



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

For

BLU Products, Inc.

10814 NW 33rd St # 100 Doral, FL 33172, Doral, Florida, United States

FCC ID: YHLBLUJ9L

Report Type: Original Report	Product Type: Mobile Phone
Report Number: RSZ210401012-00D	
Report Date: 2021-04-27	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Mobile Phone
Tested Model	J9L
Frequency Range	EGSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 17: 704-716MHz(TX); 734-746MHz(RX)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	EGSM850/ WCDMA Band 5/ LTE Band 5: -1.9dBi PCS1900/WCDMA Band 2/ LTE Band 2: 1.8dBi WCDMA Band 4/ LTE Band 4 : 0.9dBi LTE Band 7: 0.8dBi LTE Band 12: -2.4dBi LTE Band 17: -2.4dBi (provided by the applicant)
Voltage Range	DC3.7V from battery or DC 5.0V from adapter
Date of Test	2021-04-08 to 2021-04-27
Sample serial number	RSZ210401012-RF-S1(Assigned by BACL, Shenzhen)
Received date	2021-04-01
Sample/EUT Status	Good condition
Adapter information	Model: US-AR-1000 Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5.0V, 1000mA

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 °C
Humidity		±6%
Supply voltages		±0.4%

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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.

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 B12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711
LTE B17	5	706.5	710	713.5
	10	709	710	711

Equipment Modifications

No modification was made to the EUT.

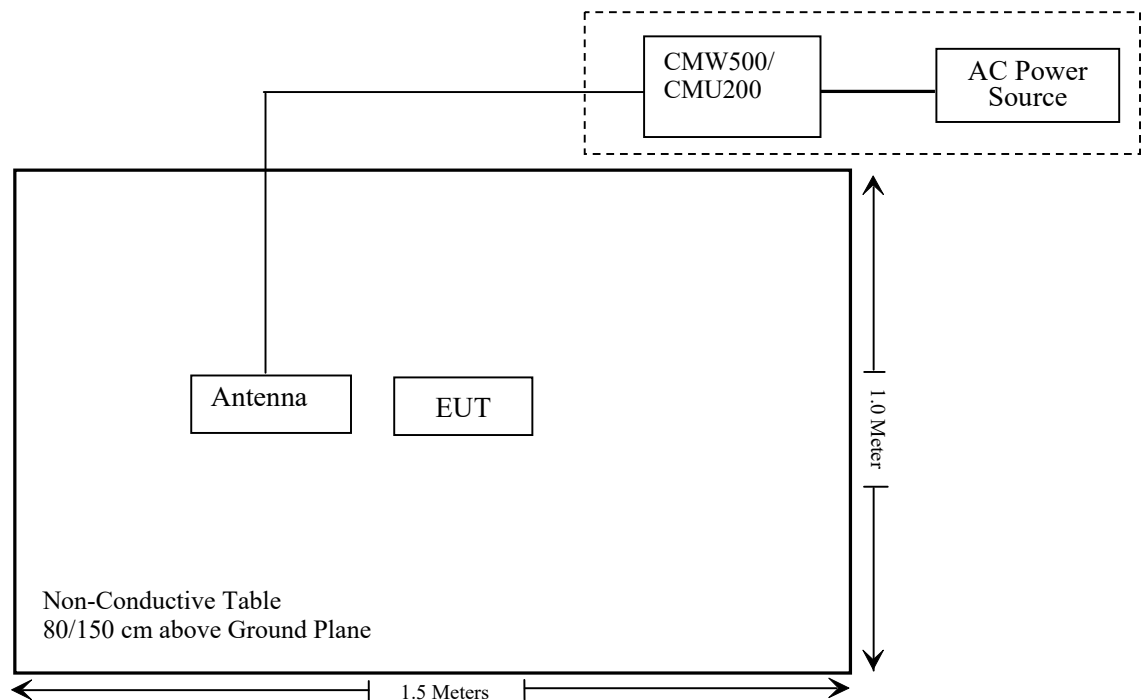
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	115500

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

Note: * Please refer to SAR report released by BACL, report number: RSZ210401012-SA.

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	A040904-2	2020/12/22	2023/12/21
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
Unknown	Cable	Chamber Cable 1	F-03-EM236	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 4	EC-007	2020/11/29	2021/11/28
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2019/11/29	2020/11/28
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	3115	9107-3694	2021/01/15	2024/01/14
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
SNSD	Band Reject filter	BSF2402-2480MN-0898-001	2.4G filter	2020/04/20	2021/04/20
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-01 1304	2020/12/06	2023/12/05
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-02 1304	2020/12/06	2023/12/05

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	SPECTRUM ANALYZER	FSU26	200120	2021/04/03	2022/04/02
Yijia	Temperature & Humidity Meter	10316377	T-03-EM397	2020/09/30	2021/09/29
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
ESPEC	Temperature & Humidity Chamber	EL-10KA	9107726	2021/01/05	2022/01/05

* 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: RSZ210401012-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 699-746MHz.

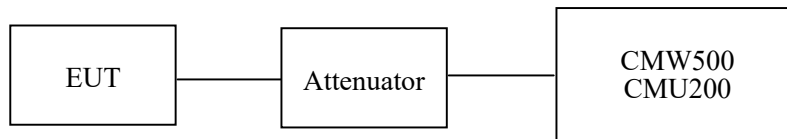
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

According to §27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2500-2570MHz & 2496-2690MHz.

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

The testing was performed by Andy Yu from 2021-04-08 to 2021-04-10.

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	33.5	28.95	38.45
	190	836.6	33.6	29.05	38.45
	251	848.8	33.7	29.15	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	33.46	31.36	29.35	27.05	28.91	26.81	24.80	22.50	38.45
	190	836.6	33.59	31.48	29.47	27.16	29.04	26.93	24.92	22.61	38.45
	251	848.8	33.62	31.49	29.54	27.22	29.07	26.94	24.99	22.67	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	26.76	26.45	24.72	21.77	22.21	21.90	20.17	17.22	38.45
	190	836.6	27.09	26.72	25.21	22.08	22.54	22.17	20.66	17.53	38.45
	251	848.8	26.95	26.58	24.96	21.89	22.40	22.03	20.41	17.34	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		22.85	22.87	22.95	18.30	18.32	18.40
	HSDPA	1	22.81	22.55	22.45	18.26	18.00	17.90
		2	22.78	22.54	22.43	18.23	17.99	17.88
		3	22.76	22.51	22.40	18.21	17.96	17.85
		4	22.73	22.50	22.39	18.18	17.95	17.84
	HSUPA	1	22.83	22.67	22.63	18.28	18.12	18.08
		2	22.80	22.64	22.61	18.25	18.09	18.06
		3	22.79	22.62	22.59	18.24	18.07	18.04
		4	22.77	22.60	22.56	18.22	18.05	18.01
		5	22.74	22.59	22.55	18.19	18.04	18.00
	HSPA+	1	22.73	22.56	22.51	18.18	18.01	17.96

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

For GSM850 / WCDMA Band5: Antenna Gain = -1.9dBi = -4.05dBd (0dBd=2.15dBi)

Cable Loss=0.5dB* (provided by the applicant)

Limit: ERP≤38.45dBm

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	30.42	31.42	33
	661	1880.0	30.43	31.43	33
	810	1909.8	30.28	31.28	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	30.45	28.13	26.47	24.33	31.45	29.13	27.47	25.33	33
	661	1880.0	30.48	28.15	26.49	24.35	31.48	29.15	27.49	25.35	33
	810	1909.8	30.31	27.98	26.31	24.14	31.31	28.98	27.31	25.14	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.33	26.07	24.30	21.88	27.33	27.07	25.3	22.88	33
	661	1880.0	27.06	26.79	25.03	23.07	28.06	27.79	26.03	24.07	33
	810	1909.8	26.50	26.22	24.48	22.26	27.5	27.22	25.48	23.26	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		21.54	21.42	21.45	22.54	22.42	22.45
	HSDPA	1	21.08	21.14	21.63	22.08	22.14	22.63
		2	21.05	21.13	21.61	22.05	22.13	22.61
		3	21.03	21.10	21.58	22.03	22.10	22.58
		4	21.00	21.09	21.57	22.00	22.09	22.57
	HSUPA	1	21.04	21.12	21.53	22.04	22.12	22.53
		2	21.01	21.09	21.51	22.01	22.09	22.51
		3	21.00	21.07	21.49	22.00	22.07	22.49
		4	20.98	21.05	21.46	21.98	22.05	22.46
		5	20.95	21.04	21.45	21.95	22.04	22.45
	HSPA+	1	20.94	21.01	21.43	21.94	22.01	22.43

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

For PCS1900 / WCDMA Band2: Antenna Gain = 1.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤33dBm

AWS Band (Part 27)

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 4)	RMC12.2k		22.06	22.05	22.02	22.16	22.15	22.12
	HSDPA	1	21.78	21.55	21.66	21.88	21.65	21.76
		2	21.75	21.54	21.64	21.85	21.64	21.74
		3	21.73	21.51	21.61	21.83	21.61	21.71
		4	21.70	21.50	21.60	21.80	21.60	21.70
	HSUPA	1	21.87	21.61	21.75	21.97	21.71	21.85
		2	21.84	21.58	21.73	21.94	21.68	21.83
		3	21.83	21.56	21.71	21.93	21.66	21.81
		4	21.81	21.54	21.68	21.91	21.64	21.78
		5	21.78	21.53	21.67	21.88	21.63	21.77
	HSPA+	1	21.77	21.50	21.65	21.87	21.60	21.75

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

For Band4: Antenna Gain =0.9dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤30dBm

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.25	13
	Middle	3.36	13
	High	3.41	13
EGPRS	Low	3.14	13
	Middle	3.22	13
	High	3.37	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.42	13
	Middle	3.27	13
	High	3.32	13
HSDPA (16QAM)	Low	3.35	13
	Middle	3.29	13
	High	3.17	13
HSUPA (BPSK)	Low	3.24	13
	Middle	3.22	13
	High	3.15	13
HSPA+ (16QAM)	Low	3.38	13
	Middle	3.51	13
	High	3.42	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.39	13
	Middle	3.36	13
	High	3.58	13
EGPRS	Low	3.26	13
	Middle	3.99	13
	High	3.39	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.98	13
	Middle	3.01	13
	High	3.30	13
HSDPA (16QAM)	Low	3.94	13
	Middle	3.23	13
	High	3.10	13
HSUPA (BPSK)	Low	3.95	13
	Middle	3.77	13
	High	3.18	13
HSPA+ (16QAM)	Low	3.37	13
	Middle	4.06	13
	High	3.12	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	4.31	13
	Middle	3.81	13
	High	3.02	13
HSDPA (16QAM)	Low	3.74	13
	Middle	3.44	13
	High	3.54	13
HSUPA (BPSK)	Low	3.94	13
	Middle	3.25	13
	High	4.04	13
HSPA+ (16QAM)	Low	3.35	13
	Middle	3.59	13
	High	4.33	13

LTE Band 2:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	20.59	20.87	21.04	21.59	21.87	22.04
		RB1#2	20.54	20.90	21.04	21.54	21.90	22.04
		RB1#5	20.53	20.97	21.07	21.53	21.97	22.07
		RB3#0	20.71	20.94	21.17	21.71	21.94	22.17
		RB3#1	20.75	21.05	21.05	21.75	22.05	22.05
		RB3#2	20.18	20.35	20.52	21.18	21.35	21.52
		RB6#0	20.89	20.22	21.12	21.89	21.22	22.12
	16QAM	RB1#0	20.92	20.30	21.09	21.92	21.30	22.09
		RB1#2	20.91	20.37	21.11	21.91	21.37	22.11
		RB1#5	20.11	20.67	20.63	21.11	21.67	21.63
		RB3#0	20.21	20.71	20.64	21.21	21.71	21.64
		RB3#1	19.33	19.57	19.80	20.33	20.57	20.80
		RB3#2	19.22	19.15	19.40	20.22	20.15	20.40
		RB6#0	19.26	19.44	19.30	20.26	20.44	20.30
3.0	QPSK	RB1#0	20.60	20.89	21.13	21.60	21.89	22.13
		RB1#7	20.62	20.85	21.12	21.62	21.85	22.12
		RB1#14	20.63	20.93	21.10	21.63	21.93	22.10
		RB8#0	20.24	20.50	20.61	21.24	21.50	21.61
		RB8#4	20.14	20.53	20.64	21.14	21.53	21.64
		RB8#7	20.22	20.41	20.66	21.22	21.41	21.66
		RB15#0	20.60	20.93	20.48	21.60	21.93	21.48
	16QAM	RB1#0	20.63	21.04	20.35	21.63	22.04	21.35
		RB1#7	20.66	21.00	20.38	21.66	22.00	21.38
		RB1#14	19.25	19.63	19.85	20.25	20.63	20.85
		RB8#0	19.13	19.74	19.86	20.13	20.74	20.86
		RB8#4	19.42	19.49	19.65	20.42	20.49	20.65
		RB8#7	19.44	19.18	19.41	20.44	20.18	20.41
		RB15#0	19.23	19.38	19.06	20.23	20.38	20.06

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	20.66	21.00	21.13	21.66	22.00	22.13
		RB1#12	20.68	21.04	21.05	21.68	22.04	22.05
		RB1#24	20.71	20.99	21.09	21.71	21.99	22.09
		RB12#0	20.19	20.48	20.64	21.19	21.48	21.64
		RB12#6	20.21	20.51	20.64	21.21	21.51	21.64
		RB12#11	20.28	20.47	20.61	21.28	21.47	21.61
		RB25#0	19.48	20.67	20.30	20.48	21.67	21.30
	16QAM	RB1#0	19.48	20.67	20.32	20.48	21.67	21.32
		RB1#12	19.60	20.59	20.38	20.60	21.59	21.38
		RB1#24	19.44	19.43	19.72	20.44	20.43	20.72
		RB12#0	19.35	19.47	19.73	20.35	20.47	20.73
		RB12#6	19.39	19.52	19.60	20.39	20.52	20.60
		RB12#11	19.21	19.11	19.13	20.21	20.11	20.13
		RB25#0	19.09	19.50	19.37	20.09	20.50	20.37
10.0	QPSK	RB1#0	20.67	20.82	21.02	21.67	21.82	22.02
		RB1#24	20.67	20.88	20.98	21.67	21.88	21.98
		RB1#49	20.81	20.90	20.94	21.81	21.90	21.94
		RB25#0	20.16	20.29	20.43	21.16	21.29	21.43
		RB25#12	19.85	20.33	20.52	20.85	21.33	21.52
		RB25#24	20.07	20.38	20.48	21.07	21.38	21.48
		RB50#0	20.25	20.47	20.01	21.25	21.47	21.01
	16QAM	RB1#0	20.34	20.43	19.99	21.34	21.43	20.99
		RB1#24	20.44	20.47	19.99	21.44	21.47	20.99
		RB1#49	19.10	19.52	19.64	20.10	20.52	20.64
		RB25#0	19.25	19.46	19.69	20.25	20.46	20.69
		RB25#12	19.20	19.48	19.60	20.20	20.48	20.60
		RB25#24	19.10	19.12	19.31	20.10	20.12	20.31
		RB50#0	19.30	19.47	19.34	20.30	20.47	20.34

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	20.37	20.83	20.93	21.37	21.83	21.93
		RB1#37	20.53	20.82	20.92	21.53	21.82	21.92
		RB1#74	20.76	20.93	20.94	21.76	21.93	21.94
		RB36#0	20.14	20.08	20.49	21.14	21.08	21.49
		RB36#18	20.30	20.27	20.47	21.30	21.27	21.47
		RB36#37	20.19	20.26	20.42	21.19	21.26	21.42
		RB75#0	20.42	20.59	20.88	21.42	21.59	21.88
	16QAM	RB1#0	20.40	20.65	20.81	21.40	21.65	21.81
		RB1#37	20.55	20.71	20.92	21.55	21.71	21.92
		RB1#74	19.27	19.45	19.53	20.27	20.45	20.53
		RB36#0	19.46	19.49	19.61	20.46	20.49	20.61
		RB36#18	19.29	19.47	19.57	20.29	20.47	20.57
		RB36#37	19.30	19.42	19.18	20.30	20.42	20.18
		RB75#0	19.24	19.20	19.39	20.24	20.20	20.39
20.0	QPSK	RB1#0	20.75	20.88	20.64	21.75	21.88	21.64
		RB1#49	20.86	20.89	20.84	21.86	21.89	21.84
		RB1#99	20.97	21.13	20.90	21.97	22.13	21.90
		RB50#0	20.26	20.51	20.31	21.26	21.51	21.31
		RB50#24	20.37	20.52	20.43	21.37	21.52	21.43
		RB50#49	20.29	20.41	20.48	21.29	21.41	21.48
		RB100#0	20.40	20.50	21.11	21.40	21.50	22.11
	16QAM	RB1#0	20.55	20.44	20.95	21.55	21.44	21.95
		RB1#49	20.61	20.58	21.09	21.61	21.58	22.09
		RB1#99	19.39	19.56	19.52	20.39	20.56	20.52
		RB50#0	19.45	19.56	19.53	20.45	20.56	20.53
		RB50#24	19.46	19.07	19.60	20.46	20.07	20.60
		RB50#49	19.36	19.54	19.42	20.36	20.54	20.42
		RB100#0	19.33	19.41	19.29	20.33	20.41	20.29

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

For Band2: Antenna Gain = 1.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤33dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.39	3.46	3.30	13	Pass
QPSK (100RB Size)	5.19	5.19	4.97	13	Pass
16QAM (1RB Size)	5.19	3.81	3.75	13	Pass
16QAM (100RB Size)	6.03	5.96	5.77	13	Pass

LTE Band 4**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	21.86	21.47	21.65	21.96	21.57	21.75
		RB1#2	21.83	21.53	21.67	21.93	21.63	21.77
		RB1#5	21.79	21.58	21.64	21.89	21.68	21.74
		RB3#0	21.96	21.61	21.53	22.06	21.71	21.63
		RB3#1	21.81	21.60	21.52	21.91	21.70	21.62
		RB3#2	21.38	21.15	20.95	21.48	21.25	21.05
		RB6#0	21.96	21.83	21.12	22.06	21.93	21.22
	16QAM	RB1#0	21.98	21.81	21.21	22.08	21.91	21.31
		RB1#2	22.03	21.89	21.14	22.13	21.99	21.24
		RB1#5	21.49	21.12	21.02	21.59	21.22	21.12
		RB3#0	21.48	21.12	21.04	21.58	21.22	21.14
		RB3#1	20.60	20.20	20.36	20.70	20.30	20.46
		RB3#2	20.12	20.28	20.32	20.22	20.38	20.42
		RB6#0	20.43	20.25	20.44	20.53	20.35	20.54
3.0	QPSK	RB1#0	21.81	21.62	21.70	21.91	21.72	21.80
		RB1#7	21.82	21.56	21.69	21.92	21.66	21.79
		RB1#14	21.70	21.62	21.68	21.80	21.72	21.78
		RB8#0	21.45	21.10	21.02	21.55	21.20	21.12
		RB8#4	21.30	21.16	21.01	21.40	21.26	21.11
		RB8#7	21.43	21.13	20.98	21.53	21.23	21.08
		RB15#0	21.87	21.87	21.16	21.97	21.97	21.26
	16QAM	RB1#0	21.79	21.88	21.11	21.89	21.98	21.21
		RB1#7	21.71	21.87	21.15	21.81	21.97	21.25
		RB1#14	20.32	20.24	20.29	20.42	20.34	20.39
		RB8#0	20.29	20.37	20.30	20.39	20.47	20.40
		RB8#4	20.52	20.24	20.18	20.62	20.34	20.28
		RB8#7	20.17	20.39	20.44	20.27	20.49	20.54
		RB15#0	20.35	20.26	20.48	20.45	20.36	20.58

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	21.91	21.72	21.36	22.01	21.82	21.46
		RB1#12	21.74	21.77	21.37	21.84	21.87	21.47
		RB1#24	21.70	21.74	21.34	21.80	21.84	21.44
		RB12#0	21.44	21.11	21.04	21.54	21.21	21.14
		RB12#6	21.37	21.15	21.10	21.47	21.25	21.20
		RB12#11	21.42	21.16	21.05	21.52	21.26	21.15
		RB25#0	20.76	21.35	20.68	20.86	21.45	20.78
	16QAM	RB1#0	20.65	21.35	20.68	20.75	21.45	20.78
		RB1#12	20.63	21.40	20.74	20.73	21.50	20.84
		RB1#24	20.55	20.16	20.16	20.65	20.26	20.26
		RB12#0	20.46	20.15	20.21	20.56	20.25	20.31
		RB12#6	20.52	20.34	20.01	20.62	20.44	20.11
		RB12#11	20.47	20.32	20.42	20.57	20.42	20.52
		RB25#0	20.19	20.27	20.48	20.29	20.37	20.58
10.0	QPSK	RB1#0	21.87	21.64	21.80	21.97	21.74	21.90
		RB1#24	21.68	21.64	21.70	21.78	21.74	21.80
		RB1#49	21.71	21.66	21.65	21.81	21.76	21.75
		RB25#0	21.23	21.11	21.13	21.33	21.21	21.23
		RB25#12	21.20	21.15	21.12	21.30	21.25	21.22
		RB25#24	21.33	21.13	21.04	21.43	21.23	21.14
		RB50#0	21.65	21.35	20.69	21.75	21.45	20.79
	16QAM	RB1#0	21.51	21.28	20.65	21.61	21.38	20.75
		RB1#24	21.46	21.31	20.65	21.56	21.41	20.75
		RB1#49	20.41	20.36	20.31	20.51	20.46	20.41
		RB25#0	20.28	20.41	20.28	20.38	20.51	20.38
		RB25#12	20.44	20.37	20.23	20.54	20.47	20.33
		RB25#24	20.28	20.11	20.12	20.38	20.21	20.22
		RB50#0	20.42	20.15	20.11	20.52	20.25	20.21

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	21.80	21.64	21.81	21.90	21.74	21.91
		RB1#37	21.69	21.62	21.74	21.79	21.72	21.84
		RB1#74	21.72	21.67	21.73	21.82	21.77	21.83
		RB36#0	21.29	21.12	21.15	21.39	21.22	21.25
		RB36#18	21.29	21.17	21.16	21.39	21.27	21.26
		RB36#37	21.30	21.29	21.05	21.40	21.39	21.15
		RB75#0	21.68	21.36	21.50	21.78	21.46	21.60
	16QAM	RB1#0	21.46	21.29	21.46	21.56	21.39	21.56
		RB1#37	21.51	21.34	21.43	21.61	21.44	21.53
		RB1#74	20.47	20.34	20.27	20.57	20.44	20.37
		RB36#0	20.51	20.37	20.26	20.61	20.47	20.36
		RB36#18	20.36	20.38	20.24	20.46	20.48	20.34
		RB36#37	20.14	20.11	20.38	20.24	20.21	20.48
		RB75#0	20.15	20.01	20.20	20.25	20.11	20.30
20.0	QPSK	RB1#0	22.07	21.34	21.68	22.17	21.44	21.78
		RB1#49	21.92	21.37	21.41	22.02	21.47	21.51
		RB1#99	21.85	21.36	21.33	21.95	21.46	21.43
		RB50#0	21.23	20.80	20.91	21.33	20.90	21.01
		RB50#24	21.21	20.73	20.70	21.31	20.83	20.80
		RB50#49	21.38	20.94	20.94	21.48	21.04	21.04
		RB100#0	21.42	21.45	21.48	21.52	21.55	21.58
	16QAM	RB1#0	20.97	21.45	21.45	21.07	21.55	21.55
		RB1#49	20.96	21.41	21.36	21.06	21.51	21.46
		RB1#99	20.25	20.21	19.98	20.35	20.31	20.08
		RB50#0	20.20	20.20	20.05	20.30	20.30	20.15
		RB50#24	20.04	20.19	20.08	20.14	20.29	20.18
		RB50#49	20.07	20.15	20.34	20.17	20.25	20.44
		RB100#0	20.18	20.14	20.04	20.28	20.24	20.14

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

For Band4: Antenna Gain = 0.9dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤30dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.55	4.46	3.97	13	Pass
QPSK (100RB Size)	5.22	5.32	5.03	13	Pass
16QAM (1RB Size)	5.13	5.10	4.74	13	Pass
16QAM (100RB Size)	6.03	6.19	5.83	13	Pass

LTE Band 5:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	24.65	24.65	24.61	20.10	20.10	20.06
		RB1#2	24.65	24.68	24.86	20.10	20.13	20.31
		RB1#5	24.59	24.69	24.78	20.04	20.14	20.23
		RB3#0	24.73	24.83	24.83	20.18	20.28	20.28
		RB3#1	24.72	24.82	24.89	20.17	20.27	20.34
		RB3#2	24.20	24.29	24.24	19.65	19.74	19.69
		RB6#0	24.57	24.93	23.96	20.02	20.38	19.41
	16QAM	RB1#0	24.58	24.90	24.07	20.03	20.35	19.52
		RB1#2	24.53	24.92	24.11	19.98	20.37	19.56
		RB1#5	24.27	24.17	23.94	19.72	19.62	19.39
		RB3#0	24.29	24.17	23.98	19.74	19.62	19.43
		RB3#1	23.34	23.78	23.31	18.79	19.23	18.76
		RB3#2	23.37	23.39	23.39	18.82	18.84	18.84
		RB6#0	23.35	23.35	23.14	18.80	18.80	18.59
3.0	QPSK	RB1#0	24.65	24.69	24.77	20.10	20.14	20.22
		RB1#7	24.64	24.69	24.78	20.09	20.14	20.23
		RB1#14	24.61	24.67	24.82	20.06	20.12	20.27
		RB8#0	24.17	24.28	24.19	19.62	19.73	19.64
		RB8#4	24.73	24.26	24.27	20.18	19.71	19.72
		RB8#7	24.21	24.33	24.29	19.66	19.78	19.74
		RB15#0	24.63	24.82	23.91	20.08	20.27	19.36
	16QAM	RB1#0	24.57	24.89	23.80	20.02	20.34	19.25
		RB1#7	25.00	24.85	23.94	20.45	20.30	19.39
		RB1#14	23.18	23.72	23.99	18.63	19.17	19.44
		RB8#0	23.67	23.74	23.44	19.12	19.19	18.89
		RB8#4	23.21	23.69	23.78	18.66	19.14	19.23
		RB8#7	23.49	23.16	23.23	18.94	18.61	18.68
		RB15#0	23.06	23.23	23.11	18.51	18.68	18.56

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	24.85	24.84	24.83	20.30	20.29	20.28
		RB1#12	24.81	24.87	24.73	20.26	20.32	20.18
		RB1#24	24.73	24.82	24.89	20.18	20.27	20.34
		RB12#0	24.45	24.35	24.28	19.90	19.80	19.73
		RB12#6	24.72	24.36	24.40	20.17	19.81	19.85
		RB12#11	24.67	24.27	24.31	20.12	19.72	19.76
		RB25#0	23.51	24.42	23.93	18.96	19.87	19.38
	16QAM	RB1#0	23.82	24.42	23.97	19.27	19.87	19.42
		RB1#12	23.31	24.33	24.12	18.76	19.78	19.57
		RB1#24	23.26	23.63	23.34	18.71	19.08	18.79
		RB12#0	23.70	23.66	23.84	19.15	19.11	19.29
		RB12#6	23.72	23.72	23.74	19.17	19.17	19.19
		RB12#11	23.49	23.36	23.44	18.94	18.81	18.89
		RB25#0	23.34	23.16	23.30	18.79	18.61	18.75
10.0	QPSK	RB1#0	24.73	24.97	24.87	20.18	20.42	20.32
		RB1#24	24.66	24.99	24.91	20.11	20.44	20.36
		RB1#49	24.87	24.98	25.02	20.32	20.43	20.47
		RB25#0	24.71	24.33	24.41	20.16	19.78	19.86
		RB25#12	24.31	24.28	24.32	19.76	19.73	19.77
		RB25#24	24.38	24.38	24.50	19.83	19.83	19.95
		RB50#0	24.44	24.58	23.83	19.89	20.03	19.28
	16QAM	RB1#0	24.39	24.49	24.00	19.84	19.94	19.45
		RB1#24	24.52	24.46	24.11	19.97	19.91	19.56
		RB1#49	23.70	23.81	23.56	19.15	19.26	19.01
		RB25#0	23.35	23.48	23.93	18.80	18.93	19.38
		RB25#12	23.33	23.87	23.40	18.78	19.32	18.85
		RB25#24	23.25	23.47	23.50	18.70	18.92	18.95
		RB50#0	23.16	23.13	23.44	18.61	18.58	18.89

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

For Band5: Antenna Gain = -1.9dBi = -4.05dBd (0dBd=2.15dBi)

For 700-960MHz, Cable Loss= 0.5dB*(provided by the 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)	4.94	4.94	4.42	13	Pass
QPSK (50RB Size)	5.54	5.35	5.45	13	Pass
16QAM (1RB Size)	5.99	5.74	5.10	13	Pass
16QAM (50RB Size)	6.35	6.12	6.22	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	20.92	20.99	20.3	20.72	20.79	20.10
		RB1#12	20.86	20.43	20.75	20.66	20.23	20.55
		RB1#24	20.4	20.03	20.18	20.20	19.83	19.98
		RB12#0	20.78	20.85	20.48	20.58	20.65	20.28
		RB12#6	20.98	20.96	20.69	20.78	20.76	20.49
		RB12#11	20.15	20.63	20.41	19.95	20.43	20.21
		RB25#0	21.04	20.8	20.37	20.84	20.60	20.17
	16QAM	RB1#0	20.39	20.54	20.05	20.19	20.34	19.85
		RB1#12	20.54	20.73	20.3	20.34	20.53	20.10
		RB1#24	20.31	21.08	20.94	20.11	20.88	20.74
		RB12#0	20.4	20.49	20.33	20.20	20.29	20.13
		RB12#6	20.09	20.3	20.37	19.89	20.10	20.17
		RB12#11	20.87	20.45	20.78	20.67	20.25	20.58
		RB25#0	20.65	20.74	20.76	20.45	20.54	20.56
10.0	QPSK	RB1#0	20.96	20.82	20.84	20.76	20.62	20.64
		RB1#24	20.17	20.5	21	19.97	20.30	20.80
		RB1#49	20.43	20.67	20.27	20.23	20.47	20.07
		RB25#0	20.36	20.92	20.79	20.16	20.72	20.59
		RB25#12	20.22	20.52	20.03	20.02	20.32	19.83
		RB25#24	20.93	21.07	20.97	20.73	20.87	20.77
		RB50#0	20.72	20.44	20.87	20.52	20.24	20.67
	16QAM	RB1#0	21.07	20.48	20.69	20.87	20.28	20.49
		RB1#24	20.24	20.85	20.55	20.04	20.65	20.35
		RB1#49	20.69	20.09	20.65	20.49	19.89	20.45
		RB25#0	20.8	20.61	20.82	20.60	20.41	20.62
		RB25#12	20.27	21.06	20.32	20.07	20.86	20.12
		RB25#24	21.09	20.87	20.61	20.89	20.67	20.41
		RB50#0	20.95	20.56	20.02	20.75	20.36	19.82

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	20.72	20.44	20.14	20.52	20.24	19.94
		RB1#37	21.06	20.75	20.61	20.86	20.55	20.41
		RB1#74	20.86	20.42	20.04	20.66	20.22	19.84
		RB36#0	20.40	20.16	20.23	20.20	19.96	20.03
		RB36#18	20.73	20.51	21.03	20.53	20.31	20.83
		RB36#37	20.12	20.29	20.68	19.92	20.09	20.48
		RB75#0	20.76	20.99	20.20	20.56	20.79	20.00
	16QAM	RB1#0	20.99	20.56	20.62	20.79	20.36	20.42
		RB1#37	20.18	20.96	20.54	19.98	20.76	20.34
		RB1#74	20.75	20.42	20.38	20.55	20.22	20.18
		RB36#0	20.22	20.44	20.02	20.02	20.24	19.82
		RB36#18	20.28	20.31	20.68	20.08	20.11	20.48
		RB36#37	20.31	20.67	20.28	20.11	20.47	20.08
		RB75#0	20.56	20.89	20.25	20.36	20.69	20.05
20.0	QPSK	RB1#0	20.31	20.00	21.09	20.11	19.80	20.89
		RB1#49	20.97	20.41	20.93	20.77	20.21	20.73
		RB1#99	20.06	20.41	20.17	19.86	20.21	19.97
		RB50#0	20.41	20.43	20.46	20.21	20.23	20.26
		RB50#24	20.54	20.50	20.38	20.34	20.30	20.18
		RB50#49	20.56	20.64	20.27	20.36	20.44	20.07
		RB100#0	20.71	20.89	20.23	20.51	20.69	20.03
	16QAM	RB1#0	20.16	20.15	20.63	19.96	19.95	20.43
		RB1#49	20.62	20.08	20.99	20.42	19.88	20.79
		RB1#99	20.27	20.57	20.04	20.07	20.37	19.84
		RB50#0	20.18	20.85	20.68	19.98	20.65	20.48
		RB50#24	20.62	20.07	20.53	20.42	19.87	20.33
		RB50#49	20.47	20.03	20.50	20.27	19.83	20.30
		RB100#0	20.82	20.83	20.49	20.62	20.63	20.29

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

For Band 7: Antenna Gain = 0.8dBi

Cable Loss=1dB*(provided by the applicant)

Limit: EIRP≤33dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.42	4.78	4.26	13	Pass
QPSK (100RB Size)	5.45	5.48	5.29	13	Pass
16QAM (1RB Size)	5.48	5.48	4.68	13	Pass
16QAM (100RB Size)	6.28	6.19	6.15	13	Pass

LTE Band 12**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	21.26	21.10	21.13	16.21	16.05	16.08
		RB1#2	21.31	21.13	21.01	16.26	16.08	15.96
		RB1#5	21.29	21.09	21.02	16.24	16.04	15.97
		RB3#0	21.33	21.30	21.06	16.28	16.25	16.01
		RB3#1	21.37	21.32	20.97	16.32	16.27	15.92
		RB3#2	20.61	20.58	20.48	15.56	15.53	15.43
		RB6#0	21.11	21.18	20.08	16.06	16.13	15.03
	16QAM	RB1#0	21.12	21.29	20.02	16.07	16.24	14.97
		RB1#2	21.07	21.24	20.09	16.02	16.19	15.04
		RB1#5	20.78	20.58	20.51	15.73	15.53	15.46
		RB3#0	20.85	20.48	20.45	15.80	15.43	15.40
		RB3#1	19.92	20.21	20.37	14.87	15.16	15.32
		RB3#2	19.16	19.97	20.33	14.11	14.92	15.28
		RB6#0	19.61	19.95	20.22	14.56	14.90	15.17
3.0	QPSK	RB1#0	21.29	21.14	21.05	16.24	16.09	16.00
		RB1#7	21.27	21.13	21.07	16.22	16.08	16.02
		RB1#14	21.37	21.14	20.98	16.32	16.09	15.93
		RB8#0	20.84	20.56	20.48	15.79	15.51	15.43
		RB8#4	20.80	20.63	20.46	15.75	15.58	15.41
		RB8#7	20.71	20.65	20.43	15.66	15.60	15.38
		RB15#0	20.97	21.21	20.16	15.92	16.16	15.11
	16QAM	RB1#0	20.91	21.21	20.13	15.86	16.16	15.08
		RB1#7	21.03	21.24	20.11	15.98	16.19	15.06
		RB1#14	19.71	20.17	20.36	14.66	15.12	15.31
		RB8#0	20.28	20.22	20.41	15.23	15.17	15.36
		RB8#4	19.84	20.31	20.08	14.79	15.26	15.03
		RB8#7	19.17	20.25	20.01	14.12	15.20	14.96
		RB15#0	20.31	20.03	19.25	15.26	14.98	14.20

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QP SK	RB1#0	21.48	21.07	21.20	16.43	16.02	16.15
		RB1#12	21.43	21.15	21.17	16.38	16.10	16.12
		RB1#24	21.38	21.05	21.02	16.33	16.00	15.97
		RB12#0	21.00	20.61	20.82	15.95	15.56	15.77
		RB12#6	20.88	20.50	20.69	15.83	15.45	15.64
		RB12#11	20.90	20.61	20.77	15.85	15.56	15.72
		RB25#0	20.10	20.59	20.39	15.05	15.54	15.34
	16QAM	RB1#0	20.15	20.57	20.35	15.10	15.52	15.30
		RB1#12	20.04	20.55	20.25	14.99	15.50	15.20
		RB1#24	20.11	20.09	19.66	15.06	15.04	14.61
		RB12#0	20.37	20.17	20.13	15.32	15.12	15.08
		RB12#6	20.46	20.26	20.10	15.41	15.21	15.05
		RB12#11	20.26	19.50	19.90	15.21	14.45	14.85
		RB25#0	19.81	19.27	20.06	14.76	14.22	15.01
10.0	QPSK	RB1#0	21.21	21.30	21.33	16.16	16.25	16.28
		RB1#24	21.14	21.16	21.23	16.09	16.11	16.18
		RB1#49	21.19	21.10	21.12	16.14	16.05	16.07
		RB25#0	20.87	20.71	20.62	15.82	15.66	15.57
		RB25#12	20.60	20.47	20.67	15.55	15.42	15.62
		RB25#24	20.66	20.45	20.53	15.61	15.40	15.48
		RB50#0	20.79	20.91	20.23	15.74	15.86	15.18
	16QAM	RB1#0	20.74	20.79	20.06	15.69	15.74	15.01
		RB1#24	20.67	20.85	19.99	15.62	15.80	14.94
		RB1#49	20.35	20.29	20.30	15.30	15.24	15.25
		RB25#0	20.15	20.21	20.29	15.10	15.16	15.24
		RB25#12	19.52	20.32	20.11	14.47	15.27	15.06
		RB25#24	20.50	19.65	20.40	15.45	14.60	15.35
		RB50#0	19.50	19.86	19.22	14.45	14.81	14.17

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

For Band12: Antenna Gain = -2.4dBi = -4.55dBd (0dBd=2.15dBi)

Cable Loss=0.5dB* (provided by the 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)	5.22	5.06	5.58	13	Pass
QPSK (50RB Size)	5.54	5.80	5.71	13	Pass
16QAM (1RB Size)	5.90	6.03	7.05	13	Pass
16QAM (50RB Size)	6.44	6.57	6.41	13	Pass

LTE Band 17**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	21.27	21.15	21.24	16.22	16.10	16.19
		RB1#12	21.28	21.09	21.22	16.23	16.04	16.17
		RB1#24	21.20	21.09	21.07	16.15	16.04	16.02
		RB12#0	20.64	20.61	20.87	15.59	15.56	15.82
		RB12#6	20.52	20.51	20.86	15.47	15.46	15.81
		RB12#11	20.54	20.52	20.83	15.49	15.47	15.78
		RB25#0	19.80	20.60	20.54	14.75	15.55	15.49
	16QAM	RB1#0	19.82	20.48	20.42	14.77	15.43	15.37
		RB1#12	19.76	20.55	20.22	14.71	15.50	15.17
		RB1#24	20.23	20.04	19.74	15.18	14.99	14.69
		RB12#0	20.32	20.01	20.16	15.27	14.96	15.11
		RB12#6	20.29	20.18	20.02	15.24	15.13	14.97
		RB12#11	20.43	20.10	20.18	15.38	15.05	15.13
		RB25#0	20.24	20.14	19.59	15.19	15.09	14.54
10.0	QPSK	RB1#0	21.21	21.19	21.41	16.16	16.14	16.36
		RB1#24	21.09	21.06	21.28	16.04	16.01	16.23
		RB1#49	21.03	21.04	21.17	15.98	15.99	16.12
		RB25#0	20.54	20.63	20.62	15.49	15.58	15.57
		RB25#12	20.71	20.72	20.58	15.66	15.67	15.53
		RB25#24	20.62	20.57	20.52	15.57	15.52	15.47
		RB50#0	20.71	20.86	20.28	15.66	15.81	15.23
	16QAM	RB1#0	20.67	20.72	20.10	15.62	15.67	15.05
		RB1#24	20.64	20.80	20.02	15.59	15.75	14.97
		RB1#49	20.11	20.34	20.29	15.06	15.29	15.24
		RB25#0	19.48	19.54	20.36	14.43	14.49	15.31
		RB25#12	20.26	20.22	20.17	15.21	15.17	15.12
		RB25#24	20.33	20.08	19.27	15.28	15.03	14.22
		RB50#0	20.09	20.08	19.91	15.04	15.03	14.86

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

For Band13: Antenna Gain = -2.4dBi = -4.55dBd (0dBd=2.15dBi)

Cable Loss=0.5dB* (provided by the 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)	5.35	5.64	5.51	13	Pass
QPSK (50RB Size)	5.90	5.71	5.61	13	Pass
16QAM (1RB Size)	6.92	6.67	6.19	13	Pass
16QAM (50RB Size)	6.47	6.51	6.47	13	Pass

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

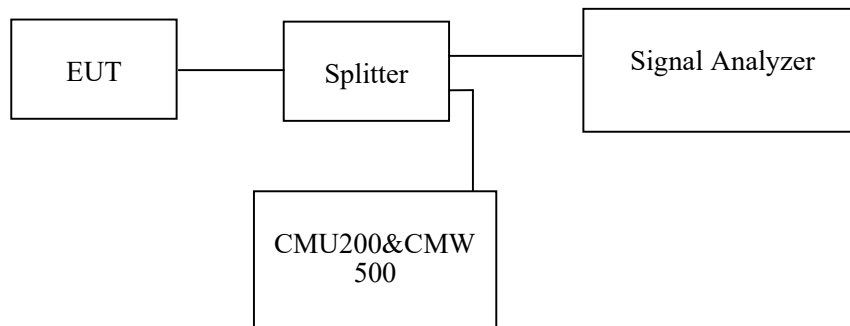
Applicable Standard

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

The testing was performed by Andy Yu from 2021-04-08 to 2021-04-10.

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	241.99	315.38
	190	836.6	240.38	316.99
	251	848.8	241.99	315.71
EGPRS(8PSK)	128	824.2	250.00	316.99
	190	836.6	246.79	313.46
	251	848.8	250.00	311.54

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.15	4.69
	836.6	4.15	4.70
	846.6	4.17	4.69
HSDPA	826.4	4.15	4.70
	836.6	4.15	4.69
	846.6	4.17	4.68
HSUPA	826.4	4.17	4.70
	836.6	4.17	4.69
	846.6	4.17	4.70

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	241.99	323.40
	661	1880.0	243.59	315.06
	810	1909.8	245.19	315.71
EGPRS(8PSK)	512	1850.2	245.19	317.63
	661	1880.0	240.40	324.68
	810	1909.8	240.40	311.86

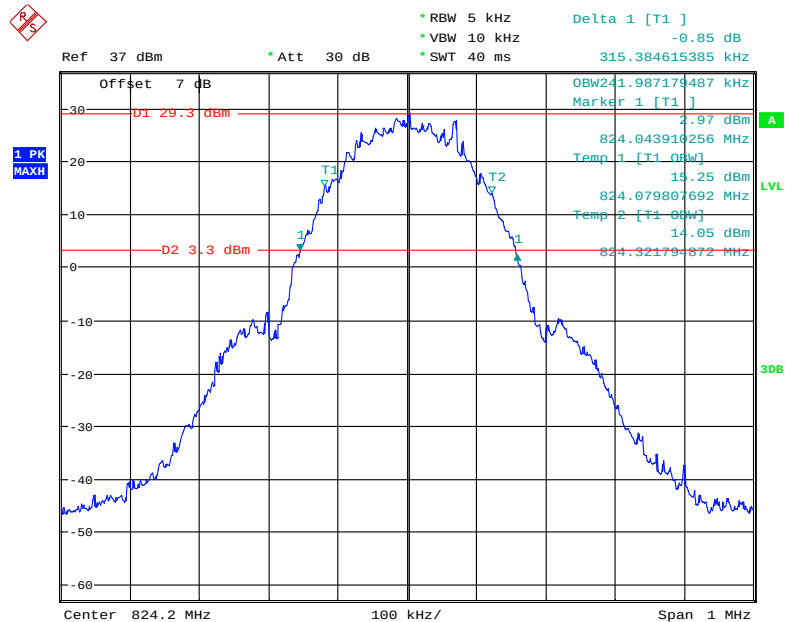
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.15	4.71
	1880.0	4.17	4.73
	1907.6	4.17	4.74
HSDPA	1852.4	4.17	4.69
	1880.0	4.17	4.73
	1907.6	4.18	4.74
HSUPA	1852.4	4.15	4.69
	1880.0	4.17	4.71
	1907.6	4.20	4.71

AWS Band (Part 27)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.15	4.72
	1732.6	4.15	4.71
	1752.6	4.17	4.73
HSDPA	1712.4	4.15	4.71
	1732.6	4.15	4.70
	1752.6	4.17	4.73
HSUPA	1712.4	4.15	4.68
	1732.6	4.17	4.70
	1752.6	4.17	4.70

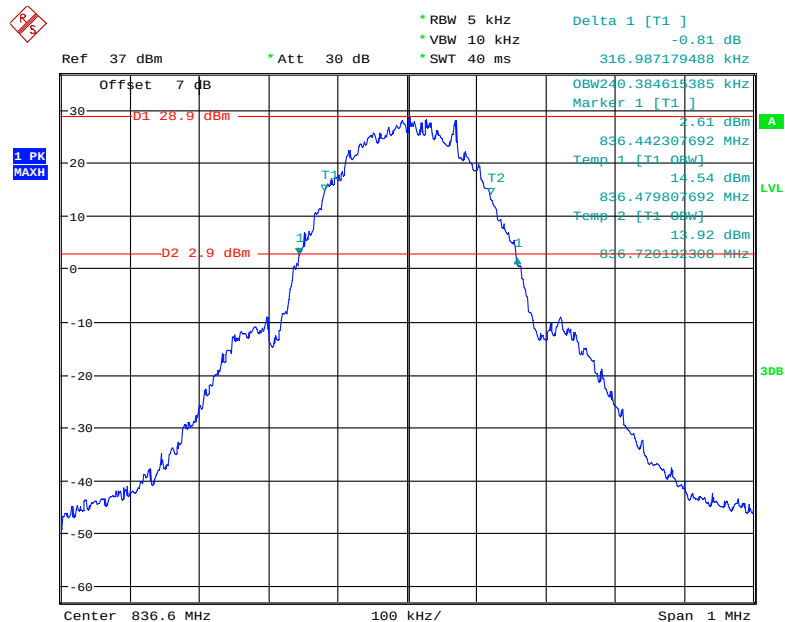
Cellular Band (Part 22H)

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



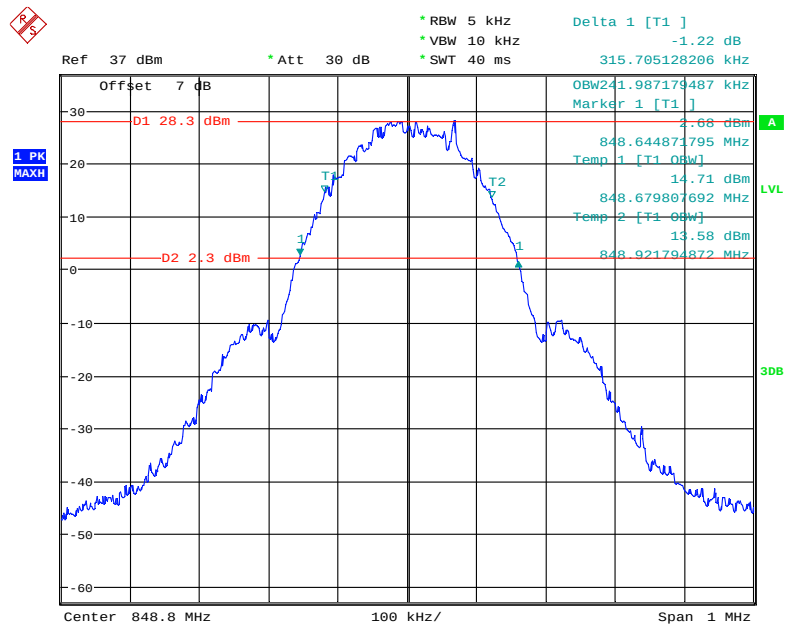
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26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



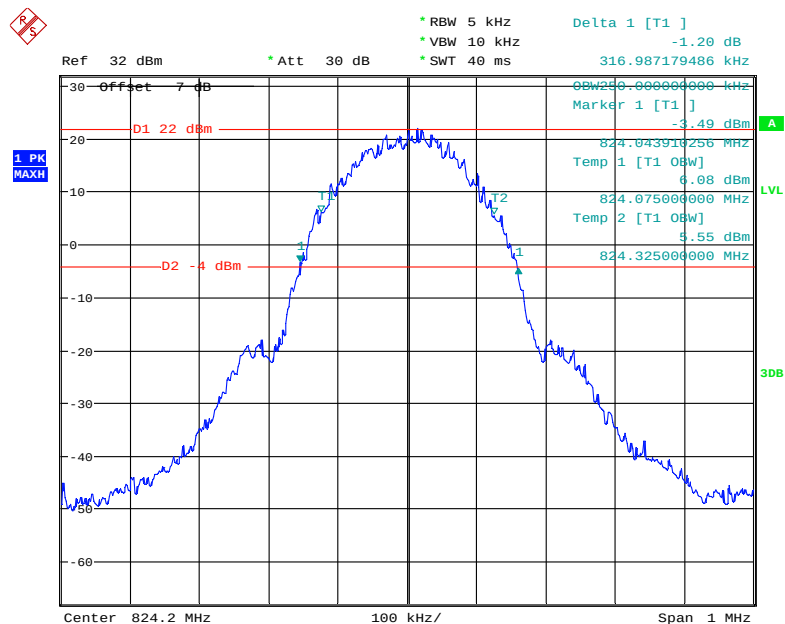
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26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel



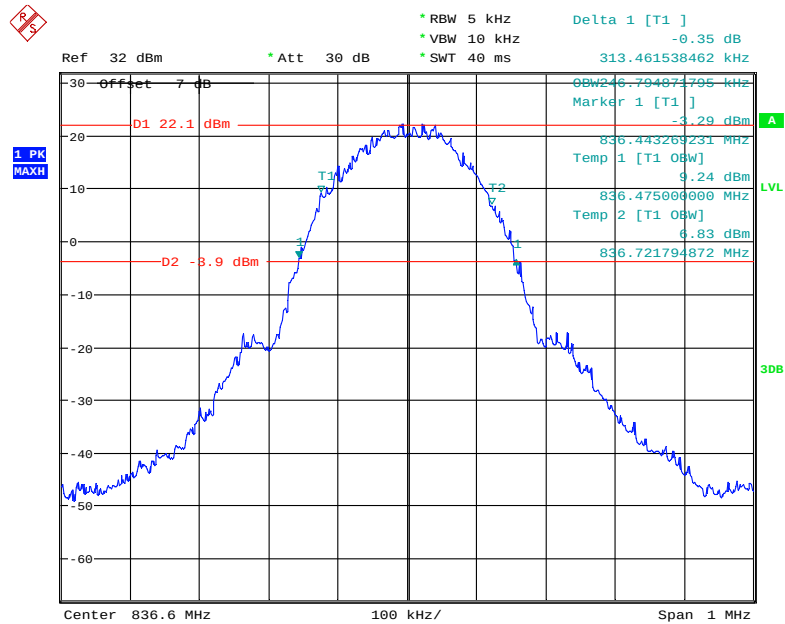
Date: 10.APR.2021 11:16:22

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



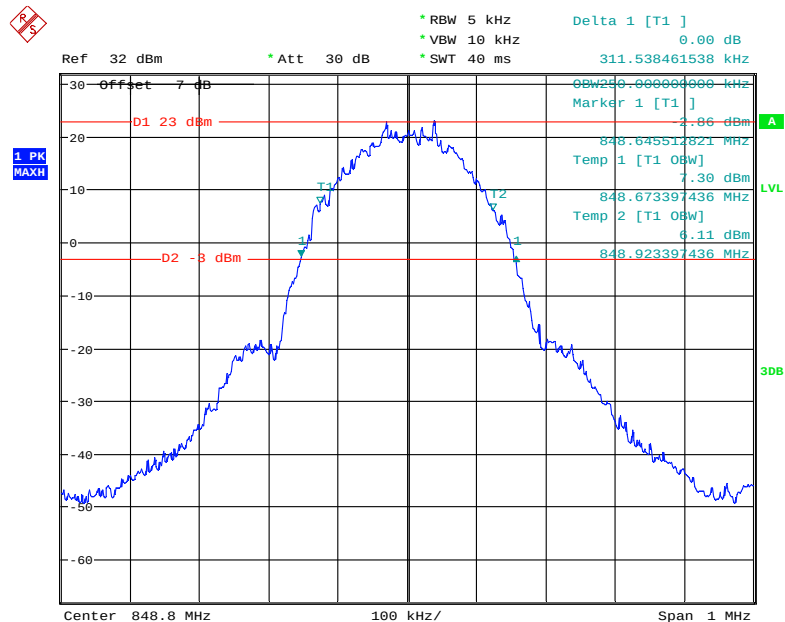
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26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel



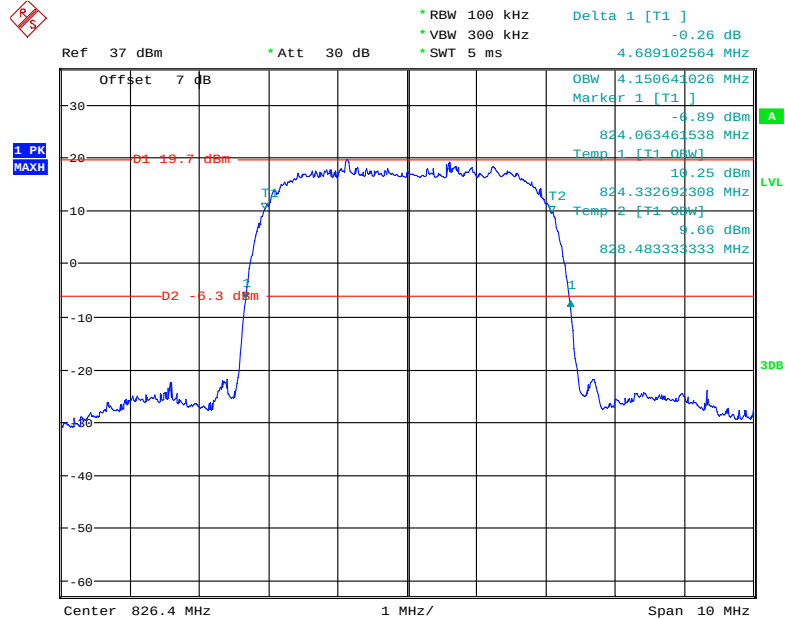
Date: 10.APR.2021 10:39:58

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



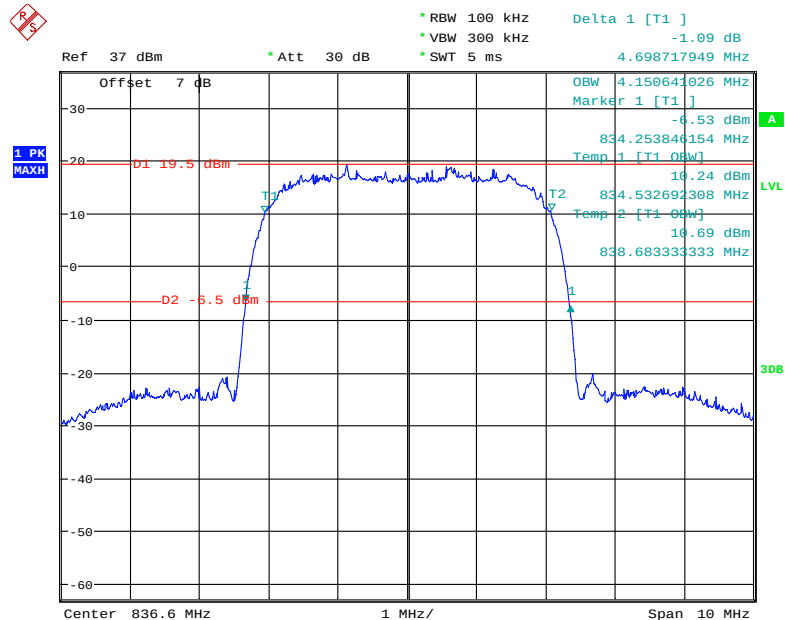
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26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel



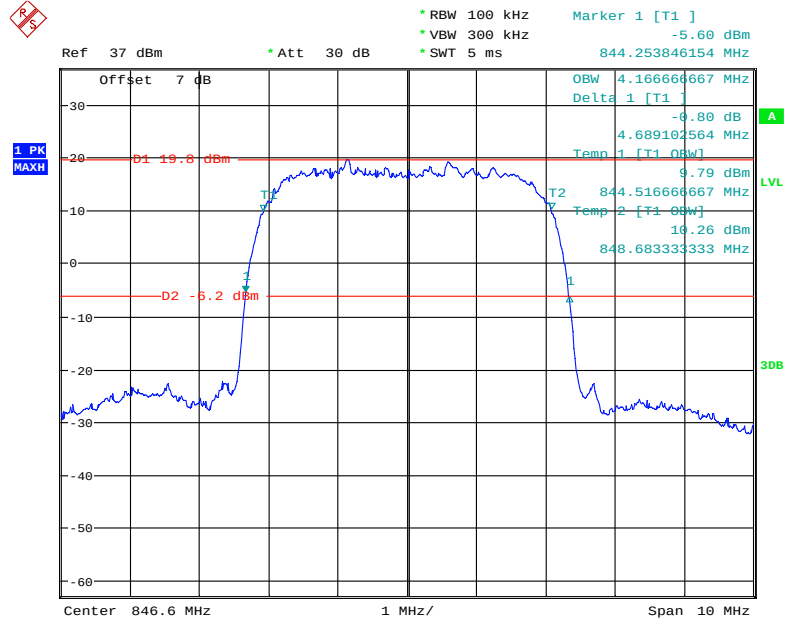
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26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



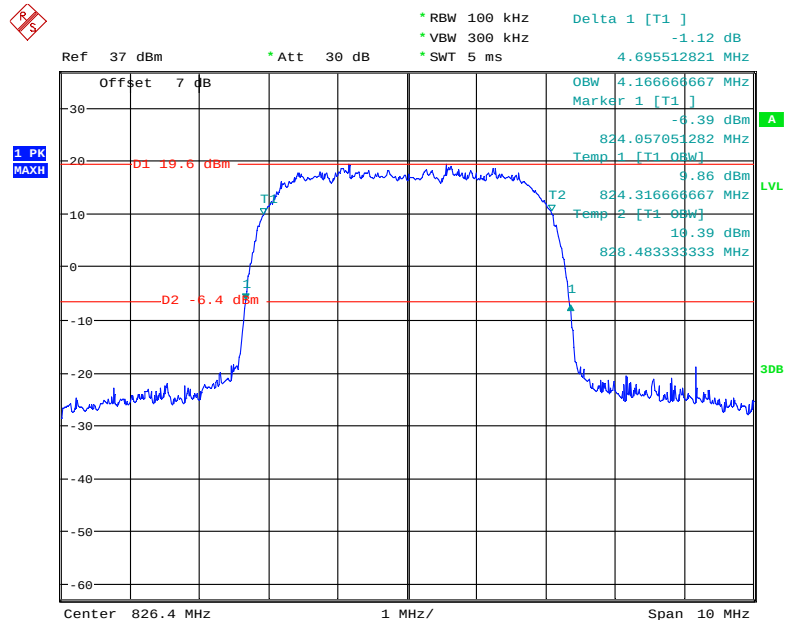
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26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel



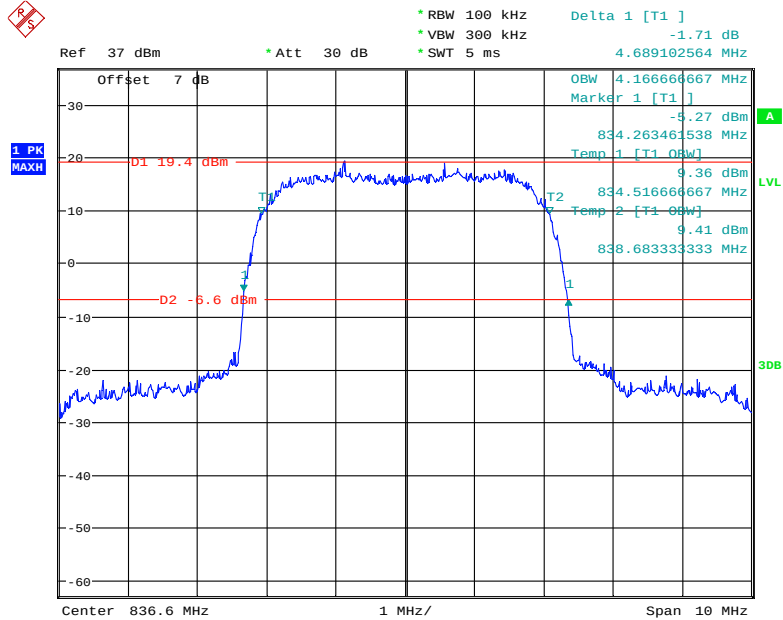
Date: 10.APR.2021 16:33:38

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



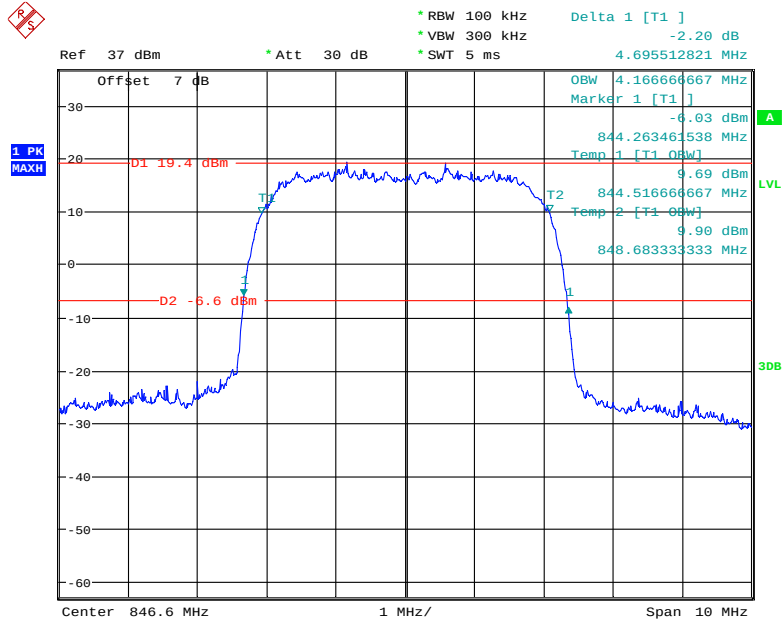
Date: 10.APR.2021 16:40:03

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



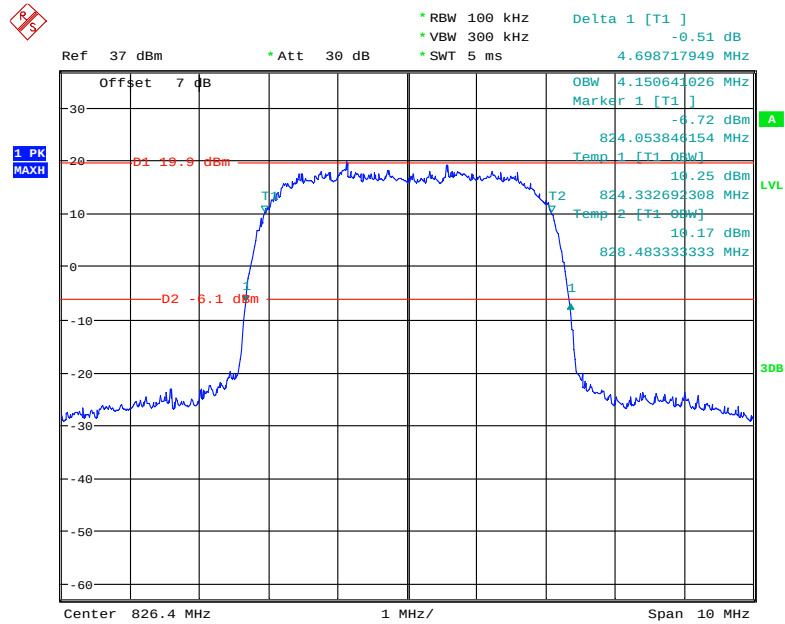
Date: 10.APR.2021 16:38:11

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



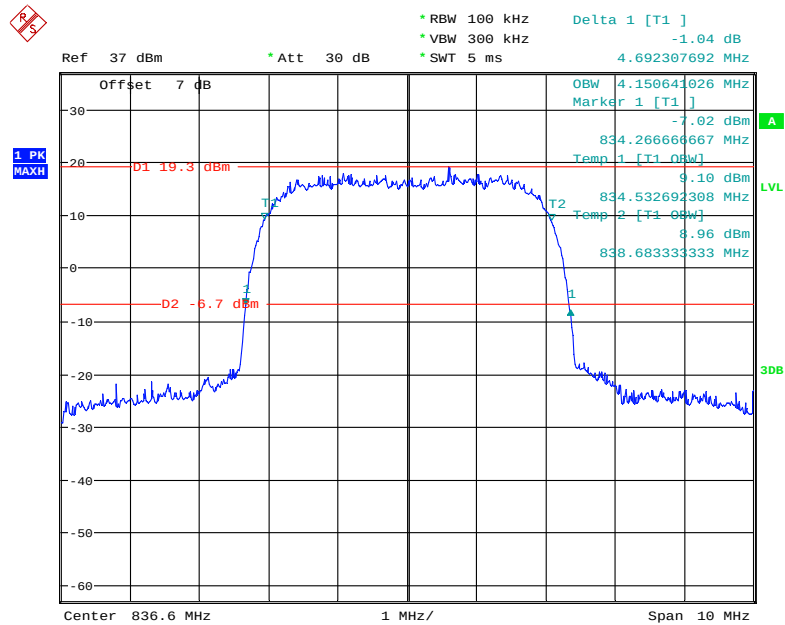
Date: 10.APR.2021 16:36:50

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



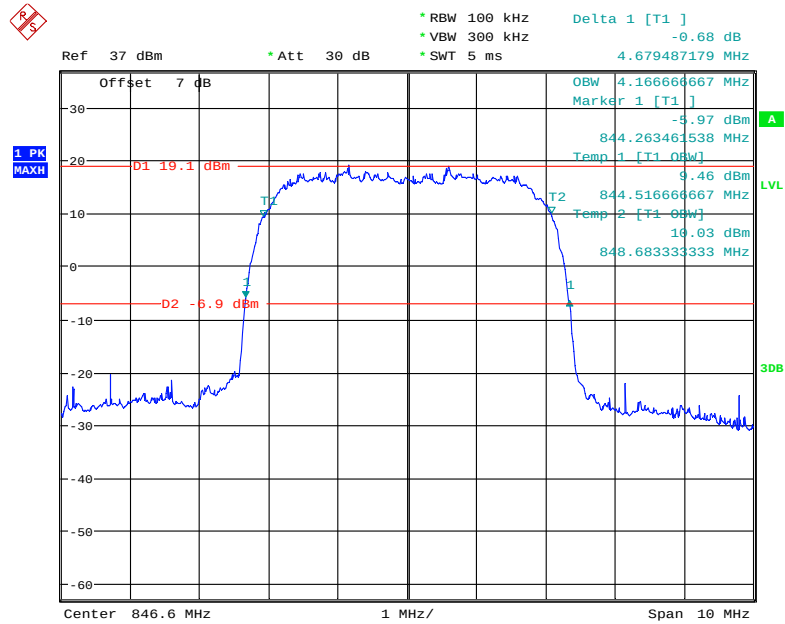
Date: 10.APR.2021 16:25:39

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



Date: 10.APR.2021 16:27:55

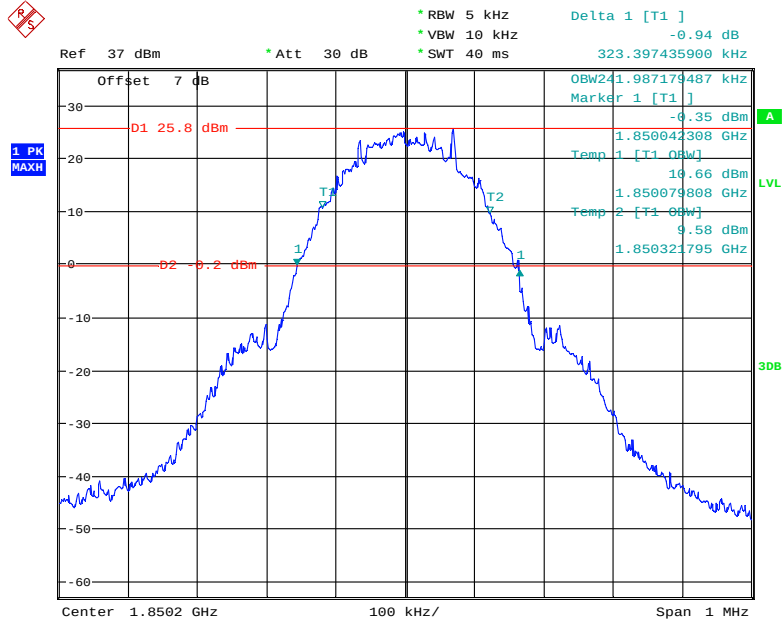
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 10.APR.2021 16:31:07

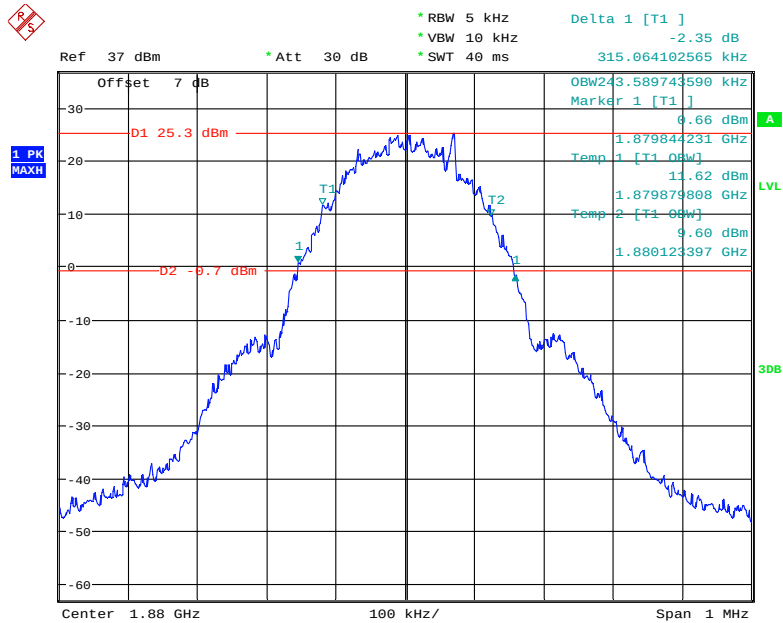
PCS Band (Part 24E)

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



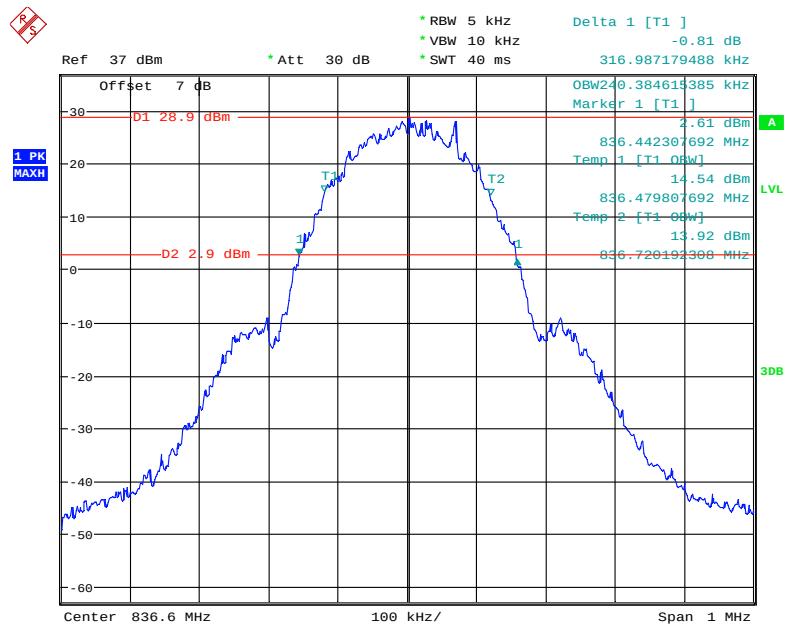
Date: 10.APR.2021 11:07:29

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



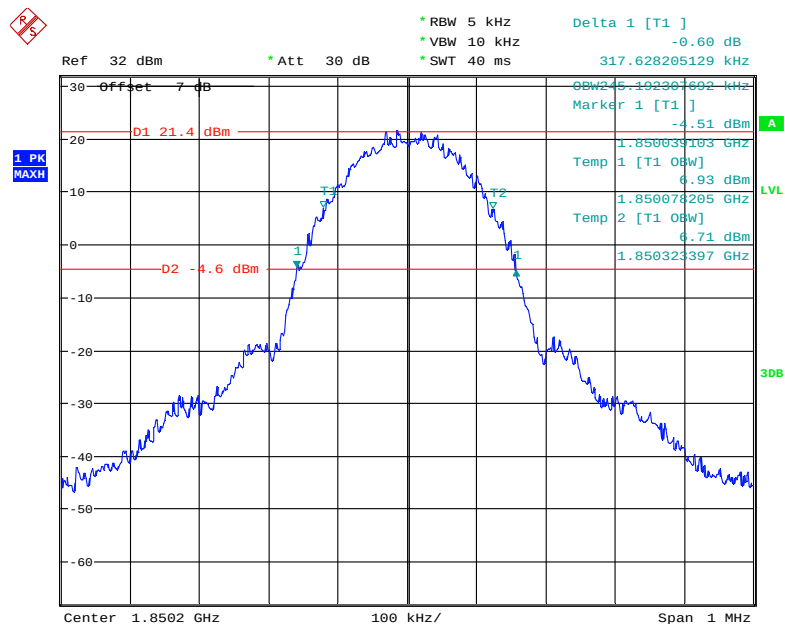
Date: 10.APR.2021 11:05:26

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



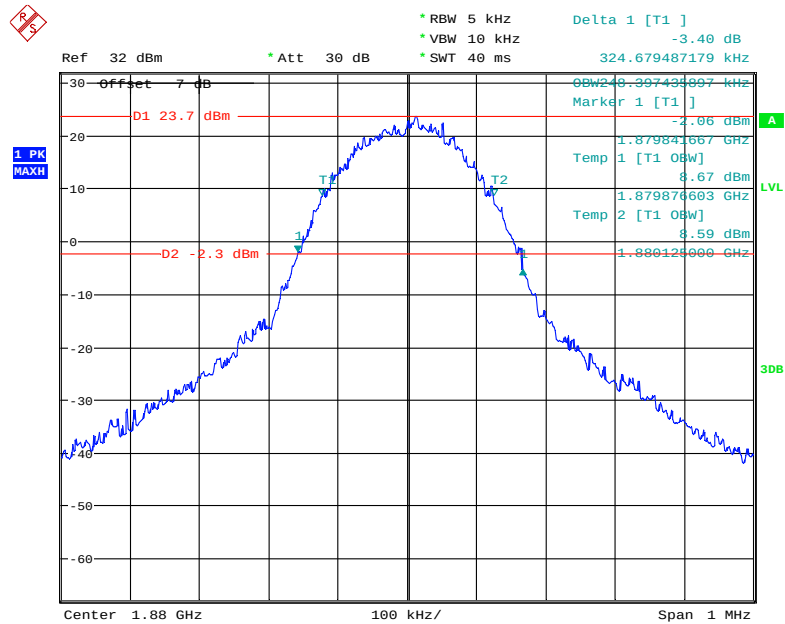
Date: 10.APR.2021 11:18:49

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



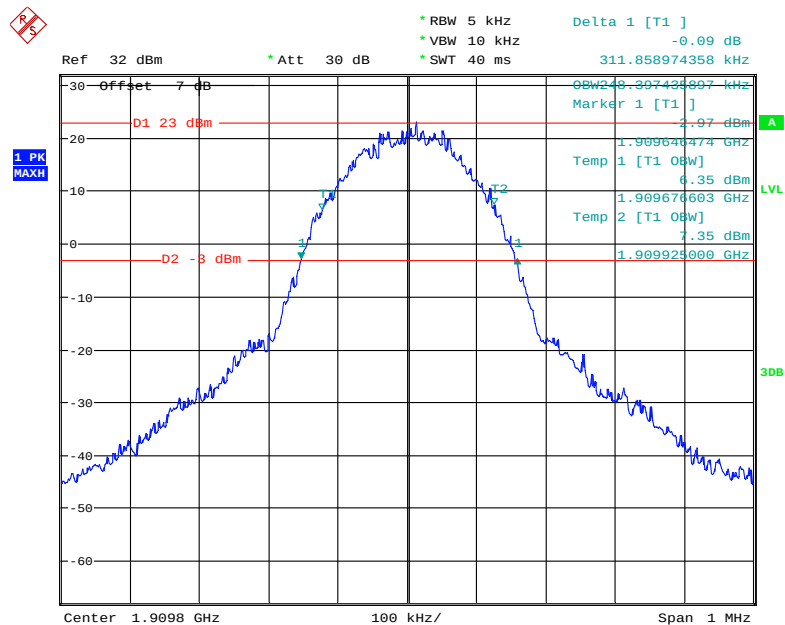
Date: 10.APR.2021 10:47:52

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



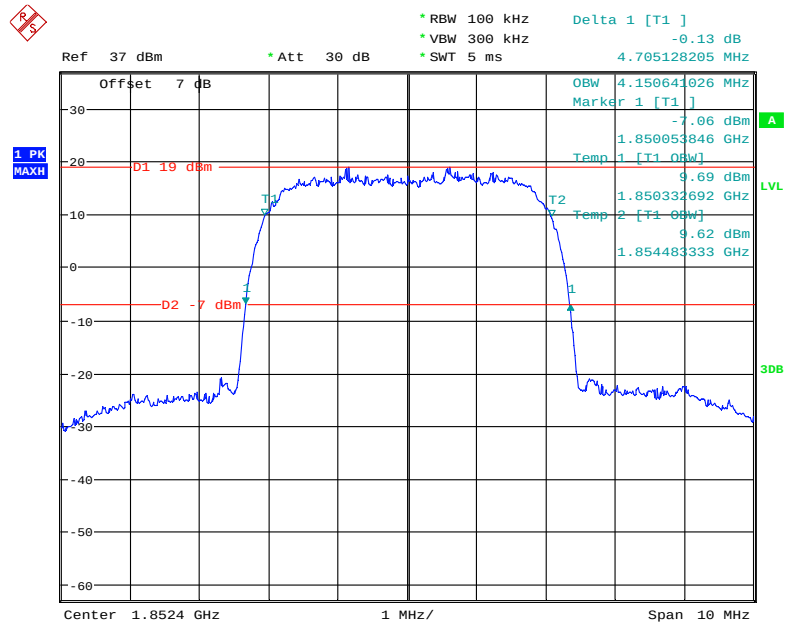
Date: 10.APR.2021 10:52:23

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



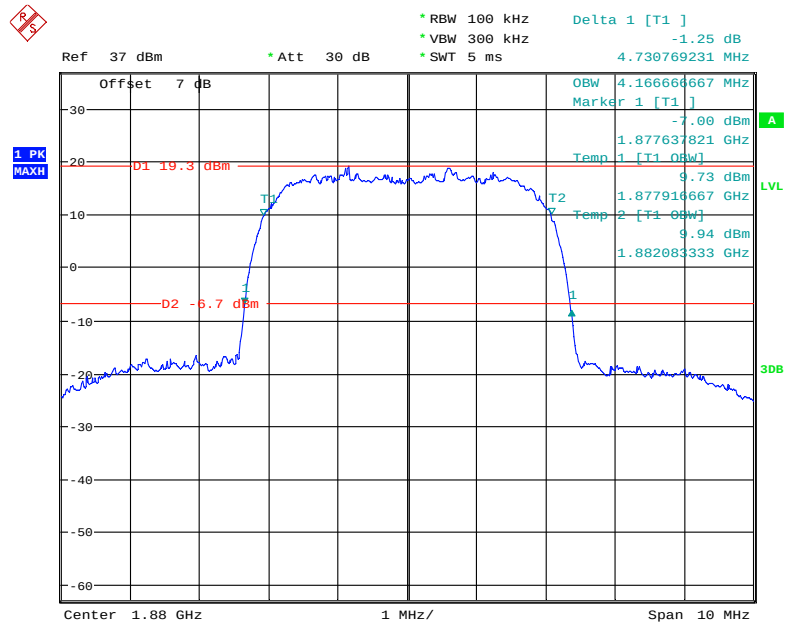
Date: 10.APR.2021 10:54:36

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



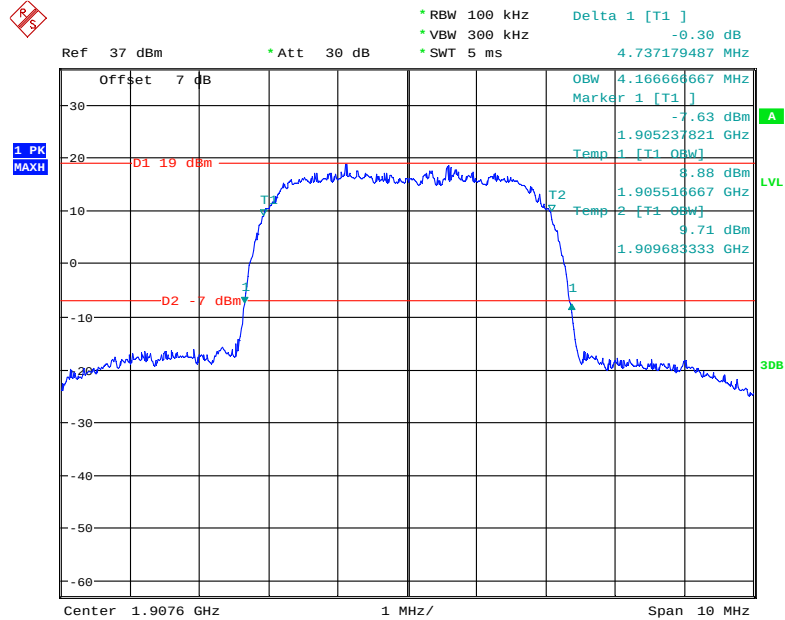
Date: 10.APR.2021 17:05:49

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



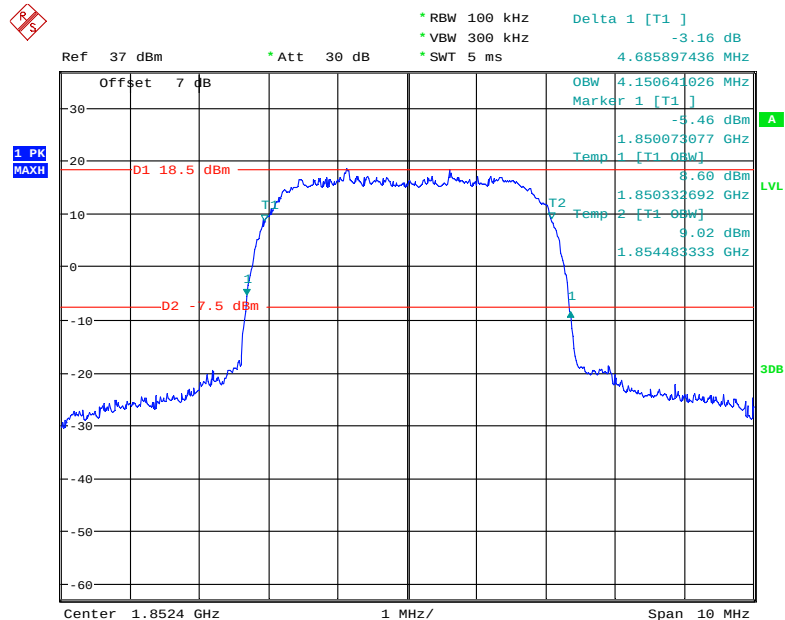
Date: 10.APR.2021 17:04:19

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

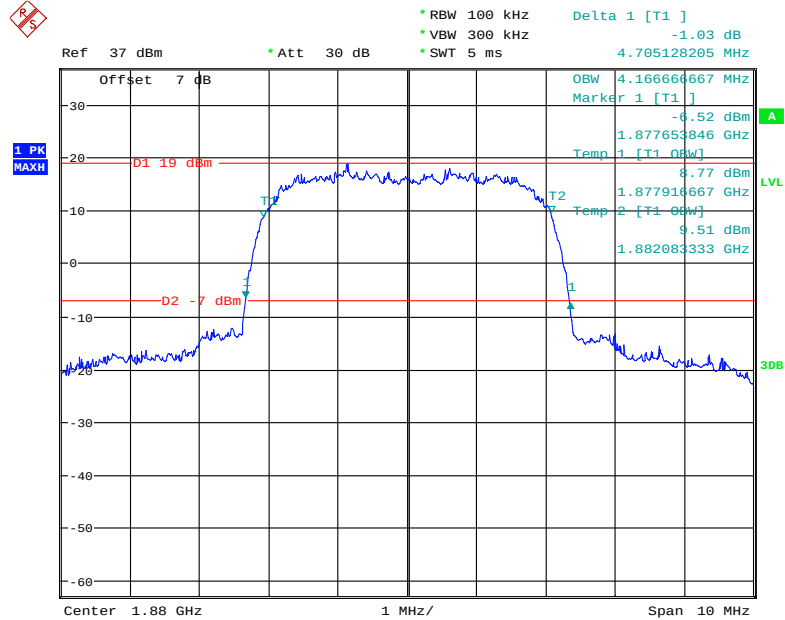


Date: 10.APR.2021 17:02:00

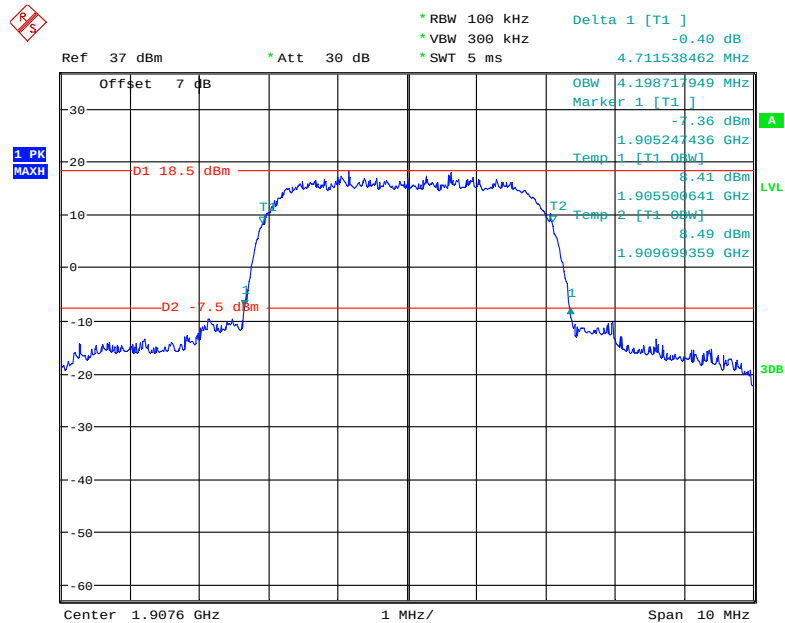
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel



Date: 10.APR.2021 17:19:44

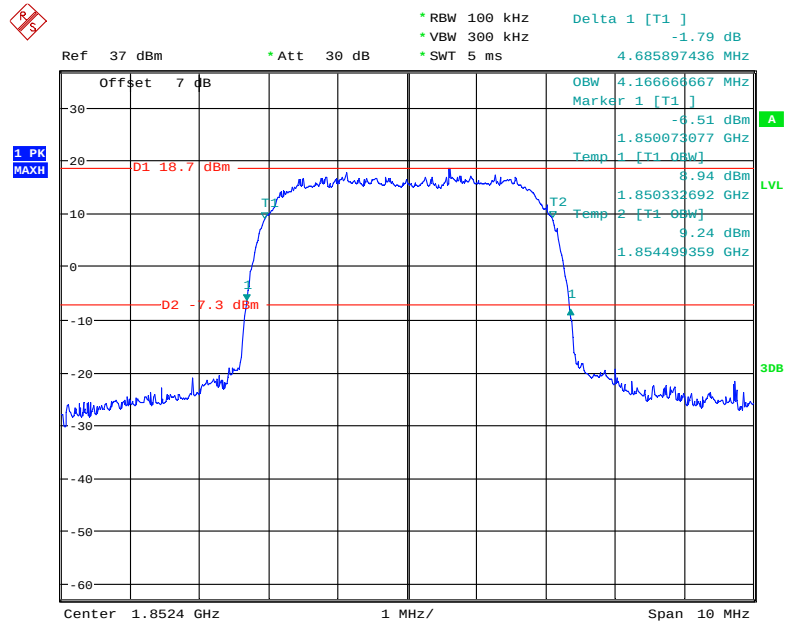
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel

Date: 10.APR.2021 17:17:59

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

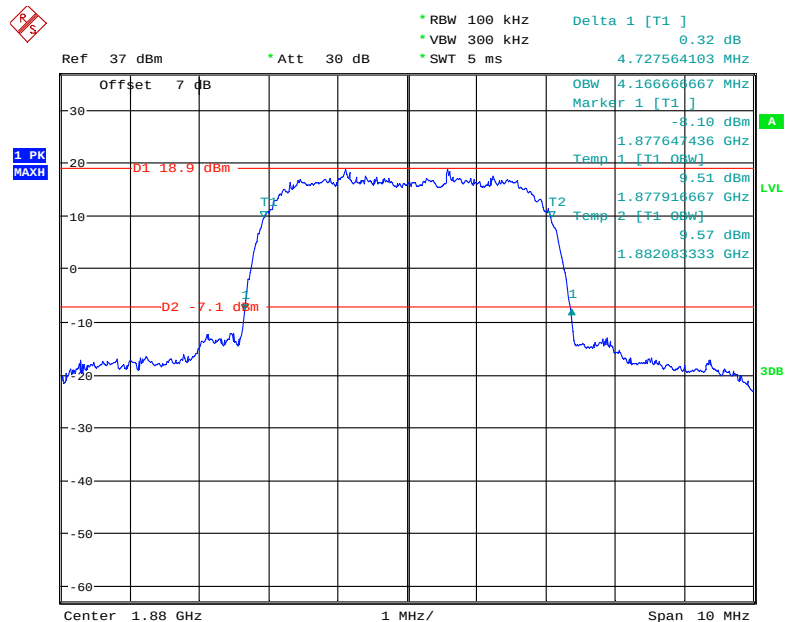
Date: 10.APR.2021 17:16:35

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



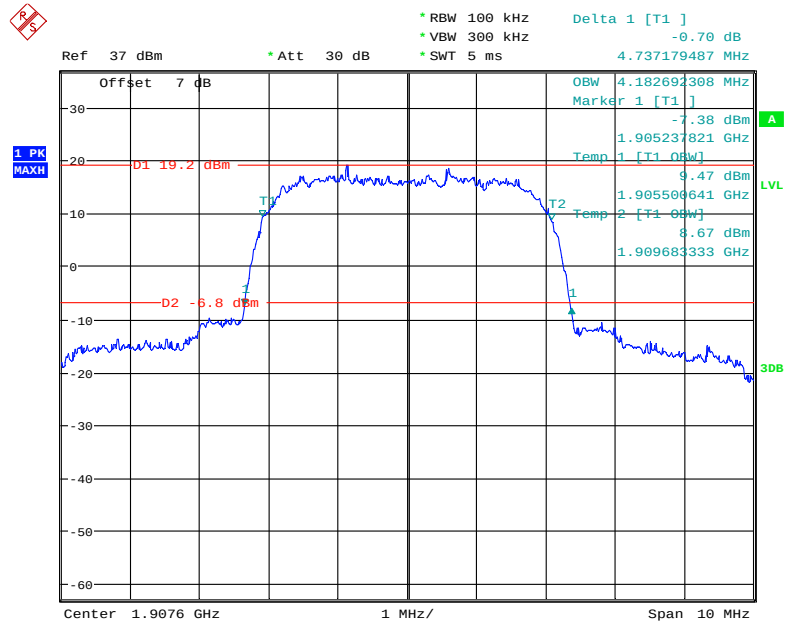
Date: 10.APR.2021 17:07:40

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



Date: 10.APR.2021 17:10:50

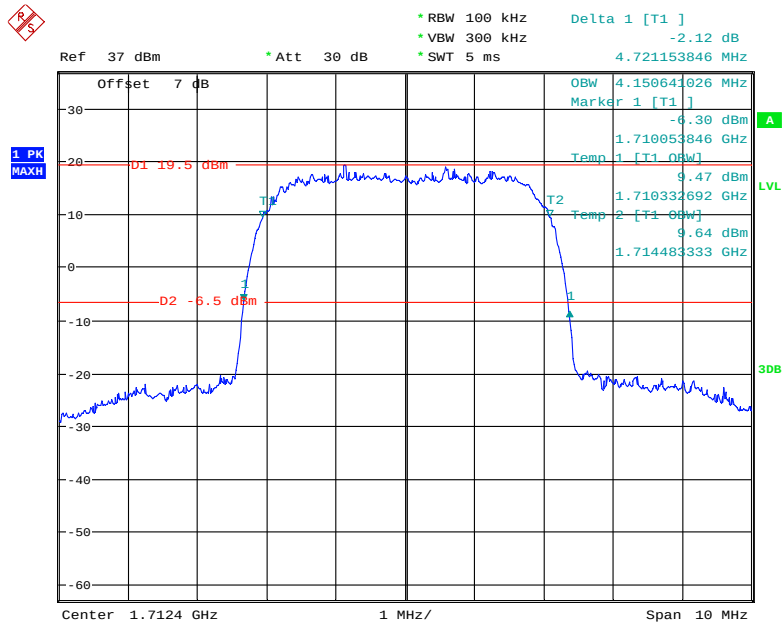
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 10.APR.2021 17:13:53

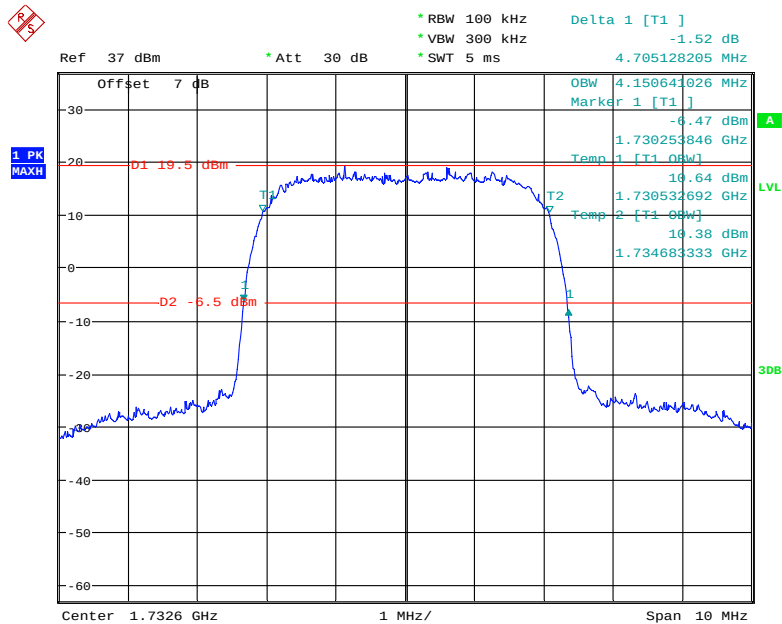
AWS Band (Part 27)

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

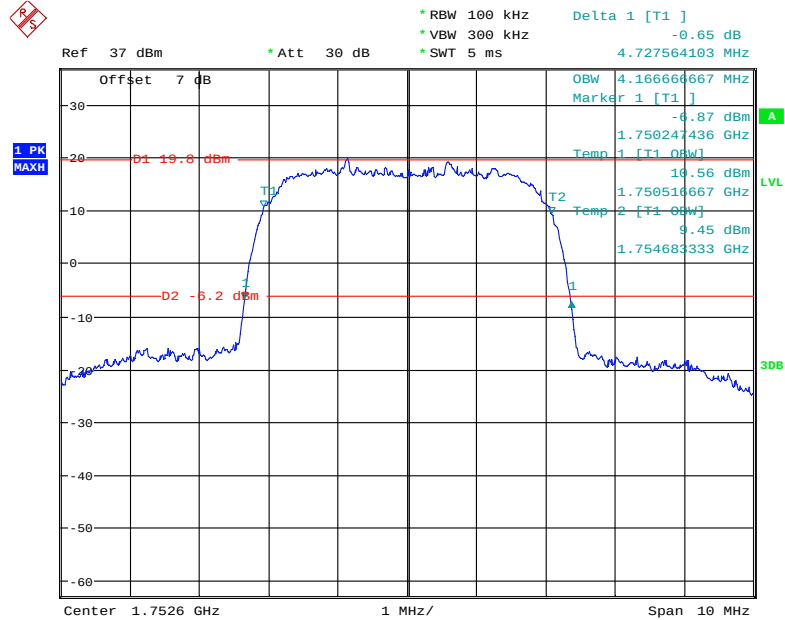


Date: 10.APR.2021 16:42:37

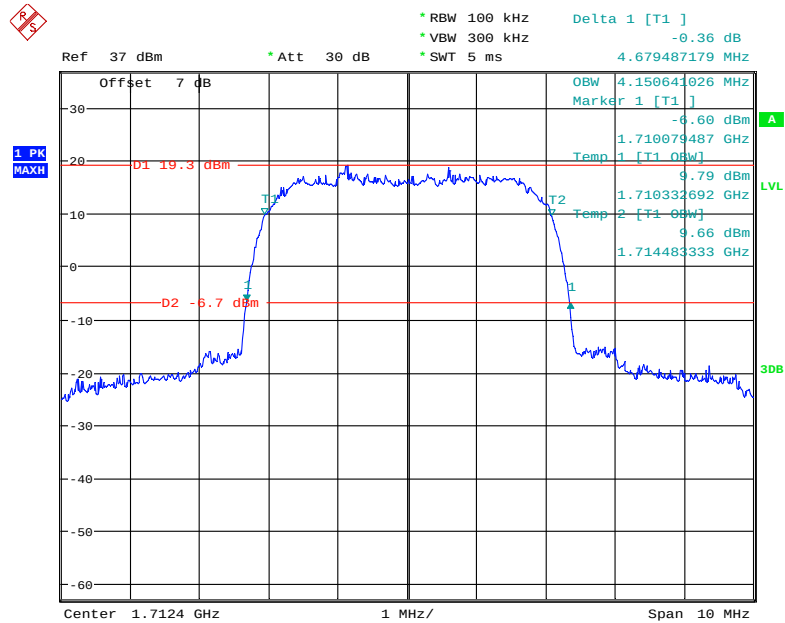
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



Date: 10.APR.2021 16:44:34

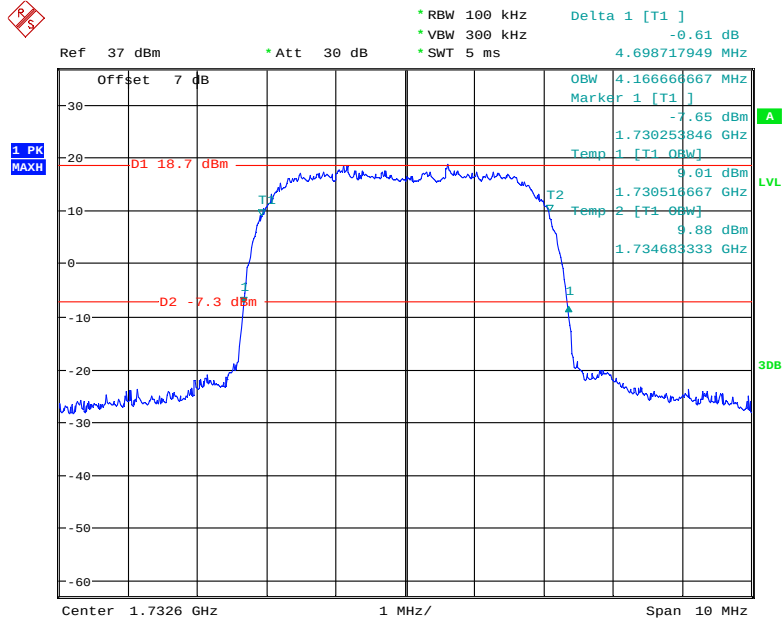
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel

Date: 10.APR.2021 16:46:46

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

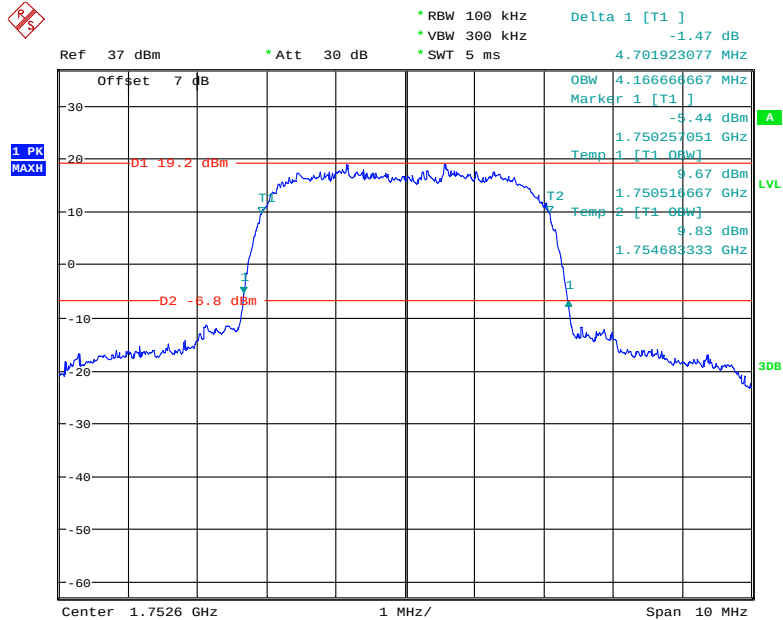
Date: 10.APR.2021 16:52:53

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



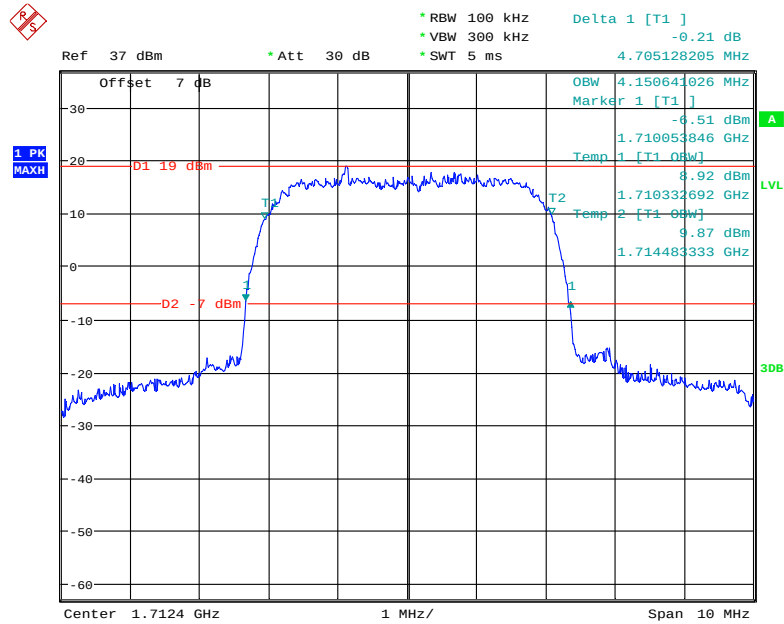
Date: 10.APR.2021 16:51:16

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



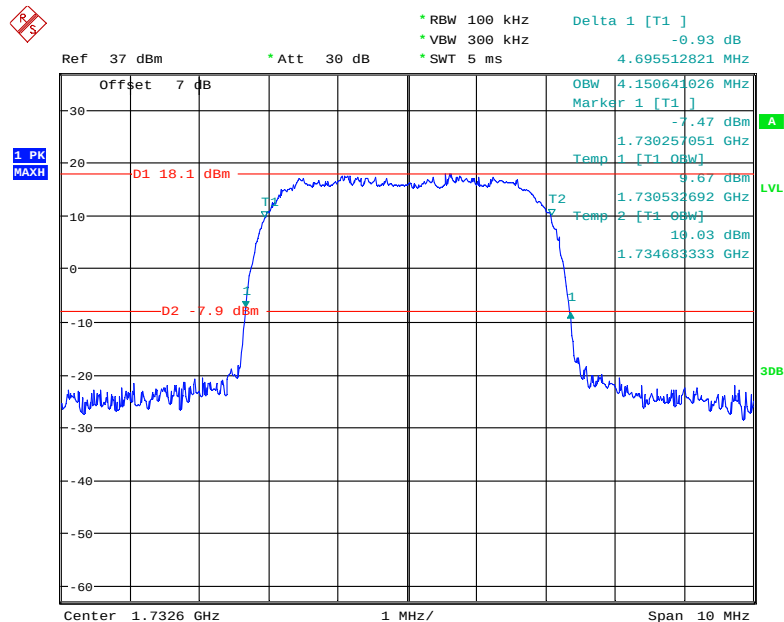
Date: 10.APR.2021 16:48:44

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



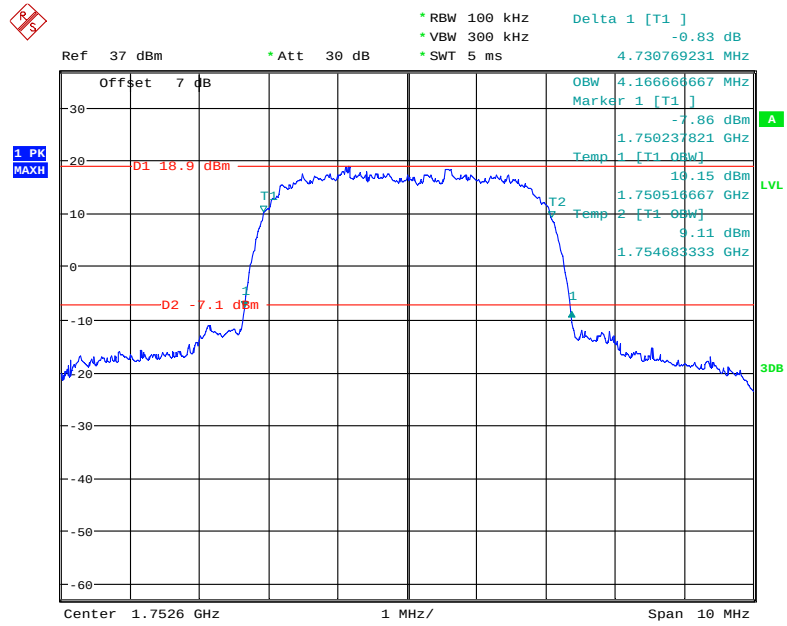
Date: 10.APR.2021 16:54:46

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



Date: 10.APR.2021 16:57:21

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



Date: 10.APR.2021 16:59:41

LTE Band 2:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.110	1.260
		Middle	1.110	1.278
		High	1.104	1.278
	16QAM	Low	1.104	1.254
		Middle	1.116	1.272
		High	1.098	1.266
3	QPSK	Low	2.700	2.988
		Middle	2.712	3.024
		High	2.700	3.036
	16QAM	Low	2.700	3.036
		Middle	2.700	3.012
		High	2.700	3.024
5	QPSK	Low	4.540	5.020
		Middle	4.520	5.020
		High	4.520	4.980
	16QAM	Low	4.520	5.000
		Middle	4.540	5.020
		High	4.560	5.000
10	QPSK	Low	9.000	9.760
		Middle	8.960	9.800
		High	9.000	9.760
	16QAM	Low	8.920	9.800
		Middle	9.000	9.800
		High	8.960	9.800
15	QPSK	Low	13.560	15.060
		Middle	13.560	15.120
		High	13.560	15.240
	16QAM	Low	13.560	15.060
		Middle	13.620	15.240
		High	13.620	15.120
20	QPSK	Low	17.920	19.600
		Middle	18.000	19.760
		High	18.080	19.680
	16QAM	Low	18.080	19.680
		Middle	18.160	19.680
		High	18.000	19.760

Band 4:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.110	1.254
		Middle	1.104	1.260
		High	1.110	1.260
	16QAM	Low	1.116	1.272
		Middle	1.098	1.254
		High	1.110	1.260
3	QPSK	Low	2.700	2.988
		Middle	2.700	3.000
		High	2.712	3.024
	16QAM	Low	2.688	3.012
		Middle	2.688	3.000
		High	2.700	3.024
5	QPSK	Low	4.540	4.980
		Middle	4.520	4.980
		High	4.520	4.980
	16QAM	Low	4.520	4.980
		Middle	4.520	5.000
		High	4.560	5.020
10	QPSK	Low	8.960	9.760
		Middle	8.960	9.720
		High	8.960	9.760
	16QAM	Low	8.920	9.640
		Middle	9.000	9.760
		High	8.960	9.760
15	QPSK	Low	13.560	15.000
		Middle	13.500	15.060
		High	13.620	15.120
	16QAM	Low	13.560	15.060
		Middle	13.620	15.180
		High	13.560	15.060
20	QPSK	Low	18.000	19.600
		Middle	18.000	19.680
		High	18.000	19.760
	16QAM	Low	18.080	19.680
		Middle	18.000	19.840
		High	18.000	19.680

Band 5:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.254
		Middle	1.104	1.266
		High	1.104	1.260
	16QAM	Low	1.110	1.260
		Middle	1.098	1.248
		High	1.104	1.254
3	QPSK	Low	2.700	2.988
		Middle	2.700	3.012
		High	2.688	3.024
	16QAM	Low	2.712	3.036
		Middle	2.700	3.024
		High	2.700	3.024
5	QPSK	Low	4.540	4.960
		Middle	4.520	4.960
		High	4.520	4.940
	16QAM	Low	4.520	4.960
		Middle	4.540	4.960
		High	4.540	5.000
10	QPSK	Low	9.000	9.680
		Middle	8.960	9.760
		High	8.960	9.800
	16QAM	Low	8.960	9.800
		Middle	9.000	9.800
		High	8.960	9.760

Band 7

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.520	5.000
		Middle	4.520	4.940
		High	4.520	4.980
	16QAM	Low	4.520	5.020
		Middle	4.520	4.980
		High	4.540	5.000
10	QPSK	Low	9.000	9.720
		Middle	8.960	9.760
		High	8.960	9.800
	16QAM	Low	9.000	9.680
		Middle	9.000	9.800
		High	8.960	9.800
15	QPSK	Low	13.560	14.940
		Middle	13.500	15.000
		High	13.560	15.120
	16QAM	Low	13.500	14.940
		Middle	13.560	15.060
		High	13.500	15.000
20	QPSK	Low	18.000	19.680
		Middle	18.000	19.680
		High	18.080	19.680
	16QAM	Low	17.920	19.680
		Middle	18.000	19.760
		High	18.000	19.600

LTE Band 12:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.098	1.248
		Middle	1.104	1.254
		High	1.110	1.254
	16QAM	Low	1.116	1.266
		Middle	1.098	1.260
		High	1.104	1.260
3	QPSK	Low	2.700	2.976
		Middle	2.700	3.012
		High	2.688	3.024
	16QAM	Low	2.700	2.976
		Middle	2.700	3.024
		High	2.700	3.024
5	QPSK	Low	4.540	4.960
		Middle	4.520	5.000
		High	4.500	4.960
	16QAM	Low	4.500	4.960
		Middle	4.540	5.000
		High	4.520	5.000
10	QPSK	Low	8.960	9.760
		Middle	9.000	9.800
		High	8.920	9.720
	16QAM	Low	8.960	9.760
		Middle	9.000	9.840
		High	8.960	9.800

LTE Band 17:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.540	5.000
		Middle	4.500	4.980
		High	4.500	4.960
	16QAM	Low	4.520	5.000
		Middle	4.540	5.020
		High	4.520	4.980
10	QPSK	Low	9.000	9.720
		Middle	8.960	9.720
		High	8.960	9.720
	16QAM	Low	9.000	9.840
		Middle	9.000	9.720
		High	8.960	9.840

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

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

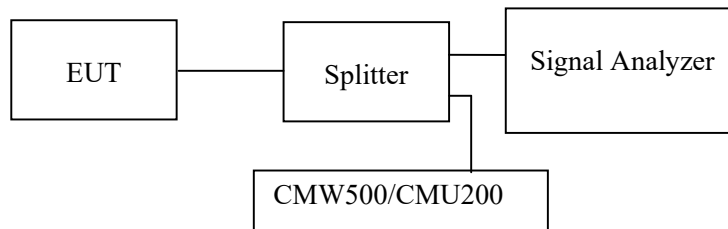
Applicable Standard

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

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

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2021-04-10 to 2021-04-23.

EUT operation mode: Transmitting

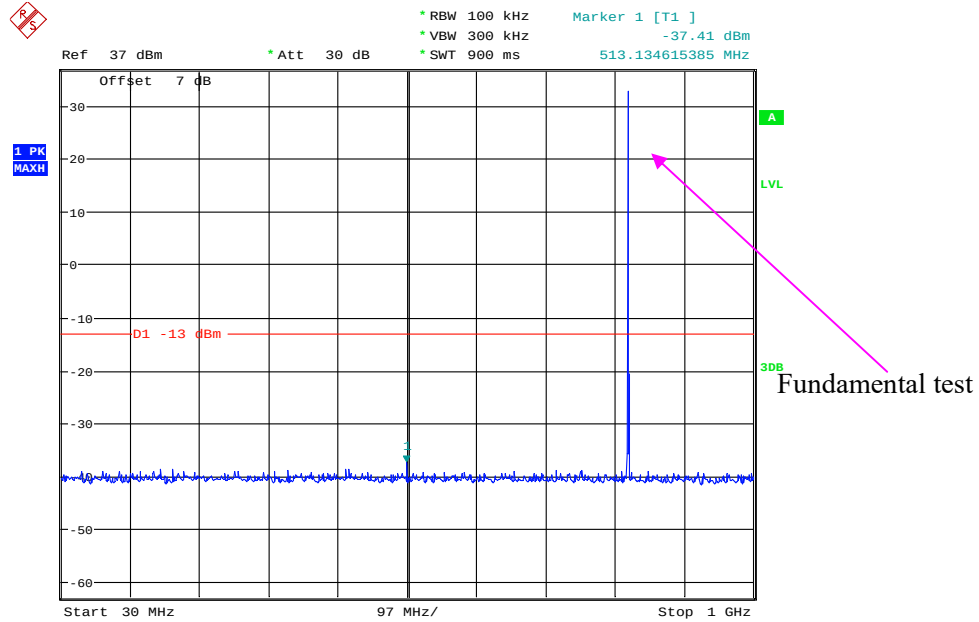
Test result: Pass

Please refer to the following plots.

Cellular Band (Part 22H)

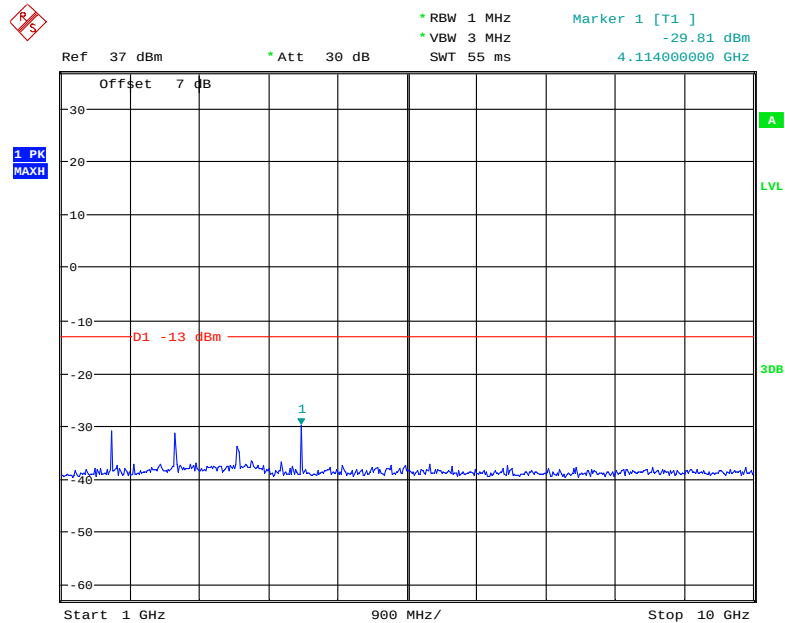
Low Channel:

30 MHz – 1 GHz (GSM Mode)



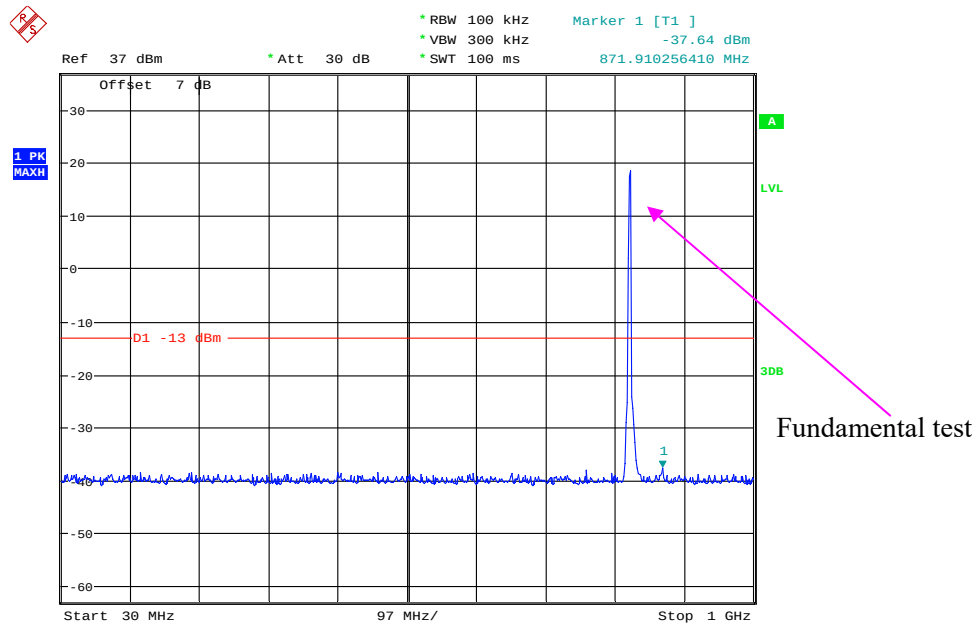
Date: 10.APR.2021 11:47:20

1 GHz – 10 GHz (GSM Mode)



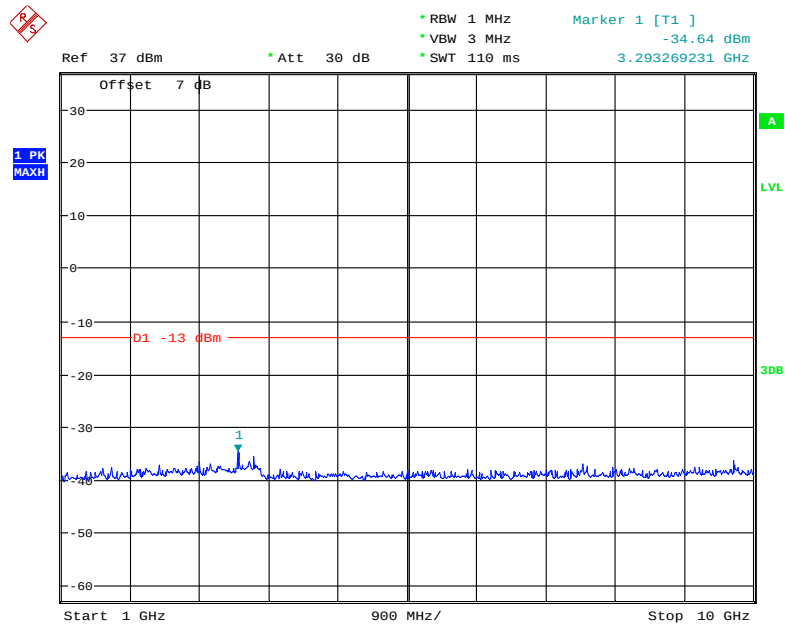
Date: 23.APR.2021 13:12:04

30 MHz – 1 GHz (WCDMA Mode)



Date: 10.APR.2021 15:48:33

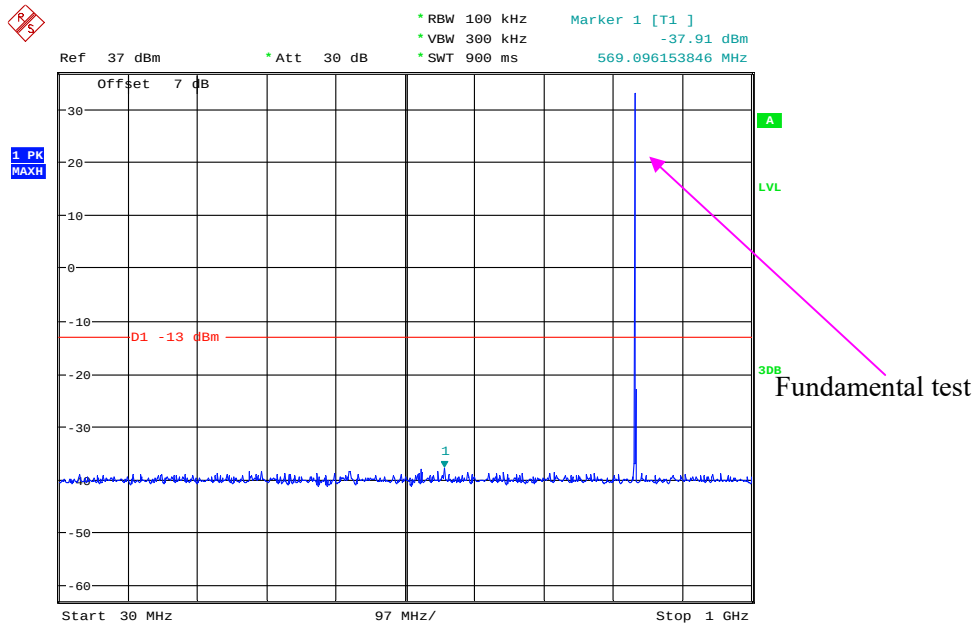
1 GHz – 10 GHz (WCDMA Mode)



Date: 10.APR.2021 15:55:00

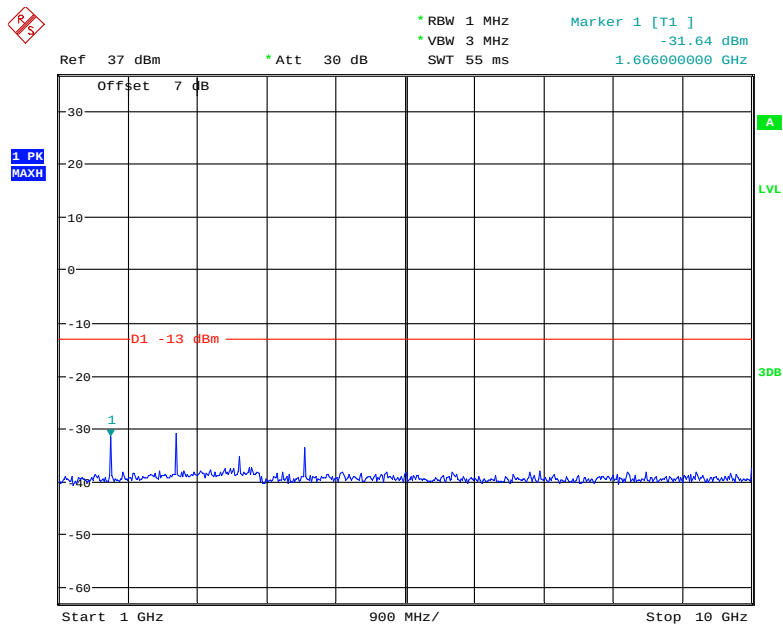
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



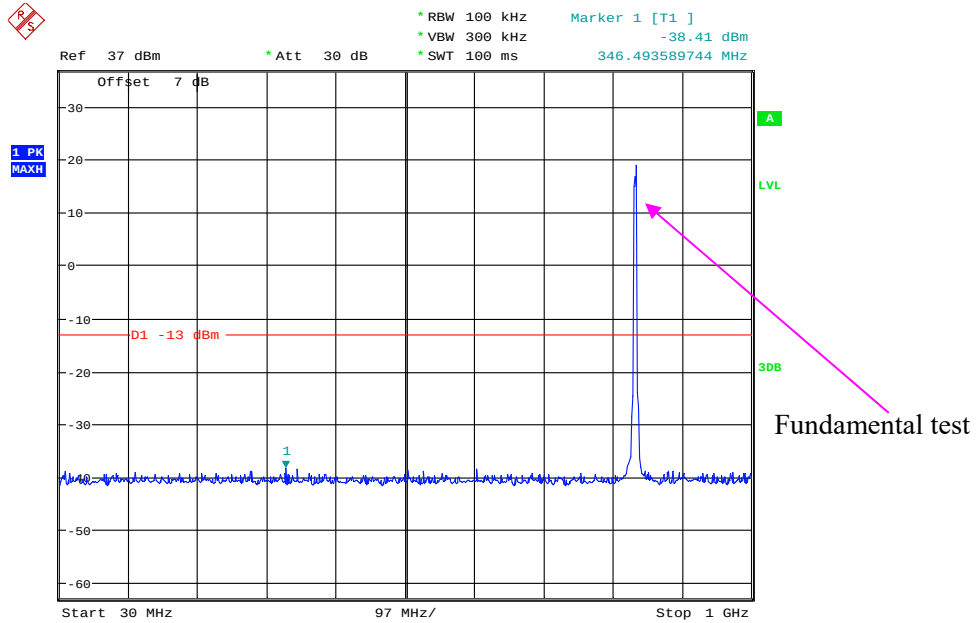
Date: 10.APR.2021 11:48:25

1 GHz – 10 GHz (GSM Mode)



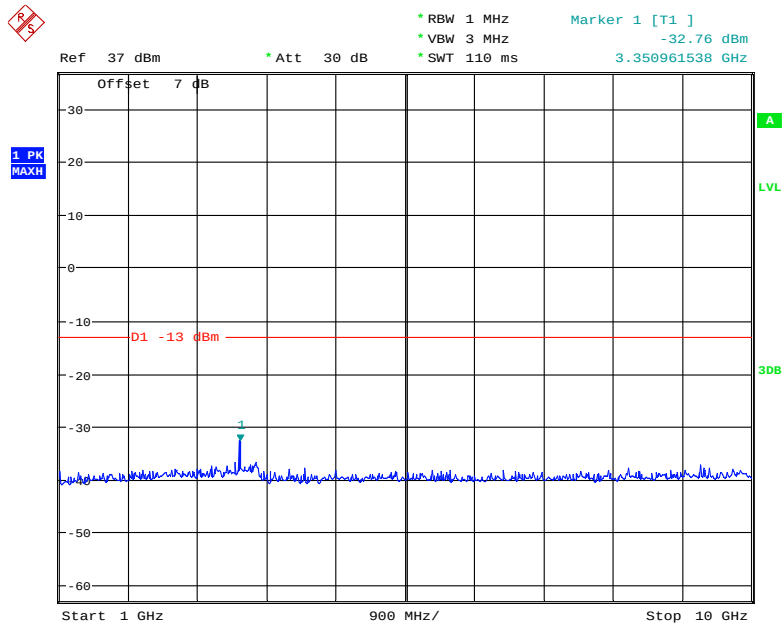
Date: 23.APR.2021 13:17:27

30 MHz – 1 GHz (WCDMA Mode)



Date: 10.APR.2021 15:49:37

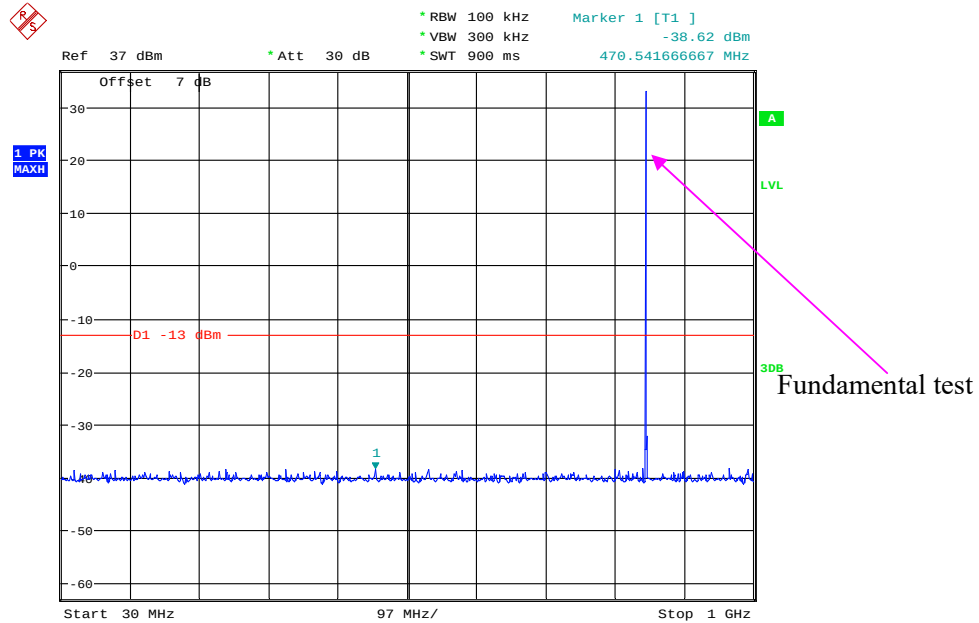
1 GHz – 10 GHz (WCDMA Mode)



Date: 10.APR.2021 15:55:17

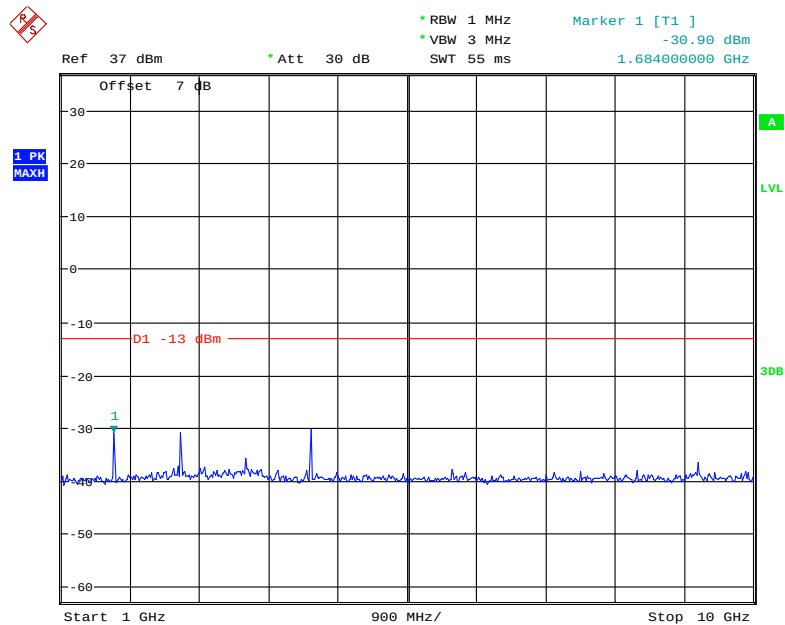
High Channel:

30 MHz – 1 GHz (GSM Mode)



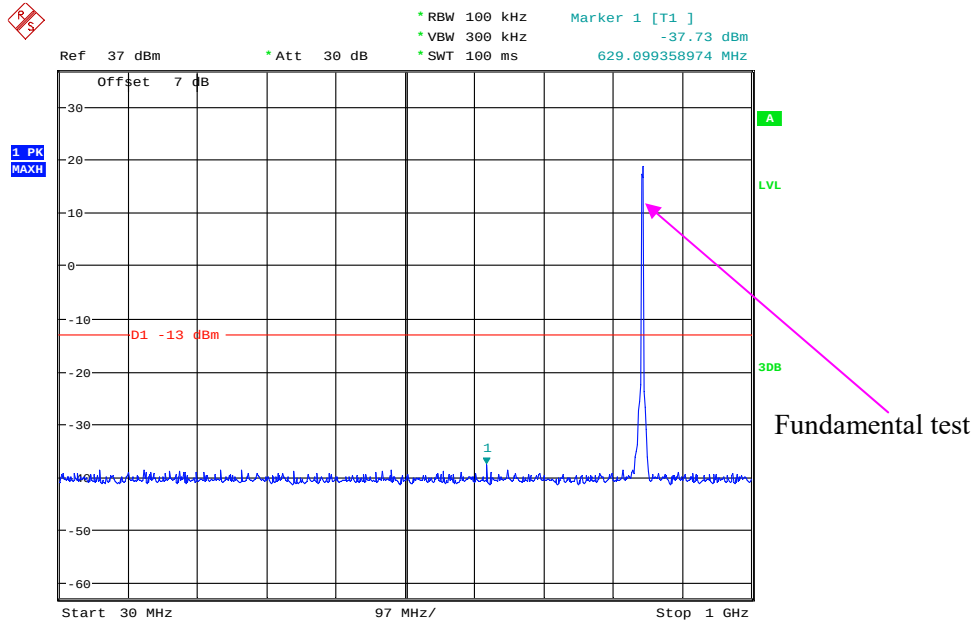
Date: 10.APR.2021 11:46:41

1 GHz – 10 GHz (GSM Mode)



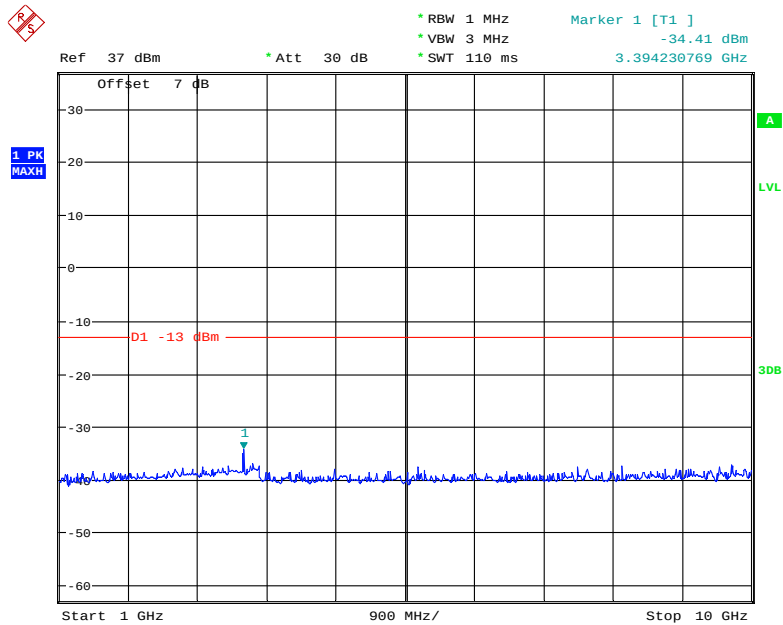
Date: 23.APR.2021 13:18:07

30 MHz – 1 GHz (WCDMA Mode)



Date: 10.APR.2021 15:50:28

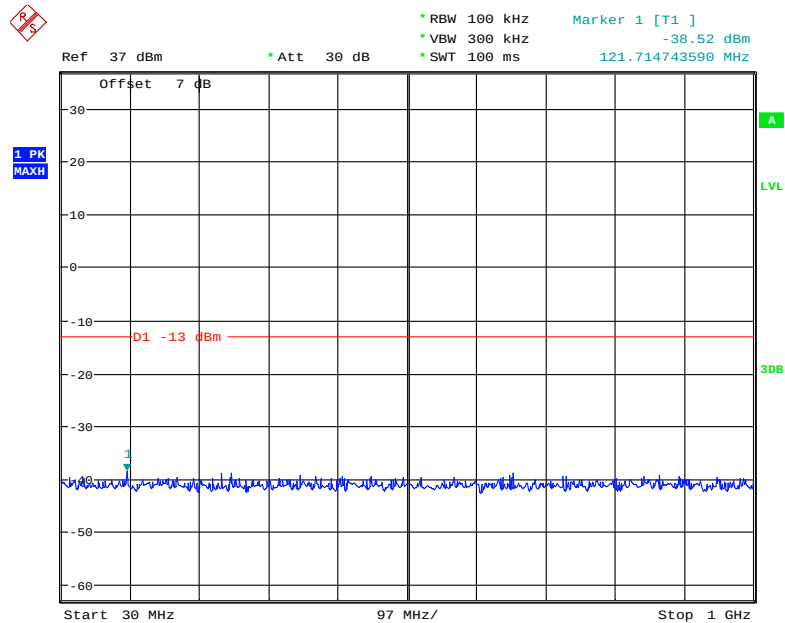
1 GHz – 10 GHz (WCDMA Mode)



Date: 10.APR.2021 15:55:37

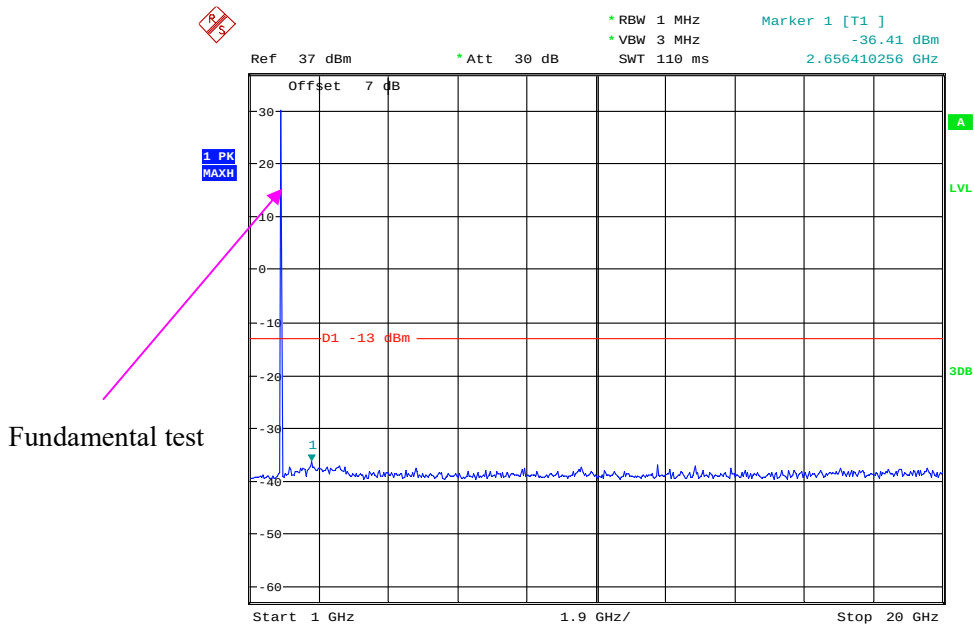
PCS Band (Part 24E) Low Channel:

30 MHz – 1 GHz (GSM Mode)



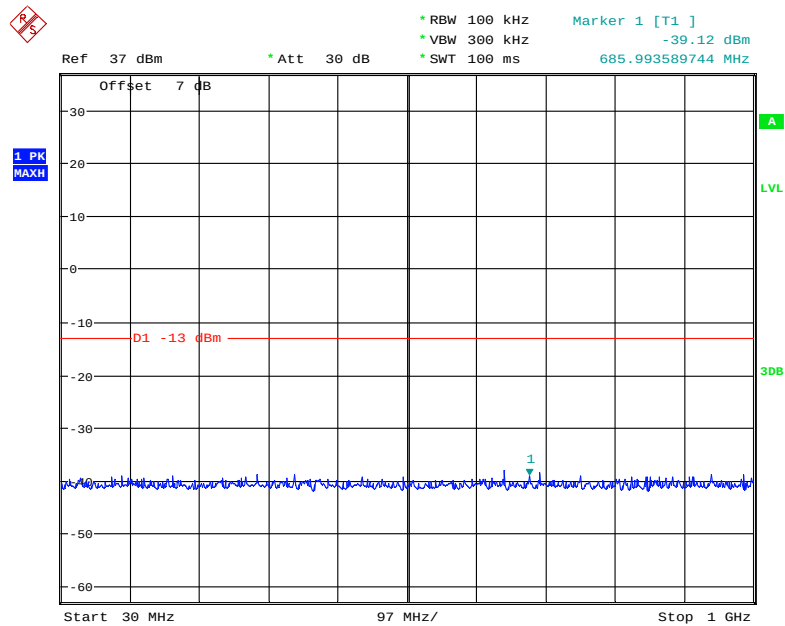
Date: 10.APR.2021 12:00:00

1 GHz – 20GHz (GSM Mode)



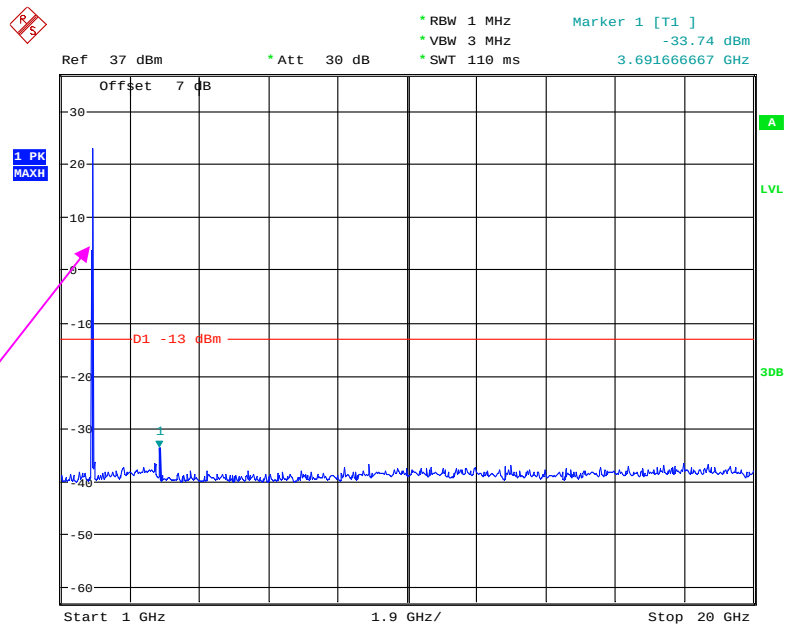
Date: 23.APR.2021 13:20:55

30 MHz – 1 GHz (WCDMA Mode)



Date: 10.APR.2021 15:36:21

1 GHz – 20 GHz (WCDMA Mode)

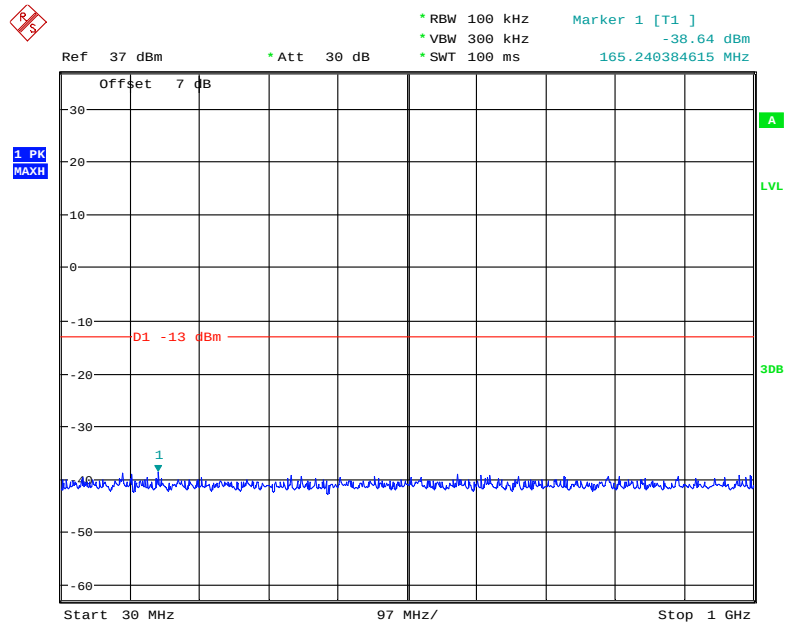


Fundamental test

Date: 10.APR.2021 15:34:10

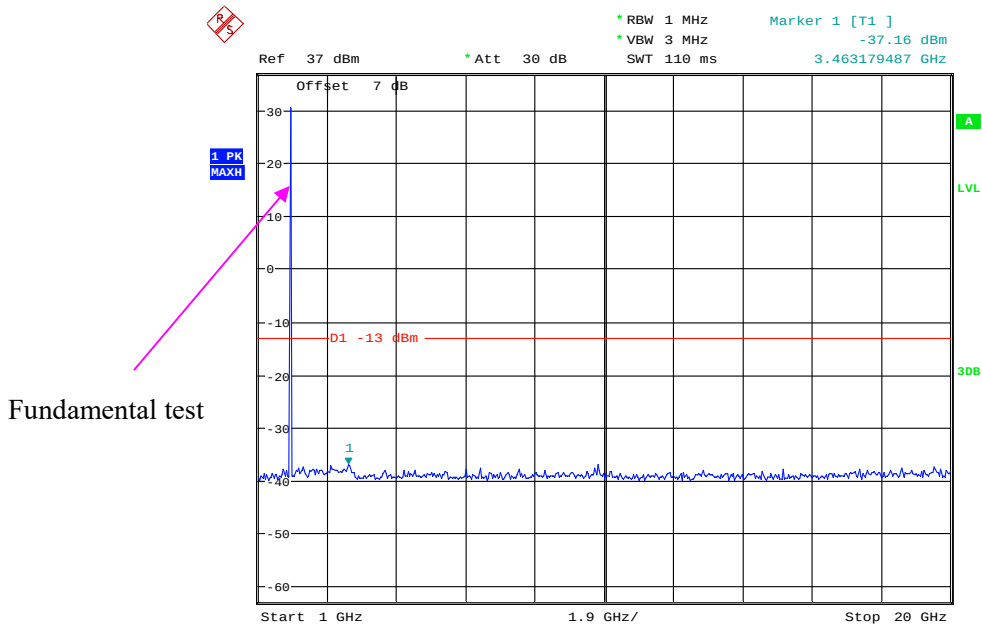
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



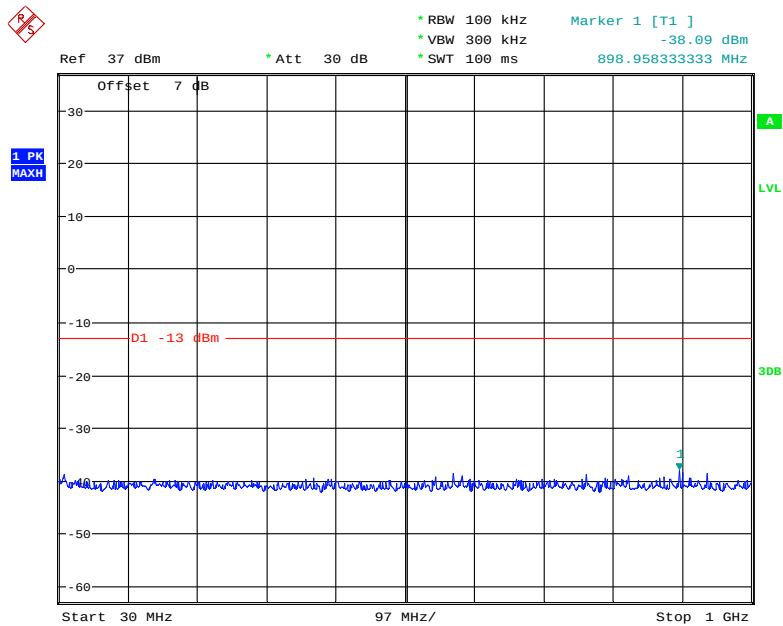
Date: 10.APR.2021 11:59:39

1 GHz – 20 GHz (GSM Mode)



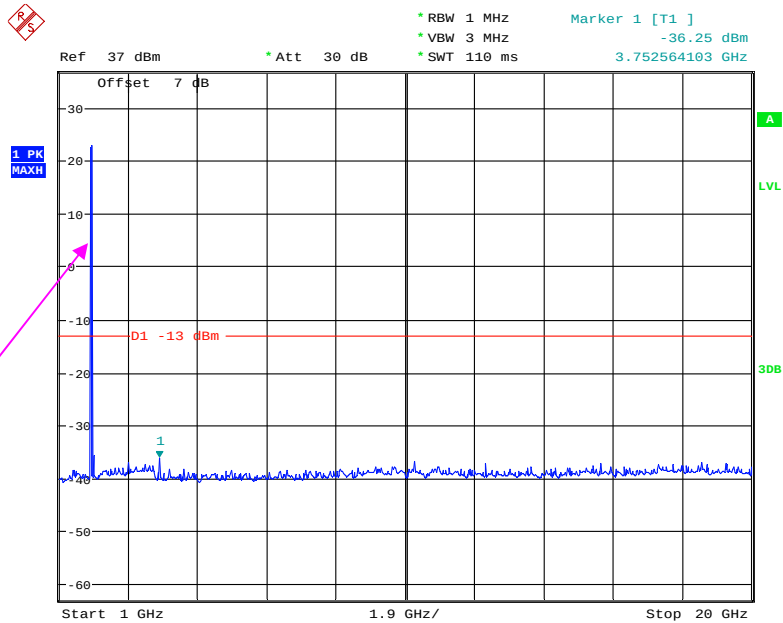
Date: 23.APR.2021 13:21:55

30 MHz – 1 GHz (WCDMA Mode)



Date: 10.APR.2021 15:35:47

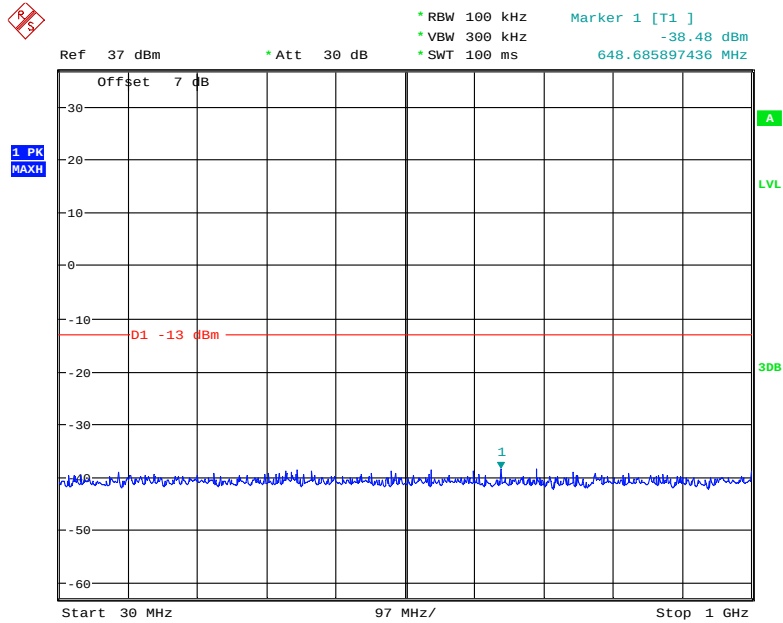
1 GHz – 20 GHz (WCDMA Mode)



Date: 10.APR.2021 15:34:46

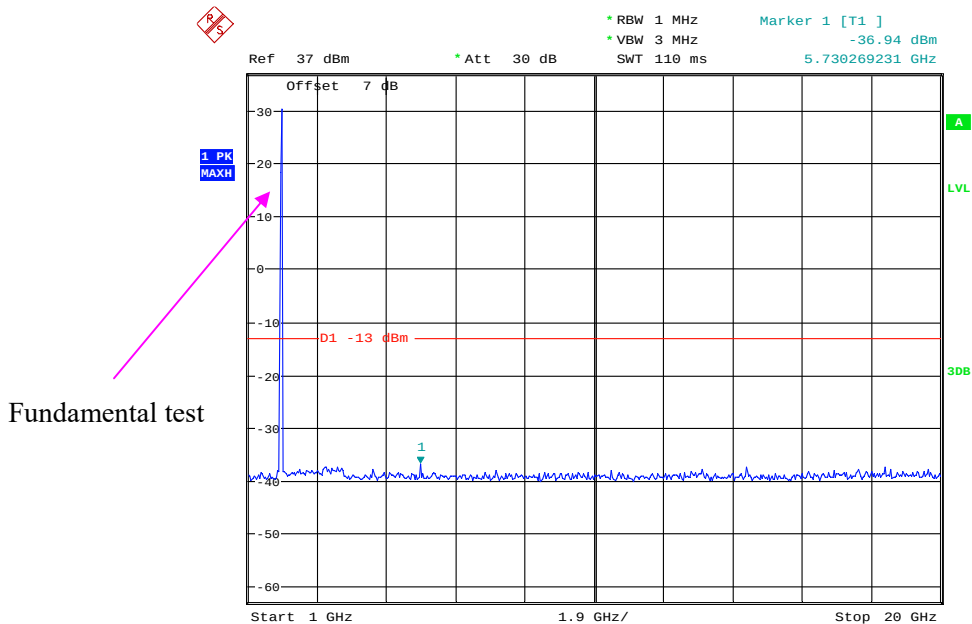
High Channel:

30 MHz – 1 GHz (GSM Mode)



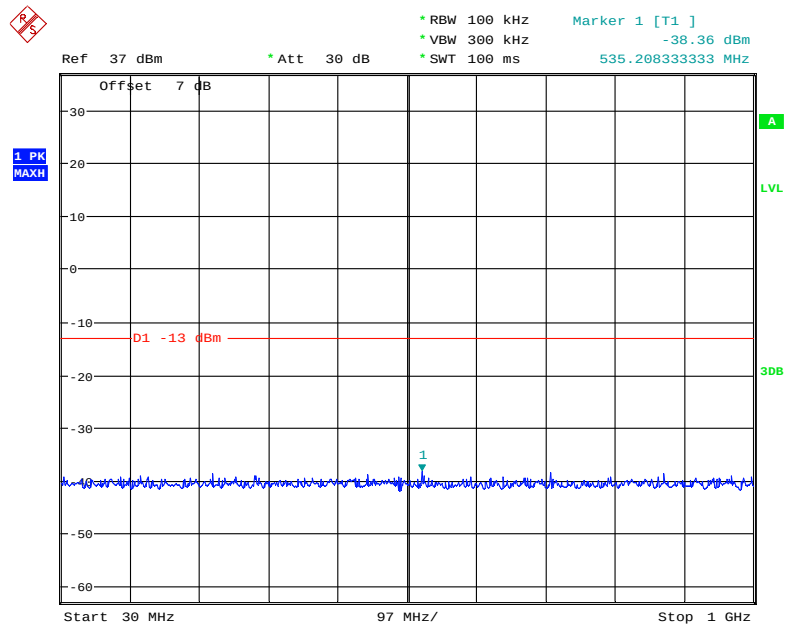
Date: 10.APR.2021 12:00:31

1 GHz – 20 GHz (GSM Mode)



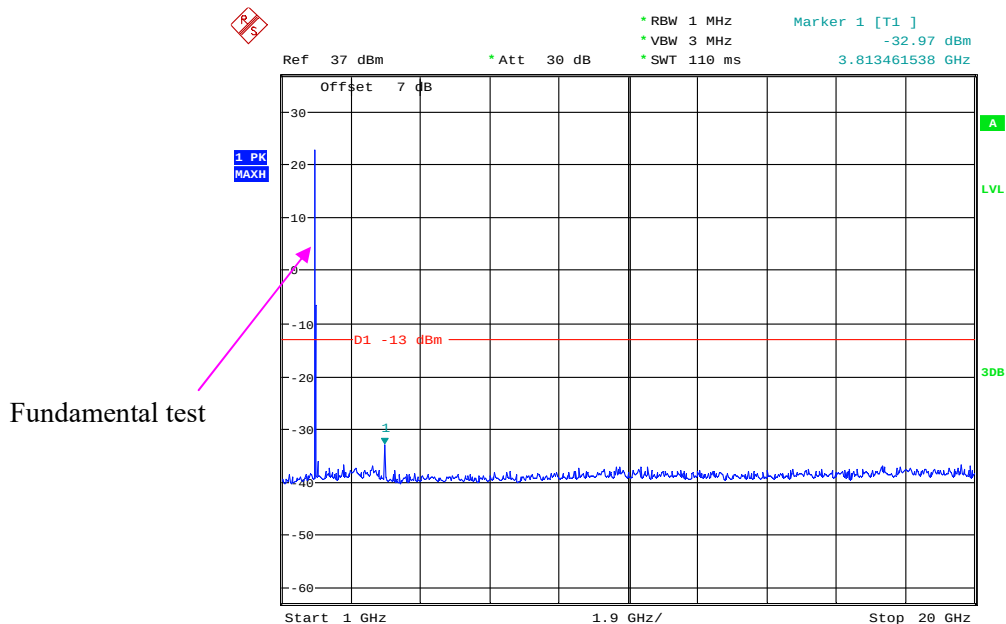
Date: 23.APR.2021 13:22:31

30 MHz – 1 GHz (WCDMA Mode)



Date: 10.APR.2021 15:31:41

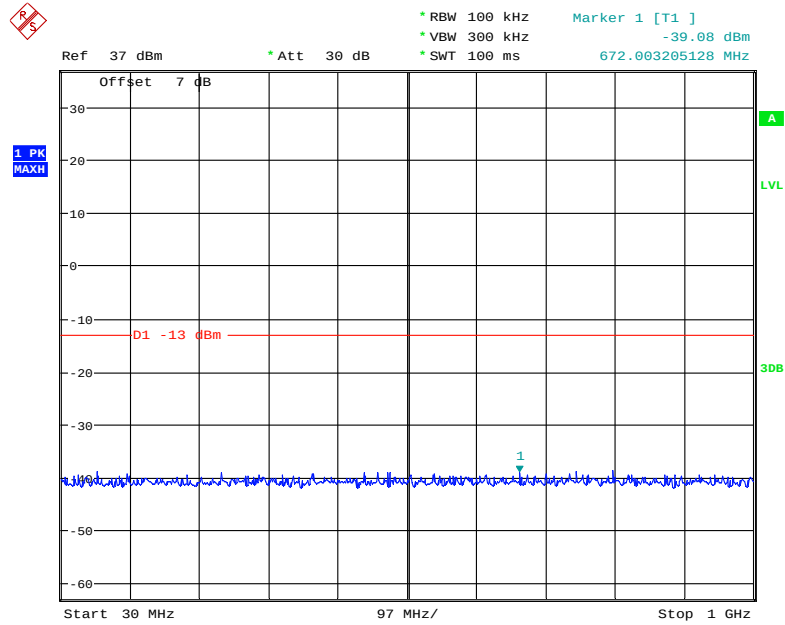
1 GHz – 20 GHz (WCDMA Mode)



Date: 10.APR.2021 15:33:03

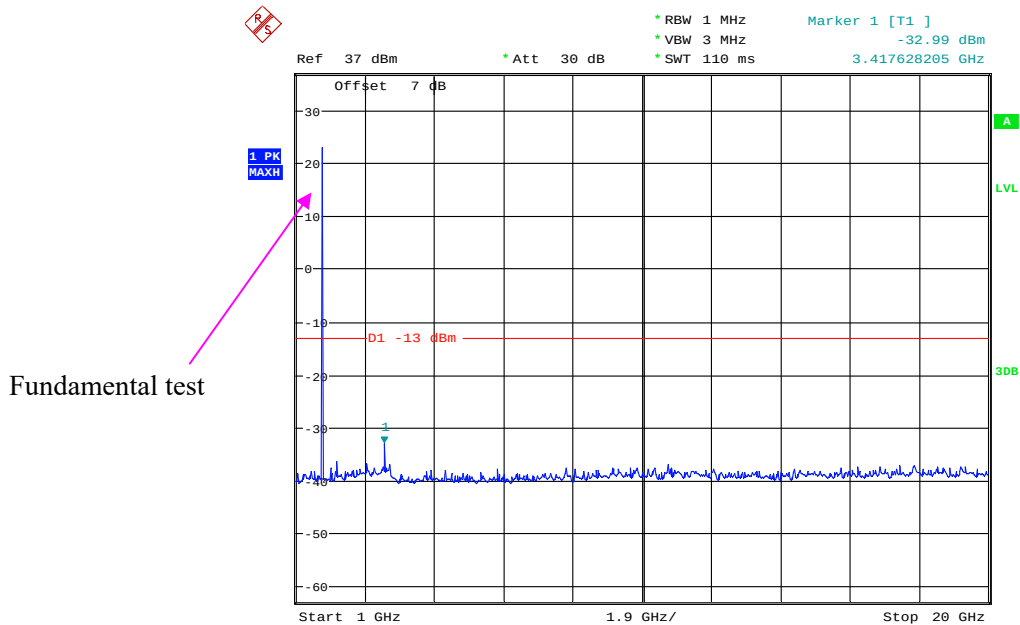
AWS Band (Part 27) **Low Channel:**

30 MHz – 1 GHz (WCDMA Mode)



Date: 10.APR.2021 15:39:28

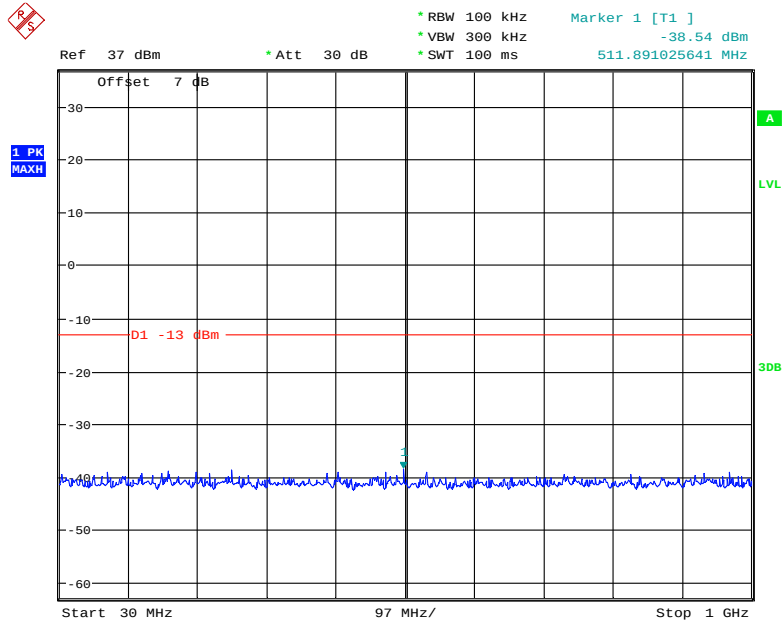
1 GHz – 20 GHz (WCDMA Mode)



Date: 10.APR.2021 15:42:45

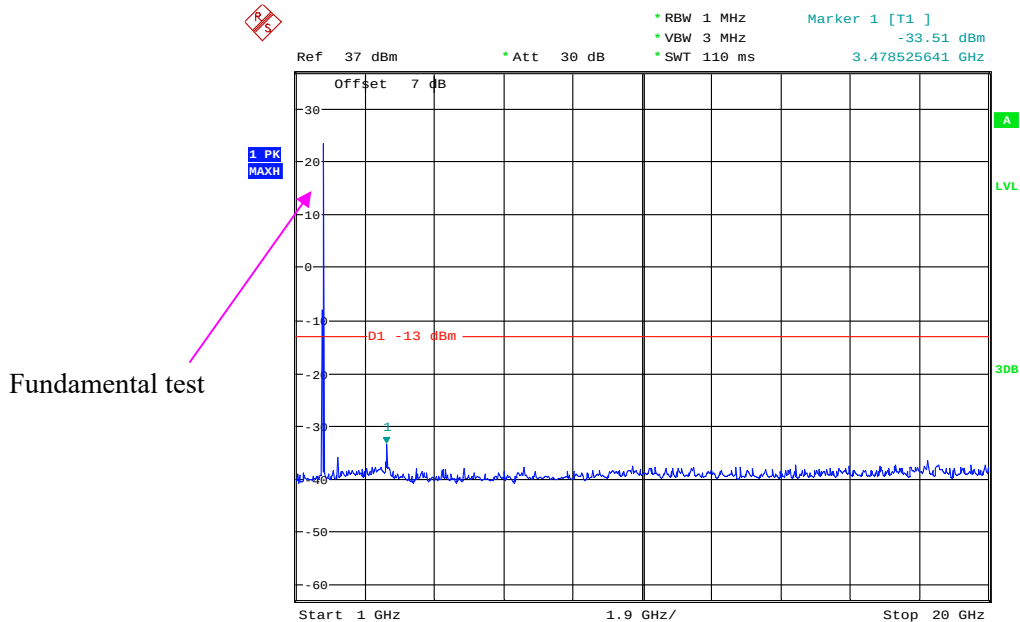
Middle Channel

30 MHz – 1 GHz (WCDMA Mode)

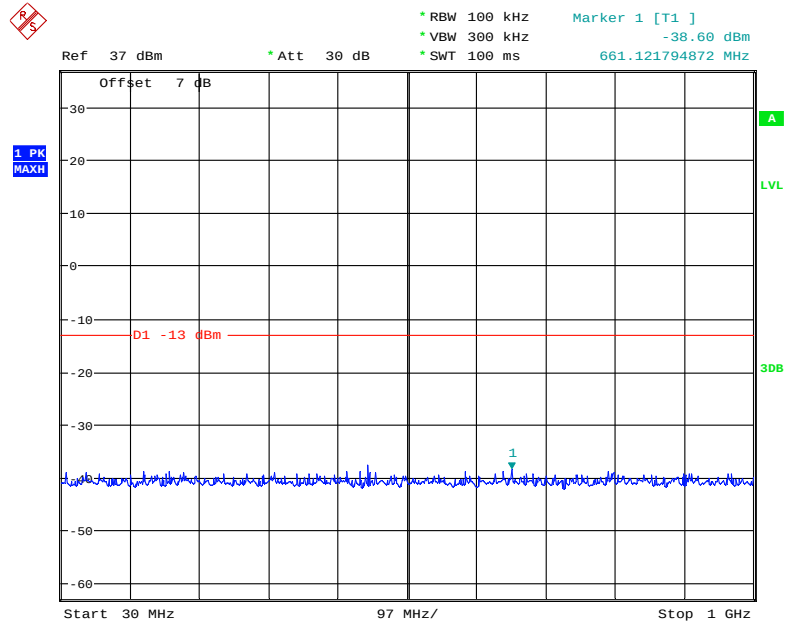


Date: 10.APR.2021 15:40:19

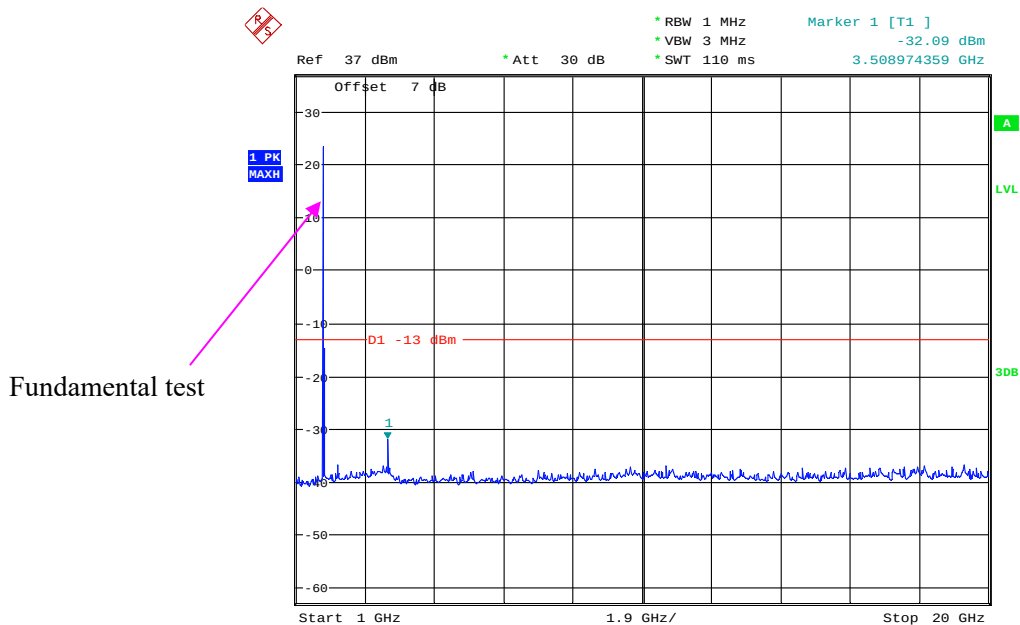
1 GHz – 20 GHz (WCDMA Mode)



Date: 10.APR.2021 15:42:09

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

Date: 10.APR.2021 15:40:56

1 GHz – 20 GHz (WCDMA Mode)

Date: 10.APR.2021 15:41:32

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:	25 ~32.2°C
Relative Humidity:	50~52 %
ATM Pressure:	101.0~101.1kPa

The testing was performed by Kilroy Deng on 2021-04-09 for below 1GHz and Alan He on 2021-04-12 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										
958.7	32.48	27	1.5	H	-64.0	1.36	0.0	-65.36	-13	52.36
958.7	33.21	301	1.6	V	-60.8	1.36	0.0	-62.16	-13	49.16
1648.40	51.57	359	2.2	H	-56.5	1.40	8.70	-49.20	-13	36.20
1648.40	53.94	333	1.6	V	-53.9	1.40	8.70	-46.60	-13	33.60
2472.60	62.51	27	1.1	H	-40.8	2.60	10.20	-33.20	-13	20.20
2472.60	61.68	166	1.4	V	-41.1	2.60	10.20	-33.50	-13	20.50
3296.80	51.61	179	1.1	H	-49.3	1.50	11.70	-39.10	-13	26.10
3296.80	51.33	353	2.4	V	-49.6	1.50	11.70	-39.40	-13	26.40
Middle channel										
960.8	32.49	31	1.2	H	-64.0	1.36	0.0	-65.36	-13	52.36
960.8	33.68	185	1.9	V	-60.4	1.36	0.0	-61.76	-13	48.76
1673.20	52.34	258	1.7	H	-54.0	1.30	8.90	-46.40	-13	33.40
1673.20	54.35	103	1.3	V	-51.4	1.30	8.90	-43.80	-13	30.80
2509.80	61.64	167	1.9	H	-41.7	2.60	10.20	-34.10	-13	21.10
2509.80	60.59	277	2.2	V	-42.2	2.60	10.20	-34.60	-13	21.60
3346.40	51.09	76	1.3	H	-49.8	1.50	11.70	-39.60	-13	26.60
3346.40	51.47	298	1.9	V	-49.5	1.50	11.70	-39.30	-13	26.30
High channel										
964.8	32.65	241	2.4	H	-63.9	1.36	0.0	-65.26	-13	52.26
964.8	33.72	260	1.7	V	-60.3	1.36	0.0	-61.66	-13	48.66
1697.60	52.68	40	1.9	H	-53.7	1.30	8.90	-46.10	-13	33.10
1697.60	52.57	2	1.6	V	-53.2	1.30	8.90	-45.60	-13	32.60
2546.40	62.11	241	1.3	H	-41.2	2.60	10.20	-33.60	-13	20.60
2546.40	61.89	153	1.3	V	-40.9	2.60	10.20	-33.30	-13	20.30
3395.20	50.68	225	1.5	H	-50.6	1.40	11.80	-40.20	-13	27.20
3395.20	51.47	125	2.2	V	-49.6	1.40	11.80	-39.20	-13	26.20

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										
952.9	32.43	287	1.5	H	-64.1	1.36	0.0	-65.46	-13	52.46
952.9	33.51	301	1.2	V	-60.5	1.36	0.0	-61.86	-13	48.86
1652.80	46.14	348	2.3	H	-60.2	1.30	8.90	-52.60	-13	39.60
1652.80	45.23	186	2.2	V	-60.5	1.30	8.90	-52.90	-13	39.90
Middle channel										
957.6	32.49	184	1.7	H	-64.0	1.36	0.0	-65.36	-13	52.36
957.6	33.57	357	2.0	V	-60.5	1.36	0.0	-61.86	-13	48.86
1673.20	47.29	46	2.4	H	-59.0	1.30	8.90	-51.40	-13	38.40
1673.20	47.61	129	2.2	V	-58.1	1.30	8.90	-50.50	-13	37.50
High channel										
962.8	32.53	177	1.5	H	-64.0	1.36	0.0	-65.36	-13	52.36
962.8	33.62	270	1.5	V	-60.4	1.36	0.0	-61.76	-13	48.76
1693.20	47.51	31	1.3	H	-58.8	1.30	8.90	-51.20	-13	38.20
1693.20	47.73	139	1.3	V	-58.0	1.30	8.90	-50.40	-13	37.40

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										
959.9	32.38	125	2.3	H	-64.1	1.36	0.0	-65.46	-13	52.46
959.9	33.51	165	2.2	V	-60.5	1.36	0.0	-61.86	-13	48.86
3700.40	46.51	116	1.8	H	-55.3	1.60	11.90	-45.00	-13	32.00
3700.40	47.61	40	1.7	V	-53.6	1.60	11.90	-43.30	-13	30.30
Middle channel										
961.6	32.35	316	1.2	H	-64.2	1.36	0.0	-65.56	-13	52.56
961.6	33.56	130	2.1	V	-60.5	1.36	0.0	-61.86	-13	48.86
3760.00	46.45	294	1.2	H	-55.6	1.50	11.80	-45.30	-13	32.30
3760.00	47.93	276	2.0	V	-53.7	1.50	11.80	-43.40	-13	30.40
High channel										
957.5	32.55	121	1.4	H	-64.0	1.36	0.0	-65.36	-13	52.36
957.5	33.63	73	1.8	V	-60.4	1.36	0.0	-61.76	-13	48.76
3819.60	46.58	15	1.2	H	-55.5	1.50	11.80	-45.20	-13	32.20
3819.60	47.96	197	1.3	V	-53.6	1.50	11.80	-43.30	-13	30.30

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										
953.5	32.25	204	1.1	H	-64.3	1.36	0.0	-65.66	-13	52.66
953.5	33.33	53	1.5	V	-60.7	1.36	0.0	-62.06	-13	49.06
3704.80	48.81	106	1.6	H	-53.0	1.60	11.90	-42.70	-13	29.70
3704.80	49.29	95	1.8	V	-51.9	1.60	11.90	-41.60	-13	28.60
Middle channel										
954.7	32.19	267	2.1	H	-64.3	1.36	0.0	-65.66	-13	52.66
954.7	33.28	3	1.9	V	-60.8	1.36	0.0	-62.16	-13	49.16
3760.00	48.57	280	1.7	H	-53.5	1.50	11.80	-43.20	-13	30.20
3760.00	49.11	198	1.3	V	-52.5	1.50	11.80	-42.20	-13	29.20
High channel										
960.2	32.22	329	1.9	H	-64.3	1.36	0.0	-65.66	-13	52.66
960.2	33.30	53	1.1	V	-60.8	1.36	0.0	-62.16	-13	49.16
3815.20	50.18	54	1.7	H	-51.9	1.50	11.80	-41.60	-13	28.60
3815.20	51.29	158	2.3	V	-50.3	1.50	11.80	-40.00	-13	27.00

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										
950.3	32.31	87	1.8	H	-64.2	1.36	0.0	-65.56	-13	52.56
950.3	33.43	66	2.4	V	-60.6	1.36	0.0	-61.96	-13	48.96
3424.80	50.25	218	1.8	H	-50.5	1.40	11.80	-40.10	-13	27.10
3424.80	46.26	222	1.5	V	-54.3	1.40	11.80	-43.90	-13	30.90
Middle channel										
956.6	32.36	125	2.0	H	-64.1	1.36	0.0	-65.46	-13	52.46
956.6	33.48	273	1.9	V	-60.6	1.36	0.0	-61.96	-13	48.96
3465.20	51.37	346	2.2	H	-49.4	1.50	12.00	-38.90	-13	25.90
3465.20	47.54	108	2.0	V	-54.0	1.50	12.00	-43.50	-13	30.50
High channel										
966.1	32.33	351	1.8	H	-64.2	1.36	0.0	-65.56	-13	52.56
966.1	33.45	117	2.4	V	-60.6	1.36	0.0	-61.96	-13	48.96
3505.20	50.77	132	1.7	H	-50.0	1.50	12.00	-39.50	-13	26.50
3505.20	47.61	236	2.0	V	-53.9	1.50	12.00	-43.40	-13	30.40

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										
951.2	32.03	170	1.8	H	-64.5	1.36	0.0	-65.86	-13	52.86
951.2	33.12	182	2.3	V	-60.9	1.36	0.0	-62.26	-13	49.26
3701.40	49.84	69	2.2	H	-52.0	1.60	11.90	-41.70	-13	28.70
3701.40	49.95	123	2.4	V	-51.3	1.60	11.90	-41.00	-13	28.00
5552.10	46.35	333	1.6	H	-53.3	1.70	12.40	-42.60	-13	29.60
5552.10	46.18	267	1.5	V	-53.2	1.70	12.40	-42.50	-13	29.50
1.4 MHz, Middle channel										
955.3	32.11	22	2.0	H	-64.4	1.36	0.0	-65.76	-13	52.76
955.3	33.19	144	1.7	V	-60.9	1.36	0.0	-62.26	-13	49.26
3760.00	53.50	188	1.1	H	-48.6	1.50	11.80	-38.30	-13	25.30
3760.00	54.09	41	2.5	V	-47.5	1.50	11.80	-37.20	-13	24.20
5640.00	46.88	347	1.9	H	-52.8	1.70	12.40	-42.10	-13	29.10
5640.00	46.56	342	2.3	V	-52.8	1.70	12.40	-42.10	-13	29.10
1.4 MHz, High channel										
959.4	32.15	91	2.0	H	-64.4	1.36	0.0	-65.76	-13	52.76
959.4	33.25	71	1.1	V	-60.8	1.36	0.0	-62.16	-13	49.16
3818.60	51.14	231	1.8	H	-50.9	1.50	11.80	-40.60	-13	27.60
3818.60	51.96	154	1.9	V	-49.6	1.50	11.80	-39.30	-13	26.30
5727.90	46.45	142	1.2	H	-53.4	1.60	12.10	-42.90	-13	29.90
5727.90	46.37	216	1.4	V	-52.9	1.60	12.10	-42.40	-13	29.40

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 4										
Test frequency range:30 MHz ~ 20 GHz										
1.4MHz, Low channel										
964.9	32.21	217	2.5	H	-64.3	1.36	0.0	-65.66	-13	52.66
964.9	33.26	254	1.3	V	-60.8	1.36	0.0	-62.16	-13	49.16
3421.40	48.01	360	1.4	H	-52.8	1.40	11.80	-42.40	-13	29.40
3421.40	48.74	77	1.4	V	-51.9	1.40	11.80	-41.50	-13	28.50
5132.10	46.44	179	2.4	H	-53.6	1.60	12.10	-43.10	-13	30.10
5132.10	46.57	229	1.5	V	-53.4	1.60	12.10	-42.90	-13	29.90
1.4MHz, Middle channel										
958.9	32.28	183	1.5	H	-64.2	1.36	0.0	-65.56	-13	52.56
958.9	33.32	304	2.2	V	-60.7	1.36	0.0	-62.06	-13	49.06
3464.00	50.01	175	1.5	H	-50.7	1.50	12.00	-40.20	-13	27.20
3464.00	49.47	299	1.4	V	-52.0	1.50	12.00	-41.50	-13	28.50
5196.00	46.25	63	1.1	H	-53.8	1.60	12.10	-43.30	-13	30.30
5196.00	46.39	235	2.2	V	-53.2	1.60	12.10	-42.70	-13	29.70
1.4MHz, High channel										
959.2	32.24	124	1.6	H	-64.3	1.36	0.0	-65.66	-13	52.66
959.2	33.28	47	1.9	V	-60.8	1.36	0.0	-62.16	-13	49.16
3508.60	49.35	245	2.2	H	-51.4	1.50	12.00	-40.90	-13	27.90
3508.60	49.47	36	1.7	V	-52.0	1.50	12.00	-41.50	-13	28.50
5262.90	46.59	169	1.5	H	-53.2	1.60	12.20	-42.60	-13	29.60
5262.90	46.19	338	2.0	V	-53.0	1.60	12.20	-42.40	-13	29.40

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										
1.4MHz, Low channel										
956.4	32.34	74	2.4	H	-64.2	1.36	0.0	-65.56	-13	52.56
956.4	33.28	78	1.5	V	-60.8	1.36	0.0	-62.16	-13	49.16
1649.40	51.64	1	1.5	H	-56.4	1.40	8.70	-49.10	-13	36.10
1649.40	49.52	230	1.1	V	-58.3	1.40	8.70	-51.00	-13	38.00
2474.10	48.20	124	2.4	H	-55.2	2.60	10.20	-47.60	-13	34.60
2474.10	47.16	77	1.8	V	-55.6	2.60	10.20	-48.00	-13	35.00
1.4MHz, Middle channel										
954.7	32.30	269	1.5	H	-64.2	1.36	0.0	-65.56	-13	52.56
954.7	33.23	263	1.7	V	-60.8	1.36	0.0	-62.16	-13	49.16
1673.00	51.36	237	1.2	H	-55.0	1.30	8.90	-47.40	-13	34.40
1673.00	48.96	338	1.2	V	-56.8	1.30	8.90	-49.20	-13	36.20
2509.50	47.65	207	2.4	H	-55.7	2.60	10.20	-48.10	-13	35.10
2509.50	46.30	331	1.1	V	-56.4	2.60	10.20	-48.80	-13	35.80
1.4MHz, High channel										
961.3	32.32	153	1.2	H	-64.2	1.36	0.0	-65.56	-13	52.56
961.3	33.27	4	1.1	V	-60.8	1.36	0.0	-62.16	-13	49.16
1696.60	52.58	188	1.7	H	-53.8	1.30	8.90	-46.20	-13	33.20
1696.60	49.30	34	1.3	V	-56.4	1.30	8.90	-48.80	-13	35.80
2544.90	49.61	293	2.4	H	-53.7	2.60	10.20	-46.10	-13	33.10
2544.90	47.80	46	1.9	V	-54.9	2.60	10.20	-47.30	-13	34.30
Band 7										
Test frequency range: 30 MHz ~ 26.5 GHz										
5MHz, Low channel										
957.3	32.41	332	2.3	H	-64.1	1.36	0.0	-65.46	-25	40.46
957.3	33.48	59	2.2	V	-60.6	1.36	0.0	-61.96	-25	36.96
5005.00	44.61	26	1.8	H	-56.0	1.70	12.00	-45.70	-25	20.70
5005.00	46.63	199	1.3	V	-53.4	1.70	12.00	-43.10	-25	18.10
7507.50	52.84	225	1.5	H	-43.1	1.90	10.70	-34.30	-25	9.30
7507.50	49.64	88	2.0	V	-45.9	1.90	10.70	-37.10	-25	12.10
5MHz, Middle channel										
957.6	32.45	30	1.5	H	-64.1	1.36	0.0	-65.46	-25	40.46
951.6	33.53	68	2.4	V	-60.5	1.36	0.0	-61.86	-25	36.86
5070.00	45.22	2	2.1	H	-54.8	1.60	12.10	-44.30	-25	19.30
5070.00	45.46	112	2.4	V	-54.6	1.60	12.10	-44.10	-25	19.10
7605.00	47.84	96	1.8	H	-49.7	2.10	10.50	-41.30	-25	16.30
7605.00	46.24	93	1.1	V	-51.0	2.10	10.50	-42.60	-25	17.60
5MHz, High channel										
966.8	32.47	203	2.0	H	-64.0	1.36	0.0	-65.36	-25	40.36
966.8	33.56	186	2.3	V	-60.5	1.36	0.0	-61.86	-25	36.86
5135.00	44.22	31	1.7	H	-55.8	1.60	12.10	-45.30	-25	20.30
5135.00	45.46	245	1.3	V	-54.6	1.60	12.10	-44.10	-25	19.10
7702.50	48.84	67	1.6	H	-48.7	2.10	10.50	-40.30	-25	15.30
7702.50	45.24	346	1.9	V	-52.0	2.10	10.50	-43.60	-25	18.60

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 12										
Test frequency range: 30 MHz ~10GHz										
1.4MHz, Low channel										
962.5	32.51	5	1.7	H	-64.0	1.36	0.0	-65.36	-13	52.36
962.5	33.58	324	1.8	V	-60.5	1.36	0.0	-61.86	-13	48.86
1399.40	44.63	2	2.5	H	-63.5	1.60	7.90	-57.20	-13	44.20
1399.40	46.68	345	2.4	V	-61.8	1.60	7.90	-55.50	-13	42.50
2099.10	59.68	198	2.2	H	-41.4	1.30	9.70	-33.00	-13	20.00
2099.10	57.75	67	1.0	V	-44.2	1.30	9.70	-35.80	-13	22.80
1.4MHz, Middle channel										
960.7	32.56	162	1.3	H	-63.9	1.36	0.0	-65.26	-13	52.26
960.7	33.59	259	1.0	V	-60.5	1.36	0.0	-61.86	-13	48.86
1415.00	43.43	85	1.5	H	-64.7	1.60	7.90	-58.40	-13	45.40
1415.00	45.23	149	2.1	V	-63.2	1.60	7.90	-56.90	-13	43.90
2122.50	58.59	187	2.0	H	-42.5	1.30	9.70	-34.10	-13	21.10
2122.50	57.7	293	2.3	V	-44.3	1.30	9.70	-35.90	-13	22.90
1.4MHz, High channel										
963.6	32.49	178	2.1	H	-64.0	1.36	0.0	-65.36	-13	52.36
963.6	33.57	359	1.6	V	-60.5	1.36	0.0	-61.86	-13	48.86
1430.60	45.28	346	2.0	H	-62.9	1.60	7.90	-56.60	-13	43.60
1430.60	46.16	52	1.9	V	-62.3	1.60	7.90	-56.00	-13	43.00
2145.90	58.61	129	1.5	H	-42.5	1.30	9.70	-34.10	-13	21.10
2145.90	56.94	16	2.3	V	-45.0	1.30	9.70	-36.60	-13	23.60

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 17										
Test frequency range: 30 MHz ~10GHz										
5MHz, Low channel										
952.3	32.62	45	1.7	H	-63.9	1.36	0.0	-65.26	-13	52.26
952.3	33.58	46	1.3	V	-60.5	1.36	0.0	-61.86	-13	48.86
1413.00	48.9	42	2.3	H	-59.3	1.60	7.90	-53.00	-13	40.00
1413.00	51.93	205	1.6	V	-56.5	1.60	7.90	-50.20	-13	37.20
2119.50	59.44	210	2.0	H	-41.7	1.30	9.70	-33.30	-13	20.30
2119.50	58.25	95	2.3	V	-43.7	1.30	9.70	-35.30	-13	22.30
5MHz, Middle channel										
949.2	32.60	108	1.2	H	-63.9	1.36	0.0	-65.26	-13	52.26
949.2	33.55	1	2.5	V	-60.5	1.36	0.0	-61.86	-13	48.86
1420.00	49.22	141	1.5	H	-59.0	1.60	7.90	-52.70	-13	39.70
1420.00	48.35	140	1.3	V	-60.1	1.60	7.90	-53.80	-13	40.80
2130.00	58.35	273	1.2	H	-42.8	1.30	9.70	-34.40	-13	21.40
2130.00	58.12	96	1.8	V	-43.8	1.30	9.70	-35.40	-13	22.40
5MHz, High channel										
950.8	32.59	190	2.2	H	-63.9	1.36	0.0	-65.26	-13	52.26
950.8	33.51	144	1.7	V	-60.5	1.36	0.0	-61.86	-13	48.86
1427.00	49.33	345	2.4	H	-58.8	1.60	7.90	-52.50	-13	39.50
1427.00	49.19	291	2.3	V	-59.2	1.60	7.90	-52.90	-13	39.90
2140.50	58.64	28	2.4	H	-42.5	1.30	9.70	-34.10	-13	21.10
2140.50	58.73	83	1.4	V	-43.2	1.30	9.70	-34.80	-13	21.80

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(g) (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.

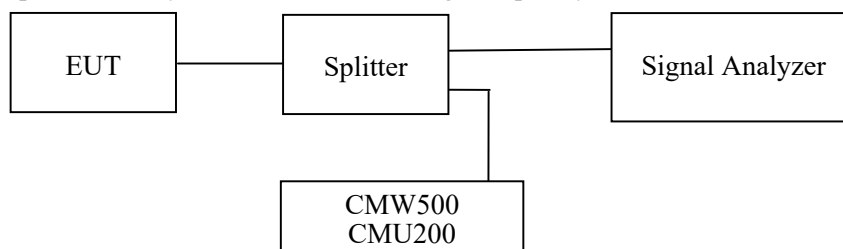
According to FCC §27.53 (g), For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

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

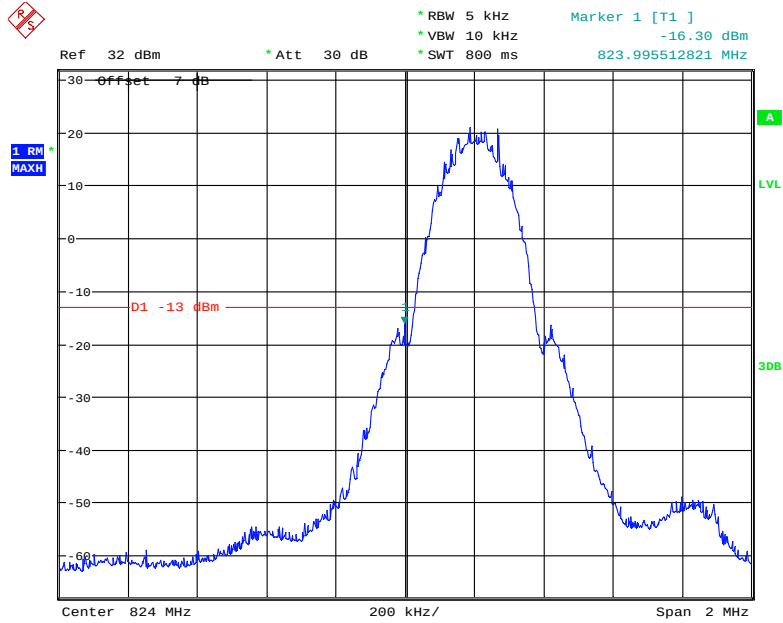
The testing was performed by Andy Yu from 2021-04-09 to 2021-04-27.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

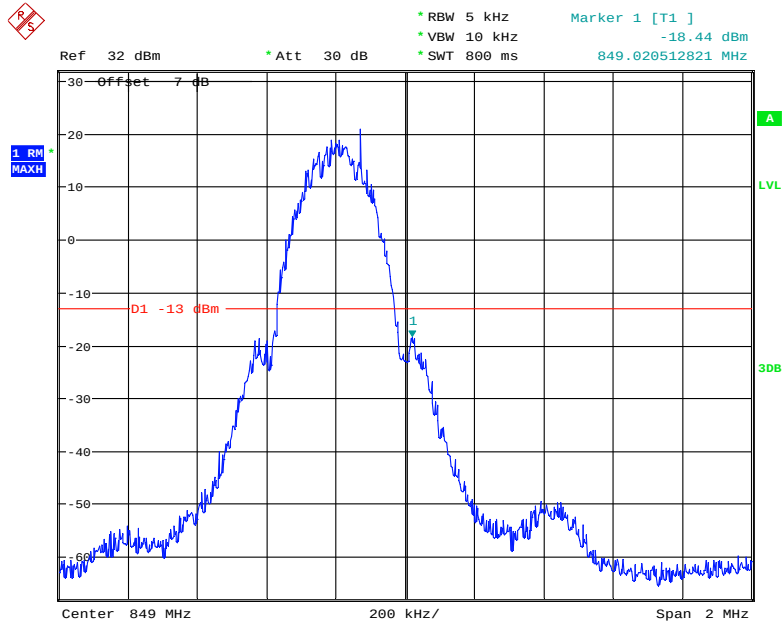
Please refer to the following plots.

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



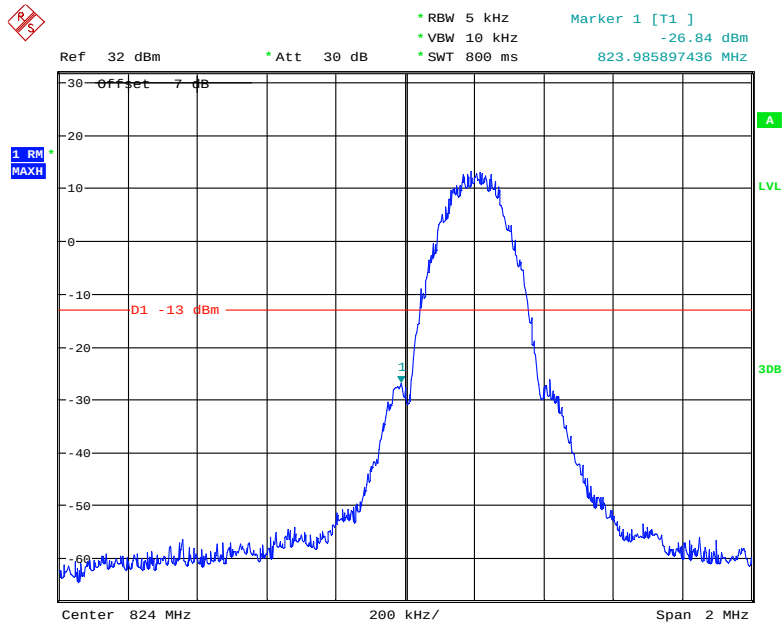
Date: 10.APR.2021 10:05:11

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



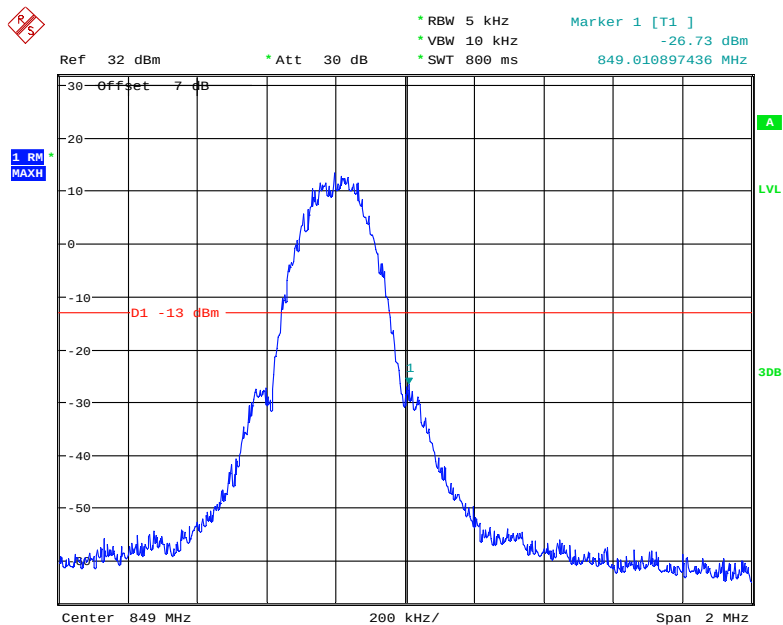
Date: 10.APR.2021 10:06:50

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

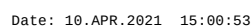
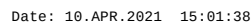


Date: 10.APR.2021 10:25:25

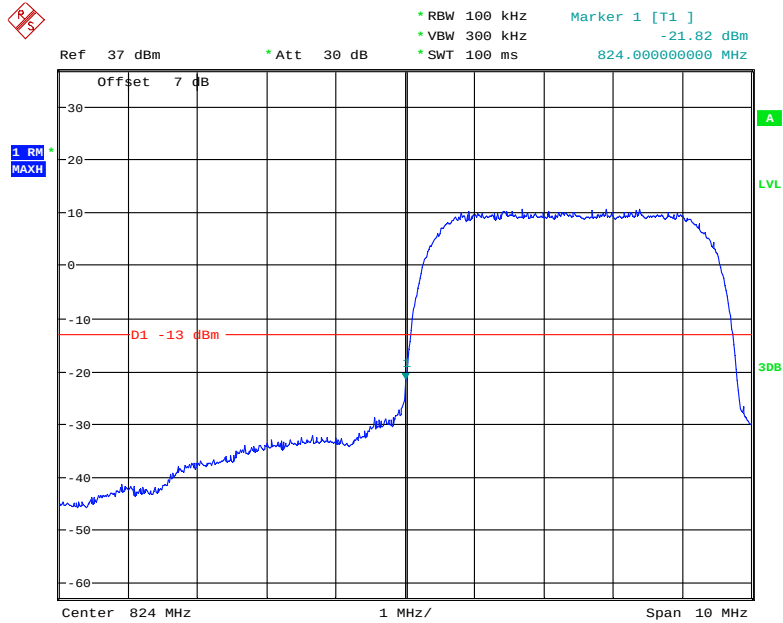
Cellular Band, Right Band Edge for EGPRS (GMSK) Mode



Date: 10.APR.2021 10:24:22

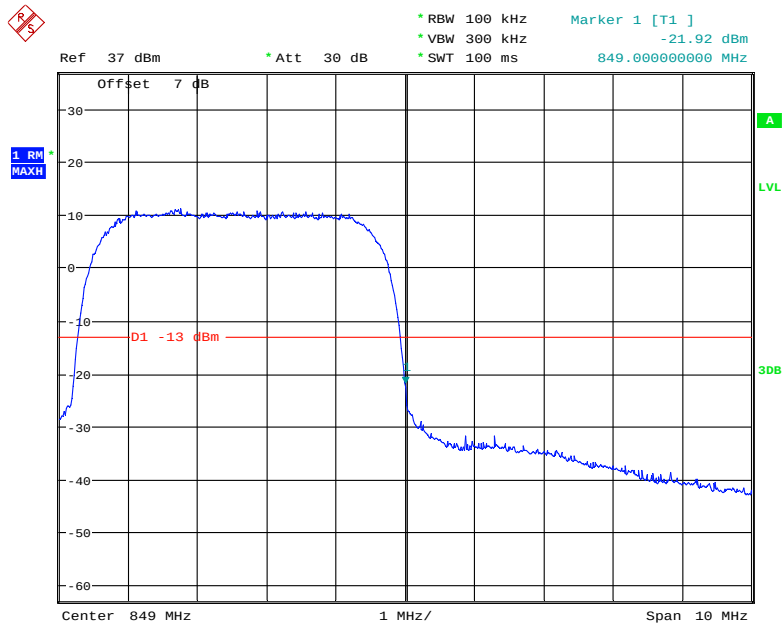


Cellular Band, Left Band Edge for HSDPA (16QAM) Mode



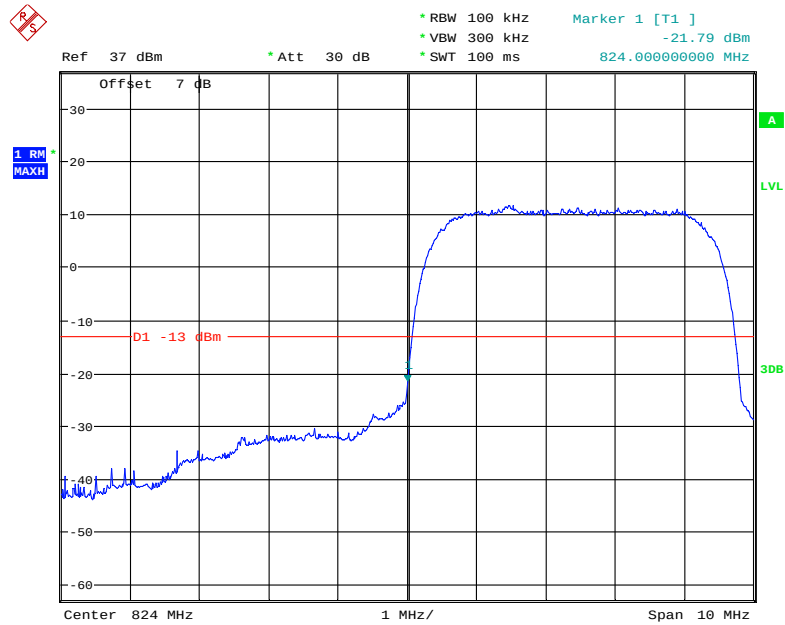
Date: 10.APR.2021 15:02:19

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



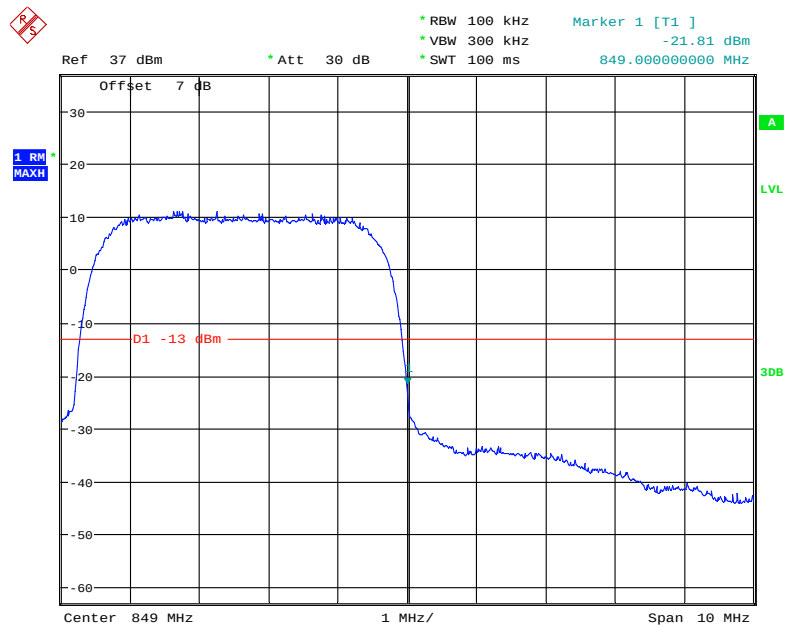
Date: 10.APR.2021 15:08:06

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



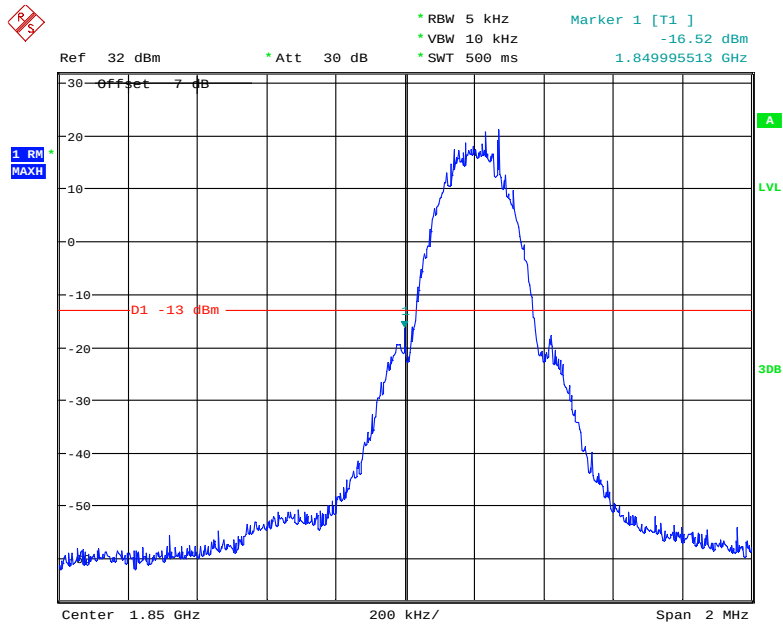
Date: 10.APR.2021 14:56:41

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



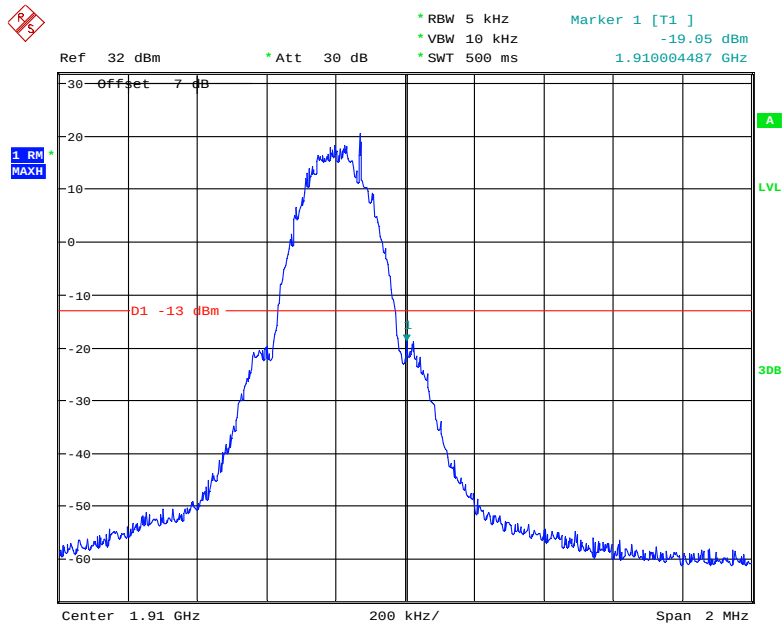
Date: 10.APR.2021 14:59:05

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



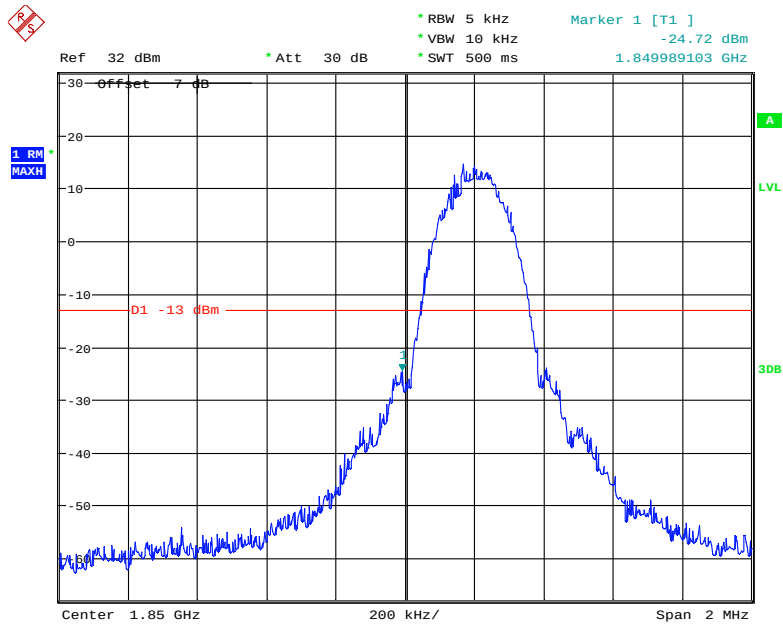
Date: 10.APR.2021 10:11:57

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



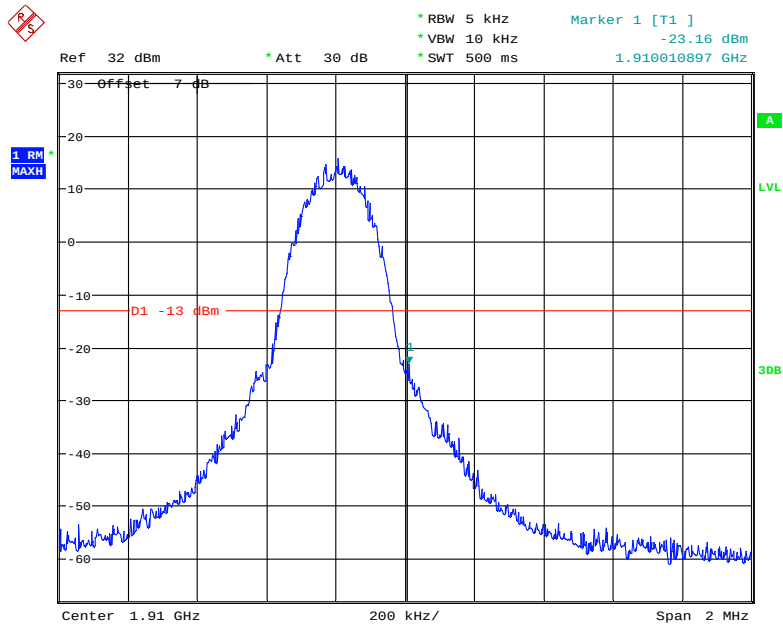
Date: 10.APR.2021 10:10:28

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



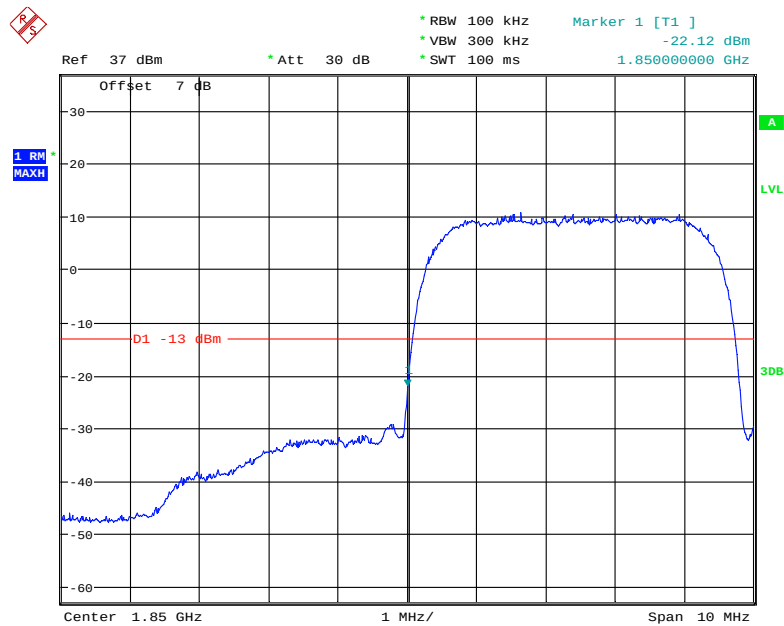
Date: 10.APR.2021 10:19:19

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



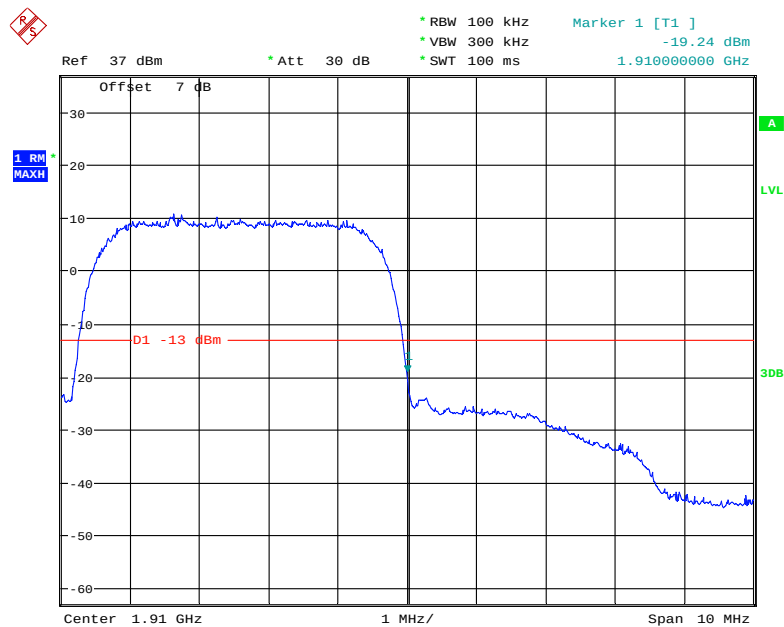
Date: 10.APR.2021 10:20:57

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



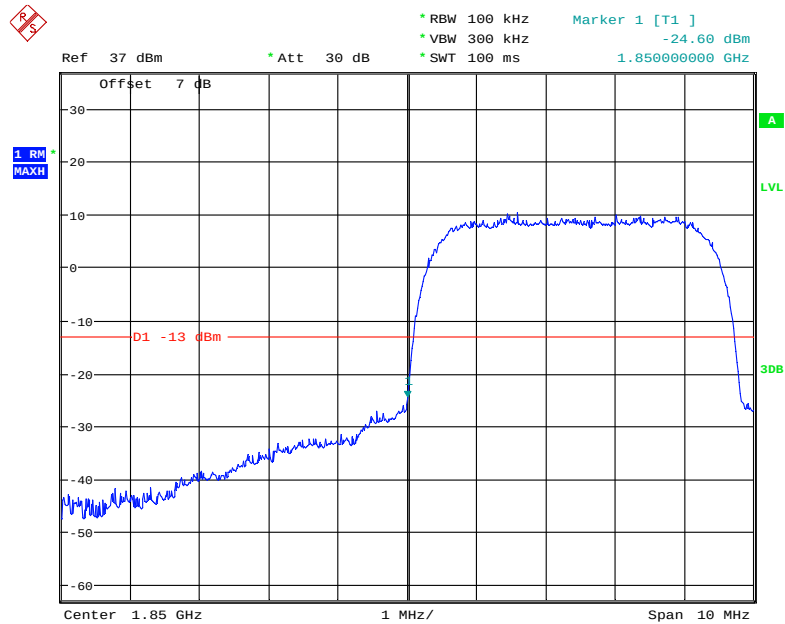
Date: 10.APR.2021 15:29:49

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



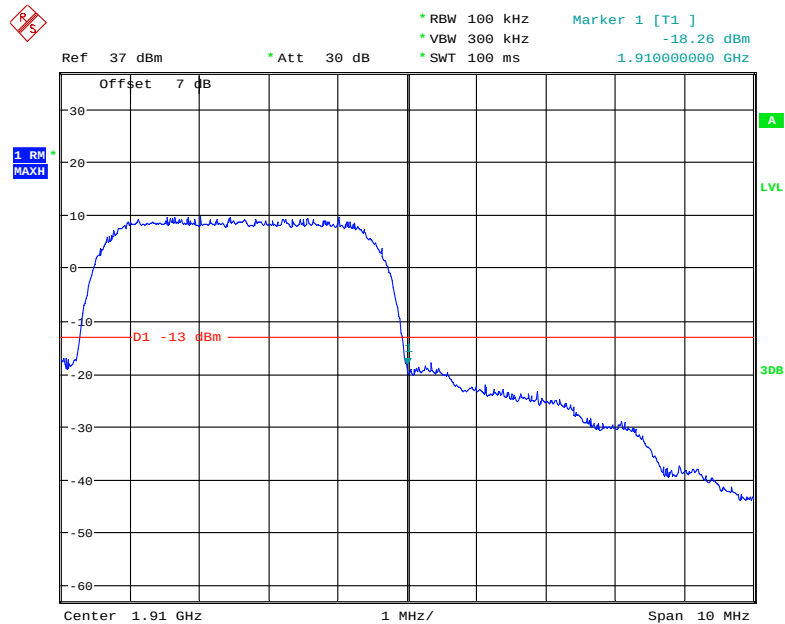
Date: 10.APR.2021 15:30:27

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



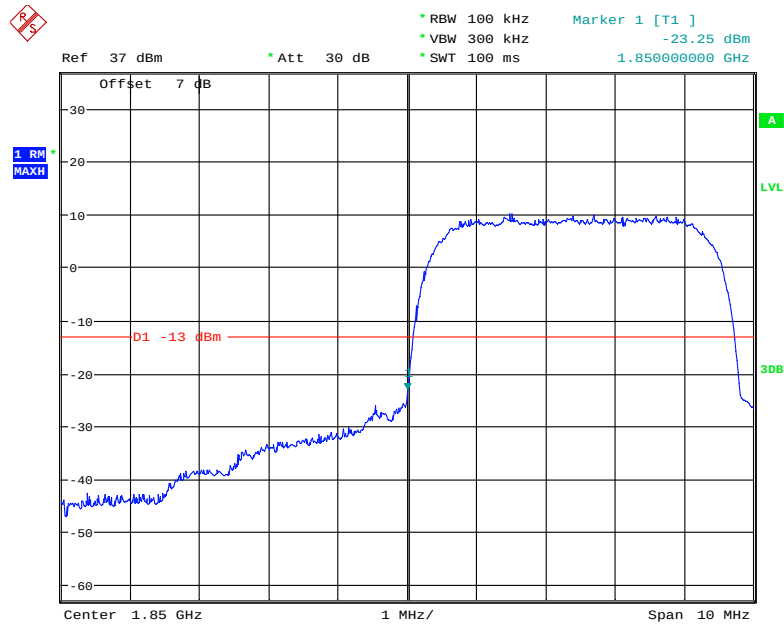
Date: 10.APR.2021 15:29:05

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



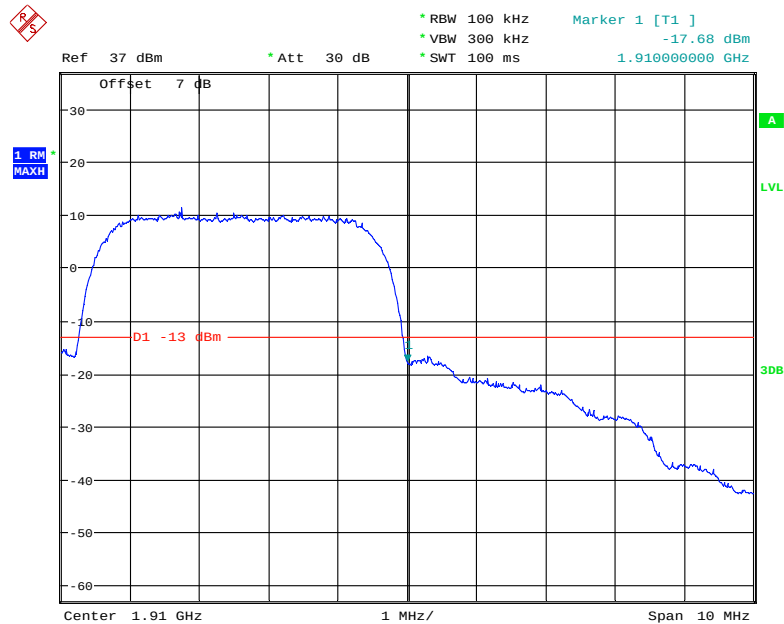
Date: 10.APR.2021 15:28:07

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



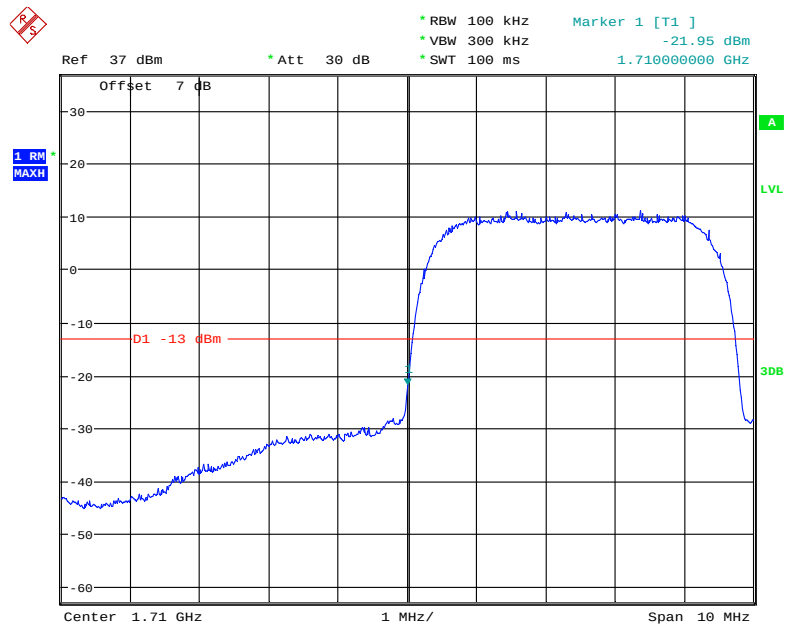
Date: 10.APR.2021 15:22:02

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



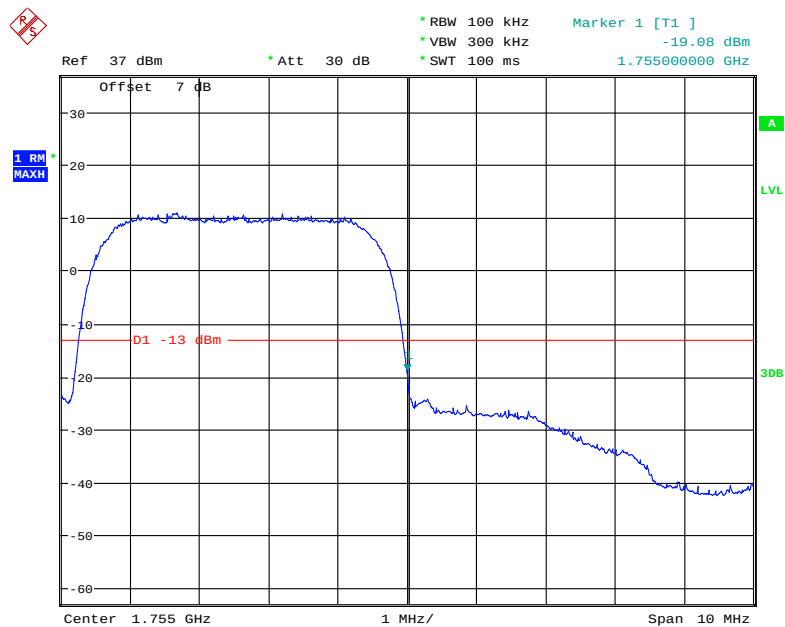
Date: 10.APR.2021 15:26:40

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



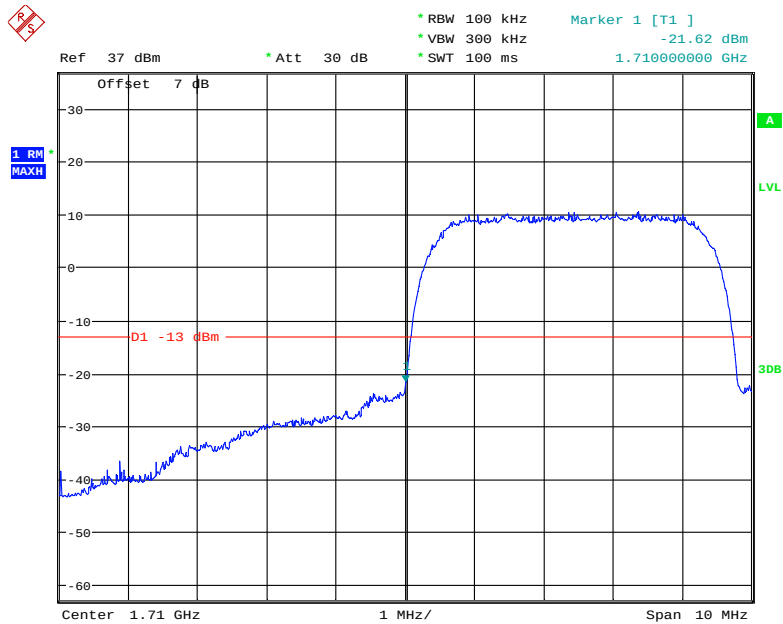
Date: 10.APR.2021 15:11:10

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



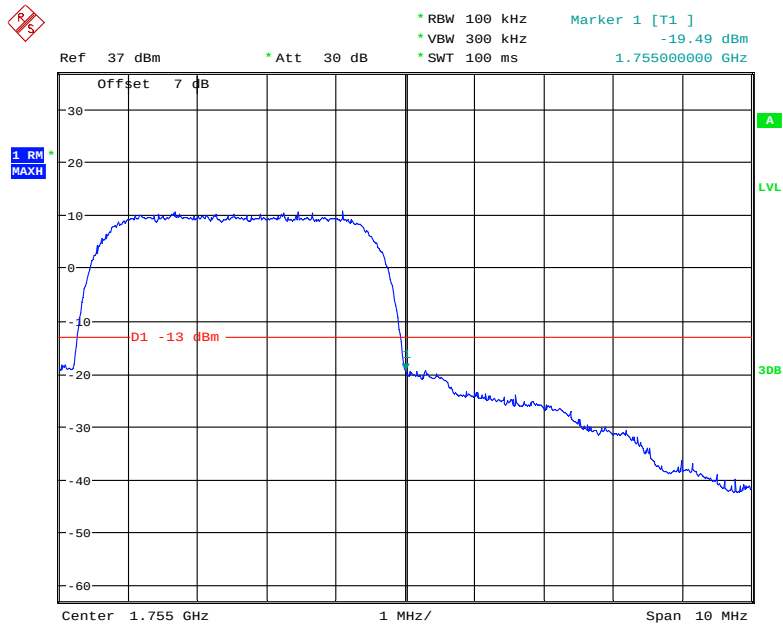
Date: 10.APR.2021 15:10:25

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



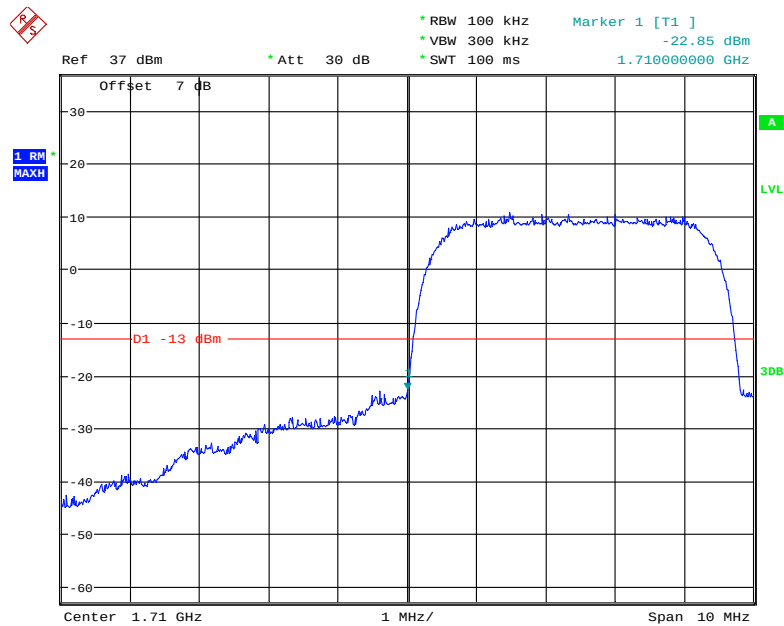
Date: 10.APR.2021 15:14:01

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



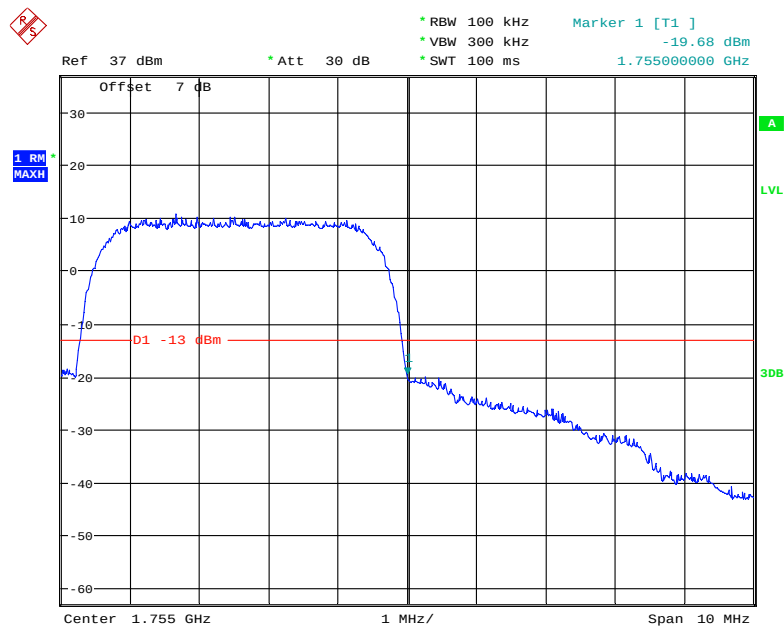
Date: 10.APR.2021 15:15:04

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



Date: 10.APR.2021 15:18:26

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



Date: 10.APR.2021 15:17:40

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

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

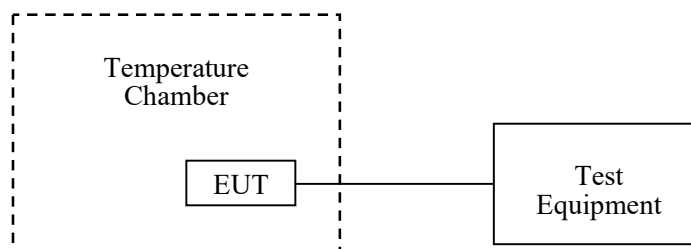
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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

The testing was performed by Andy Yu from 2021-04-08 to 2021-04-10.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

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

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	3	0.0036	2.5
-20		1	0.0012	2.5
-10		4	0.0048	2.5
0		5	0.0060	2.5
10		-3	-0.0036	2.5
20		5	0.0060	2.5
30		-1	-0.0012	2.5
40		2	0.0024	2.5
50		2	0.0024	2.5
20	3.4	-3	-0.0036	2.5
	4.35	5	0.0060	2.5

EDGE Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	3	0.0036	2.5
-20		5	0.0060	2.5
-10		6	0.0072	2.5
0		4	0.0048	2.5
10		5	0.0060	2.5
20		7	0.0084	2.5
30		8	0.0096	2.5
40		6	0.0072	2.5
50		9	0.0108	2.5
20	3.4	5	0.0060	2.5
	4.35	7	0.0084	2.5

WCDMA Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	2	0.0024	2.5
-20		0	0	2.5
-10		3	0.0036	2.5
0		-2	-0.0024	2.5
10		1	0.0012	2.5
20		3	0.0036	2.5
30		-3	-0.0036	2.5
40		2	0.0024	2.5
50		0	0	2.5
20	3.4	2	0.0024	2.5
	4.35	-2	-0.0024	2.5

PCS Band (Part 24E)**GSM Mode**

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	1	0.0005	pass
-20		4	0.0021	pass
-10		0	0.0000	pass
0		1	0.0005	pass
10		4	0.0021	pass
20		-1	-0.0005	pass
30		4	0.0021	pass
40		2	0.0011	pass
50		1	0.0005	pass
20	3.4	5	0.0027	pass
	4.35	-1	-0.0005	pass

EDGE Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	-2	-0.0011	pass
-20		-7	-0.0037	pass
-10		-5	-0.0027	pass
0		-6	-0.0032	pass
10		-4	-0.0021	pass
20		-1	-0.0005	pass
30		-2	-0.0011	pass
40		-5	-0.0027	pass
50		-3	-0.0016	pass
20	3.4	-2	-0.0011	pass
	4.35	-6	-0.0032	pass

PCS Band (Part 24E)**WCDMA Mode**

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	-1	-0.0005	pass
-20		2	0.0011	pass
-10		-3	-0.0016	pass
0		4	0.0021	pass
10		-1	-0.0005	pass
20		0	0.0000	pass
30		3	0.0016	pass
40		-1	-0.0005	pass
50		-3	-0.0016	pass
20	3.4	4	0.0021	pass
	4.35	-2	-0.0011	pass

AWS Band (Part 27)

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	1710.1882	1754.1429	1710	1755
-20		1710.1027	1754.0524	1710	1755
-10		1710.0581	1754.0708	1710	1755
0		1710.1929	1754.1560	1710	1755
10		1710.0235	1754.1454	1710	1755
20		1710.0089	1754.0913	1710	1755
30		1710.1186	1754.1314	1710	1755
40		1710.0435	1754.0161	1710	1755
50		1710.1671	1754.0606	1710	1755
20	3.4	1710.1784	1754.0172	1710	1755
	4.35	1710.0655	1754.0855	1710	1755

LTE:
QPSK:

Band 2:

10.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	25.18	0.0134	pass
-20		-9.97	-0.0053	pass
-10		-6.13	-0.0033	pass
0		6.17	0.0033	pass
10		7.92	0.0042	pass
20		6.46	0.0034	pass
30		-6.52	-0.0035	pass
40		7.18	0.0038	pass
50		-9.69	-0.0052	pass
20	3.4	-8.17	-0.0043	pass
	4.35	-7.05	-0.0038	pass

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	1710.1873	1754.3151	1710	1755
-20		1710.1464	1754.1119	1710	1755
-10		1710.1735	1754.3903	1710	1755
0		1710.1274	1754.3228	1710	1755
10		1710.1650	1754.2723	1710	1755
20		1710.0640	1754.2783	1710	1755
30		1710.0181	1754.3139	1710	1755
40		1710.0987	1754.0708	1710	1755
50		1710.0389	1754.3893	1710	1755
20	3.4	1710.1243	1754.1176	1710	1755
	4.35	1710.0105	1754.1274	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	36.12	0.0432	2.5
-20		-6.97	-0.0083	2.5
-10		-5.50	-0.0066	2.5
0		6.06	0.0072	2.5
10		9.80	0.0117	2.5
20		5.03	0.006	2.5
30		-6.62	-0.0079	2.5
40		-8.73	-0.0104	2.5
50		-7.05	-0.0084	2.5
20	3.4	8.99	0.0107	2.5
	4.35	-7.17	-0.0086	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	2500.1632	2569.5941	2500	2570
-20		2500.0067	2569.9660	2500	2570
-10		2500.0666	2569.6595	2500	2570
0		2500.1780	2569.7421	2500	2570
10		2500.1094	2569.6127	2500	2570
20		2500.1281	2569.6656	2500	2570
30		2500.1930	2569.5278	2500	2570
40		2500.0438	2569.5785	2500	2570
50		2500.0523	2569.9233	2500	2570
20	3.4	2500.0018	2569.8556	2500	2570
	4.35	2500.0882	2569.8765	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	699.0178	715.8675	699	716
-20		699.1838	715.6029	699	716
-10		699.0566	715.7095	699	716
0		699.0965	715.6349	699	716
10		699.1063	715.8288	699	716
20		699.1945	715.8731	699	716
30		699.1505	715.7823	699	716
40		699.1321	715.7192	699	716
50		699.1362	715.7868	699	716
20	3.4	699.0519	715.9678	699	716
	4.35	699.0640	715.6552	699	716

Band 17:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	704.1490	715.7257	704	716
-20		704.0980	715.8114	704	716
-10		704.0337	715.8157	704	716
0		704.0814	715.6399	704	716
10		704.0702	715.5619	704	716
20		704.1891	715.8803	704	716
30		704.0883	715.5542	704	716
40		704.0813	715.5492	704	716
50		704.0504	715.7878	704	716
20	3.4	704.1692	715.5266	704	716
	4.35	704.0076	715.8046	704	716

16QAM:**Band 2:**

10.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	-14.32	-0.0076	pass
-20		-6.68	-0.0036	pass
-10		9.77	0.0052	pass
0		-7.62	-0.0041	pass
10		-9.91	-0.0053	pass
20		-9.82	-0.0052	pass
30		-6.68	-0.0036	pass
40		-8.85	-0.0047	pass
50		5.67	0.003	pass
20	3.4	6.05	0.0032	pass
	4.35	7.52	0.004	pass

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	1710.0384	1754.2201	1710	1755
-20		1710.0760	1754.4405	1710	1755
-10		1710.0942	1754.4814	1710	1755
0		1710.1619	1754.0804	1710	1755
10		1710.0290	1754.1403	1710	1755
20		1710.1802	1754.1846	1710	1755
30		1710.1257	1754.2417	1710	1755
40		1710.1230	1754.0209	1710	1755
50		1710.0675	1754.3490	1710	1755
20	3.4	1710.1766	1754.4990	1710	1755
	4.35	1710.0366	1754.2480	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_o=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	35.13	0.042	2.5
-20		8.10	0.0097	2.5
-10		-8.59	-0.0103	2.5
0		9.33	0.0112	2.5
10		-6.94	-0.0083	2.5
20		7.54	0.009	2.5
30		6.43	0.0077	2.5
40		-6.17	-0.0074	2.5
50		-6.44	-0.0077	2.5
20	3.4	6.34	0.0076	2.5
	4.35	-6.89	-0.0082	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	2500.0253	2569.5326	2500	2570
-20		2500.1389	2569.6978	2500	2570
-10		2500.0289	2569.9503	2500	2570
0		2500.0860	2569.9341	2500	2570
10		2500.0868	2569.7804	2500	2570
20		2500.1016	2569.7337	2500	2570
30		2500.0886	2569.9796	2500	2570
40		2500.0888	2569.6296	2500	2570
50		2500.1294	2569.9796	2500	2570
20	3.4	2500.1323	2569.5186	2500	2570
	4.35	2500.1014	2569.6504	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	699.1665	715.5349	699	716
-20		699.0611	715.7806	699	716
-10		699.0030	715.8510	699	716
0		699.0230	715.5136	699	716
10		699.0472	715.5507	699	716
20		699.0871	715.5805	699	716
30		699.0432	715.7660	699	716
40		699.1102	715.9178	699	716
50		699.0597	715.6227	699	716
20	3.4	699.0374	715.7473	699	716
	4.35	699.0900	715.6688	699	716

Band 17:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.7	704.0775	715.8759	704	716
-20		704.1583	715.7974	704	716
-10		704.1582	715.9895	704	716
0		704.1585	715.6512	704	716
10		704.0513	715.8596	704	716
20		704.0817	715.7098	704	716
30		704.1263	715.7717	704	716
40		704.0990	715.5300	704	716
50		704.0753	715.9411	704	716
20	3.4	704.1611	715.7309	704	716
	4.35	704.1549	715.7210	704	716

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