Humidity:	41~52%
ATM Pressure:	101.0 kPa

The testing was performed by Holland Yang on 2021-01-18 for below 1GHz and Leven Gan on 2021-01-17 for above 1GHz.

EUT operation mode: Transmitting

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
GSM Mode										
Low channel										
959.7	32.56	130	1.1	H	-63.9	1.36	0.0	-65.26	-13	52.26
959.7	33.21	285	1.3	V	-60.8	1.36	0.0	-62.16	-13	49.16
1648.40	54.79	12	1.2	H	-53.3	1.40	8.70	-46.00	-13	33.00
1648.40	56.23	286	1.2	V	-51.6	1.40	8.70	-44.30	-13	31.30
2472.60	60.12	336	1.3	H	-43.2	2.60	10.20	-35.60	-13	22.60
2472.60	60.54	125	1.4	V	-42.2	2.60	10.20	-34.60	-13	21.60
3296.80	46.41	84	2.0	H	-54.5	1.50	11.70	-44.30	-13	31.30
3296.80	49.55	244	1.0	V	-51.4	1.50	11.70	-41.20	-13	28.20
Middle channel										
951.6	32.42	337	2.0	H	-64.1	1.36	0.0	-65.46	-13	52.46
951.6	33.14	342	1.4	V	-60.9	1.36	0.0	-62.26	-13	49.26
1673.20	55.43	251	1.5	H	-50.9	1.30	8.90	-43.30	-13	30.30
1673.20	55.93	178	2.3	V	-49.8	1.30	8.90	-42.20	-13	29.20
2509.80	59.66	304	1.7	H	-43.7	2.60	10.20	-36.10	-13	23.10
2509.80	60.71	83	1.8	V	-42.0	2.60	10.20	-34.40	-13	21.40
3346.40	46.36	216	1.9	H	-54.5	1.50	11.70	-44.30	-13	31.30
3346.40	49.65	130	1.8	V	-51.3	1.50	11.70	-41.10	-13	28.10
High channel										
962.8	32.65	43	1.5	H	-63.9	1.36	0.0	-65.26	-13	52.26
962.8	33.54	138	1.9	V	-60.5	1.36	0.0	-61.86	-13	48.86
1697.60	55.14	92	2.2	H	-51.2	1.30	8.90	-43.60	-13	30.60
1697.60	56.36	198	1.8	V	-49.4	1.30	8.90	-41.80	-13	28.80
2546.40	58.89	223	2.0	H	-44.5	2.60	10.20	-36.90	-13	23.90
2546.40	60.77	174	2.2	V	-42.0	2.60	10.20	-34.40	-13	21.40
3395.20	46.51	50	1.7	H	-54.7	1.40	11.80	-44.30	-13	31.30
3395.20	50.18	111	2.1	V	-50.9	1.40	11.80	-40.50	-13	27.50

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
953.3	32.87	291	2.4	H	-63.6	1.36	0.0	-64.96	-13	51.96
953.3	33.34	52	1.1	V	-60.7	1.36	0.0	-62.06	-13	49.06
1652.80	49.29	206	1.1	H	-57.0	1.30	8.90	-49.40	-13	36.40
1652.80	48.39	42	1.2	V	-57.3	1.30	8.90	-49.70	-13	36.70
2479.20	46.75	334	2.2	H	-56.6	2.60	10.20	-49.00	-13	36.00
2479.20	45.94	258	2.0	V	-56.8	2.60	10.20	-49.20	-13	36.20
3305.60	44.92	233	1.9	H	-56.0	1.50	11.70	-45.80	-13	32.80
3305.60	43.87	228	2.0	V	-57.1	1.50	11.70	-46.90	-13	33.90
Middle channel										
957.6	32.42	44	1.2	H	-64.1	1.36	0.0	-65.46	-13	52.46
957.6	33.15	298	1.9	V	-60.9	1.36	0.0	-62.26	-13	49.26
1673.20	50.12	139	1.6	H	-56.2	1.30	8.90	-48.60	-13	35.60
1673.20	49.27	164	1.5	V	-56.5	1.30	8.90	-48.90	-13	35.90
2509.80	46.58	190	1.2	H	-56.8	2.60	10.20	-49.20	-13	36.20
2509.80	46.06	353	1.9	V	-56.7	2.60	10.20	-49.10	-13	36.10
3346.40	45.03	75	1.1	H	-55.9	1.50	11.70	-45.70	-13	32.70
3346.40	43.85	292	1.4	V	-57.1	1.50	11.70	-46.90	-13	33.90
High channel										
962.8	32.19	222	1.6	H	-64.3	1.36	0.0	-65.66	-13	52.66
962.8	33.22	347	1.8	V	-60.8	1.36	0.0	-62.16	-13	49.16
1693.20	50.27	10	1.4	H	-56.1	1.30	8.90	-48.50	-13	35.50
1693.20	48.84	15	1.5	V	-56.9	1.30	8.90	-49.30	-13	36.30
2539.80	46.37	0	2.4	H	-57.0	2.60	10.20	-49.40	-13	36.40
2539.80	45.76	42	2.0	V	-57.0	2.60	10.20	-49.40	-13	36.40
3386.40	45.33	66	2.2	H	-55.9	1.40	11.80	-45.50	-13	32.50
3386.40	44.18	314	2.4	V	-56.9	1.40	11.80	-46.50	-13	33.50

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
GSM Mode										
Low channel										
958.2	32.19	106	1.9	H	-64.3	1.36	0.0	-65.66	-13	52.66
958.2	33.24	181	1.7	V	-60.8	1.36	0.0	-62.16	-13	49.16
3700.40	51.48	169	1.9	H	-50.3	1.60	11.90	-40.00	-13	27.00
3700.40	51.55	342	1.5	V	-49.7	1.60	11.90	-39.40	-13	26.40
Middle channel										
963.6	32.69	313	2.1	H	-63.8	1.36	0.0	-65.16	-13	52.16
963.6	33.74	9	1.2	V	-60.3	1.36	0.0	-61.66	-13	48.66
3760.00	51.61	85	2.0	H	-50.4	1.50	11.80	-40.10	-13	27.10
3760.00	51.42	267	2.0	V	-50.2	1.50	11.80	-39.90	-13	26.90
High channel										
957.4	32.09	90	2.5	H	-64.4	1.36	0.0	-65.76	-13	52.76
957.4	33.55	96	2.2	V	-60.5	1.36	0.0	-61.86	-13	48.86
3819.60	50.94	57	1.3	H	-51.1	1.50	11.80	-40.80	-13	27.80
3819.60	51.20	104	2.4	V	-50.4	1.50	11.80	-40.10	-13	27.10

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
969.9	32.41	287	1.2	H	-64.1	1.36	0.0	-65.46	-13	52.46
969.9	33.52	187	1.1	V	-60.5	1.36	0.0	-61.86	-13	48.86
3704.80	49.89	344	2.2	H	-51.9	1.60	11.90	-41.60	-13	28.60
3704.80	49.61	342	1.2	V	-51.6	1.60	11.90	-41.30	-13	28.30
Middle channel										
953.7	32.36	49	1.6	H	-64.1	1.36	0.0	-65.46	-13	52.46
953.7	33.21	174	1.7	V	-60.8	1.36	0.0	-62.16	-13	49.16
3760.00	50.14	282	2.4	H	-51.9	1.50	11.80	-41.60	-13	28.60
3760.00	48.75	280	1.2	V	-52.8	1.50	11.80	-42.50	-13	29.50
High channel										
949.4	32.84	151	2.2	H	-63.7	1.36	0.0	-65.06	-13	52.06
949.4	33.69	82	1.6	V	-60.4	1.36	0.0	-61.76	-13	48.76
3815.20	50.63	293	2.2	H	-51.4	1.50	11.80	-41.10	-13	28.10
3815.20	50.12	138	1.2	V	-51.5	1.50	11.80	-41.20	-13	28.20

30 MHz ~ 20 GHz:

AWS Band

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
954.1	32.84	195	1.9	H	-63.7	1.36	0.0	-65.06	-13	52.06
954.1	33.50	169	1.2	V	-60.6	1.36	0.0	-61.96	-13	48.96
3424.80	52.87	41	1.8	H	-47.9	1.40	11.80	-37.50	-13	24.50
3424.80	51.19	253	1.2	V	-49.4	1.40	11.80	-39.00	-13	26.00
Middle channel										
956.6	32.95	124	2.2	H	-63.6	1.36	0.0	-64.96	-13	51.96
956.6	33.71	103	1.7	V	-60.3	1.36	0.0	-61.66	-13	48.66
3465.20	53.12	292	1.9	H	-47.6	1.50	12.00	-37.10	-13	24.10
3465.20	50.98	31	1.9	V	-50.5	1.50	12.00	-40.00	-13	27.00
High channel										
960.2	32.61	121	2.0	H	-63.9	1.36	0.0	-65.26	-13	52.26
960.2	33.55	322	1.5	V	-60.5	1.36	0.0	-61.86	-13	48.86
3505.20	52.64	347	1.0	H	-48.1	1.50	12.00	-37.60	-13	24.60
3505.20	50.79	342	2.0	V	-50.7	1.50	12.00	-40.20	-13	27.20

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

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 2										
Test frequency range: 30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
964.3	32.56	171	1.9	H	-63.9	1.36	0.0	-65.26	-13	52.26
964.3	33.47	144	1.1	V	-60.6	1.36	0.0	-61.96	-13	48.96
3701.40	49.85	260	1.3	H	-52.0	1.60	11.90	-41.70	-13	28.70
3701.40	49.17	73	2.1	V	-52.1	1.60	11.90	-41.80	-13	28.80
1.4 MHz, Middle channel										
959.4	32.64	20	1.0	H	-63.9	1.36	0.0	-65.26	-13	52.26
959.4	33.51	255	1.4	V	-60.5	1.36	0.0	-61.86	-13	48.86
3760.00	49.09	83	2.1	H	-53.0	1.50	11.80	-42.70	-13	29.70
3760.00	48.58	16	1.8	V	-53.0	1.50	11.80	-42.70	-13	29.70
1.4 MHz, High channel										
965.8	32.38	37	2.0	H	-64.1	1.36	0.0	-65.46	-13	52.46
965.8	33.61	329	1.8	V	-60.4	1.36	0.0	-61.76	-13	48.76
3818.60	48.42	246	2.3	H	-53.6	1.50	11.80	-43.30	-13	30.30
3818.60	48.61	227	2.2	V	-53.0	1.50	11.80	-42.70	-13	29.70
Band 4										
Test frequency range:30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
963.9	32.42	351	1.2	H	-64.1	1.36	0.0	-65.46	-13	52.46
963.9	33.15	67	1.5	V	-60.9	1.36	0.0	-62.26	-13	49.26
3421.40	50.12	90	1.0	H	-50.7	1.40	11.80	-40.30	-13	27.30
3421.40	49.42	287	2.1	V	-51.2	1.40	11.80	-40.80	-13	27.80
1.4 MHz, Middle channel										
960.6	32.69	57	2.0	H	-63.8	1.36	0.0	-65.16	-13	52.16
960.6	33.58	97	1.3	V	-60.5	1.36	0.0	-61.86	-13	48.86
3465.00	49.42	114	1.1	H	-51.3	1.50	12.00	-40.80	-13	27.80
3465.00	48.96	337	1.9	V	-52.5	1.50	12.00	-42.00	-13	29.00
1.4 MHz, High channel										
956.8	32.06	192	1.0	H	-64.4	1.36	0.0	-65.76	-13	52.76
956.8	33.21	290	1.6	V	-60.8	1.36	0.0	-62.16	-13	49.16
3508.60	50.18	78	1.4	H	-50.6	1.50	12.00	-40.10	-13	27.10
3508.60	48.79	24	1.3	V	-52.7	1.50	12.00	-42.20	-13	29.20

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBµV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 5										
Test frequency range:30 MHz ~ 10 GHz										
1.4 MHz, Low channel										
959.3	32.86	336	1.7	H	-63.6	1.36	0.0	-64.96	-13	51.96
959.3	33.74	95	1.9	V	-60.3	1.36	0.0	-61.66	-13	48.66
1649.40	52.75	55	1.2	H	-55.3	1.40	8.70	-48.00	-13	35.00
1649.40	52.91	207	2.4	V	-54.9	1.40	8.70	-47.60	-13	34.60
2474.10	52.89	69	1.8	H	-50.5	2.60	10.20	-42.90	-13	29.90
2474.10	51.24	171	2.1	V	-51.5	2.60	10.20	-43.90	-13	30.90
3298.80	46.71	215	1.0	H	-54.2	1.50	11.70	-44.00	-13	31.00
3298.80	46.22	360	2.2	V	-54.7	1.50	11.70	-44.50	-13	31.50
1.4 MHz, Middle channel										
964.7	32.78	117	2.0	H	-63.7	1.36	0.0	-65.06	-13	52.06
964.7	33.91	222	2.3	V	-60.1	1.36	0.0	-61.46	-13	48.46
1673.00	53.08	45	1.8	H	-53.3	1.30	8.90	-45.70	-13	32.70
1673.00	53.03	244	1.9	V	-52.7	1.30	8.90	-45.10	-13	32.10
2509.50	53.35	113	1.6	H	-50.0	2.60	10.20	-42.40	-13	29.40
2509.50	50.32	347	1.6	V	-52.4	2.60	10.20	-44.80	-13	31.80
3346.00	46.14	30	2.0	H	-54.8	1.50	11.70	-44.60	-13	31.60
3346.00	45.89	277	1.3	V	-55.0	1.50	11.70	-44.80	-13	31.80
1.4 MHz, High channel										
961.2	32.61	332	1.6	H	-63.9	1.36	0.0	-65.26	-13	52.26
961.2	33.55	190	1.3	V	-60.5	1.36	0.0	-61.86	-13	48.86
1696.60	54.17	278	1.9	H	-52.2	1.30	8.90	-44.60	-13	31.60
1696.60	52.74	320	1.7	V	-53.0	1.30	8.90	-45.40	-13	32.40
2544.90	53.91	274	2.2	H	-49.4	2.60	10.20	-41.80	-13	28.80
2544.90	51.46	191	1.3	V	-51.3	2.60	10.20	-43.70	-13	30.70
3393.20	47.12	294	1.5	H	-54.1	1.40	11.80	-43.70	-13	30.70
3393.20	45.98	216	1.6	V	-55.1	1.40	11.80	-44.70	-13	31.70

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 7										
Test frequency range: 30 MHz ~26.5GHz										
5 MHz, Low channel										
965.3	32.46	272	1.7	H	-64.0	1.36	0.0	-65.36	-25	40.36
965.3	33.25	147	1.7	V	-60.8	1.36	0.0	-62.16	-25	37.16
5005.00	52.47	85	1.2	H	-48.1	1.70	12.00	-37.80	-25	12.80
5005.00	51.39	9	1.5	V	-48.6	1.70	12.00	-38.30	-25	13.30
5 MHz, Middle channel										
960.6	32.58	222	1.4	H	-63.9	1.36	0.0	-65.26	-25	40.26
960.6	33.67	287	2.0	V	-60.4	1.36	0.0	-61.76	-25	36.76
5070.00	53.27	195	1.9	H	-46.7	1.60	12.10	-36.20	-25	11.20
5070.00	51.11	38	1.8	V	-48.9	1.60	12.10	-38.40	-25	13.40
5 MHz, High channel										
968.6	32.17	328	1.7	H	-64.3	1.36	0.0	-65.66	-25	40.66
968.6	33.44	10	2.0	V	-60.6	1.36	0.0	-61.96	-25	36.96
5135.00	52.34	239	2.2	H	-47.7	1.60	12.10	-37.20	-25	12.20
5135.00	49.77	23	1.7	V	-50.2	1.60	12.10	-39.70	-25	1470
Band 17										
Test frequency range: 30 MHz ~ 10GHz										
5 MHz, Low channel										
964.7	32.14	172	1.7	H	-64.4	1.36	0.0	-65.76	-13	52.76
964.7	33.33	307	1.9	V	-60.7	1.36	0.0	-62.06	-13	49.06
1413.00	54.26	166	2.1	H	-53.9	1.60	7.90	-47.60	-13	34.60
1413.00	52.63	258	2.5	V	-55.8	1.60	7.90	-49.50	-13	36.50
2119.50	54.01	103	1.2	H	-47.1	1.30	9.70	-38.70	-13	25.70
2119.50	52.13	181	2.1	V	-49.8	1.30	9.70	-41.40	-13	28.40
2826.00	47.25	86	2.1	H	-56.7	1.80	10.50	-48.00	-13	35.00
2826.00	46.38	269	2.3	V	-57.2	1.80	10.50	-48.50	-13	35.50
5 MHz, Middle channel										
952.1	32.67	37	1.0	H	-63.8	1.36	0.0	-65.16	-13	52.16
952.1	33.54	196	2.2	V	-60.5	1.36	0.0	-61.86	-13	48.86
1420.00	55.12	3	1.9	H	-53.1	1.60	7.90	-46.80	-13	33.80
1420.00	52.44	103	1.5	V	-56.0	1.60	7.90	-49.70	-13	36.70
2130.00	53.48	294	1.0	H	-47.6	1.30	9.70	-39.20	-13	26.20
2130.00	51.97	254	2.4	V	-50.0	1.30	9.70	-41.60	-13	28.60
2840.00	47.35	182	2.2	H	-56.6	1.80	10.50	-47.90	-13	34.90
2840.00	46.29	122	2.2	V	-57.3	1.80	10.50	-48.60	-13	35.60
5 MHz, High channel										
967.0	32.90	354	1.9	H	-63.6	1.36	0.0	-64.96	-13	51.96
967.0	33.85	138	2.4	V	-60.2	1.36	0.0	-61.56	-13	48.56
1427.00	54.77	27	1.9	H	-53.4	1.60	7.90	-47.10	-13	34.10
1427.00	51.24	278	1.1	V	-57.2	1.60	7.90	-50.90	-13	37.90
2140.50	53.76	31	2.1	H	-47.4	1.30	9.70	-39.00	-13	26.00
2140.50	52.26	268	1.4	V	-49.7	1.30	9.70	-41.30	-13	28.30
2854.00	47.51	114	2.2	H	-57.2	1.70	10.70	-48.20	-13	35.20
2854.00	46.38	36	2.0	V	-58.3	1.70	10.70	-49.30	-13	36.30

Note:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level
dBd is for the ERP, dBi is for EIRP.

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.

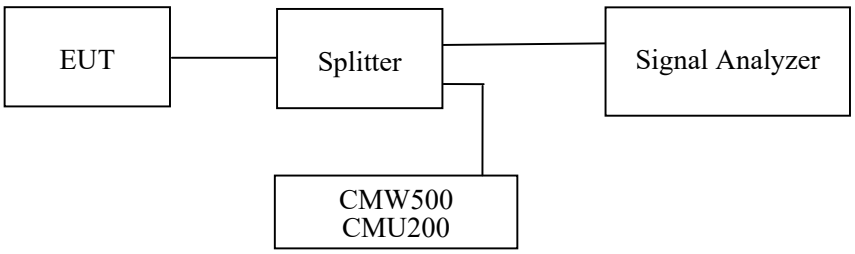
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

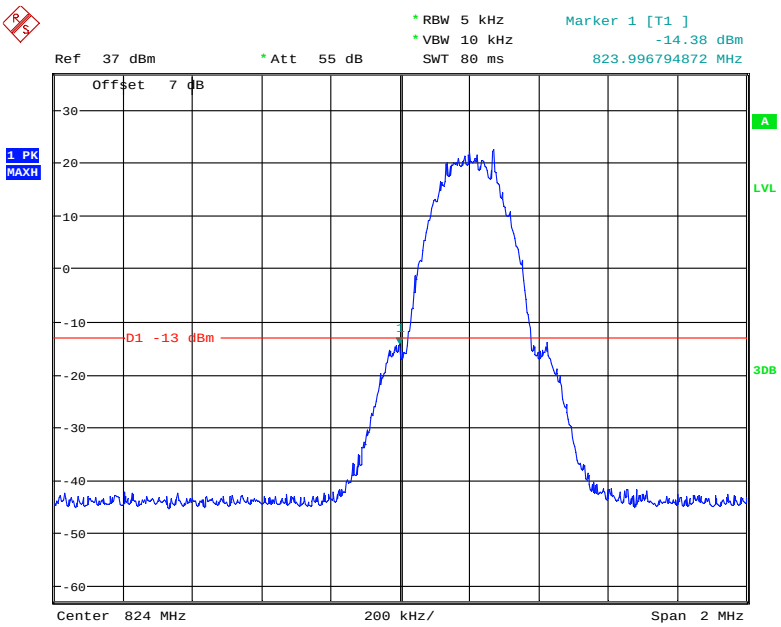
The testing was performed by Coco Liu from 2021-01-01 to 2021-02-04.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

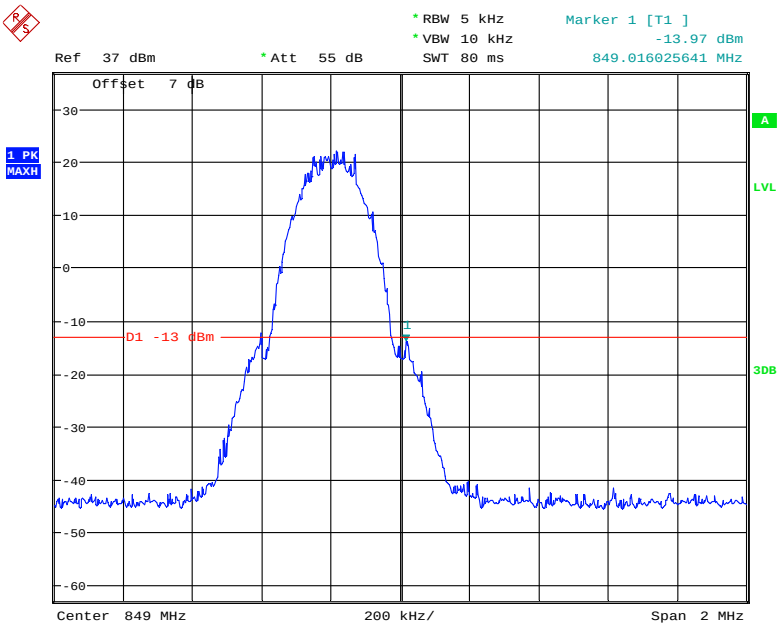
Please refer to the following plots.

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



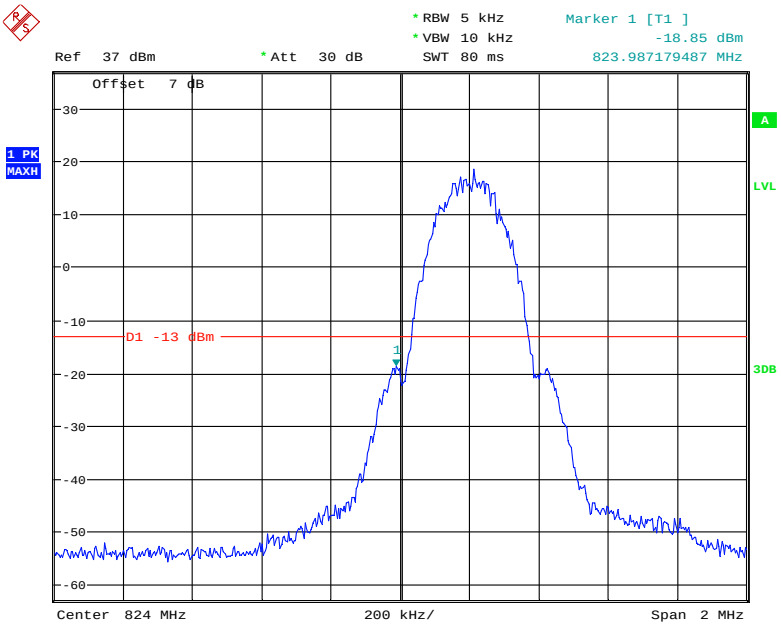
Date: 16.JAN.2021 18:46:51

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



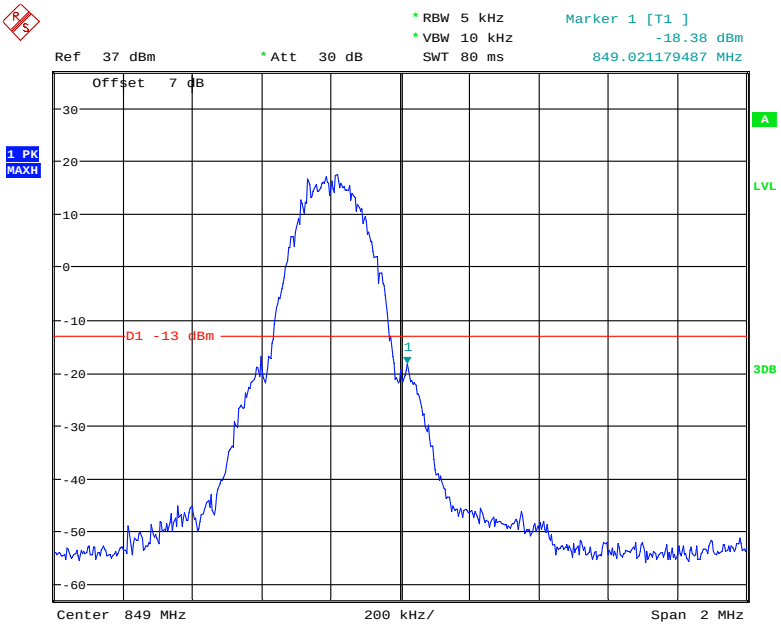
Date: 16.JAN.2021 18:48:05

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



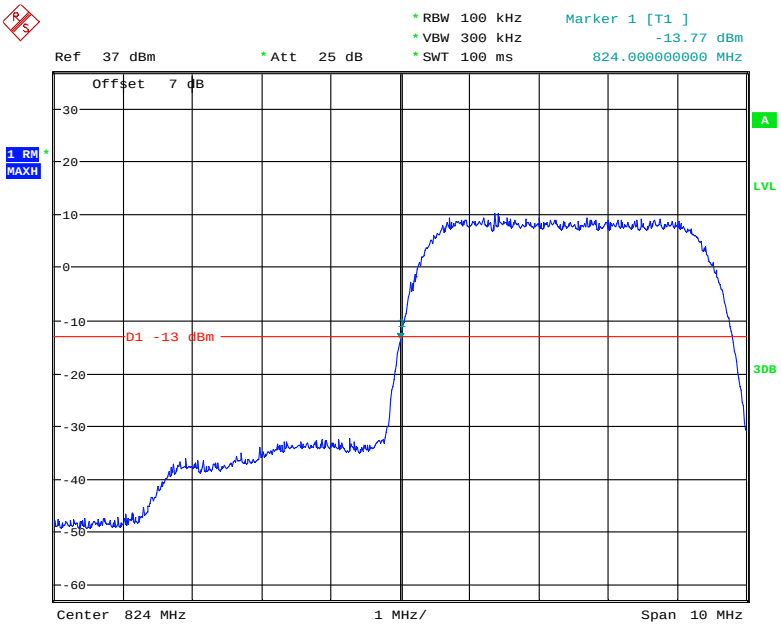
Date: 30.JAN.2021 10:53:31

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



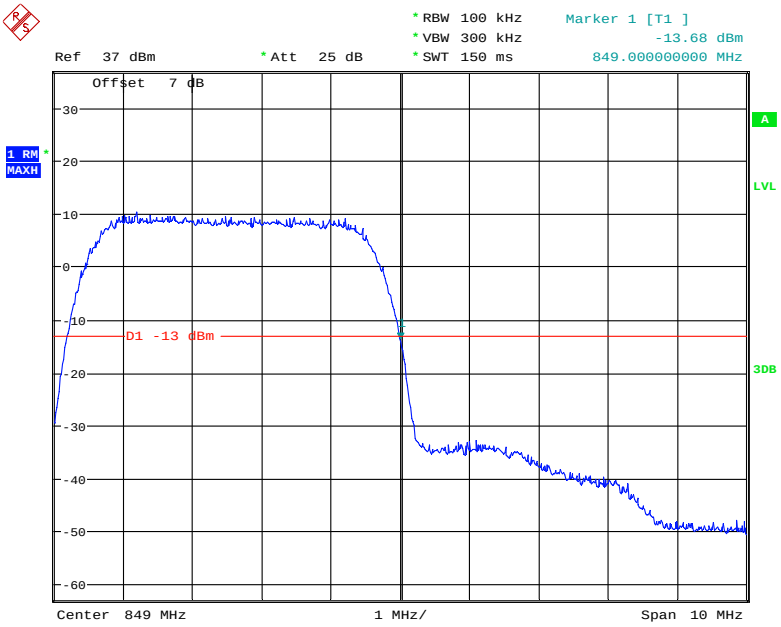
Date: 30.JAN.2021 10:54:09

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



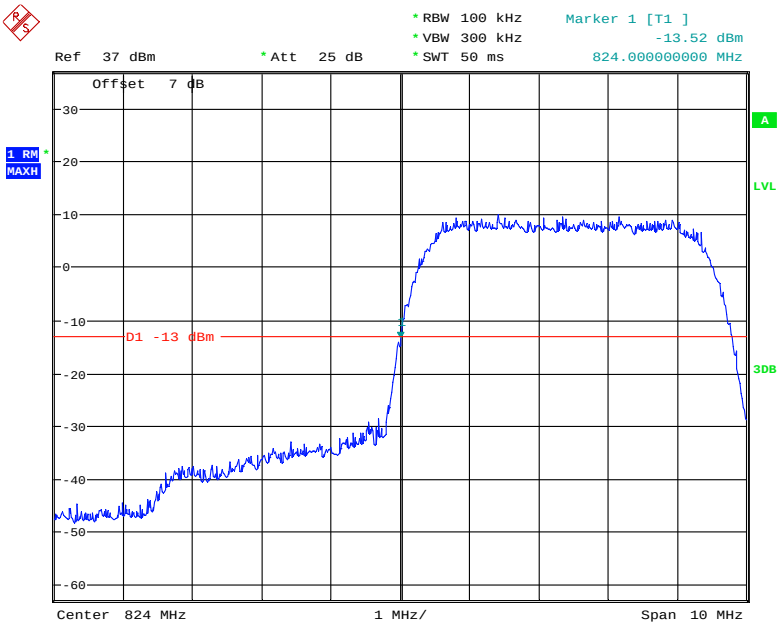
Date: 29.JAN.2021 21:18:06

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



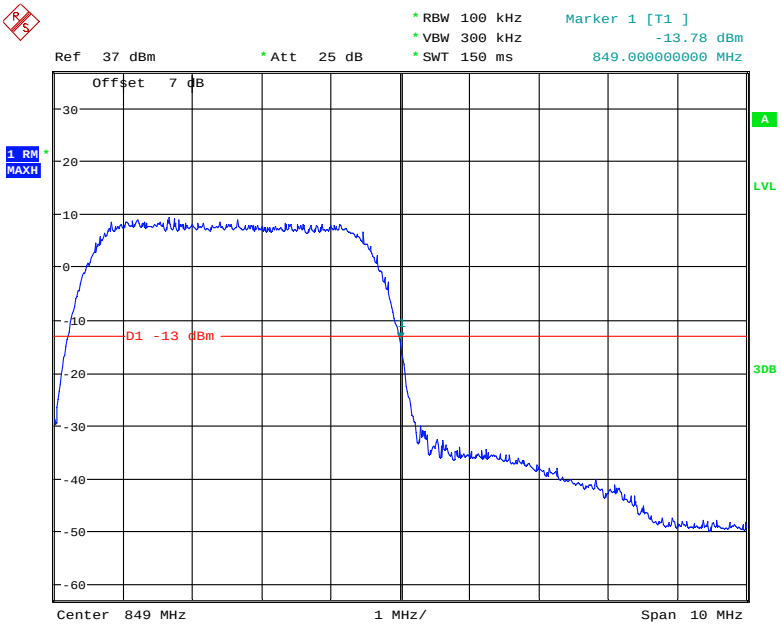
Date: 29.JAN.2021 21:18:55

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



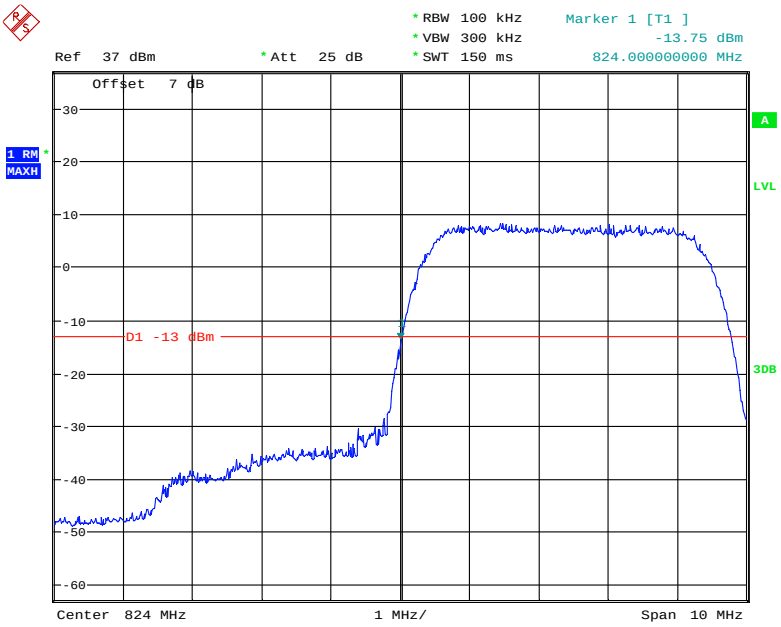
Date: 29.JAN.2021 21:32:24

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



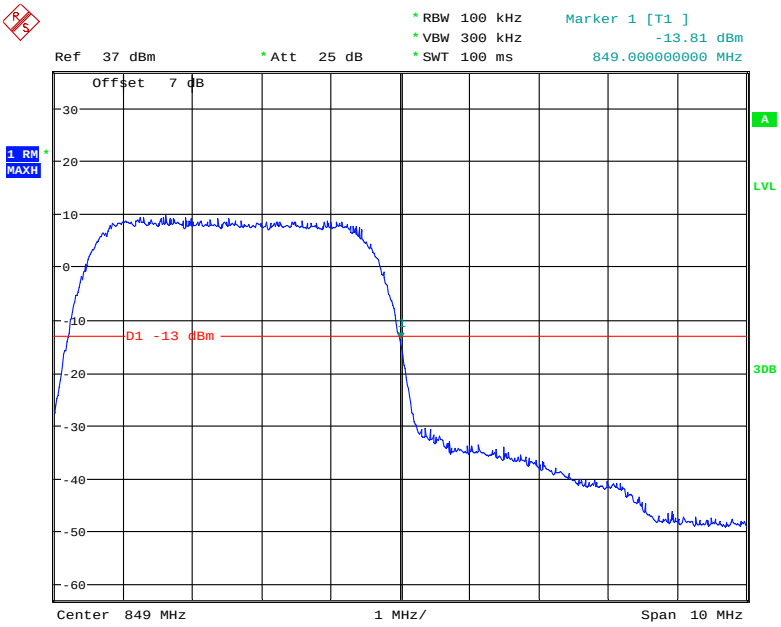
Date: 29.JAN.2021 21:19:36

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



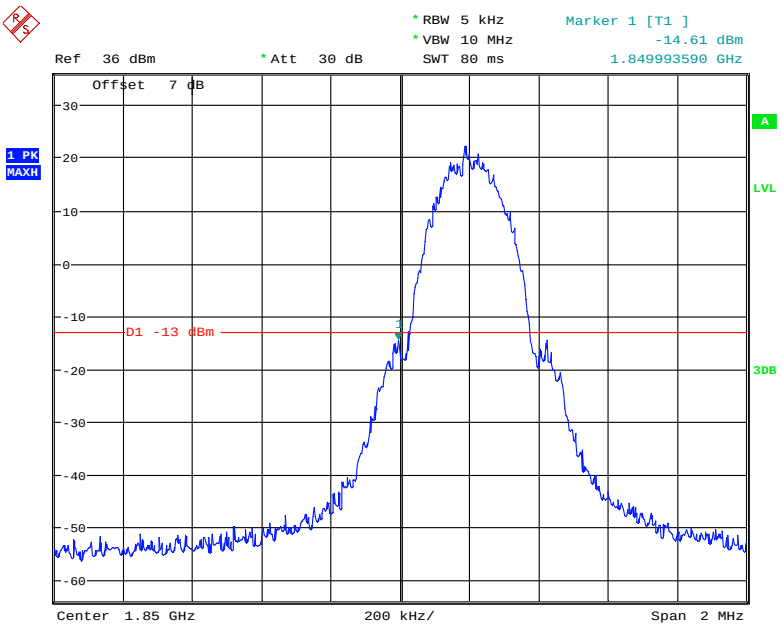
Date: 29.JAN.2021 21:20:53

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



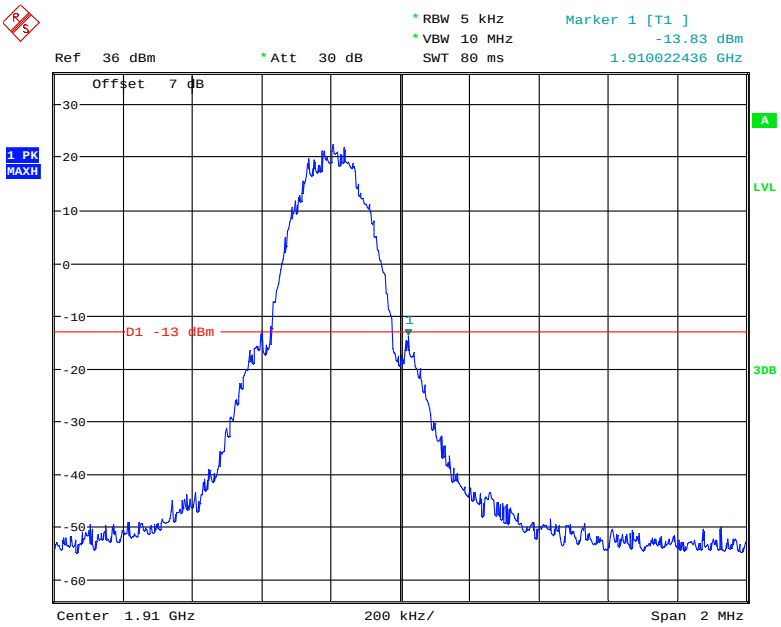
Date: 29.JAN.2021 21:21:40

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



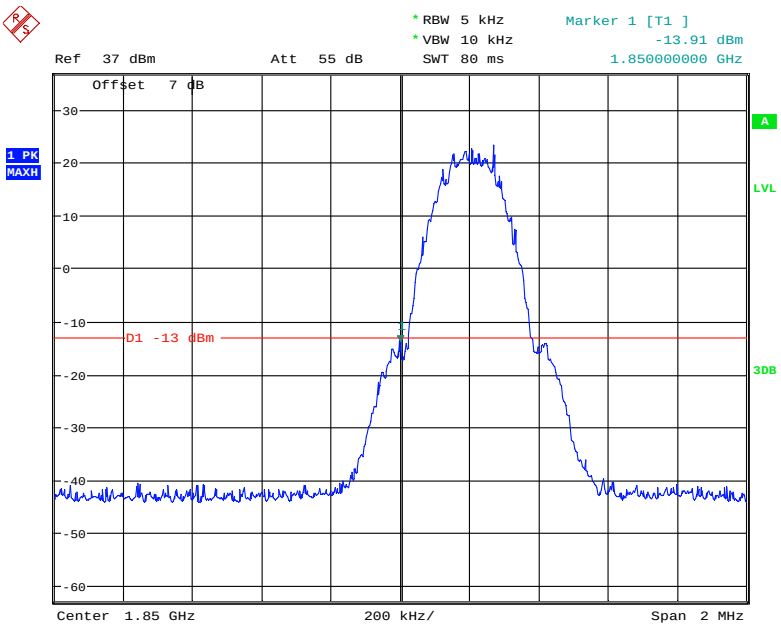
Date: 16.JAN.2021 19:10:27

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



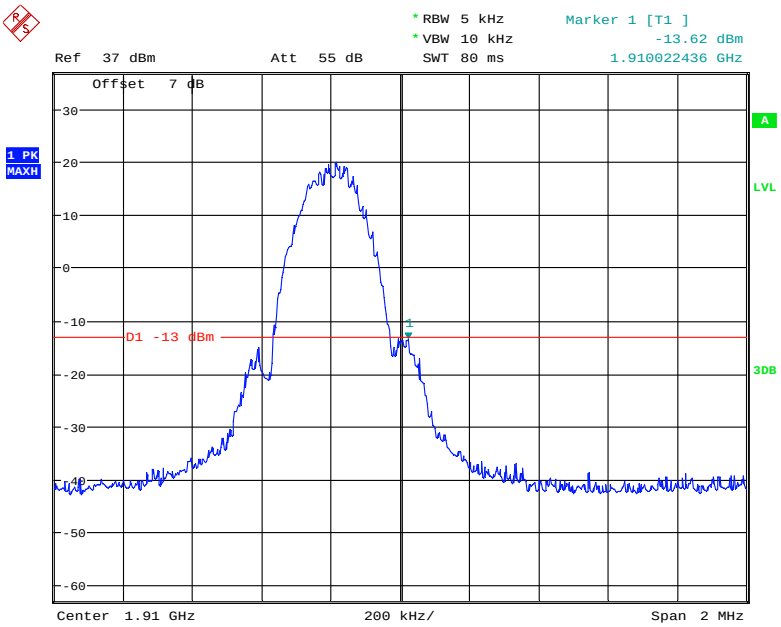
Date: 16.JAN.2021 19:09:09

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



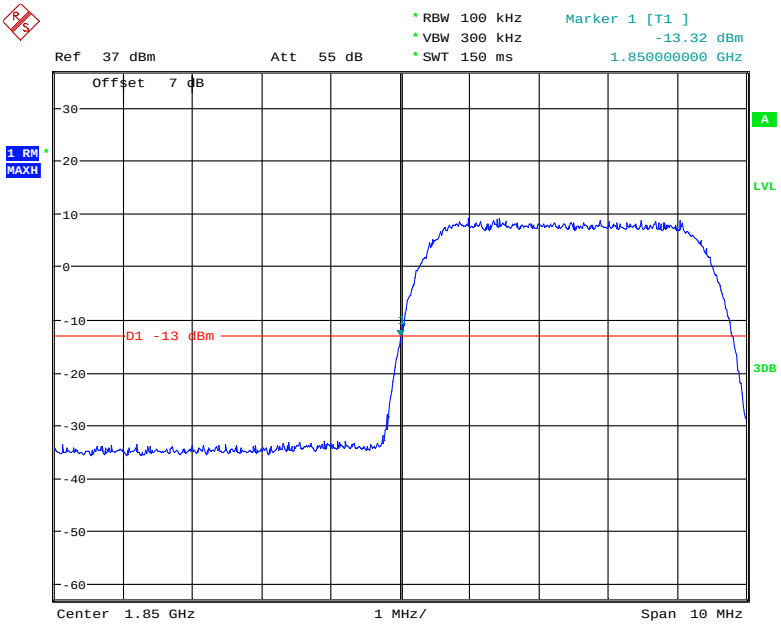
Date: 4.FEB.2021 20:27:02

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



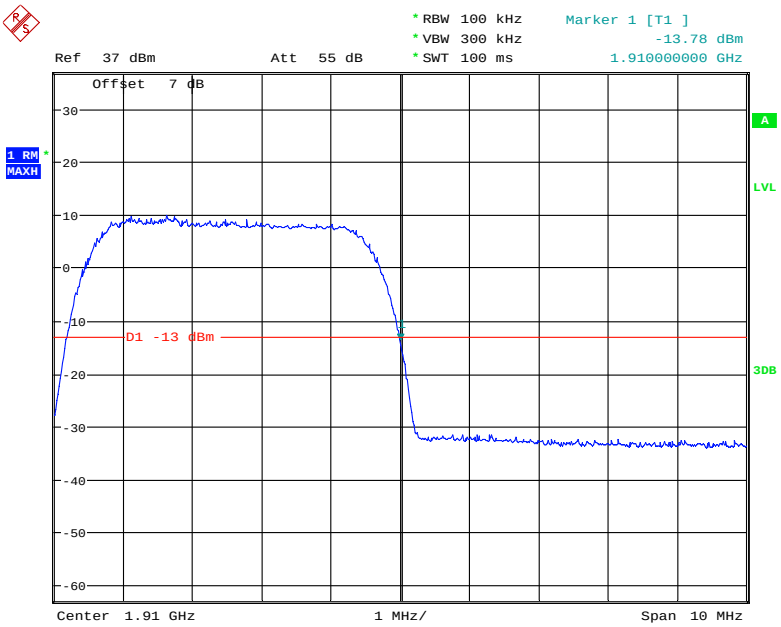
Date: 16.JAN.2021 20:04:20

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



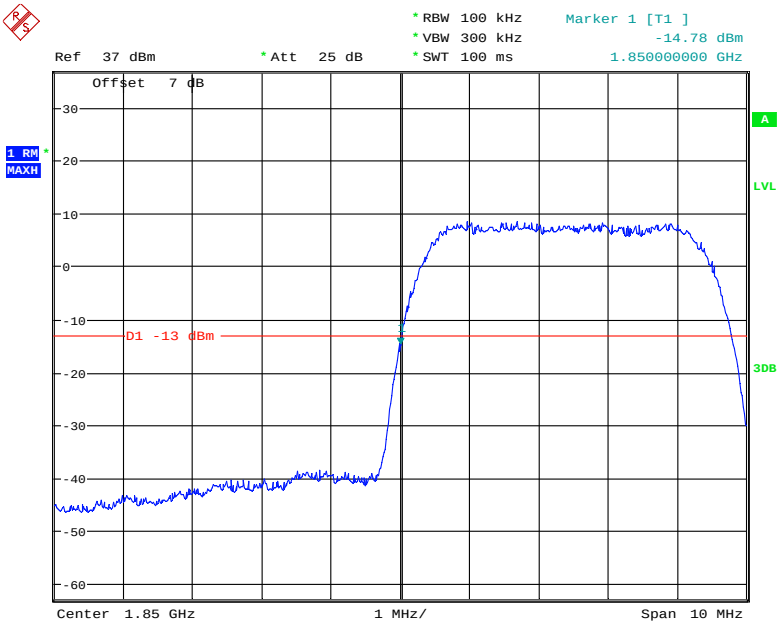
Date: 29.JAN.2021 20:09:41

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



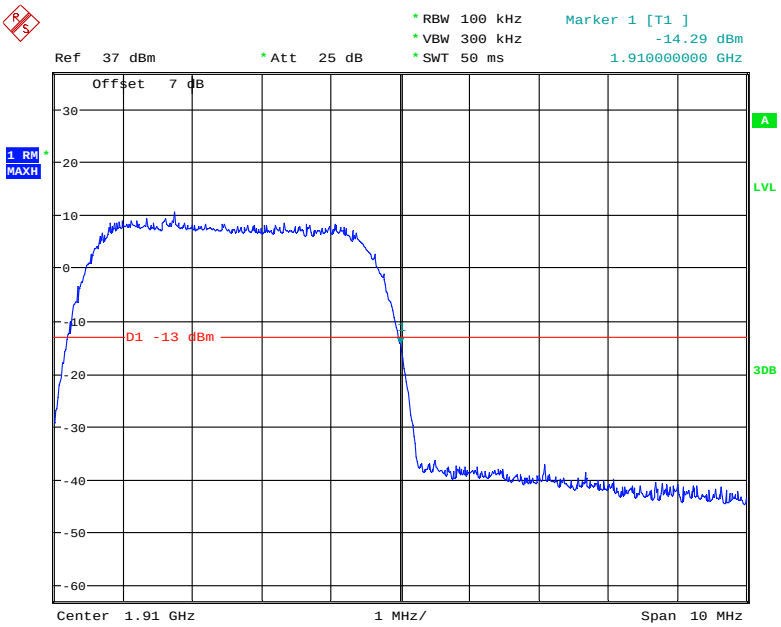
Date: 29.JAN.2021 20:01:42

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



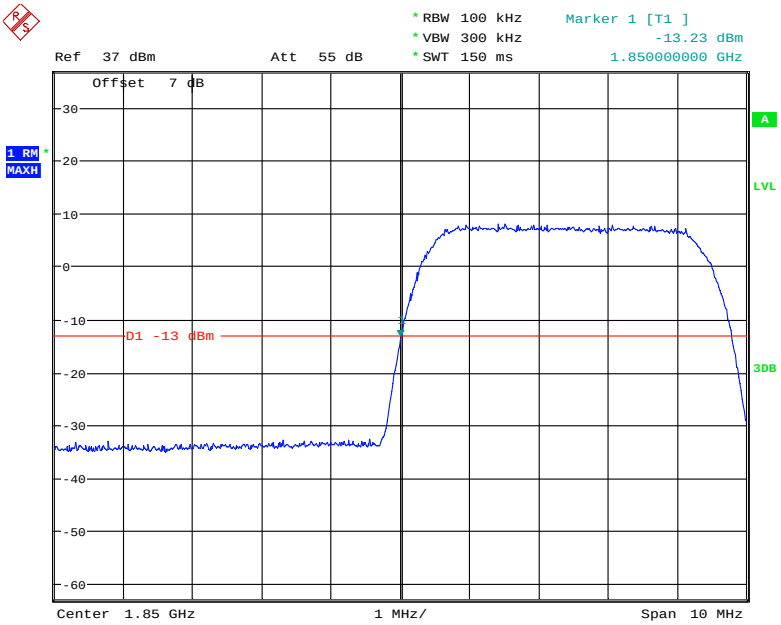
Date: 29.JAN.2021 20:27:14

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



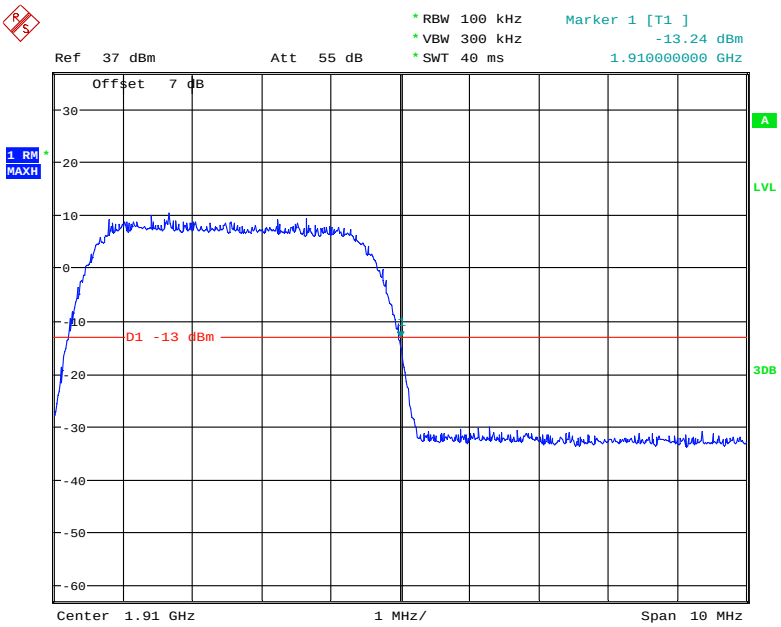
Date: 29.JAN.2021 20:25:32

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



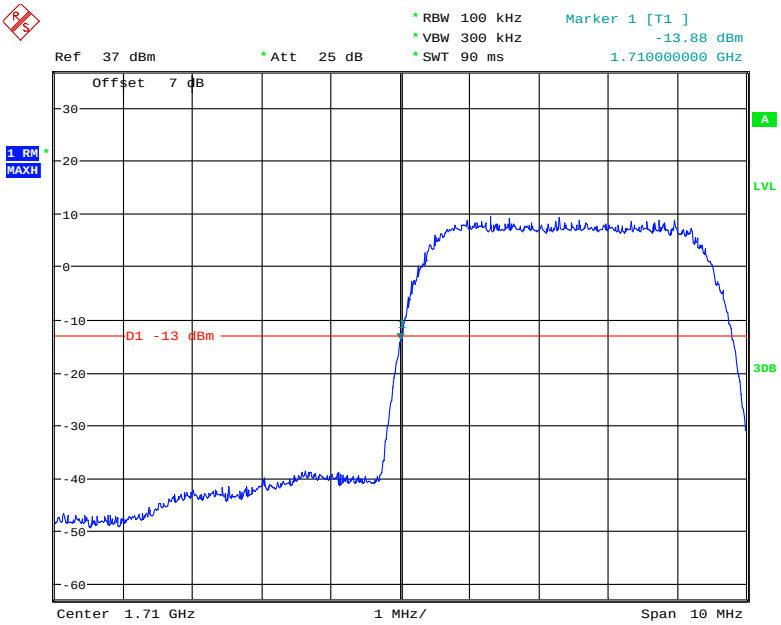
Date: 29.JAN.2021 20:10:27

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



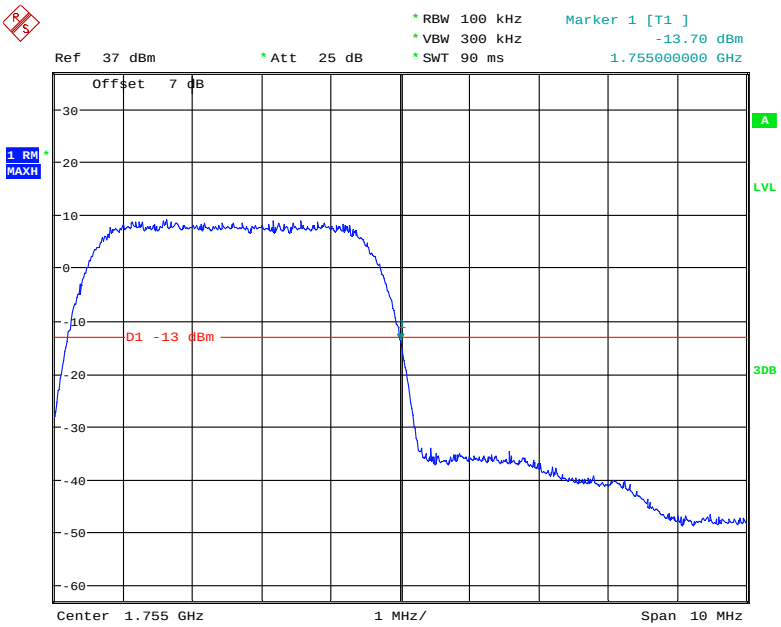
Date: 29.JAN.2021 20:11:16

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



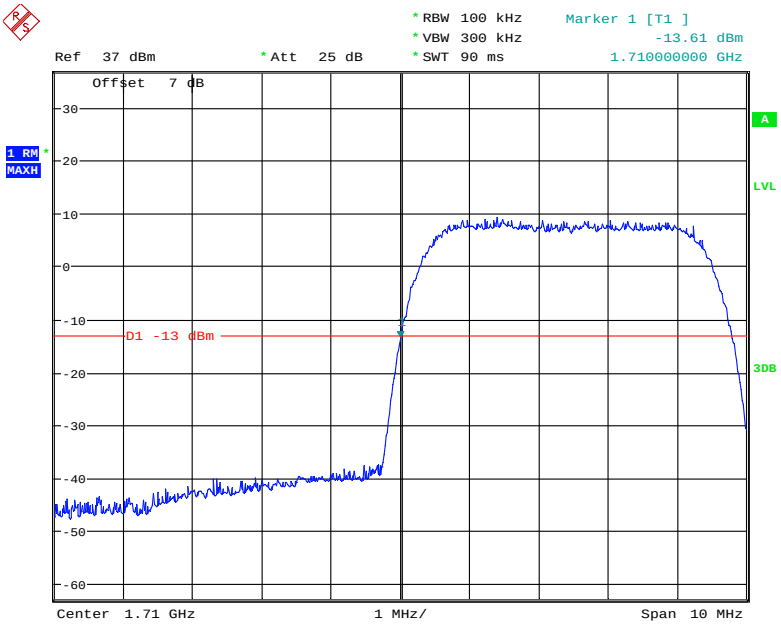
Date: 29.JAN.2021 20:49:35

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



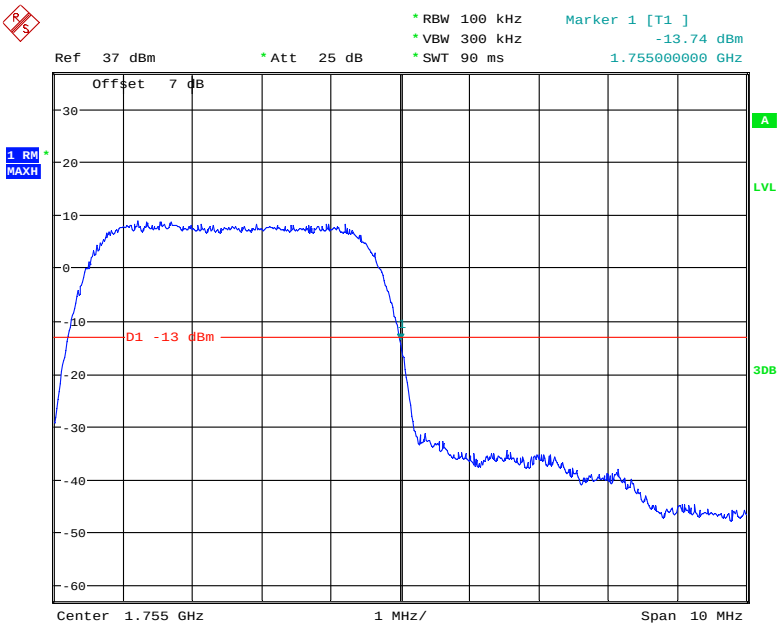
Date: 29.JAN.2021 20:48:54

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



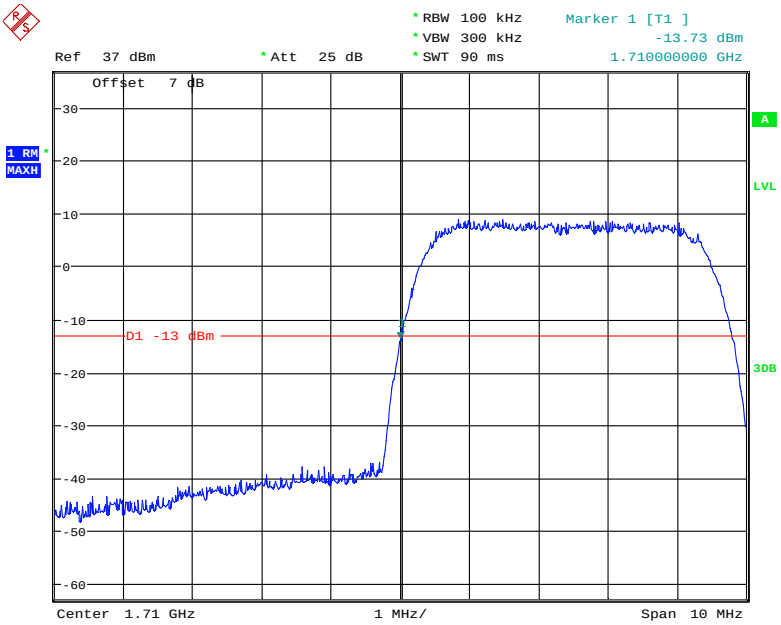
Date: 29.JAN.2021 20:49:59

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

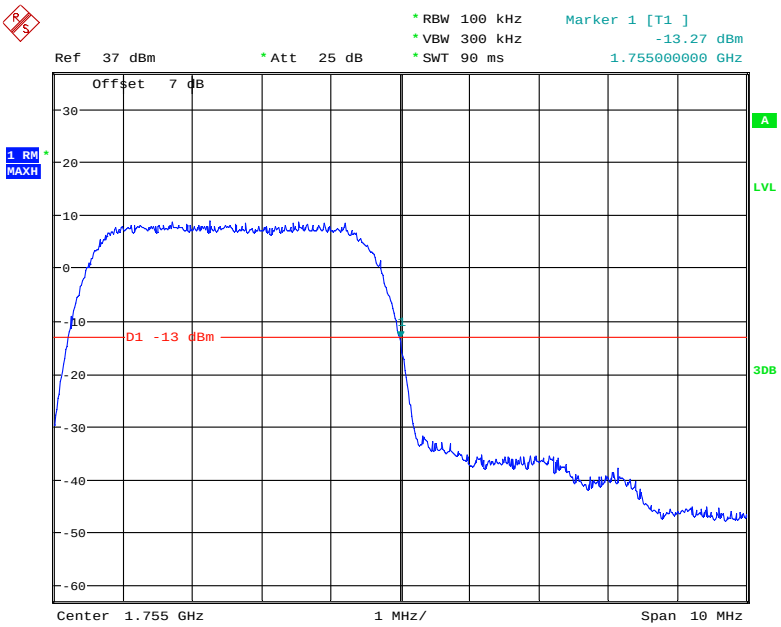


Date: 29.JAN.2021 20:50:32

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



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



The test plot of LTE band please refer to the Appendix C

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

Applicable Standard

FCC § 2.1055, §22.355, §24.235 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

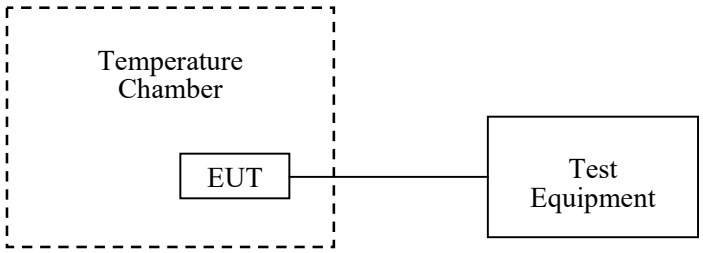
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Coco Liu from 2021-01-08 to 2021-01-30.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

Cellular Band (Part 22H)

GSM Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	-1	-0.0012	2.5
-20		6	0.0072	2.5
-10		-2	-0.0024	2.5
0		-1	-0.0012	2.5
10		4	0.0048	2.5
20		-3	-0.0036	2.5
30		5	0.0060	2.5
40		2	0.0024	2.5
50		1	0.0012	2.5
20	V min.= 3.5	4	0.0048	2.5
	V max.= 4.4	-2	-0.0024	2.5

EDGE Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	-3	-0.0036	2.5
-20		3	0.0036	2.5
-10		-2	-0.0024	2.5
0		6	0.0072	2.5
10		-4	-0.0048	2.5
20		3	0.0036	2.5
30		5	0.0060	2.5
40		-4	-0.0048	2.5
50		-2	-0.0024	2.5
20	V min.= 3.5	8	0.0096	2.5
	V max.= 4.4	2	0.0024	2.5

WCDMA Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	3	0.0036	2.5
-20		2	0.0024	2.5
-10		2	0.0024	2.5
0		-1	-0.0012	2.5
10		7	0.0084	2.5
20		2	0.0024	2.5
30		3	0.0036	2.5
40		2	0.0024	2.5
50		-1	-0.0012	2.5
20	V min.= 3.5	2	0.0024	2.5
	V max.= 4.4	4	0.0048	2.5

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	6	0.0032	pass
-20		7	0.0037	pass
-10		3	0.0016	pass
0		5	0.0027	pass
10		-1	-0.0005	pass
20		-2	-0.0011	pass
30		8	0.0043	pass
40		6	0.0032	pass
50		2	0.0011	pass
20	V min.= 3.5	5	0.0027	pass
	V max.= 4.4	4	0.0021	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	7	0.0037	pass
-20		-3	-0.0016	pass
-10		-2	-0.0011	pass
0		-5	-0.0027	pass
10		4	0.0021	pass
20		6	0.0032	pass
30		3	0.0016	pass
40		4	0.0021	pass
50		-4	-0.0021	pass
20	V min.= 3.5	2	0.0011	pass
	V max.= 4.4	3	0.0016	pass

PCS Band (Part 24E)

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	4	0.0021	pass
-20		5	0.0027	pass
-10		2	0.0011	pass
0		6	0.0032	pass
10		3	0.0016	pass
20		2	0.0011	pass
30		-4	-0.0021	pass
40		8	0.0043	pass
50		7	0.0037	pass
20	V min.= 3.5	2	0.0011	pass
	V max.= 4.4	6	0.0032	pass

AWS Band (Part 27)

Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	1710.2378	1754.8994	1710	1755
-20		1710.1692	1754.8945	1710	1755
-10		1710.0604	1754.7592	1710	1755
0		1710.2099	1754.7373	1710	1755
10		1710.1227	1754.7964	1710	1755
20		1710.2869	1754.9389	1710	1755
30		1710.2877	1754.7972	1710	1755
40		1710.1366	1754.8432	1710	1755
50		1710.0483	1754.7543	1710	1755
20	V min.= 3.5	1710.0507	1754.7827	1710	1755
	V max.= 4.4	1710.2169	1754.7896	1710	1755

LTE:
QPSK:
Band 2:

10.0 MHz Middle Channel, f_o =1880MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	-2	-0.0011	pass
-20		-5	-0.0027	pass
-10		4	0.0021	pass
0		3	0.0016	pass
10		6	0.0032	pass
20		4	0.0021	pass
30		3	0.0016	pass
40		5	0.0027	pass
50		-2	-0.0011	pass
20	V min.= 3.5	-7	-0.0037	pass
	V max.= 4.4	5	0.0027	pass

Band 4:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	1710.2414	1754.8963	1710	1755
-20		1710.1531	1754.7265	1710	1755
-10		1710.2864	1754.9207	1710	1755
0		1710.0282	1754.7997	1710	1755
10		1710.1837	1754.8225	1710	1755
20		1710.1678	1754.9045	1710	1755
30		1710.2769	1754.7278	1710	1755
40		1710.0402	1754.8435	1710	1755
50		1710.1631	1754.8038	1710	1755
20	V min.= 3.5	1710.1717	1754.8824	1710	1755
	V max.= 4.4	1710.251	1754.7546	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o=836.5MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	2	0.0024	2.5
-20		3	0.0036	2.5
-10		-1	-0.0012	2.5
0		4	0.0048	2.5
10		2	0.0024	2.5
20		5	0.0060	2.5
30		-5	-0.0060	2.5
40		-4	-0.0048	2.5
50		5	0.0060	2.5
20	V min.= 3.5	4	0.0048	2.5
	V max.= 4.4	5	0.0060	2.5

Band 7:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	2500.1961	2569.9298	2500	2570
-20		2500.0265	2569.9921	2500	2570
-10		2500.0976	2569.9969	2500	2570
0		2500.1805	2569.7233	2500	2570
10		2500.1268	2569.7741	2500	2570
20		2500.2494	2569.8001	2500	2570
30		2500.0865	2569.9010	2500	2570
40		2500.1925	2569.7952	2500	2570
50		2500.1307	2569.7983	2500	2570
20	V min.= 3.5	2500.0908	2569.7081	2500	2570
	V max.= 4.4	2500.2377	2569.8039	2500	2570

Band17

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	704.2352	715.9709	704	716
-20		704.2487	715.7456	704	716
-10		704.2006	715.9651	704	716
0		704.0916	715.9085	704	716
10		704.1941	715.9205	704	716
20		704.2069	715.7573	704	716
30		704.2807	715.7431	704	716
40		704.0937	715.7887	704	716
50		704.2425	715.9402	704	716
20	V min.= 3.5	704.2442	715.7612	704	716
	V max.= 4.4	704.0070	715.8290	704	716

16QAM:

Band 2:

10.0 MHz Middle Channel, f_o =1880MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	-4	-0.0021	pass
-20		-5	-0.0027	pass
-10		2	0.0011	pass
0		-2	-0.0011	pass
10		3	0.0016	pass
20		2	0.0011	pass
30		-3	-0.0016	pass
40		1	0.0005	pass
50		4	0.0021	pass
20	V min.= 3.5	7	0.0037	pass
	V max.= 4.4	5	0.0027	pass

Band 4:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	1710.0230	1754.5267	1710	1755
-20		1710.0070	1754.5796	1710	1755
-10		1710.2638	1754.5674	1710	1755
0		1710.1897	1754.7504	1710	1755
10		1710.2567	1754.7371	1710	1755
20		1710.2668	1754.5689	1710	1755
30		1710.1408	1754.6749	1710	1755
40		1710.1741	1754.5437	1710	1755
50		1710.1142	1754.5603	1710	1755
20	V min.= 3.5	1710.0875	1754.6520	1710	1755
	V max.= 4.4	1710.0818	1754.6278	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o =836.5MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	2	0.0024	2.5
-20		5	0.0060	2.5
-10		-2	-0.0024	2.5
0		-5	-0.0060	2.5
10		4	0.0048	2.5
20		-3	-0.0036	2.5
30		2	0.0024	2.5
40		-4	-0.0048	2.5
50		2	0.0024	2.5
20	V min.= 3.5	4	0.0048	2.5
	V max.= 4.4	5	0.0060	2.5

Band 7:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	2500.1156	2569.9316	2500	2570
-20		2500.1746	2569.8943	2500	2570
-10		2500.2024	2569.7855	2500	2570
0		2500.0068	2569.8800	2500	2570
10		2500.1875	2569.9006	2500	2570
20		2500.2605	2569.8992	2500	2570
30		2500.0271	2569.8281	2500	2570
40		2500.0571	2569.8454	2500	2570
50		2500.1265	2569.8964	2500	2570
20	V min.= 3.5	2500.196	2569.8938	2500	2570
	V max.= 4.4	2500.1617	2569.8710	2500	2570

Band 17

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	704.1191	715.7678	704	716
-20		704.0980	715.7918	704	716
-10		704.0187	715.9992	704	716
0		704.0573	715.7450	704	716
10		704.0496	715.7882	704	716
20		704.1875	715.9240	704	716
30		704.2276	715.9321	704	716
40		704.2301	715.7759	704	716
50		704.0481	715.7514	704	716
20	V min.= 3.5	704.1783	715.9576	704	716
	V max.= 4.4	704.2158	715.8751	704	716

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