

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

For

LUXPAD TABLET

YangGuangGaoErFU Building, No 7008 SHENNAN Road, FuTian SHENZHEN, China

FCC ID: 2ANIRASTRO8Q

Report Type: Original Report	Product Type: Phablet
Report Number: RDG210414001-00D	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Phablet
Tested Model	ASTRO 8Q
Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 17: 704-716MHz(TX); 734-746MHz(RX) LTE Band 66: 1710-1780MHz(TX); 2110-2180MHz(RX)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	EGSM850/ WCDMA Band 5/ LTE Band 5: -0.45dBi PCS1900/WCDMA Band 2/ LTE Band 2: -0.88dBi WCDMA Band 4/ LTE Band 4/ LTE Band 66: -0.82dBi LTE Band 7: -0.93dBi LTE Band 12/ LTE Band 17: -0.40dBi (provided by the applicant)
Voltage Range	DC3.8V from battery or DC 5.0V from adapter
Date of Test	2021-04-22 to 2021-05-24
Sample serial number	RDG210414001-RF-S3 (for CE&RSE test) RDG210414001-RF-S8 (for RF conducted test) (Assigned by BACL, Shenzhen)
Received date	2021-04-14
Sample/EUT Status	Good condition
Adapter information	Model: ASTRO 8Q Input: 100-240V~50/60Hz, 0.3A Output: 5V, 1.5A

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. Each test item follows test standards and with no deviation.

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

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE B66	1.4	1710.7	1745	1779.3
	3	1711.5	1745	1778.5
	5	1712.5	1745	1777.5
	10	1715	1745	1775
	15	1717.5	1745	1772.5
	20	1720	1745	1770

Equipment Modifications

No modification was made to the EUT.

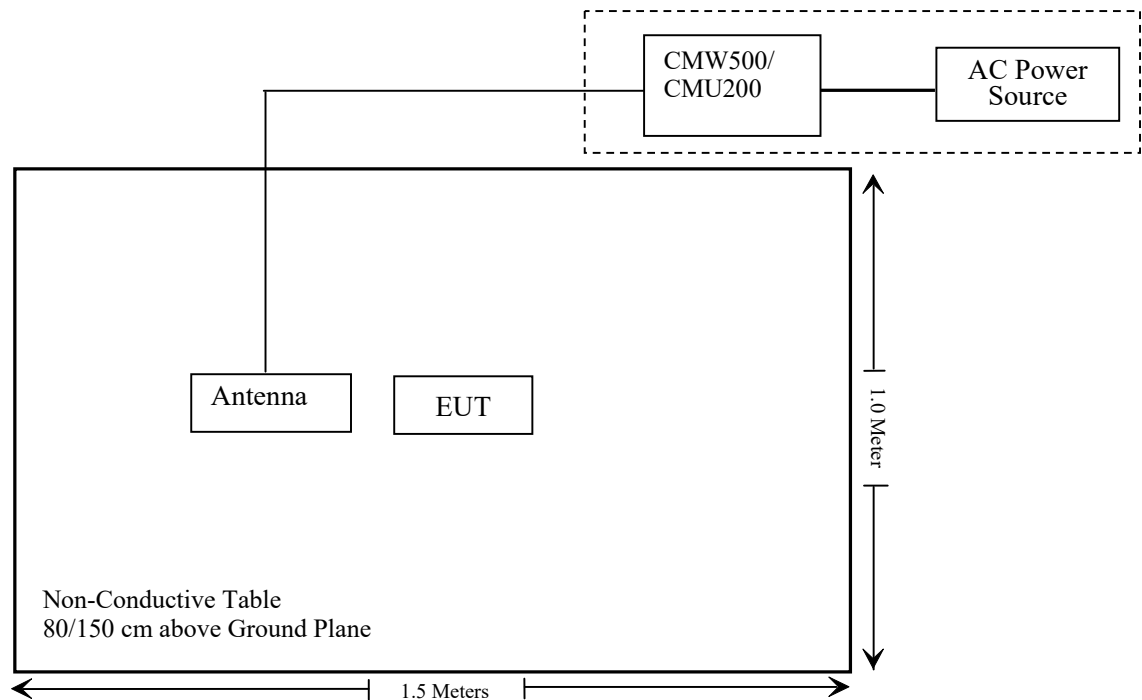
Support Equipment List and Details

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
/	/	/	/

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: RDG210414001-20.

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	2020/11/28	2021/11/27
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	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: RDG210414001-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E & 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 22.913 (a) & § 24.232 (c); §27.50 (c) (d) (h) - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

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

According to §27.50(c), the maximum EIRP must not exceed 3Watts (34.77dBm) for 699-746MHz.

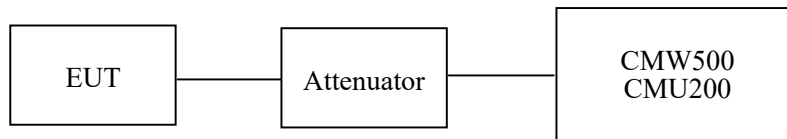
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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 Orlo Yang from 2021-04-23 to 2021-04-26.

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	32.4	29.3	38.45
	190	836.6	32.5	29.4	38.45
	251	848.8	32.6	29.5	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.32	30.41	28.45	26.23	29.22	27.31	25.35	23.13	38.45
	190	836.6	32.48	30.39	28.43	26.20	29.38	27.29	25.33	23.1	38.45
	251	848.8	32.59	30.37	28.42	26.17	29.49	27.27	25.32	23.07	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	25.20	24.93	23.19	19.75	22.1	21.83	20.09	16.65	38.45
	190	836.6	25.65	25.38	23.80	20.67	22.55	22.28	20.7	17.57	38.45
	251	848.8	25.04	24.77	22.93	19.73	21.94	21.67	19.83	16.63	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		22.51	22.65	22.62	19.41	19.55	19.52
	HSDPA	1	21.72	22.15	21.47	18.62	19.05	18.37
		2	21.54	22.02	21.43	18.44	18.92	18.33
		3	21.28	22.06	21.36	18.18	18.96	18.26
		4	21.35	21.99	21.37	18.25	18.89	18.27
	HSUPA	1	21.71	22.22	21.49	18.61	19.12	18.39
		2	21.45	22.12	21.43	18.35	19.02	18.33
		3	21.37	22.19	21.34	18.27	19.09	18.24
		4	21.46	22.17	21.46	18.36	19.07	18.36
		5	21.69	22.08	21.39	18.59	18.98	18.29
	HSPA+	1	21.62	22.54	22.46	18.52	19.44	18.36

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)
 For GSM850 / WCDMA Band5: Antenna Gain = -0.45dBi = -2.6dBd (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	29.2	27.32	33
	661	1880.0	29.1	27.22	33
	810	1909.8	29.0	27.12	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.08	26.97	25.41	23.18	27.2	25.09	23.53	21.3	33
	661	1880.0	29.02	26.73	25.19	22.94	27.14	24.85	23.31	21.06	33
	810	1909.8	28.93	26.48	24.81	22.65	27.05	24.6	22.93	20.77	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	23.39	23.41	21.52	18.81	21.51	21.53	19.64	16.93	33
	661	1880.0	23.79	23.81	22.19	19.42	21.91	21.93	20.31	17.54	33
	810	1909.8	23.81	23.80	22.22	19.53	21.93	21.92	20.34	17.65	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		22.36	22.45	22.49	20.48	20.57	20.61
	HSDPA	1	20.71	21.61	21.33	18.83	19.73	19.45
		2	20.65	21.49	21.28	18.77	19.61	19.40
		3	20.46	21.53	21.31	18.58	19.65	19.43
		4	20.57	21.48	21.29	18.69	19.60	19.41
	HSUPA	1	20.81	21.68	21.35	18.93	19.80	19.47
		2	20.76	21.59	21.31	18.88	19.71	19.43
		3	20.69	21.63	21.29	18.81	19.75	19.41
		4	20.58	21.65	21.32	18.70	19.77	19.44
		5	20.72	21.67	21.34	18.84	19.79	19.46
	HSPA+	1	21.36	21.42	21.39	19.48	19.54	19.51

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

For PCS1900 / WCDMA Band2: Antenna Gain = -0.88dBi

Cable Loss=1dB*(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		22.16	22.13	22.18	20.34	20.31	20.36
	HSDPA	1	20.09	20.28	21.08	18.27	18.46	19.26
		2	20.05	20.23	21.04	18.23	18.41	19.22
		3	19.95	20.06	20.86	18.13	18.24	19.04
		4	19.92	19.99	20.93	18.10	18.17	19.11
	HSUPA	1	20.02	20.31	21.09	18.20	18.49	19.27
		2	19.87	20.14	20.85	18.05	18.32	19.03
		3	19.92	19.96	20.91	18.10	18.14	19.09
		4	19.84	19.87	20.78	18.02	18.05	18.96
		5	19.76	19.85	20.94	17.94	18.03	19.12
	HSPA+	1	20.86	21.43	21.93	19.04	19.61	20.11

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

For Band4: Antenna Gain = -0.82dBi

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

Limit: EIRP ≤ 30dBm

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.53	13
	Middle	3.89	13
	High	3.74	13
EGPRS	Low	3.84	13
	Middle	4.00	13
	High	3.69	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.37	13
	Middle	3.69	13
	High	3.86	13
HSDPA (16QAM)	Low	3.49	13
	Middle	3.38	13
	High	3.77	13
HSUPA (BPSK)	Low	3.80	13
	Middle	3.56	13
	High	3.40	13
HSPA+ (16QAM)	Low	3.76	13
	Middle	3.46	13
	High	3.43	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.42	13
	Middle	3.64	13
	High	3.54	13
EGPRS	Low	3.87	13
	Middle	3.59	13
	High	3.77	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.45	13
	Middle	3.85	13
	High	3.46	13
HSDPA (16QAM)	Low	3.86	13
	Middle	3.70	13
	High	3.75	13
HSUPA (BPSK)	Low	3.64	13
	Middle	3.57	13
	High	3.60	13
HSPA+ (16QAM)	Low	3.55	13
	Middle	3.65	13
	High	3.70	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	4.28	13
	Middle	4.30	13
	High	4.29	13
HSDPA (16QAM)	Low	4.76	13
	Middle	4.67	13
	High	4.33	13
HSUPA (BPSK)	Low	4.65	13
	Middle	4.68	13
	High	4.68	13
HSPA+ (16QAM)	Low	4.65	13
	Middle	4.63	13
	High	4.72	13

LTE Band 2:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.66	22.46	22.71	20.78	20.58	20.83
		RB1#2	22.47	22.53	22.73	20.59	20.65	20.85
		RB1#5	22.53	22.51	22.67	20.65	20.63	20.79
		RB3#0	22.64	22.57	22.79	20.76	20.69	20.91
		RB3#1	22.6	22.62	22.78	20.72	20.74	20.90
		RB3#2	21.52	21.5	21.68	19.64	19.62	19.80
		RB6#0	21.68	21.37	22.36	19.80	19.49	20.48
	16QAM	RB1#0	21.76	21.39	22.3	19.88	19.51	20.42
		RB1#2	21.67	21.37	22.34	19.79	19.49	20.46
		RB1#5	21.74	21.79	21.81	19.86	19.91	19.93
		RB3#0	21.78	21.74	21.86	19.90	19.86	19.98
		RB3#1	20.73	20.7	21.06	18.85	18.82	19.18
		RB3#2	20.93	21.07	21.36	19.05	19.19	19.48
		RB6#0	21.00	21.14	21.50	19.12	19.26	19.62
3.0	QPSK	RB1#0	22.51	22.45	22.63	20.63	20.57	20.75
		RB1#7	22.5	22.53	22.71	20.62	20.65	20.83
		RB1#14	22.43	22.5	22.73	20.55	20.62	20.85
		RB8#0	21.65	21.62	21.84	19.77	19.74	19.96
		RB8#4	21.53	21.61	21.8	19.65	19.73	19.92
		RB8#7	21.66	21.61	21.74	19.78	19.73	19.86
		RB15#0	21.84	22.14	21.57	19.96	20.26	19.69
	16QAM	RB1#0	21.81	22.13	21.54	19.93	20.25	19.66
		RB1#7	21.75	22.14	21.61	19.87	20.26	19.73
		RB1#14	20.85	20.82	21.07	18.97	18.94	19.19
		RB8#0	20.71	20.8	21.11	18.83	18.92	19.23
		RB8#4	20.73	20.63	20.94	18.85	18.75	19.06
		RB8#7	20.79	20.94	21.01	18.91	19.06	19.13
		RB15#0	20.88	21.15	21.35	19.00	19.27	19.47

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.48	22.76	22.76	20.60	20.88	20.88
		RB1#12	22.44	22.67	22.81	20.56	20.79	20.93
		RB1#24	22.48	22.76	22.76	20.60	20.88	20.88
		RB12#0	21.73	21.65	21.77	19.85	19.77	19.89
		RB12#6	21.5	21.66	21.82	19.62	19.78	19.94
		RB12#11	21.52	21.69	21.89	19.64	19.81	20.01
		RB25#0	20.94	21.76	21.55	19.06	19.88	19.67
	16QAM	RB1#0	20.83	21.82	21.5	18.95	19.94	19.62
		RB1#12	20.82	21.88	21.52	18.94	20.00	19.64
		RB1#24	20.84	20.61	20.94	18.96	18.73	19.06
		RB12#0	20.64	20.7	20.98	18.76	18.82	19.10
		RB12#6	20.7	20.8	20.79	18.82	18.92	18.91
		RB12#11	20.92	21.22	20.86	19.04	19.34	18.98
		RB25#0	20.97	21.57	21.32	19.09	19.69	19.44
10.0	QPSK	RB1#0	22.56	22.66	22.89	20.68	20.78	21.01
		RB1#24	22.57	22.72	22.9	20.69	20.84	21.02
		RB1#49	22.54	22.76	22.86	20.66	20.88	20.98
		RB25#0	21.61	21.69	21.8	19.73	19.81	19.92
		RB25#12	21.63	21.66	21.82	19.75	19.78	19.94
		RB25#24	21.58	21.76	21.93	19.70	19.88	20.05
		RB50#0	22.13	21.8	21.37	20.25	19.92	19.49
	16QAM	RB1#0	22.01	21.86	21.33	20.13	19.98	19.45
		RB1#24	22.04	21.83	21.35	20.16	19.95	19.47
		RB1#49	20.62	20.8	21.04	18.74	18.92	19.16
		RB25#0	20.72	20.84	21.03	18.84	18.96	19.15
		RB25#12	20.64	20.85	20.94	18.76	18.97	19.06
		RB25#24	20.76	21.13	21.04	18.88	19.25	19.16
		RB50#0	21.04	21.60	21.35	19.16	19.72	19.47

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	22.55	22.59	22.75	20.67	20.71	20.87
		RB1#37	22.48	22.6	22.84	20.60	20.72	20.96
		RB1#74	22.52	22.65	22.76	20.64	20.77	20.88
		RB36#0	21.53	21.67	21.88	19.65	19.79	20.00
		RB36#18	21.61	21.71	21.86	19.73	19.83	19.98
		RB36#37	21.57	21.68	21.86	19.69	19.80	19.98
		RB75#0	22.06	22.37	22.11	20.18	20.49	20.23
	16QAM	RB1#0	21.97	22.41	22.23	20.09	20.53	20.35
		RB1#37	21.82	22.36	22.14	19.94	20.48	20.26
		RB1#74	20.72	20.73	20.94	18.84	18.85	19.06
		RB36#0	20.69	20.79	20.93	18.81	18.91	19.05
		RB36#18	20.77	20.75	20.99	18.89	18.87	19.11
		RB36#37	20.79	21.21	21.04	18.91	19.33	19.16
		RB75#0	21.23	21.44	21.27	19.35	19.56	19.39
20.0	QPSK	RB1#0	22.76	22.69	22.87	20.88	20.81	20.99
		RB1#49	22.78	22.7	22.98	20.90	20.82	21.10
		RB1#99	22.72	22.68	22.98	20.84	20.80	21.10
		RB50#0	21.59	21.72	21.91	19.71	19.84	20.03
		RB50#24	21.67	21.77	21.85	19.79	19.89	19.97
		RB50#49	21.62	21.61	21.86	19.74	19.73	19.98
		RB100#0	21.74	21.66	22.41	19.86	19.78	20.53
	16QAM	RB1#0	21.63	21.72	22.5	19.75	19.84	20.62
		RB1#49	21.65	21.67	22.55	19.77	19.79	20.67
		RB1#99	20.67	20.8	20.84	18.79	18.92	18.96
		RB50#0	20.82	20.82	20.9	18.94	18.94	19.02
		RB50#24	20.7	20.75	20.94	18.82	18.87	19.06
		RB50#49	20.87	21.24	21.23	18.99	19.36	19.35
		RB100#0	21.35	21.47	21.28	19.47	19.59	19.40

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

For Band2: Antenna Gain = -0.88dBi

Cable Loss=1 dB*(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)	4.77	3.66	3.46	13	Pass
QPSK (100RB Size)	5.22	5.36	5.42	13	Pass
16QAM (1RB Size)	5.64	3.87	4.02	13	Pass
16QAM (100RB Size)	6.28	6.15	6.25	13	Pass

LTE Band 4**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.46	22.48	22.46	20.64	20.66	20.64
		RB1#2	22.46	22.41	22.45	20.64	20.59	20.63
		RB1#5	22.47	22.44	22.45	20.65	20.62	20.63
		RB3#0	22.59	22.41	22.30	20.77	20.59	20.48
		RB3#1	22.55	22.43	22.37	20.73	20.61	20.55
		RB3#2	21.43	21.46	21.34	19.61	19.64	19.52
		RB6#0	22.20	22.17	21.34	20.38	20.35	19.52
	16QAM	RB1#0	22.15	22.14	21.35	20.33	20.32	19.53
		RB1#2	22.18	22.16	21.33	20.36	20.34	19.51
		RB1#5	21.58	21.27	21.20	19.76	19.45	19.38
		RB3#0	21.63	21.35	21.27	19.81	19.53	19.45
		RB3#1	20.74	20.67	20.71	18.92	18.85	18.89
		RB3#2	20.78	20.73	21.09	18.96	18.91	19.27
		RB6#0	21.24	20.90	21.27	19.42	19.08	19.45
3.0	QPSK	RB1#0	22.45	22.46	22.48	20.63	20.64	20.66
		RB1#7	22.43	22.40	22.48	20.61	20.58	20.66
		RB1#14	22.43	22.42	22.49	20.61	20.60	20.67
		RB8#0	21.56	21.49	21.37	19.74	19.67	19.55
		RB8#4	21.47	21.49	21.26	19.65	19.67	19.44
		RB8#7	21.55	21.47	21.28	19.73	19.65	19.46
		RB15#0	21.94	22.17	21.38	20.12	20.35	19.56
	16QAM	RB1#0	21.90	22.19	21.40	20.08	20.37	19.58
		RB1#7	21.81	22.20	21.39	19.99	20.38	19.57
		RB1#14	20.41	20.63	20.73	18.59	18.81	18.91
		RB8#0	20.48	20.64	20.67	18.66	18.82	18.85
		RB8#4	20.58	20.53	20.44	18.76	18.71	18.62
		RB8#7	20.79	20.56	20.93	18.97	18.74	19.11
		RB15#0	20.89	20.60	21.14	19.07	18.78	19.32

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.51	22.45	22.30	20.69	20.63	20.48
		RB1#12	22.58	22.49	22.27	20.76	20.67	20.45
		RB1#24	22.44	22.56	22.22	20.62	20.74	20.40
		RB12#0	21.62	21.48	21.33	19.80	19.66	19.51
		RB12#6	21.52	21.48	21.39	19.70	19.66	19.57
		RB12#11	21.52	21.39	21.32	19.70	19.57	19.50
		RB25#0	20.67	21.63	21.01	18.85	19.81	19.19
	16QAM	RB1#0	20.61	21.61	20.84	18.79	19.79	19.02
		RB1#12	20.69	21.63	20.95	18.87	19.81	19.13
		RB1#24	20.65	20.43	20.52	18.83	18.61	18.70
		RB12#0	20.69	20.43	20.34	18.87	18.61	18.52
		RB12#6	20.62	20.52	20.42	18.80	18.70	18.60
		RB12#11	20.70	20.92	20.67	18.88	19.10	18.85
		RB25#0	20.75	21.09	20.98	18.93	19.27	19.16
10.0	QPSK	RB1#0	22.43	22.59	22.51	20.61	20.77	20.69
		RB1#24	22.42	22.51	22.60	20.60	20.69	20.78
		RB1#49	22.46	22.49	22.55	20.64	20.67	20.73
		RB25#0	21.43	21.46	21.38	19.61	19.64	19.56
		RB25#12	21.47	21.50	21.37	19.65	19.68	19.55
		RB25#24	21.51	21.47	21.43	19.69	19.65	19.61
		RB50#0	21.65	21.66	20.97	19.83	19.84	19.15
	16QAM	RB1#0	21.70	21.66	20.99	19.88	19.84	19.17
		RB1#24	21.63	21.57	20.95	19.81	19.75	19.13
		RB1#49	20.54	20.70	20.51	18.72	18.88	18.69
		RB25#0	20.57	20.66	20.53	18.75	18.84	18.71
		RB25#12	20.57	20.63	20.66	18.75	18.81	18.84
		RB25#24	20.99	21.08	20.68	19.17	19.26	18.86
		RB50#0	21.38	21.32	21.11	19.56	19.50	19.29

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	22.42	22.51	22.54	20.60	20.69	20.72
		RB1#37	22.45	22.62	22.50	20.63	20.80	20.68
		RB1#74	22.40	22.49	22.57	20.58	20.67	20.75
		RB36#0	21.58	21.50	21.43	19.76	19.68	19.61
		RB36#18	21.53	21.45	21.37	19.71	19.63	19.55
		RB36#37	21.54	21.46	21.35	19.72	19.64	19.53
		RB75#0	21.93	21.61	21.79	20.11	19.79	19.97
	16QAM	RB1#0	21.93	21.60	21.77	20.11	19.78	19.95
		RB1#37	22.00	21.60	21.84	20.18	19.78	20.02
		RB1#74	20.55	20.69	20.41	18.73	18.87	18.59
		RB36#0	20.66	20.50	20.55	18.84	18.68	18.73
		RB36#18	20.60	20.54	19.83	18.78	18.72	18.01
		RB36#37	21.01	21.00	19.88	19.19	19.18	18.06
		RB75#0	21.21	21.42	20.01	19.39	19.60	18.19
20.0	QPSK	RB1#0	22.46	22.29	22.36	20.64	20.47	20.54
		RB1#49	22.33	22.29	22.33	20.51	20.47	20.51
		RB1#99	22.35	22.32	22.38	20.53	20.50	20.56
		RB50#0	21.36	21.24	21.21	19.54	19.42	19.39
		RB50#24	21.25	21.25	21.39	19.43	19.43	19.57
		RB50#49	21.36	21.31	21.33	19.54	19.49	19.51
		RB100#0	21.27	21.42	21.90	19.45	19.60	20.08
	16QAM	RB1#0	21.28	21.48	21.86	19.46	19.66	20.04
		RB1#49	21.29	21.40	21.84	19.47	19.58	20.02
		RB1#99	20.41	20.38	20.27	18.59	18.56	18.45
		RB50#0	20.76	20.33	20.35	18.94	18.51	18.53
		RB50#24	20.39	20.34	20.34	18.57	18.52	18.52
		RB50#49	20.47	20.41	20.63	18.65	18.59	18.81
		RB100#0	20.81	20.47	21.01	18.99	18.65	19.19

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

For Band4: Antenna Gain = -0.82dBi

Cable Loss=1dB*(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)	4.61	3.85	3.57	13	Pass
QPSK (100RB Size)	5.38	5.53	5.01	13	Pass
16QAM (1RB Size)	5.60	4.10	4.10	13	Pass
16QAM (100RB Size)	6.19	6.42	5.89	13	Pass

LTE Band 5:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.82	22.70	22.84	19.72	19.60	19.74
		RB1#2	22.75	22.64	22.78	19.65	19.54	19.68
		RB1#5	22.72	22.68	22.71	19.62	19.58	19.61
		RB3#0	22.83	22.80	22.94	19.73	19.70	19.84
		RB3#1	22.92	22.85	22.86	19.82	19.75	19.76
		RB3#2	21.65	21.98	21.84	18.55	18.88	18.74
		RB6#0	22.12	22.50	21.45	19.02	19.40	18.35
	16QAM	RB1#0	22.11	22.54	21.55	19.01	19.44	18.45
		RB1#2	22.15	22.61	21.56	19.05	19.51	18.46
		RB1#5	21.69	21.82	21.85	18.59	18.72	18.75
		RB3#0	21.75	21.77	21.93	18.65	18.67	18.83
		RB3#1	21.32	21.75	21.92	18.22	18.65	18.82
		RB3#2	21.64	22.22	21.94	18.54	19.12	18.84
		RB6#0	21.80	22.57	22.19	18.70	19.47	19.09
3.0	QPSK	RB1#0	22.80	22.77	22.95	19.70	19.67	19.85
		RB1#7	22.73	22.77	22.92	19.63	19.67	19.82
		RB1#14	22.73	22.75	22.78	19.63	19.65	19.68
		RB8#0	21.58	21.86	21.79	18.48	18.76	18.69
		RB8#4	21.69	21.96	21.78	18.59	18.86	18.68
		RB8#7	21.65	22.00	21.78	18.55	18.90	18.68
		RB15#0	22.06	22.44	21.45	18.96	19.34	18.35
	16QAM	RB1#0	21.97	22.69	21.39	18.87	19.59	18.29
		RB1#7	21.92	22.62	21.35	18.82	19.52	18.25
		RB1#14	21.88	21.78	21.15	18.78	18.68	18.05
		RB8#0	21.69	21.83	21.93	18.59	18.73	18.83
		RB8#4	21.13	21.72	21.96	18.03	18.62	18.86
		RB8#7	21.54	21.84	22.17	18.44	18.74	19.07
		RB15#0	21.95	22.25	22.50	18.85	19.15	19.40

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.92	22.76	23.01	19.82	19.66	19.91
		RB1#12	22.77	22.76	22.76	19.67	19.66	19.66
		RB1#24	22.67	22.75	22.69	19.57	19.65	19.59
		RB12#0	21.64	21.86	22.07	18.54	18.76	18.97
		RB12#6	21.71	21.96	21.84	18.61	18.86	18.74
		RB12#11	21.75	21.97	21.80	18.65	18.87	18.70
		RB25#0	20.87	22.01	21.67	17.77	18.91	18.57
	16QAM	RB1#0	20.88	22.08	21.49	17.78	18.98	18.39
		RB1#12	20.99	21.94	21.44	17.89	18.84	18.34
		RB1#24	21.24	21.70	21.14	18.14	18.60	18.04
		RB12#0	21.79	21.74	21.22	18.69	18.64	18.12
		RB12#6	21.92	21.85	21.97	18.82	18.75	18.87
		RB12#11	21.95	21.94	22.05	18.85	18.84	18.95
		RB25#0	22.18	22.33	22.44	19.08	19.23	19.34
10.0	QPSK	RB1#0	22.90	22.86	22.89	19.80	19.76	19.79
		RB1#24	22.75	22.89	23.02	19.65	19.79	19.92
		RB1#49	22.72	23.10	22.90	19.62	20.00	19.80
		RB25#0	21.82	21.93	22.05	18.72	18.83	18.95
		RB25#12	21.88	21.79	21.85	18.78	18.69	18.75
		RB25#24	21.88	22.00	21.92	18.78	18.90	18.82
		RB50#0	21.90	22.09	21.30	18.80	18.99	18.20
	16QAM	RB1#0	21.98	22.15	21.44	18.88	19.05	18.34
		RB1#24	21.88	22.18	21.32	18.78	19.08	18.22
		RB1#49	21.88	21.83	21.38	18.78	18.73	18.28
		RB25#0	21.25	21.68	21.74	18.15	18.58	18.64
		RB25#12	21.70	21.91	21.95	18.60	18.81	18.85
		RB25#24	22.17	22.00	22.02	19.07	18.90	18.92
		RB50#0	22.19	22.29	22.09	19.09	19.19	18.99

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

For Band5: Antenna Gain = -0.45dBi = -2.6dBd (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)	4.75	3.75	3.57	13	Pass
QPSK (50RB Size)	5.56	5.55	5.45	13	Pass
16QAM (1RB Size)	5.49	3.88	3.89	13	Pass
16QAM (50RB Size)	6.21	6.20	5.93	13	Pass

LTE Band 7:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	21.32	21.11	21.40	19.39	19.18	19.47
		RB1#12	21.26	21.17	21.30	19.33	19.24	19.37
		RB1#24	21.23	21.17	21.22	19.30	19.24	19.29
		RB12#0	20.37	20.07	20.38	18.44	18.14	18.45
		RB12#6	20.32	20.21	20.37	18.39	18.28	18.44
		RB12#11	20.38	20.12	20.34	18.45	18.19	18.41
		RB25#0	20.54	20.25	20.11	18.61	18.32	18.18
	16QAM	RB1#0	20.61	20.15	20.96	18.68	18.22	19.03
		RB1#12	20.59	20.20	20.93	18.66	18.27	19.00
		RB1#24	20.45	20.04	20.47	18.52	18.11	18.54
		RB12#0	20.48	20.19	20.46	18.55	18.26	18.53
		RB12#6	20.52	20.26	20.25	18.59	18.33	18.32
		RB12#11	20.65	20.76	20.34	18.72	18.83	18.41
		RB25#0	20.75	21.15	20.49	18.82	19.22	18.56
10.0	QPSK	RB1#0	20.72	20.72	20.85	18.79	18.79	18.92
		RB1#24	20.64	20.63	21.11	18.71	18.70	19.18
		RB1#49	20.54	20.54	20.94	18.61	18.61	19.01
		RB25#0	20.84	20.67	20.88	18.91	18.74	18.95
		RB25#12	20.68	20.58	20.88	18.75	18.65	18.95
		RB25#24	20.79	20.72	20.07	18.86	18.79	18.14
		RB50#0	20.06	20.94	20.40	18.13	19.01	18.47
	16QAM	RB1#0	20.91	20.92	20.59	18.98	18.99	18.66
		RB1#24	20.92	20.82	20.46	18.99	18.89	18.53
		RB1#49	20.91	20.04	20.10	18.98	18.11	18.17
		RB25#0	20.89	20.81	20.14	18.96	18.88	18.21
		RB25#12	20.96	20.89	20.14	19.03	18.96	18.21
		RB25#24	21.14	21.18	20.52	19.21	19.25	18.59
		RB50#0	21.36	21.54	20.72	19.43	19.61	18.79

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	20.75	20.59	20.67	18.82	18.66	18.74
		RB1#37	20.62	20.57	20.91	18.69	18.64	18.98
		RB1#74	20.56	20.65	20.96	18.63	18.72	19.03
		RB36#0	20.87	20.62	20.81	18.94	18.69	18.88
		RB36#18	20.66	20.73	20.90	18.73	18.80	18.97
		RB36#37	20.74	20.74	20.91	18.81	18.81	18.98
		RB75#0	20.18	20.01	20.14	18.25	18.08	18.21
	16QAM	RB1#0	20.82	20.97	20.32	18.89	19.04	18.39
		RB1#37	20.78	20.96	20.39	18.85	19.03	18.46
		RB1#74	20.93	20.77	20.89	19.00	18.84	18.96
		RB36#0	20.88	20.84	20.07	18.95	18.91	18.14
		RB36#18	20.88	20.84	20.92	18.95	18.91	18.99
		RB36#37	21.13	21.20	21.00	19.20	19.27	19.07
		RB75#0	21.13	21.48	21.12	19.20	19.55	19.19
20.0	QPSK	RB1#0	20.83	20.72	20.84	18.90	18.79	18.91
		RB1#49	20.72	20.81	20.96	18.79	18.88	19.03
		RB1#99	20.68	20.65	21.07	18.75	18.72	19.14
		RB50#0	20.69	20.69	20.74	18.76	18.76	18.81
		RB50#24	20.62	20.63	20.88	18.69	18.70	18.95
		RB50#49	20.67	20.67	20.76	18.74	18.74	18.83
		RB100#0	20.90	20.04	20.32	18.97	18.11	18.39
	16QAM	RB1#0	20.60	20.96	20.45	18.67	19.03	18.52
		RB1#49	20.68	20.02	20.72	18.75	18.09	18.79
		RB1#99	20.89	20.73	20.88	18.96	18.80	18.95
		RB50#0	20.89	20.84	20.15	18.96	18.91	18.22
		RB50#24	20.81	20.68	20.91	18.88	18.75	18.98
		RB50#49	21.27	20.99	21.17	19.34	19.06	19.24
		RB100#0	21.50	21.23	21.51	19.57	19.30	19.58

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

For Band 7: Antenna Gain = -0.93dBi

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)	4.66	3.90	3.78	13	Pass
QPSK (100RB Size)	5.42	5.54	5.27	13	Pass
16QAM (1RB Size)	5.79	4.08	4.11	13	Pass
16QAM (100RB Size)	6.07	6.25	6.24	13	Pass

LTE Band 12**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.33	22.16	22.52	19.28	19.11	19.47
		RB1#2	22.25	22.32	22.48	19.20	19.27	19.43
		RB1#5	22.24	22.38	22.52	19.19	19.33	19.47
		RB3#0	22.4	22.44	22.38	19.35	19.39	19.33
		RB3#1	22.42	22.35	22.28	19.37	19.30	19.23
		RB3#2	21.17	21.47	21.23	18.12	18.42	18.18
		RB6#0	21.61	21.84	21.73	18.56	18.79	18.68
	16QAM	RB1#0	21.54	22.06	21.99	18.49	19.01	18.94
		RB1#2	21.59	22.01	21.06	18.54	18.96	18.01
		RB1#5	21.32	21.32	21.24	18.27	18.27	18.19
		RB3#0	21.29	21.25	21.24	18.24	18.20	18.19
		RB3#1	21.48	21.44	21.51	18.43	18.39	18.46
		RB3#2	21.77	21.44	21.55	18.72	18.39	18.50
		RB6#0	21.89	21.71	21.67	18.84	18.66	18.62
3.0	QPSK	RB1#0	22.3	22.16	22.46	19.25	19.11	19.41
		RB1#7	22.35	22.4	22.5	19.30	19.35	19.45
		RB1#14	22.26	22.41	22.51	19.21	19.36	19.46
		RB8#0	21.23	21.27	21.05	18.18	18.22	18.00
		RB8#4	21.49	21.38	21.31	18.44	18.33	18.26
		RB8#7	21.27	21.4	21.13	18.22	18.35	18.08
		RB15#0	21.58	21.95	21.73	18.53	18.90	18.68
	16QAM	RB1#0	21.58	22.09	21.75	18.53	19.04	18.70
		RB1#7	21.62	22.12	21.03	18.57	19.07	17.98
		RB1#14	21.26	21.17	21.83	18.21	18.12	18.78
		RB8#0	21.34	21.34	21.44	18.29	18.29	18.39
		RB8#4	21.25	21.43	21.62	18.20	18.38	18.57
		RB8#7	21.27	21.80	21.79	18.22	18.75	18.74
		RB15#0	21.48	22.23	22.22	18.43	19.18	19.17

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QP SK	RB1#0	22.4	22.27	22.22	19.35	19.22	19.17
		RB1#12	22.35	22.39	22.38	19.30	19.34	19.33
		RB1#24	22.53	22.15	22.44	19.48	19.10	19.39
		RB12#0	21.29	21.31	21.31	18.24	18.26	18.26
		RB12#6	21.47	21.38	21.22	18.42	18.33	18.17
		RB12#11	21.49	21.46	21.14	18.44	18.41	18.09
		RB25#0	21.25	21.27	21.92	18.20	18.22	18.87
	16QAM	RB1#0	21.49	21.45	21.71	18.44	18.40	18.66
		RB1#12	21.4	21.07	21.99	18.35	18.02	18.94
		RB1#24	21.41	21.1	21.21	18.36	18.05	18.16
		RB12#0	21.36	21.33	21.77	18.31	18.28	18.72
		RB12#6	21.43	21.44	21.61	18.38	18.39	18.56
		RB12#11	21.90	21.76	22.06	18.85	18.71	19.01
		RB25#0	21.94	21.95	22.37	18.89	18.90	19.32
10.0	QPSK	RB1#0	22.3	22.3	22.33	19.25	19.25	19.28
		RB1#24	22.39	22.37	22.35	19.34	19.32	19.30
		RB1#49	22.43	22.24	22.7	19.38	19.19	19.65
		RB25#0	21.47	21.37	21.42	18.42	18.32	18.37
		RB25#12	21.28	21.2	21.19	18.23	18.15	18.14
		RB25#24	21.39	21.46	21.15	18.34	18.41	18.10
		RB50#0	21.32	21.76	21.91	18.27	18.71	18.86
	16QAM	RB1#0	21.41	21.7	21.72	18.36	18.65	18.67
		RB1#24	21.44	21.62	21.94	18.39	18.57	18.89
		RB1#49	21.32	21.22	21.47	18.27	18.17	18.42
		RB25#0	21.32	21.26	21.83	18.27	18.21	18.78
		RB25#12	21.12	21.58	21.23	18.07	18.53	18.18
		RB25#24	21.32	21.63	21.44	18.27	18.58	18.39
		RB50#0	21.68	21.76	21.47	18.63	18.71	18.42

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

For Band12: Antenna Gain = -0.40dBi = -2.55dBd (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)	4.48	3.74	3.36	13	Pass
QPSK (50RB Size)	5.60	5.54	5.10	13	Pass
16QAM (1RB Size)	5.79	4.29	3.85	13	Pass
16QAM (50RB Size)	6.43	6.26	5.86	13	Pass

LTE Band 17**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.47	22.40	22.24	19.42	19.35	19.19
		RB1#12	22.21	22.20	22.41	19.16	19.15	19.36
		RB1#24	22.44	22.26	22.47	19.39	19.21	19.42
		RB12#0	21.34	21.12	21.34	18.29	18.07	18.29
		RB12#6	21.44	21.14	21.13	18.39	18.09	18.08
		RB12#11	21.37	21.12	21.17	18.32	18.07	18.12
		RB25#0	21.34	21.38	21.00	18.29	18.33	17.95
	16QAM	RB1#0	21.25	21.06	21.75	18.20	18.01	18.70
		RB1#12	21.52	21.40	21.02	18.47	18.35	17.97
		RB1#24	21.29	21.04	21.25	18.24	17.99	18.20
		RB12#0	21.41	21.97	21.76	18.36	18.92	18.71
		RB12#6	21.25	21.04	21.65	18.20	17.99	18.60
		RB12#11	21.72	21.21	22.03	18.67	18.16	18.98
		RB25#0	21.88	21.25	22.09	18.83	18.20	19.04
10.0	QPSK	RB1#0	22.37	22.21	22.35	19.32	19.16	19.30
		RB1#24	22.23	22.15	22.35	19.18	19.10	19.30
		RB1#49	22.39	22.37	22.61	19.34	19.32	19.56
		RB25#0	21.31	21.42	21.26	18.26	18.37	18.21
		RB25#12	21.37	21.42	21.21	18.32	18.37	18.16
		RB25#24	21.40	21.26	21.15	18.35	18.21	18.10
		RB50#0	21.22	21.51	21.96	18.17	18.46	18.91
	16QAM	RB1#0	21.38	21.36	21.74	18.33	18.31	18.69
		RB1#24	21.13	21.35	21.96	18.08	18.30	18.91
		RB1#49	21.18	21.46	21.51	18.13	18.41	18.46
		RB25#0	21.13	21.32	21.74	18.08	18.27	18.69
		RB25#12	21.43	21.22	21.13	18.38	18.17	18.08
		RB25#24	21.71	21.38	21.56	18.66	18.33	18.51
		RB50#0	21.97	21.81	21.59	18.92	18.76	18.54

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

For Band13: Antenna Gain = -0.4dBi = -2.55dBd (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)	4.61	3.77	3.79	13	Pass
QPSK (50RB Size)	5.61	5.42	5.10	13	Pass
16QAM (1RB Size)	5.50	3.91	4.15	13	Pass
16QAM (50RB Size)	6.44	6.21	6.09	13	Pass

LTE Band 66:

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.56	22.66	22.61	20.74	20.84	20.79
		RB1#2	22.59	22.84	22.42	20.77	21.02	20.60
		RB1#5	22.61	22.65	22.74	20.79	20.83	20.92
		RB3#0	22.51	22.19	22.20	20.69	20.37	20.38
		RB3#1	22.39	22.01	22.20	20.57	20.19	20.38
		RB3#2	22.09	22.21	21.84	20.27	20.39	20.02
		RB6#0	22.12	22.40	22.04	20.30	20.58	20.22
	16QAM	RB1#0	22.12	22.32	21.93	20.30	20.50	20.11
		RB1#2	21.73	21.83	22.04	19.91	20.01	20.22
		RB1#5	22.34	22.32	22.19	20.52	20.50	20.37
		RB3#0	21.70	21.78	21.82	19.88	19.96	20.00
		RB3#1	21.89	21.78	22.02	20.07	19.96	20.20
		RB3#2	22.00	21.93	22.50	20.18	20.11	20.68
		RB6#0	22.14	21.96	22.56	20.32	20.14	20.74
3.0	QPSK	RB1#0	22.45	22.70	22.95	20.63	20.88	21.13
		RB1#7	22.36	22.44	22.43	20.54	20.62	20.61
		RB1#14	22.41	22.60	22.58	20.59	20.78	20.76
		RB8#0	22.12	21.93	22.09	20.30	20.11	20.27
		RB8#4	21.90	22.06	22.15	20.08	20.24	20.33
		RB8#7	21.83	21.83	21.82	20.01	20.01	20.00
		RB15#0	22.32	22.34	21.89	20.50	20.52	20.07
	16QAM	RB1#0	22.08	22.06	22.13	20.26	20.24	20.31
		RB1#7	21.87	21.52	21.69	20.05	19.70	19.87
		RB1#14	21.90	21.96	22.10	20.08	20.14	20.28
		RB8#0	21.60	21.57	21.90	19.78	19.75	20.08
		RB8#4	21.89	21.76	21.71	20.07	19.94	19.89
		RB8#7	22.35	22.00	22.15	20.53	20.18	20.33
		RB15#0	22.56	22.25	22.51	20.74	20.43	20.69

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	22.37	22.69	22.53	20.55	20.87	20.71
		RB1#12	22.45	22.26	22.49	20.63	20.44	20.67
		RB1#24	22.17	22.44	22.41	20.35	20.62	20.59
		RB12#0	22.16	22.03	22.06	20.34	20.21	20.24
		RB12#6	21.76	22.14	21.96	19.94	20.32	20.14
		RB12#11	22.03	21.61	21.76	20.21	19.79	19.94
		RB25#0	22.23	21.85	22.23	20.41	20.03	20.41
	16QAM	RB1#0	22.16	21.90	22.00	20.34	20.08	20.18
		RB1#12	21.59	21.57	21.79	19.77	19.75	19.97
		RB1#24	21.93	22.15	21.99	20.11	20.33	20.17
		RB12#0	21.62	21.41	21.73	19.80	19.59	19.91
		RB12#6	21.58	21.92	21.63	19.76	20.10	19.81
		RB12#11	21.76	21.97	21.78	19.94	20.15	19.96
		RB25#0	22.00	22.01	21.86	20.18	20.19	20.04
10.0	QPSK	RB1#0	22.36	22.39	22.76	20.54	20.57	20.94
		RB1#24	22.23	22.33	22.30	20.41	20.51	20.48
		RB1#49	22.22	22.29	22.14	20.40	20.47	20.32
		RB25#0	21.99	22.00	21.90	20.17	20.18	20.08
		RB25#12	22.02	21.96	21.90	20.20	20.14	20.08
		RB25#24	21.59	21.57	21.84	19.77	19.75	20.02
		RB50#0	22.16	21.92	22.20	20.34	20.10	20.38
	16QAM	RB1#0	22.14	21.94	22.06	20.32	20.12	20.24
		RB1#24	21.55	21.70	21.49	19.73	19.88	19.67
		RB1#49	21.85	21.93	21.72	20.03	20.11	19.90
		RB25#0	21.84	21.65	21.57	20.02	19.83	19.75
		RB25#12	21.84	22.05	22.03	20.02	20.23	20.21
		RB25#24	21.96	22.46	22.34	20.14	20.64	20.52
		RB50#0	22.04	22.79	22.55	20.22	20.97	20.73

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	22.28	22.42	22.54	20.46	20.60	20.72
		RB1#37	22.40	22.41	22.35	20.58	20.59	20.53
		RB1#74	22.33	22.13	22.25	20.51	20.31	20.43
		RB36#0	21.79	22.05	21.74	19.97	20.23	19.92
		RB36#18	21.79	22.15	21.82	19.97	20.33	20.00
		RB36#37	21.63	21.72	21.66	19.81	19.90	19.84
		RB75#0	21.91	21.71	22.07	20.09	19.89	20.25
	16QAM	RB1#0	21.64	21.91	22.12	19.82	20.09	20.30
		RB1#37	21.45	21.52	21.43	19.63	19.70	19.61
		RB1#74	21.61	21.64	21.80	19.79	19.82	19.98
		RB36#0	21.68	21.77	21.77	19.86	19.95	19.95
		RB36#18	21.59	21.91	21.75	19.77	20.09	19.93
		RB36#37	21.95	22.39	22.09	20.13	20.57	20.27
		RB75#0	22.32	22.57	22.14	20.50	20.75	20.32
20.0	QPSK	RB1#0	22.23	22.25	22.59	20.41	20.43	20.77
		RB1#49	22.16	22.37	22.42	20.34	20.55	20.60
		RB1#99	21.99	22.01	21.95	20.17	20.19	20.13
		RB50#0	22.10	21.87	21.88	20.28	20.05	20.06
		RB50#24	22.09	21.81	21.80	20.27	19.99	19.98
		RB50#49	21.53	21.80	21.84	19.71	19.98	20.02
		RB100#0	22.10	21.70	21.67	20.28	19.88	19.85
	16QAM	RB1#0	21.97	21.63	21.98	20.15	19.81	20.16
		RB1#49	21.60	21.65	21.49	19.78	19.83	19.67
		RB1#99	21.54	21.69	21.67	19.72	19.87	19.85
		RB50#0	21.74	21.52	21.53	19.92	19.70	19.71
		RB50#24	21.85	21.79	21.86	20.03	19.97	20.04
		RB50#49	22.31	22.18	22.04	20.49	20.36	20.22
		RB100#0	22.45	22.67	22.11	20.63	20.85	20.29

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

For Band 66: Antenna Gain = -0.82Bi

Cable Loss = 1dB*(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)	4.62	3.74	3.72	13	Pass
QPSK (100RB Size)	5.67	5.26	5.40	13	Pass
16QAM (1RB Size)	5.48	4.03	3.76	13	Pass
16QAM (100RB Size)	6.18	6.40	6.23	13	Pass

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

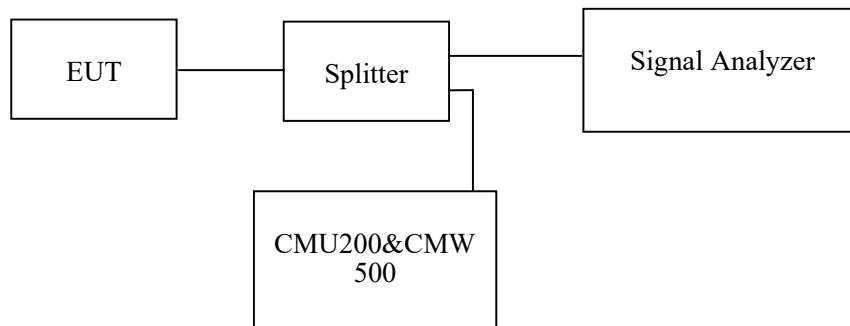
Applicable Standard

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 Orlo Yang from 2021-04-23 to 2021-05-24.

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	243.590	320.192
	190	836.6	246.795	316.026
	251	848.8	243.590	321.795
EGPRS(8PSK)	128	824.2	246.795	314.744
	190	836.6	251.603	316.987
	251	848.8	245.192	313.782

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.151	4.689
	836.6	4.151	4.705
	846.6	4.151	4.708
HSDPA	826.4	4.151	4.683
	836.6	4.151	4.679
	846.6	4.151	4.679
HSUPA	826.4	4.151	4.705
	836.6	4.151	4.708
	846.6	4.167	4.689

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	246.795	324.359
	661	1880.0	245.192	316.667
	810	1909.8	245.192	312.821
EGPRS(8PSK)	512	1850.2	240.385	319.231
	661	1880.0	240.385	318.590
	810	1909.8	240.385	310.256

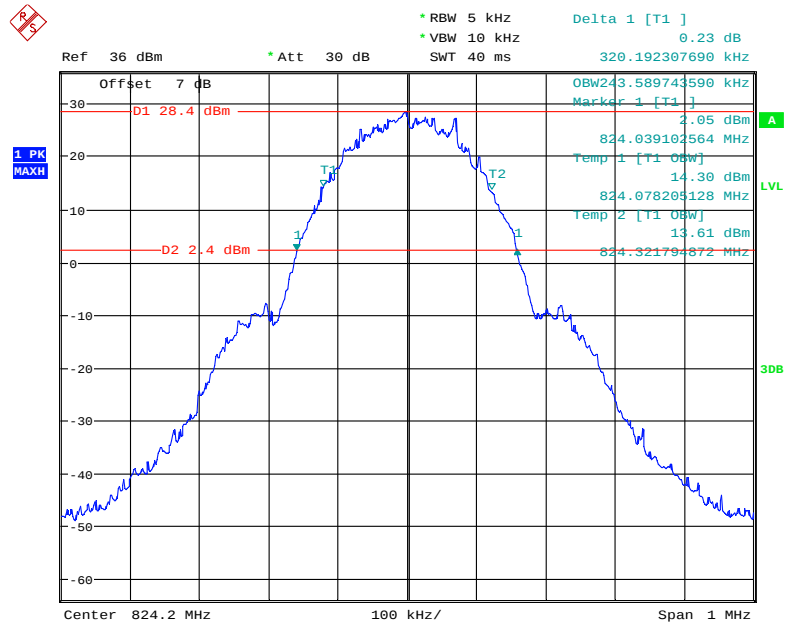
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.167	4.705
	1880.0	4.151	4.708
	1907.6	4.135	4.696
HSDPA	1852.4	4.167	4.692
	1880.0	4.151	4.679
	1907.6	4.167	4.670
HSUPA	1852.4	4.151	4.689
	1880.0	4.151	4.683
	1907.6	4.167	4.689

AWS Band (Part 27)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.135	4.689
	1732.6	4.151	4.689
	1752.6	4.151	4.689
HSDPA	1712.4	4.151	4.679
	1732.6	4.151	4.689
	1752.6	4.151	4.679
HSUPA	1712.4	4.167	4.679
	1732.6	4.151	4.689
	1752.6	4.151	4.689

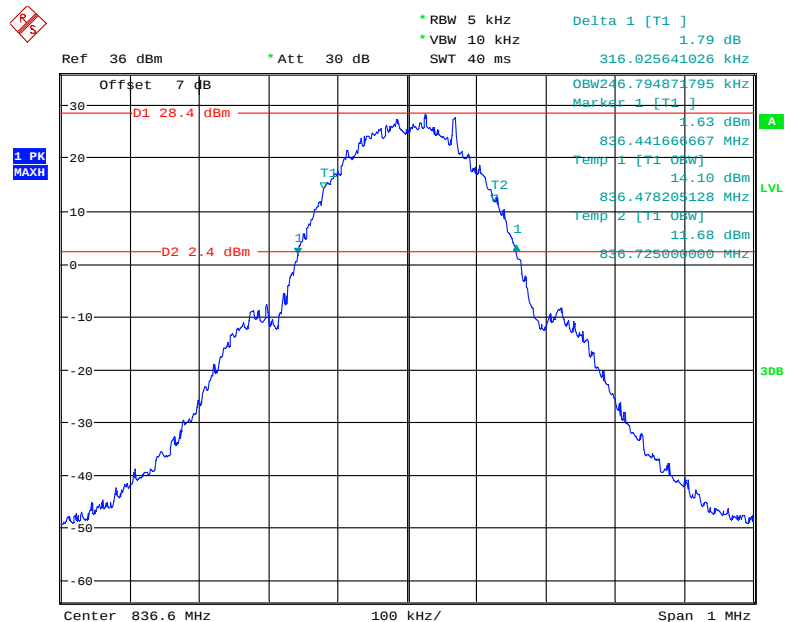
Cellular Band (Part 22H)

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



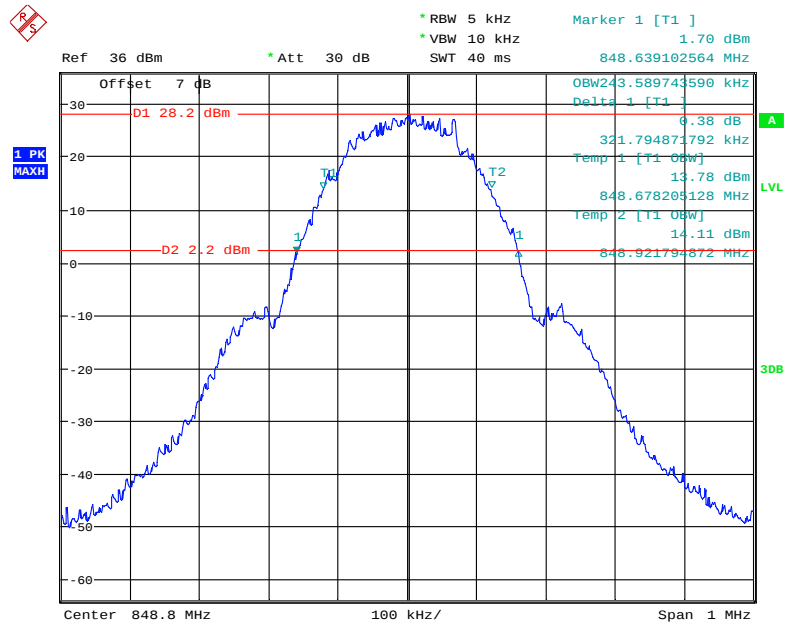
Date: 26.APR.2021 13:15:33

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



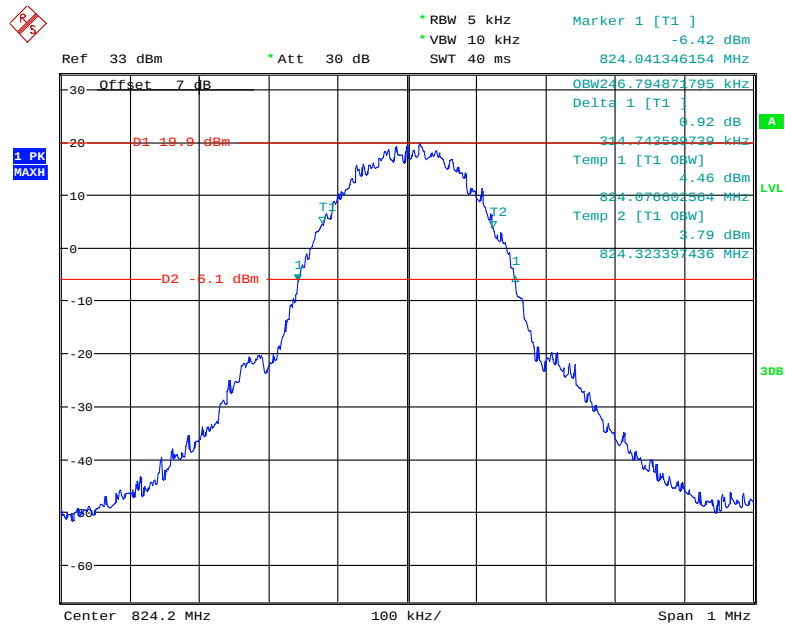
Date: 26.APR.2021 13:18:25

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



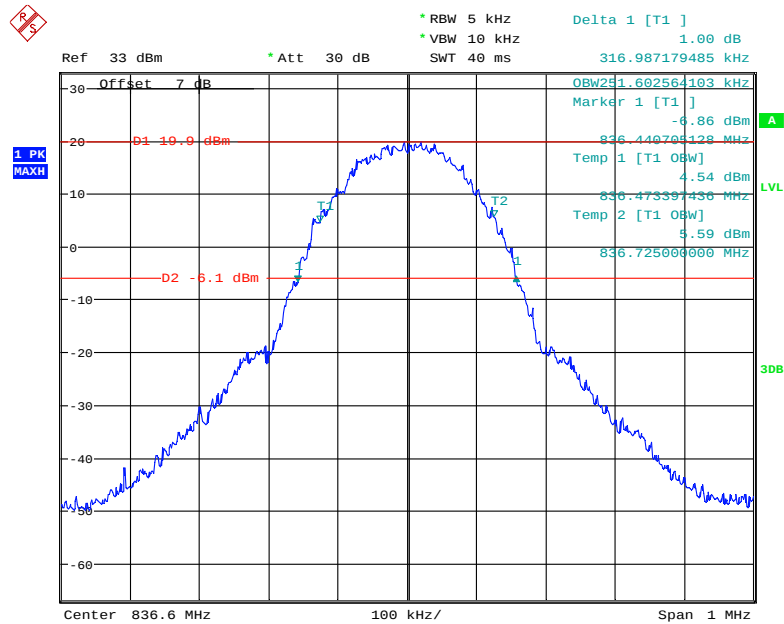
Date: 26.APR.2021 13:21:57

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



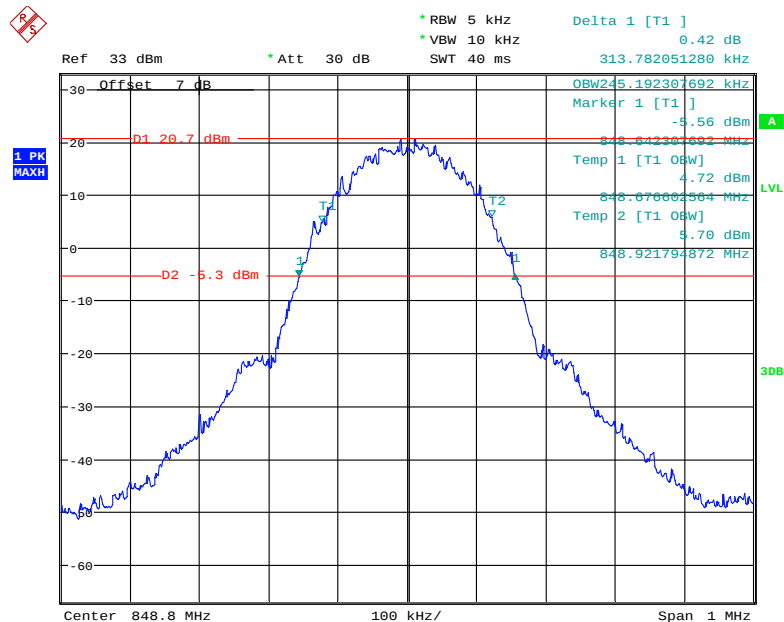
Date: 26.APR.2021 12:02:16

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



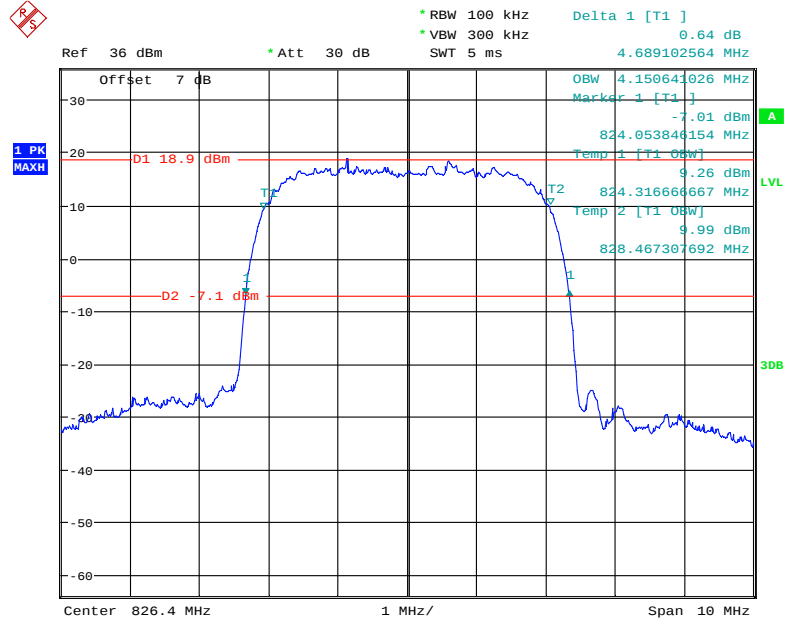
Date: 26.APR.2021 12:00:36

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



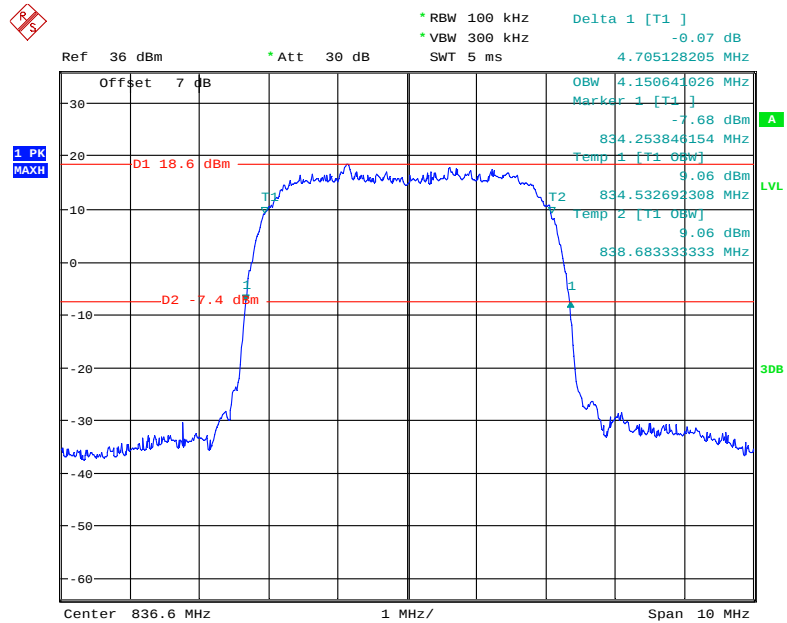
Date: 26.APR.2021 11:57:19

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



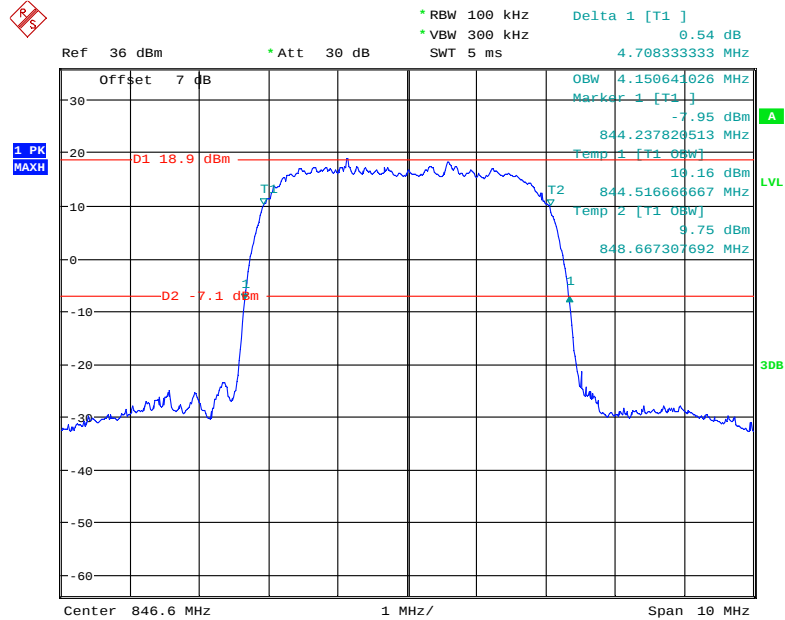
Date: 26.APR.2021 15:39:57

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



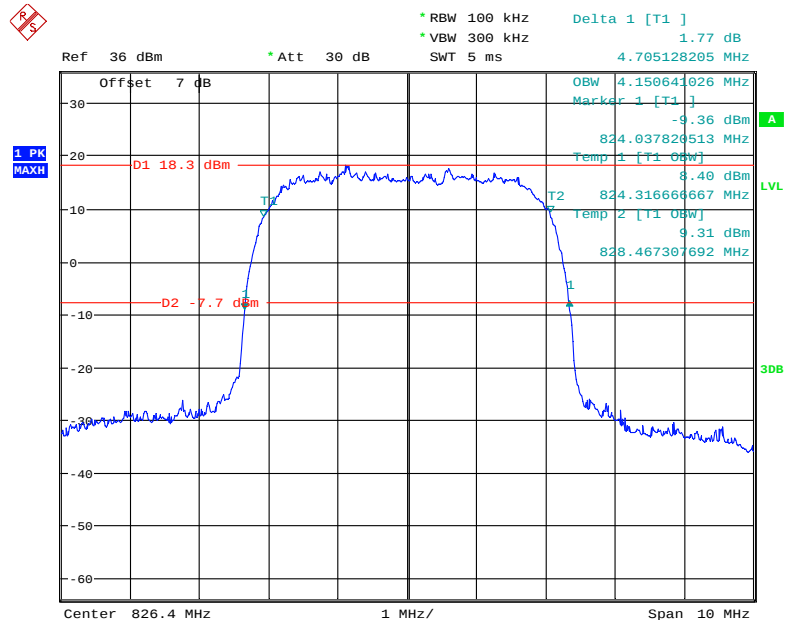
Date: 26.APR.2021 15:37:40

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



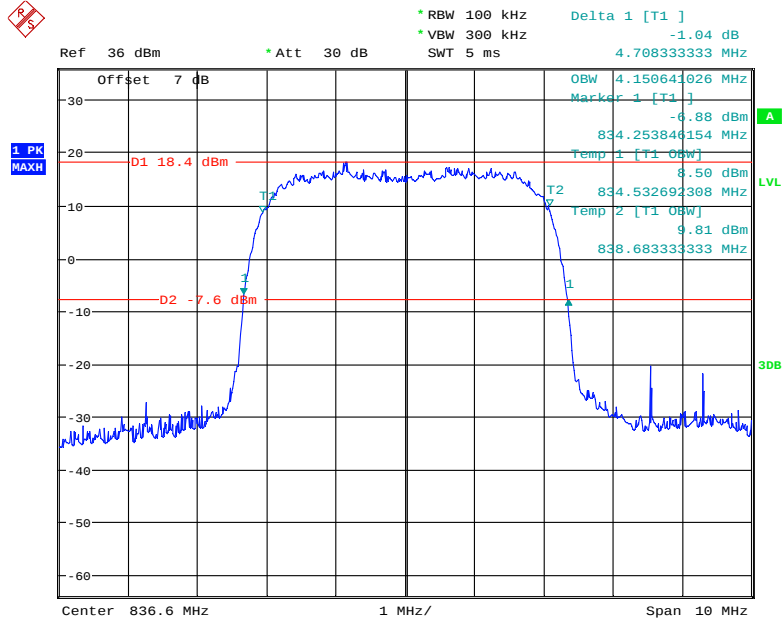
Date: 26.APR.2021 15:35:26

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



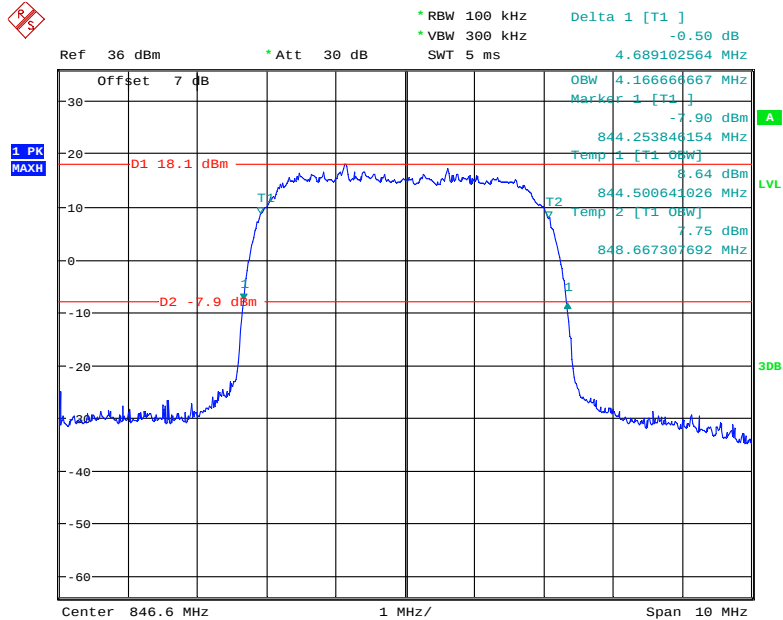
Date: 26.APR.2021 15:45:56

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



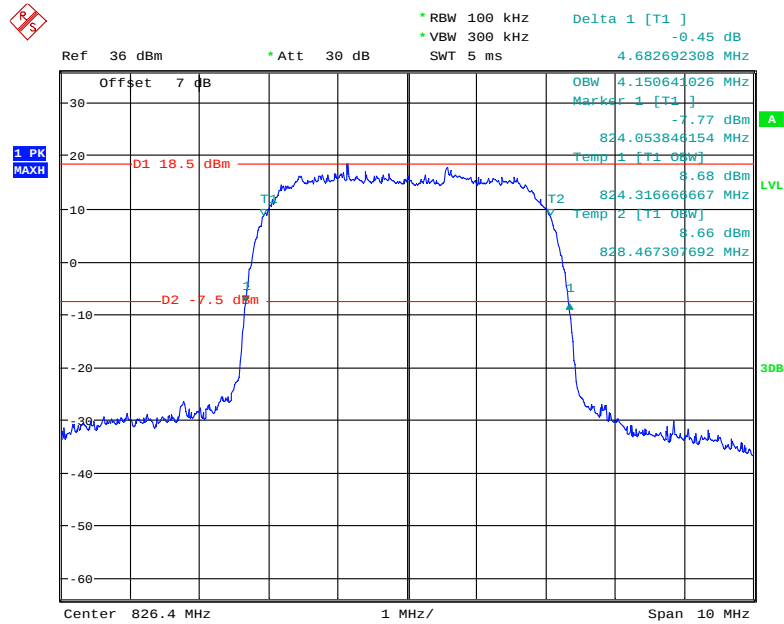
Date: 26.APR.2021 15:49:17

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



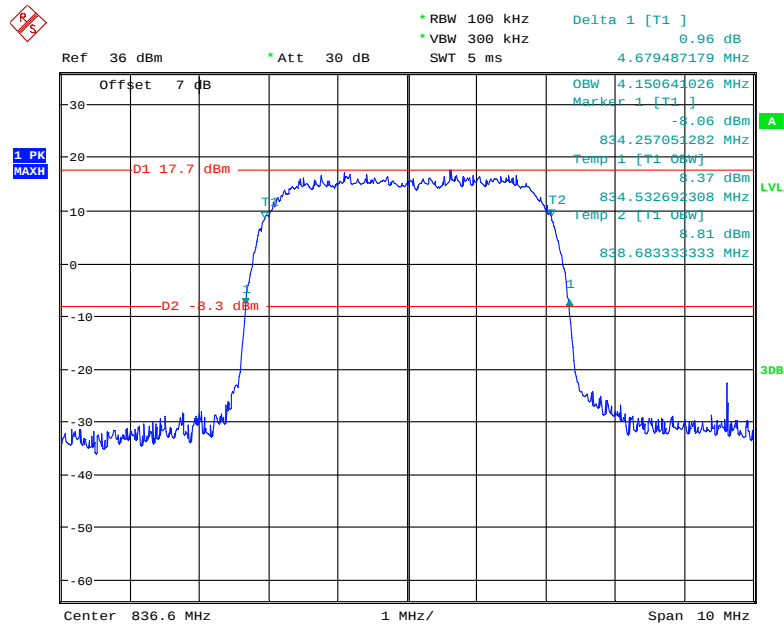
Date: 26.APR.2021 15:51:20

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



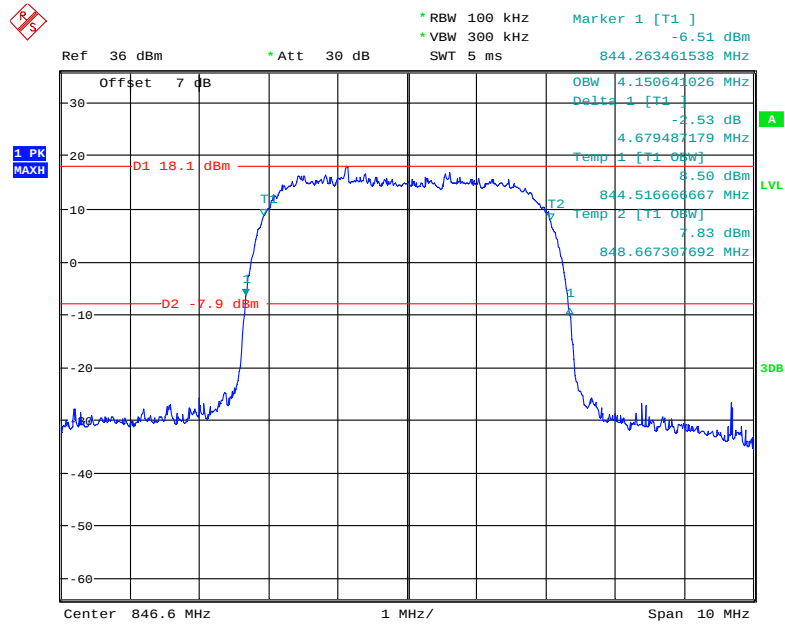
Date: 26.APR.2021 16:36:05

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



Date: 26.APR.2021 16:33:59

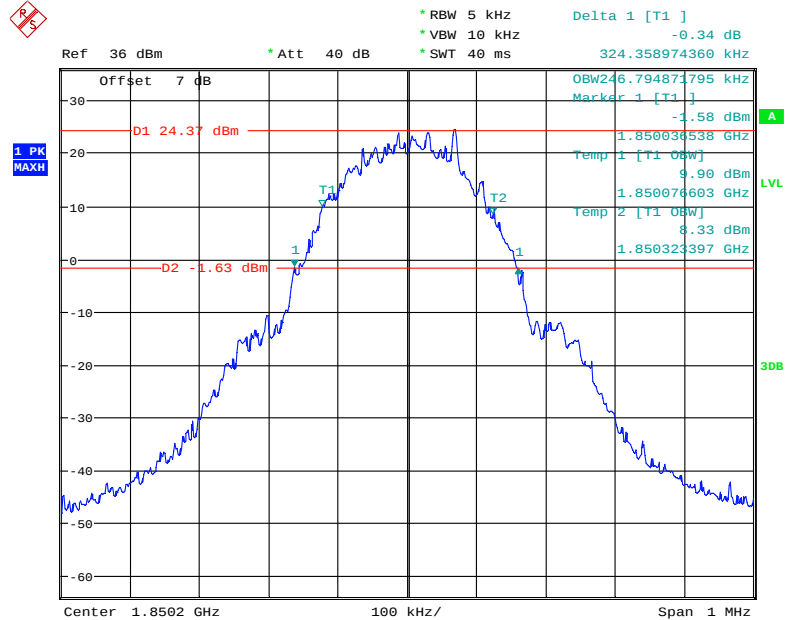
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 26.APR.2021 16:31:26

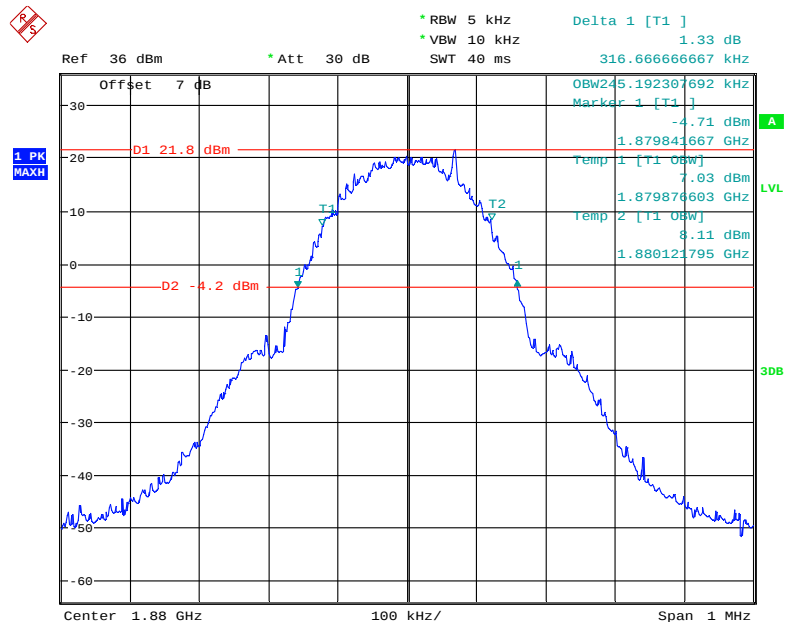
PCS Band (Part 24E)

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



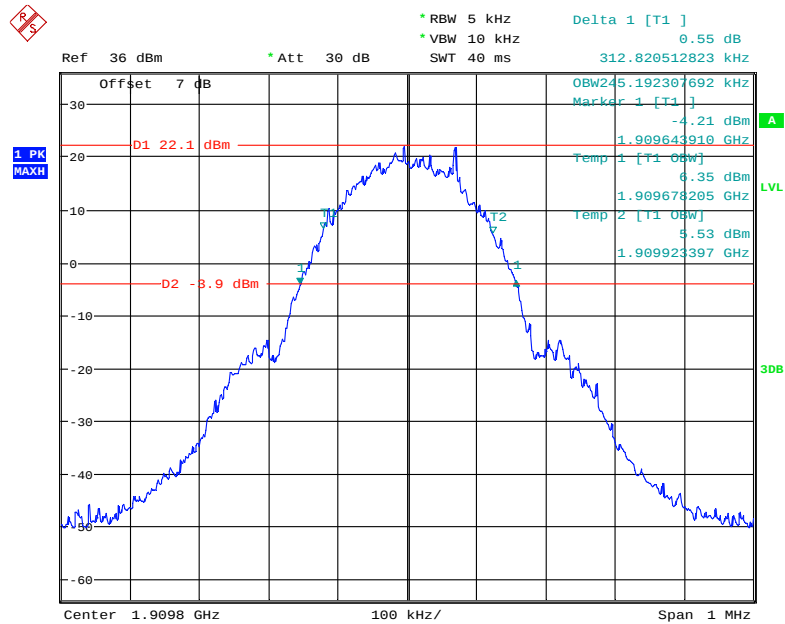
Date: 14.MAY.2021 16:00:25

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



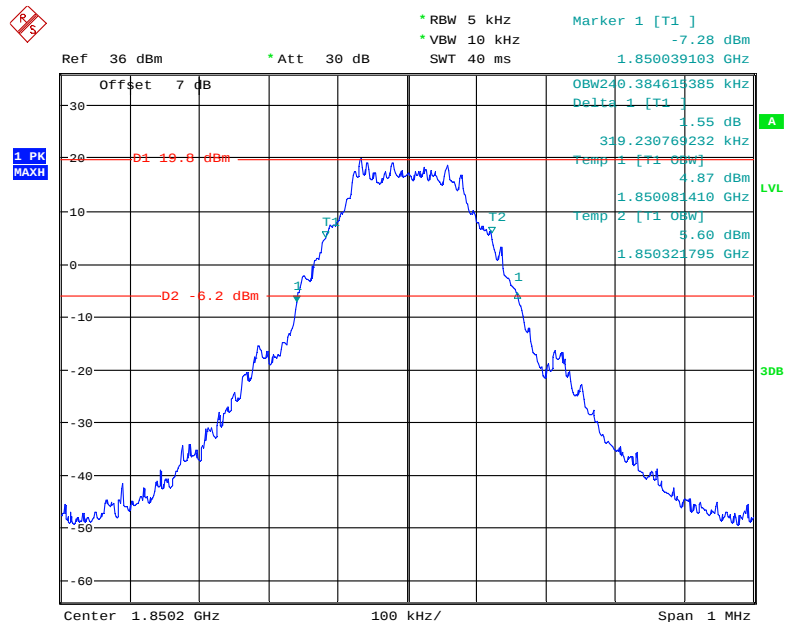
Date: 26.APR.2021 13:46:42

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



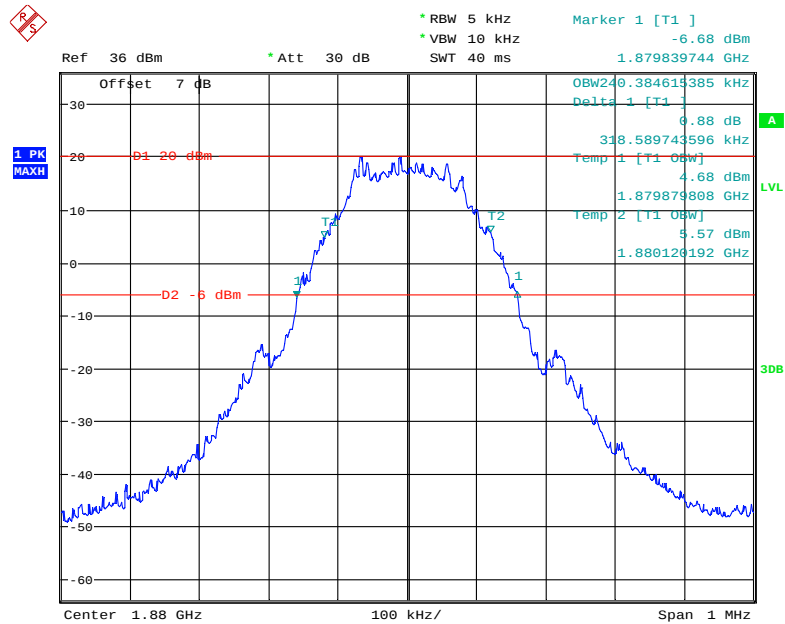
Date: 26.APR.2021 13:44:17

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



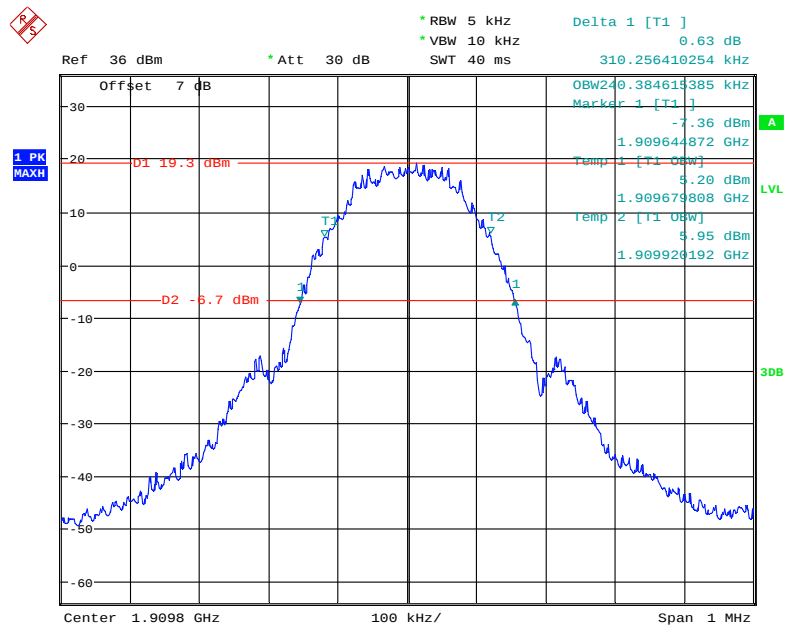
Date: 26.APR.2021 13:30:58

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



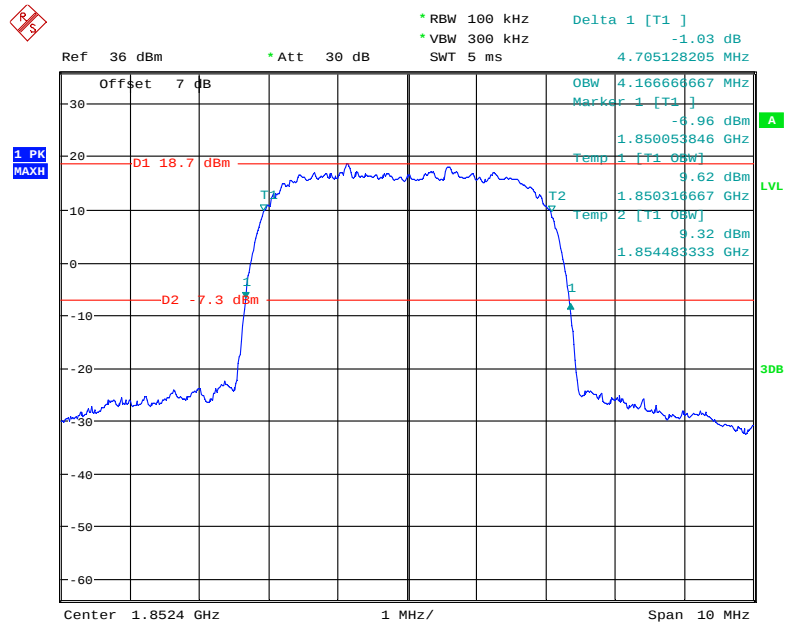
Date: 26.APR.2021 13:33:52

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



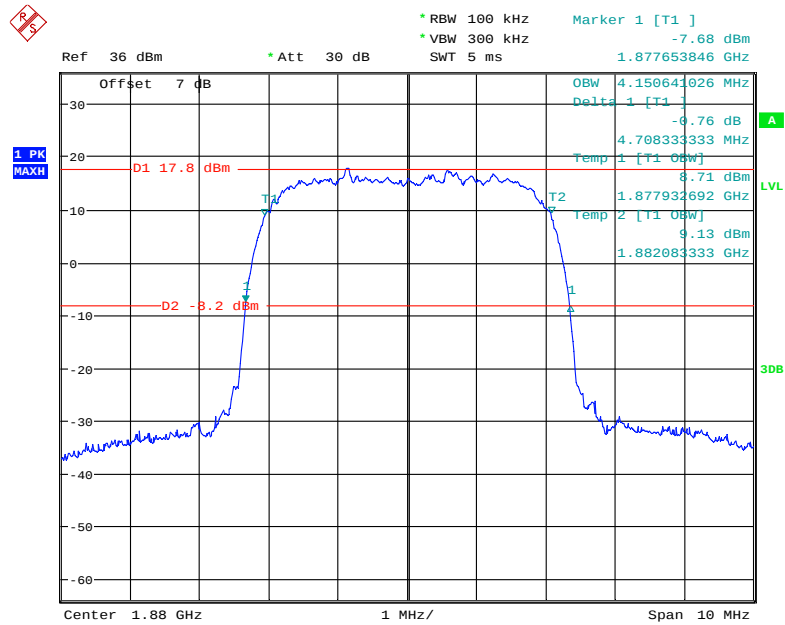
Date: 26.APR.2021 13:39:41

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



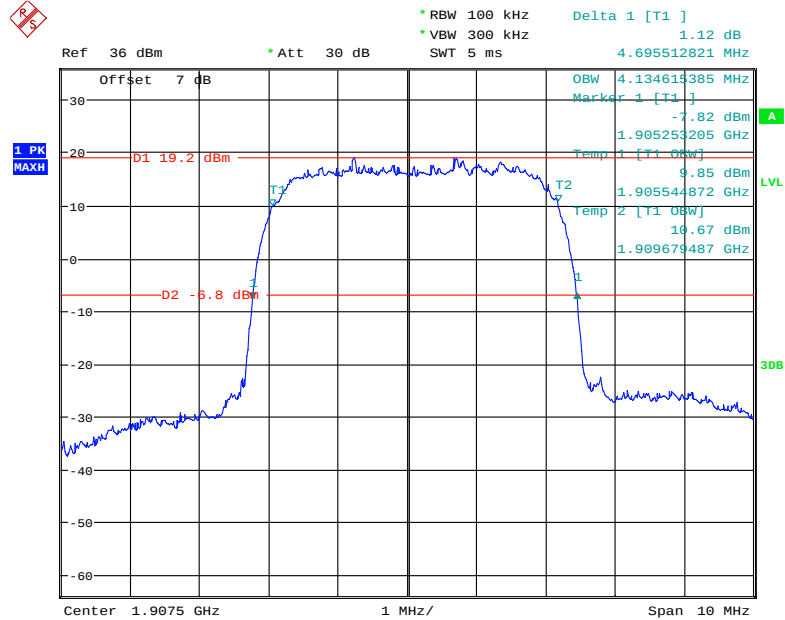
Date: 26.APR.2021 15:31:45

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



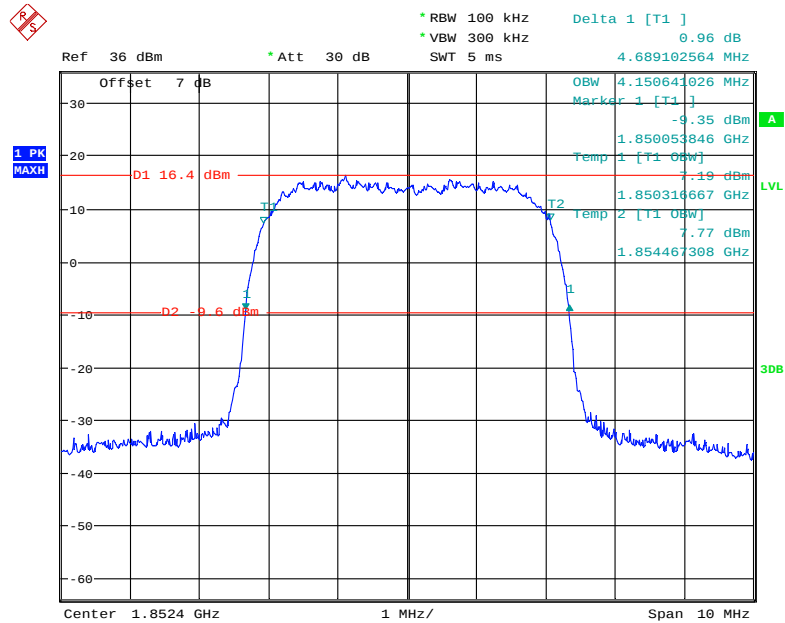
Date: 26.APR.2021 15:28:06

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



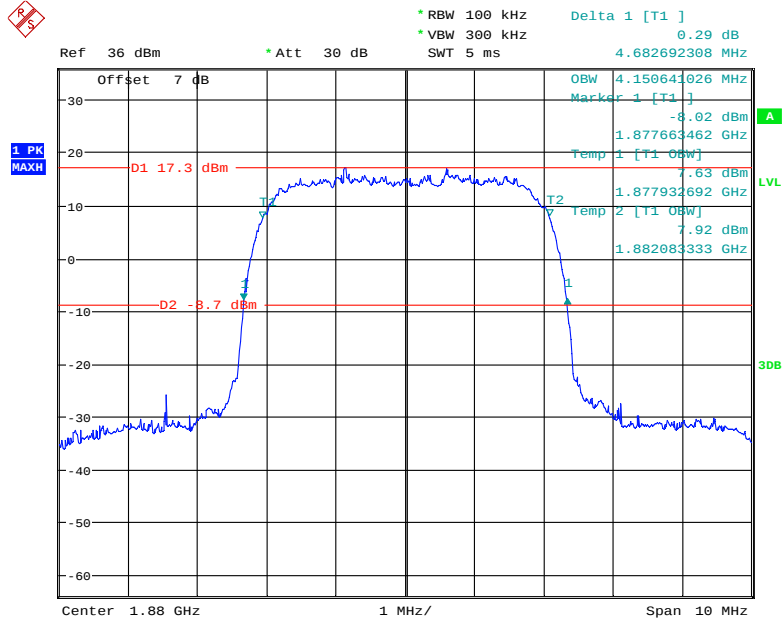
Date: 26.APR.2021 15:23:38

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



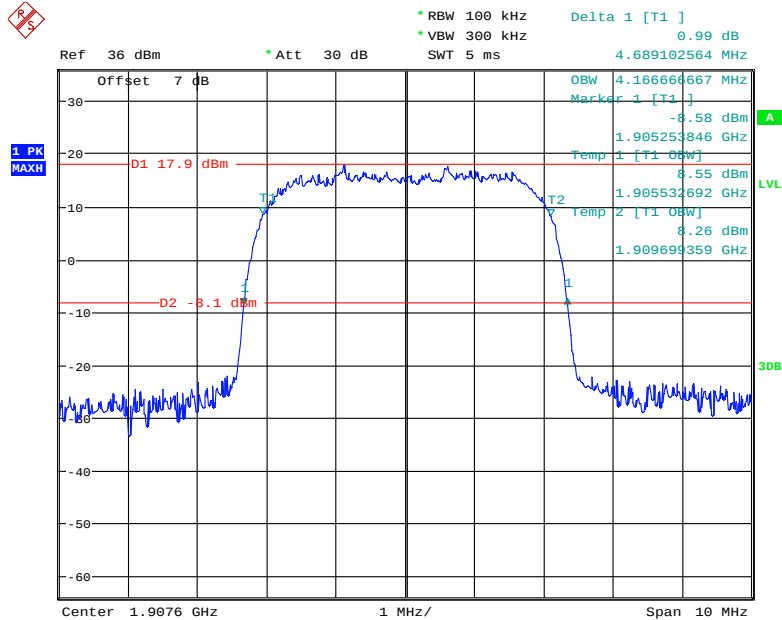
Date: 26.APR.2021 15:57:45

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

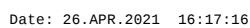
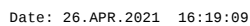


Date: 26.APR.2021 15:59:15

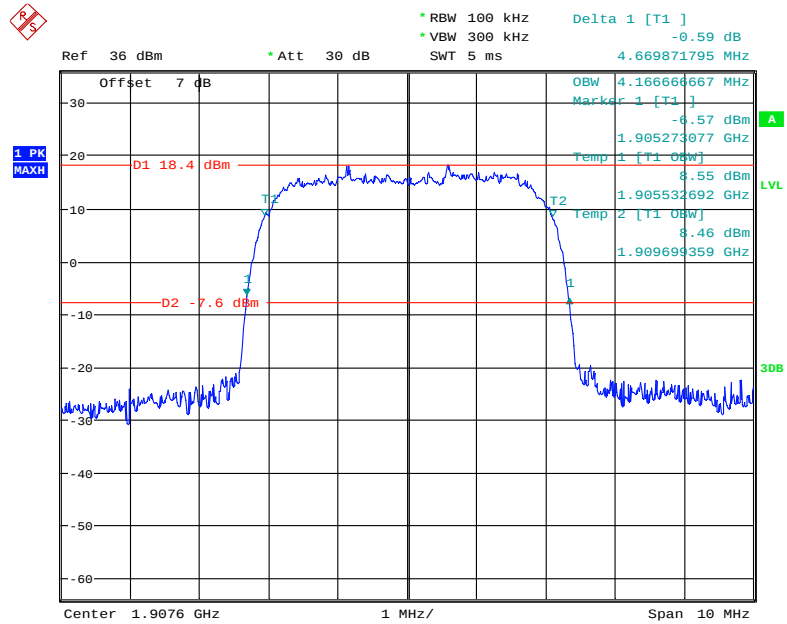
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



Date: 26.APR.2021 16:01:21



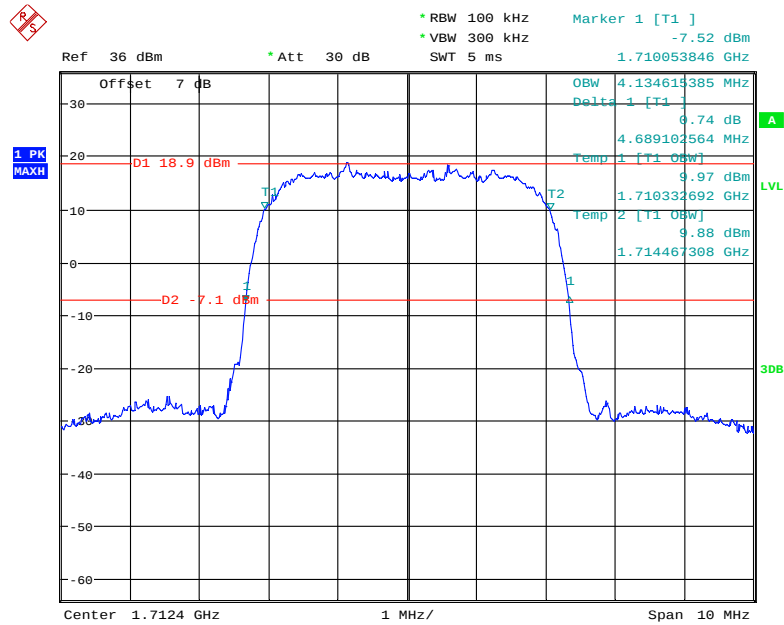
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 26.APR.2021 16:14:22

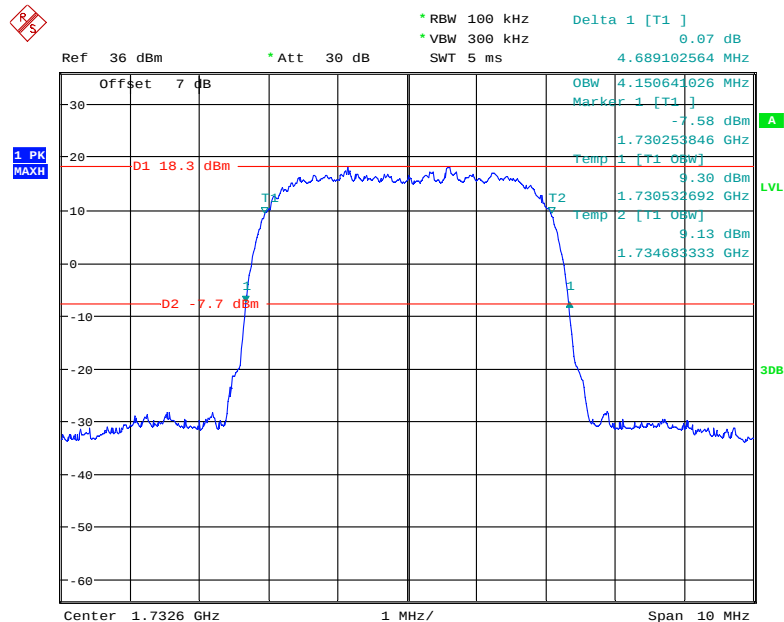
AWS Band (Part 27)

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



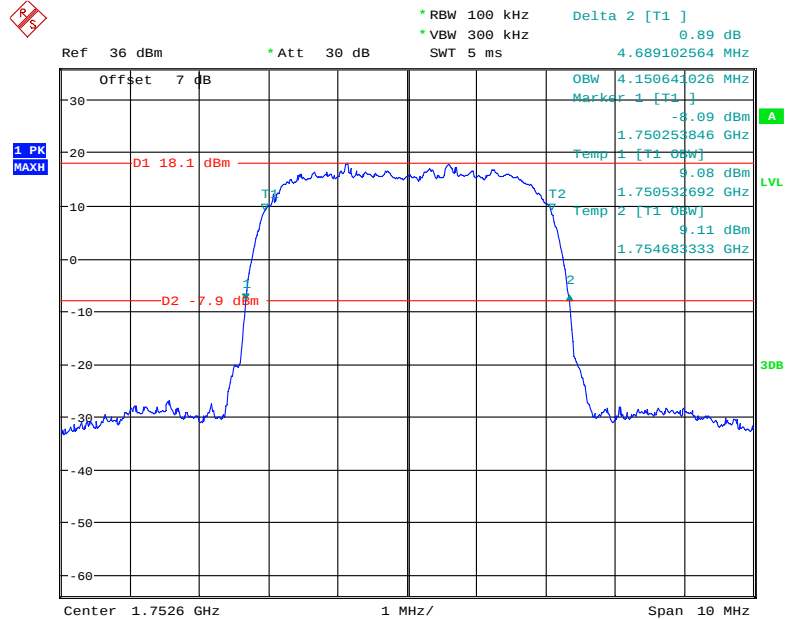
Date: 26.APR.2021 15:21:08

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



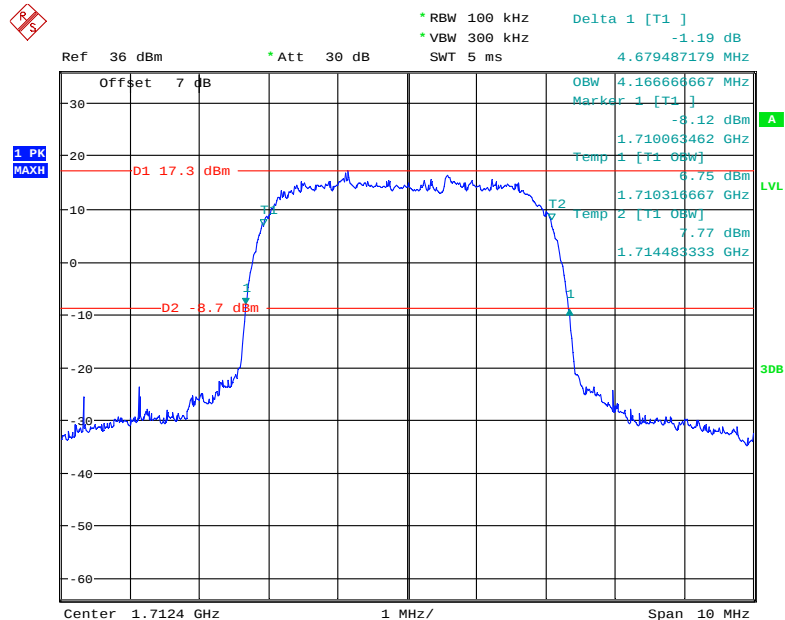
Date: 26.APR.2021 15:18:23

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



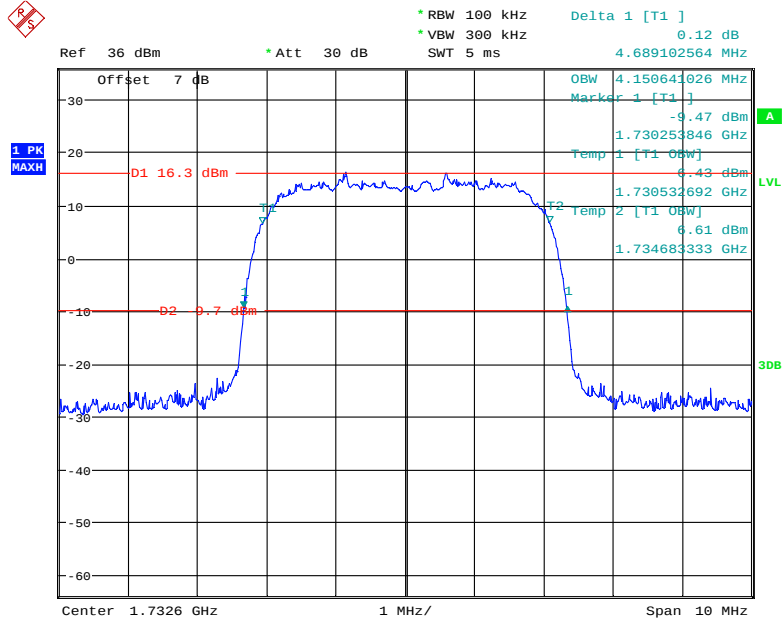
Date: 26.APR.2021 15:14:02

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



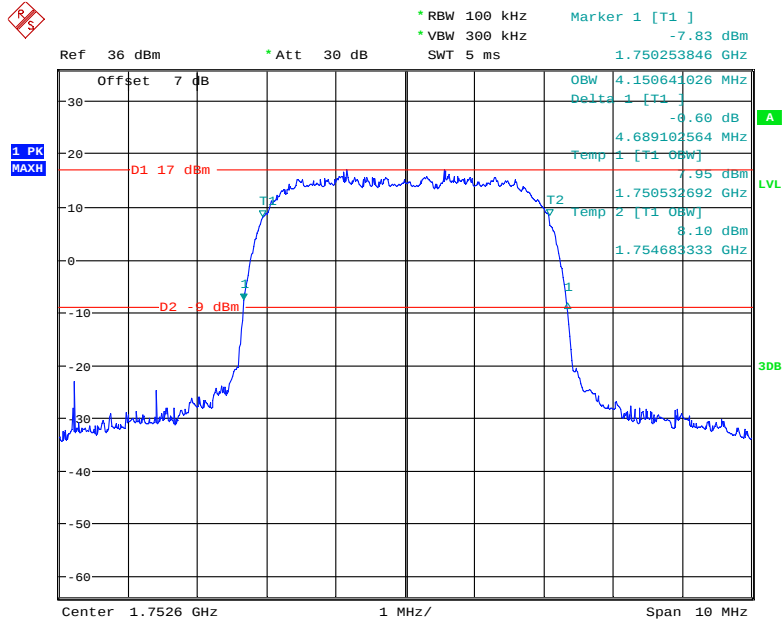
Date: 26.APR.2021 16:03:44

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



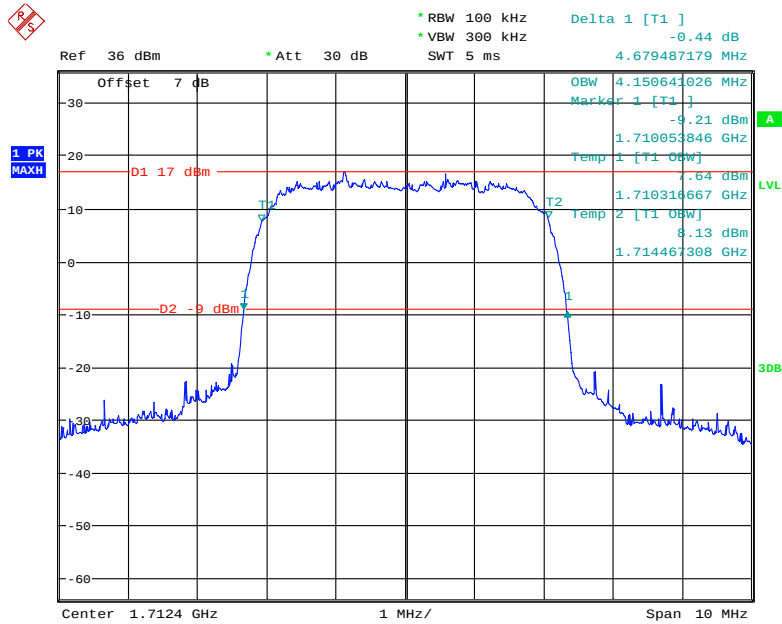
Date: 26.APR.2021 16:06:08

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



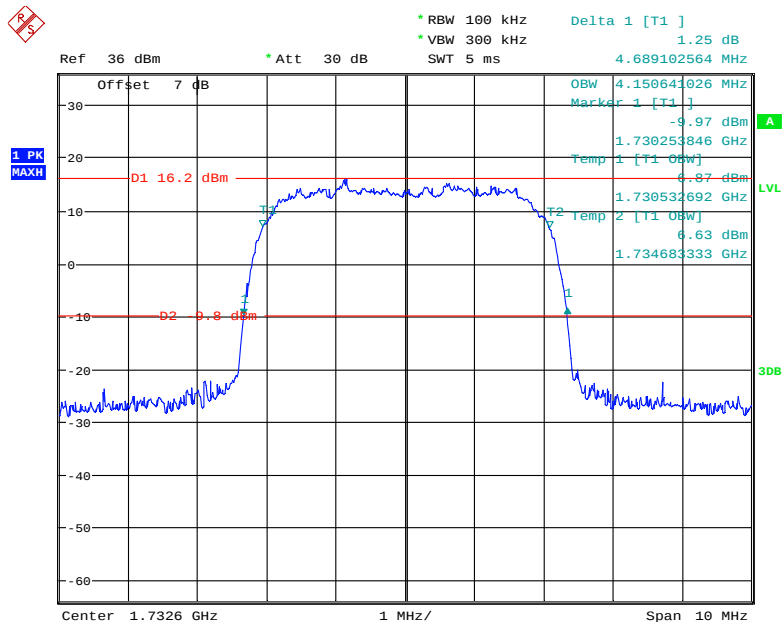
Date: 26.APR.2021 16:08:06

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



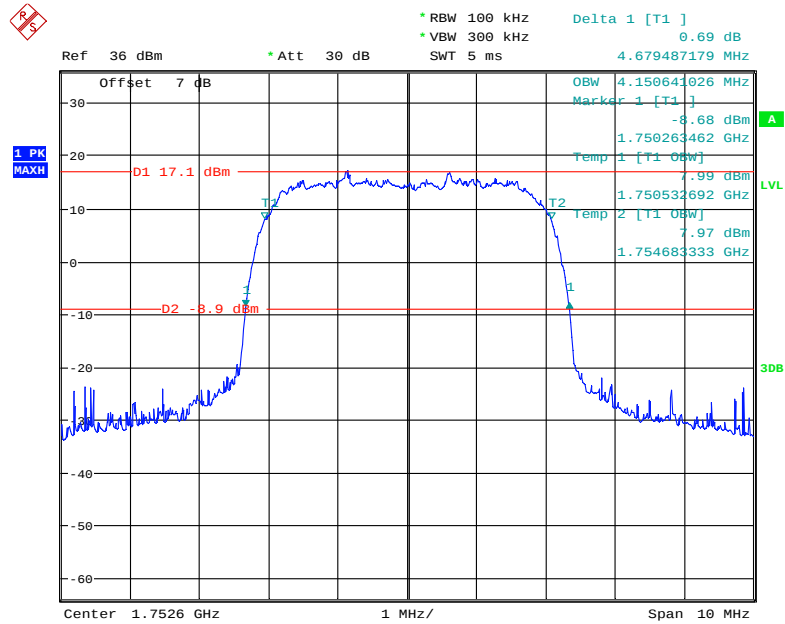
Date: 26.APR.2021 16:29:28

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



Date: 26.APR.2021 16:25:29

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



Date: 26.APR.2021 16:22:54

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	1.254
		High	1.104	1.254
	16QAM	Low	1.110	1.254
		Middle	1.116	1.260
		High	1.098	1.248
3	QPSK	Low	2.712	3.012
		Middle	2.700	2.988
		High	2.688	3.000
	16QAM	Low	2.700	3.024
		Middle	2.700	3.000
		High	2.700	3.048
5	QPSK	Low	4.540	4.980
		Middle	4.520	5.000
		High	4.500	4.980
	16QAM	Low	4.520	5.020
		Middle	4.540	5.020
		High	4.540	4.980
10	QPSK	Low	9.000	9.760
		Middle	8.960	9.720
		High	8.960	9.760
	16QAM	Low	8.960	9.720
		Middle	8.960	9.720
		High	8.960	9.840
15	QPSK	Low	13.560	15.000
		Middle	13.500	15.000
		High	13.620	15.180
	16QAM	Low	13.560	15.000
		Middle	13.560	14.940
		High	13.560	15.060
20	QPSK	Low	18.000	19.600
		Middle	17.920	19.520
		High	18.080	19.760
	16QAM	Low	18.000	19.760
		Middle	18.000	19.680
		High	18.000	19.680

Band 4:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.248
		Middle	1.104	1.254
		High	1.104	1.260
	16QAM	Low	1.110	1.260
		Middle	1.098	1.254
		High	1.104	1.260
3	QPSK	Low	2.712	2.988
		Middle	2.700	3.000
		High	2.688	3.024
	16QAM	Low	2.700	3.000
		Middle	2.700	3.000
		High	2.700	3.012
5	QPSK	Low	4.520	5.000
		Middle	4.520	4.980
		High	4.500	4.960
	16QAM	Low	4.520	4.980
		Middle	4.520	5.020
		High	4.540	5.040
10	QPSK	Low	8.960	9.760
		Middle	8.960	9.760
		High	8.960	9.760
	16QAM	Low	8.960	9.680
		Middle	9.000	9.760
		High	8.960	9.720
15	QPSK	Low	13.620	14.940
		Middle	13.560	14.940
		High	13.440	14.940
	16QAM	Low	13.560	15.060
		Middle	13.560	15.060
		High	13.560	15.000
20	QPSK	Low	18.000	19.600
		Middle	17.920	19.520
		High	18.000	19.680
	16QAM	Low	18.000	19.440
		Middle	18.000	19.680
		High	17.920	19.600

Band 5:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.260
		Middle	1.104	1.260
		High	1.104	1.248
	16QAM	Low	1.116	1.266
		Middle	1.098	1.254
		High	1.104	1.260
3	QPSK	Low	2.700	3.012
		Middle	2.700	3.000
		High	2.700	3.012
	16QAM	Low	2.688	3.000
		Middle	2.702	3.023
		High	2.700	3.036
5	QPSK	Low	4.540	4.960
		Middle	4.520	5.020
		High	4.520	4.980
	16QAM	Low	4.500	4.980
		Middle	4.520	5.040
		High	4.540	5.020
10	QPSK	Low	8.960	9.800
		Middle	9.000	9.720
		High	8.960	9.720
	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	5.020
		Middle	4.520	5.020
		High	4.520	4.980
	16QAM	Low	4.520	4.960
		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	9.760
	16QAM	Low	9.000	9.800
		Middle	9.000	9.840
		High	8.960	9.800
15	QPSK	Low	13.560	15.060
		Middle	13.560	15.000
		High	13.500	15.120
	16QAM	Low	13.560	14.940
		Middle	13.560	15.060
		High	13.500	15.060
20	QPSK	Low	18.000	19.520
		Middle	17.920	19.600
		High	18.080	19.760
	16QAM	Low	17.920	19.600
		Middle	18.000	19.600
		High	18.000	19.760

LTE Band 12:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.098	1.254
		Middle	1.104	1.254
		High	1.110	1.248
	16QAM	Low	1.116	1.254
		Middle	1.098	1.248
		High	1.104	1.260
3	QPSK	Low	2.700	2.976
		Middle	2.700	3.024
		High	2.688	3.012
	16QAM	Low	2.700	3.012
		Middle	2.700	3.012
		High	2.688	3.024
5	QPSK	Low	4.520	4.980
		Middle	4.520	5.000
		High	4.520	5.000
	16QAM	Low	4.520	4.920
		Middle	4.540	5.040
		High	4.520	5.000
10	QPSK	Low	8.960	9.760
		Middle	8.960	9.640
		High	9.000	9.760
	16QAM	Low	8.960	9.760
		Middle	8.960	9.680
		High	9.000	9.760

LTE Band 17:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.520	4.980
		Middle	4.520	5.000
		High	4.500	4.960
	16QAM	Low	4.500	4.960
		Middle	4.540	5.040
		High	4.520	4.960
10	QPSK	Low	8.960	9.760
		Middle	8.960	9.720
		High	9.000	9.760
	16QAM	Low	8.960	9.840
		Middle	9.000	9.840
		High	8.960	9.800

LTE Band 66:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.110	1.248
		Middle	1.098	1.254
		High	1.110	1.248
	16QAM	Low	1.116	1.260
		Middle	1.104	1.260
		High	1.110	1.260
3	QPSK	Low	2.700	2.988
		Middle	2.700	3.036
		High	2.700	3.012
	16QAM	Low	2.700	3.012
		Middle	2.700	3.000
		High	2.700	3.012
5	QPSK	Low	4.520	4.980
		Middle	4.520	5.020
		High	4.500	4.960
	16QAM	Low	4.500	4.980
		Middle	4.540	5.020
		High	4.540	5.000
10	QPSK	Low	8.960	9.760
		Middle	8.960	9.720
		High	8.960	9.720
	16QAM	Low	9.000	9.760
		Middle	9.000	9.760
		High	8.960	9.800
15	QPSK	Low	13.620	15.060
		Middle	13.440	14.940
		High	13.560	15.060
	16QAM	Low	13.560	15.060
		Middle	13.560	15.000
		High	13.560	14.940
20	QPSK	Low	18.000	19.600
		Middle	17.920	19.600
		High	18.000	19.680
	16QAM	Low	18.000	19.680
		Middle	18.000	19.600
		High	18.000	19.680

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

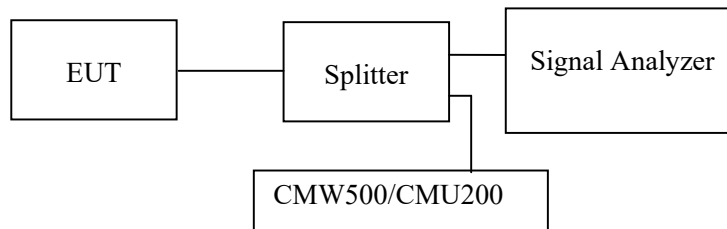
Applicable Standard

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

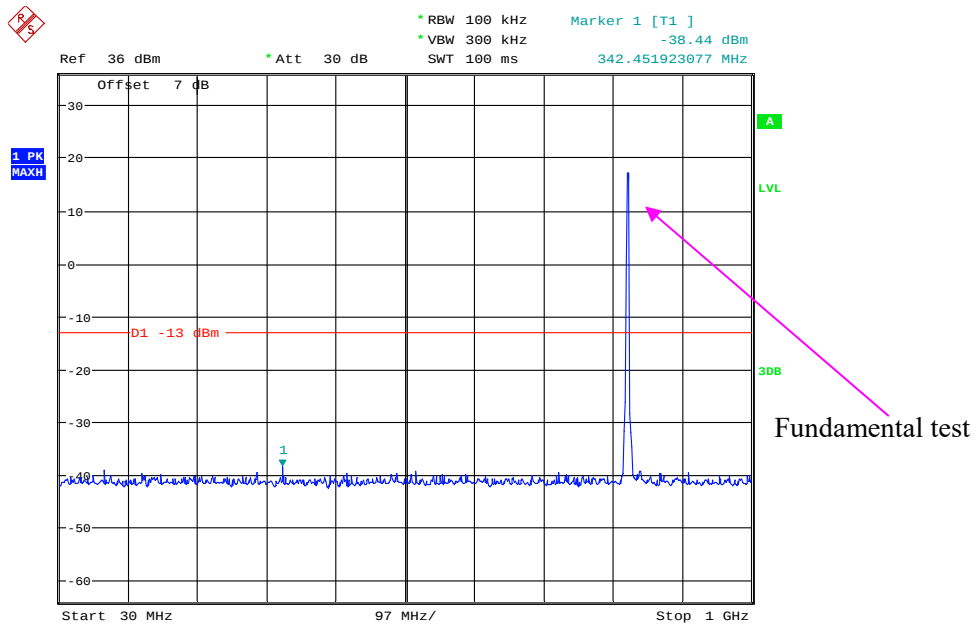
The testing was performed by Orlo Yang from 2021-04-23 to 2021-04-26.

EUT operation mode: Transmitting

Test result: Pass

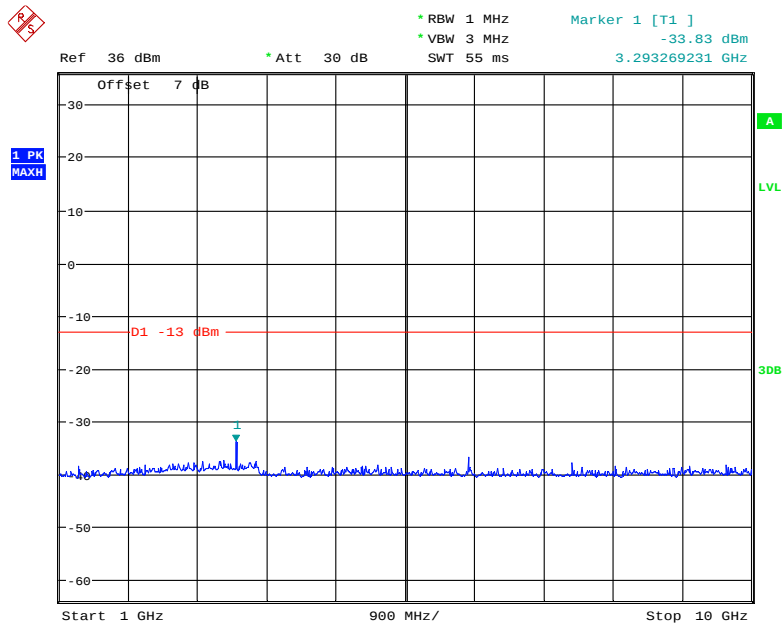
Please refer to the following plots.

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:50:17

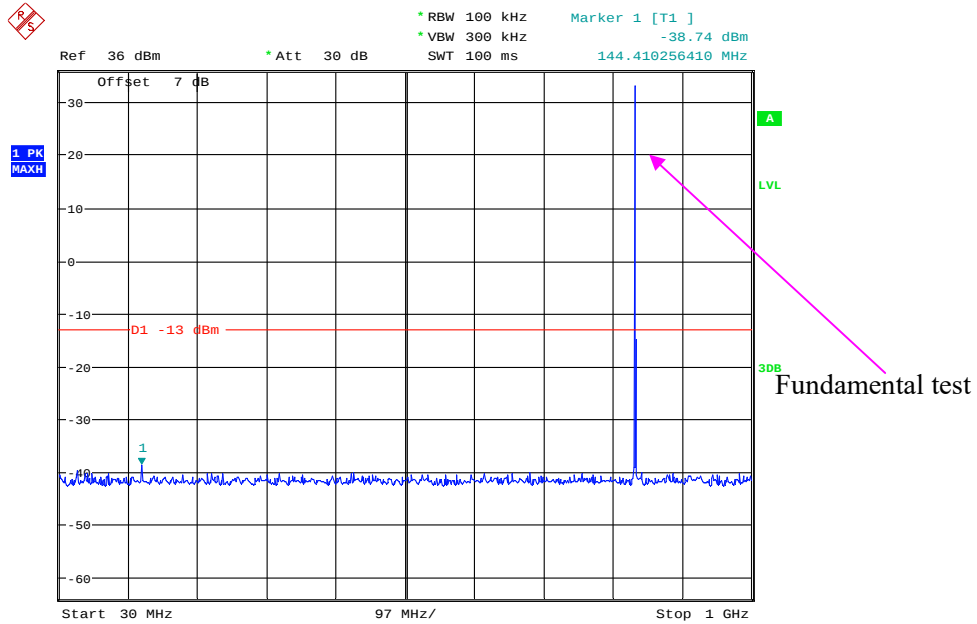
1 GHz – 10 GHz (WCDMA Mode)



Date: 26.APR.2021 14:59:31

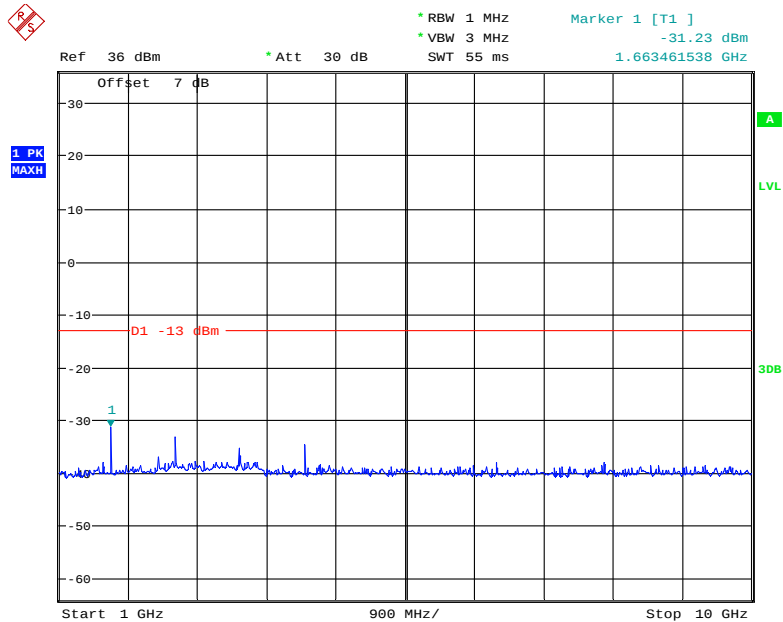
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



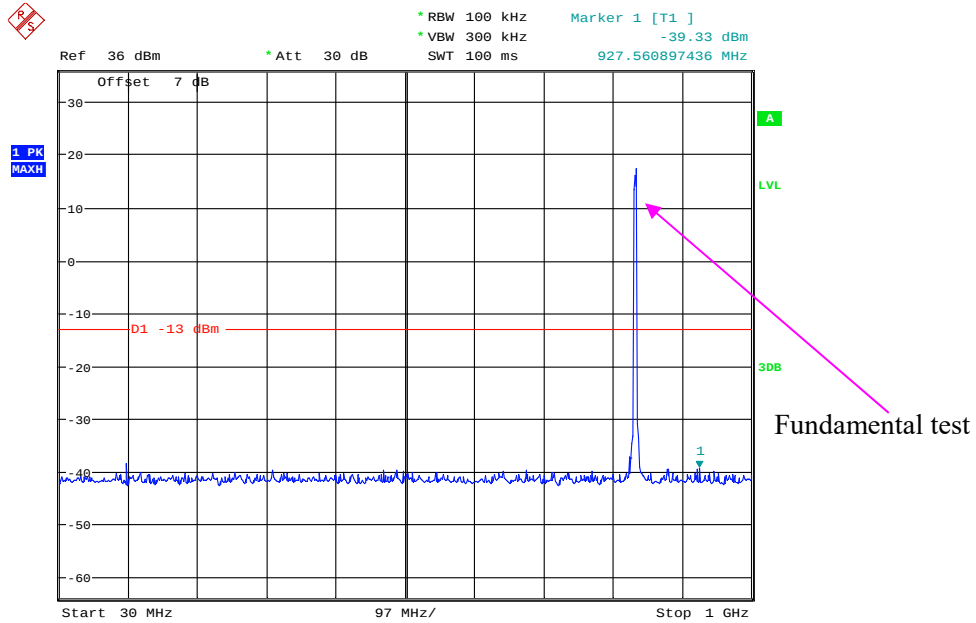
Date: 26.APR.2021 14:20:46

1 GHz – 10 GHz (GSM Mode)



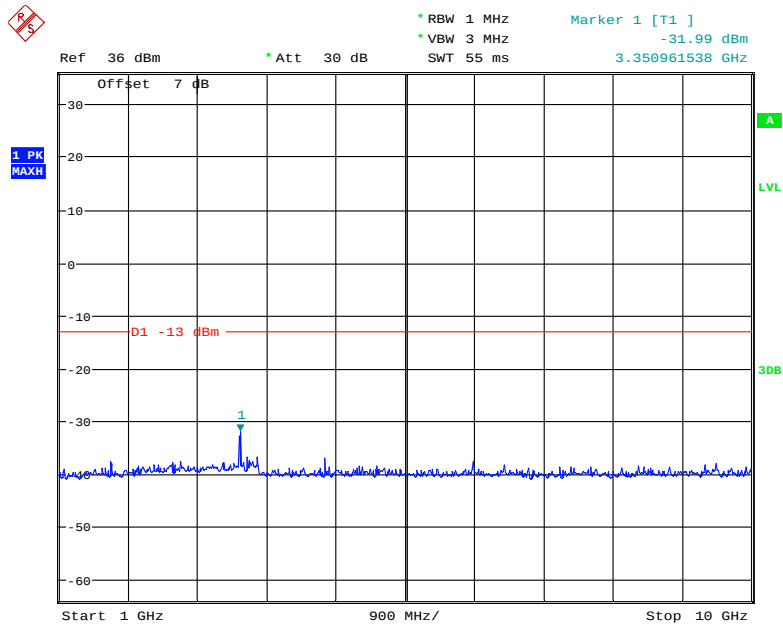
Date: 26.APR.2021 14:23:24

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:48:36

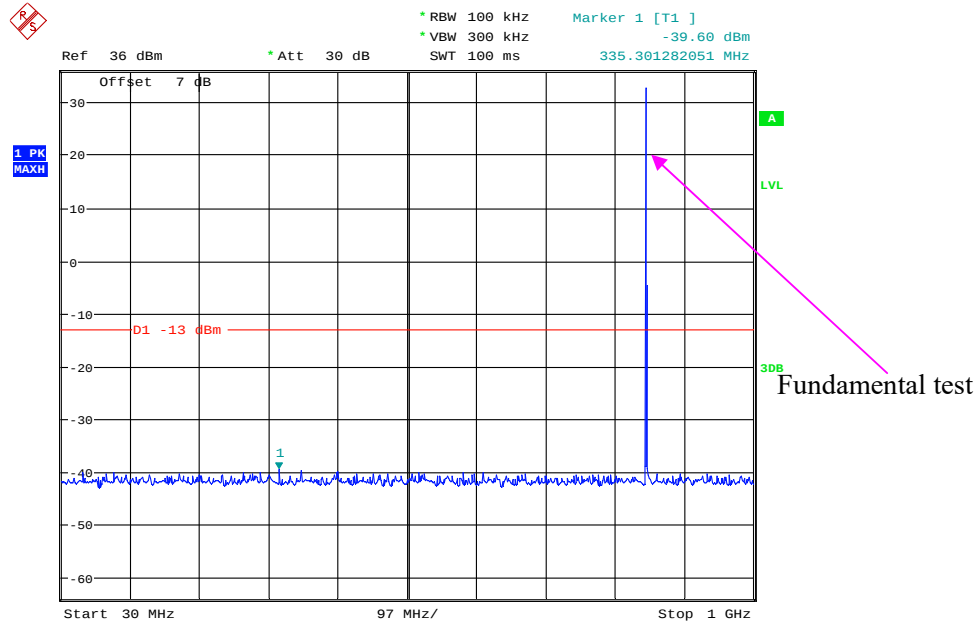
1 GHz – 10 GHz (WCDMA Mode)



Date: 26.APR.2021 15:00:51

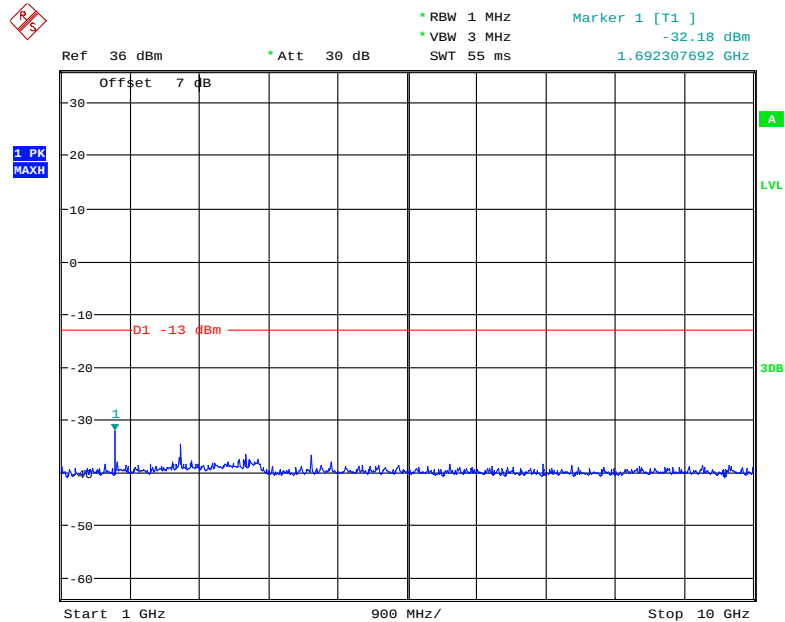
High Channel:

30 MHz – 1 GHz (GSM Mode)



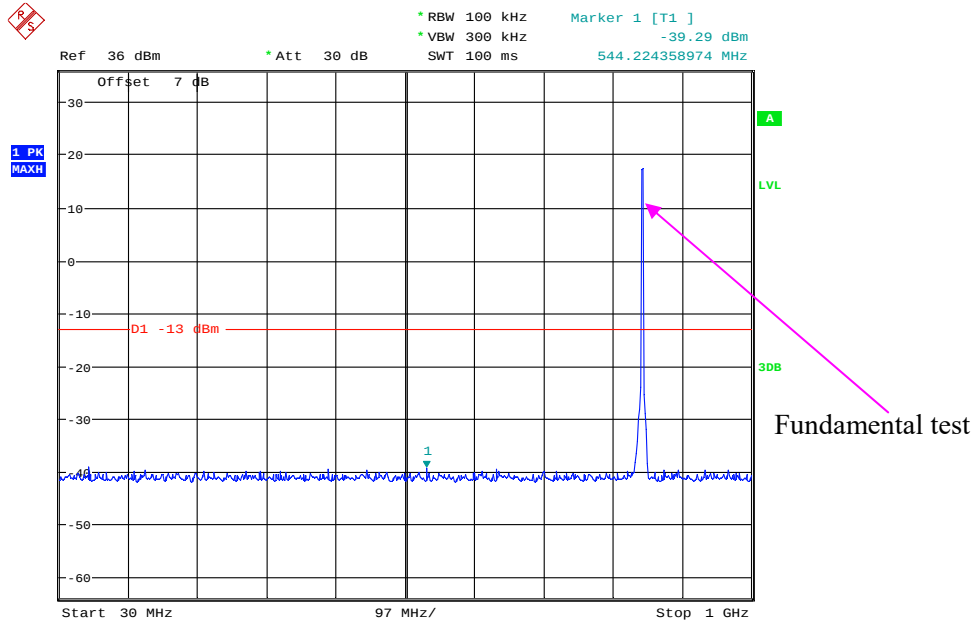
Date: 26.APR.2021 14:21:39

1 GHz – 10 GHz (GSM Mode)



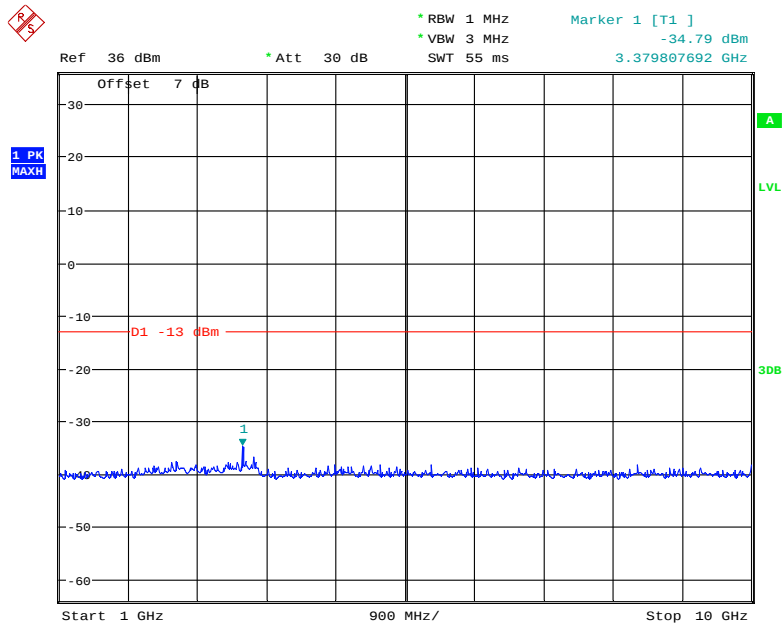
Date: 26.APR.2021 14:22:42

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:46:55

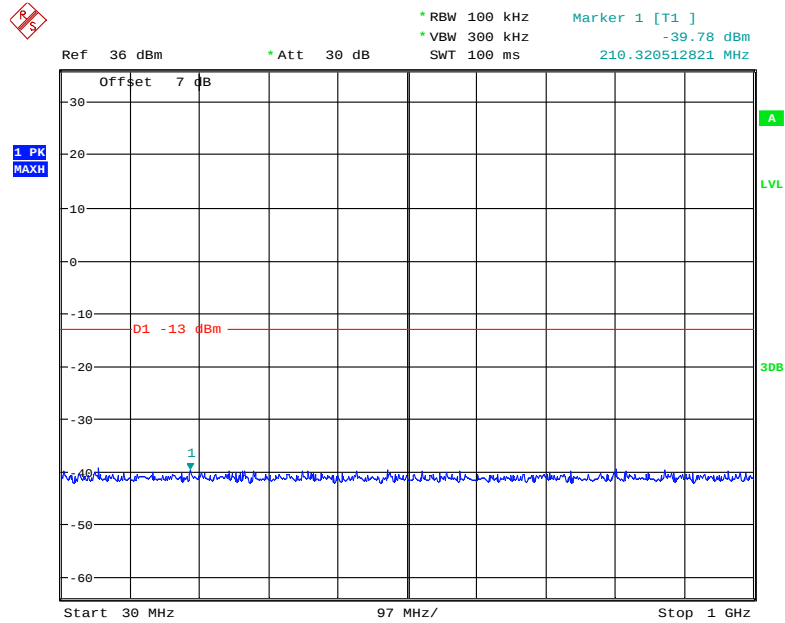
1 GHz – 10 GHz (WCDMA Mode)



Date: 26.APR.2021 15:02:03

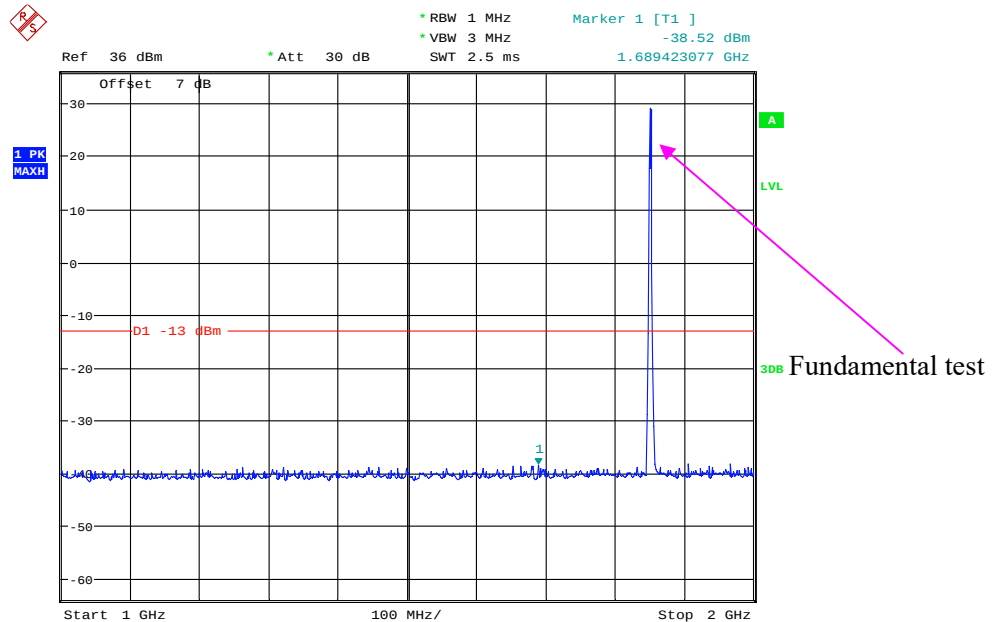
PCS Band (Part 24E) Low Channel:

30 MHz – 1 GHz (GSM Mode)



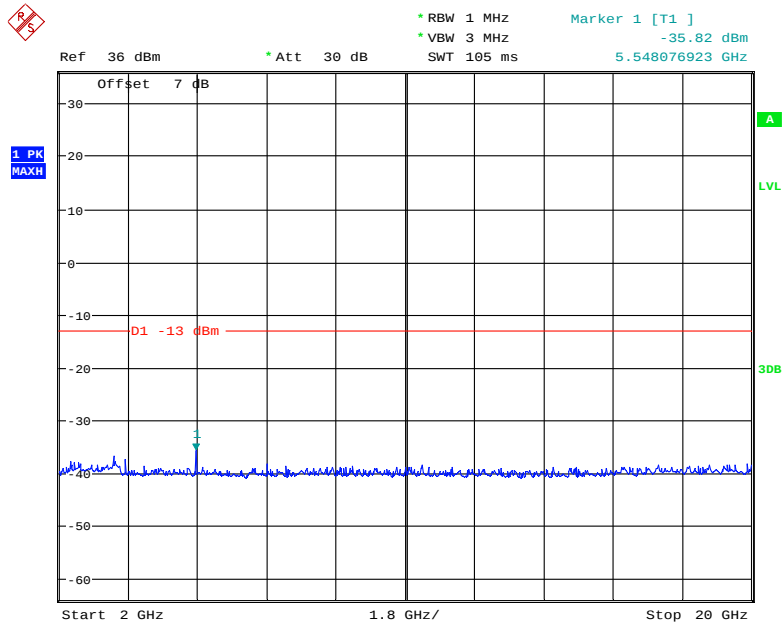
Date: 26.APR.2021 14:08:22

1 GHz – 2GHz (GSM Mode)



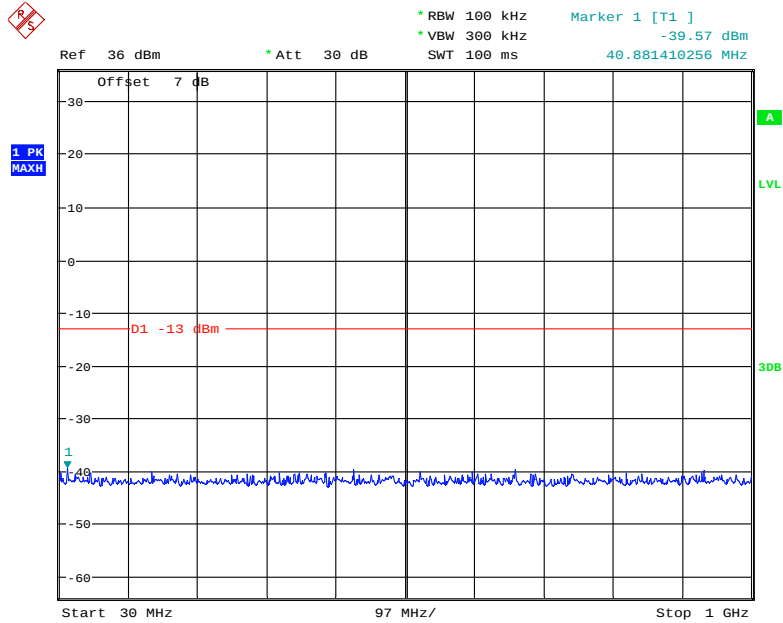
Date: 26.APR.2021 14:13:26

2 MHz – 20 GHz (GSM Mode)



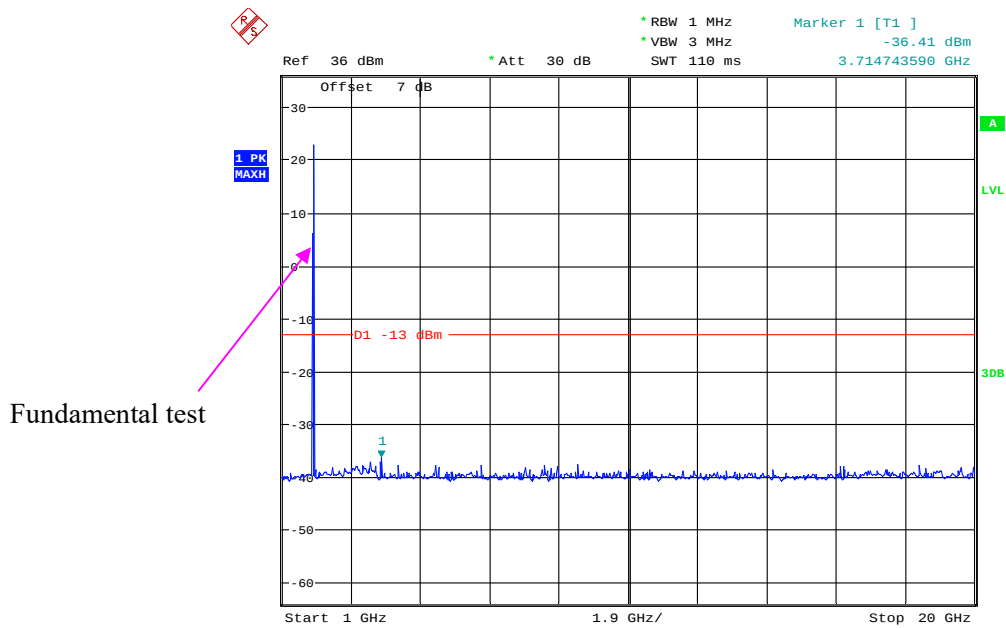
Date: 26.APR.2021 14:14:27

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:53:45

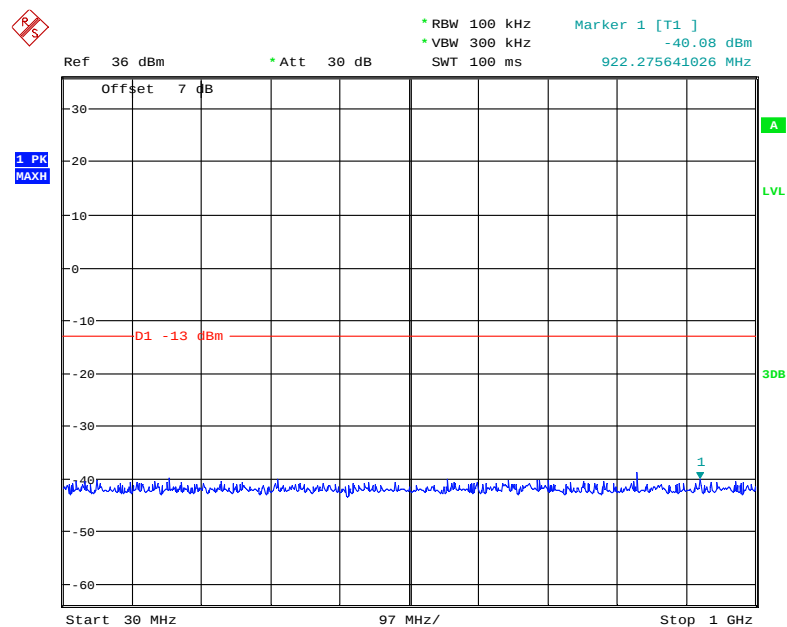
1 GHz – 20 GHz (WCDMA Mode)



Date: 26.APR.2021 15:03:24

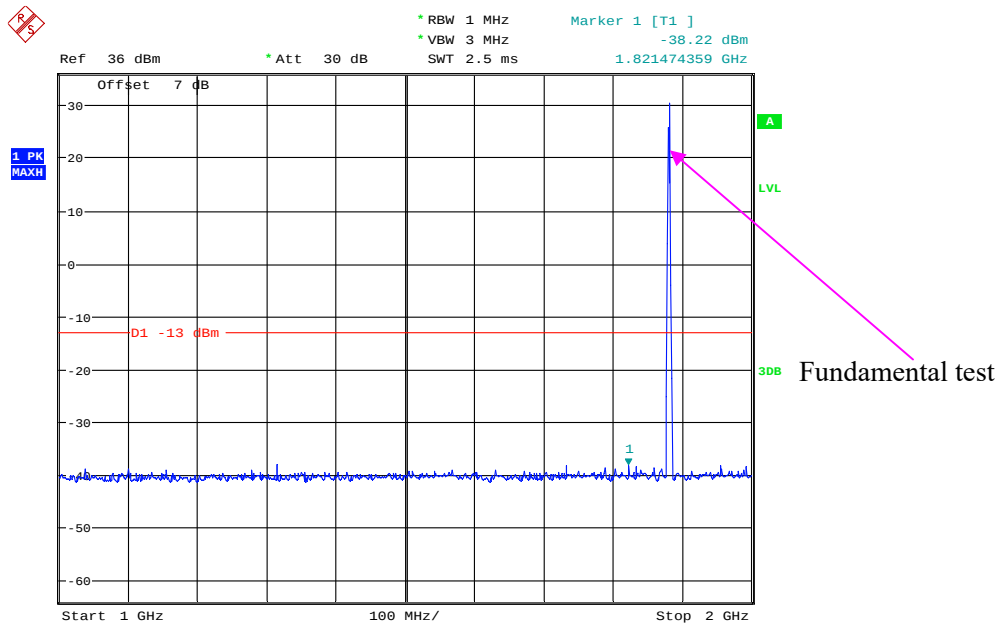
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



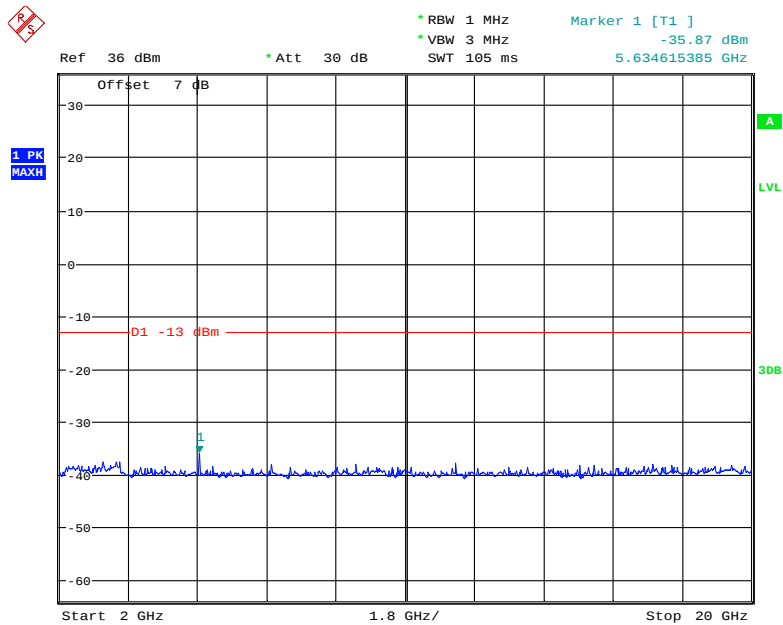
Date: 26.APR.2021 14:09:40

1 GHz – 2 GHz (GSM Mode)



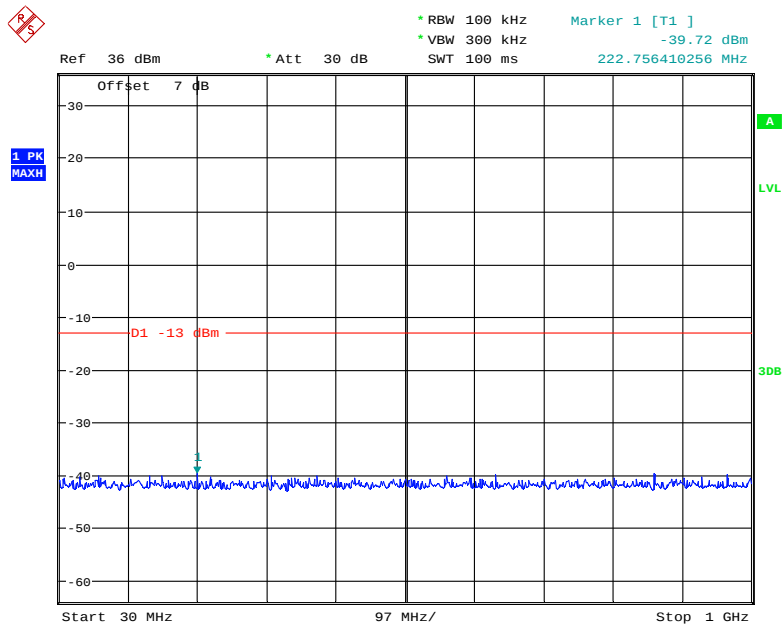
Date: 26.APR.2021 14:12:40

2 GHz – 20 GHz (GSM Mode)



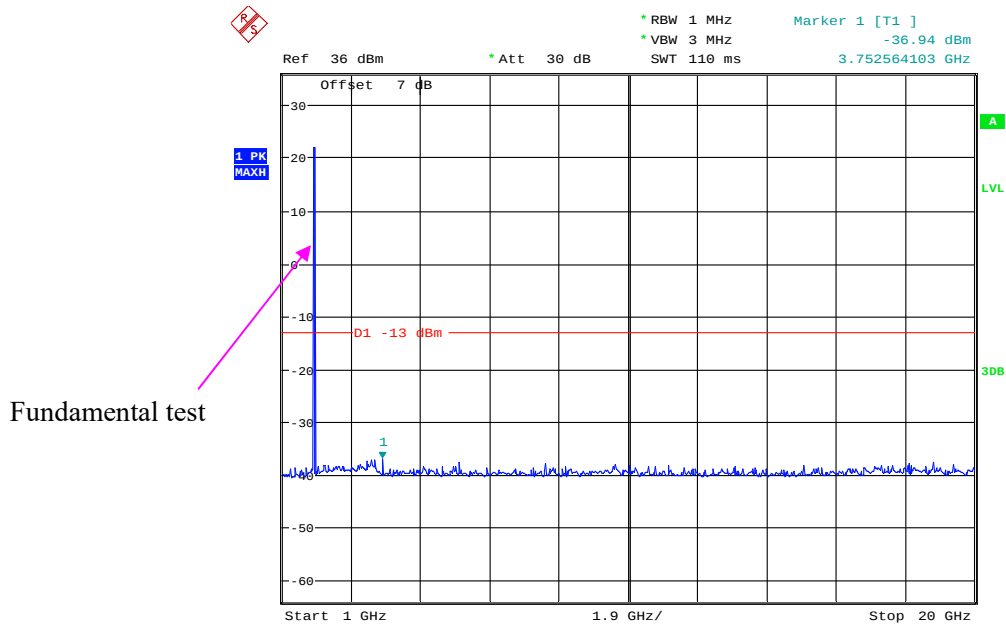
Date: 26.APR.2021 14:15:12

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:52:37

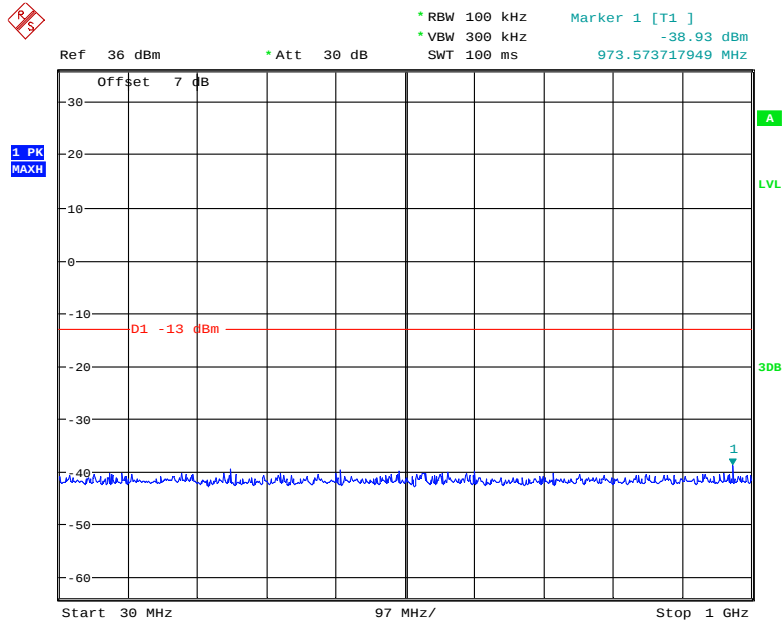
1 GHz – 20 GHz (WCDMA Mode)



Date: 26.APR.2021 15:04:35

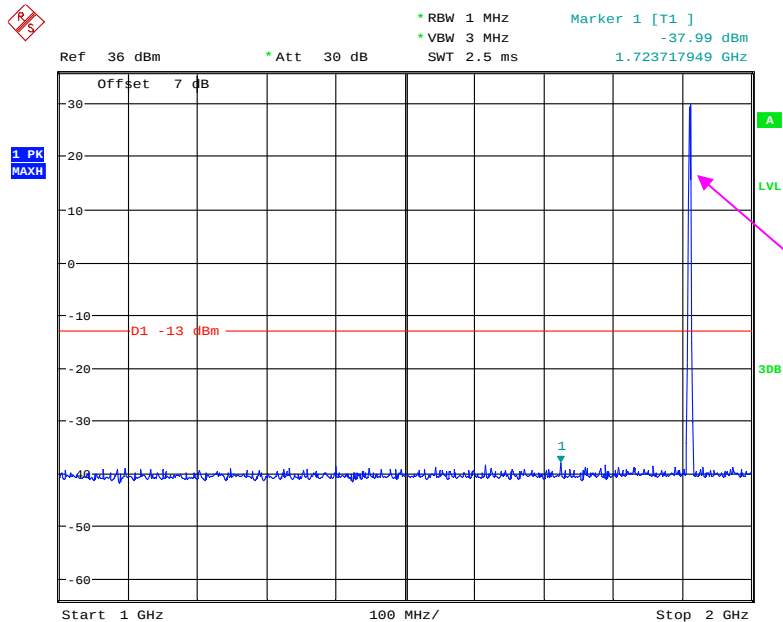
High Channel:

30 MHz – 1 GHz (GSM Mode)



Date: 26.APR.2021 14:10:23

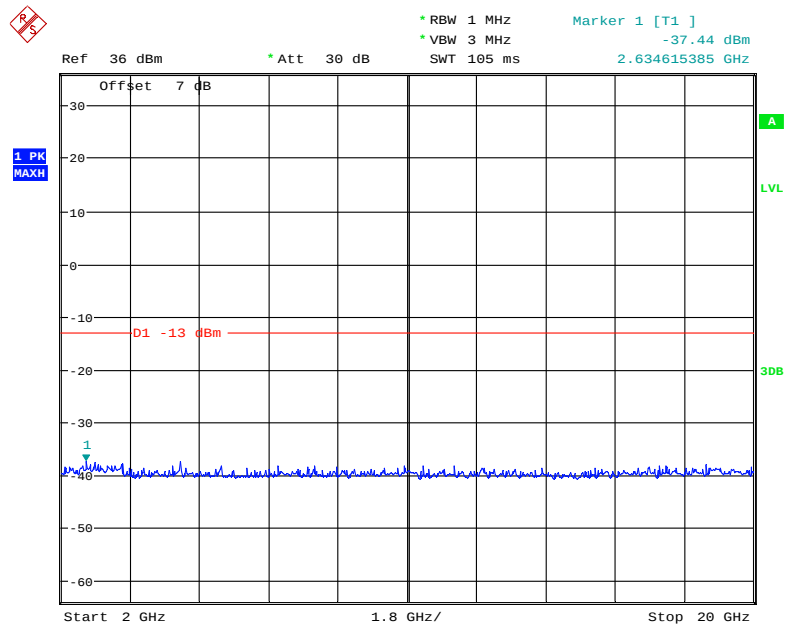
1 GHz – 2 GHz (GSM Mode)



Fundamental test

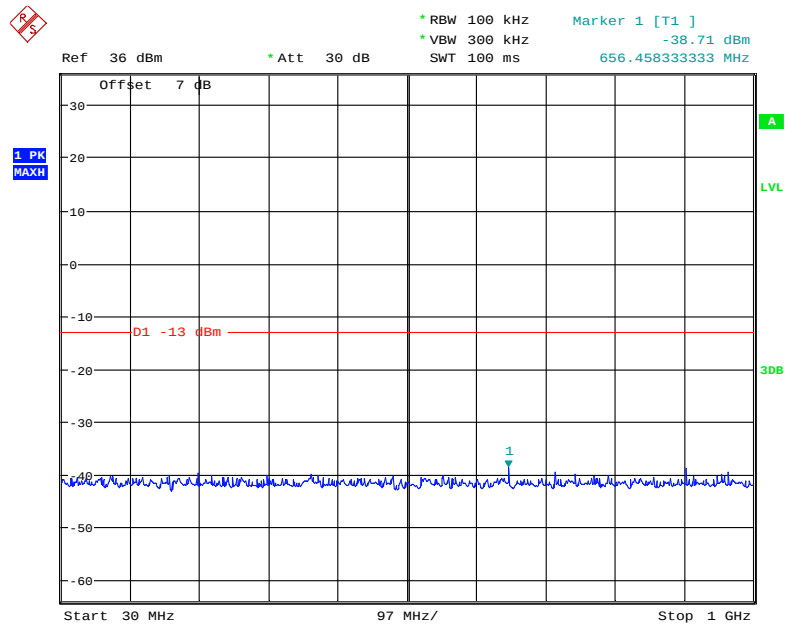
Date: 26.APR.2021 14:11:37

2 GHz – 20 GHz (GSM Mode)



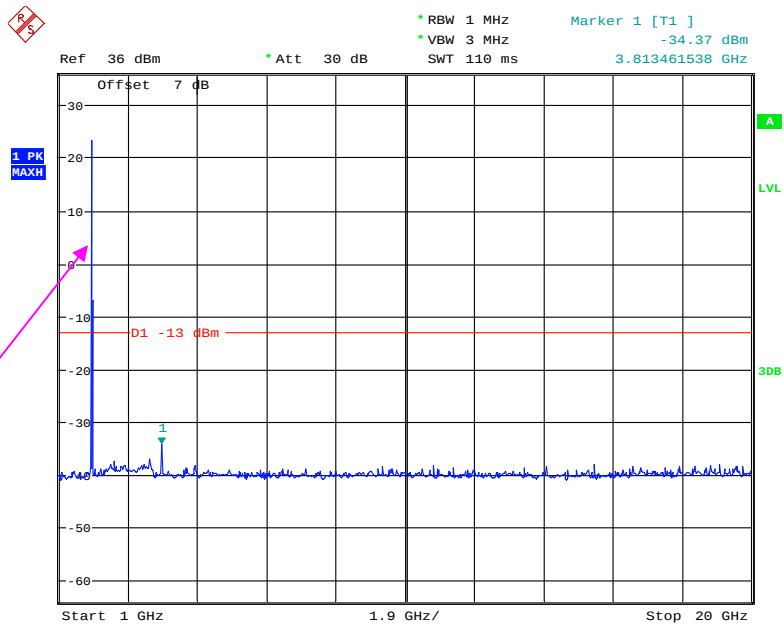
Date: 26.APR.2021 14:15:54

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:51:33

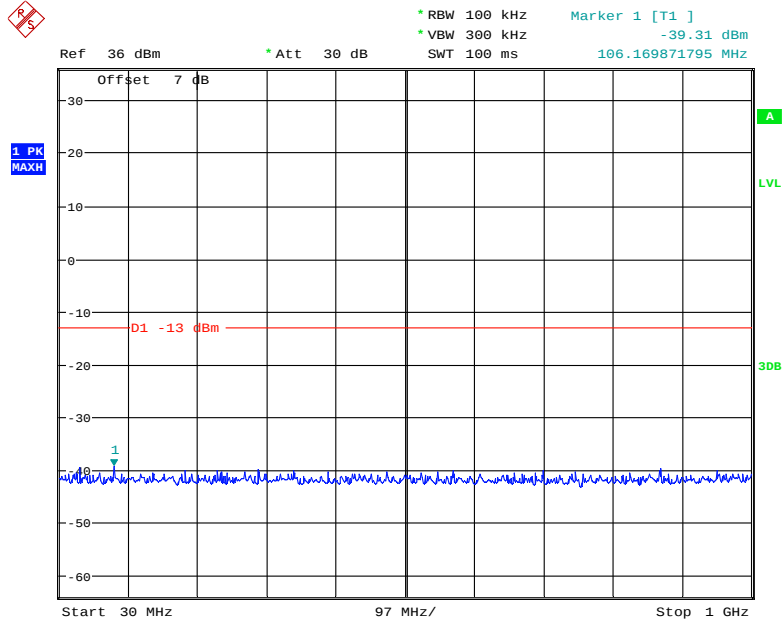
1 GHz – 20 GHz (WCDMA Mode)



Date: 26.APR.2021 15:05:22

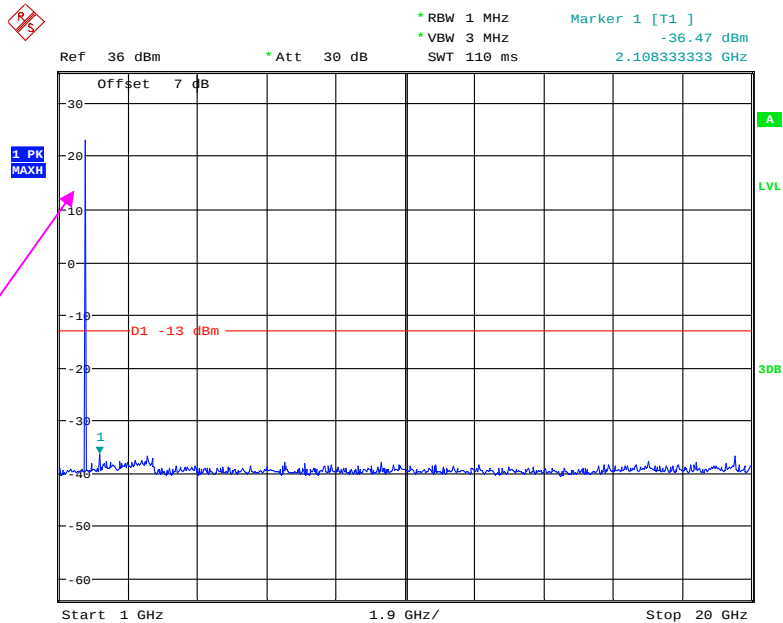
AWS Band (Part 27)
Low Channel:

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:57:22

1 GHz – 20 GHz (WCDMA Mode)

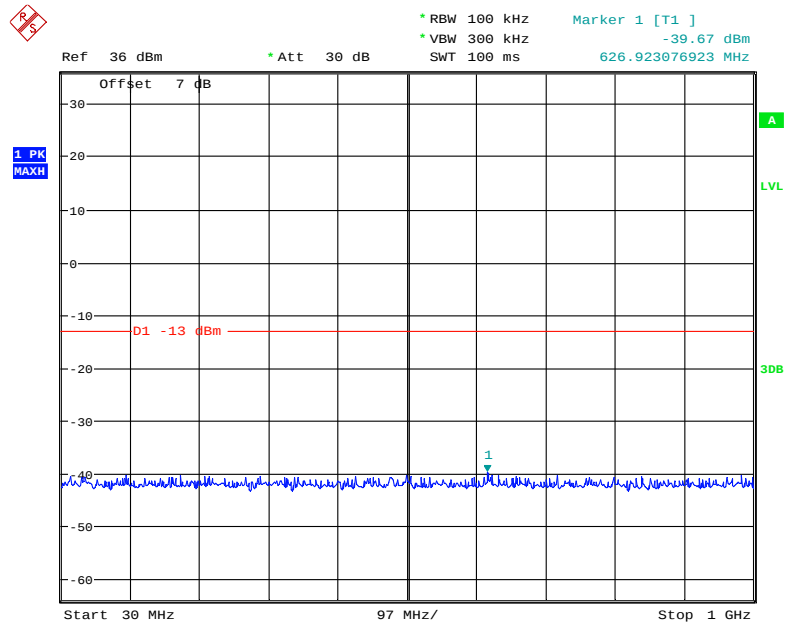


Fundamental test

Date: 26.APR.2021 15:06:31

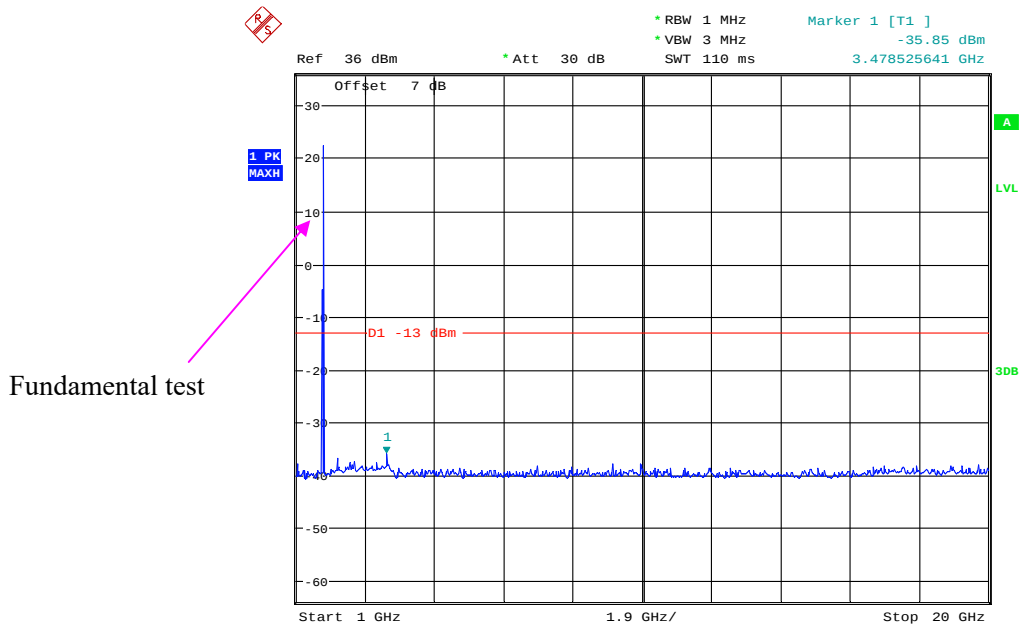
Middle Channel

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:55:50

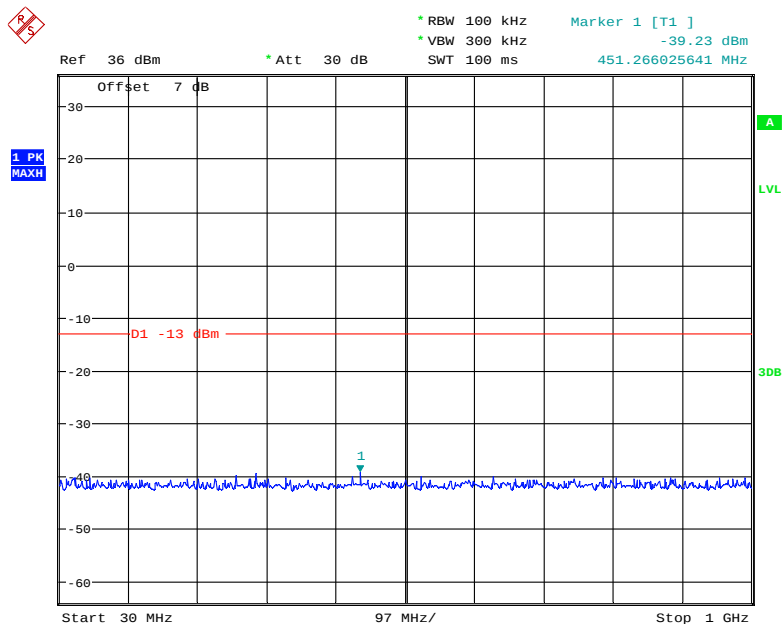
1 GHz – 20 GHz (WCDMA Mode)



Date: 26.APR.2021 15:07:45

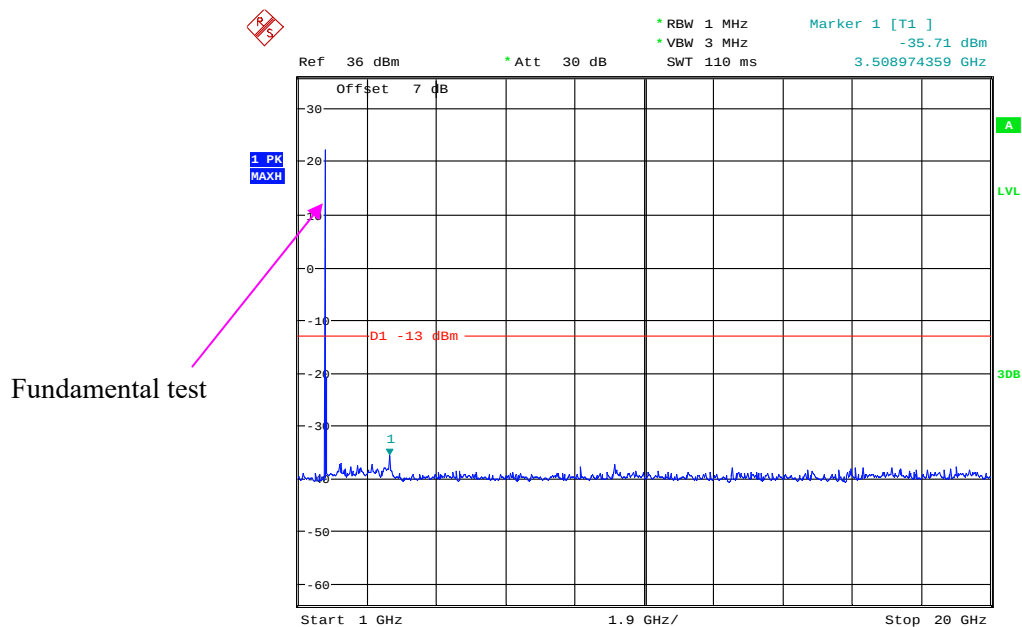
High Channel:

30 MHz – 1 GHz (WCDMA Mode)



Date: 26.APR.2021 14:54:58

1 GHz – 20 GHz (WCDMA Mode)



Date: 26.APR.2021 15:08:58

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:	46~52 %
ATM Pressure:	101.0~101.1 kPa

The testing was performed by Zero Yan and Alan He on 2021-04-26 for below 1GHz and Alan He from 2021-04-22 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										
946.17	36.45	169	2.0	H	-60.1	1.36	0.0	-61.46	-13	48.46
946.17	35.22	51	1.1	V	-58.8	1.36	0.0	-60.16	-13	47.16
1648.40	53.67	255	1.5	H	-54.4	1.40	8.70	-47.10	-13	34.10
1648.40	48.28	15	1.4	V	-59.6	1.40	8.70	-52.30	-13	39.30
2472.60	49.12	243	1.1	H	-54.2	2.60	10.20	-46.60	-13	33.60
2472.60	45.72	100	2.4	V	-57.0	2.60	10.20	-49.40	-13	36.40
3296.80	57.98	260	1.7	H	-42.9	1.50	11.70	-32.70	-13	19.70
3296.80	52.02	102	1.3	V	-48.9	1.50	11.70	-38.70	-13	25.70
Middle channel										
951.26	37.81	117	2.3	H	-58.7	1.36	0.0	-60.06	-13	47.06
951.26	35.75	304	1.4	V	-58.3	1.36	0.0	-59.66	-13	46.66
1673.20	52.20	344	1.7	H	-54.1	1.30	8.90	-46.50	-13	33.50
1673.20	47.65	321	2.5	V	-58.1	1.30	8.90	-50.50	-13	37.50
2509.80	49.80	315	1.1	H	-53.6	2.60	10.20	-46.00	-13	33.00
2509.80	45.08	276	1.7	V	-57.7	2.60	10.20	-50.10	-13	37.10
3346.40	58.24	210	2.0	H	-42.7	1.50	11.70	-32.50	-13	19.50
3346.40	53.84	106	1.0	V	-47.1	1.50	11.70	-36.90	-13	23.90
High channel										
964.25	36.56	105	2.3	H	-59.9	1.36	0.0	-61.26	-13	48.26
964.25	35.11	94	2.0	V	-58.9	1.36	0.0	-60.26	-13	47.26
1697.60	54.46	215	1.4	H	-51.9	1.30	8.90	-44.30	-13	31.30
1697.60	50.93	223	1.0	V	-54.8	1.30	8.90	-47.20	-13	34.20
2546.40	51.48	336	1.3	H	-51.9	2.60	10.20	-44.30	-13	31.30
2546.40	48.74	60	1.2	V	-54.0	2.60	10.20	-46.40	-13	33.40
3395.20	57.10	158	1.9	H	-44.1	1.40	11.80	-33.70	-13	20.70
3395.20	53.24	144	1.4	V	-47.8	1.40	11.80	-37.40	-13	24.40

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										
947.60	36.32	283	2.2	H	-60.2	1.36	0.0	-61.56	-13	48.56
947.60	34.99	88	2.1	V	-59.1	1.36	0.0	-60.46	-13	47.46
1652.80	47.63	183	2.5	H	-58.7	1.30	8.90	-51.10	-13	38.10
1652.80	46.20	218	1.7	V	-59.5	1.30	8.90	-51.90	-13	38.90
2479.20	54.23	347	2.4	H	-49.1	2.60	10.20	-41.50	-13	28.50
2479.20	50.37	335	2.2	V	-52.4	2.60	10.20	-44.80	-13	31.80
3305.60	57.50	176	1.2	H	-43.4	1.50	11.70	-33.20	-13	20.20
3305.60	51.07	157	1.6	V	-49.9	1.50	11.70	-39.70	-13	26.70
Middle channel										
949.17	34.98	179	2.2	H	-61.5	1.36	0.0	-62.86	-13	49.86
949.17	34.18	263	1.7	V	-59.9	1.36	0.0	-61.26	-13	48.26
1673.20	52.54	93	1.8	H	-53.8	1.30	8.90	-46.20	-13	33.20
1673.20	47.85	20	1.3	V	-57.9	1.30	8.90	-50.30	-13	37.30
2509.80	55.27	98	2.3	H	-48.1	2.60	10.20	-40.50	-13	27.50
2509.80	51.17	316	2.2	V	-51.6	2.60	10.20	-44.00	-13	31.00
3346.40	65.31	324	1.3	H	-35.6	1.50	11.70	-25.40	-13	12.40
3346.40	60.20	118	2.0	V	-40.7	1.50	11.70	-30.50	-13	17.50
High channel										
952.30	35.80	317	1.4	H	-60.7	1.36	0.0	-62.06	-13	49.06
952.30	34.25	317	1.0	V	-59.8	1.36	0.0	-61.16	-13	48.16
1693.20	51.68	21	2.3	H	-54.7	1.30	8.90	-47.10	-13	34.10
1693.20	47.24	268	2.4	V	-58.5	1.30	8.90	-50.90	-13	37.90
2539.80	54.63	305	2.2	H	-48.7	2.60	10.20	-41.10	-13	28.10
2539.80	50.31	258	1.4	V	-52.4	2.60	10.20	-44.80	-13	31.80
3386.40	60.57	293	2.1	H	-40.7	1.40	11.80	-30.30	-13	17.30
3386.40	56.42	49	1.0	V	-44.6	1.40	11.80	-34.20	-13	21.20

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										
955.39	36.34	163	2.0	H	-60.2	1.36	0.0	-61.56	-13	48.56
955.39	35.09	159	1.1	V	-59.0	1.36	0.0	-60.36	-13	47.36
3700.40	42.94	70	2.5	H	-58.9	1.60	11.90	-48.60	-13	35.60
3700.40	43.10	355	1.8	V	-58.1	1.60	11.90	-47.80	-13	34.80
Middle channel										
966.48	35.47	129	2.4	H	-61.0	1.36	0.0	-62.36	-13	49.36
966.48	36.04	139	2.3	V	-58.0	1.36	0.0	-59.36	-13	46.36
3760.00	43.80	96	2.2	H	-58.3	1.50	11.80	-48.00	-13	35.00
3760.00	43.39	80	1.2	V	-58.2	1.50	11.80	-47.90	-13	34.90
High channel										
947.15	36.12	266	1.5	H	-60.4	1.36	0.0	-61.76	-13	48.76
947.15	35.44	39	2.3	V	-58.6	1.36	0.0	-59.96	-13	46.96
3819.60	46.54	341	2.4	H	-55.5	1.50	11.80	-45.20	-13	32.20
3819.60	43.35	8	1.3	V	-58.2	1.50	11.80	-47.90	-13	34.90

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										
944.21	37.24	14	2.0	H	-59.3	1.36	0.0	-60.66	-13	47.66
944.21	36.18	287	2.0	V	-57.9	1.36	0.0	-59.26	-13	46.26
3704.80	56.22	174	1.2	H	-45.6	1.60	11.90	-35.30	-13	22.30
3704.80	53.67	165	1.6	V	-47.6	1.60	11.90	-37.30	-13	24.30
Middle channel										
954.17	35.16	345	1.6	H	-61.3	1.36	0.0	-62.66	-13	49.66
954.17	34.25	21	1.5	V	-59.8	1.36	0.0	-61.16	-13	48.16
3760.00	58.89	32	1.9	H	-43.2	1.50	11.80	-32.90	-13	19.90
3760.00	53.58	108	2.0	V	-48.0	1.50	11.80	-37.70	-13	24.70
High channel										
948.35	35.22	234	1.4	H	-61.3	1.36	0.0	-62.66	-13	49.66
948.35	35.16	162	1.5	V	-58.9	1.36	0.0	-60.26	-13	47.26
3815.20	59.61	264	1.4	H	-42.4	1.50	11.80	-32.10	-13	19.10
3815.20	54.02	100	1.2	V	-47.6	1.50	11.80	-37.30	-13	24.30

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										
949.84	36.28	354	1.7	H	-60.2	1.36	0.0	-61.56	-13	48.56
949.84	33.89	164	2.2	V	-60.2	1.36	0.0	-61.56	-13	48.56
3424.80	43.93	79	2.1	H	-56.9	1.40	11.80	-46.50	-13	33.50
3424.80	43.26	351	1.4	V	-57.3	1.40	11.80	-46.90	-13	33.90
Middle channel										
951.17	35.49	351	1.4	H	-61.0	1.36	0.0	-62.36	-13	49.36
951.17	34.87	186	2.5	V	-59.2	1.36	0.0	-60.56	-13	47.56
3465.20	45.44	172	2.1	H	-55.3	1.50	12.00	-44.80	-13	31.80
3465.20	44.02	290	2.0	V	-57.5	1.50	12.00	-47.00	-13	34.00
High channel										
952.42	35.25	334	2.1	H	-61.3	1.36	0.0	-62.66	-13	49.66
952.42	34.93	307	1.3	V	-59.1	1.36	0.0	-60.46	-13	47.46
3505.20	46.32	327	2.3	H	-54.4	1.50	12.00	-43.90	-13	30.90
3505.20	45.73	145	2.1	V	-55.8	1.50	12.00	-45.30	-13	32.30

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										
953.21	34.13	38	1.6	H	-62.4	1.36	0.0	-63.76	-13	50.76
953.21	34.36	31	1.3	V	-59.7	1.36	0.0	-61.06	-13	48.06
3701.40	62.76	95	1.3	H	-39.0	1.60	11.90	-28.70	-13	15.70
3701.40	57.77	359	2.2	V	-43.5	1.60	11.90	-33.20	-13	20.20
1.4 MHz, Middle channel										
950.35	35.23	273	1.0	H	-61.3	1.36	0.0	-62.66	-13	49.66
950.35	33.91	299	2.0	V	-60.1	1.36	0.0	-61.46	-13	48.46
3760.00	64.17	183	1.3	H	-37.9	1.50	11.80	-27.60	-13	14.60
3760.00	58.62	114	1.9	V	-43.0	1.50	11.80	-32.70	-13	19.70
1.4 MHz, High channel										
951.28	35.13	44	2.4	H	-61.4	1.36	0.0	-62.76	-13	49.76
951.28	34.44	0	2.3	V	-59.6	1.36	0.0	-60.96	-13	47.96
3818.60	63.58	220	2.2	H	-38.5	1.50	11.80	-28.20	-13	15.20
3818.60	58.5	279	2.0	V	-43.1	1.50	11.80	-32.80	-13	19.80
Band 4										
Test frequency range: 30 MHz ~ 20 GHz										
1.4MHz, Low channel										
951.77	35.97	136	1.4	H	-60.5	1.36	0.0	-61.86	-13	48.86
951.77	34.27	234	1.6	V	-59.8	1.36	0.0	-61.16	-13	48.16
3421.40	46.26	249	1.7	H	-54.5	1.40	11.80	-44.10	-13	31.10
3421.40	44.26	84	1.4	V	-56.3	1.40	11.80	-45.90	-13	32.90
1.4MHz, Middle channel										
955.12	35.22	315	2.1	H	-61.3	1.36	0.0	-62.66	-13	49.66
955.12	34.20	218	2.1	V	-59.9	1.36	0.0	-61.26	-13	48.26
3465.00	47.38	189	1.2	H	-53.4	1.50	12.00	-42.90	-13	29.90
3465.00	46.1	304	2.1	V	-55.4	1.50	12.00	-44.90	-13	31.90
1.4MHz, High channel										
954.83	35.19	122	1.0	H	-61.3	1.36	0.0	-62.66	-13	49.66
954.83	35.08	72	1.8	V	-59.0	1.36	0.0	-60.36	-13	47.36
3508.60	43.49	333	1.7	H	-57.3	1.50	12.00	-46.80	-13	33.80
3508.60	43.44	59	1.2	V	-58.1	1.50	12.00	-47.60	-13	34.60

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 5										
Test frequency range:30 MHz ~ 10 GHz										
1.4MHz, Low channel										
954.68	35.49	219	1.4	H	-61.0	1.36	0.0	-62.36	-13	49.36
954.68	34.77	62	2.4	V	-59.3	1.36	0.0	-60.66	-13	47.66
1649.40	50.12	220	1.9	H	-58.0	1.40	8.70	-50.70	-13	37.70
1649.40	43.15	354	1.9	V	-64.7	1.40	8.70	-57.40	-13	44.40
2474.10	44.05	65	1.7	H	-59.3	2.60	10.20	-51.70	-13	38.70
2474.10	43.68	7	2.1	V	-59.1	2.60	10.20	-51.50	-13	38.50
3298.80	43.12	13	1.1	H	-57.8	1.50	11.70	-47.60	-13	34.60
3298.80	42.98	196	1.5	V	-57.9	1.50	11.70	-47.70	-13	34.70
1.4MHz, Middle channel										
951.06	34.53	198	1.6	H	-62.0	1.36	0.0	-63.36	-13	50.36
951.06	34.18	64	1.6	V	-59.9	1.36	0.0	-61.26	-13	48.26
1673.00	51.29	25	1.4	H	-55.0	1.30	8.90	-47.40	-13	34.40
1673.00	47.32	249	1.9	V	-58.4	1.30	8.90	-50.80	-13	37.80
2509.50	43.89	104	1.5	H	-59.5	2.60	10.20	-51.90	-13	38.90
2509.50	43.37	251	1.5	V	-59.4	2.60	10.20	-51.80	-13	38.80
3346.00	42.86	2	1.7	H	-58.0	1.50	11.70	-47.80	-13	34.80
3346.00	43.22	57	2.0	V	-57.7	1.50	11.70	-47.50	-13	34.50
1.4MHz, High channel										
952.86	35.21	8	1.9	H	-61.3	1.36	0.0	-62.66	-13	49.66
952.86	34.27	121	1.8	V	-59.8	1.36	0.0	-61.16	-13	48.16
1696.60	51.32	79	1.6	H	-55.0	1.30	8.90	-47.40	-13	34.40
1696.60	46.94	175	1.4	V	-58.8	1.30	8.90	-51.20	-13	38.20
2544.90	43.51	283	1.3	H	-59.8	2.60	10.20	-52.20	-13	39.20
2544.90	43.42	321	1.4	V	-59.3	2.60	10.20	-51.70	-13	38.70
3393.20	43.55	57	1.7	H	-57.7	1.40	11.80	-47.30	-13	34.30
3393.20	43.16	67	1.9	V	-57.9	1.40	11.80	-47.50	-13	34.50
Band 7										
Test frequency range: 30 MHz ~ 26.5 GHz										
5MHz, Low channel										
953.54	36.55	142	2.1	H	-60.0	1.36	0.0	-61.36	-25	36.36
953.54	35.02	123	1.1	V	-59.0	1.36	0.0	-60.36	-25	35.36
5005.00	43.89	170	1.3	H	-56.7	1.70	12.00	-46.40	-25	21.40
5005.00	44.02	118	1.9	V	-56.0	1.70	12.00	-45.70	-25	20.70
5MHz, Middle channel										
949.53	35.28	25	2.4	H	-61.2	1.36	0.0	-62.56	-25	37.56
949.53	35.12	136	1.4	V	-58.9	1.36	0.0	-60.26	-25	35.26
5070.00	44.2	300	1.4	H	-55.8	1.60	12.10	-45.30	-25	20.30
5070.00	44.04	189	1.0	V	-56.0	1.60	12.10	-45.50	-25	20.50
5MHz, High channel										
951.17	35.87	258	1.9	H	-60.6	1.36	0.0	-61.96	-25	36.96
951.17	33.12	178	1.1	V	-60.9	1.36	0.0	-62.26	-25	37.26
5135.00	44.21	22	1.4	H	-55.8	1.60	12.10	-45.30	-25	20.30
5135.00	44.39	96	1.3	V	-55.6	1.60	12.10	-45.10	-25	20.10

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										
948.57	35.58	212	2.2	H	-60.9	1.36	0.0	-62.26	-13	49.26
948.57	34.10	342	2.1	V	-60.0	1.36	0.0	-61.36	-13	48.36
1399.40	42.69	124	1.7	H	-65.5	1.60	7.90	-59.20	-13	46.20
1399.40	42.74	19	2.1	V	-65.7	1.60	7.90	-59.40	-13	46.40
2099.10	44.01	357	1.4	H	-57.1	1.30	9.70	-48.70	-13	35.70
2099.10	43.89	198	2.2	V	-58.1	1.30	9.70	-49.70	-13	36.70
2798.80	43.25	191	1.5	H	-60.7	1.80	10.50	-52.00	-13	39.00
2798.80	43.56	230	1.5	V	-60.1	1.80	10.50	-51.40	-13	38.40
1.4MHz, Middle channel										
945.65	36.04	5	1.3	H	-60.5	1.36	0.0	-61.86	-13	48.86
945.65	34.81	133	2.1	V	-59.2	1.36	0.0	-60.56	-13	47.56
1415.00	42.54	324	1.9	H	-65.6	1.60	7.90	-59.30	-13	46.30
1415.00	42.67	118	1.5	V	-65.8	1.60	7.90	-59.50	-13	46.50
2122.50	43.68	240	1.8	H	-57.4	1.30	9.70	-49.00	-13	36.00
2122.50	43.76	114	1.5	V	-58.2	1.30	9.70	-49.80	-13	36.80
2830.00	43.08	26	1.2	H	-60.9	1.80	10.50	-52.20	-13	39.20
2830.00	43.22	134	2.3	V	-60.4	1.80	10.50	-51.70	-13	38.70
1.4MHz, High channel										
946.89	36.03	11	1.6	H	-60.5	1.36	0.0	-61.86	-13	48.86
946.89	34.21	230	1.8	V	-59.8	1.36	0.0	-61.16	-13	48.16
1430.60	43.12	341	2.3	H	-65.1	1.60	7.90	-58.80	-13	45.80
1430.60	43.25	186	1.5	V	-65.2	1.60	7.90	-58.90	-13	45.90
2145.90	43.68	27	1.2	H	-57.4	1.30	9.70	-49.00	-13	36.00
2145.90	43.51	35	1.2	V	-58.4	1.30	9.70	-50.00	-13	37.00
2861.20	43.66	146	2.2	H	-61.0	1.70	10.70	-52.00	-13	39.00
2861.20	43.72	41	2.2	V	-61.0	1.70	10.70	-52.00	-13	39.00

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										
952.26	36.36	238	1.3	H	-60.1	1.36	0.0	-61.46	-13	48.46
952.26	34.82	257	2.3	V	-59.2	1.36	0.0	-60.56	-13	47.56
1413.00	43.02	101	1.7	H	-65.2	1.60	7.90	-58.90	-13	45.90
1413.00	43.26	315	2.3	V	-65.2	1.60	7.90	-58.90	-13	45.90
5MHz, Middle channel										
956.21	34.92	274	1.6	H	-61.6	1.36	0.0	-62.96	-13	49.96
956.21	34.33	45	1.8	V	-59.7	1.36	0.0	-61.06	-13	48.06
1420.00	42.39	15	1.3	H	-65.8	1.60	7.90	-59.50	-13	46.50
1420.00	42.66	158	2.1	V	-65.8	1.60	7.90	-59.50	-13	46.50
5MHz, High channel										
954.80	35.54	117	1.8	H	-61.0	1.36	0.0	-62.36	-13	49.36
954.80	33.96	349	2.0	V	-60.1	1.36	0.0	-61.46	-13	48.46
1427.00	43.11	168	1.9	H	-65.1	1.60	7.90	-58.80	-13	45.80
1427.00	43.35	139	1.9	V	-65.1	1.60	7.90	-58.80	-13	45.80
Band 66										
Test frequency range: 30 MHz ~20GHz										
5MHz, Low channel										
948.78	36.97	199	1.2	H	-59.5	1.36	0.0	-60.86	-13	47.86
948.78	36.80	20	1.3	V	-57.3	1.36	0.0	-58.66	-13	45.66
3421.40	43.56	103	2.3	H	-57.7	1.40	11.80	-47.30	-13	34.30
3421.40	43.48	299	2.1	V	-57.6	1.40	11.80	-47.20	-13	34.20
5MHz, Middle channel										
949.17	36.84	16	2.1	H	-59.7	1.36	0.0	-61.06	-13	48.06
949.17	35.93	7	1.2	V	-58.1	1.36	0.0	-59.46	-13	46.46
3490.00	43.88	108	1.4	H	-57.0	1.50	12.00	-46.50	-13	33.50
3490.00	43.85	27	1.6	V	-57.8	1.50	12.00	-47.30	-13	34.30
5MHz, High channel										
948.56	37.65	168	1.8	H	-58.9	1.36	0.0	-60.26	-13	47.26
948.56	36.16	330	2.2	V	-57.9	1.36	0.0	-59.26	-13	46.26
3558.60	44.03	272	1.4	H	-57.7	1.50	12.10	-47.10	-13	34.10
3558.60	43.96	109	1.3	V	-57.2	1.50	12.10	-46.60	-13	33.60

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.

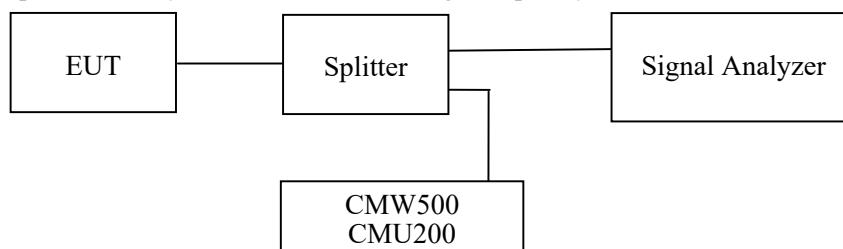
According to FCC §27.53 (g), For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ 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

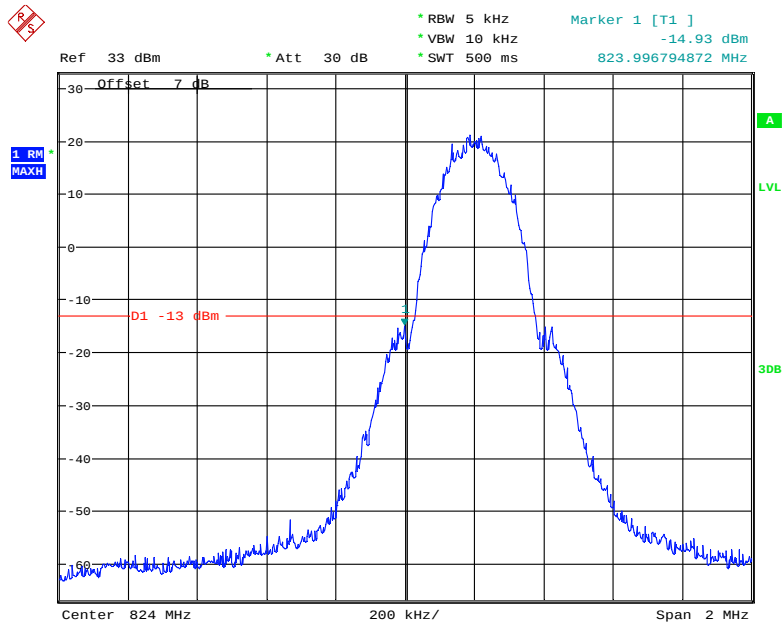
The testing was performed by Orlo Yang from 2021-04-23 to 2021-05-24.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

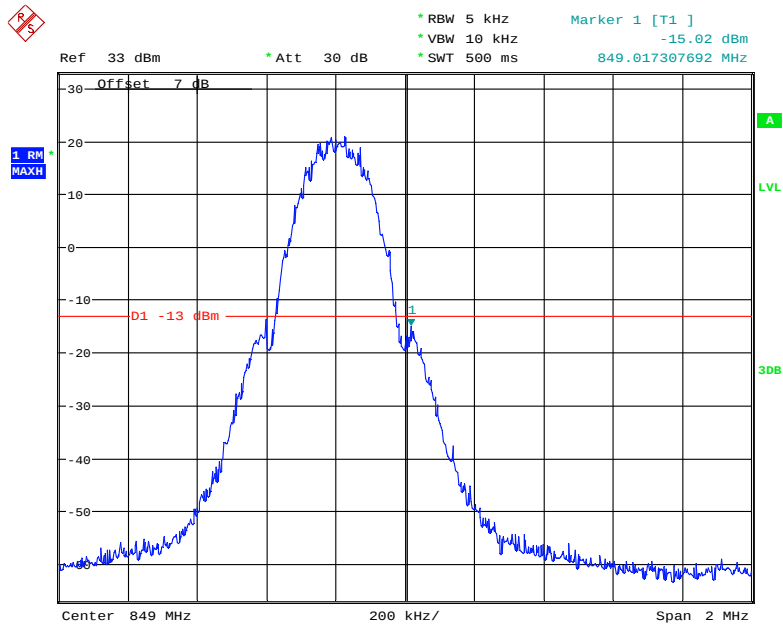
Please refer to the following plots.

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



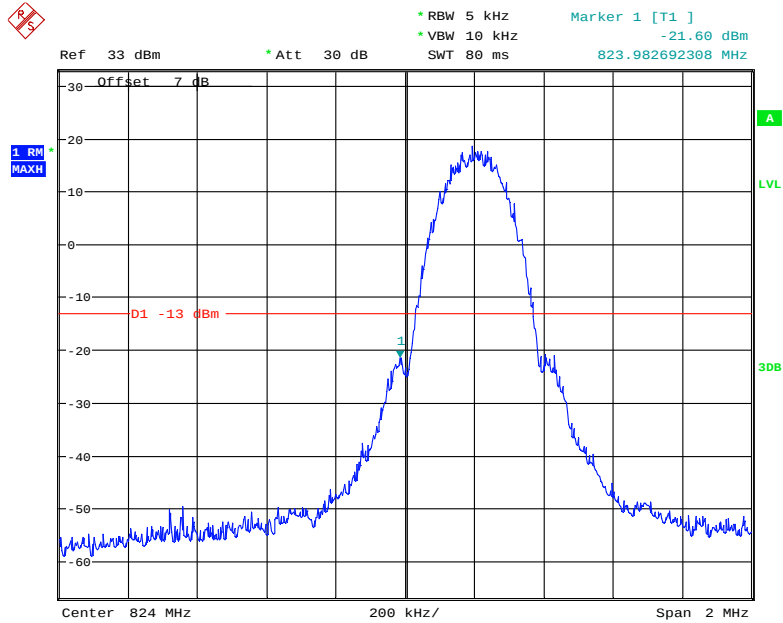
Date: 26.APR.2021 11:22:43

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



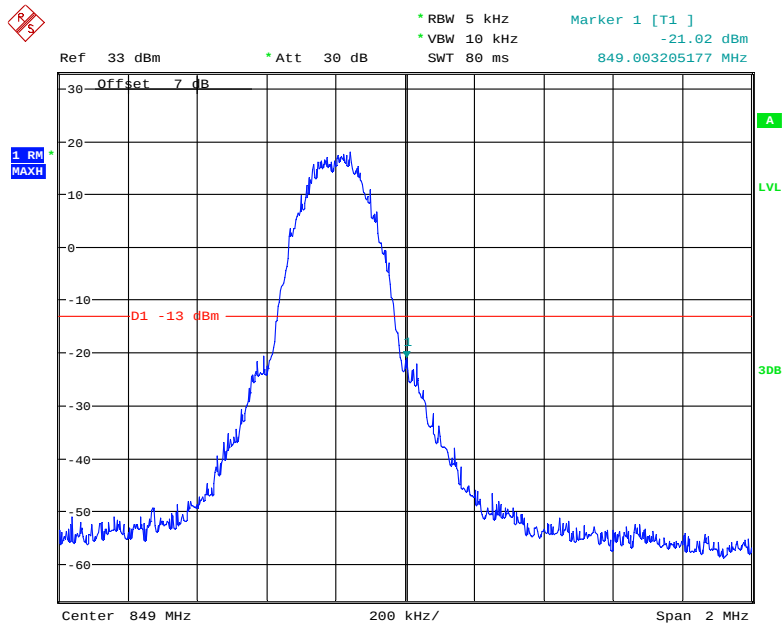
Date: 26.APR.2021 11:25:44

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



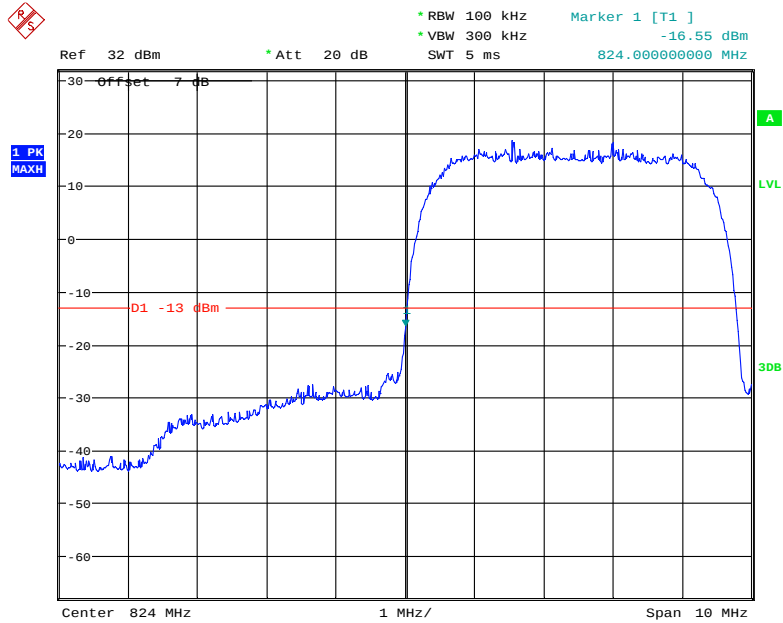
Date: 26.APR.2021 11:50:09

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



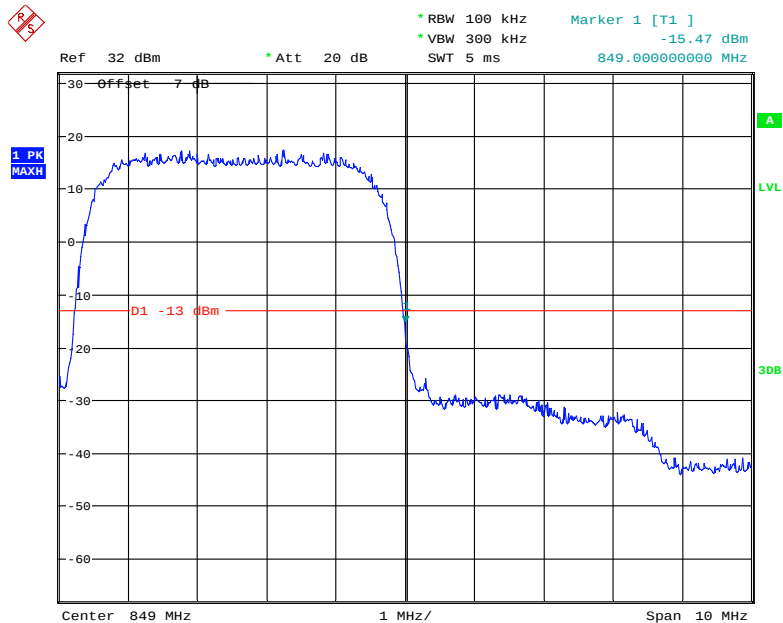
Date: 26.APR.2021 11:53:15

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



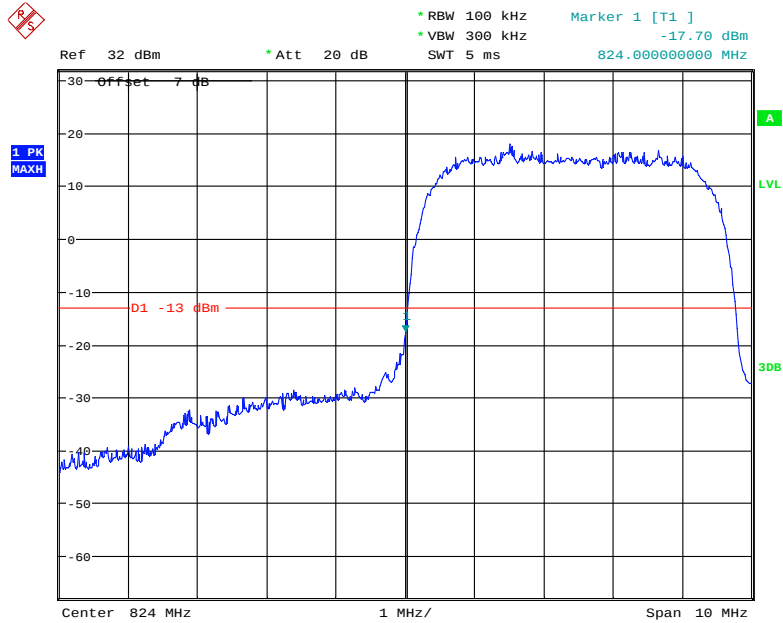
Date: 26.APR.2021 17:51:18

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



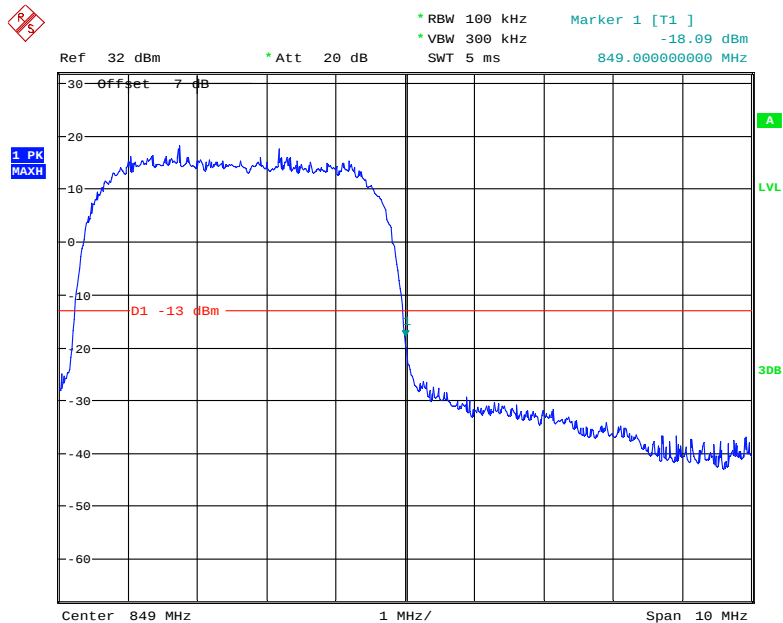
Date: 26.APR.2021 17:52:14

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



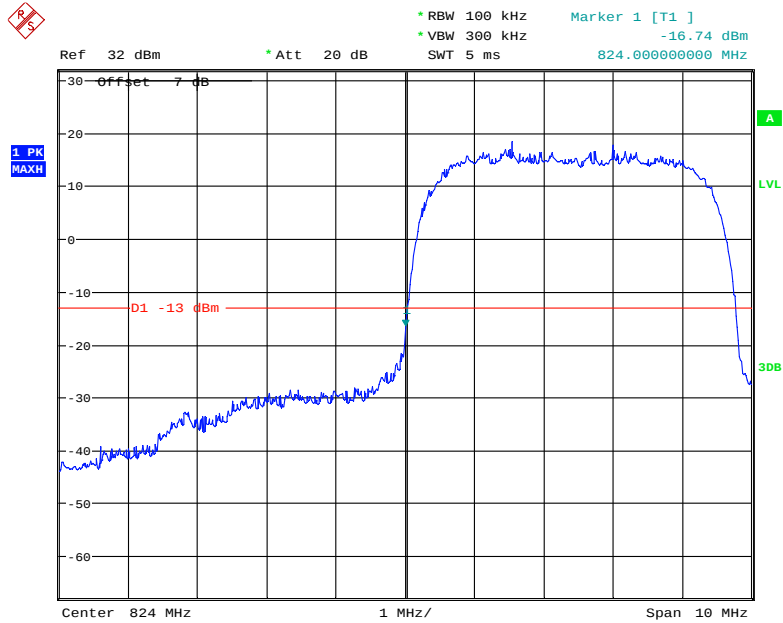
Date: 26.APR.2021 18:00:57

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



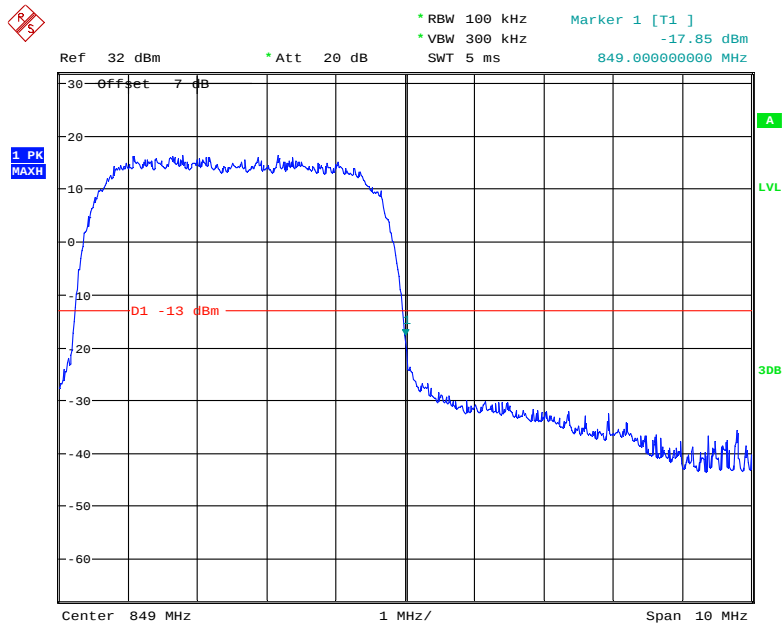
Date: 26.APR.2021 17:59:44

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



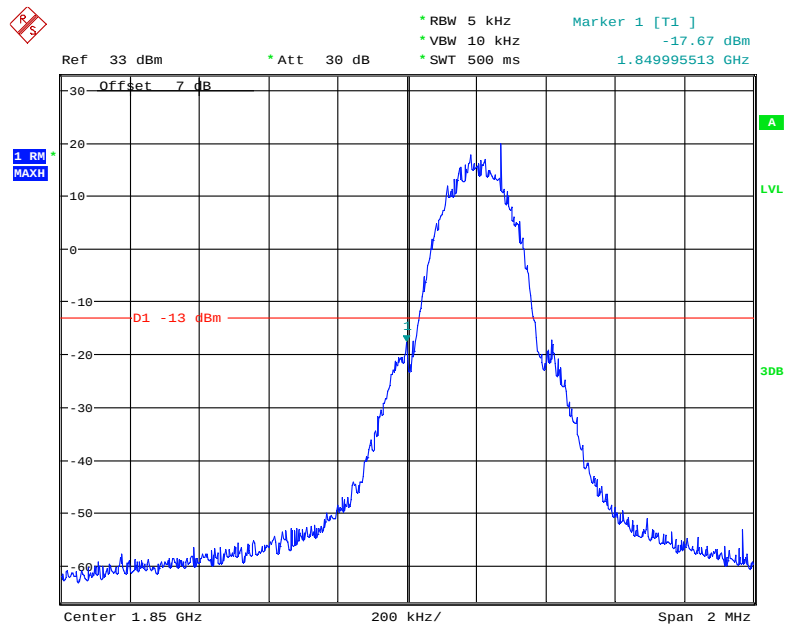
Date: 26.APR.2021 18:10:39

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



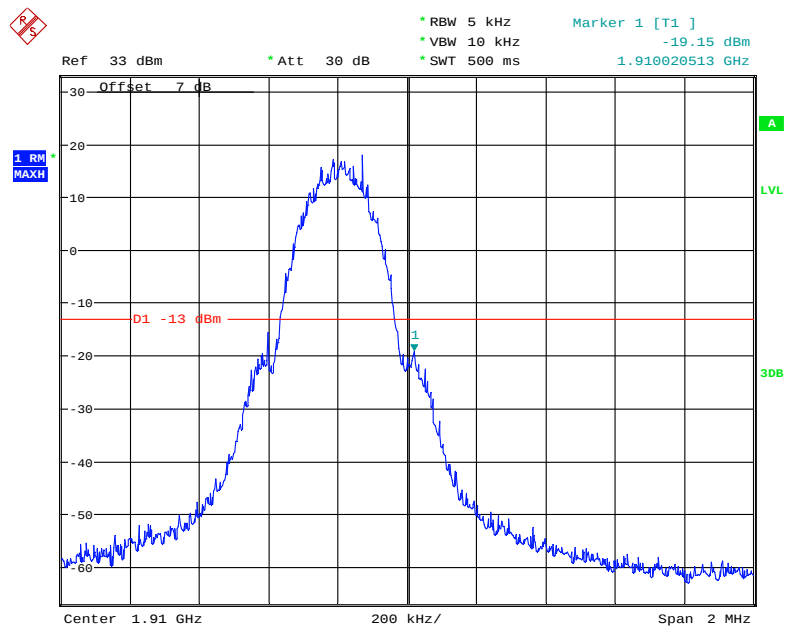
Date: 26.APR.2021 18:11:42

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



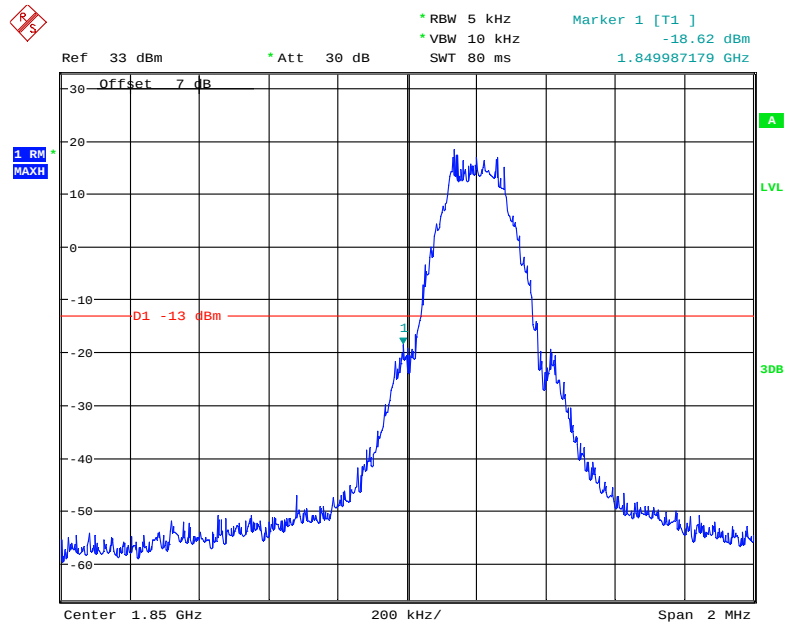
Date: 26.APR.2021 11:32:45

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



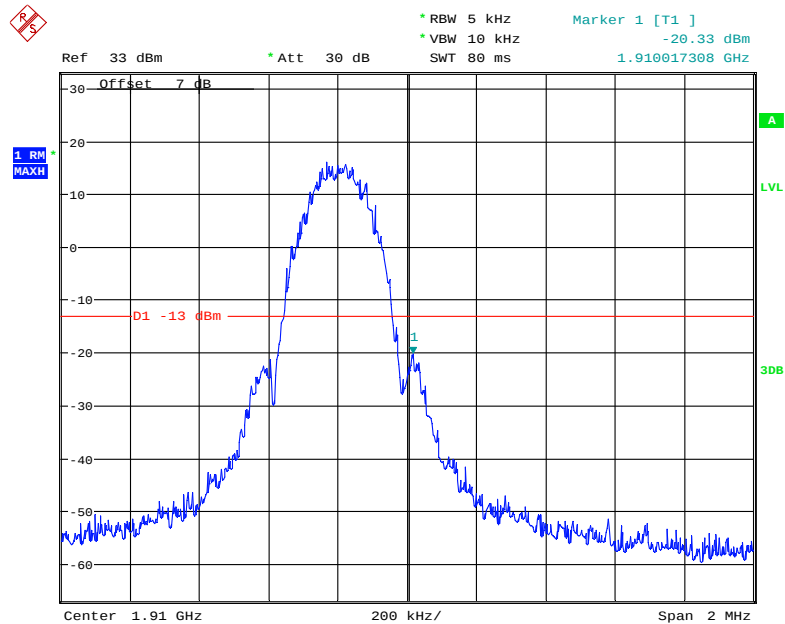
Date: 26.APR.2021 11:30:53

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



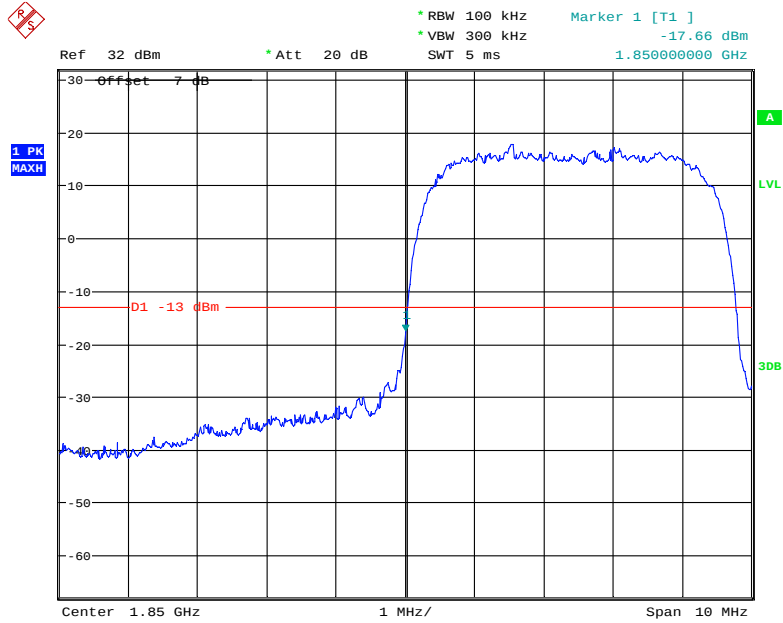
Date: 26.APR.2021 11:40:55

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



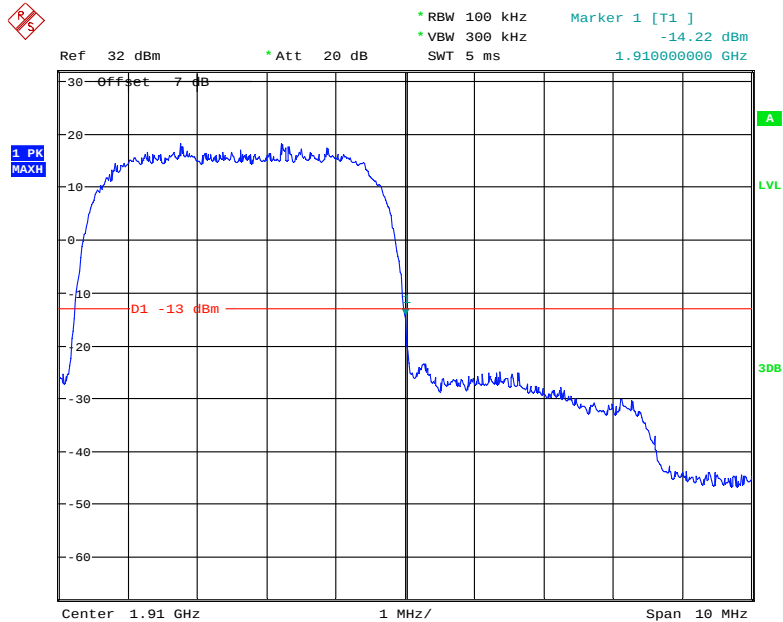
Date: 26.APR.2021 11:44:17

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



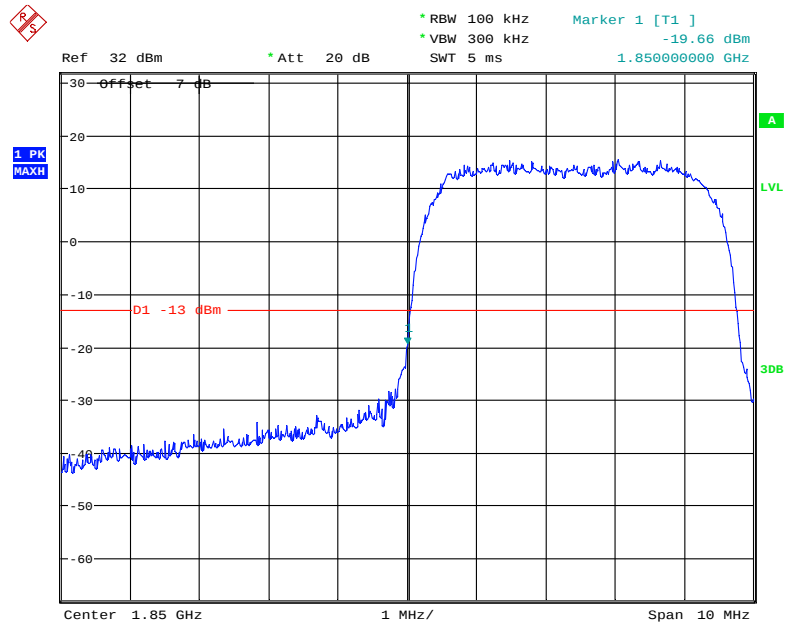
Date: 26.APR.2021 17:46:22

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



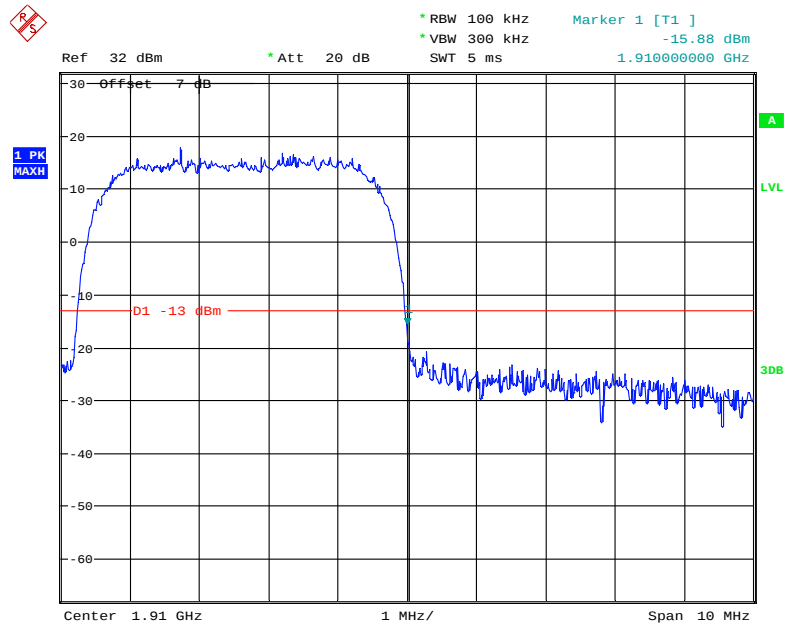
Date: 26.APR.2021 17:48:09

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



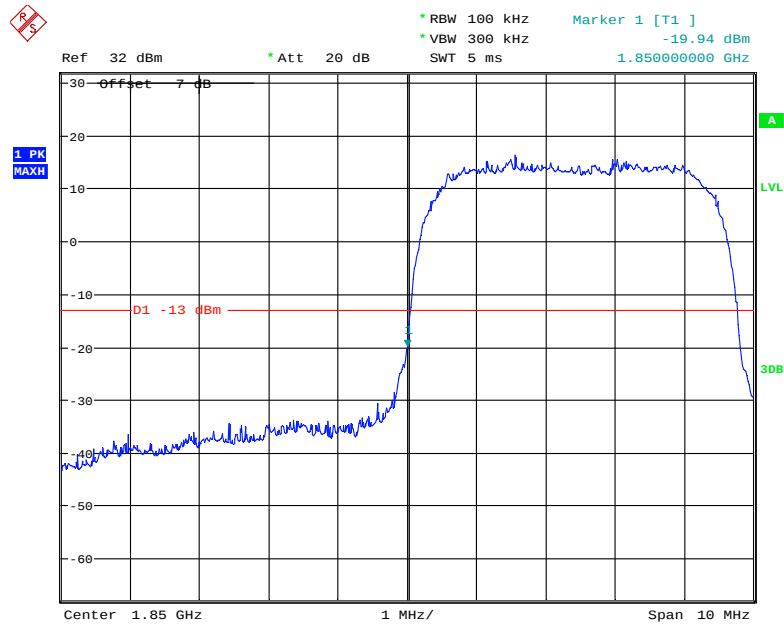
Date: 26.APR.2021 17:55:47

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



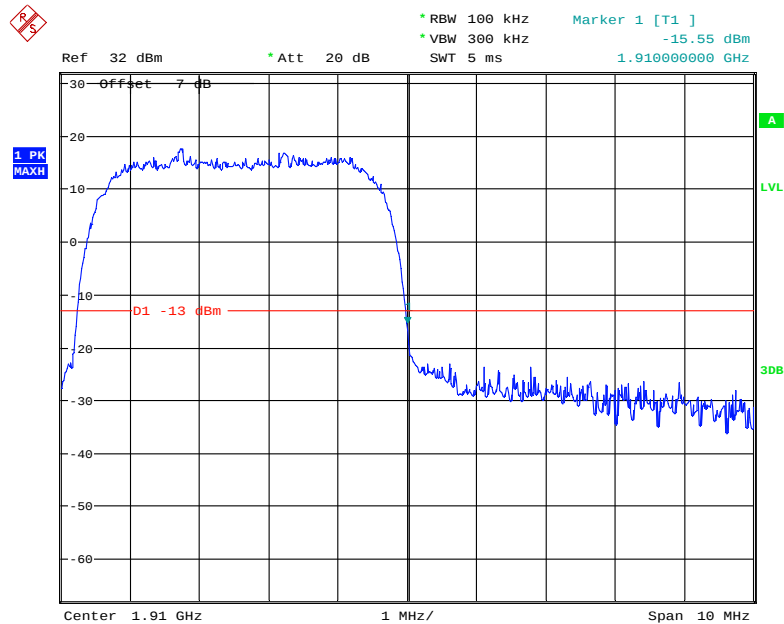
Date: 26.APR.2021 17:54:28

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



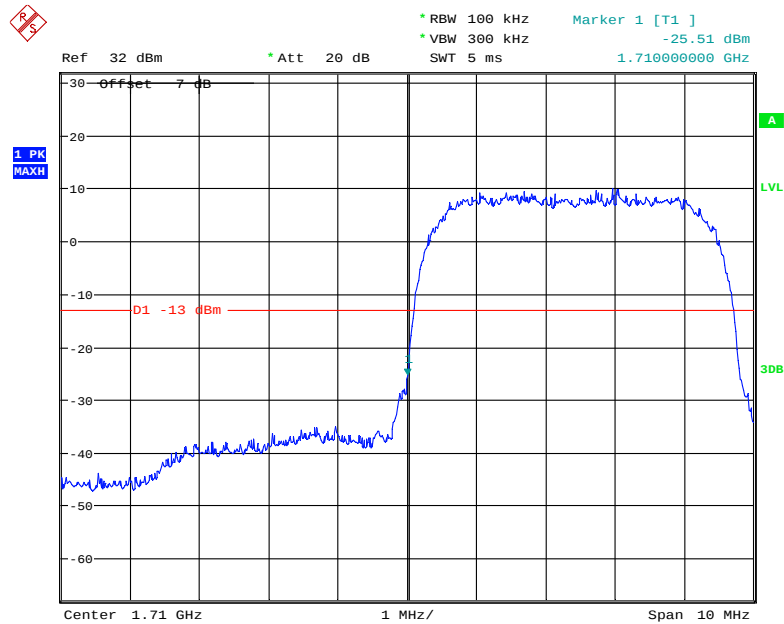
Date: 26.APR.2021 18:04:25

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



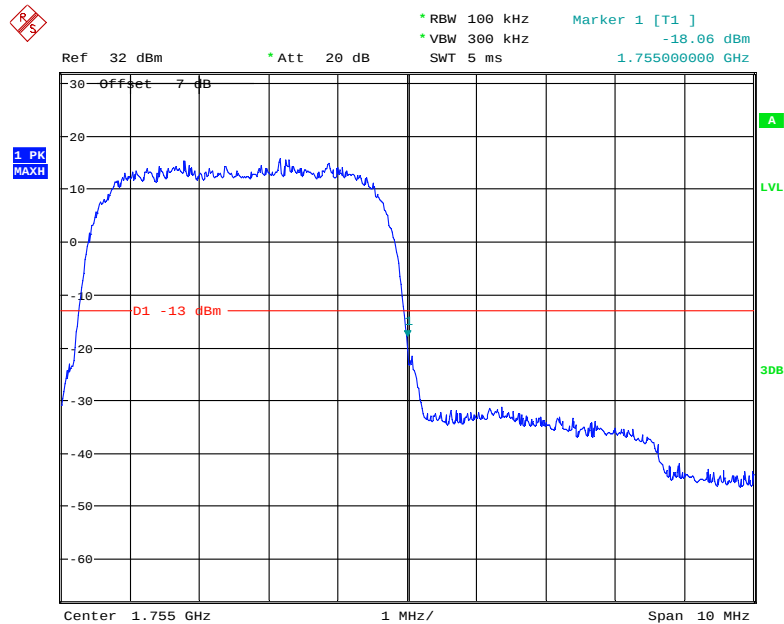
Date: 26.APR.2021 18:07:15

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



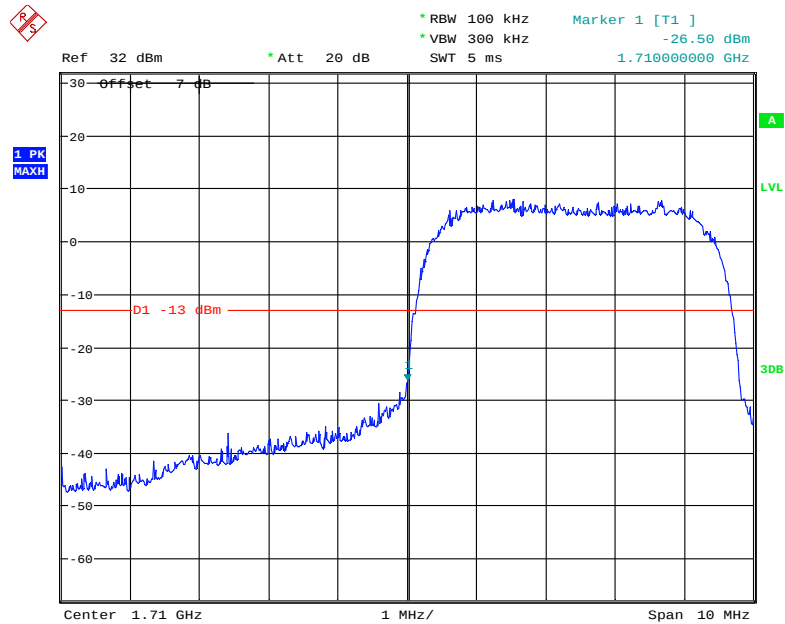
Date: 26.APR.2021 17:49:33

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



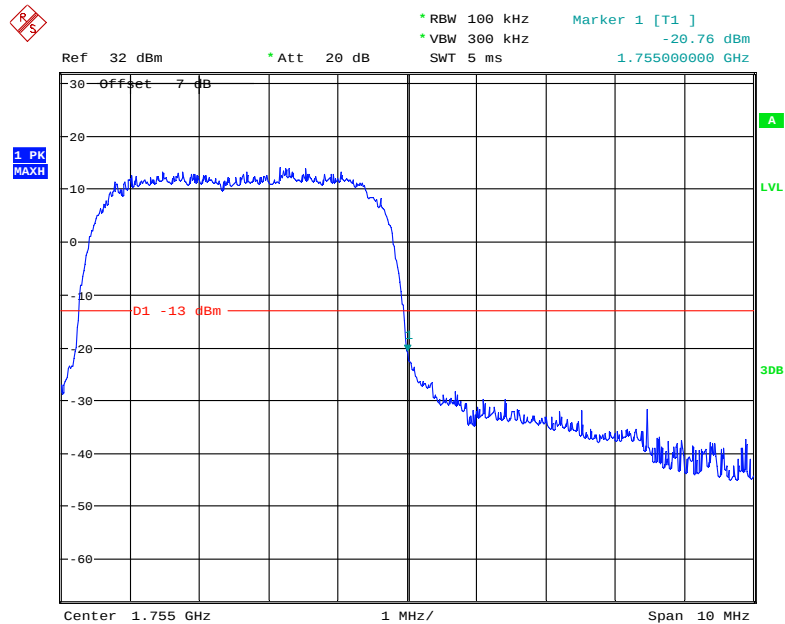
Date: 26.APR.2021 17:50:17

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

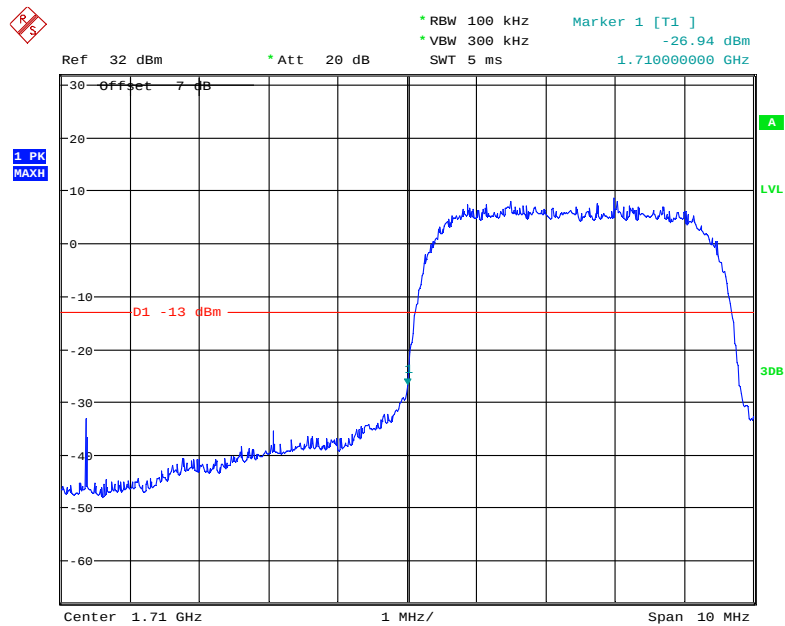


Date: 26.APR.2021 17:58:13

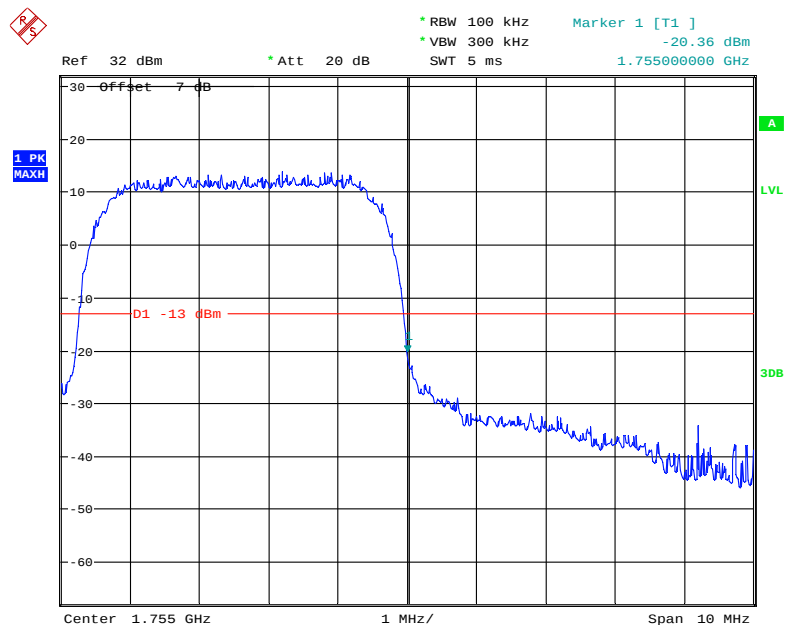
AWS Band, Right Band Edge for HSDPA (16QAM) Mode



Date: 26.APR.2021 17:57:01

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

Date: 26.APR.2021 18:08:45

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

Date: 26.APR.2021 18:09:49

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

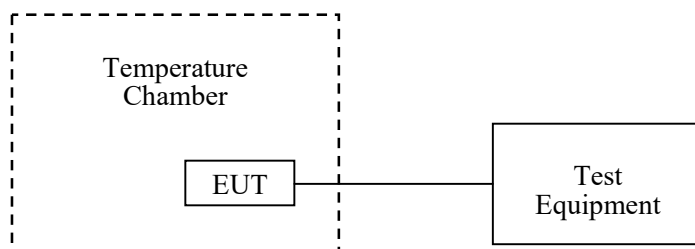
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 Orlo Yang from 2021-04-23 to 2021-04-26.

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	3.8	3	0.0036	2.5
-20		-2	-0.0024	2.5
-10		4	0.0048	2.5
0		5	0.0060	2.5
10		5	0.0060	2.5
20		0	0.0000	2.5
30		3	0.0036	2.5
40		2	0.0024	2.5
50		3	0.0036	2.5
20	3.5	4	0.0048	2.5
	4.35	-2	-0.0024	2.5

EDGE Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-2	-0.0024	2.5
-20		0	0.0000	2.5
-10		-3	-0.0036	2.5
0		5	0.0060	2.5
10		4	0.0048	2.5
20		4	0.0048	2.5
30		5	0.0060	2.5
40		-1	-0.0012	2.5
50		-3	-0.0036	2.5
20	3.5	2	0.0024	2.5
	4.35	4	0.0048	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	3.8	2	0.0024	2.5
-20		-1	-0.0012	2.5
-10		2	0.0024	2.5
0		3	0.0036	2.5
10		2	0.0024	2.5
20		3	0.0036	2.5
30		1	0.0012	2.5
40		-3	-0.0036	2.5
50		0	0.0000	2.5
20	3.5	-3	-0.0036	2.5
	4.35	3	0.0036	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	3.8	-1	-0.0005	pass
-20		-2	-0.0011	pass
-10		5	0.0027	pass
0		1	0.0005	pass
10		-3	-0.0016	pass
20		5	0.0027	pass
30		3	0.0016	pass
40		1	0.0005	pass
50		5	0.0027	pass
20	3.5	-2	-0.0011	pass
	4.35	5	0.0027	pass

EDGE Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	5	0.0027	pass
-20		0	0.0000	pass
-10		4	0.0021	pass
0		-2	-0.0011	pass
10		-2	-0.0011	pass
20		0	0.0000	pass
30		4	0.0021	pass
40		5	0.0027	pass
50		2	0.0011	pass
20	3.5	-1	-0.0005	pass
	4.35	-2	-0.0011	pass

WCDMA Mode

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	1	0.0005	pass
-20		3	0.0016	pass
-10		-3	-0.0016	pass
0		-2	-0.0011	pass
10		-1	-0.0005	pass
20		2	0.0011	pass
30		3	0.0016	pass
40		0	0.0000	pass
50		2	0.0011	pass
20	3.5	5	0.0027	pass
	4.35	1	0.0005	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	3.8	1710.0348	1754.9634	1710	1755
-20		1710.1716	1754.8714	1710	1755
-10		1710.0552	1754.5173	1710	1755
0		1710.0568	1754.9149	1710	1755
10		1710.1312	1754.7352	1710	1755
20		1710.0338	1754.7743	1710	1755
30		1710.0897	1754.7224	1710	1755
40		1710.1270	1754.7194	1710	1755
50		1710.0558	1754.8777	1710	1755
20	3.5	1710.0114	1754.6279	1710	1755
	4.35	1710.0055	1754.5184	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	3.8	0	0.0000	pass
-20		6	0.0032	pass
-10		-3	-0.0016	pass
0		-3	-0.0016	pass
10		1	0.0005	pass
20		-1	-0.0005	pass
30		2	0.0011	pass
40		2	0.0011	pass
50		-3	-0.0016	pass
20	3.5	4	0.0021	pass
	4.35	5	0.0027	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	3.8	1710.0798	1754.8533	1710	1755
-20		1710.1623	1754.9429	1710	1755
-10		1710.1928	1754.6406	1710	1755
0		1710.0170	1754.7227	1710	1755
10		1710.1972	1754.8646	1710	1755
20		1710.0769	1754.5987	1710	1755
30		1710.1783	1754.6169	1710	1755
40		1710.0065	1754.7370	1710	1755
50		1710.1651	1754.6624	1710	1755
20	3.5	1710.0636	1754.5563	1710	1755
	4.35	1710.0591	1754.7984	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	3.8	10	0.0120	2.5
-20		6	0.0072	2.5
-10		-3	-0.0036	2.5
0		8	0.0096	2.5
10		-3	-0.0036	2.5
20		10	0.0120	2.5
30		6	0.0072	2.5
40		-3	-0.0036	2.5
50		7	0.0084	2.5
20	3.5	6	0.0072	2.5
	4.35	3	0.0036	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	3.8	2500.0305	2569.5083	2500	2570
-20		2500.1511	2569.7868	2500	2570
-10		2500.0661	2569.8505	2500	2570
0		2500.1855	2569.5877	2500	2570
10		2500.1131	2569.8272	2500	2570
20		2500.1416	2569.5097	2500	2570
30		2500.1332	2569.9164	2500	2570
40		2500.1789	2569.5319	2500	2570
50		2500.0235	2569.7891	2500	2570
20	3.5	2500.1709	2569.9478	2500	2570
	4.35	2500.1419	2569.8565	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	3.8	699.0181	715.8257	699	716
-20		699.0194	715.5859	699	716
-10		699.0948	715.6341	699	716
0		699.0911	715.5091	699	716
10		699.1648	715.6250	699	716
20		699.1770	715.8594	699	716
30		699.1912	715.9080	699	716
40		699.0274	715.8328	699	716
50		699.0787	715.5871	699	716
20	3.5	699.0903	715.5783	699	716
	4.35	699.0907	715.8328	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	3.8	704.0484	715.8859	704	716
-20		704.1239	715.7978	704	716
-10		704.1144	715.8787	704	716
0		704.0942	715.5980	704	716
10		704.0420	715.9049	704	716
20		704.1240	715.5222	704	716
30		704.0852	715.6805	704	716
40		704.1459	715.6412	704	716
50		704.1761	715.5241	704	716
20	3.5	704.0756	715.8381	704	716
	4.35	704.0895	715.7445	704	716

Band 66:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.1025	1779.9534	1710	1780
-20		1710.1607	1779.6108	1710	1780
-10		1710.1408	1779.7828	1710	1780
0		1710.1100	1779.5587	1710	1780
10		1710.1912	1779.6779	1710	1780
20		1710.1688	1779.7659	1710	1780
30		1710.0460	1779.9630	1710	1780
40		1710.1093	1779.7503	1710	1780
50		1710.0517	1779.8412	1710	1780
20	3.5	1710.0848	1779.6841	1710	1780
	4.35	1710.0231	1779.9292	1710	1780

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	3.8	-3	-0.0016	pass
-20		1	0.0005	pass
-10		10	0.0053	pass
0		1	0.0005	pass
10		9	0.0048	pass
20		10	0.0053	pass
30		1	0.0005	pass
40		-3	-0.0016	pass
50		8	0.0043	pass
20	3.5	-1	-0.0005	pass
	4.35	1	0.0005	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	3.8	1710.1458	1754.9512	1710	1755
-20		1710.1413	1754.6851	1710	1755
-10		1710.0163	1754.9416	1710	1755
0		1710.1900	1754.9903	1710	1755
10		1710.1623	1754.9511	1710	1755
20		1710.0283	1754.6024	1710	1755
30		1710.1629	1754.5921	1710	1755
40		1710.1540	1754.9735	1710	1755
50		1710.0265	1754.6286	1710	1755
20	3.5	1710.1670	1754.5116	1710	1755
	4.35	1710.1515	1754.5062	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	3.8	9	0.0108	2.5
-20		10	0.0120	2.5
-10		-1	-0.0012	2.5
0		8	0.0096	2.5
10		3	0.0036	2.5
20		5	0.0060	2.5
30		7	0.0084	2.5
40		-3	-0.0036	2.5
50		6	0.0072	2.5
20	3.5	7	0.0084	2.5
	4.35	2	0.0024	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	3.8	2500.0889	2569.6088	2500	2570
-20		2500.1920	2569.8053	2500	2570
-10		2500.1380	2569.9671	2500	2570
0		2500.1299	2569.5986	2500	2570
10		2500.0960	2569.6241	2500	2570
20		2500.1470	2569.6829	2500	2570
30		2500.0070	2569.8746	2500	2570
40		2500.0054	2569.7517	2500	2570
50		2500.0759	2569.9416	2500	2570
20	3.5	2500.1850	2569.9232	2500	2570
	4.35	2500.1344	2569.6249	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	3.8	699.0641	715.5912	699	716
-20		699.1277	715.5830	699	716
-10		699.0968	715.5566	699	716
0		699.1972	715.6788	699	716
10		699.1787	715.7824	699	716
20		699.1676	715.5954	699	716
30		699.0217	715.8448	699	716
40		699.1821	715.6825	699	716
50		699.0217	715.5786	699	716
20	3.5	699.0282	715.7607	699	716
	4.35	699.1453	715.5038	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	3.8	704.0710	715.7487	704	716
-20		704.0754	715.8913	704	716
-10		704.0076	715.9390	704	716
0		704.1341	715.8706	704	716
10		704.1605	715.8421	704	716
20		704.1992	715.8180	704	716
30		704.1761	715.5597	704	716
40		704.0588	715.8927	704	716
50		704.1622	715.5317	704	716
20	3.5	704.0423	715.7179	704	716
	4.35	704.0515	715.8146	704	716

Band 66:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.0858	1779.5173	1710	1780
-20		1710.0483	1779.9131	1710	1780
-10		1710.1908	1779.8881	1710	1780
0		1710.1729	1779.6661	1710	1780
10		1710.0281	1779.5142	1710	1780
20		1710.0582	1779.5411	1710	1780
30		1710.1261	1779.5055	1710	1780
40		1710.0735	1779.7394	1710	1780
50		1710.1845	1779.8371	1710	1780
20	3.5	1710.0081	1779.5209	1710	1780
	4.35	1710.0059	1779.8070	1710	1780

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