

Appendix A

RF Test Data for BT V4.2(BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth Speaker with Wireless Charging Powerbank

Trade Mark: N/A

Test Model: XO-9833

Environmental Conditions

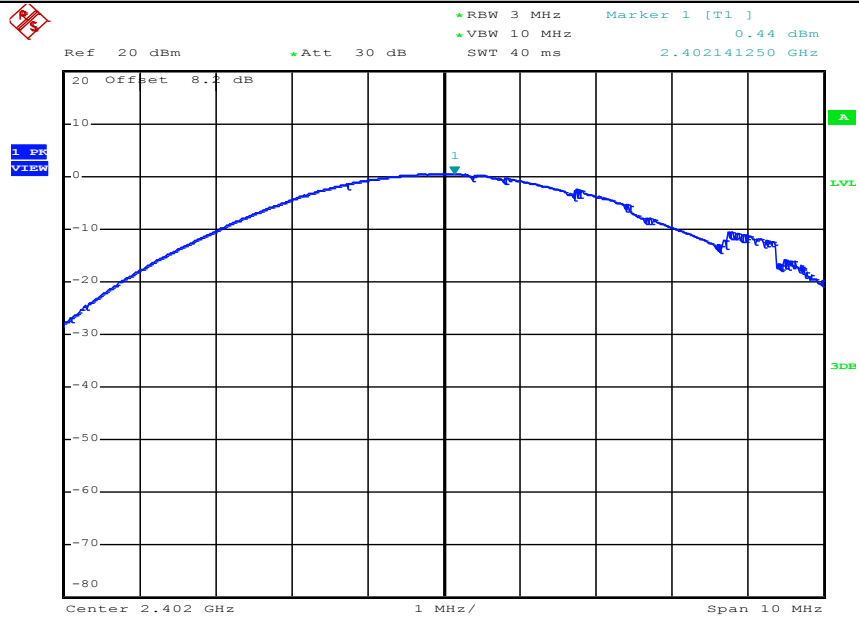
Temperature:	25.2 ° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Wang.Chuang

A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.440	21	PASS
	MCH	-0.360	21	PASS
	HCH	-1.120	21	PASS
π/4DQPSK	LCH	-2.620	21	PASS
	MCH	-1.210	21	PASS
	HCH	-2.220	21	PASS
8DPSK	LCH	-2.430	21	PASS
	MCH	-1.490	21	PASS
	HCH	-2.430	21	PASS

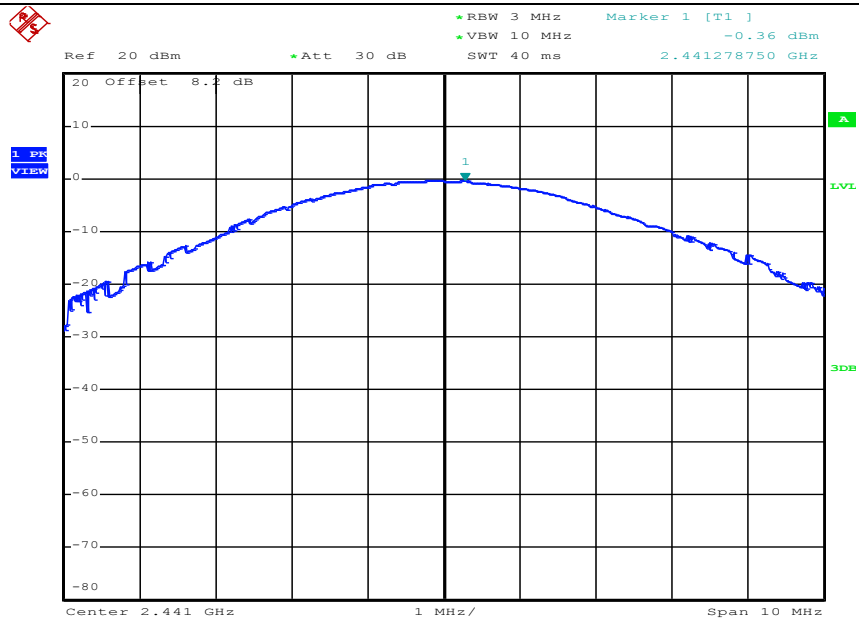
Test Graphs

GFSK/LCH



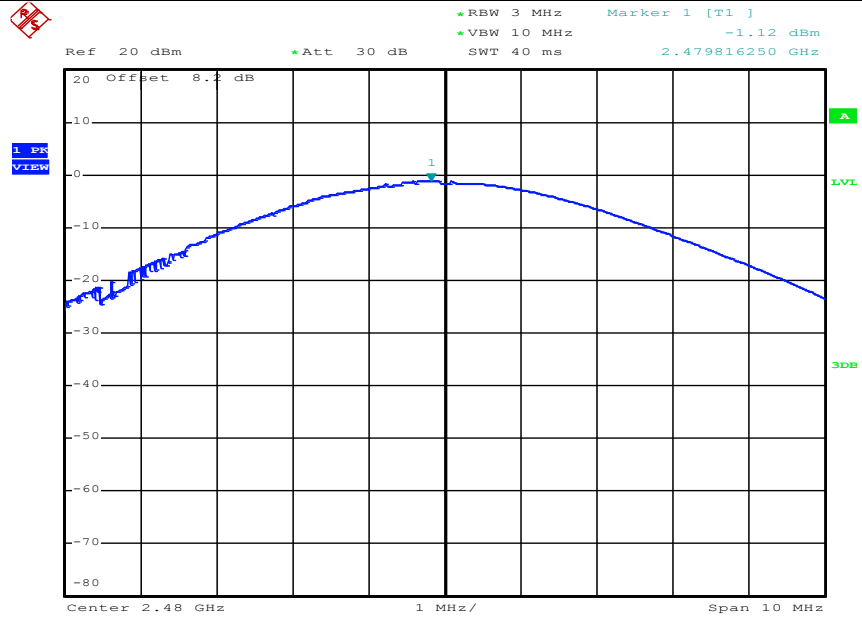
Date: 14.AUG.2019 19:17:35

GFSK/MCH



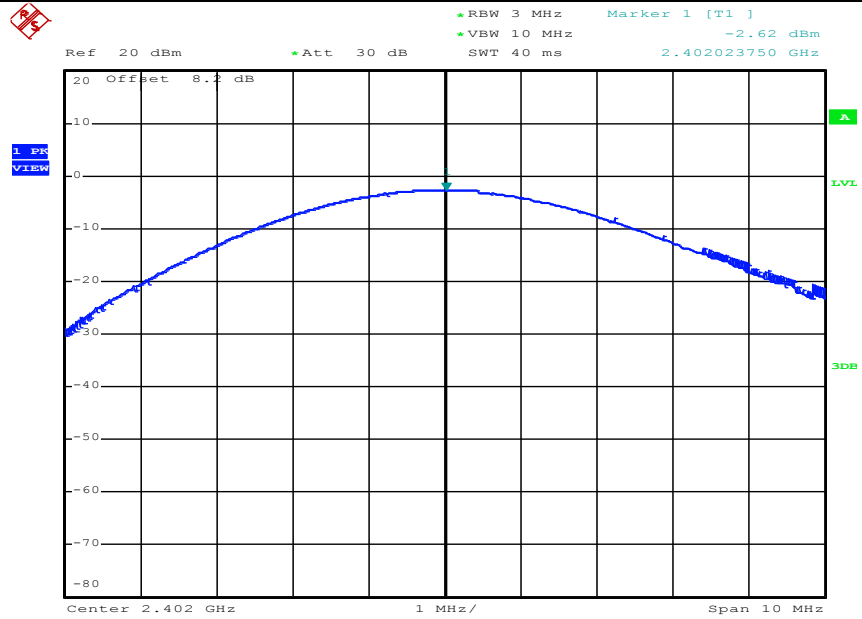
Date: 14.AUG.2019 19:20:06

GFSK/HCH



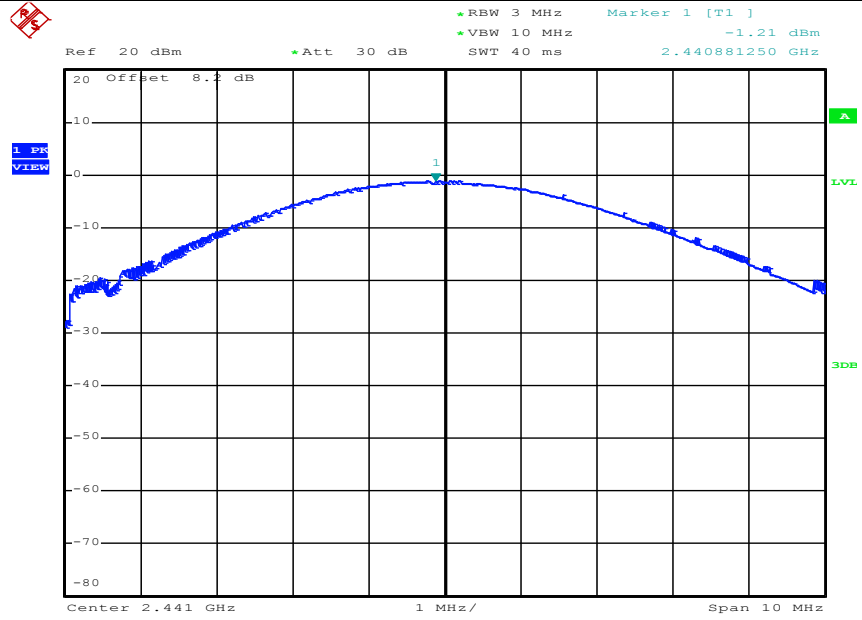
Date: 14.AUG.2019 19:21:47

$\pi/4$ DQPSK/LCH



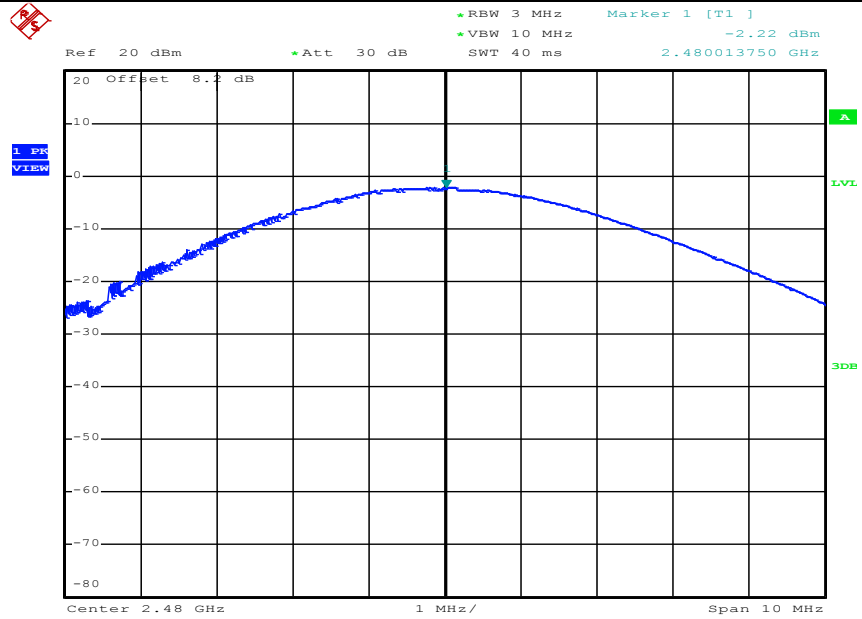
Date: 14.AUG.2019 19:25:32

$\pi/4$ DQPSK/MCH



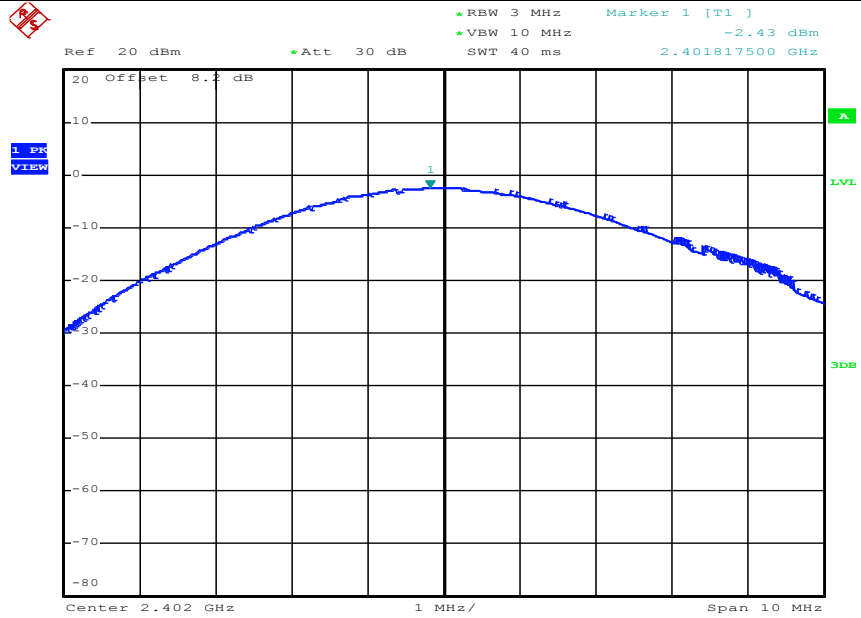
Date: 14.AUG.2019 19:28:00

$\pi/4$ DQPSK/HCH



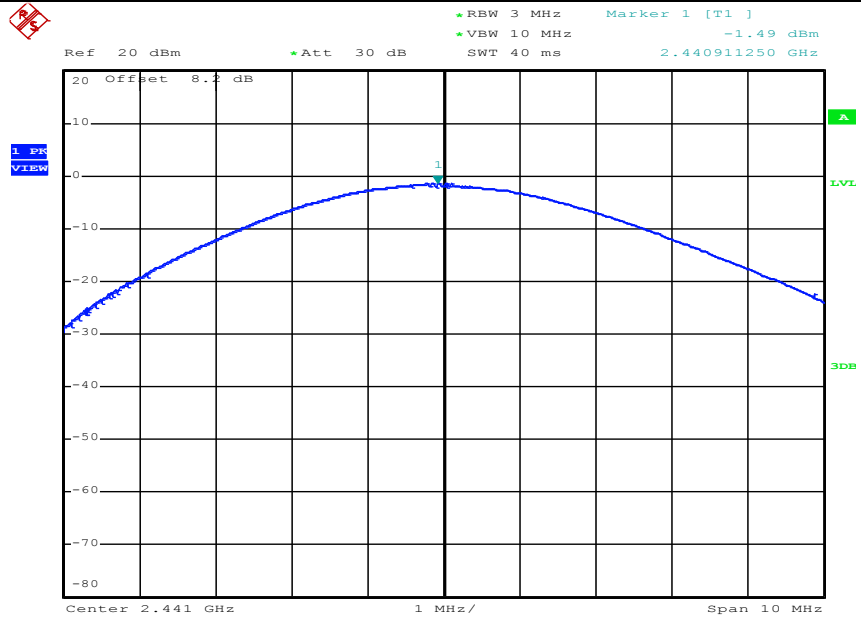
Date: 14.AUG.2019 19:29:42

8DPSK/LCH



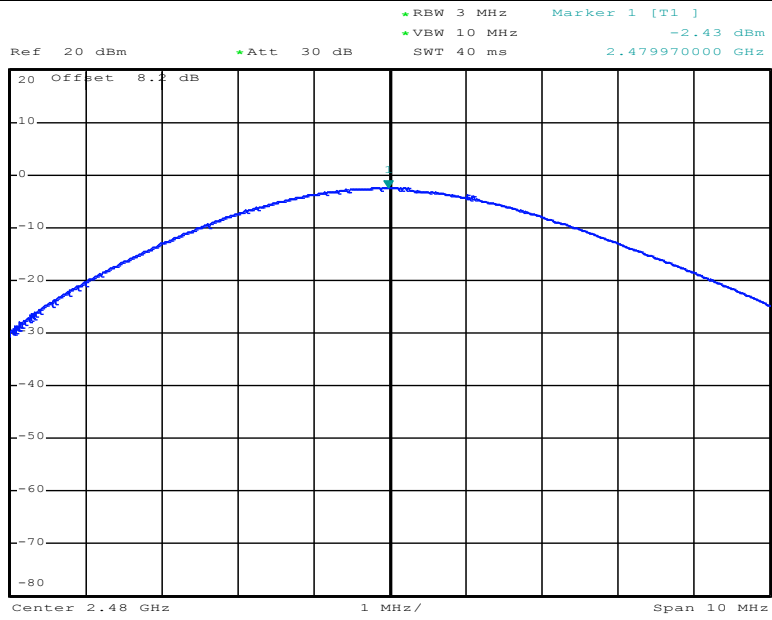
Date: 14.AUG.2019 19:32:18

8DPSK/MCH



Date: 14.AUG.2019 19:34:42

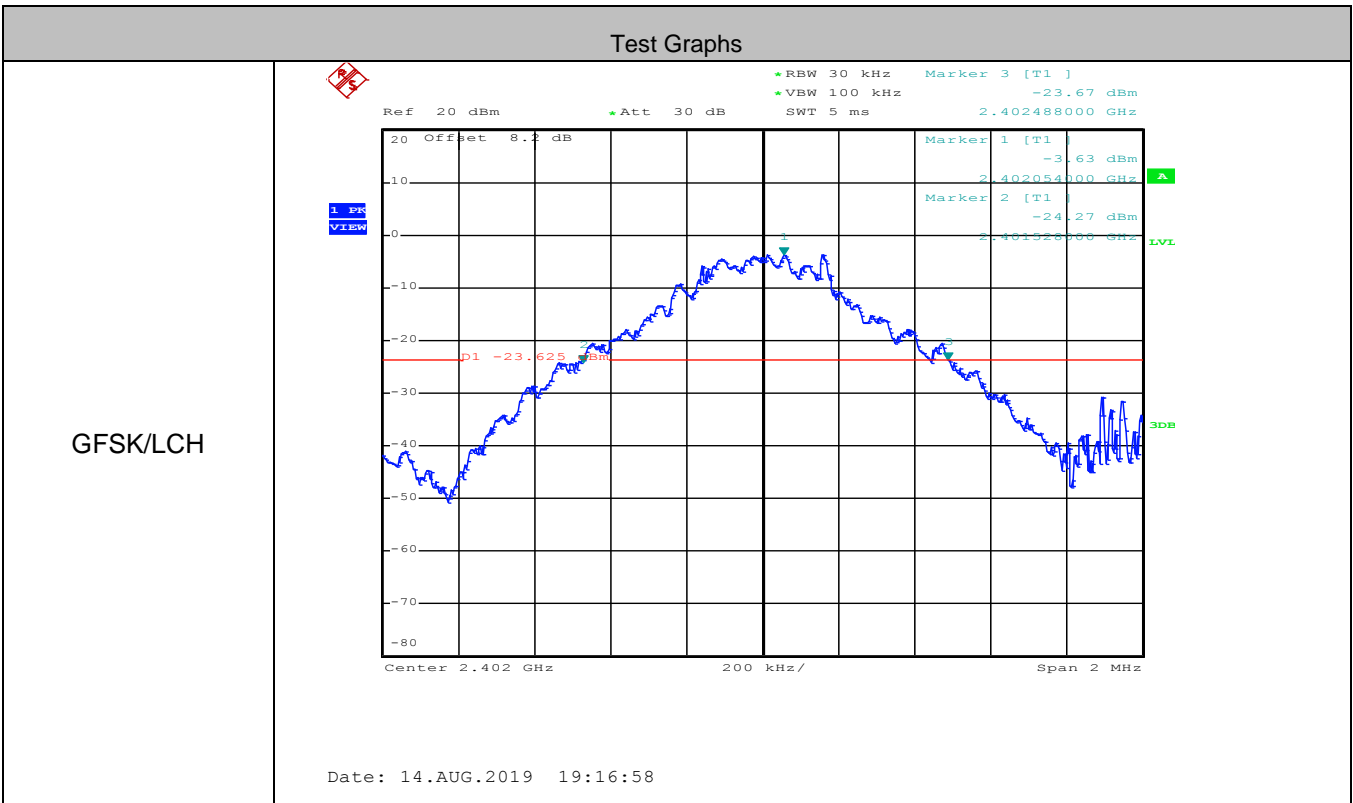
8DPSK/HCH



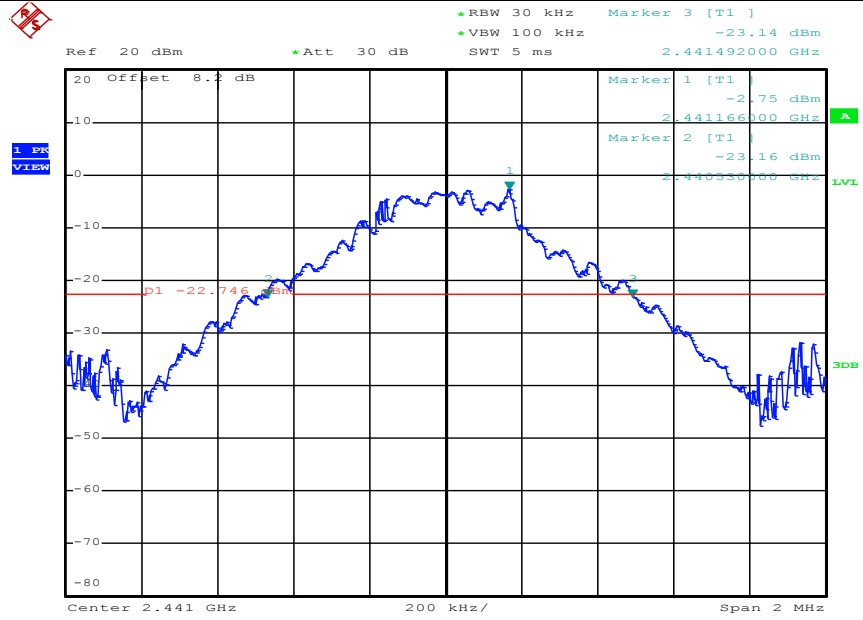
Date: 14.AUG.2019 19:37:11

A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.960	Not Specified	PASS
	MCH	0.962	Not Specified	PASS
	HCH	0.956	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.292	Not Specified	PASS
	MCH	1.286	Not Specified	PASS
	HCH	1.286	Not Specified	PASS
8DPSK	LCH	1.310	Not Specified	PASS
	MCH	1.296	Not Specified	PASS
	HCH	1.294	Not Specified	PASS

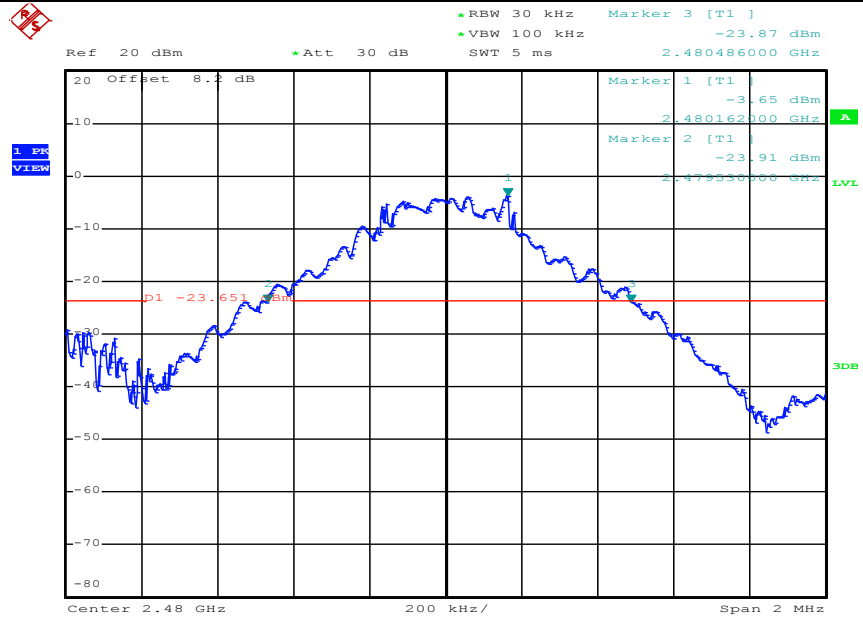


GFSK/MCH



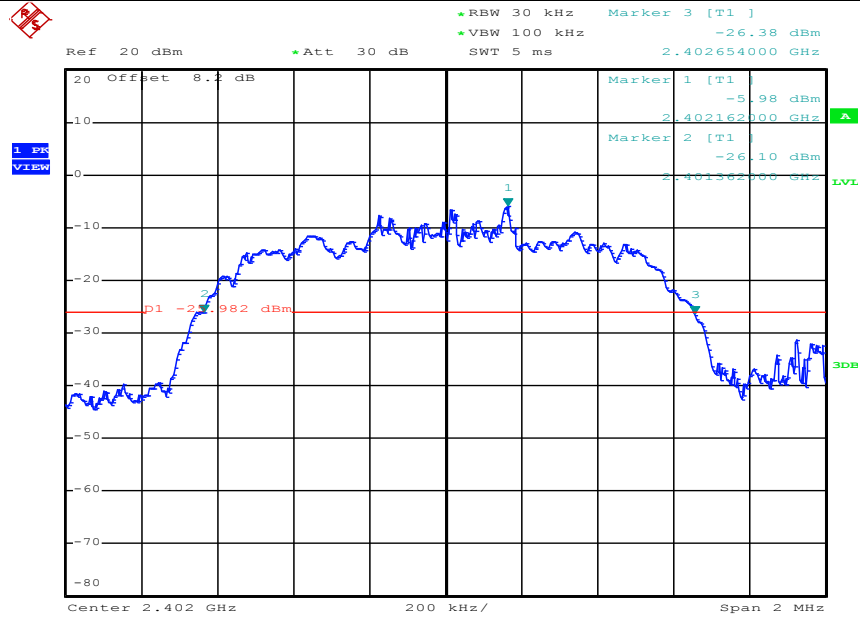
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GFSK/HCH



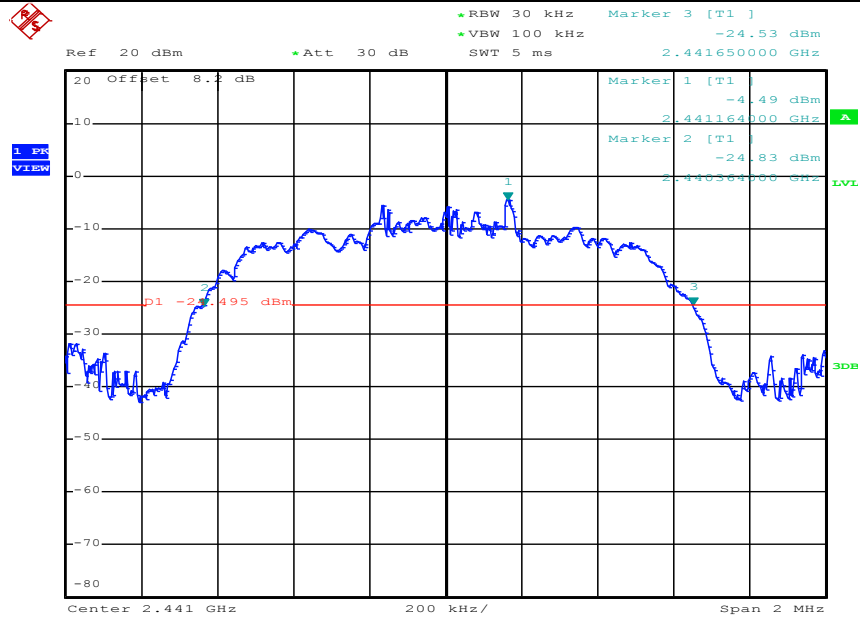
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$\pi/4$ DQPSK/LCH



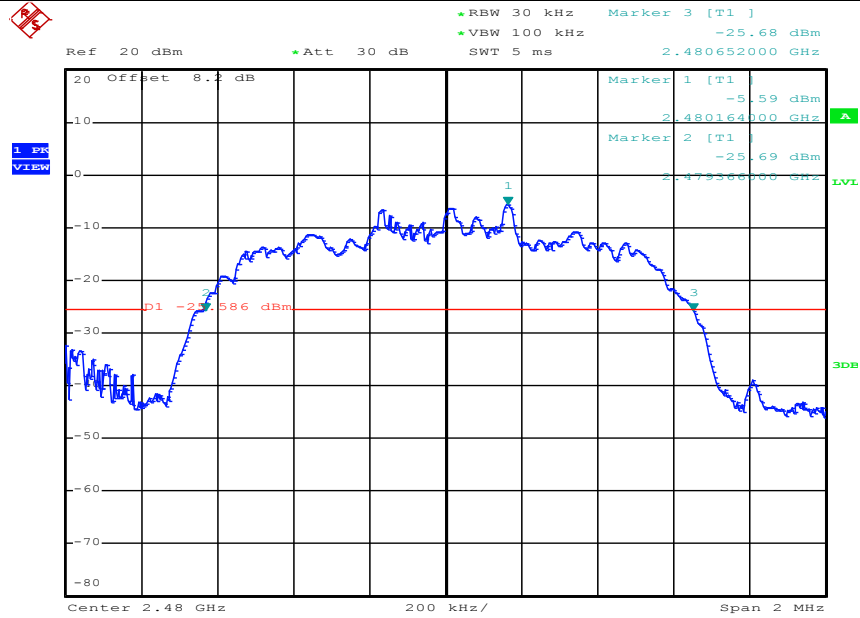
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$\pi/4$ DQPSK/MCH



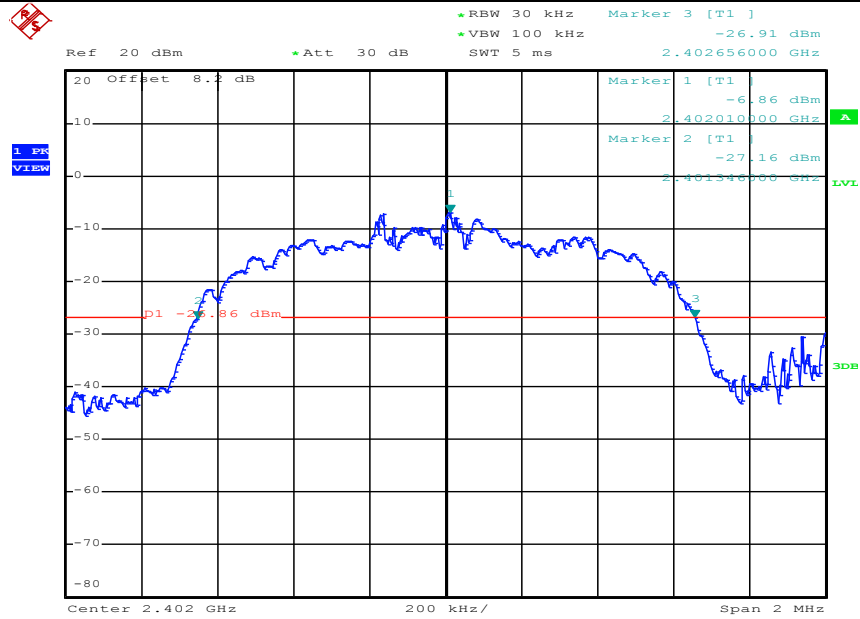
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$\pi/4$ DQPSK/HCH



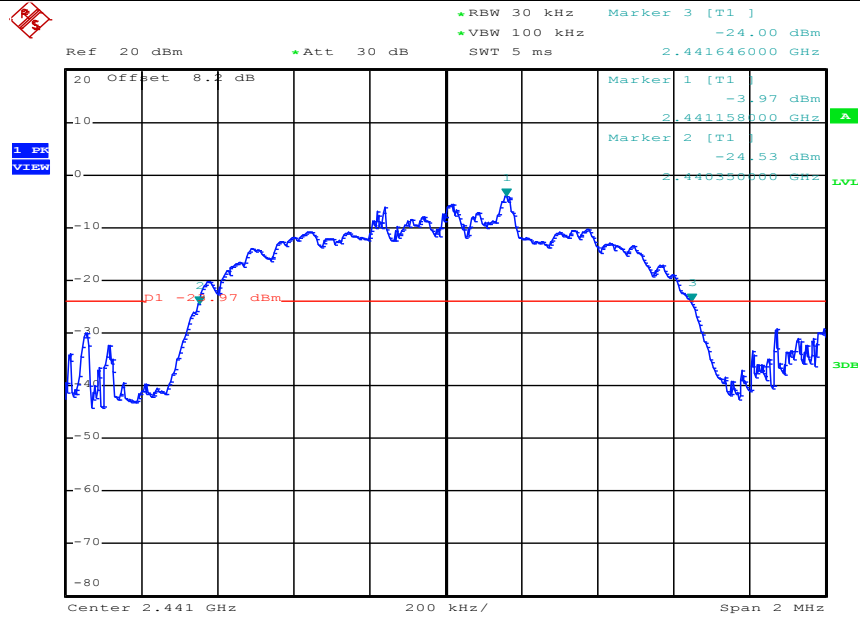
Date: 14.AUG.2019 19:29:06

8DPSK/LCH



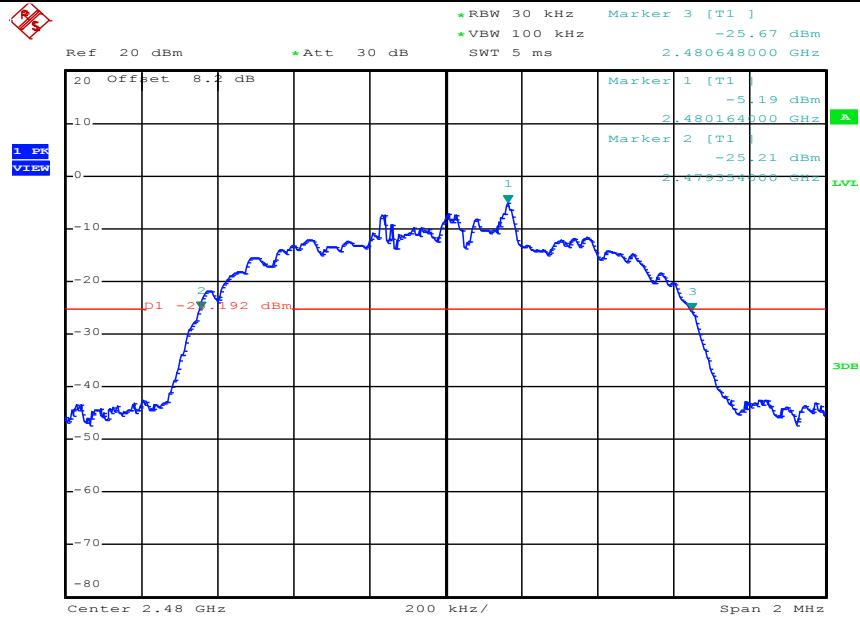
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8DPSK/MCH



Date: 14.AUG.2019 19:34:06

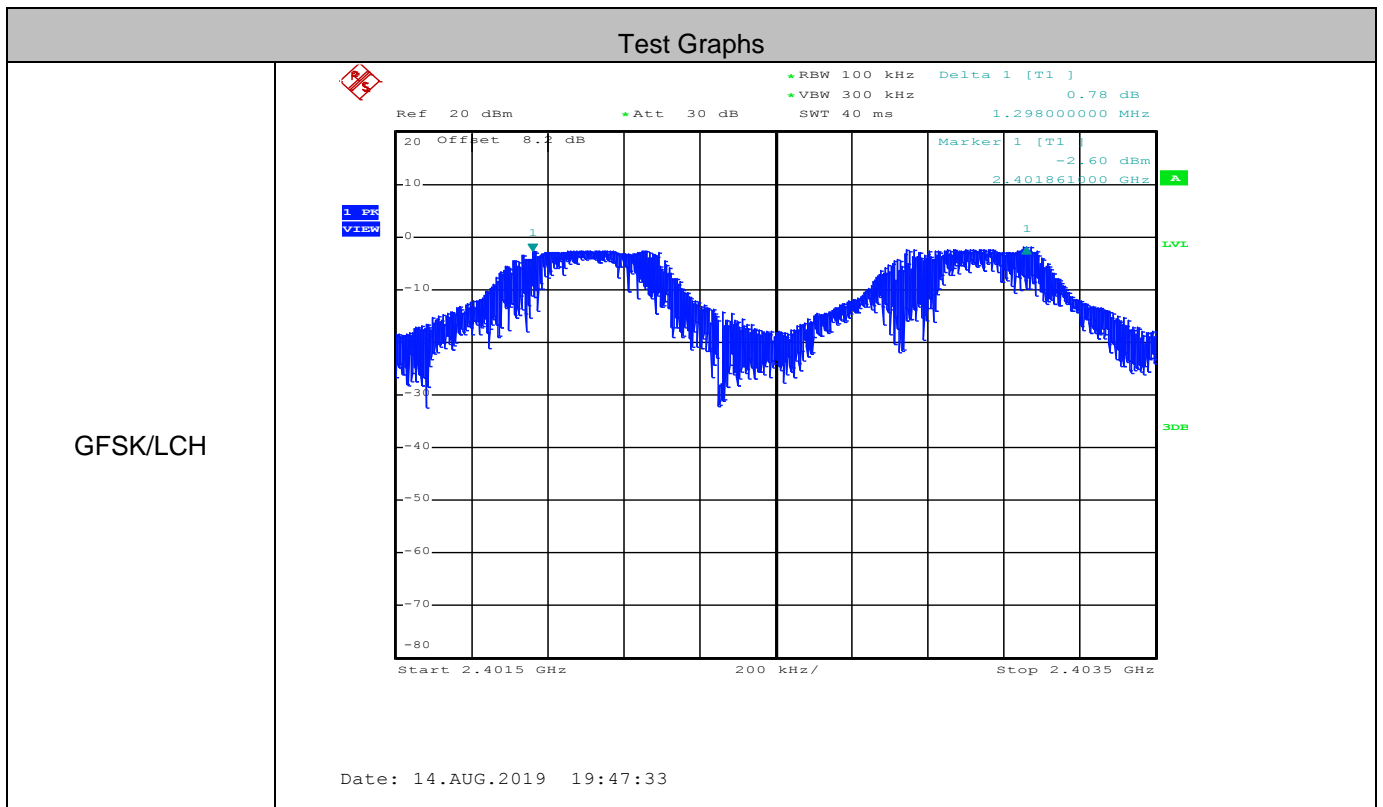
8DPSK/HCH



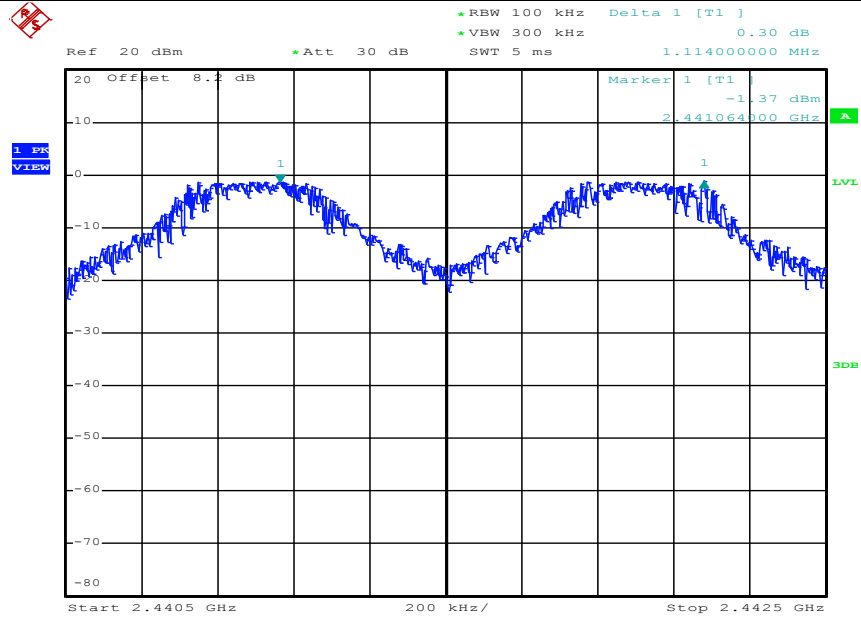
Date: 14.AUG.2019 19:36:35

A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.298	0.641	PASS
	MCH	1.114	0.641	PASS
	HCH	0.826	0.641	PASS
π/4DQPSK	LCH	0.934	0.861	PASS
	MCH	1.090	0.861	PASS
	HCH	0.892	0.861	PASS
8DPSK	LCH	0.978	0.873	PASS
	MCH	1.298	0.873	PASS
	HCH	0.930	0.873	PASS

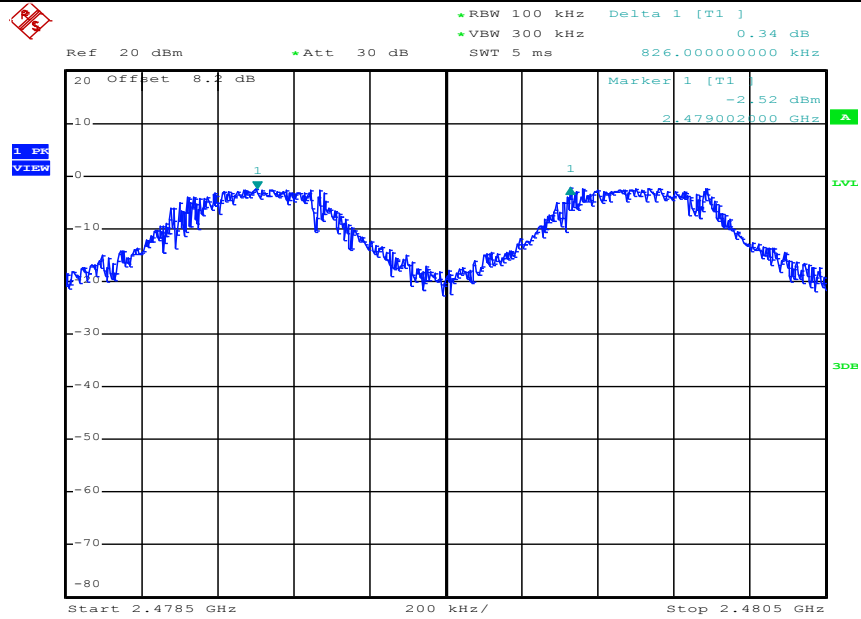


GFSK/MCH



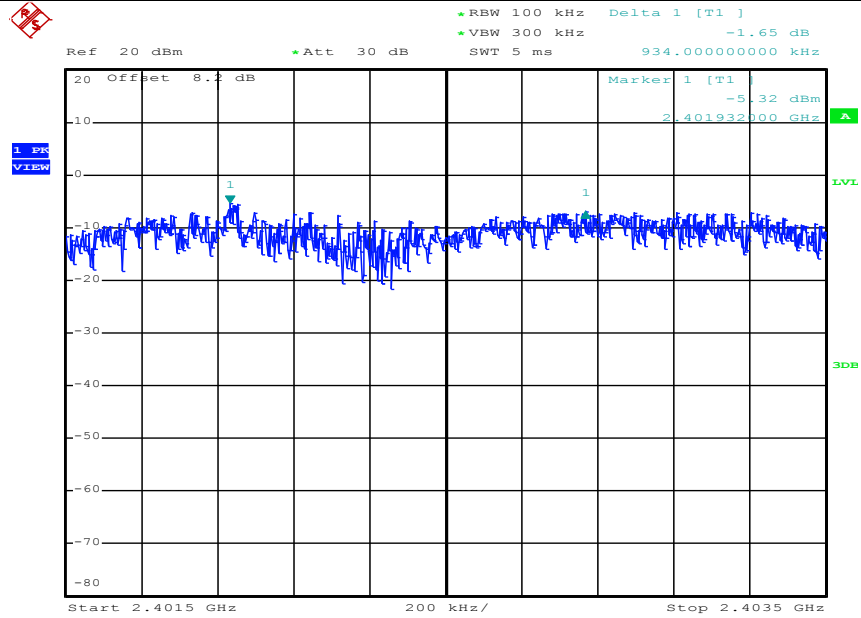
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GFSK/HCH



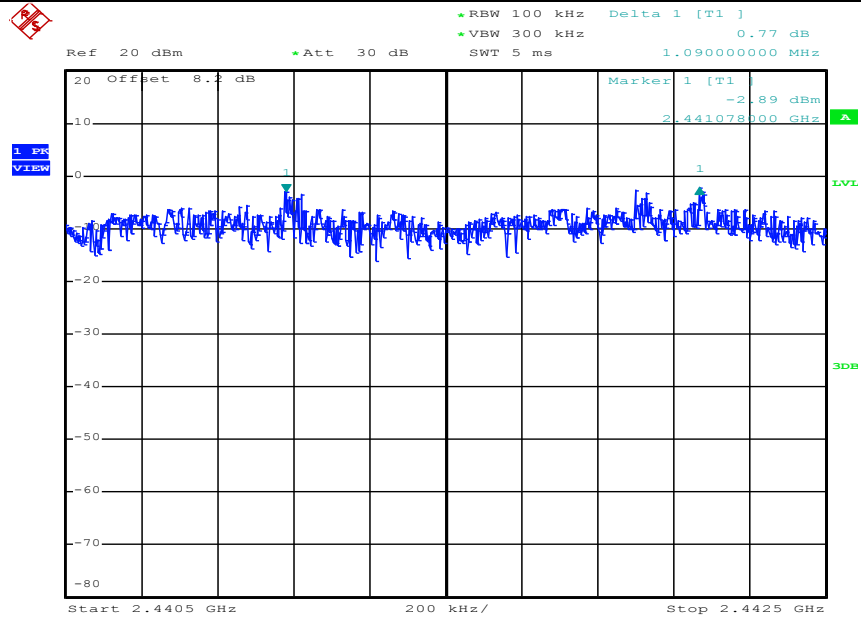
Date: 14.AUG.2019 19:49:54

$\pi/4$ DQPSK/LCH



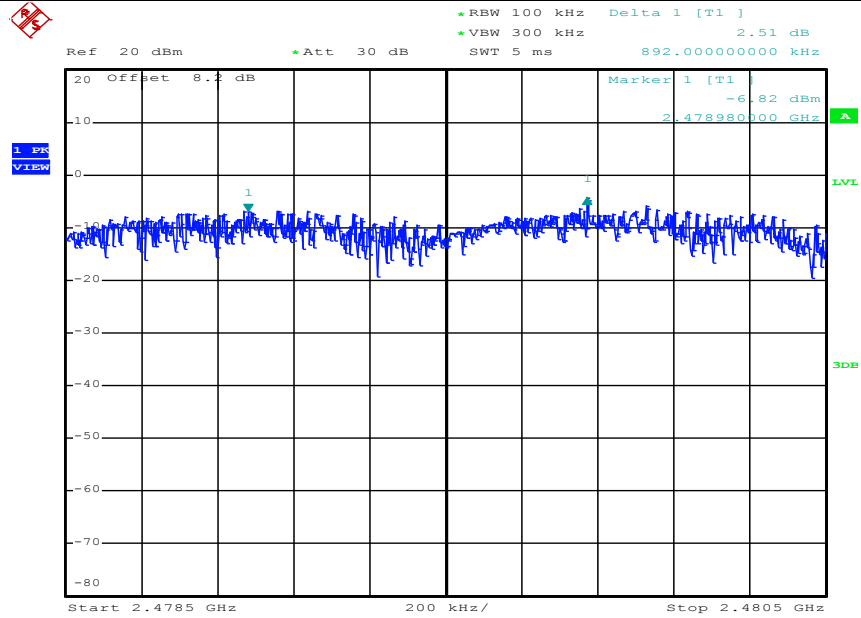
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$\pi/4$ DQPSK/MCH



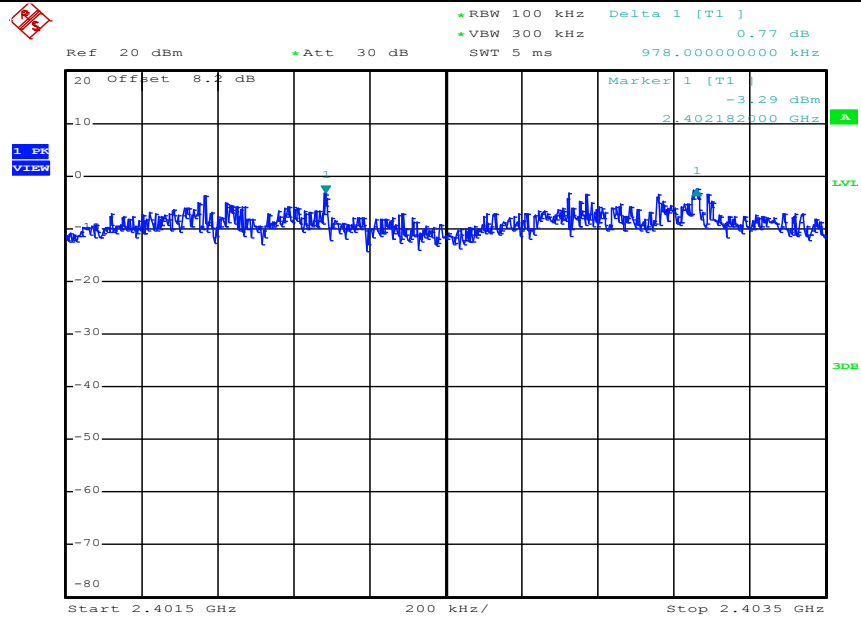
Date: 14.AUG.2019 19:56:33

π /4DQPSK/HCH



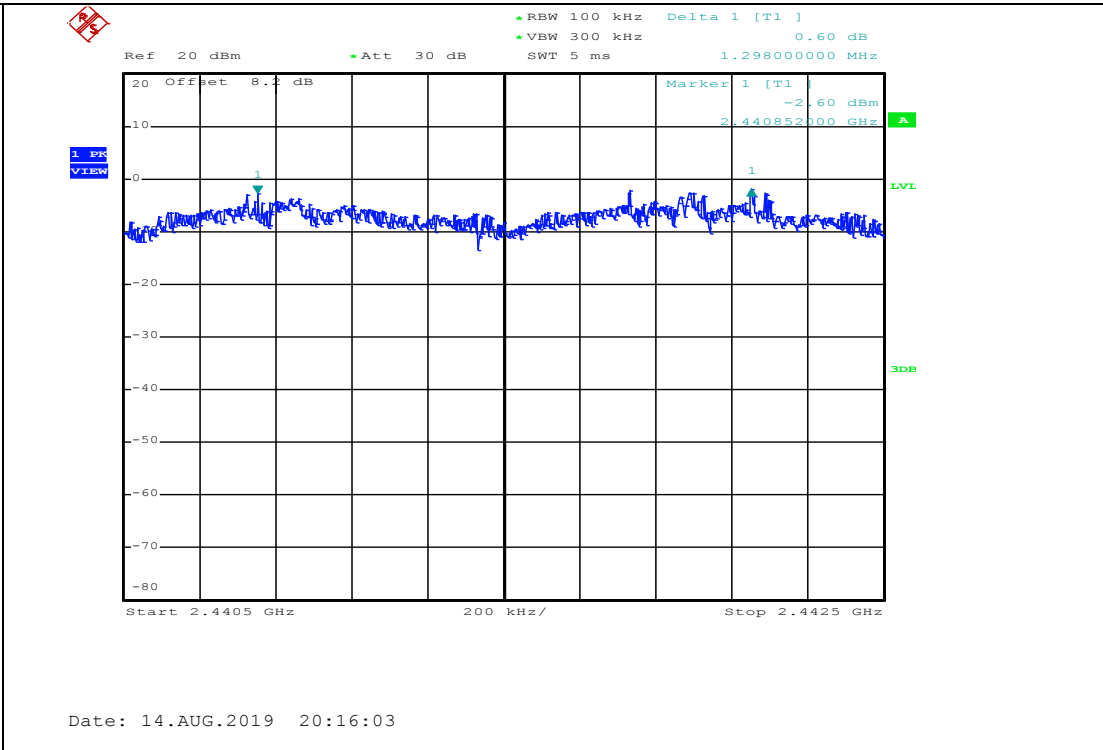
Date: 14.AUG.2019 20:25:01

8DPSK/LCH

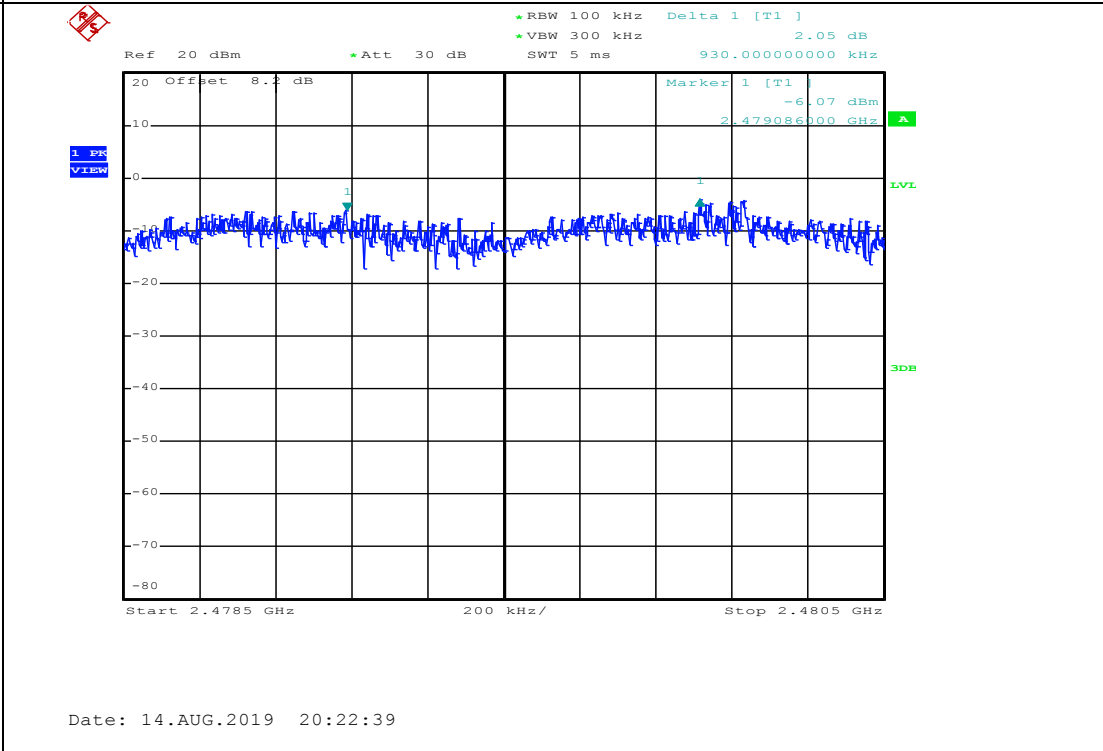


Date: 14.AUG.2019 20:13:46

8DPSK/MCH



8DPSK/HCH

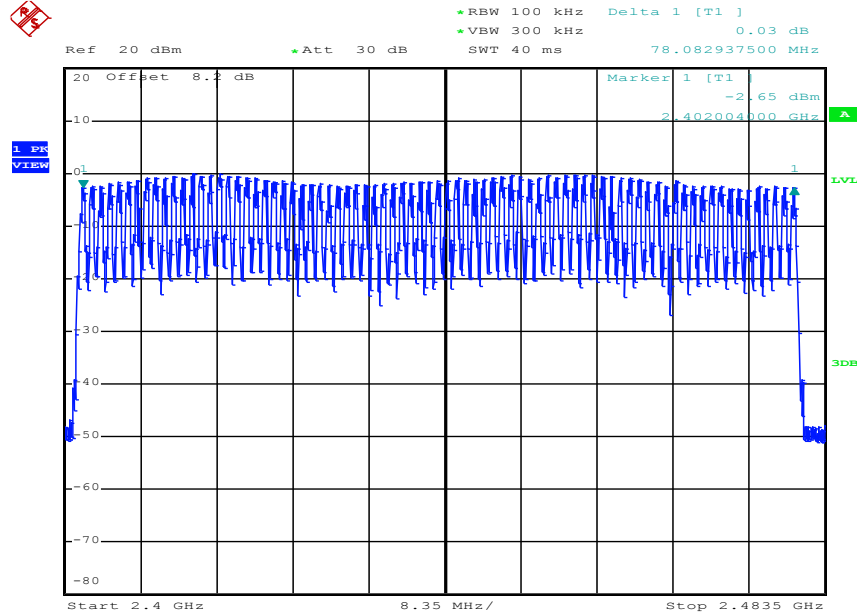


A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

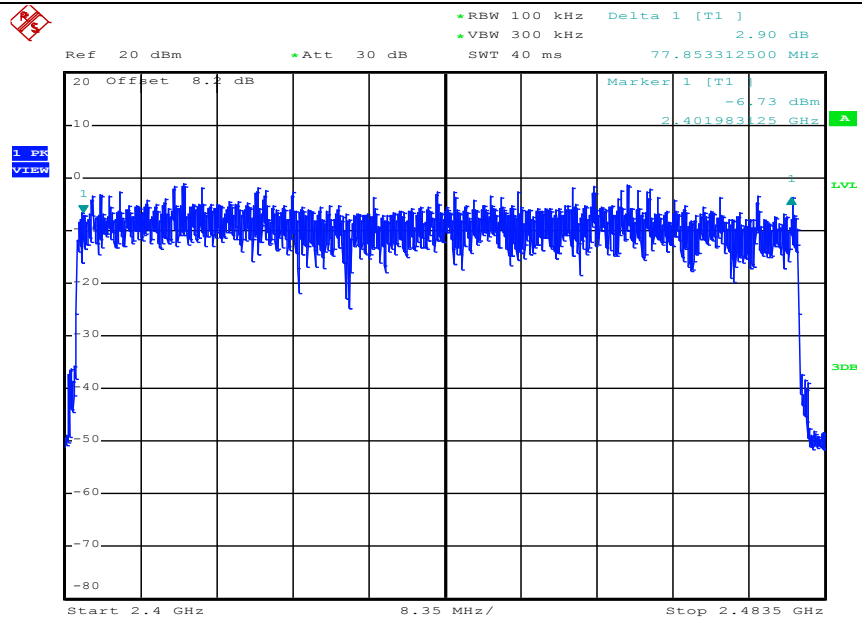
Test Graphs

GFSK/Hop



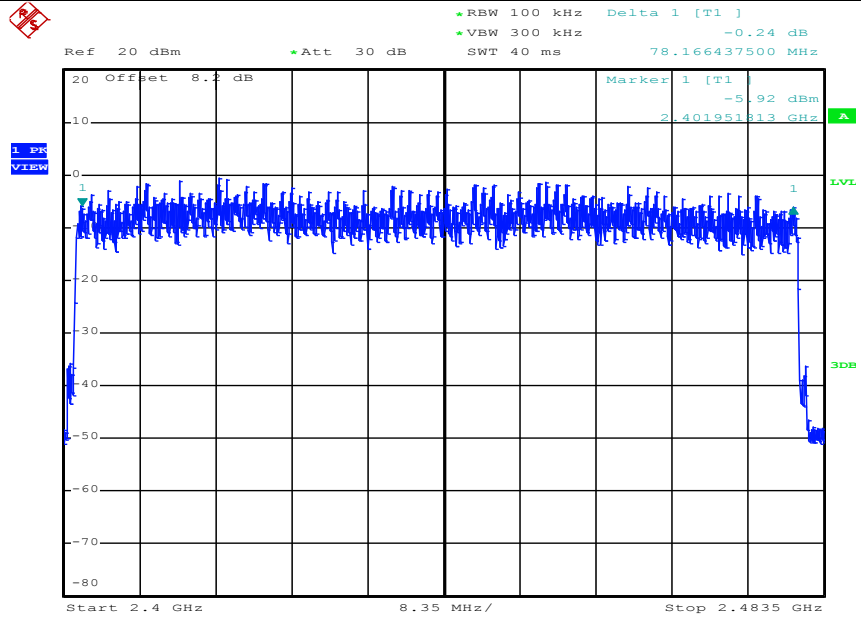
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$\pi/4$ DQPSK/Hop



Date: 14.AUG.2019 20:27:50

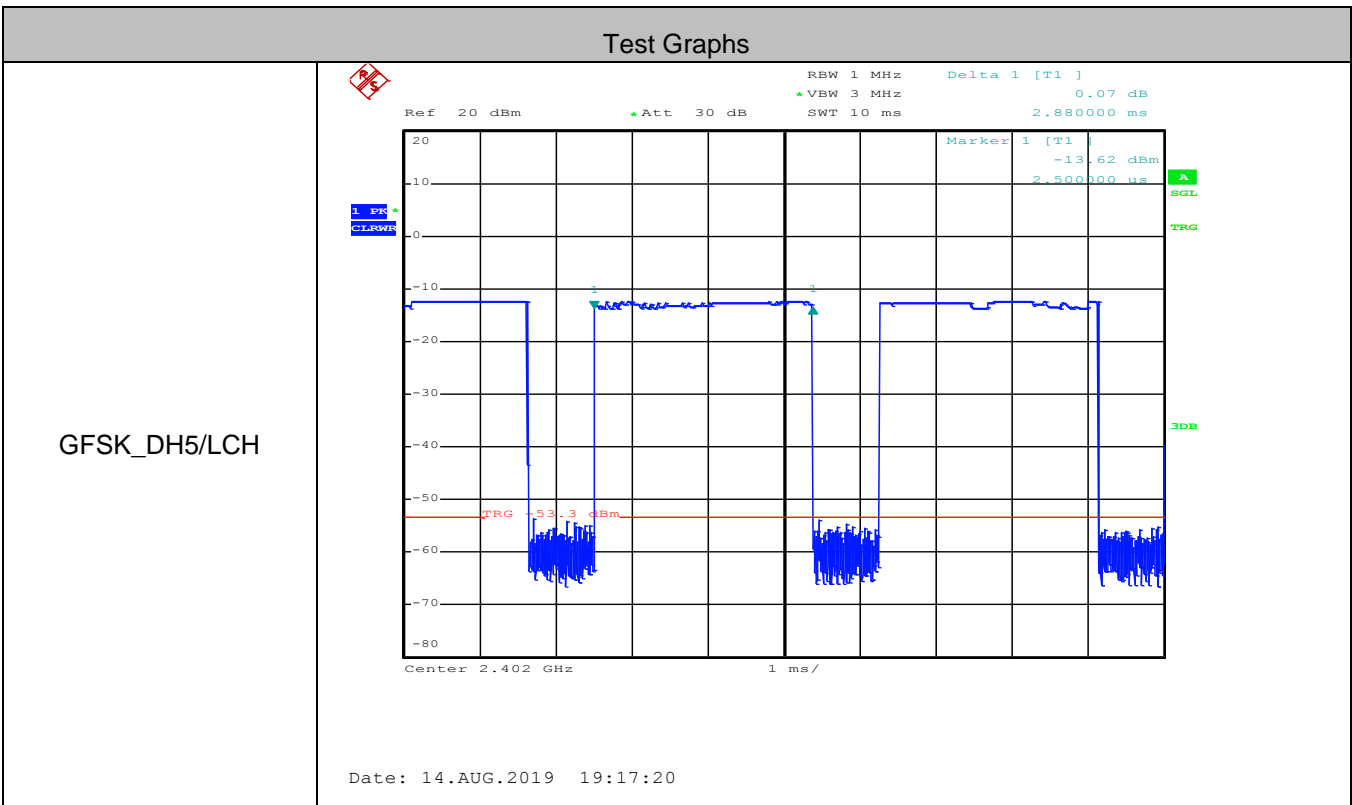
8DPSK/Hop



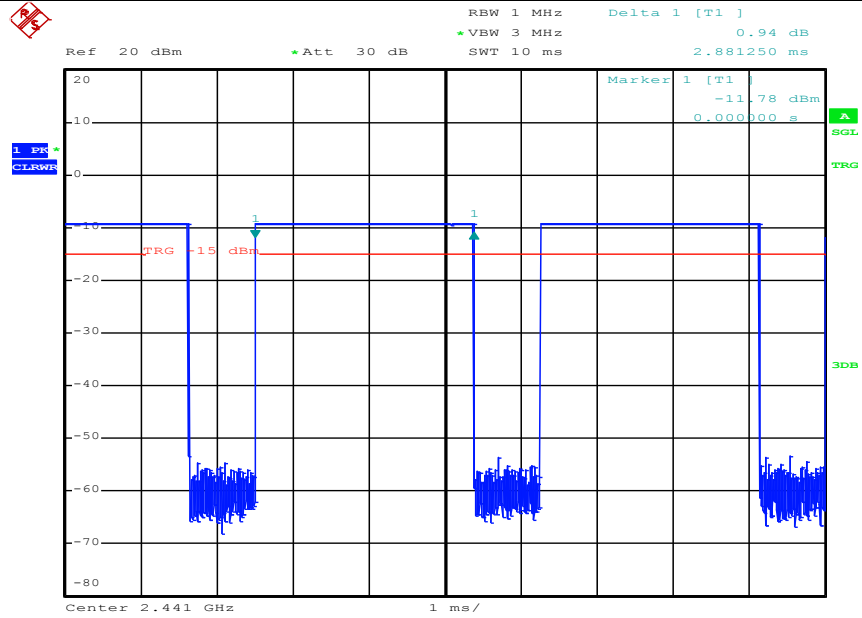
Date: 14.AUG.2019 20:22:02

A.5 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS

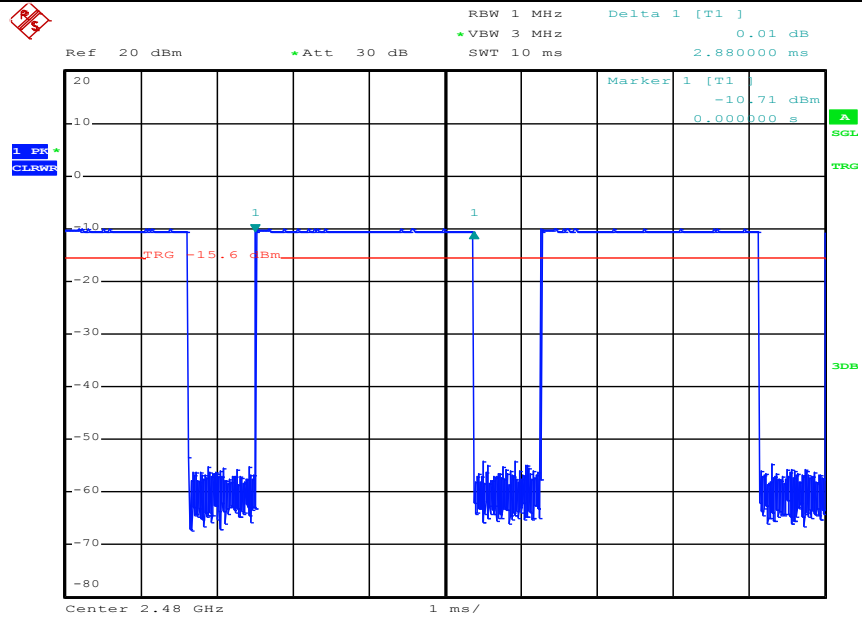


GFSK_DH5/MCH



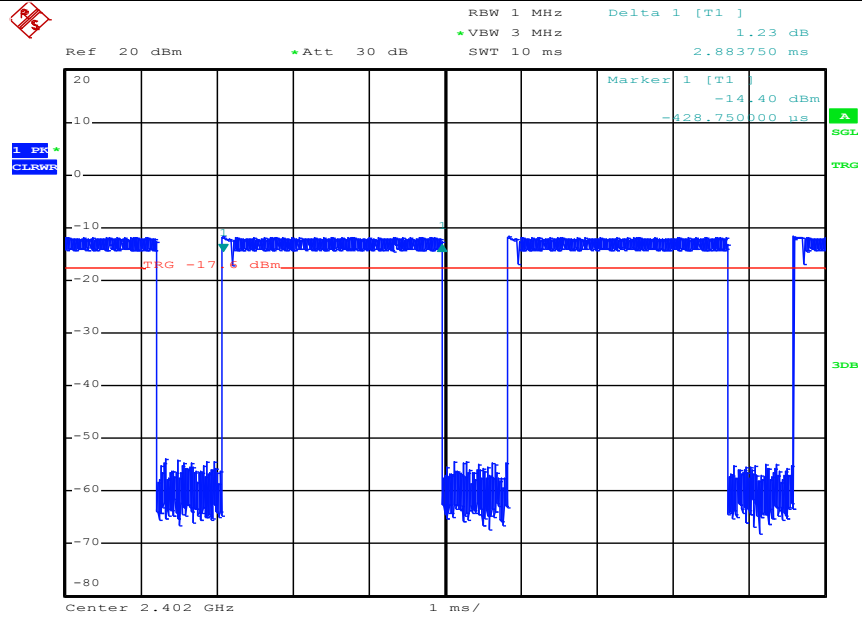
Date: 14.AUG.2019 19:19:51

GFSK_DH5/HCH



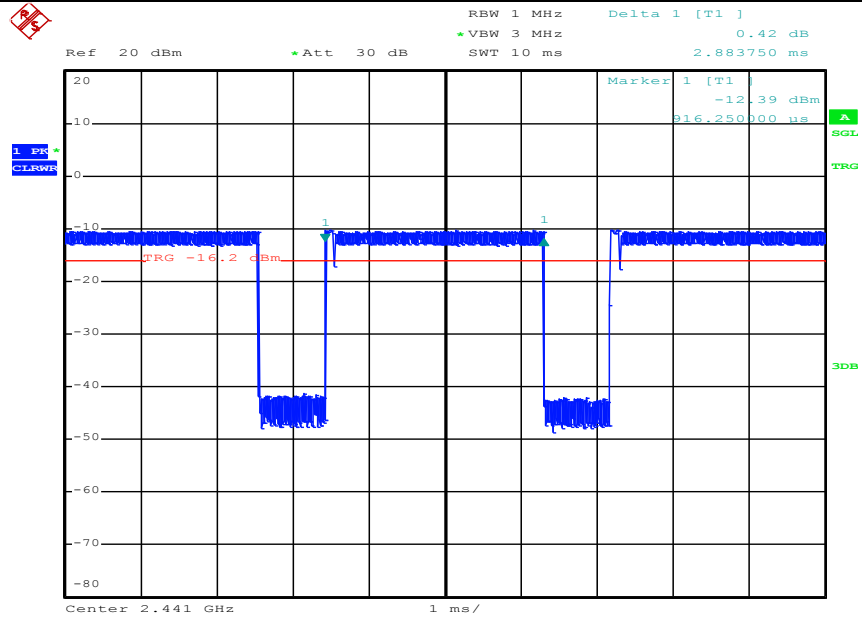
Date: 14.AUG.2019 19:21:32

$\pi/4$ DQPSK
_2DH5/LCH



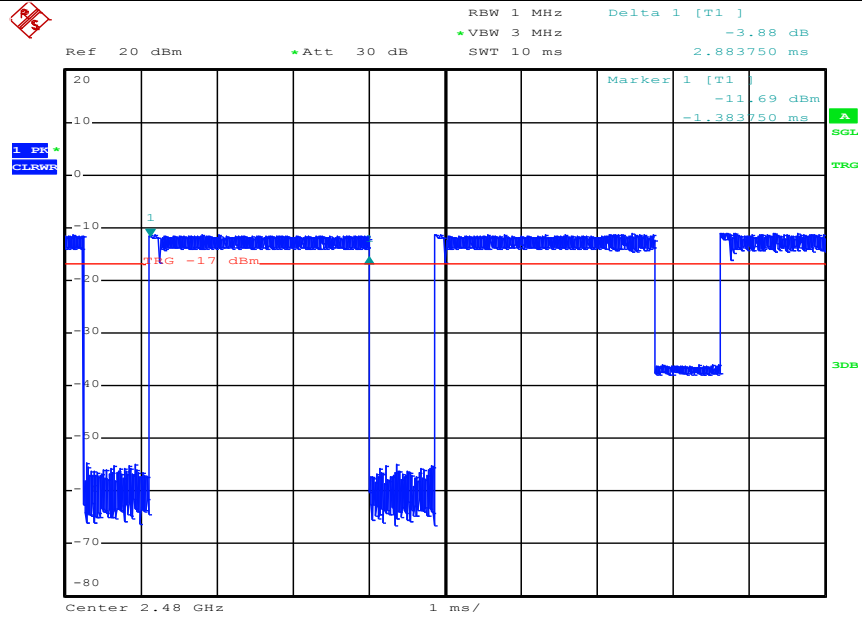
Date: 14.AUG.2019 19:25:17

$\pi/4$ DQPSK
_2DH5/MCH



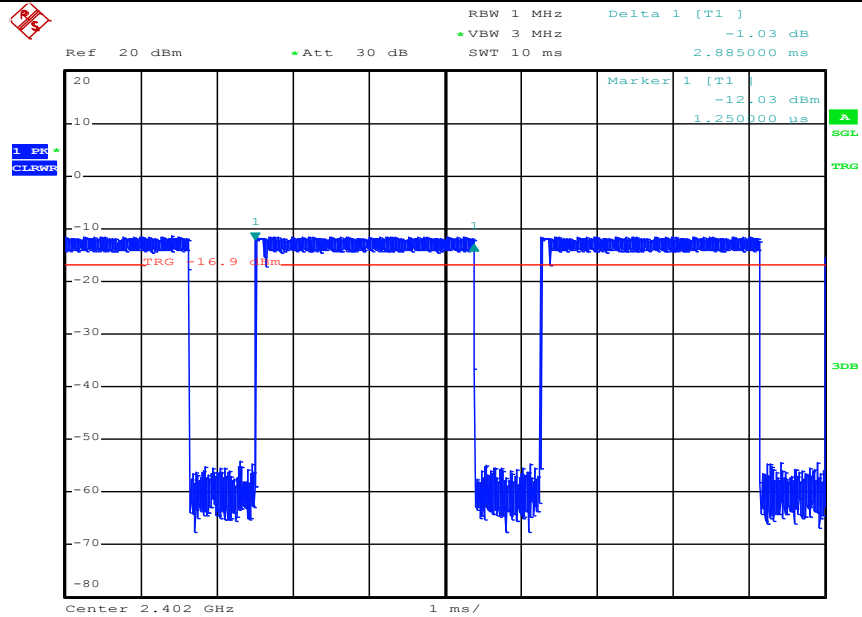
Date: 14.AUG.2019 19:27:45

$\pi/4$ DQPSK
_2DH5/HCH



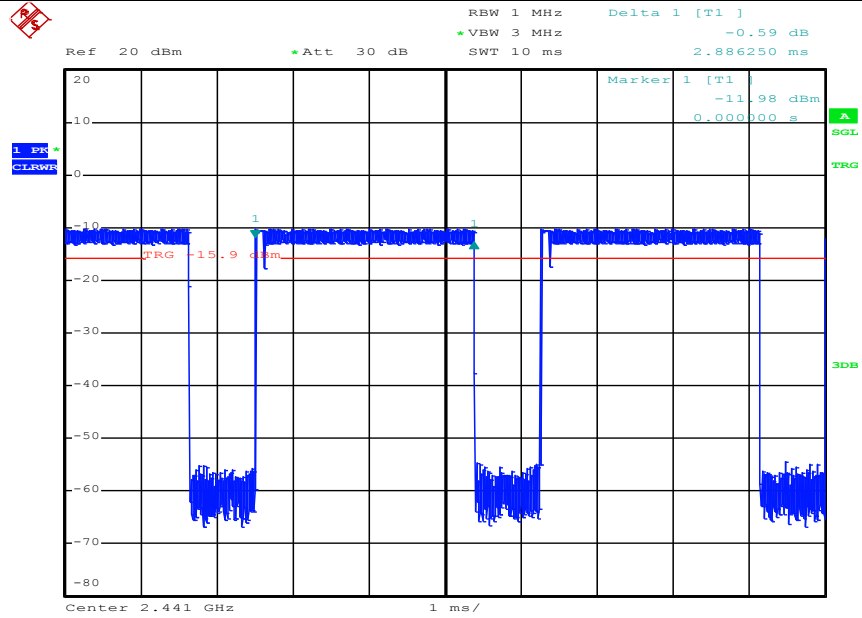
Date: 14.AUG.2019 19:29:27

8DPSK _3DH5/LCH



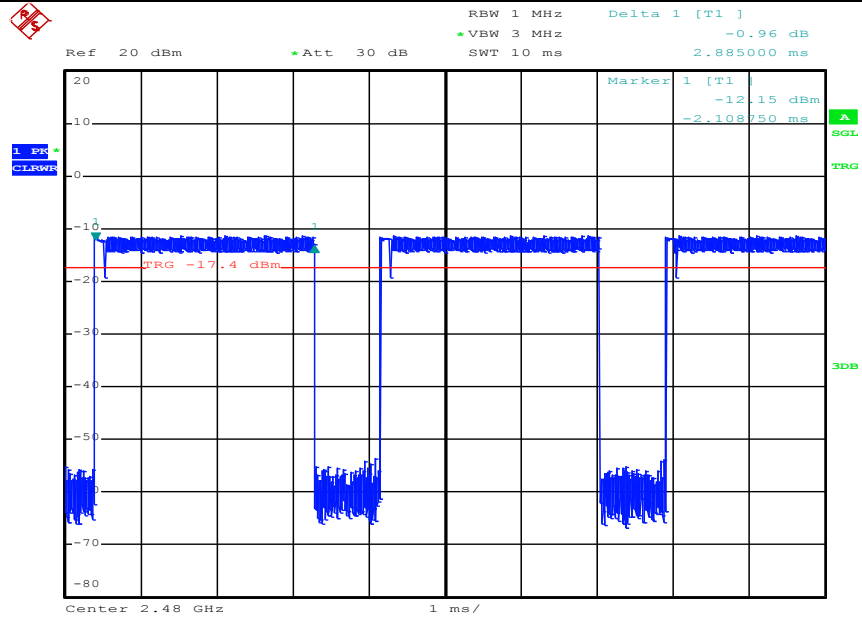
Date: 14.AUG.2019 19:32:03

8DPSK_3DH5/MCH



Date: 14.AUG.2019 19:34:27

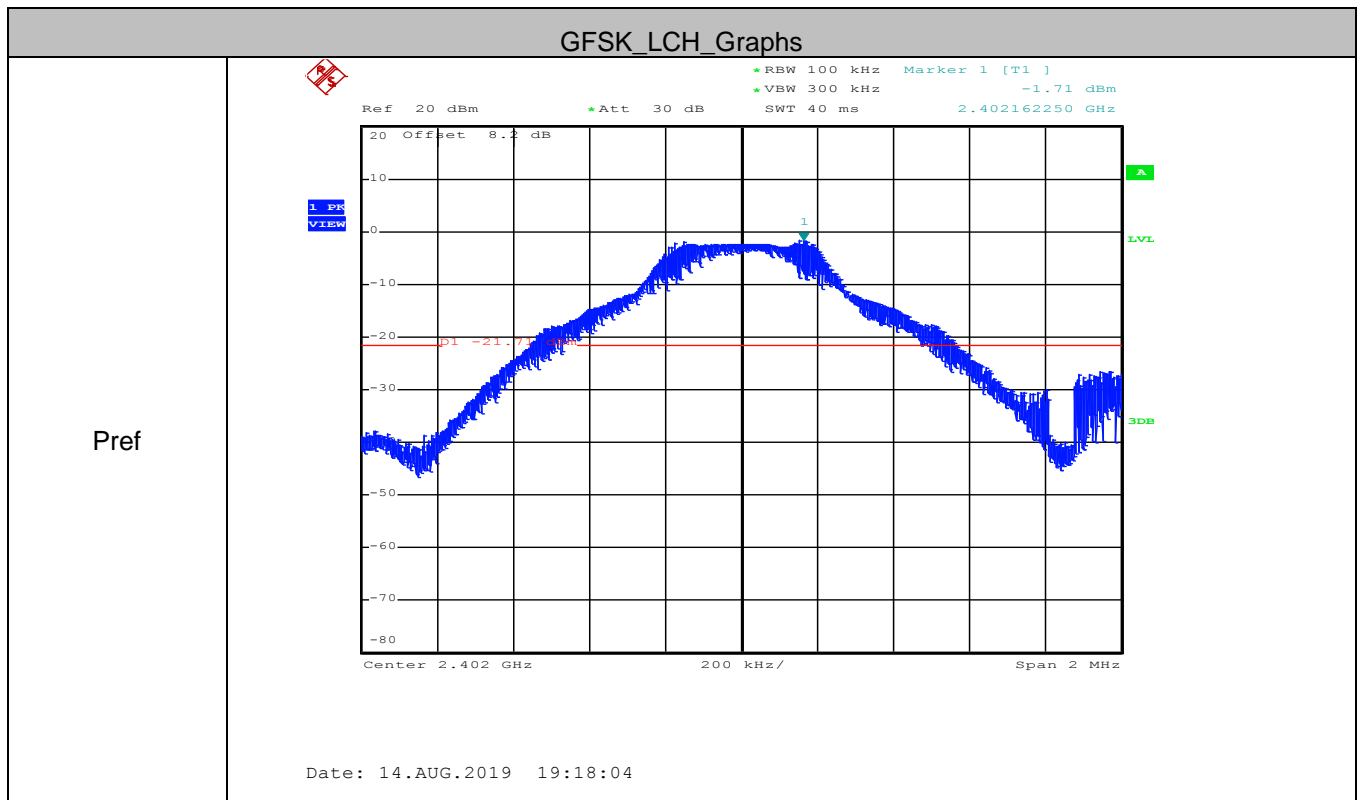
8DPSK_3DH5/HCH



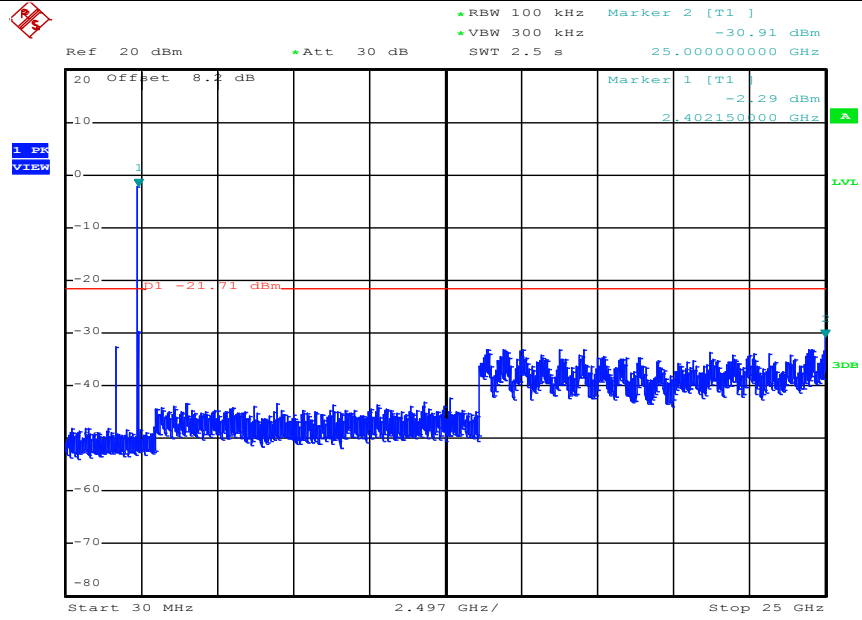
Date: 14.AUG.2019 19:36:56

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.71	-30.910	-21.710	PASS
	MCH	-0.32	-31.820	-20.320	PASS
	HCH	-1.25	-32.480	-21.250	PASS
π/4DQPSK	LCH	-2.99	-32.050	-22.990	PASS
	MCH	-1.6	-32.260	-21.600	PASS
	HCH	-2.69	-31.900	-22.690	PASS
8DPSK	LCH	-2.81	-32.020	-22.810	PASS
	MCH	-1.95	-31.870	-21.950	PASS
	HCH	-2.98	-32.160	-22.980	PASS



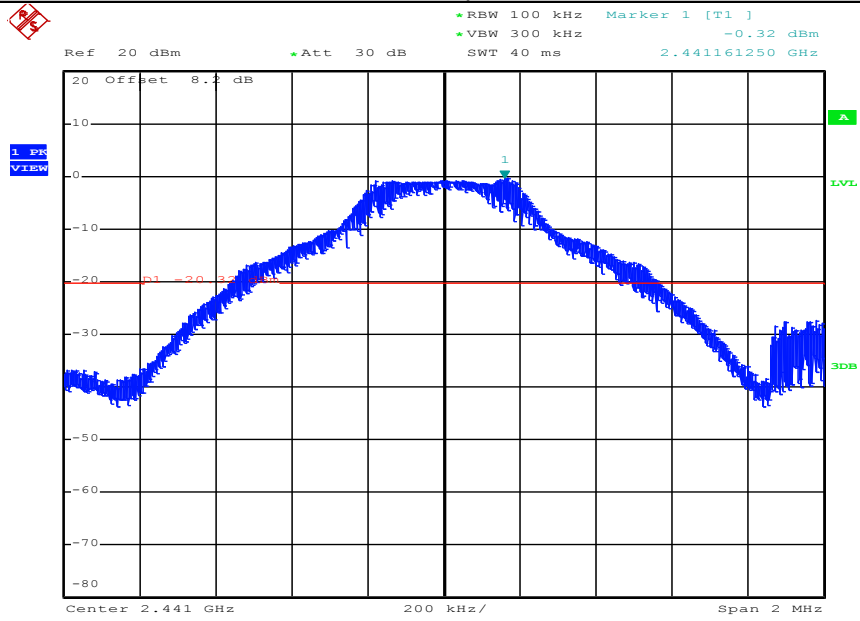
P_u



Date: 14.AUG.2019 19:18:18

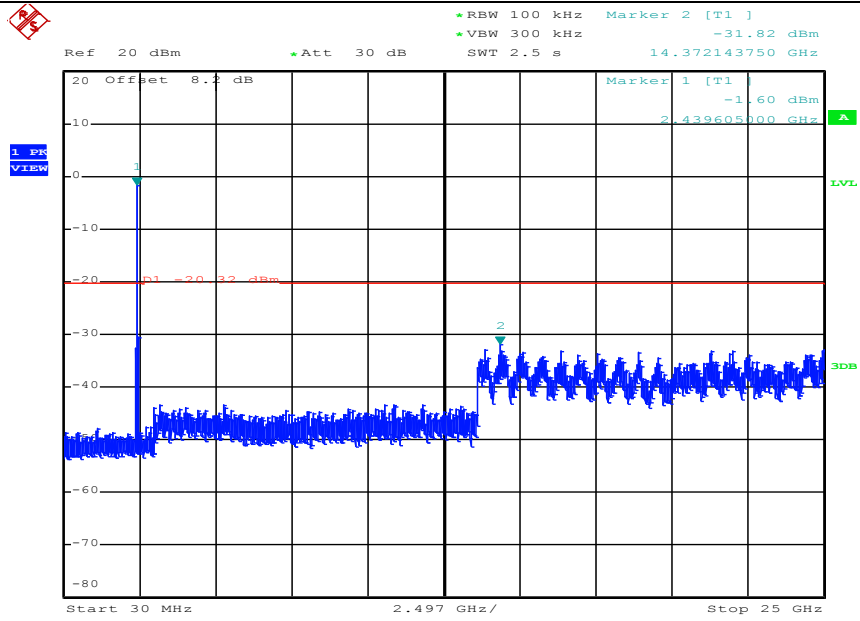
GFSK_MCH_Graphs

Pref



Date: 14.AUG.2019 19:20:19

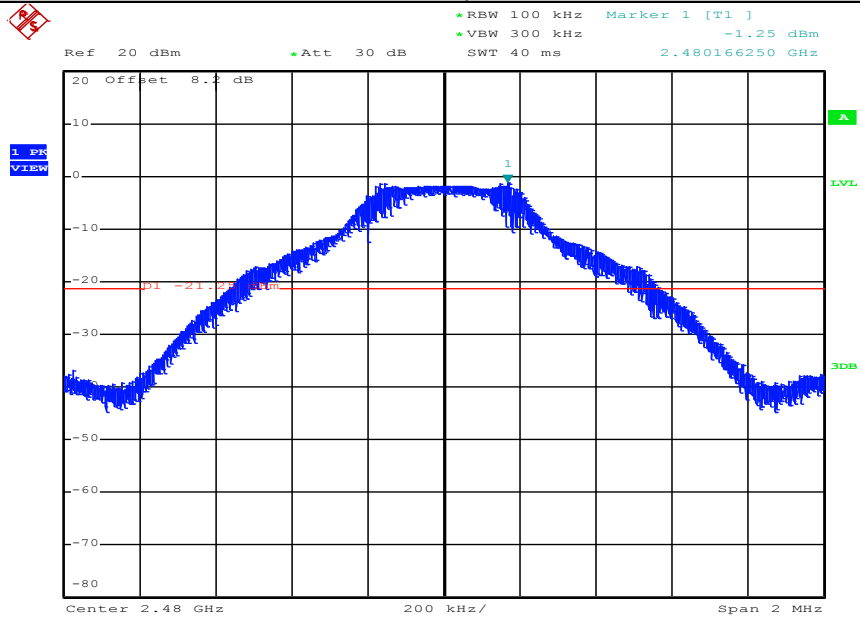
Puw



Date: 14.AUG.2019 19:20:33

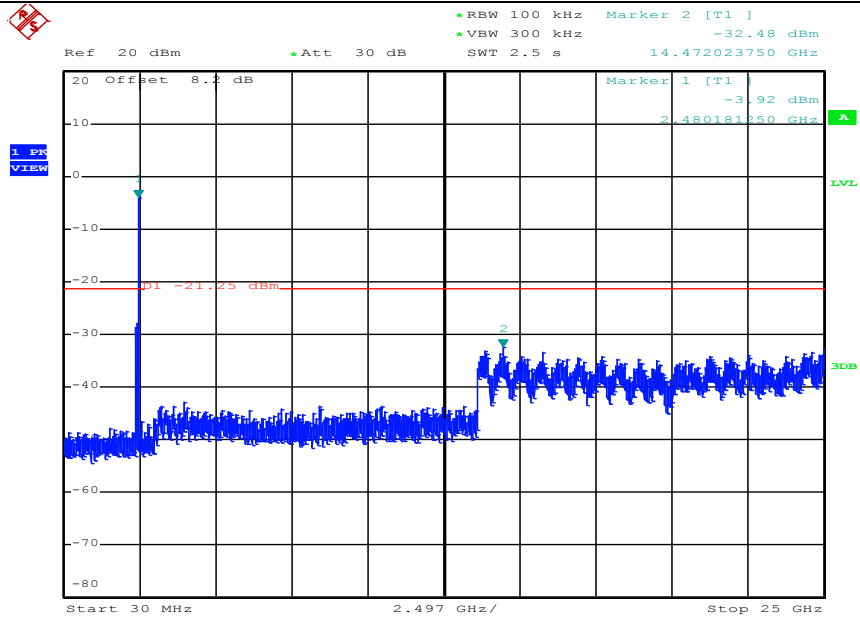
GFSK_HCH_Graphs

Pref



Date: 14.AUG.2019 19:22:16

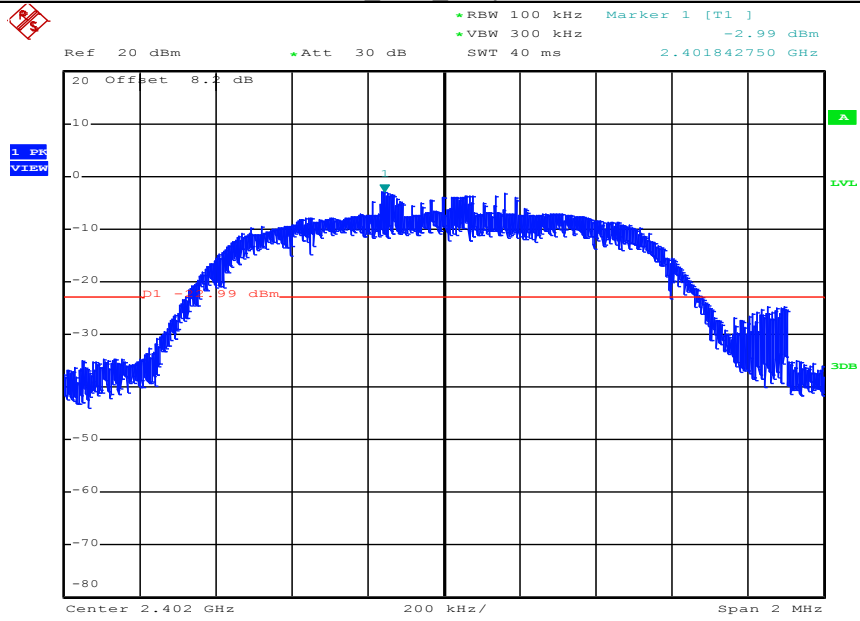
Puw



Date: 14.AUG.2019 19:22:30

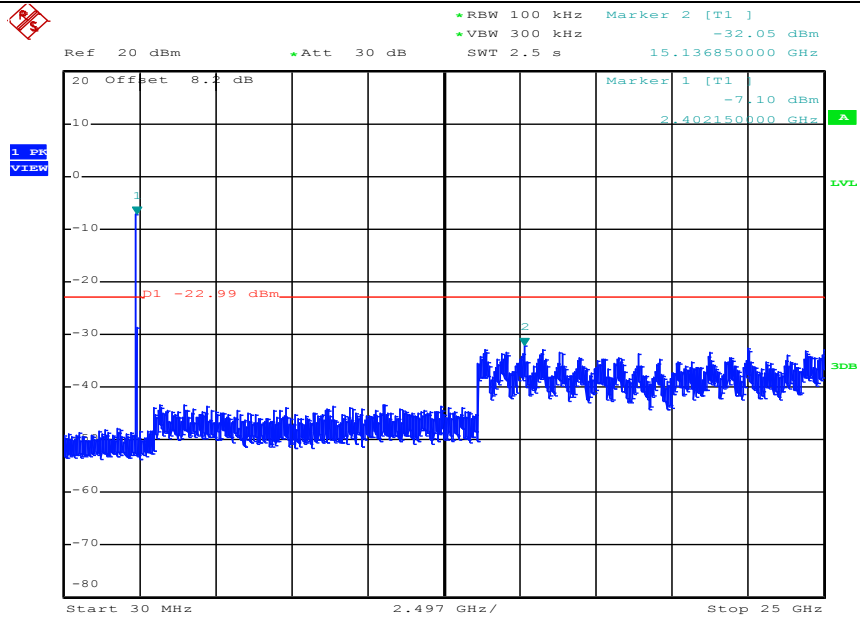
$\pi/4$ DQPSK_LCH_Graphs

Pref



Date: 14.AUG.2019 19:26:01

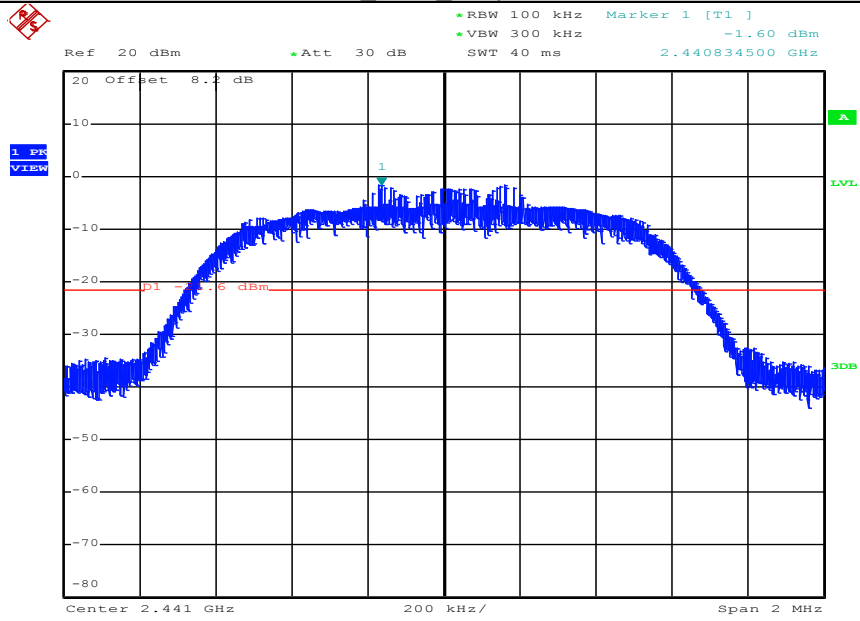
Puw



Date: 14.AUG.2019 19:26:15

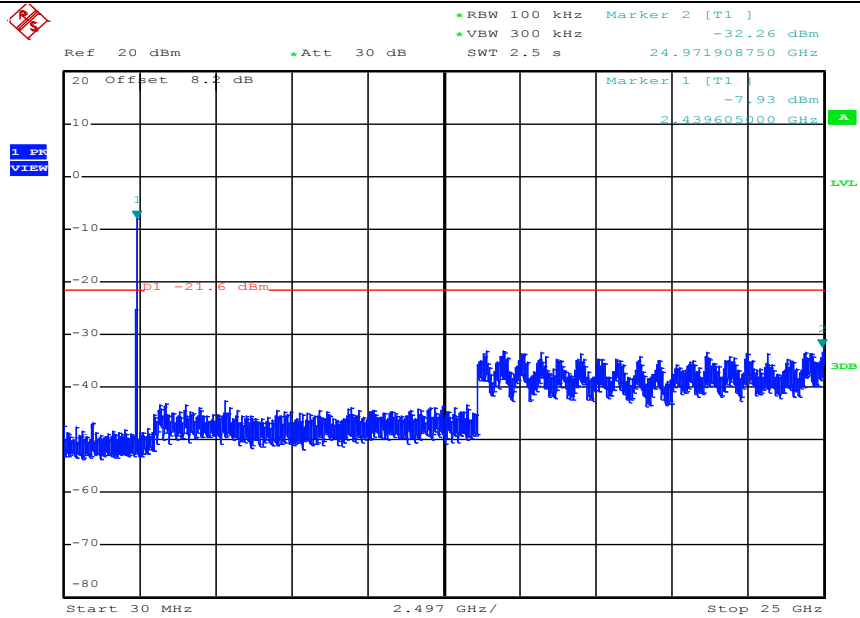
$\pi/4$ DQPSK_MCH_Graphs

Pref



Date: 14.AUG.2019 19:28:13

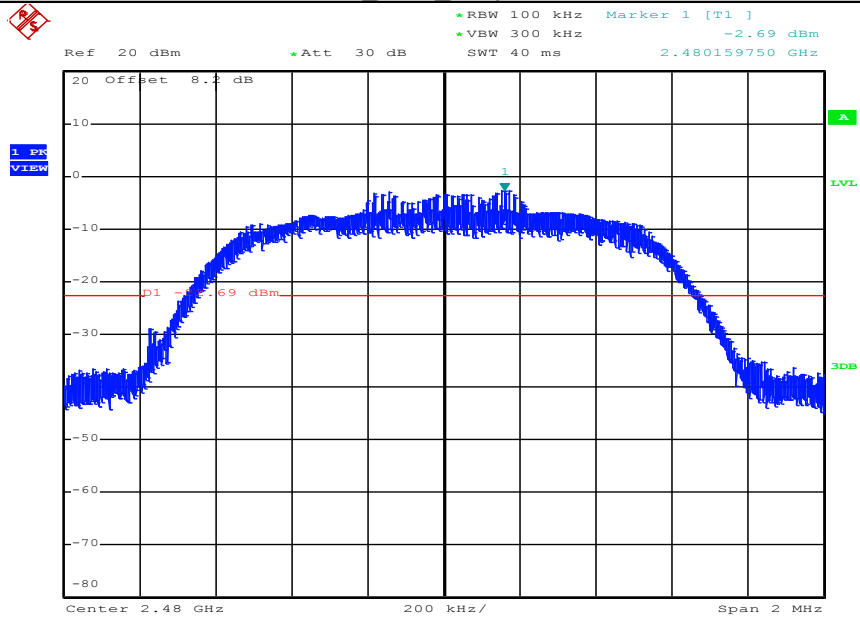
Puw



Date: 14.AUG.2019 19:28:28

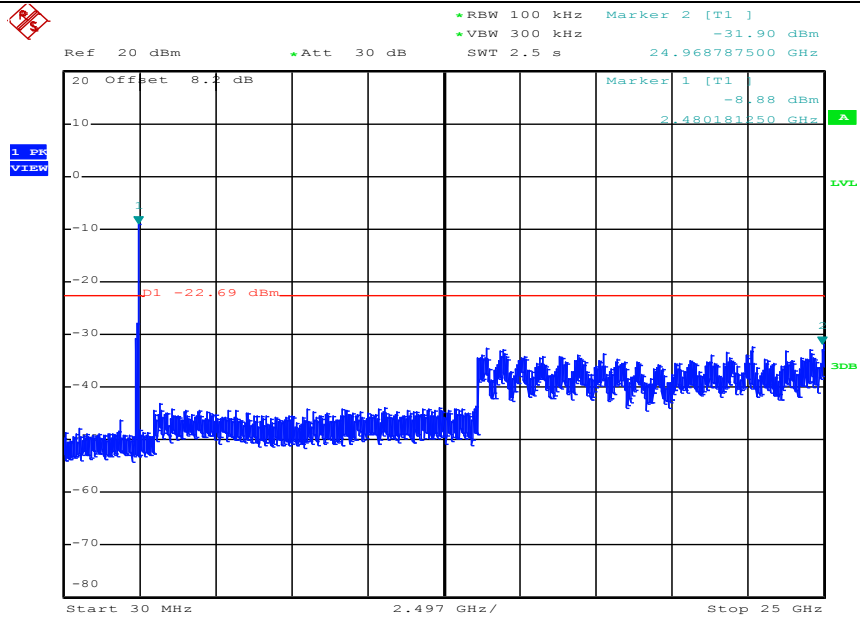
$\pi/4$ DQPSK_HCH_Graphs

Pref



Date: 14.AUG.2019 19:30:11

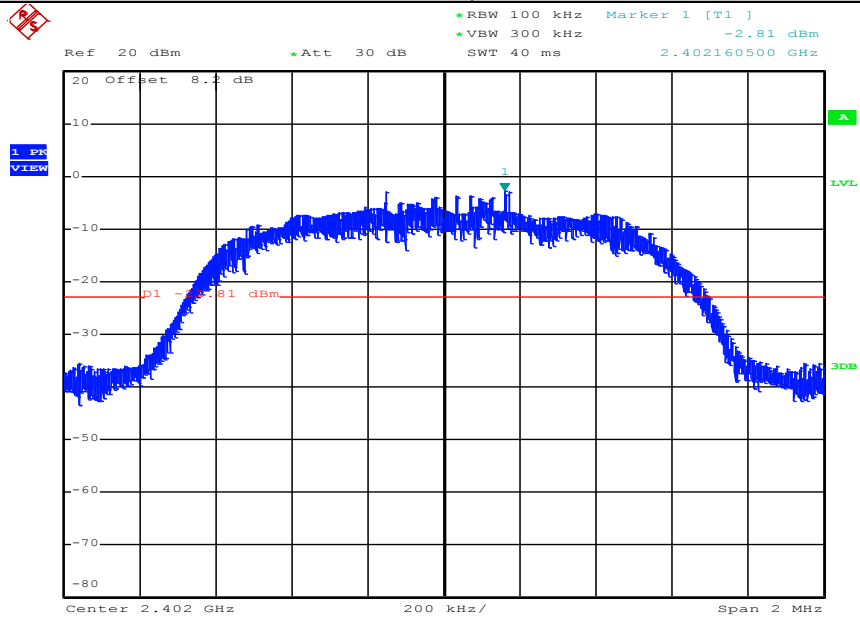
Puw



Date: 14.AUG.2019 19:30:26

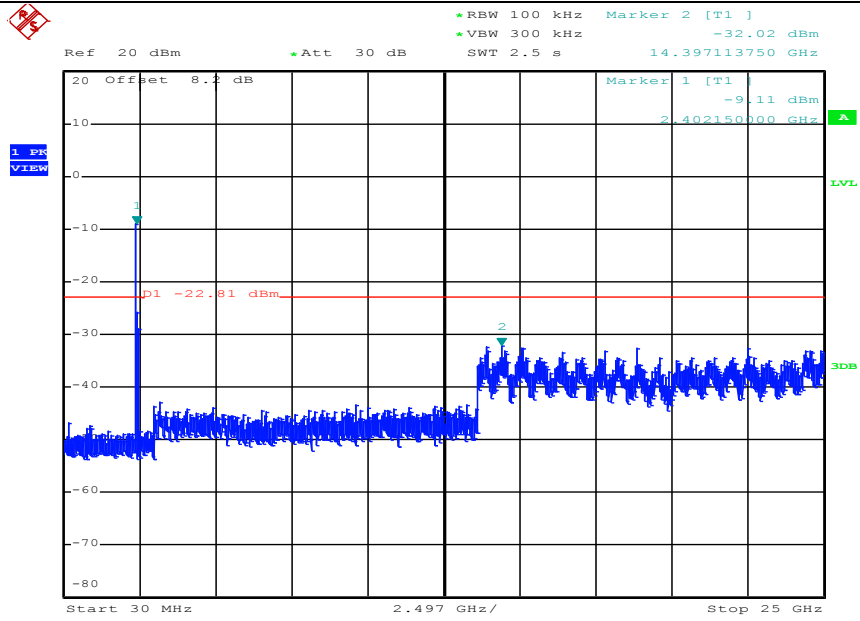
8DPSK_LCH_Graphs

Pref



Date: 14.AUG.2019 19:32:47

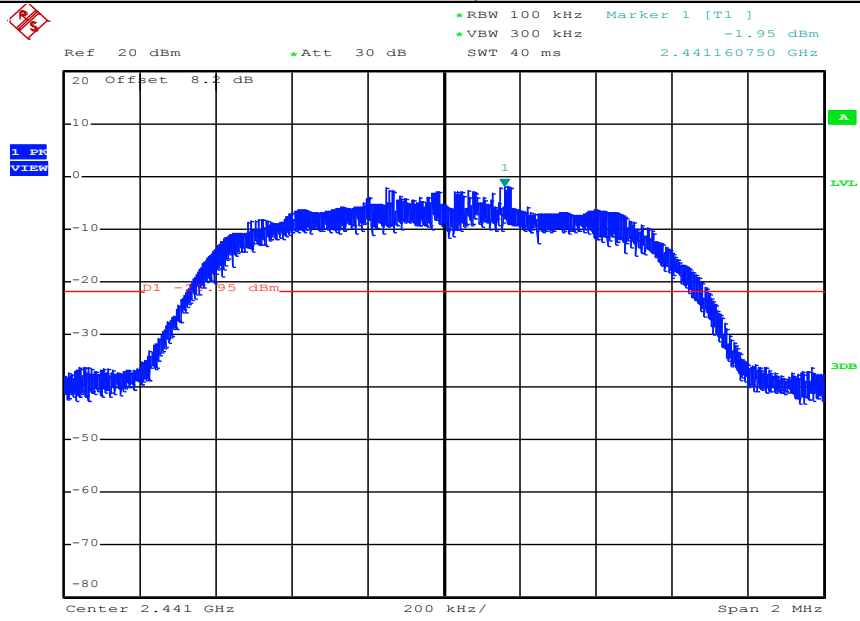
Puw



Date: 14.AUG.2019 19:33:01

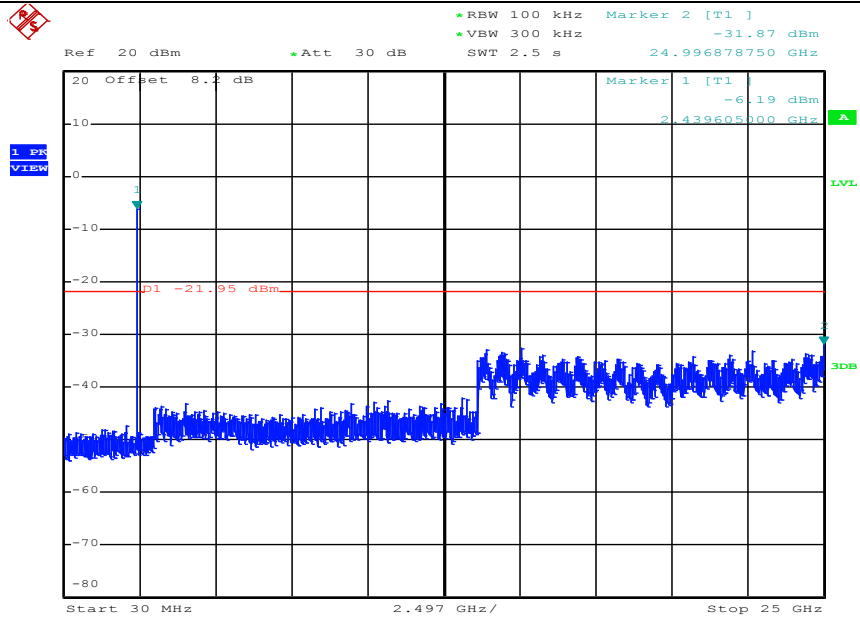
8DPSK_MCH_Graphs

Pref



Date: 14.AUG.2019 19:34:54

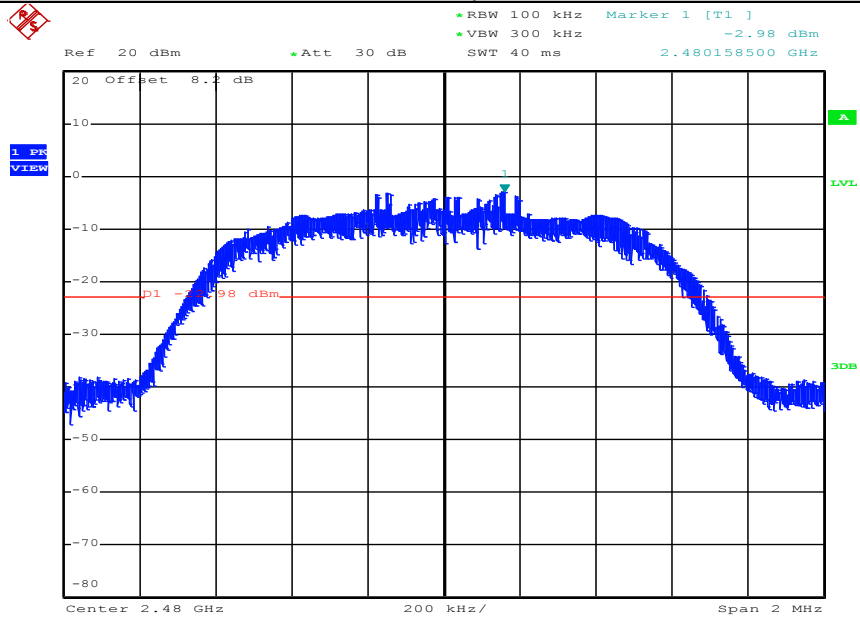
Puw



Date: 14.AUG.2019 19:35:09

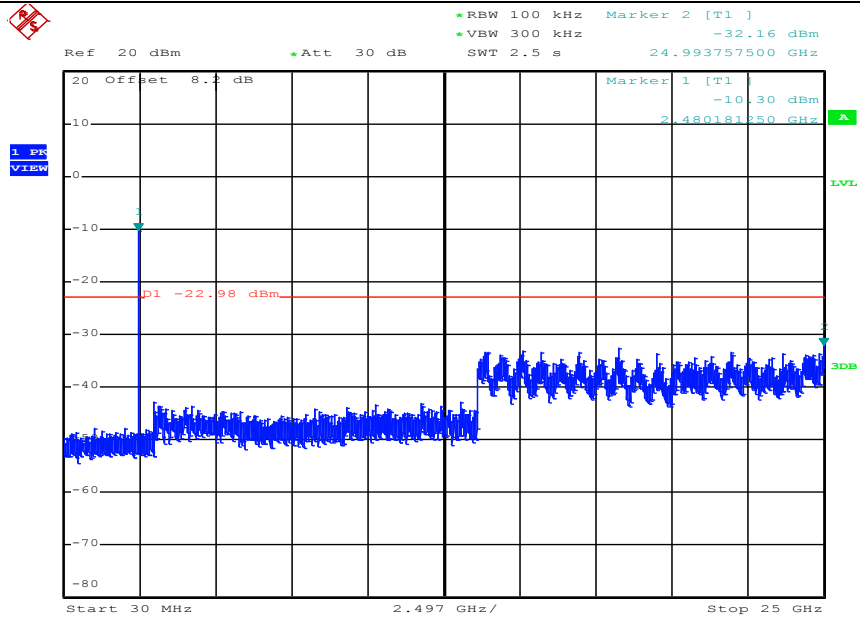
8DPSK_HCH_Graphs

Pref



Date: 14.AUG.2019 19:37:40

Puw



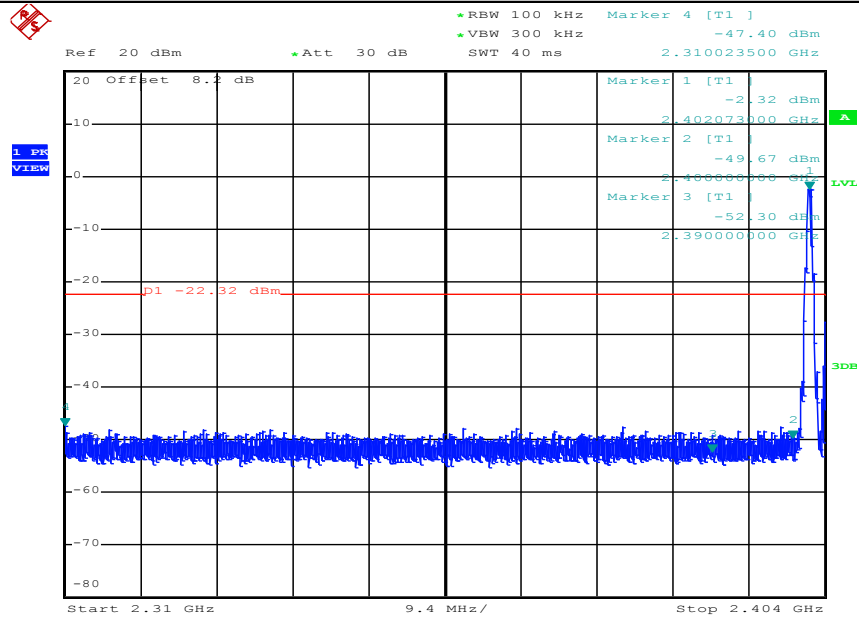
Date: 14.AUG.2019 19:37:54

A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.320	Off	-47.398	-22.32	PASS
			-0.480	On	-47.355	-20.48	PASS
	HCH	2480	-1.790	Off	-47.261	-21.79	PASS
			-0.080	On	-47.126	-20.08	PASS
$\pi/4$ DQPSK	LCH	2402	-3.780	Off	-47.321	-23.78	PASS
			-1.660	On	-46.959	-21.66	PASS
	HCH	2480	-3.470	Off	-47.001	-23.47	PASS
			-1.310	On	-46.788	-21.31	PASS
8DPSK	LCH	2402	-3.770	Off	-47.525	-23.77	PASS
			-1.080	On	-46.817	-21.08	PASS
	HCH	2480	-3.000	Off	-47.001	-23	PASS
			-1.600	On	-46.652	-21.6	PASS

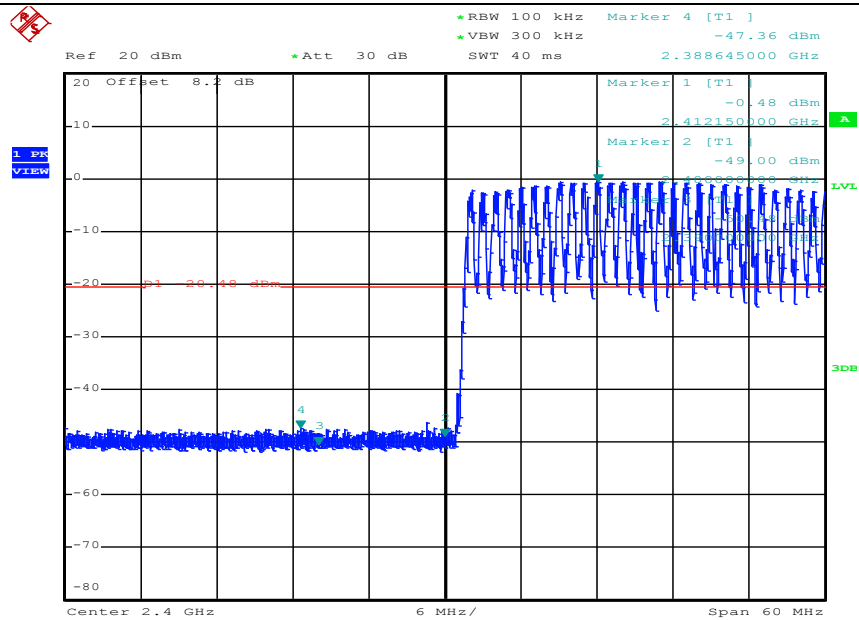
Test Graphs

GFSK/LCH/No Hop



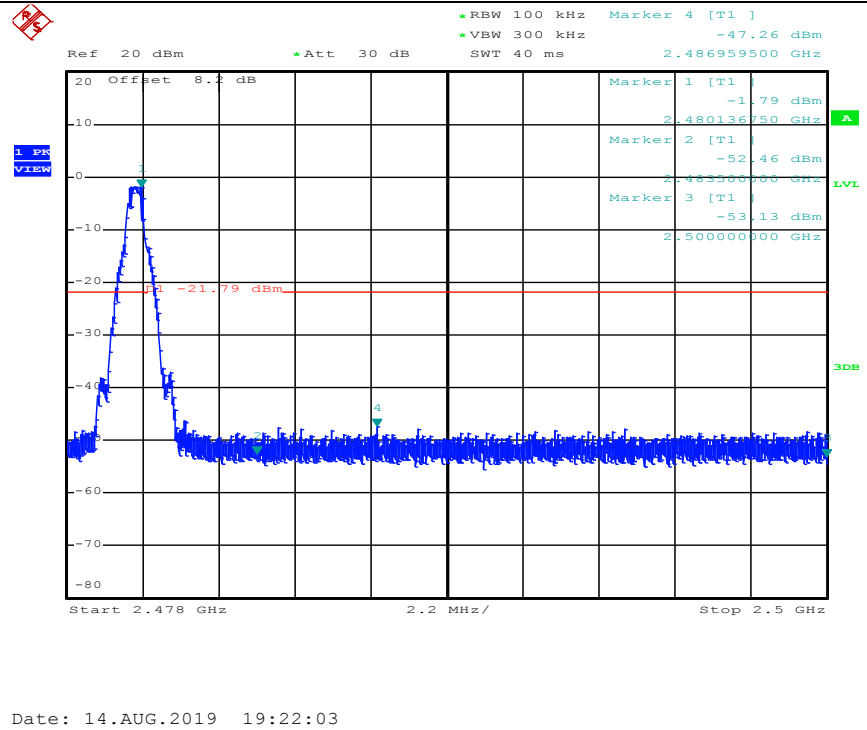
Date: 14.AUG.2019 19:17:51

GFSK/LCH/Hop

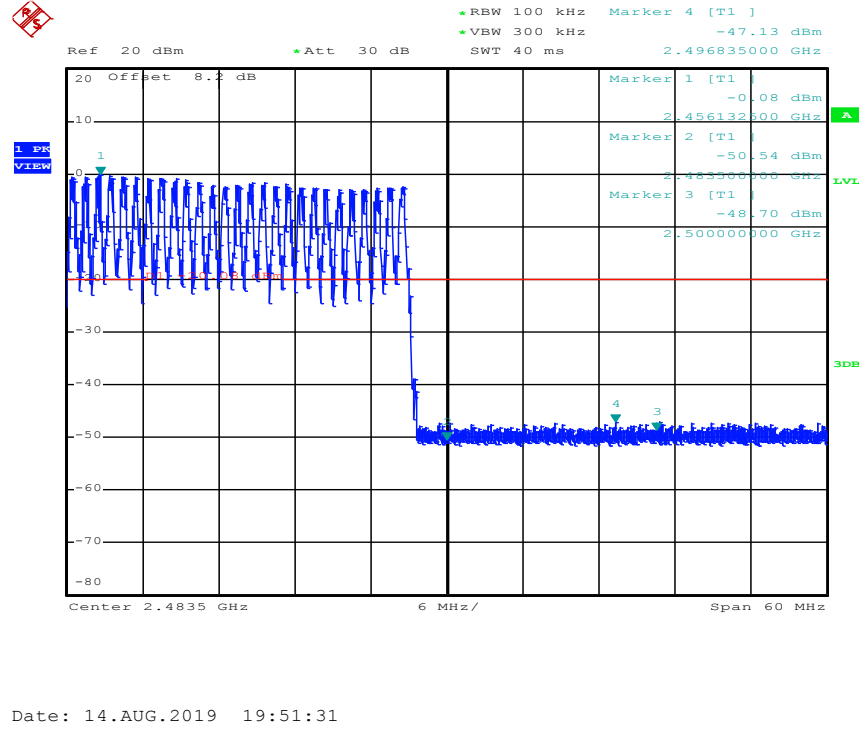


Date: 14.AUG.2019 19:48:57

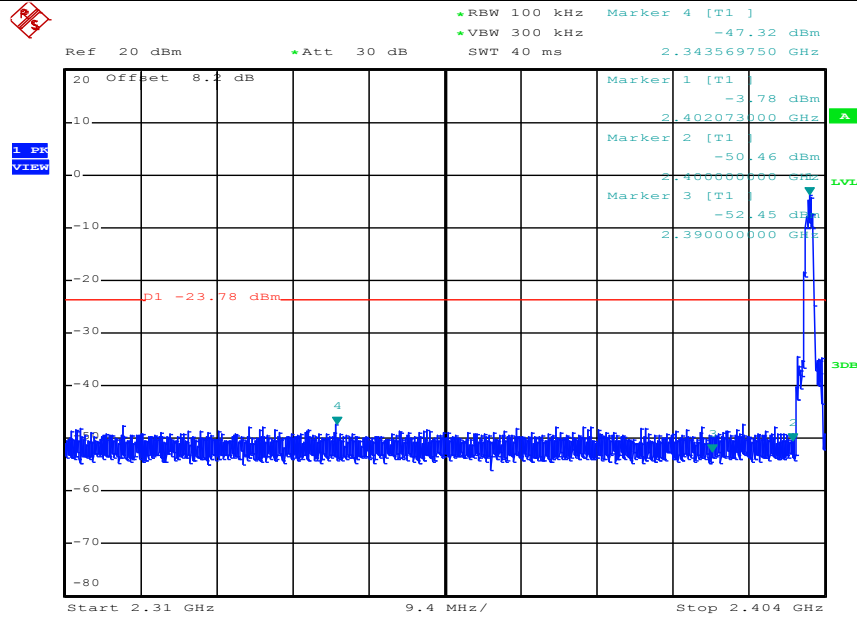
GFSK/HCH/No Hop



GFSK/HCH/Hop

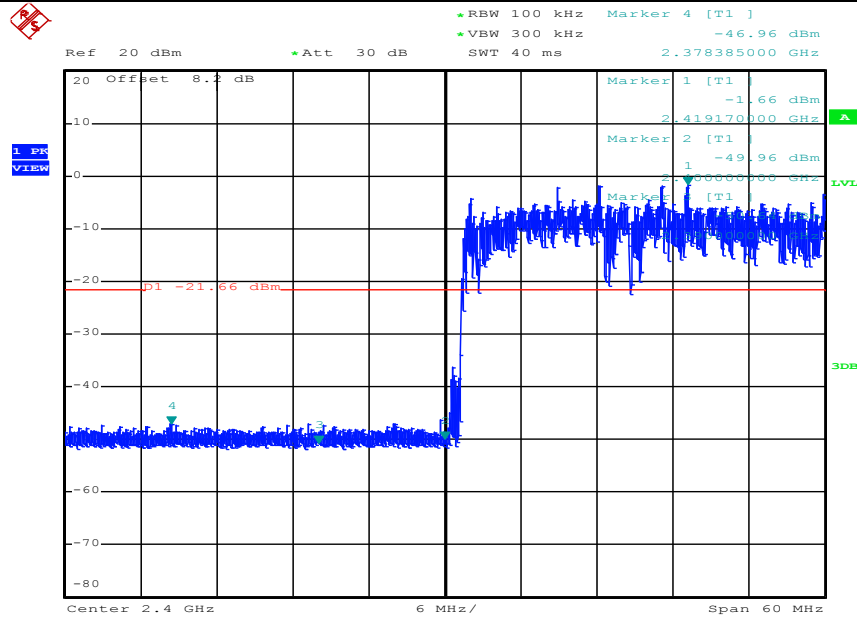


$\pi/4$ DQPSK/LCH/No
Hop



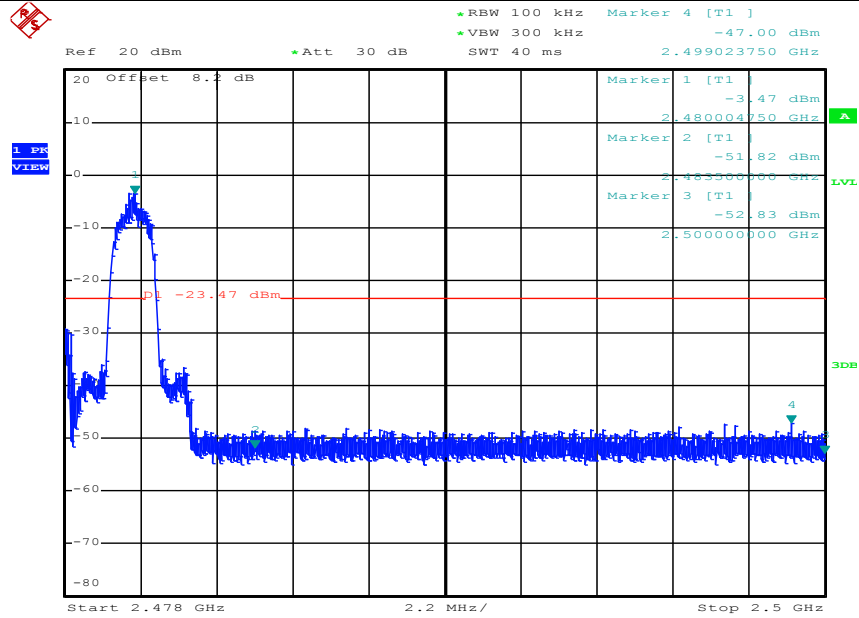
Date: 14.AUG.2019 19:25:48

$\pi/4$ DQPSK/LCH/Hop



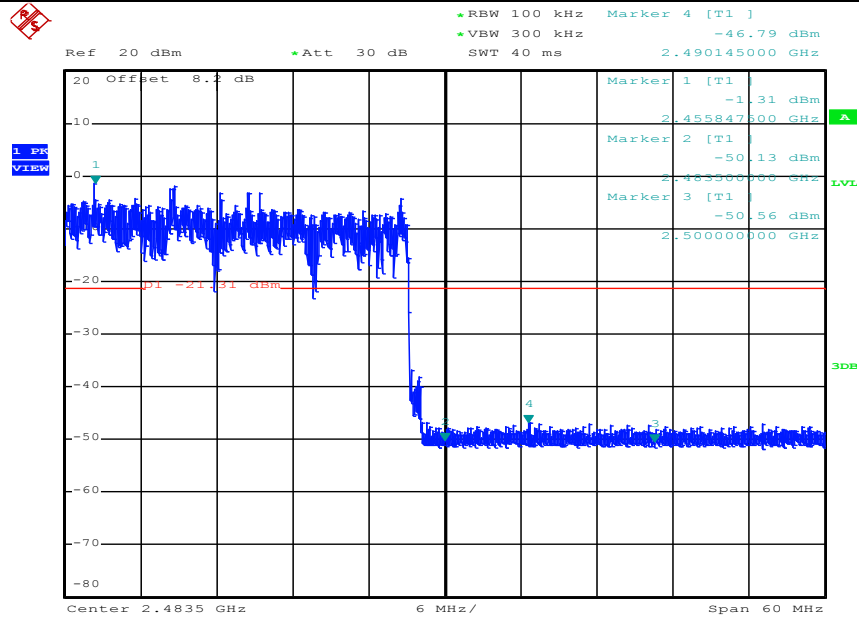
Date: 14.AUG.2019 19:56:07

π /4DQPSK/HCH/No
Hop



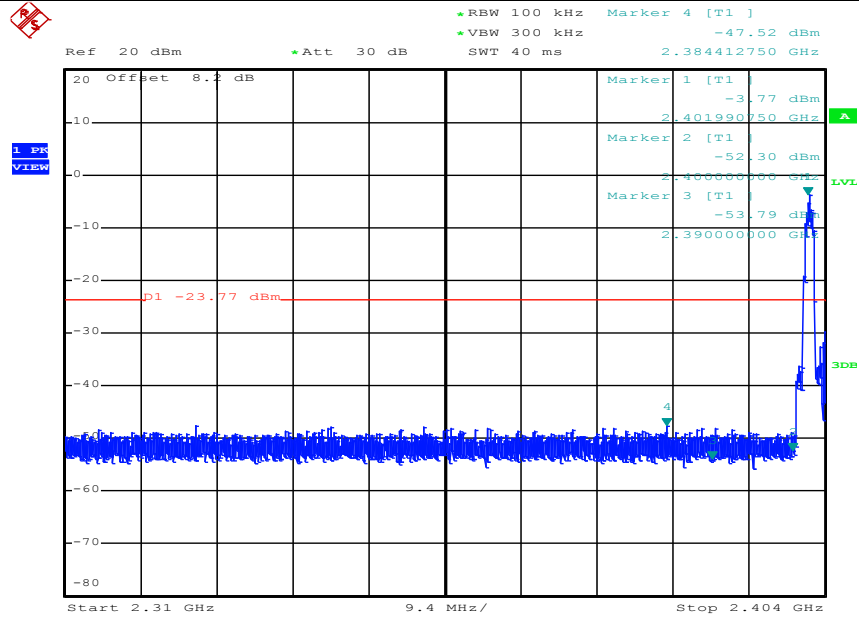
Date: 14.AUG.2019 19:29:58

π /4DQPSK/HCH/Hop



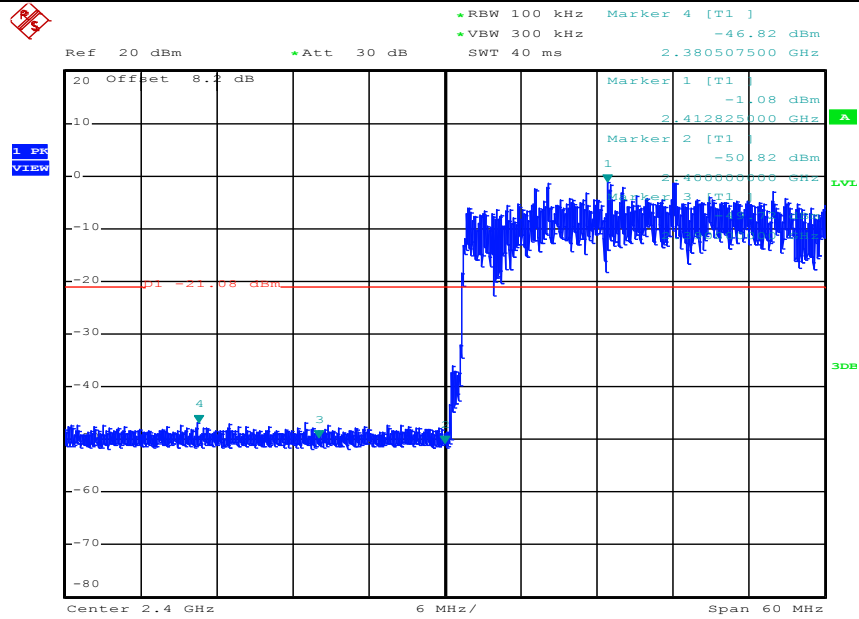
Date: 14.AUG.2019 20:26:28

8DPSK/LCH/No Hop



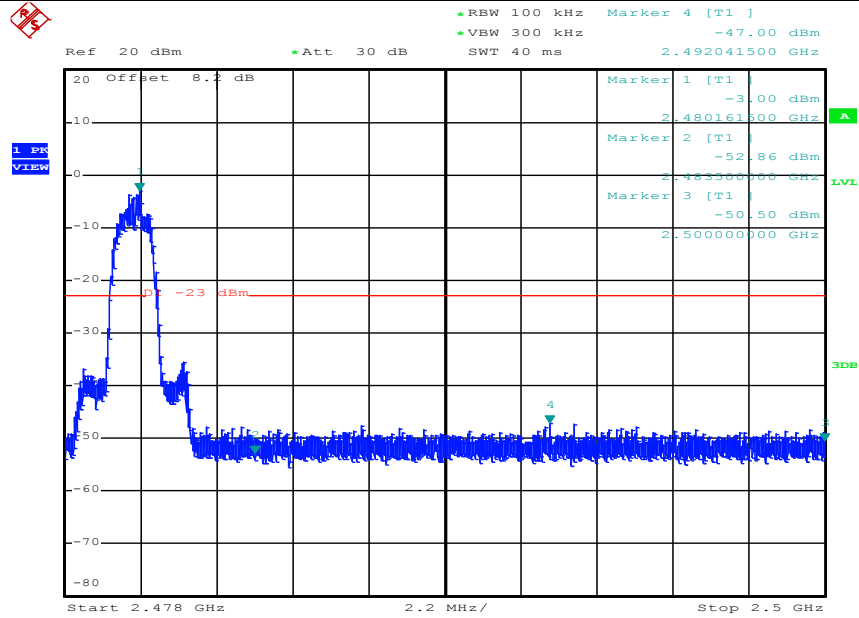
Date: 14.AUG.2019 19:32:34

8DPSK/LCH/Hop



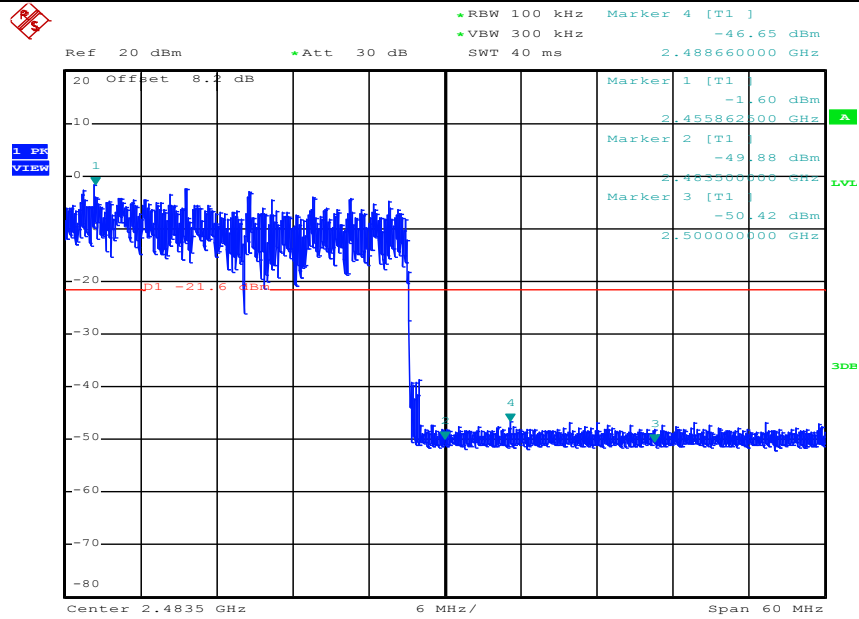
Date: 14.AUG.2019 20:15:03

8DPSK/HCH/No Hop



Date: 14.AUG.2019 19:37:27

8DPSK/HCH/Hop

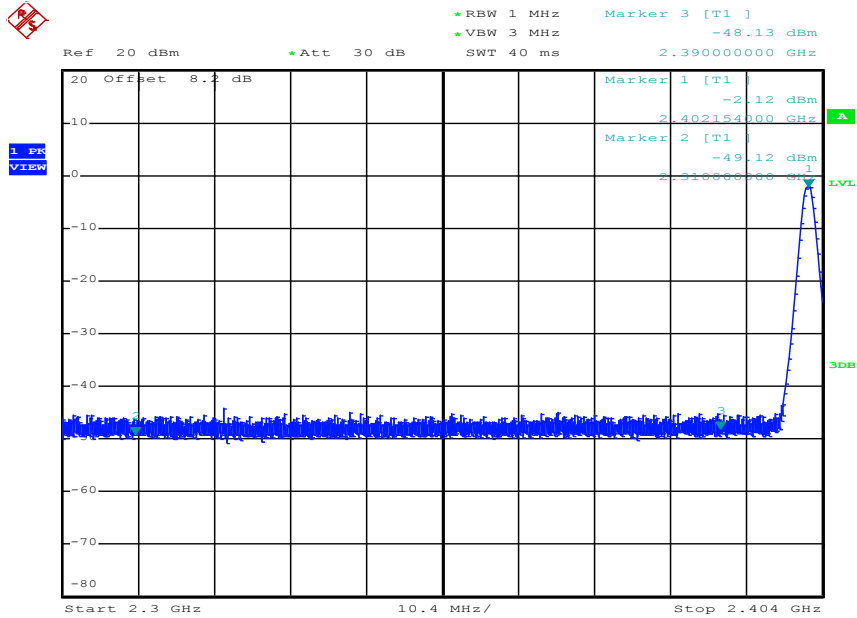


Date: 14.AUG.2019 20:19:25

A.8 Restrict-band band-edge measurements

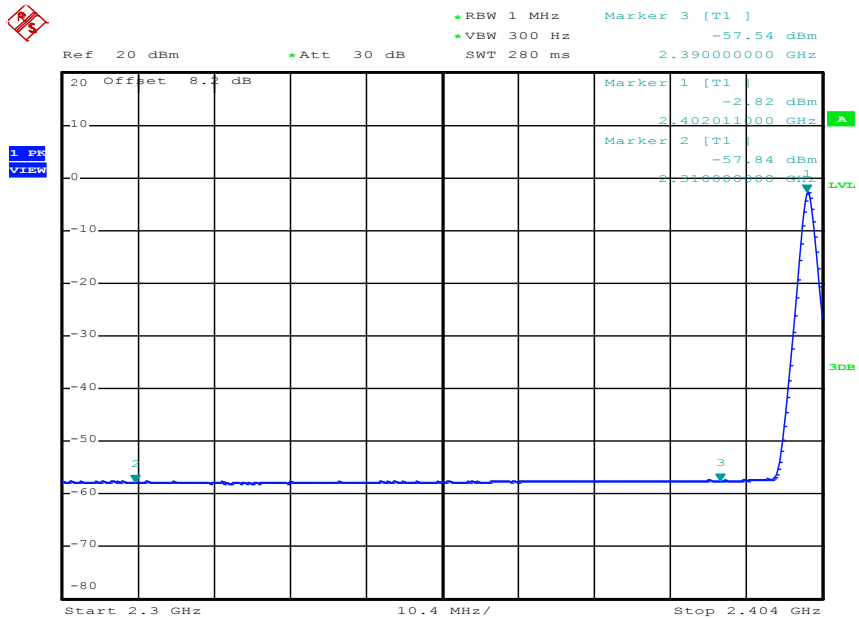
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-49.12	2.0	0	46.14	PEAK	74	PASS
	Off	2310.0	-57.84	2.0	0	37.42	AV	54	PASS
	Off	2390.0	-48.13	2.0	0	47.13	PEAK	74	PASS
	Off	2390.0	-57.54	2.0	0	37.72	AV	54	PASS
	Off	2483.5	-40.33	2.0	0	54.93	PEAK	74	PASS
	Off	2483.5	-44.60	2.0	0	50.66	AV	54	PASS
	Off	2500.0	-48.42	2.0	0	46.84	PEAK	74	PASS
	Off	2500.0	-58.03	2.0	0	37.23	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-47.78	2.0	0	47.48	PEAK	74	PASS
	Off	2310.0	-57.81	2.0	0	37.45	AV	54	PASS
	Off	2390.0	-48.15	2.0	0	47.11	PEAK	74	PASS
	Off	2390.0	-57.57	2.0	0	37.69	AV	54	PASS
	Off	2483.5	-40.84	2.0	0	54.42	PEAK	74	PASS
	Off	2483.5	-46.73	2.0	0	48.53	AV	54	PASS
	Off	2500.0	-47.19	2.0	0	48.07	PEAK	74	PASS
	Off	2500.0	-58.13	2.0	0	37.13	AV	54	PASS
8DPSK	Off	2310.0	-48.27	2.0	0	46.99	PEAK	74	PASS
	Off	2310.0	-57.77	2.0	0	37.49	AV	54	PASS
	Off	2390.0	-48.57	2.0	0	46.69	PEAK	74	PASS
	Off	2390.0	-57.41	2.0	0	37.85	AV	54	PASS
	Off	2483.5	-41.43	2.0	0	53.83	PEAK	74	PASS
	Off	2483.5	-47.22	2.0	0	48.04	AV	54	PASS
	Off	2500.0	-47.57	2.0	0	47.69	PEAK	74	PASS
	Off	2500.0	-58.08	2.0	0	37.18	AV	54	PASS

Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



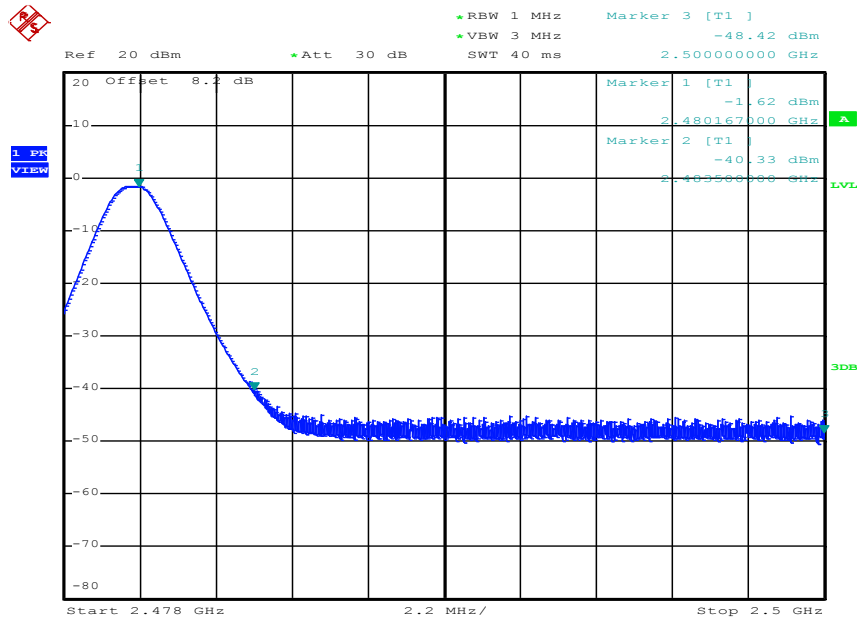
Date: 14.AUG.2019 19:18:37

Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



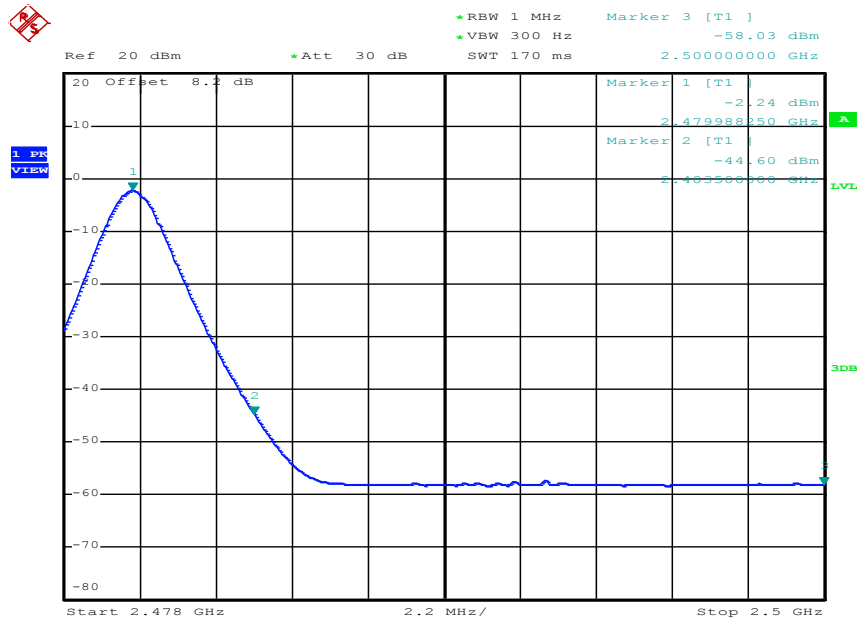
Date: 14.AUG.2019 19:18:51

Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



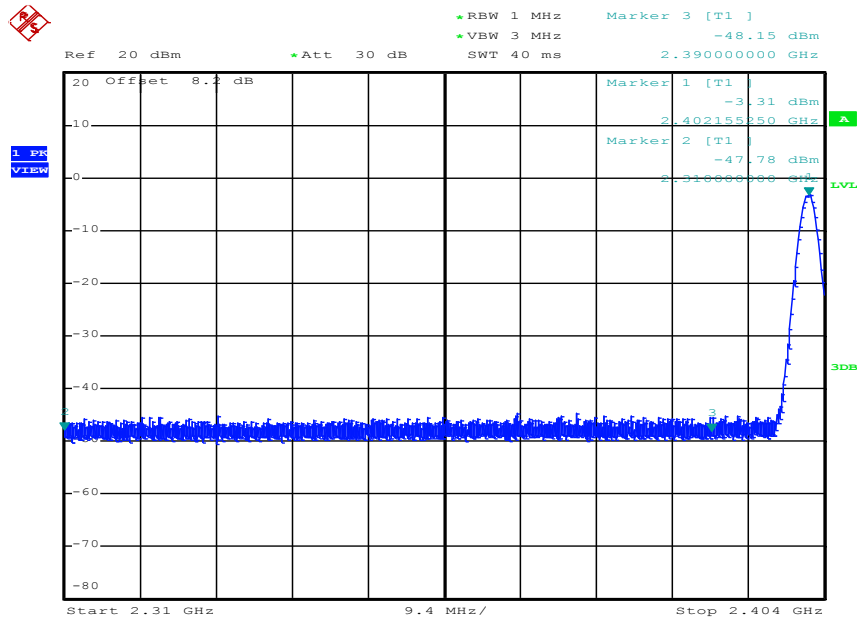
Date: 14.AUG.2019 19:22:49

Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



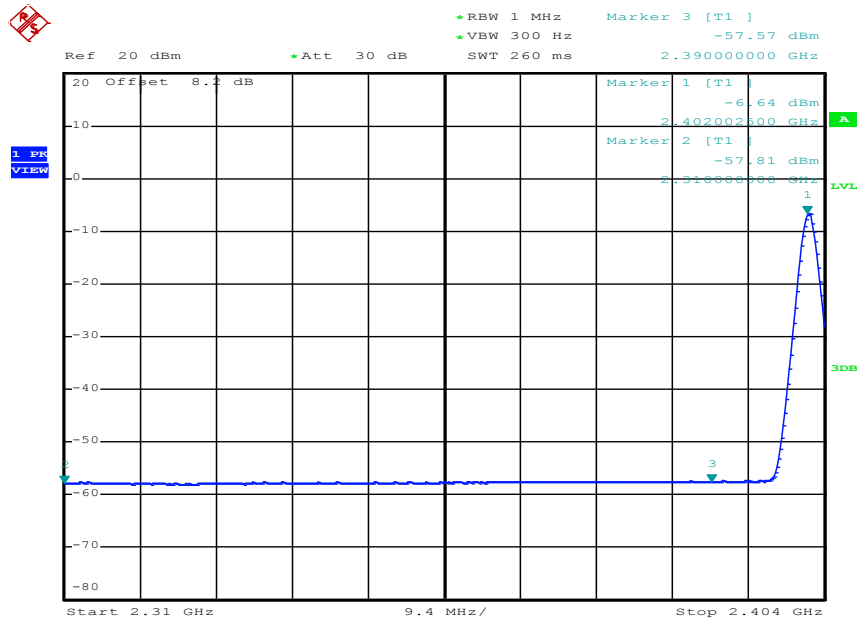
Date: 14.AUG.2019 19:23:02

Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



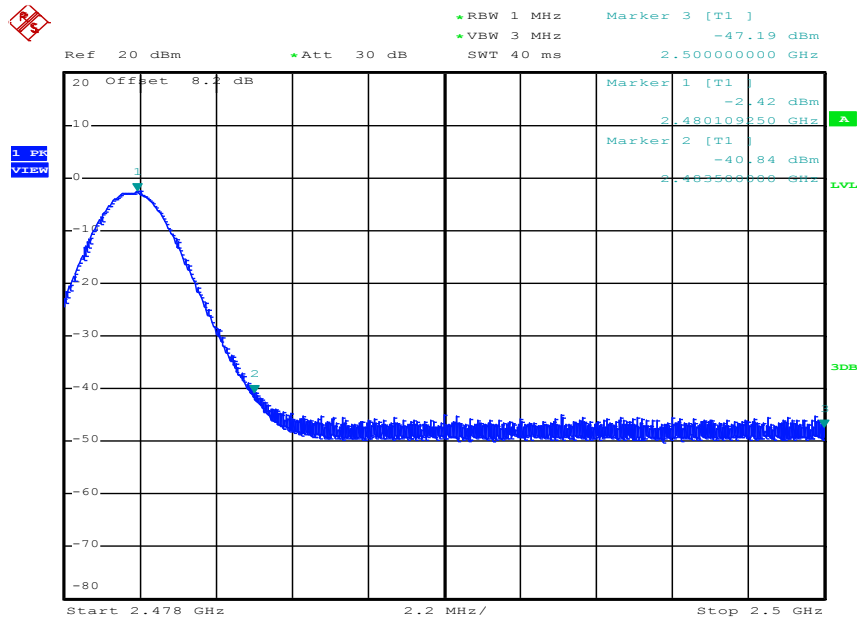
Date: 14.AUG.2019 19:26:34

Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



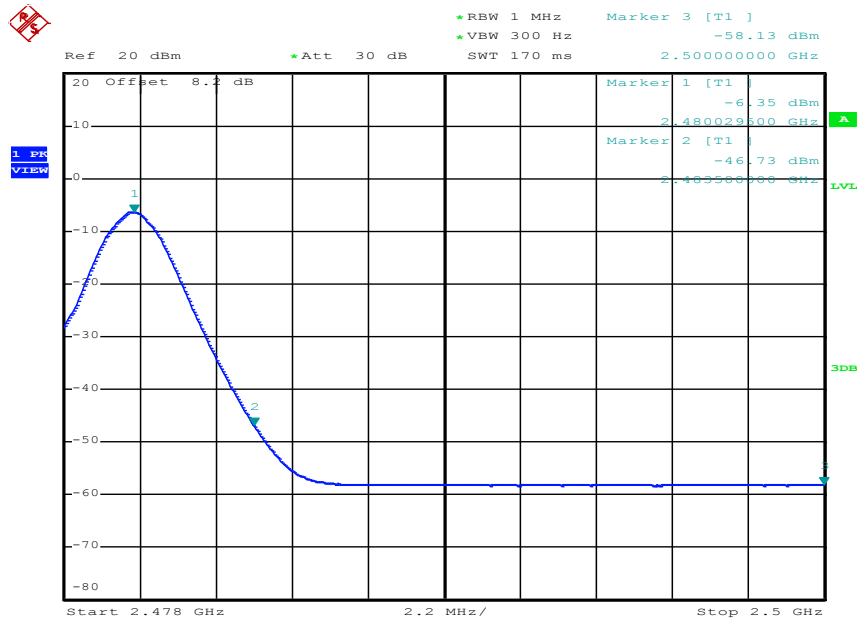
Date: 14.AUG.2019 19:26:47

Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



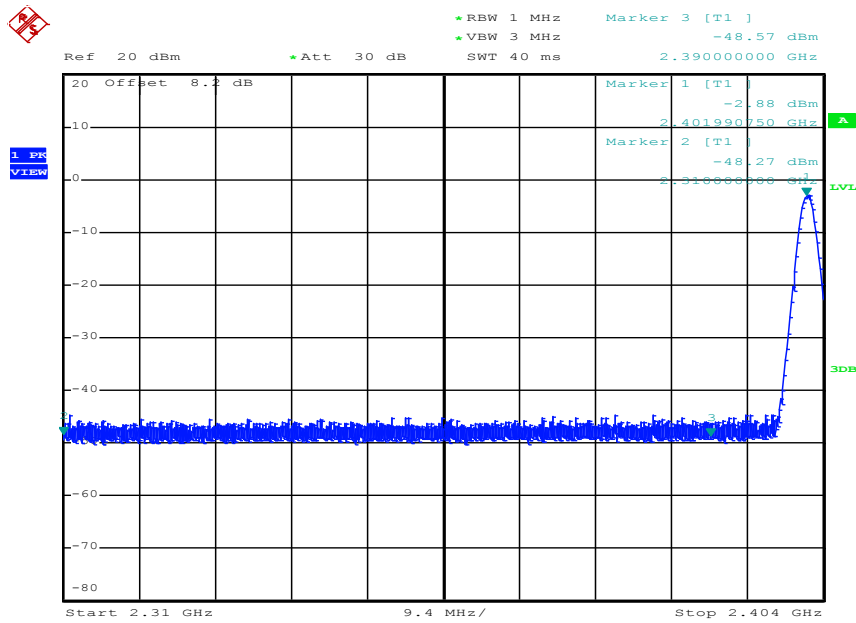
Date: 14.AUG.2019 19:30:44

Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



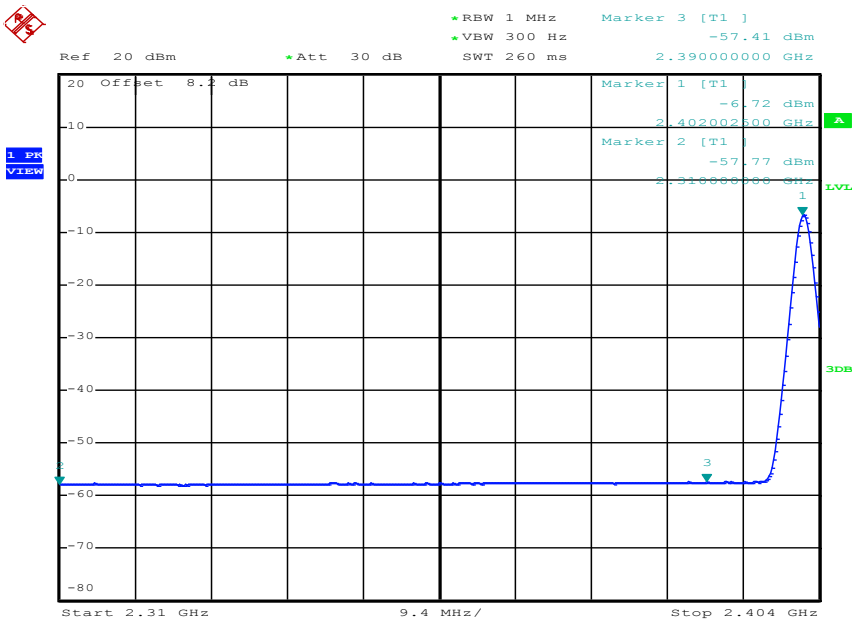
Date: 14.AUG.2019 19:30:57

Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



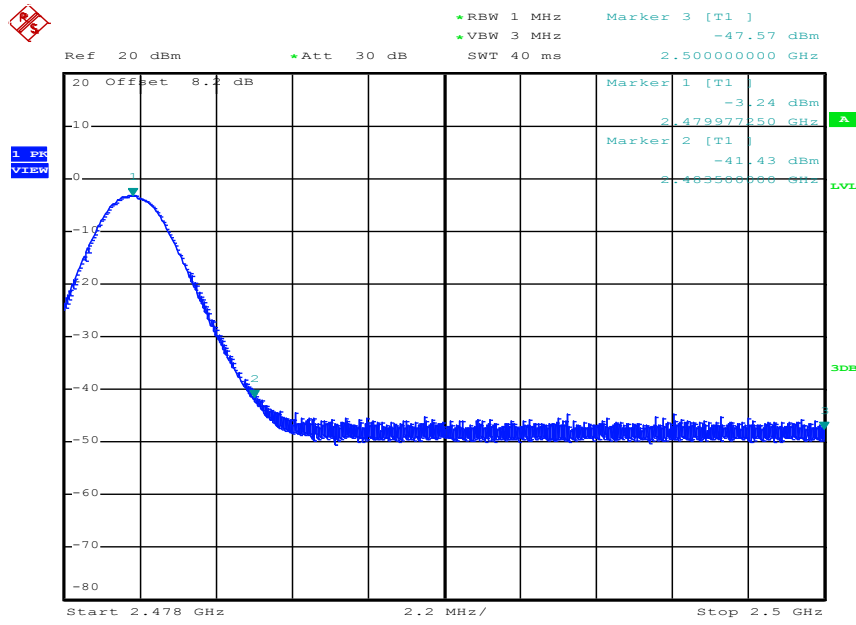
Date: 14.AUG.2019 19:33:20

Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



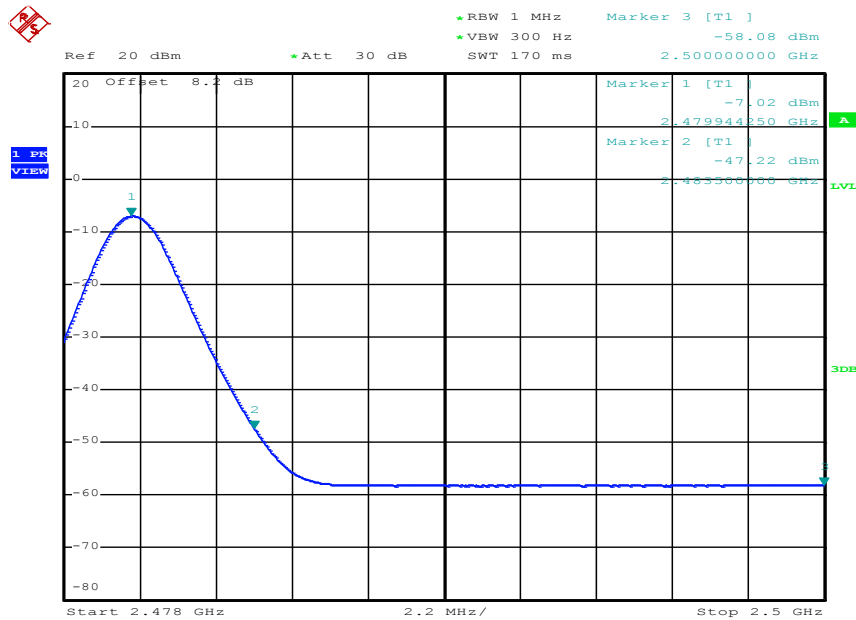
Date: 14.AUG.2019 19:33:33

Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Date: 14.AUG.2019 19:38:13

Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)



Date: 14.AUG.2019 19:38:26