

Appendix A

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

Product Name: Portable Data Collector

Trade Mark: Newland

Test Model: NLS-N7

Environmental Conditions

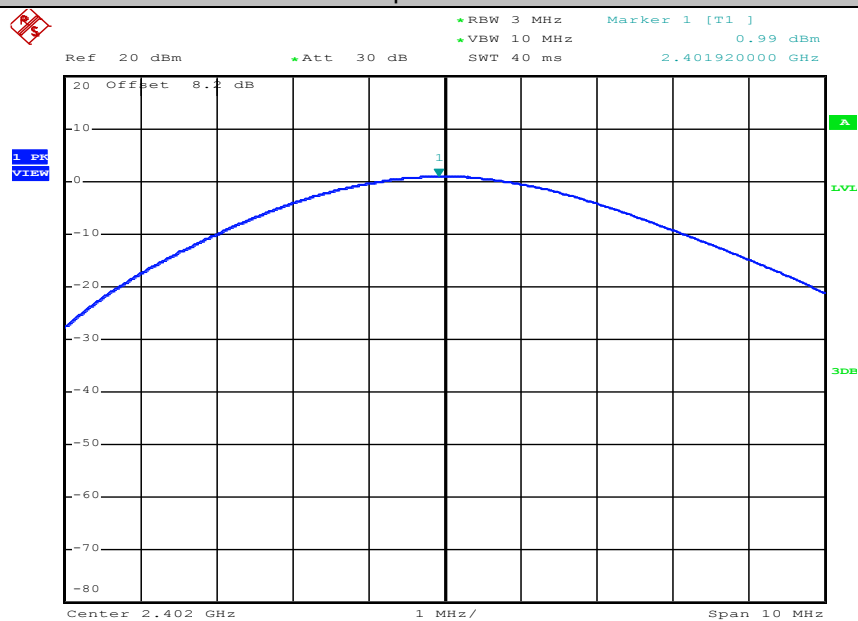
Temperature:	24.7 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	JK ZHOU
Supervised by:	Wang.Chuang

A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.990	30	PASS
	MCH	0.710	30	PASS
	HCH	0.990	30	PASS
$\pi/4$ DQPSK	LCH	0.160	21	PASS
	MCH	-0.140	21	PASS
	HCH	0.440	21	PASS
8DPSK	LCH	0.440	21	PASS
	MCH	-0.140	21	PASS
	HCH	0.440	21	PASS

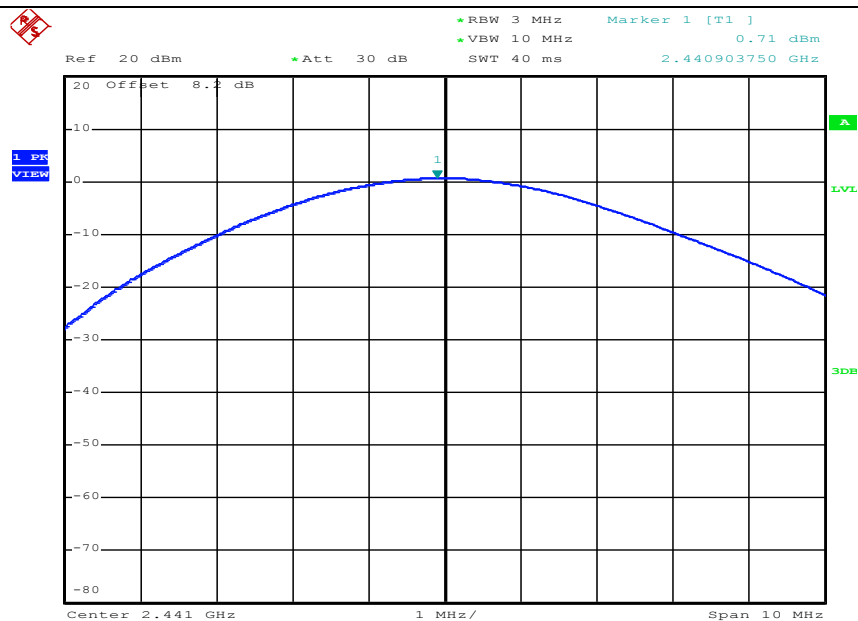
Test Graphs

GFSK/LCH



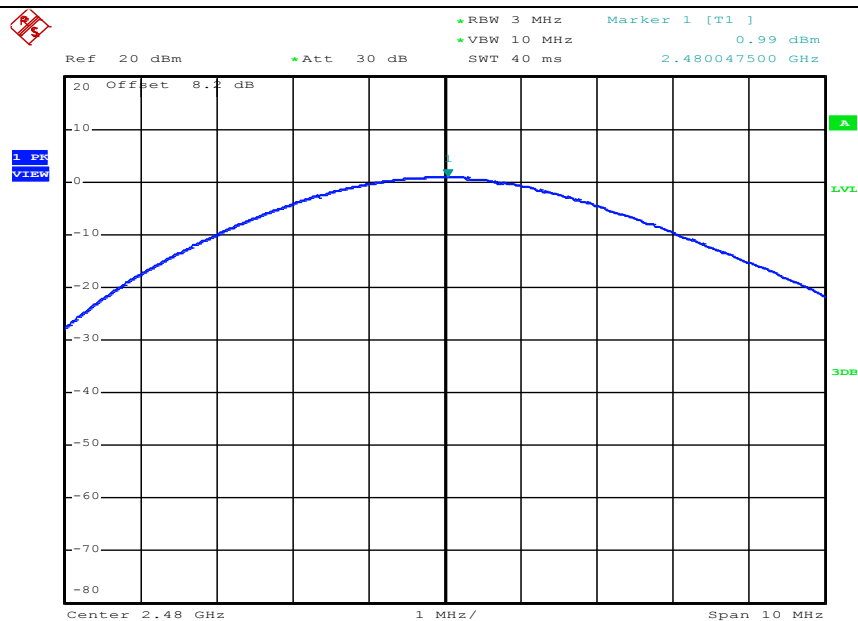
Date: 20.SEP.2019 10:16:24

GFSK/MCH



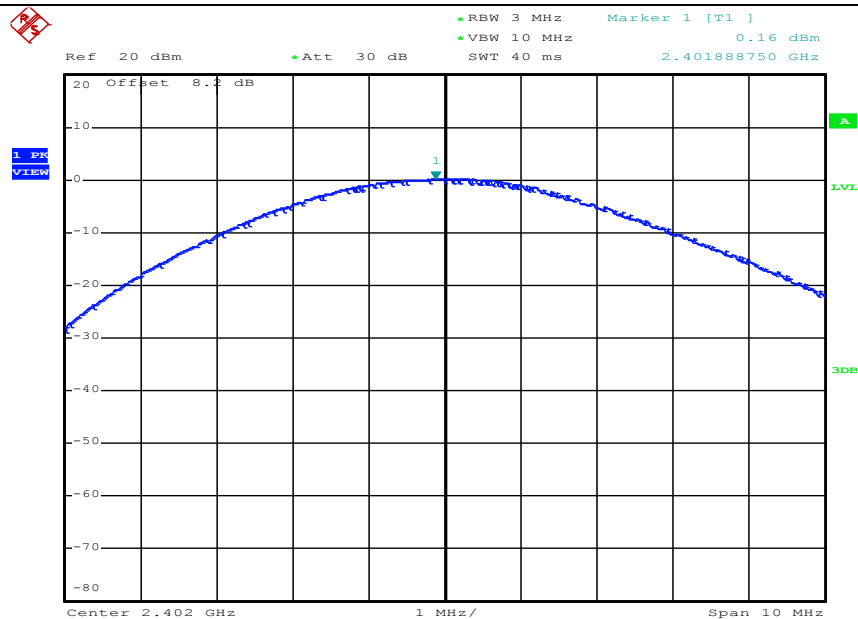
Date: 20.SEP.2019 10:19:01

GFSK/HCH



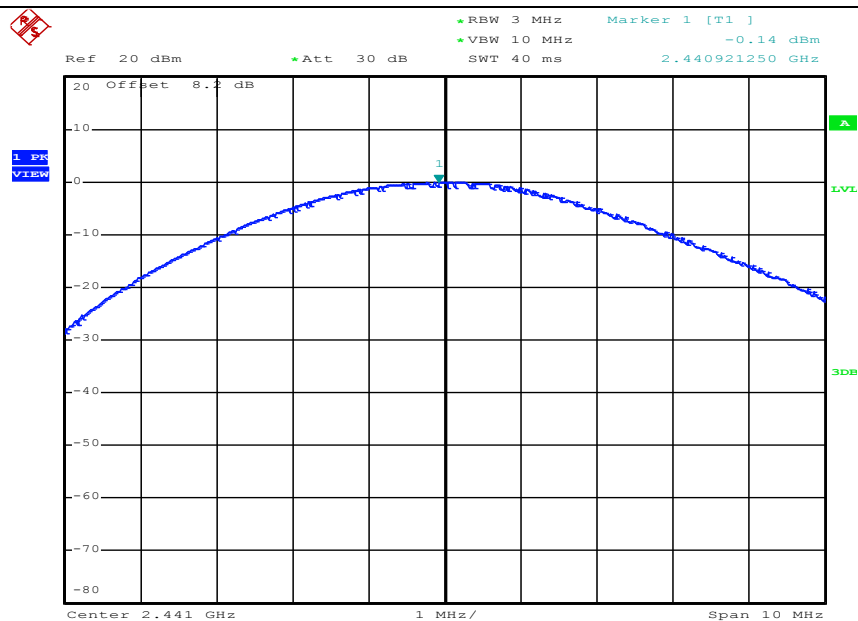
Date: 20.SEP.2019 10:20:52

$\pi/4$ DQPSK/LCH



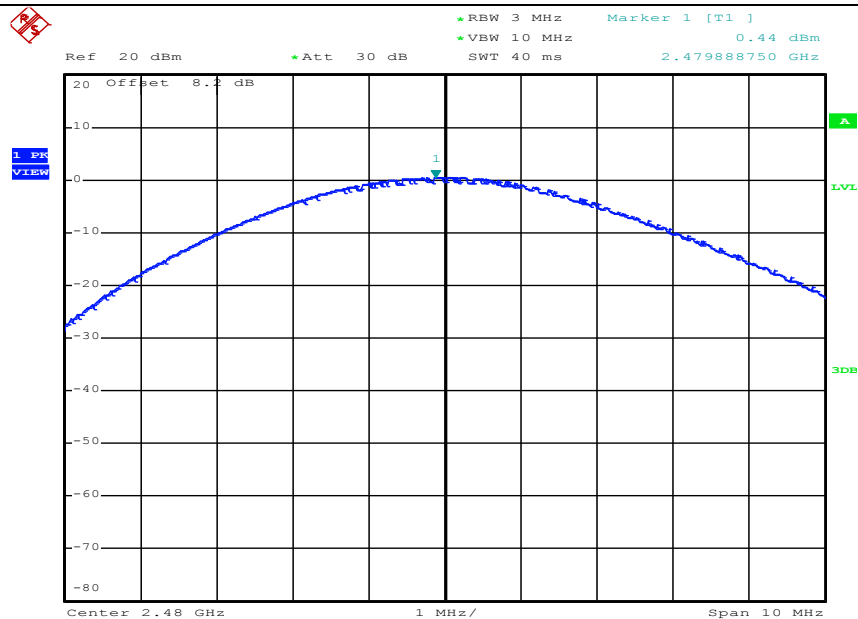
Date: 20.SEP.2019 10:23:25

$\pi/4$ DQPSK/MCH



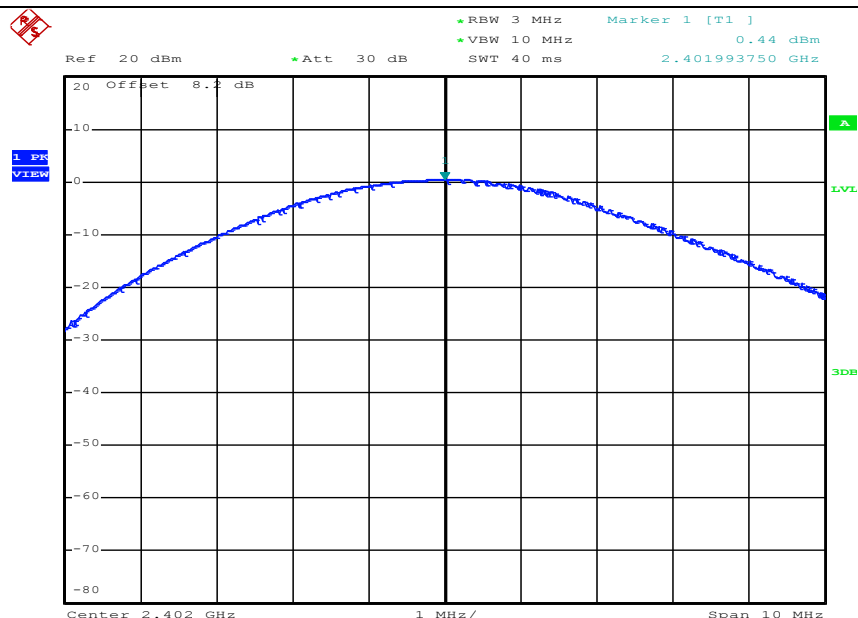
Date: 20.SEP.2019 10:26:05

$\pi/4$ DQPSK/HCH



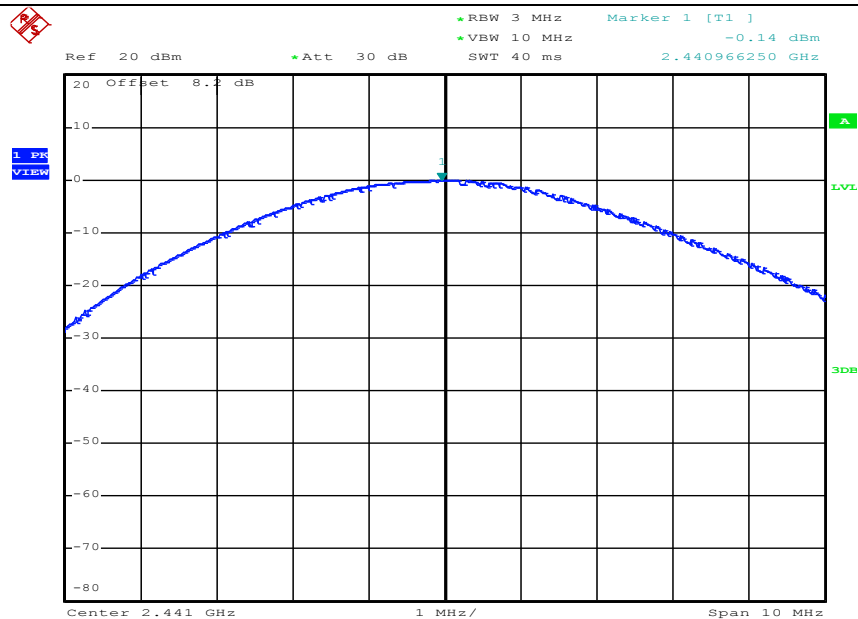
Date: 20.SEP.2019 10:28:52

8DPSK/LCH



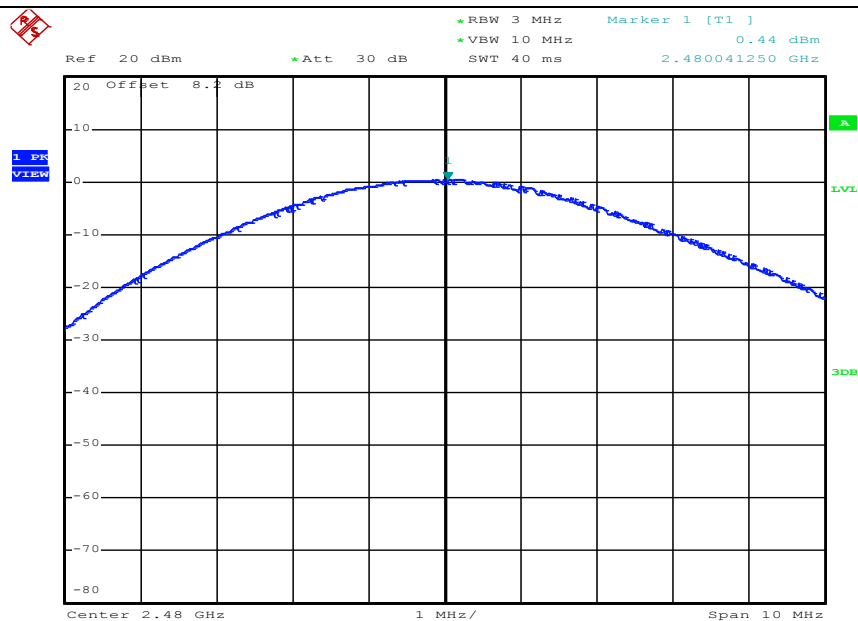
Date: 20.SEP.2019 10:33:05

8DPSK/MCH



Date: 20.SEP.2019 10:36:05

8DPSK/HCH



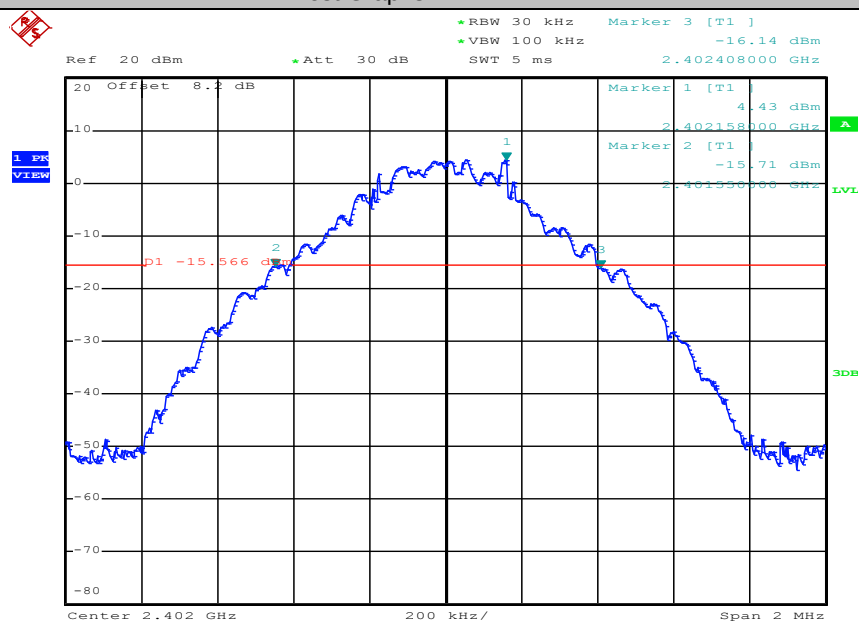
Date: 20.SEP.2019 10:37:44

A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.858	Not Specified	PASS
	MCH	0.858	Not Specified	PASS
	HCH	0.862	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.276	Not Specified	PASS
	MCH	1.276	Not Specified	PASS
	HCH	1.270	Not Specified	PASS
8DPSK	LCH	1.260	Not Specified	PASS
	MCH	1.262	Not Specified	PASS
	HCH	1.258	Not Specified	PASS

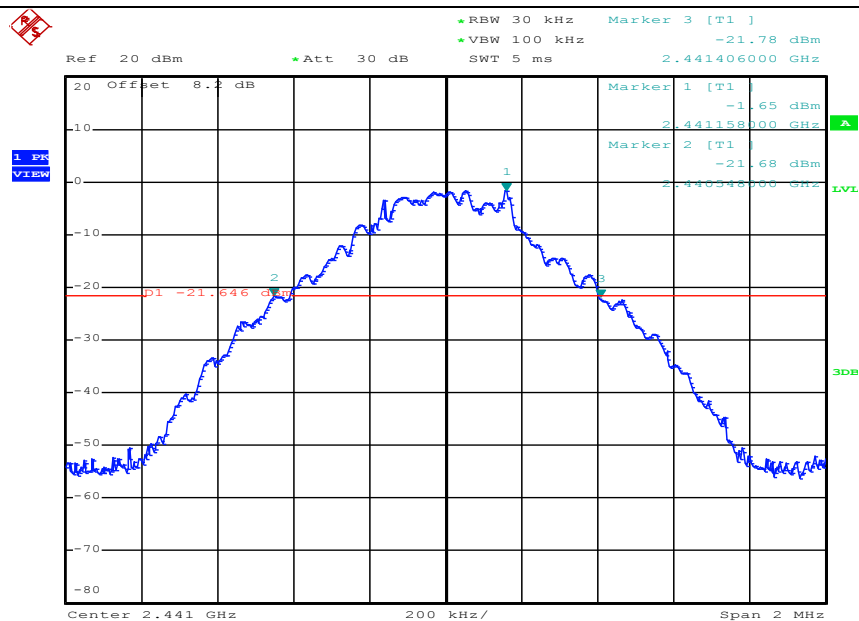
Test Graphs

GFSK/LCH



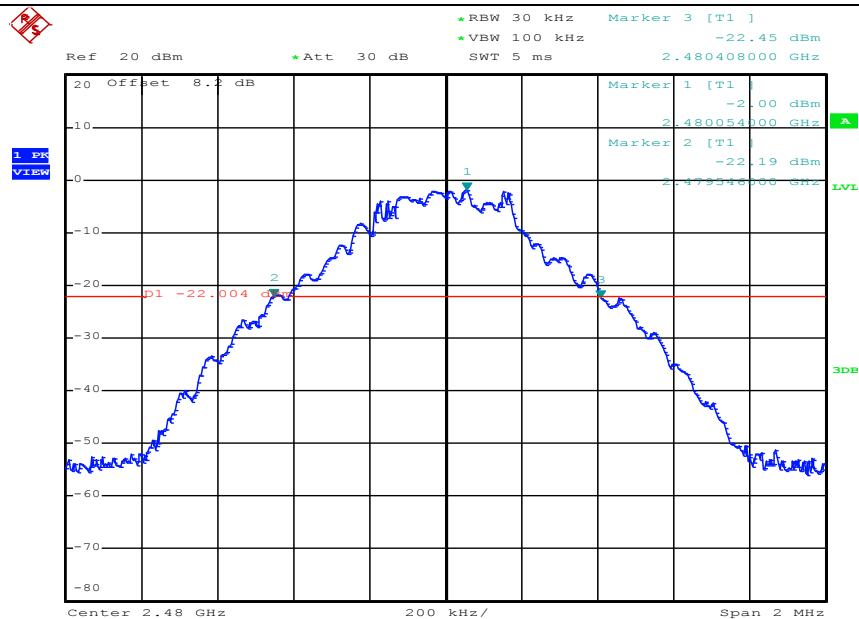
Date: 20.SEP.2019 10:07:50

GFSK/MCH



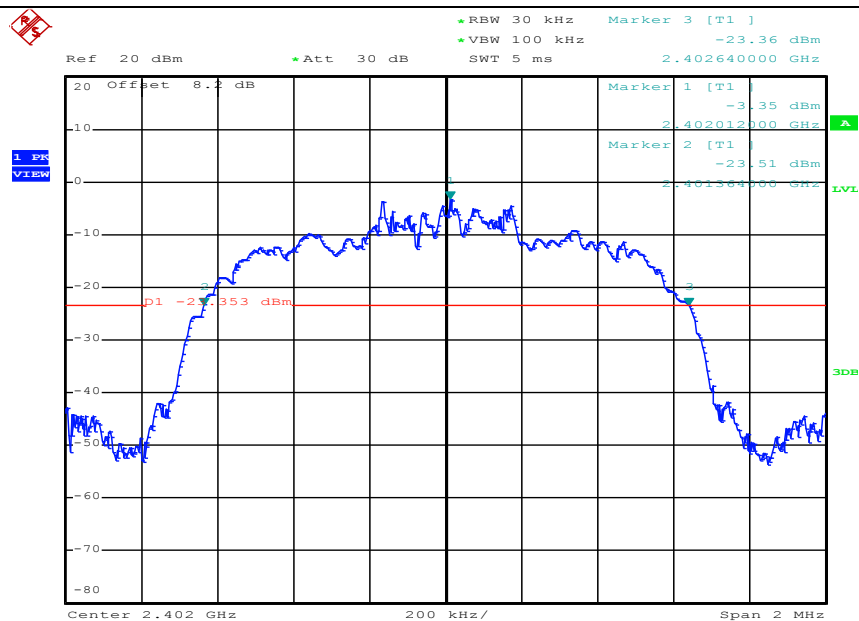
Date: 20.SEP.2019 10:18:25

GFSK/HCH



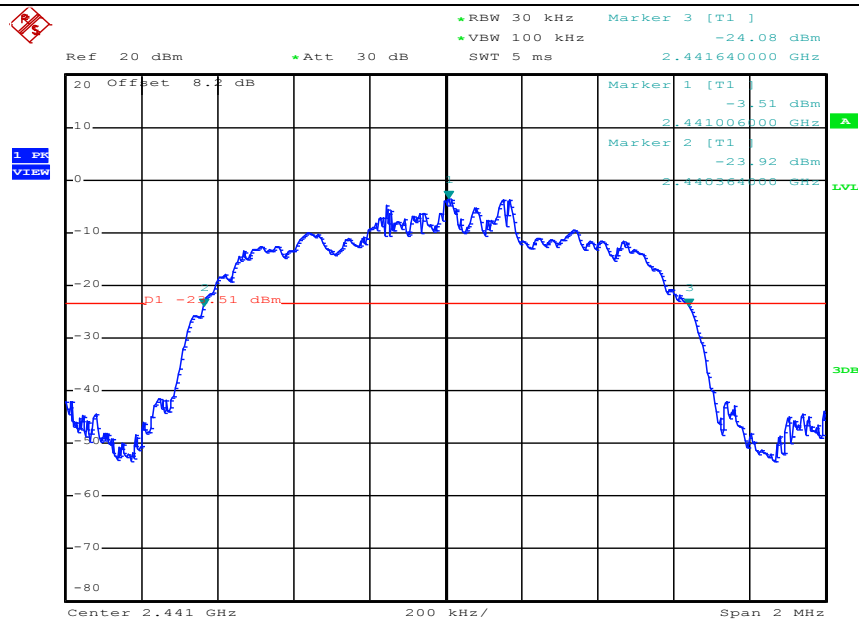
Date: 20.SEP.2019 10:20:16

$\pi/4$ DQPSK/LCH



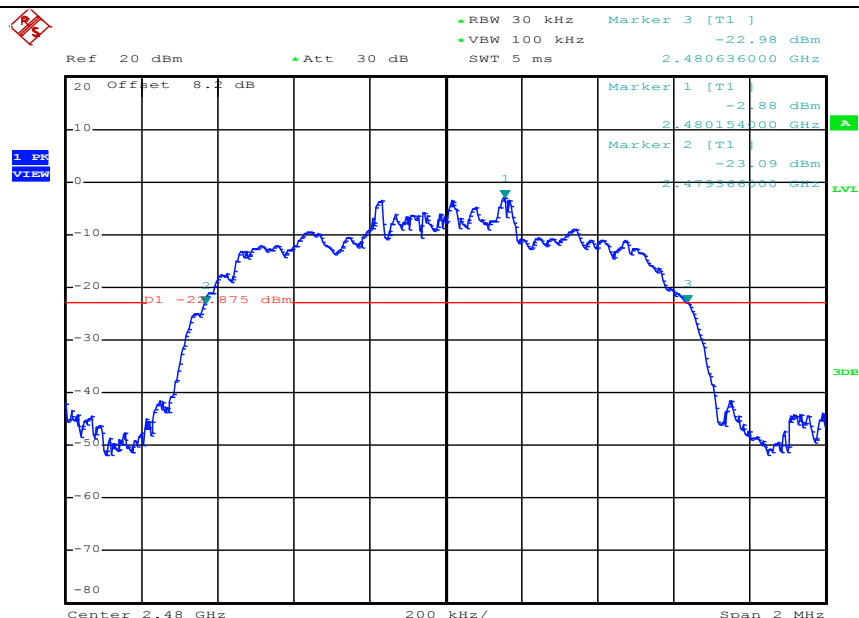
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$\pi/4$ DQPSK/MCH



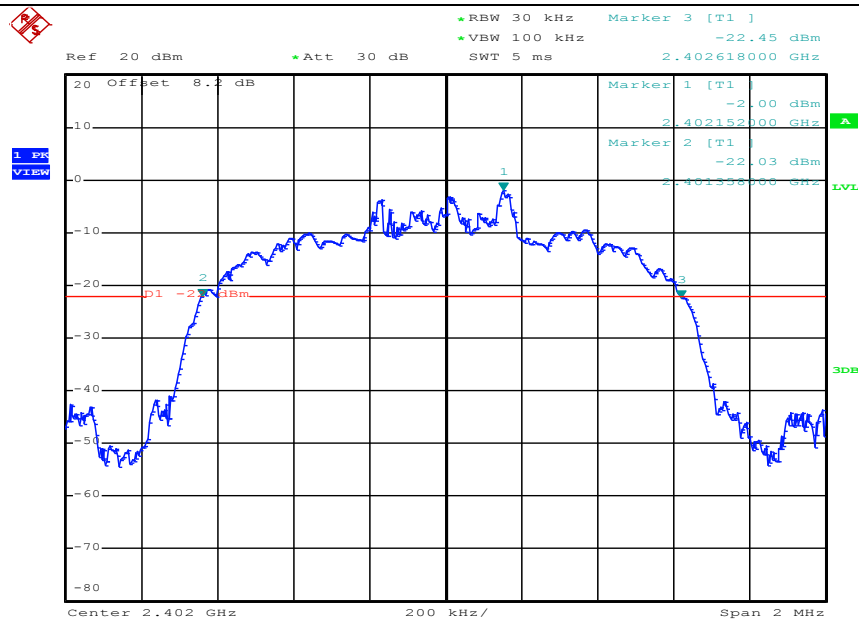
Date: 20.SEP.2019 10:25:29

$\pi/4$ DQPSK/HCH



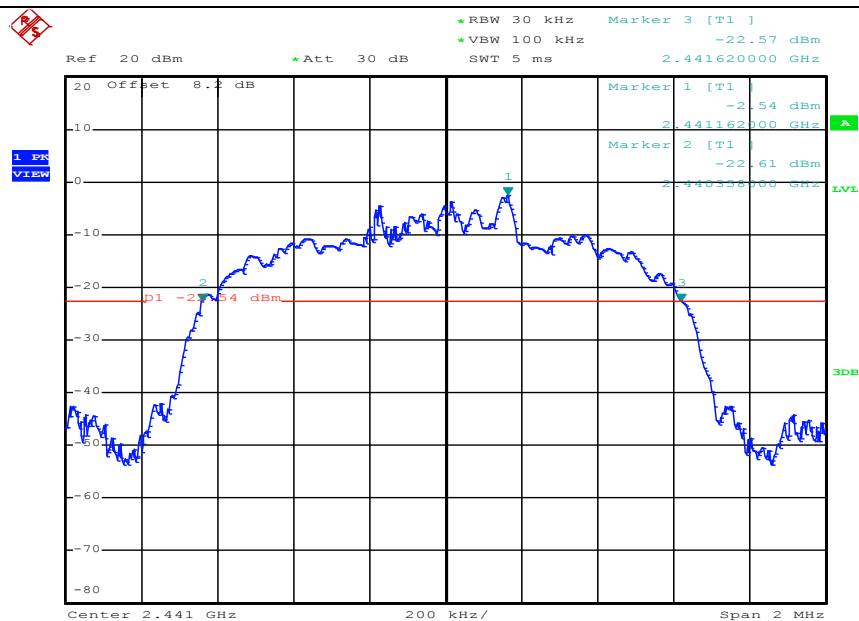
Date: 20.SEP.2019 10:28:17

8DPSK/LCH



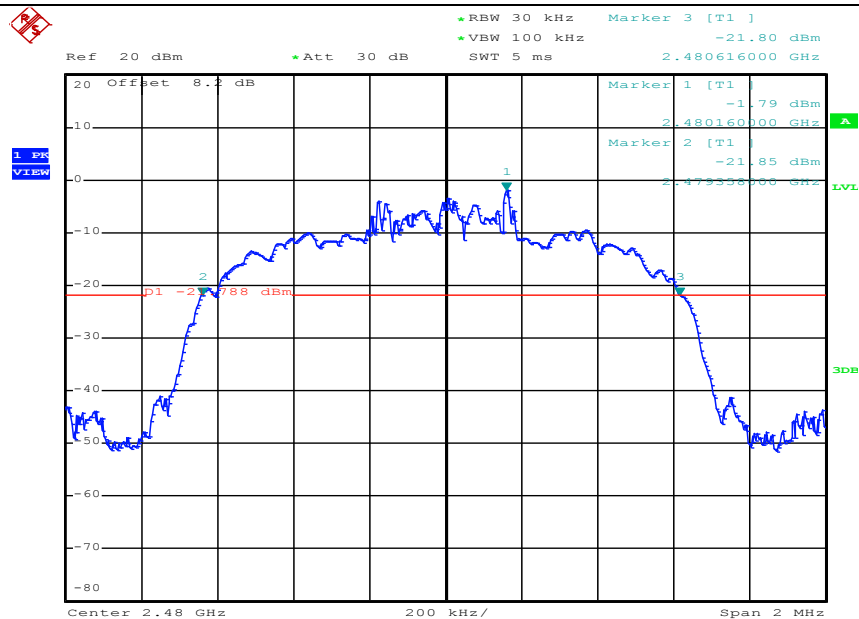
Date: 20.SEP.2019 10:32:30

8DPSK/MCH



Date: 20.SEP.2019 10:35:29

8DPSK/HCH



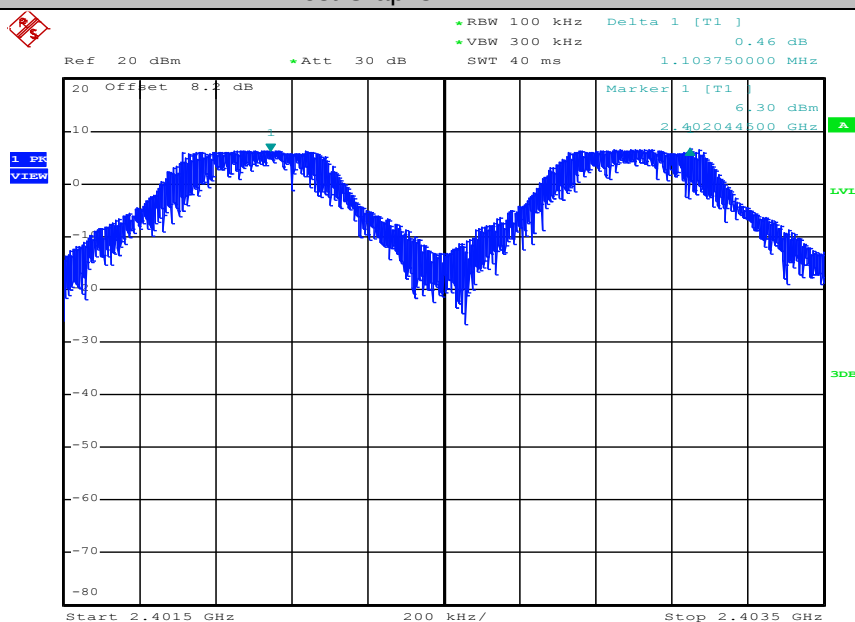
Date: 20.SEP.2019 10:37:09

A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.104	0.86	PASS
	MCH	1.016	0.86	PASS
	HCH	1.146	0.86	PASS
$\pi/4$ DQPSK	LCH	0.996	0.85	PASS
	MCH	1.002	0.85	PASS
	HCH	1.084	0.85	PASS
8DPSK	LCH	0.970	0.84	PASS
	MCH	1.002	0.84	PASS
	HCH	0.858	0.84	PASS

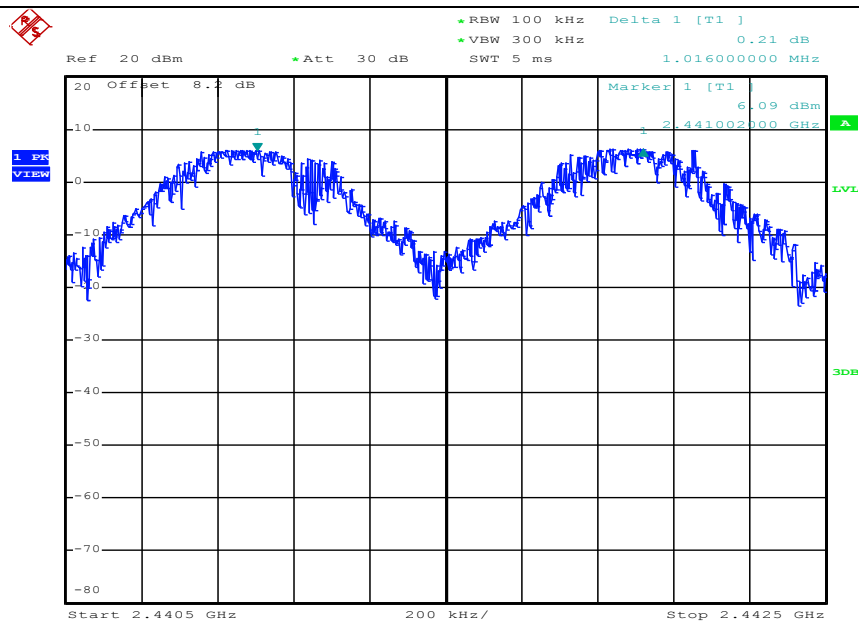
Test Graphs

GFSK/LCH



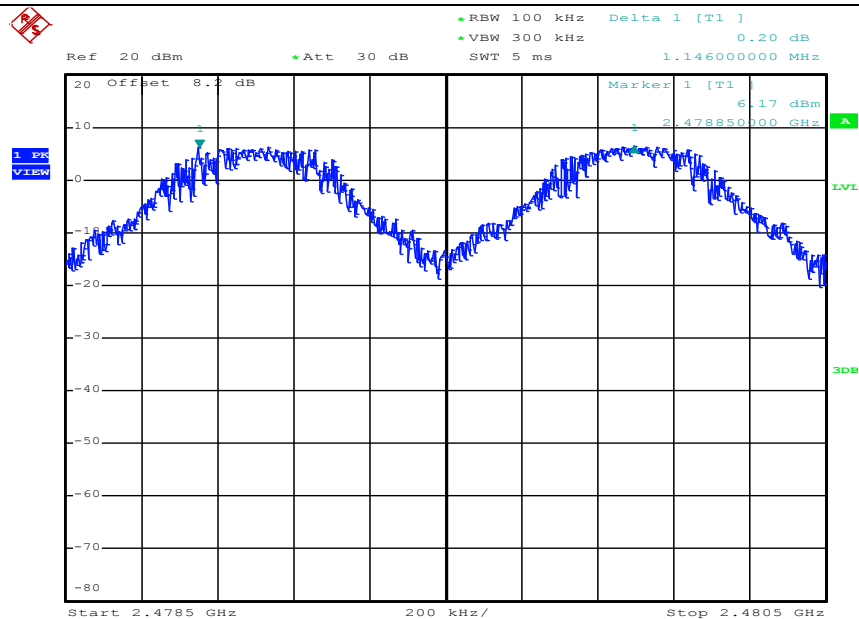
Date: 19.SEP.2019 16:21:21

GFSK/MCH



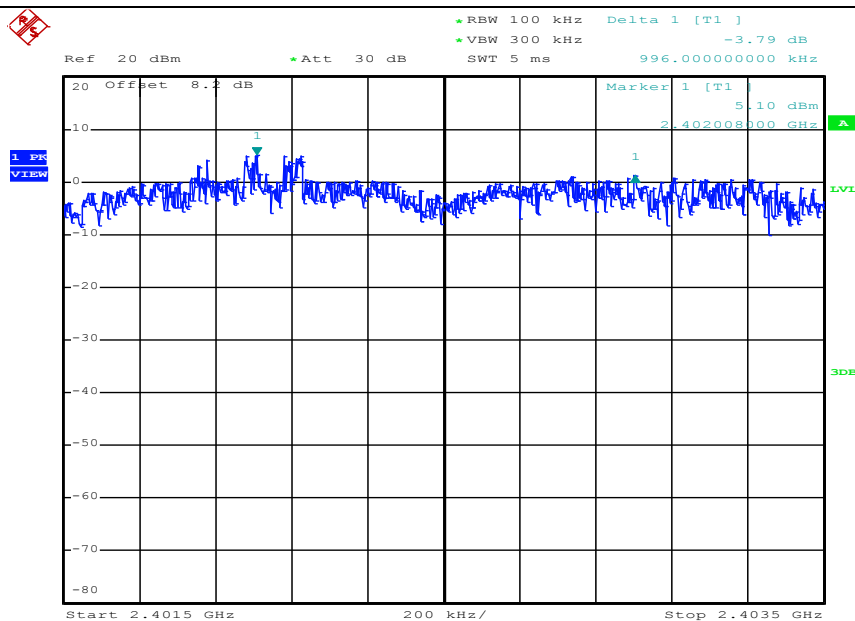
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GFSK/HCH



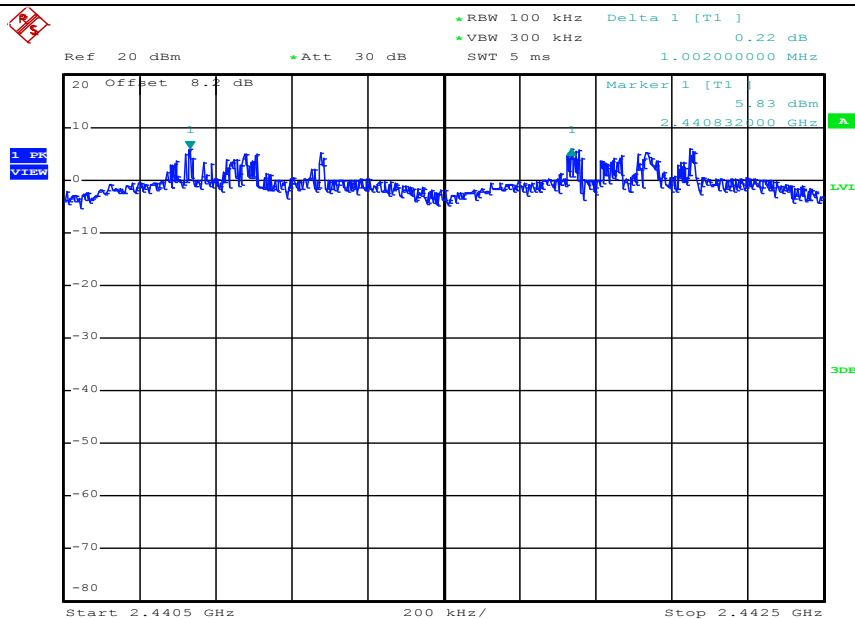
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$\pi/4$ DQPSK/LCH



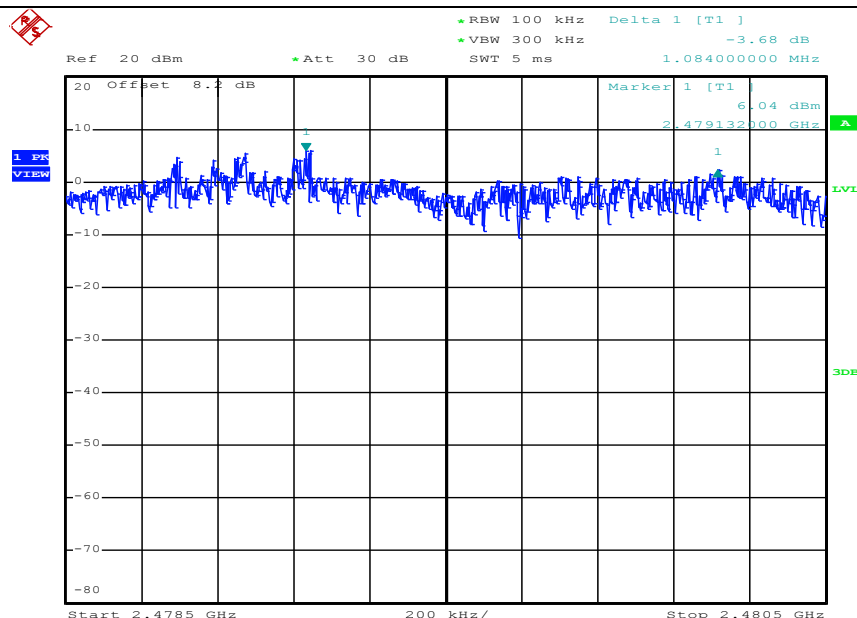
Date: 19.SEP.2019 16:27:43

$\pi/4$ DQPSK/MCH



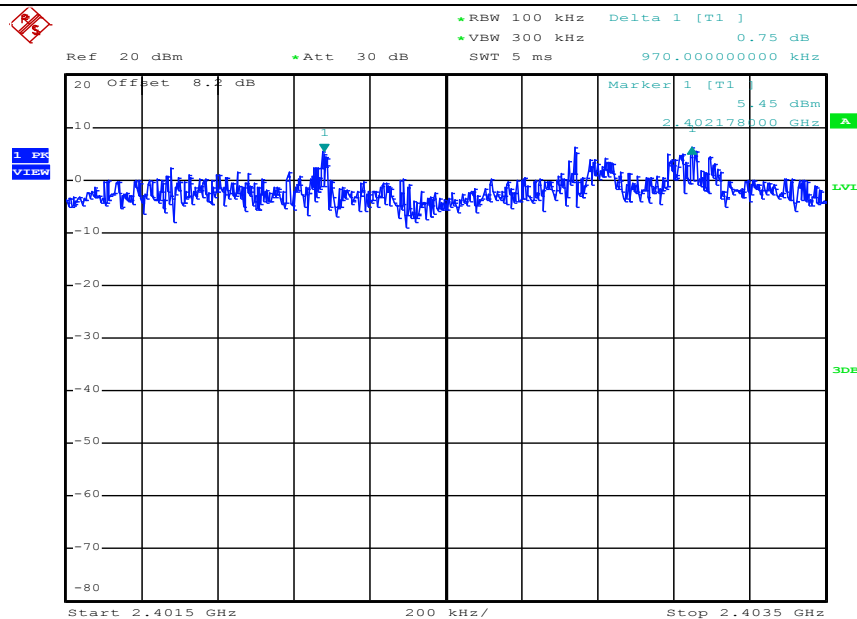
Date: 19.SEP.2019 16:30:10

$\pi/4$ DQPSK/HCH



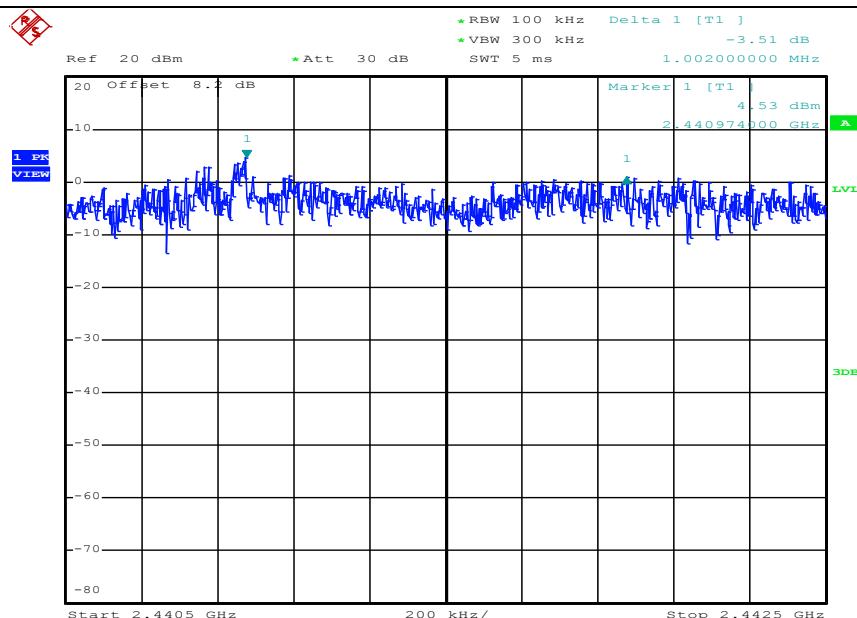
Date: 19.SEP.2019 16:30:38

8DPSK/LCH



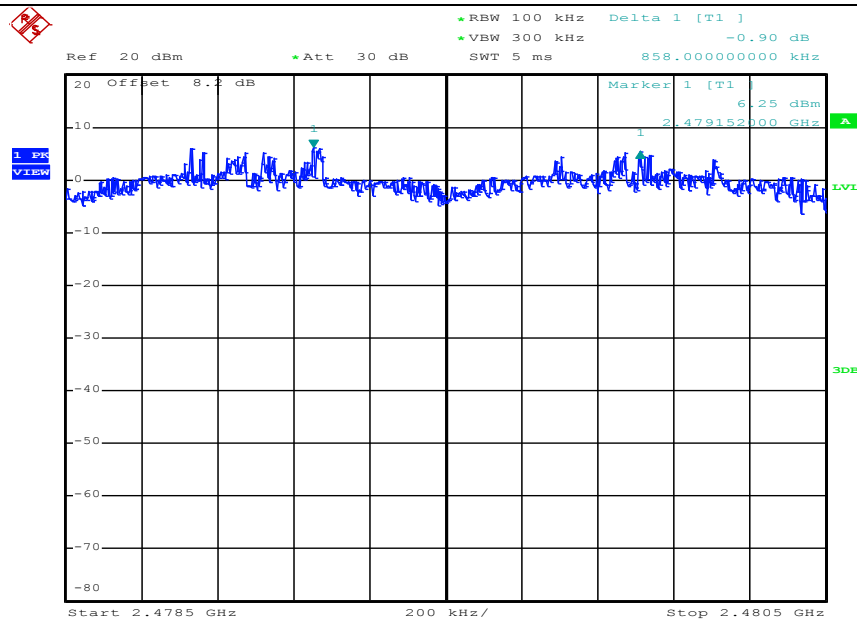
Date: 19.SEP.2019 16:35:38

8DPSK/MCH



Date: 20.SEP.2019 09:58:45

8DPSK/HCH



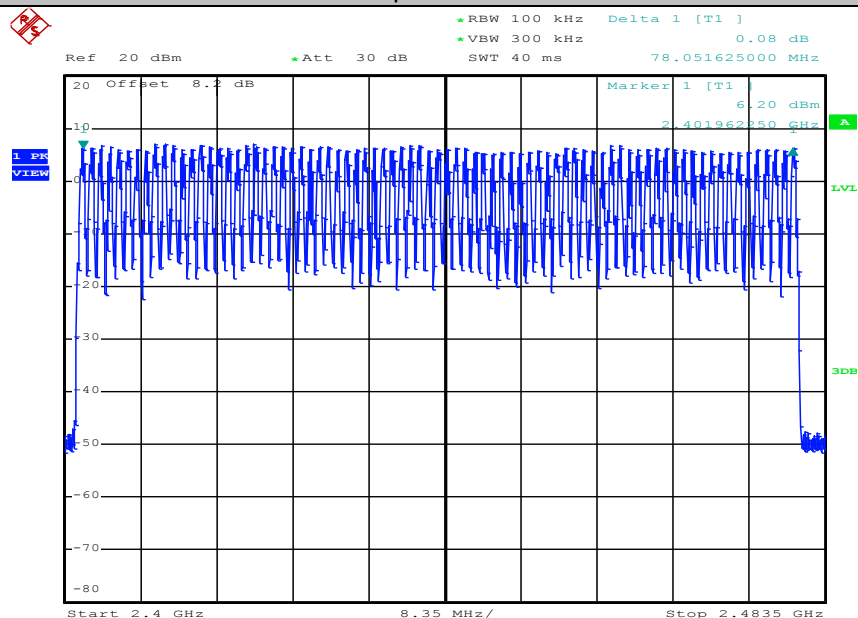
Date: 20.SEP.2019 09:59:56

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

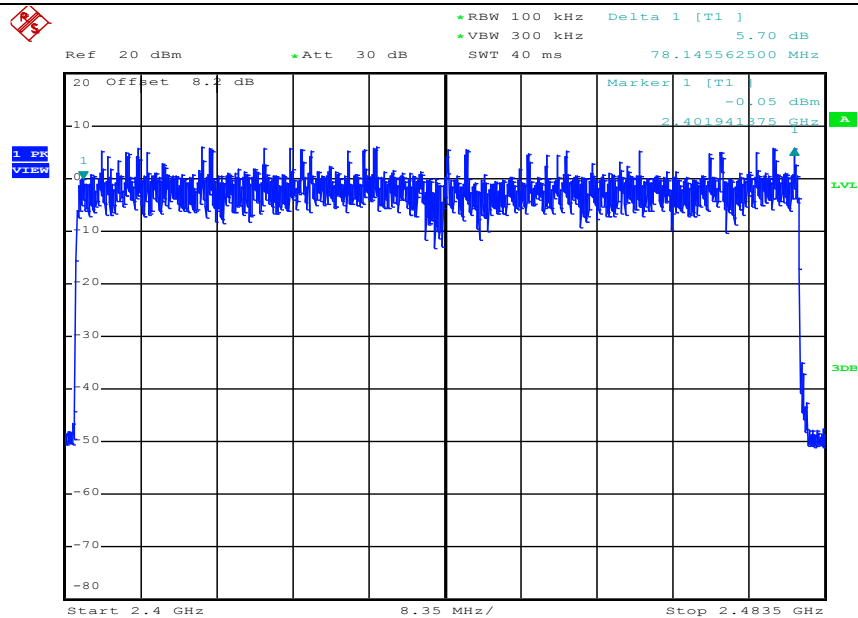
Test Graphs

GFSK/Hop



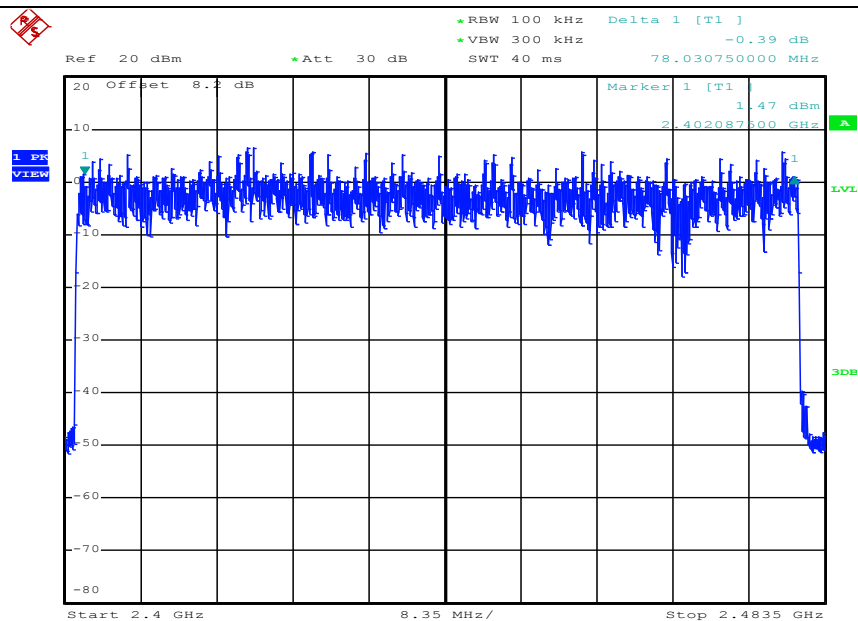
Date: 19.SEP.2019 16:26:32

$\pi/4$ DQPSK/Hop



Date: 19.SEP.2019 16:34:15

8DPSK/Hop



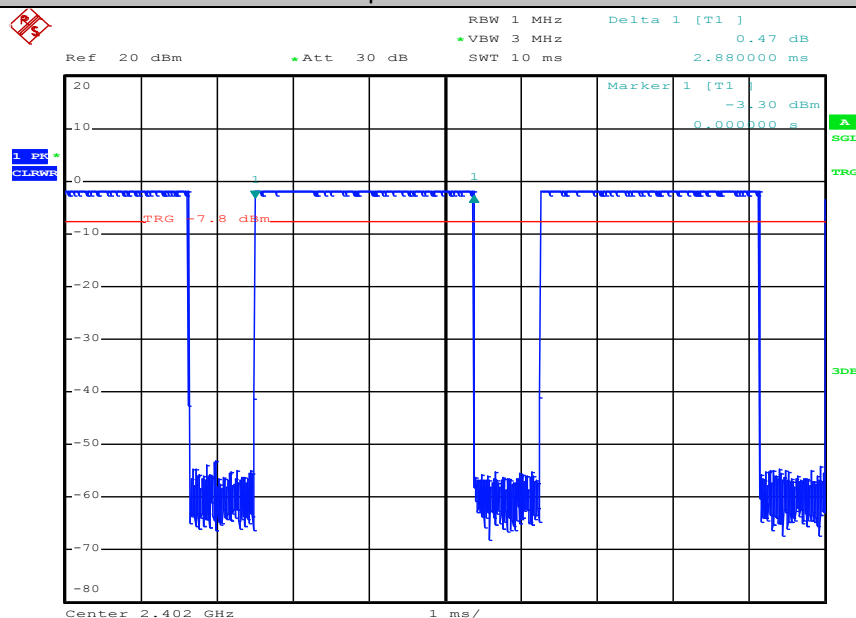
Date: 20.SEP.2019 10:05:22

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	2.88	106.7	0.307	0.4	PASS
	3DH5	MCH	2.88	106.7	0.307	0.4	PASS
	3DH5	HCH	2.88	106.7	0.307	0.4	PASS

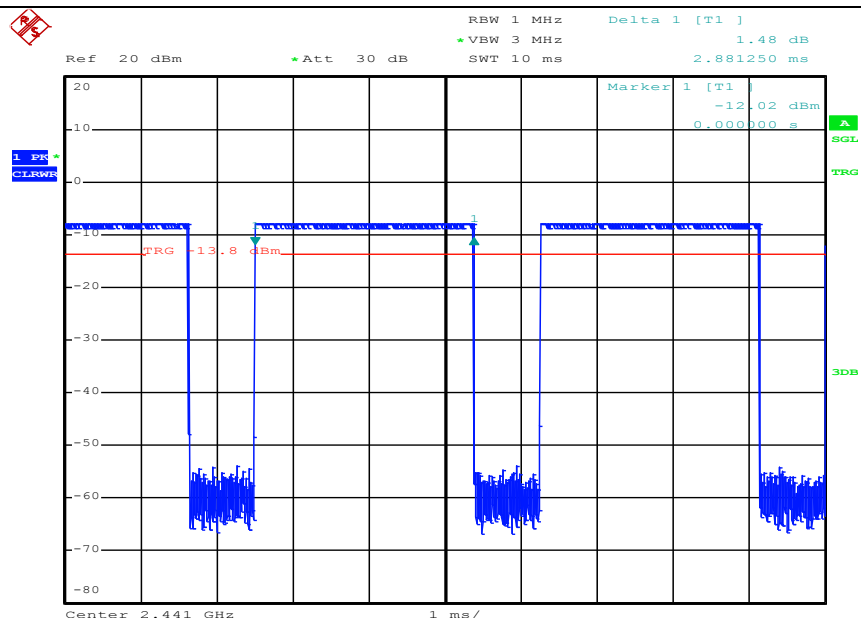
Test Graphs

GFSK_DH5/LCH



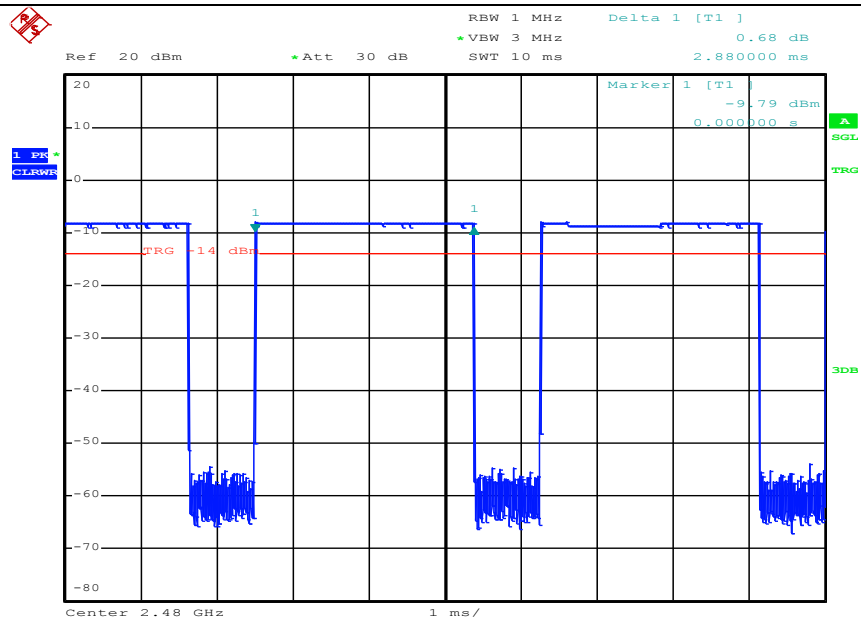
Date: 20.SEP.2019 10:08:12

GFSK_DH5/MCH



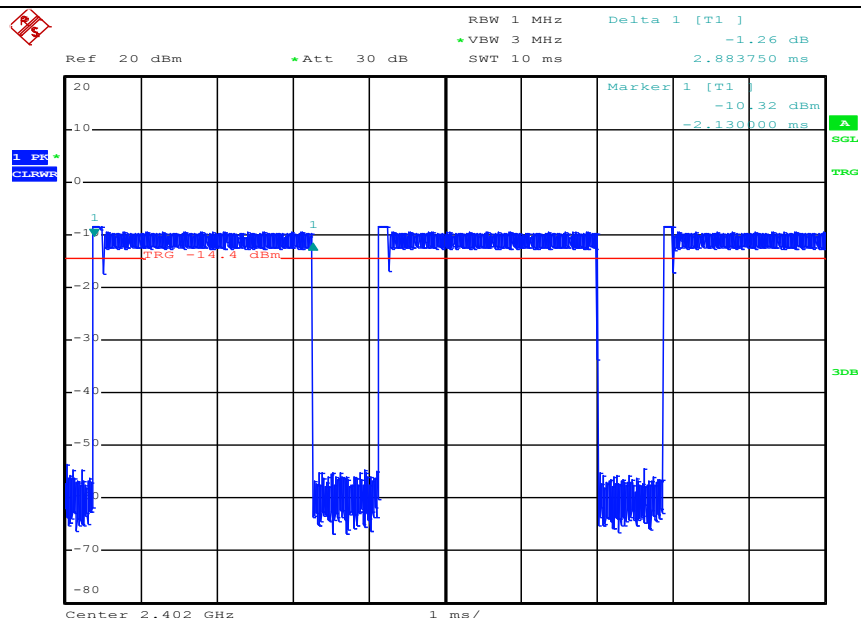
Date: 20.SEP.2019 10:18:46

GFSK_DH5/HCH



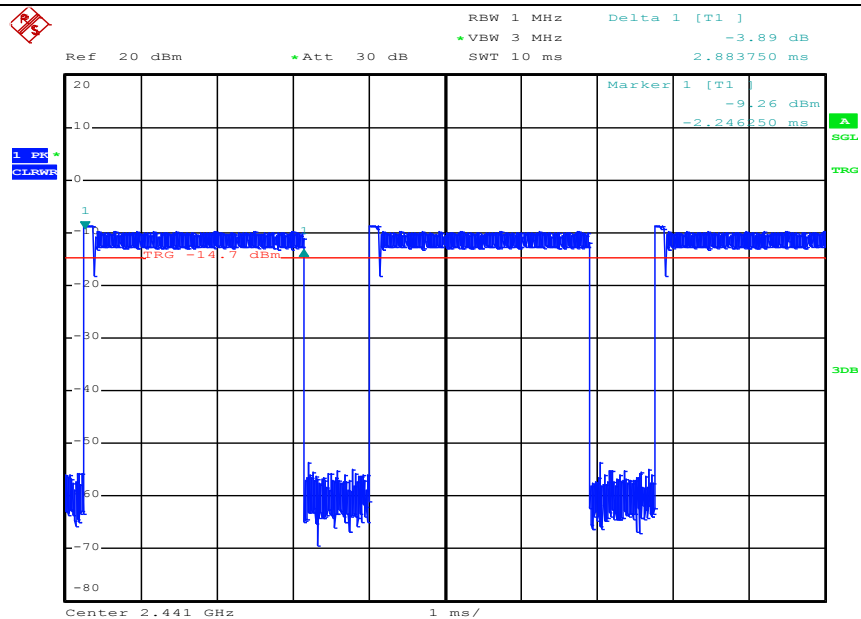
Date: 20.SEP.2019 10:20:37

$\pi/4$ DQPSK
_2DH5/LCH



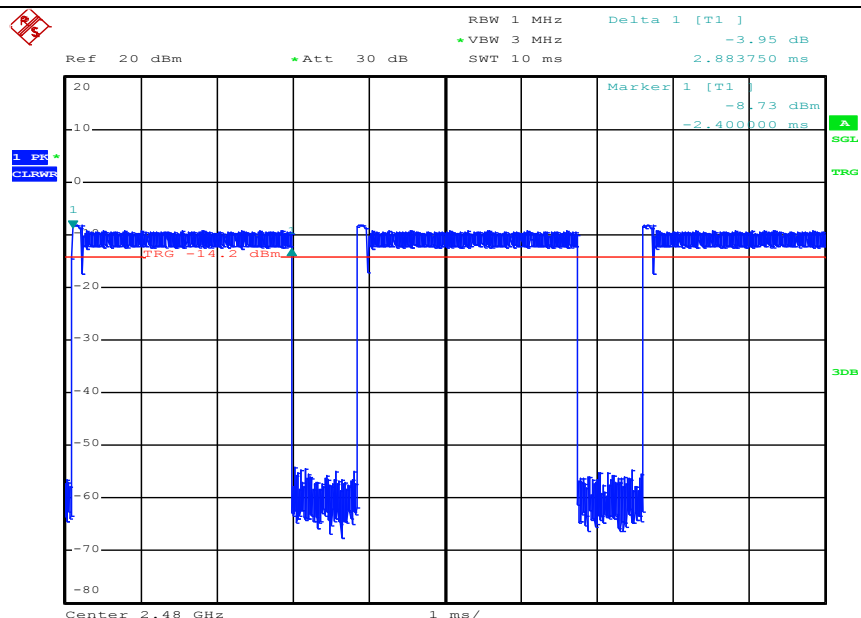
Date: 20.SEP.2019 10:23:10

$\pi/4$ DQPSK
_2DH5/MCH



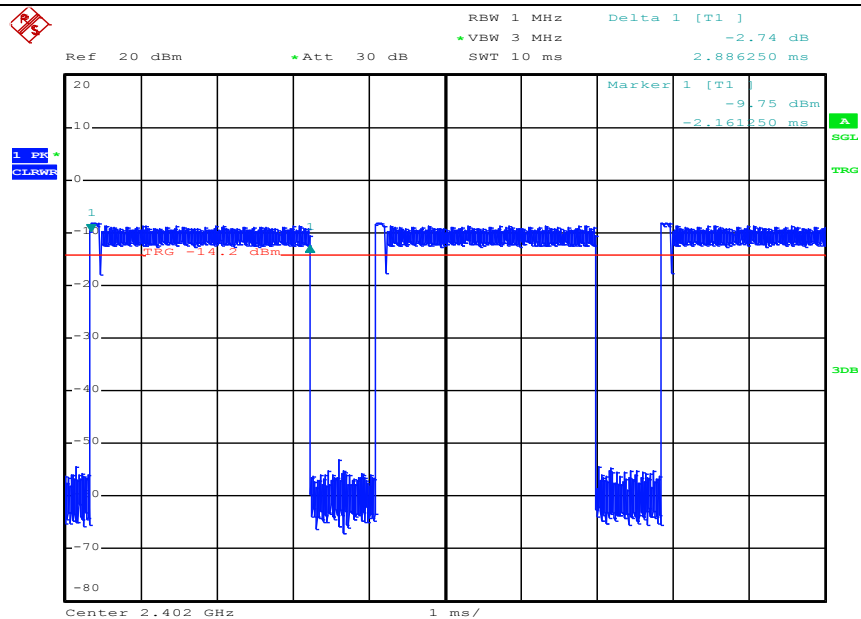
Date: 20.SEP.2019 10:25:50

$\pi/4$ DQPSK
_2DH5/HCH



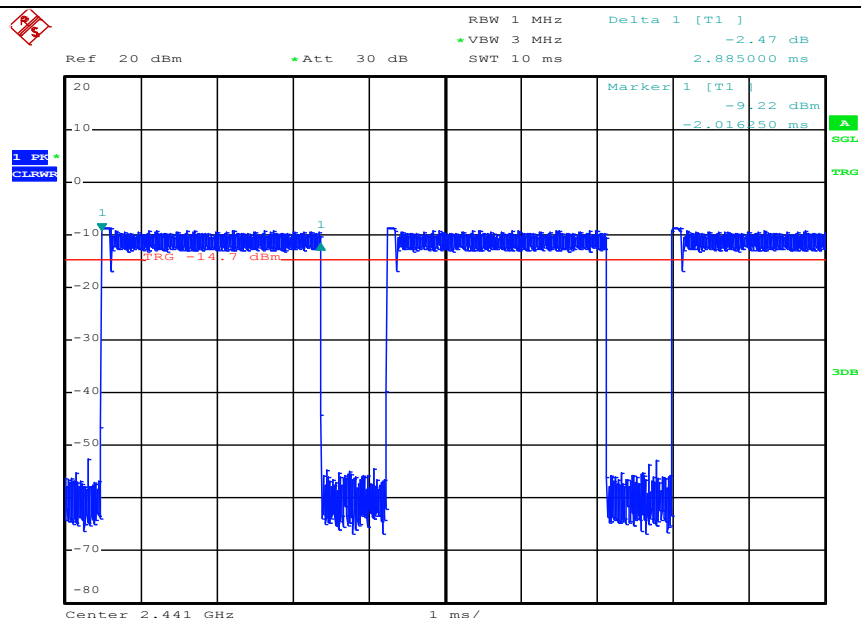
Date: 20.SEP.2019 10:28:38

8DPSK_3DH5/LCH



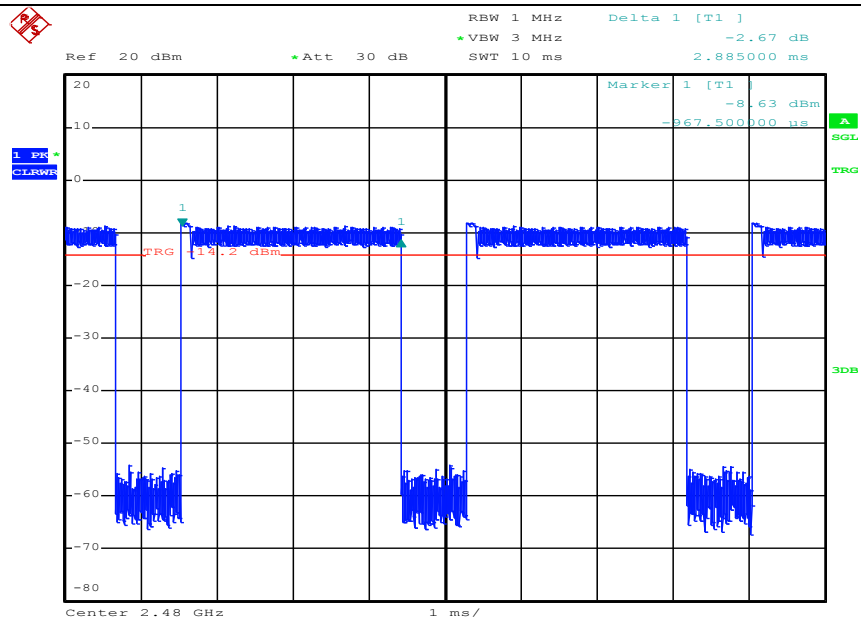
Date: 20.SEP.2019 10:32:51

8DPSK_3DH5/MCH



Date: 20.SEP.2019 10:35:50

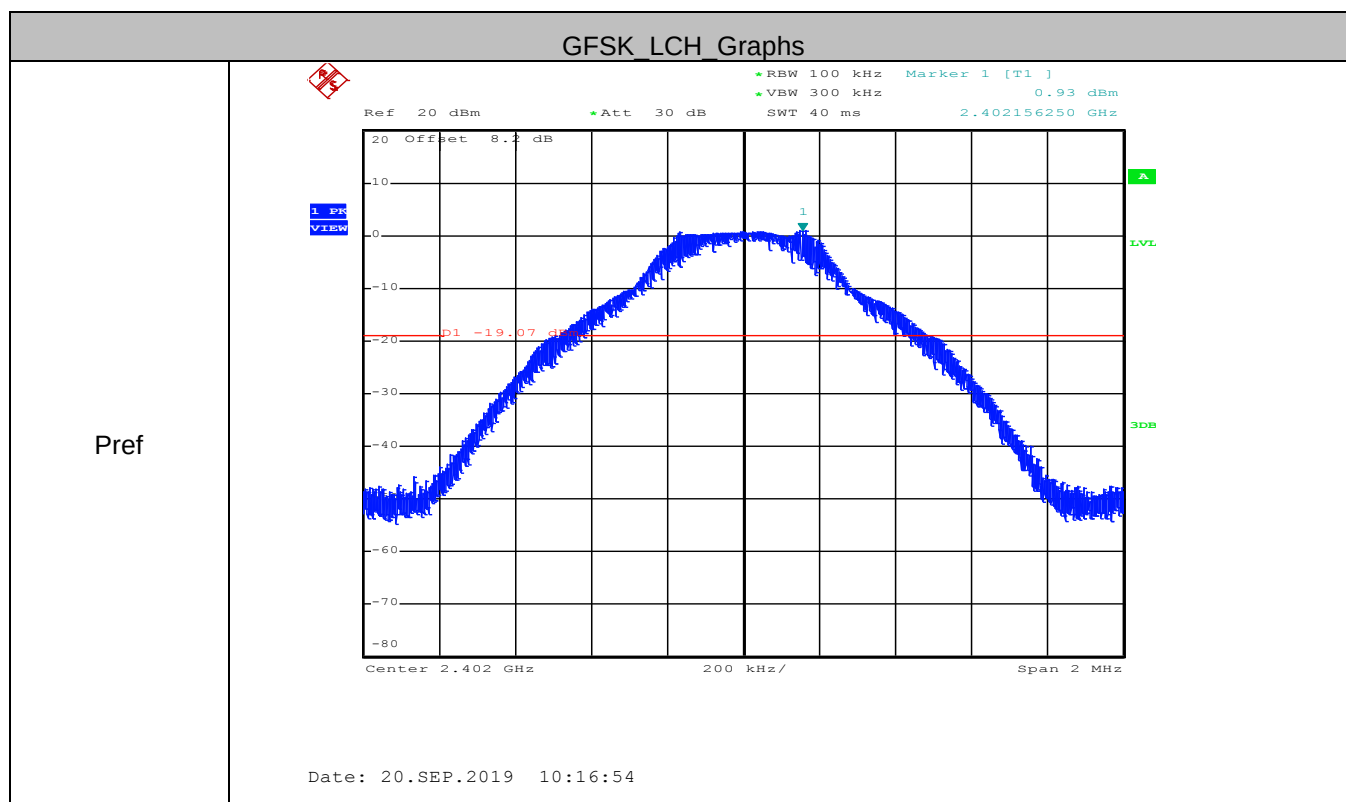
8DPSK_3DH5/HCH



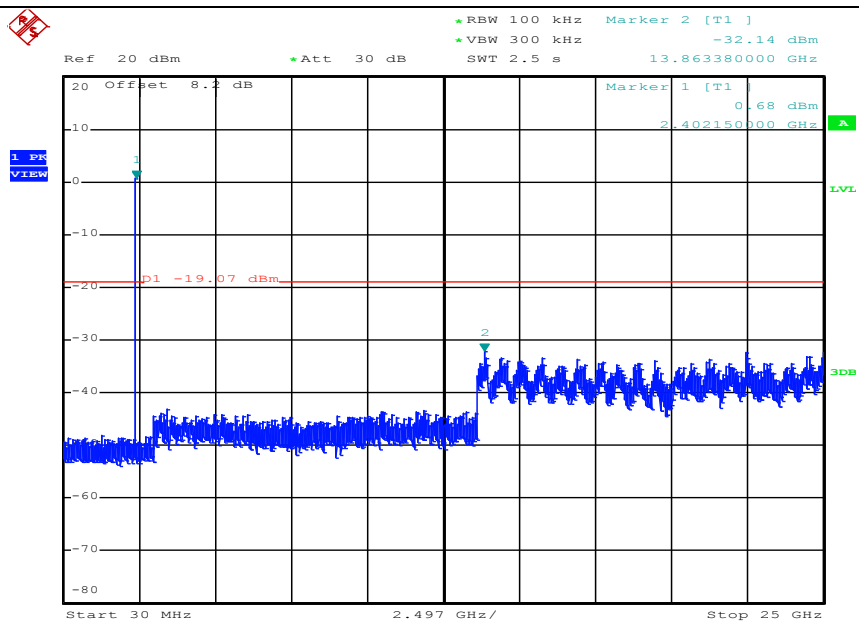
Date: 20.SEP.2019 10:37:30

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.93	-32.140	-19.070	PASS
	MCH	0.6	-31.390	-19.400	PASS
	HCH	0.34	-32.680	-19.660	PASS
$\pi/4$ DQPSK	LCH	0.24	-31.140	-19.760	PASS
	MCH	0.01	-32.680	-19.990	PASS
	HCH	0.38	-31.920	-19.620	PASS
8DPSK	LCH	0.6	-32.750	-19.400	PASS
	MCH	0.1	-32.200	-19.900	PASS
	HCH	0.5	-32.060	-19.500	PASS



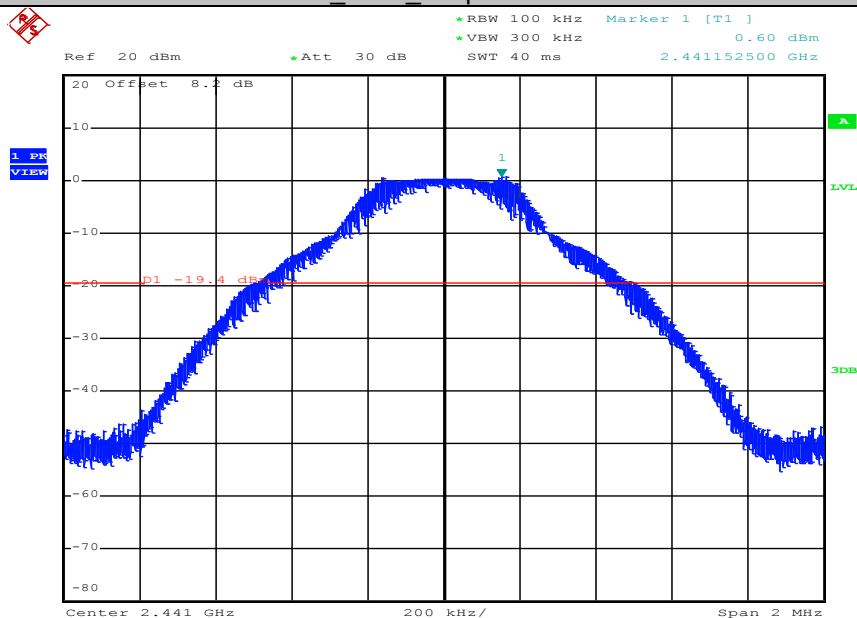
P_{uw}



Date: 20.SEP.2019 10:17:08

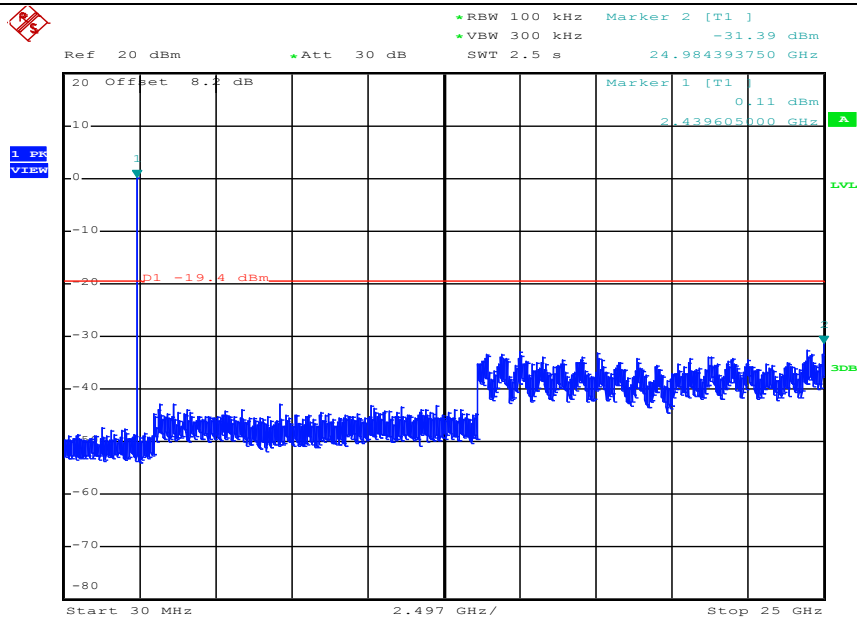
GFSK_MCH_Graphs

Pref



Date: 20.SEP.2019 10:19:13

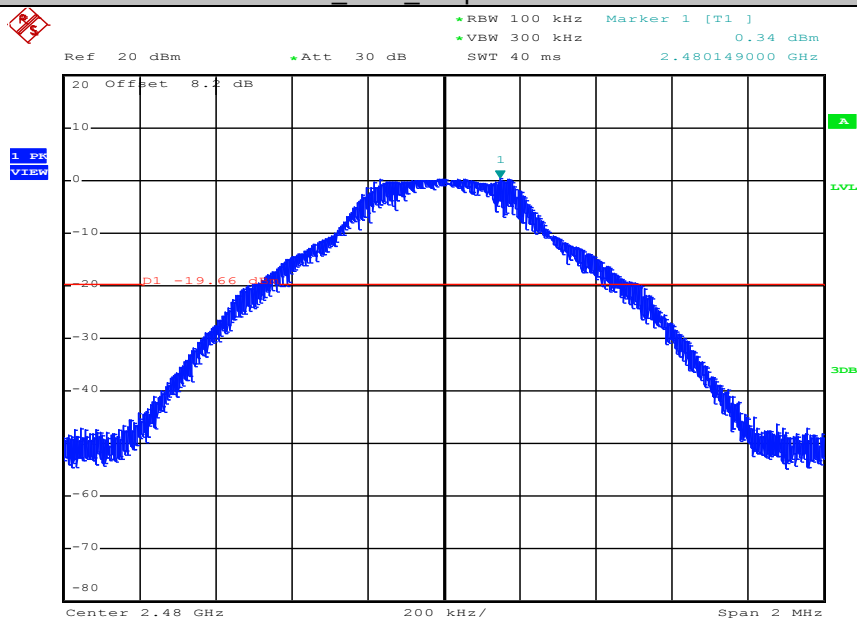
Puw



Date: 20.SEP.2019 10:19:28

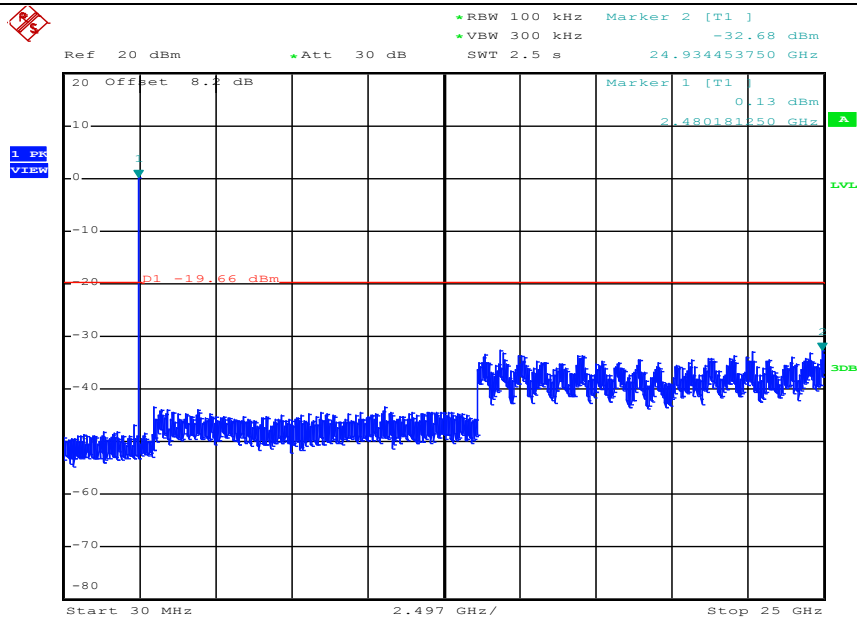
GFSK_HCH_Graphs

Pref



Date: 20.SEP.2019 10:21:21

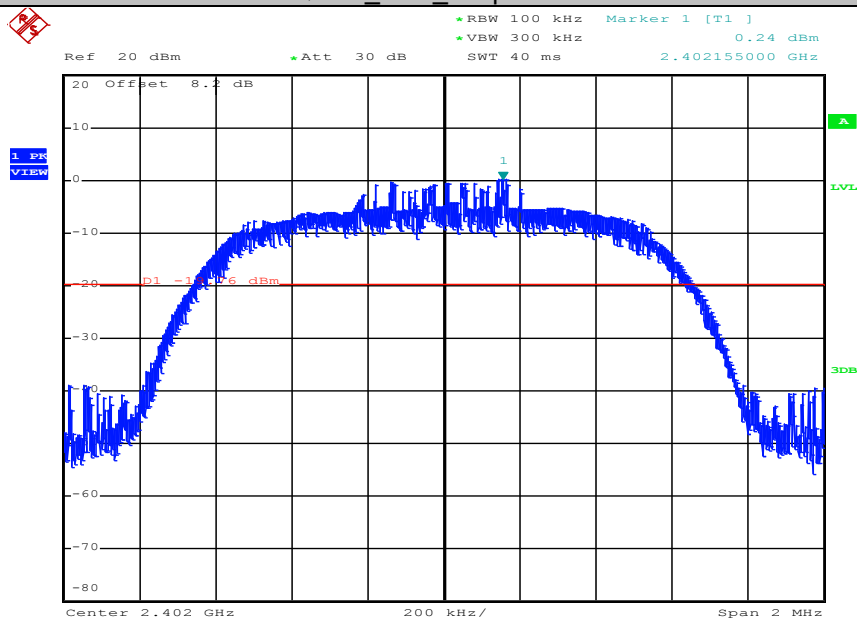
Puw



Date: 20.SEP.2019 10:21:35

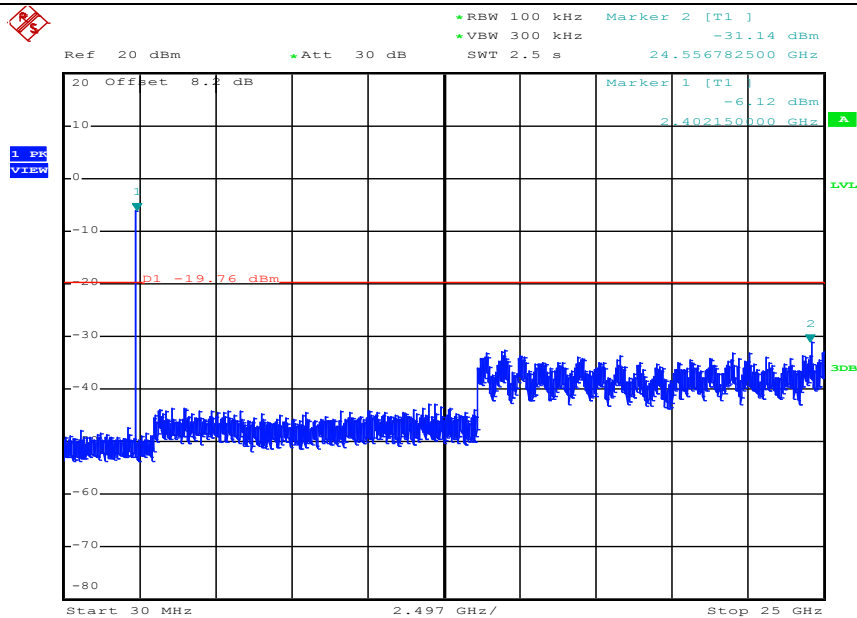
$\pi/4$ DQPSK_LCH_Graphs

Pref



Date: 20.SEP.2019 10:23:54

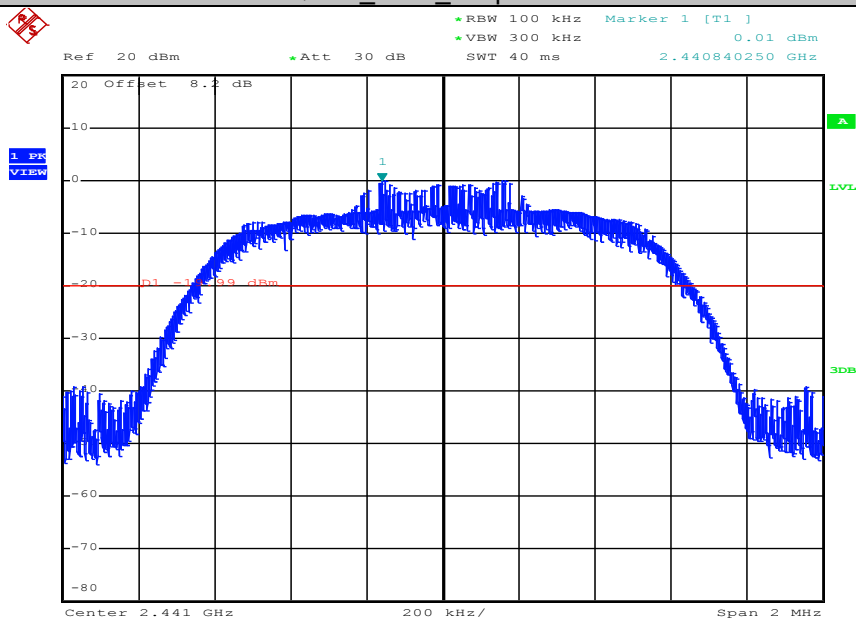
Puw



Date: 20.SEP.2019 10:24:08

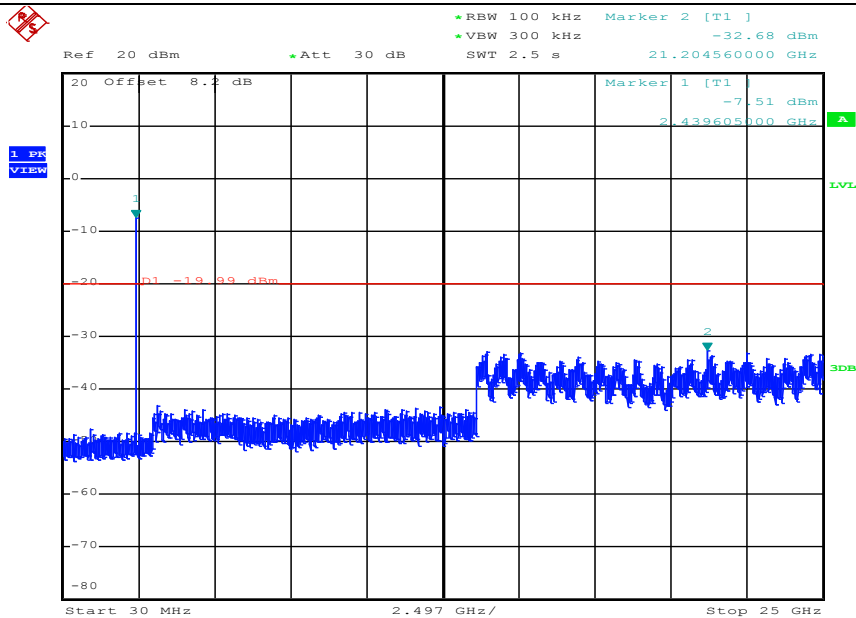
$\pi/4$ DQPSK_MCH_Graphs

Pref



Date: 20.SEP.2019 10:26:17

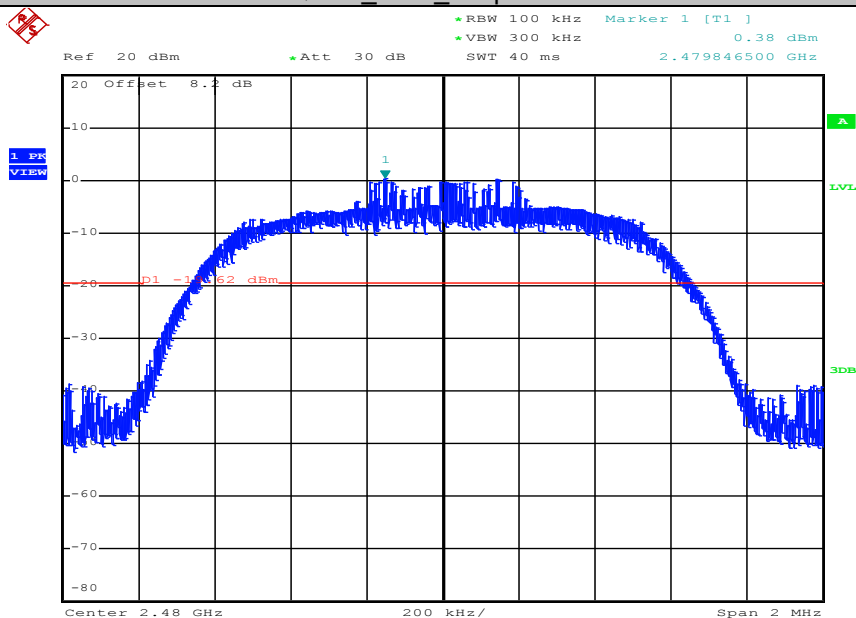
Puw



Date: 20.SEP.2019 10:26:31

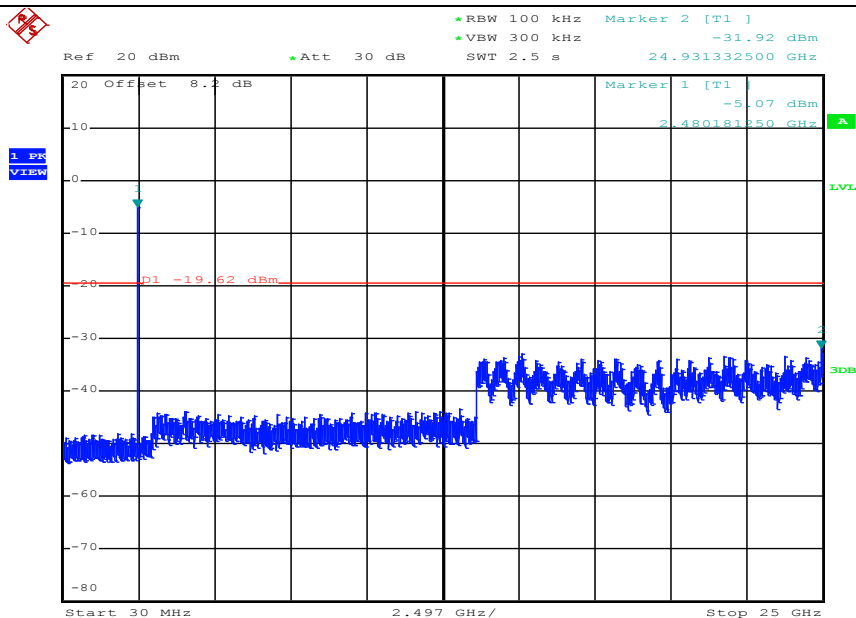
$\pi/4$ DQPSK_HCH_Graphs

Pref



Date: 20.SEP.2019 10:29:21

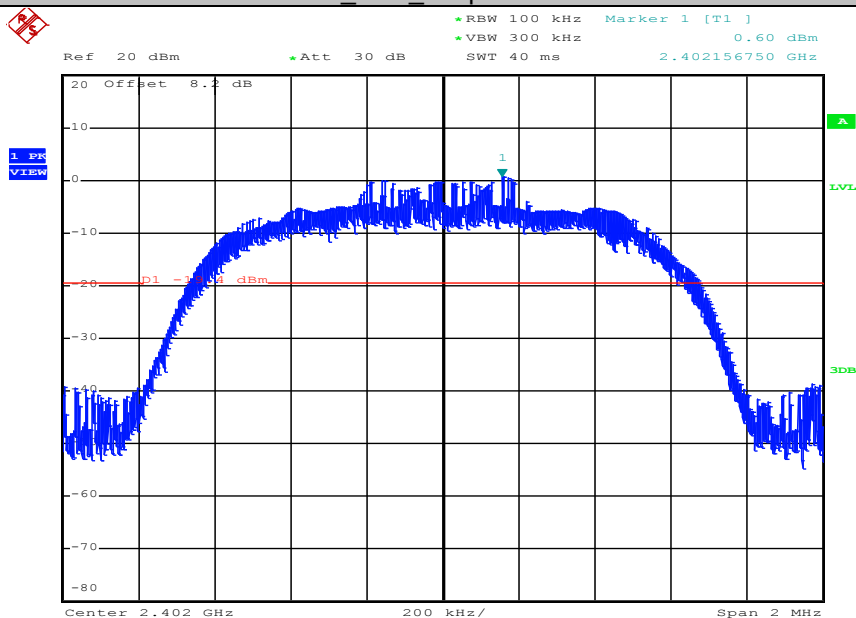
Puw



Date: 20.SEP.2019 10:29:36

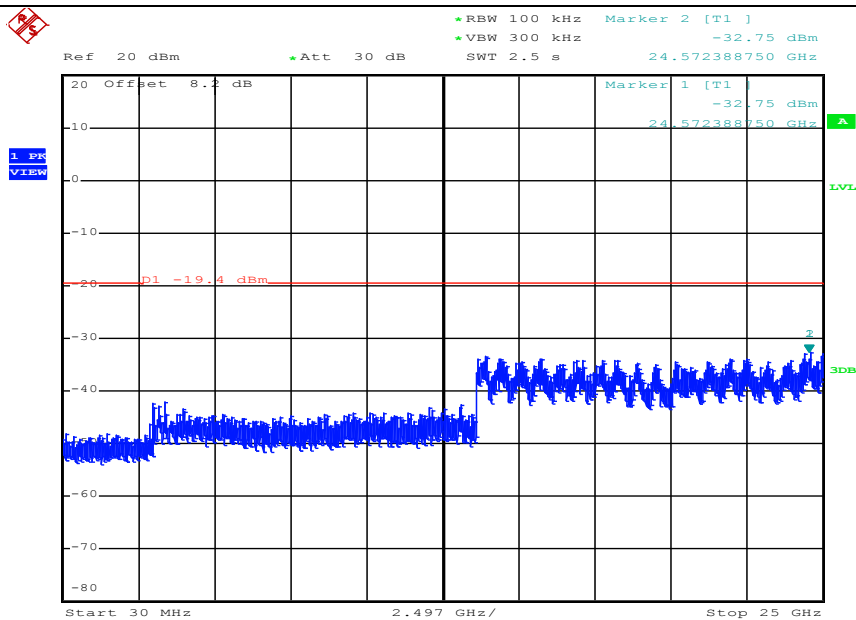
8DPSK_LCH_Graphs

Pref



Date: 20.SEP.2019 10:33:34

Puw



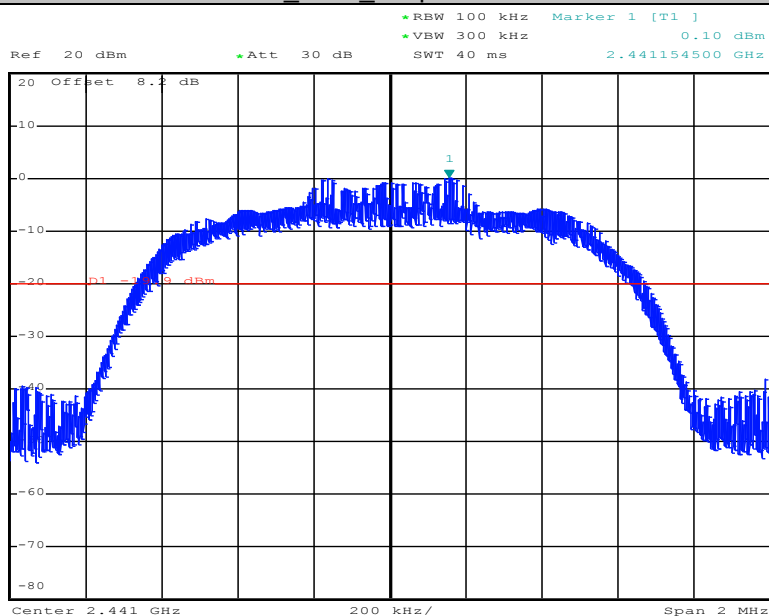
Date: 20.SEP.2019 10:33:49

8DPSK_MCH_Graphs

Pref



1 PR
VIEW

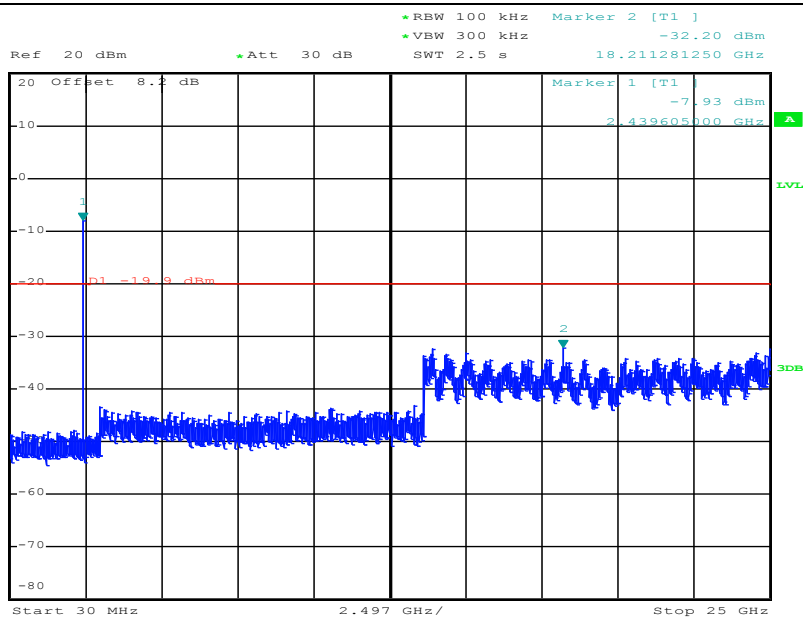


Date: 20.SEP.2019 10:36:17

Puw



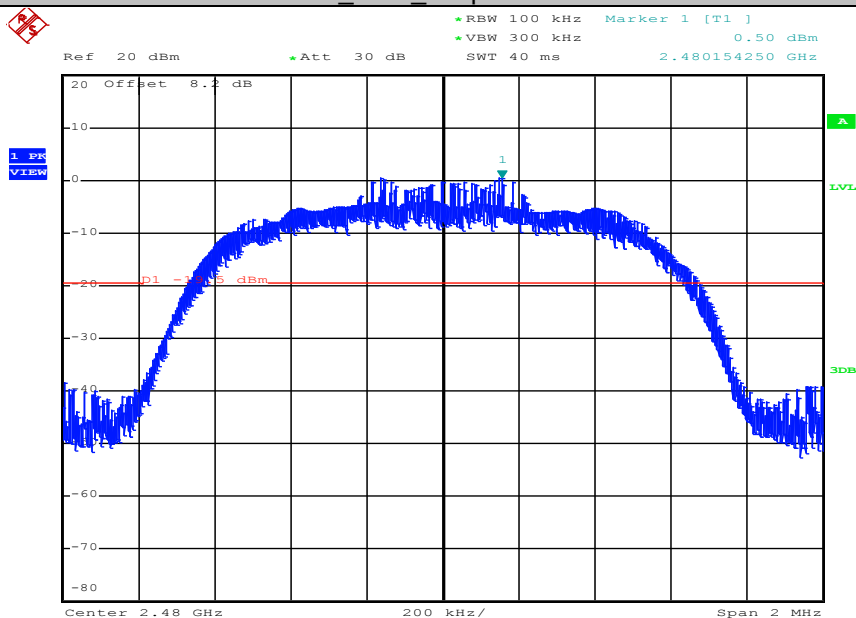
1 PR
VIEW



Date: 20.SEP.2019 10:36:32

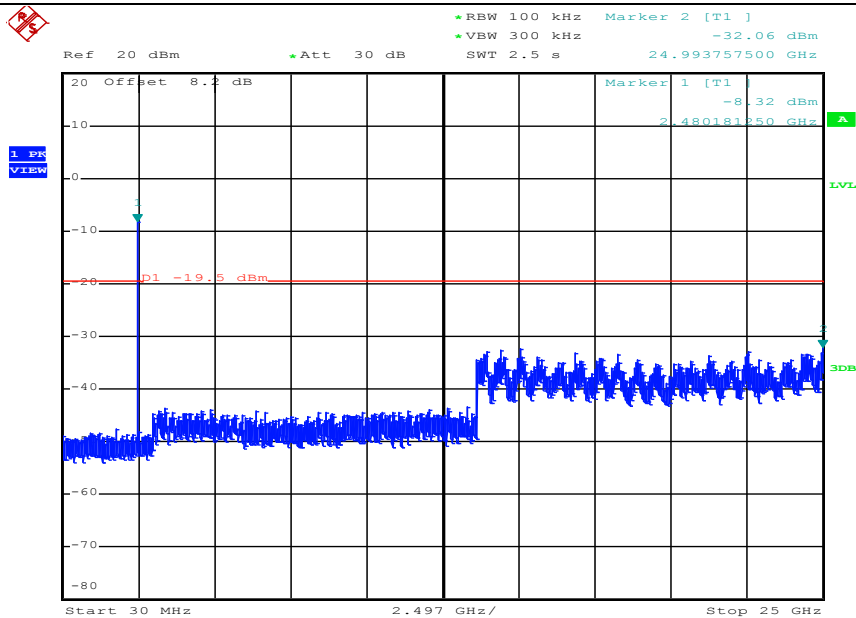
8DPSK_HCH_Graphs

Pref



Date: 20.SEP.2019 10:38:13

Puw



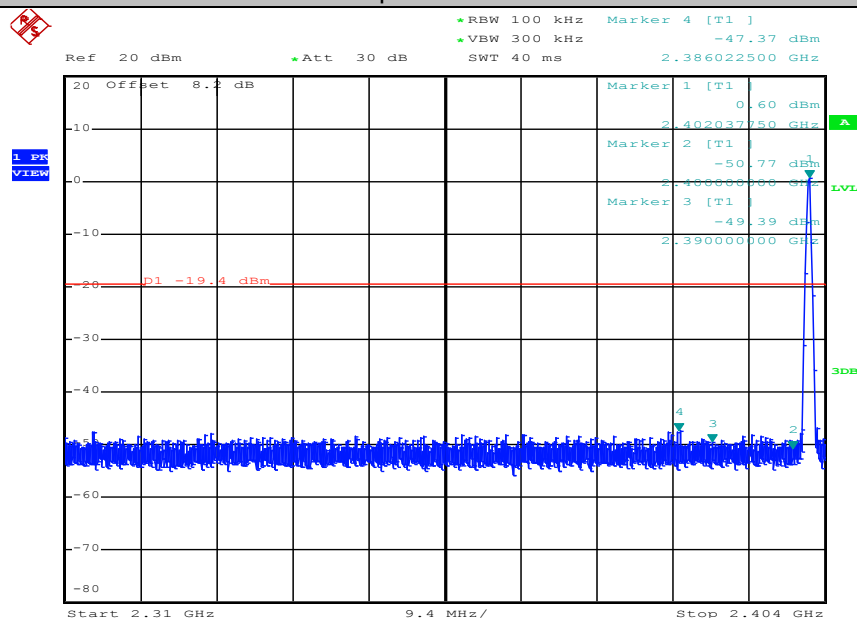
Date: 20.SEP.2019 10:38:28

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	0.600	Off	-47.368	-19.4	PASS
			6.970	On	-46.923	-13.03	PASS
	HCH	2480	0.070	Off	-47.564	-19.93	PASS
			6.660	On	-46.708	-13.34	PASS
$\pi/4$ DQPSK	LCH	2402	0.180	Off	-47.774	-19.82	PASS
			6.190	On	-46.849	-13.81	PASS
	HCH	2480	0.350	Off	-47.689	-19.65	PASS
			5.620	On	-46.752	-14.38	PASS
8DPSK	LCH	2402	-0.200	Off	-47.626	-20.2	PASS
			6.290	On	-46.772	-13.71	PASS
	HCH	2480	-0.210	Off	-47.034	-20.21	PASS
			5.710	On	-46.402	-14.29	PASS

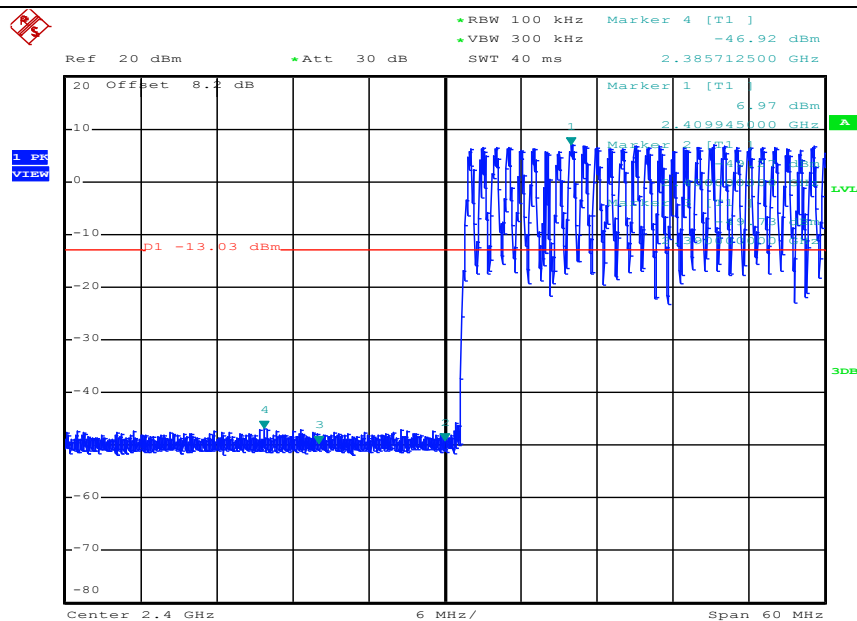
Test Graphs

GFSK/LCH/No Hop



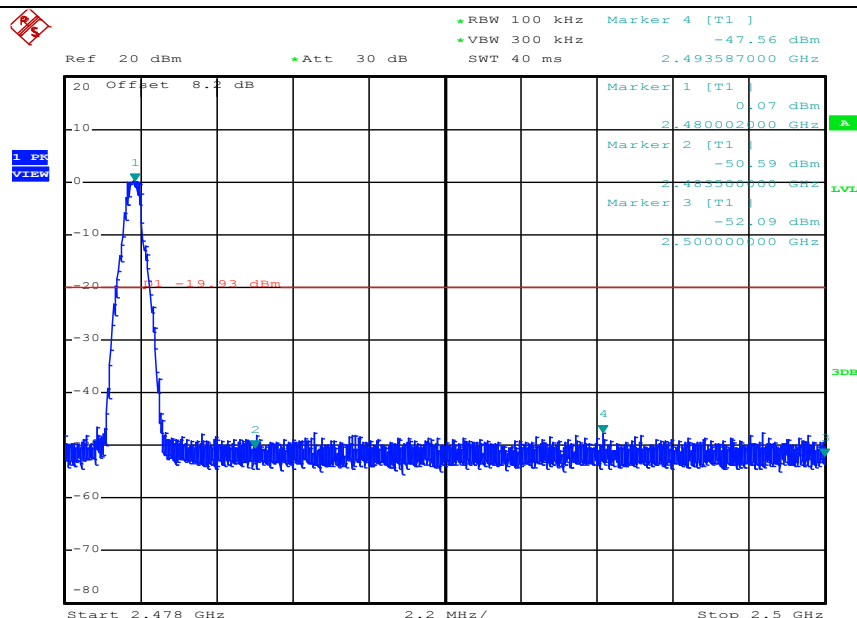
Date: 20.SEP.2019 10:16:41

GFSK/LCH/Hop



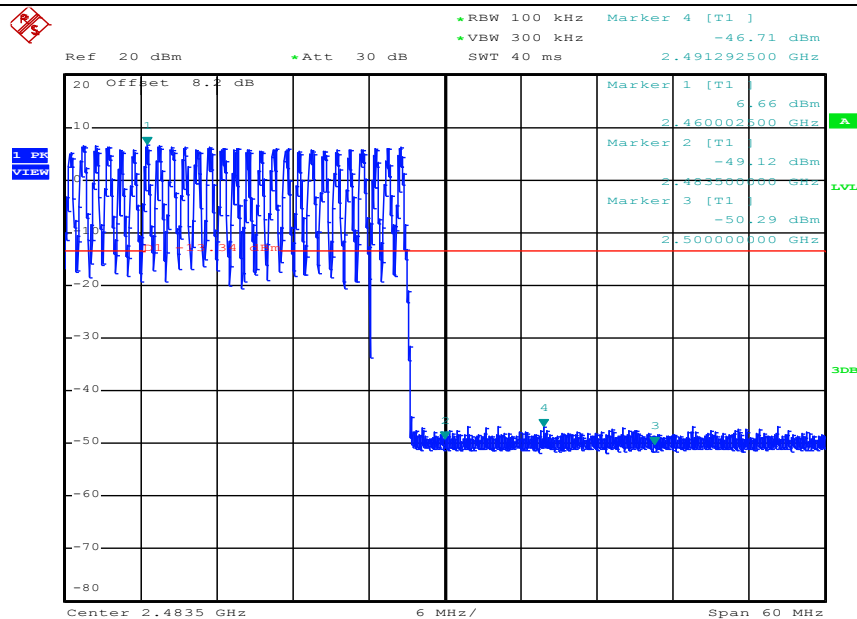
Date: 19.SEP.2019 16:22:51

GFSK/HCH/No Hop



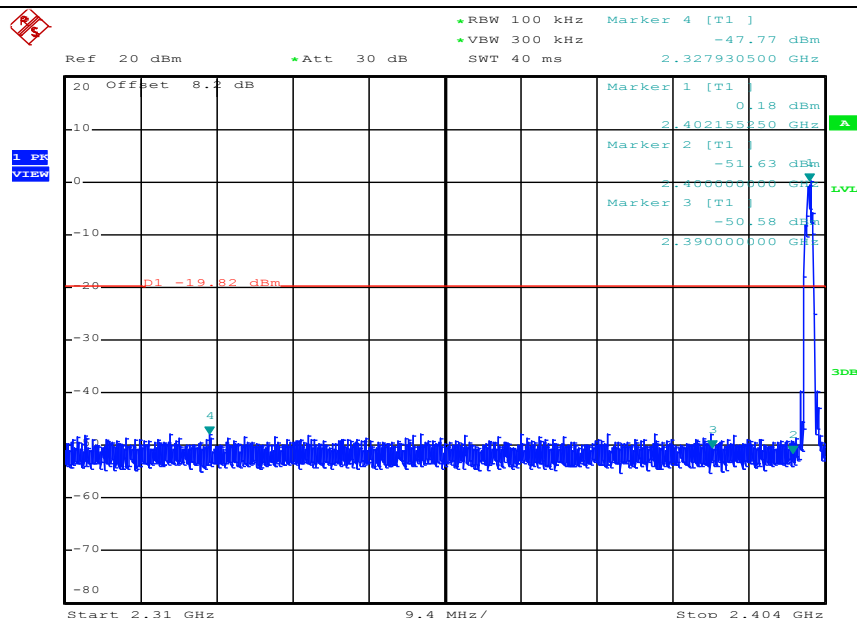
Date: 20.SEP.2019 10:21:08

GFSK/HCH/Hop



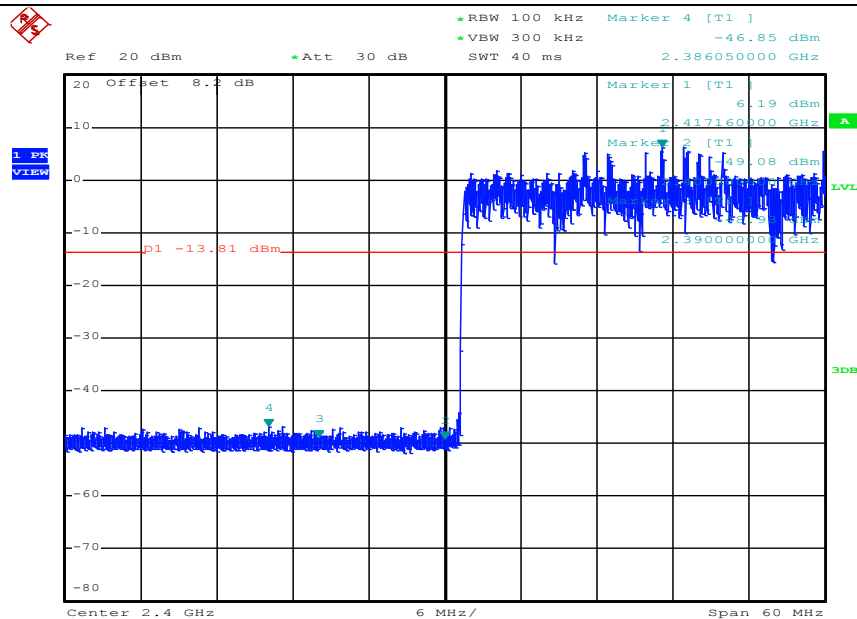
Date: 19.SEP.2019 16:25:03

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



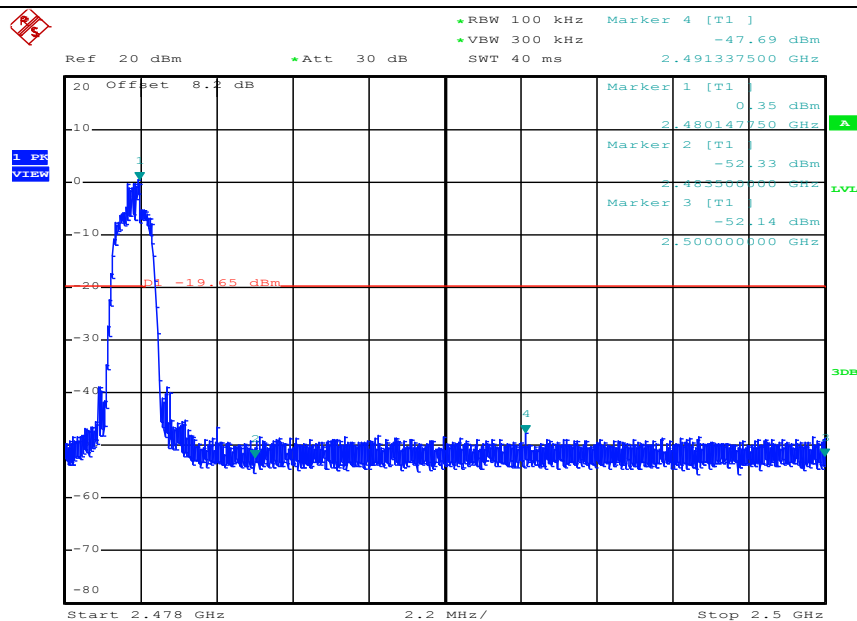
Date: 20.SEP.2019 10:23:41

$\pi/4$ DQPSK/LCH/Hop



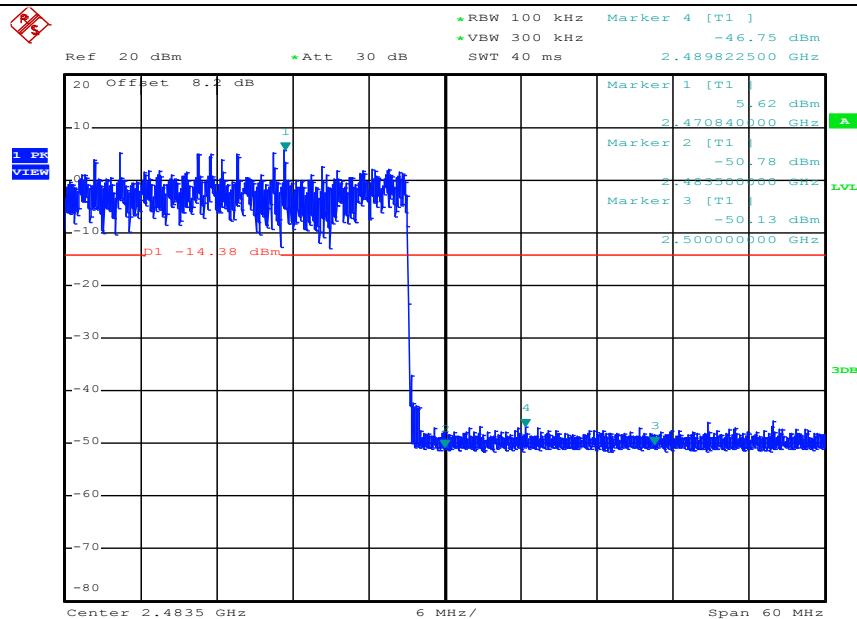
Date: 19.SEP.2019 16:29:04

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



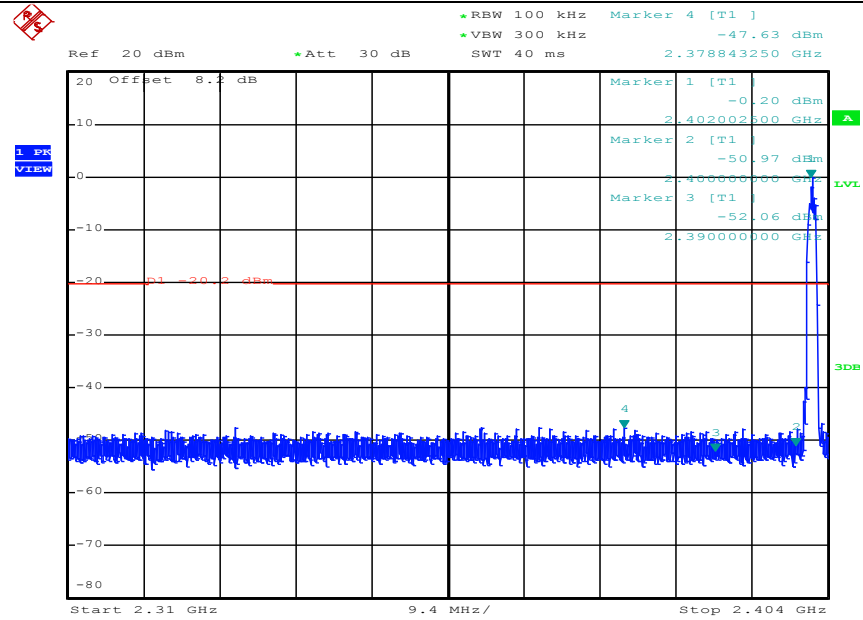
Date: 20.SEP.2019 10:29:09

$\pi/4$ DQPSK/HCH/Hop



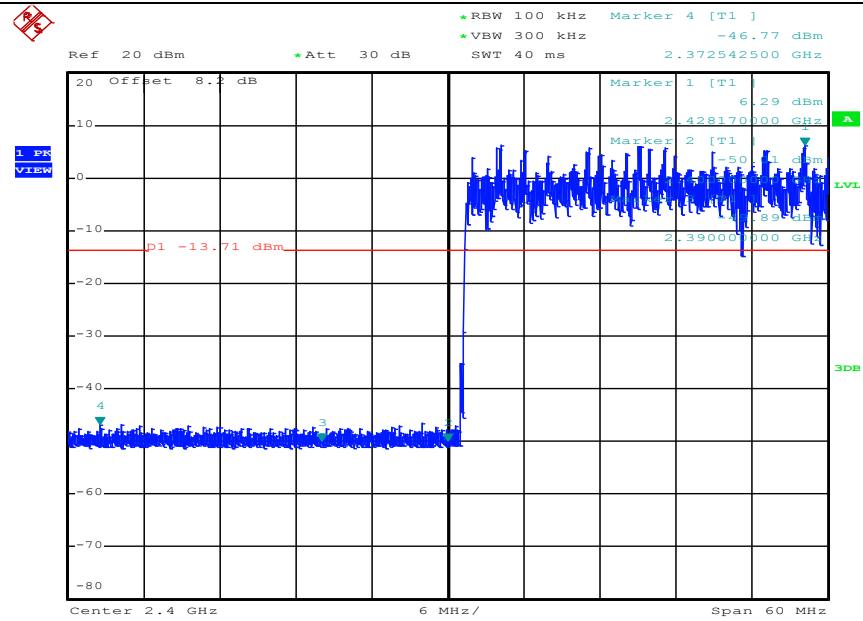
Date: 19.SEP.2019 16:32:16

8DPSK/LCH/No Hop



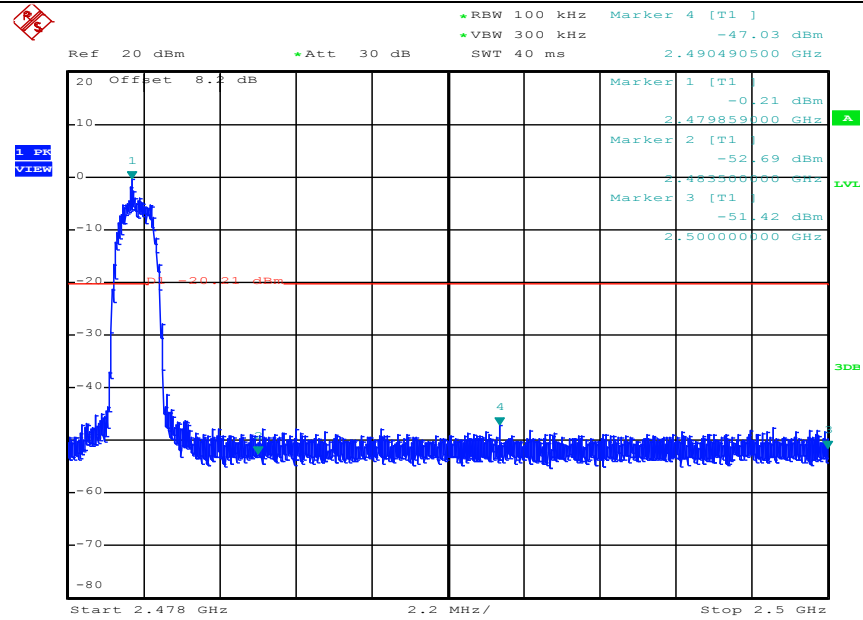
Date: 20.SEP.2019 10:33:22

8DPSK/LCH/Hop



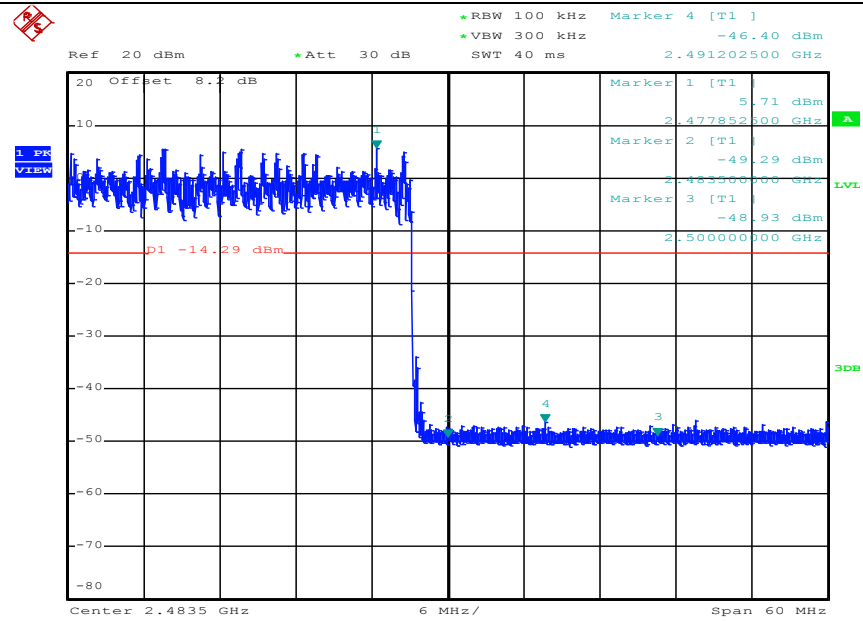
Date: 19.SEP.2019 16:37:20

8DPSK/HCH/No Hop



Date: 20.SEP.2019 10:38:00

8DPSK/HCH/Hop

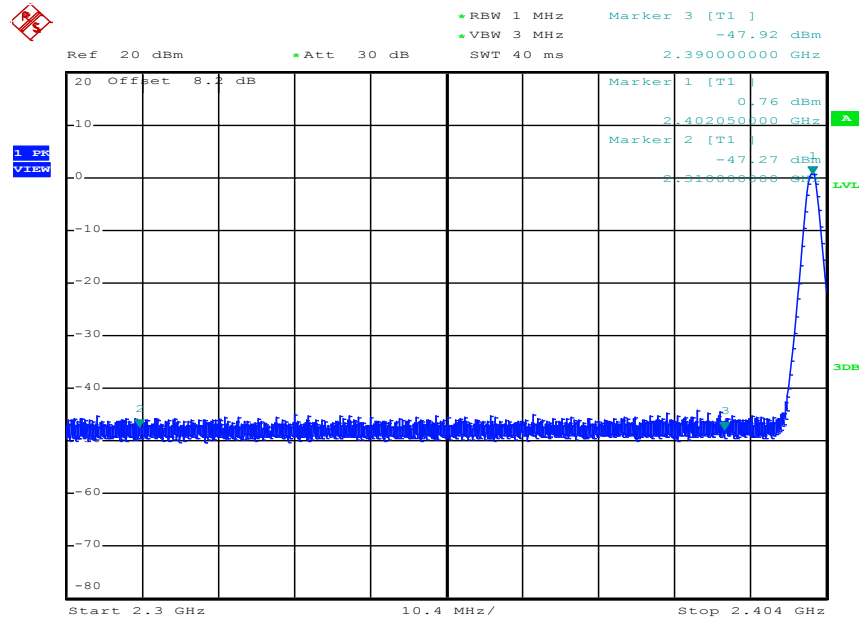


Date: 20.SEP.2019 10:03:39

A.8 Restrict-band band-edge measurements

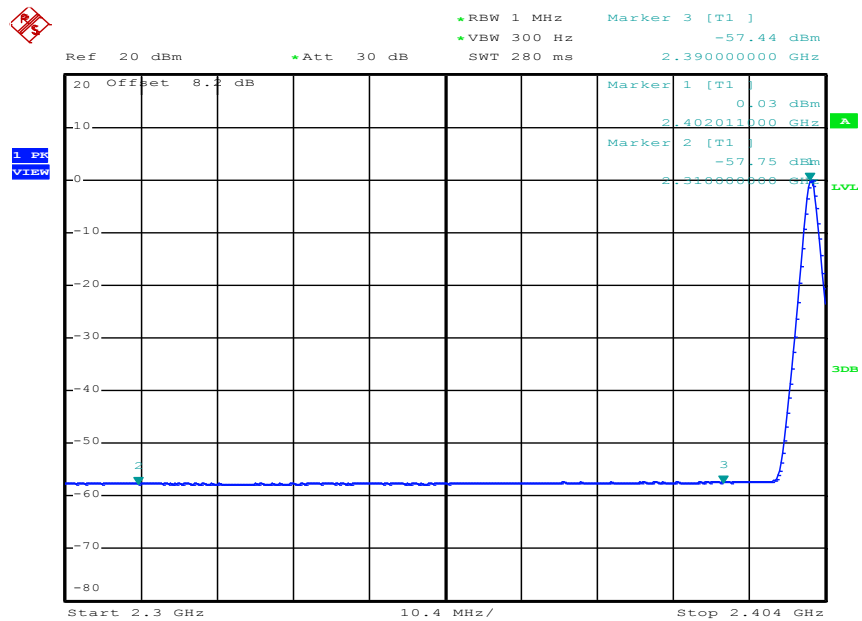
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-47.27	2.0	0	47.99	PEAK	74	PASS
	Off	2310.0	-57.75	2.0	0	37.51	AV	54	PASS
	Off	2390.0	-47.92	2.0	0	47.34	PEAK	74	PASS
	Off	2390.0	-57.44	2.0	0	37.82	AV	54	PASS
	Off	2483.5	-38.79	2.0	0	56.47	PEAK	74	PASS
	Off	2483.5	-42.77	2.0	0	52.49	AV	54	PASS
	Off	2500.0	-48.15	2.0	0	47.11	PEAK	74	PASS
	Off	2500.0	-58.06	2.0	0	37.20	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-47.19	2.0	0	48.07	PEAK	74	PASS
	Off	2310.0	-57.67	2.0	0	37.59	AV	54	PASS
	Off	2390.0	-49.28	2.0	0	45.98	PEAK	74	PASS
	Off	2390.0	-57.46	2.0	0	37.80	AV	54	PASS
	Off	2483.5	-39.52	2.0	0	55.74	PEAK	74	PASS
	Off	2483.5	-45.13	2.0	0	50.13	AV	54	PASS
	Off	2500.0	-47.14	2.0	0	48.12	PEAK	74	PASS
	Off	2500.0	-58.05	2.0	0	37.21	AV	54	PASS
8DPSK	Off	2310.0	-48.69	2.0	0	46.57	PEAK	74	PASS
	Off	2310.0	-57.69	2.0	0	37.57	AV	54	PASS
	Off	2390.0	-47.58	2.0	0	47.68	PEAK	74	PASS
	Off	2390.0	-57.46	2.0	0	37.80	AV	54	PASS
	Off	2483.5	-39.29	2.0	0	55.97	PEAK	74	PASS
	Off	2483.5	-45.14	2.0	0	50.12	AV	54	PASS
	Off	2500.0	-49.77	2.0	0	45.49	PEAK	74	PASS
	Off	2500.0	-58.01	2.0	0	37.25	AV	54	PASS

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



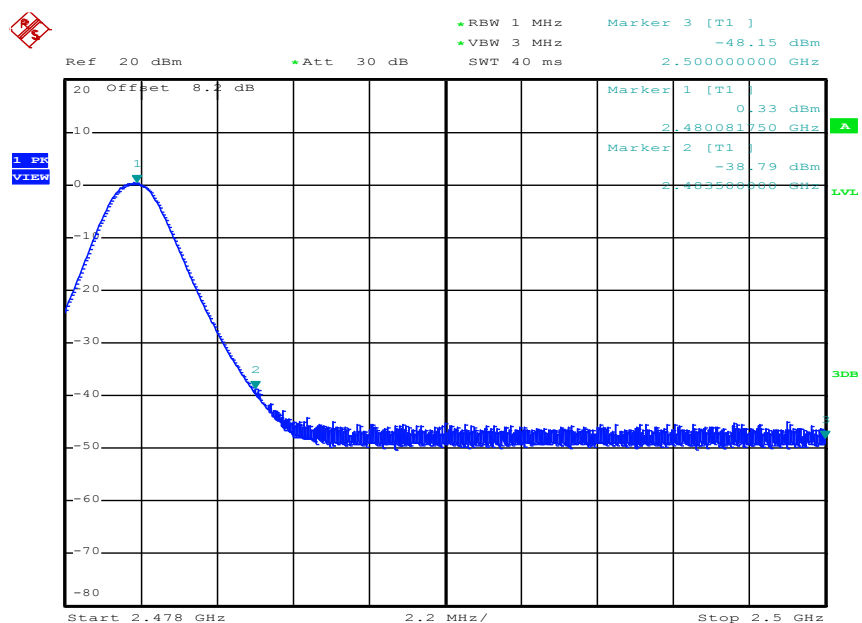
Date: 20.SEP.2019 10:17:27

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



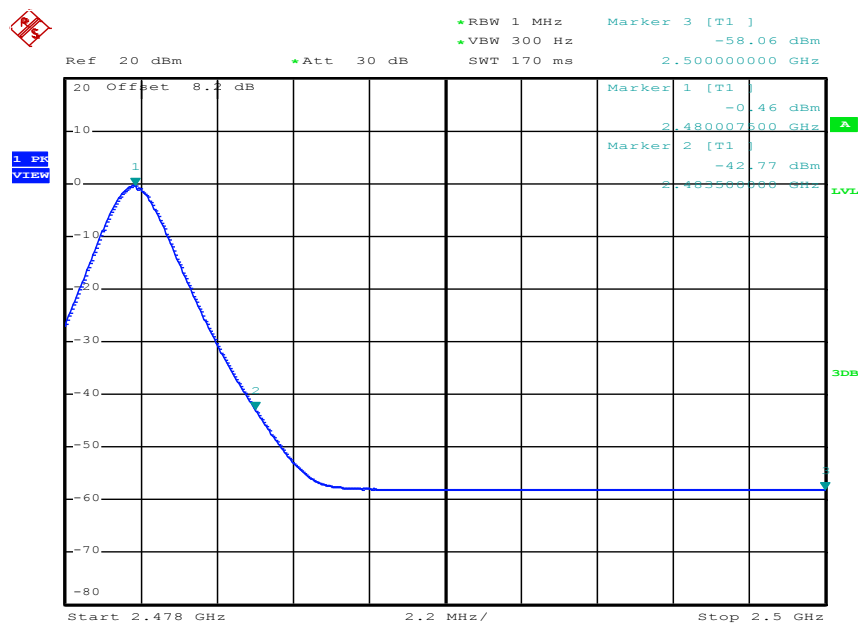
Date: 20.SEP.2019 10:17:40

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



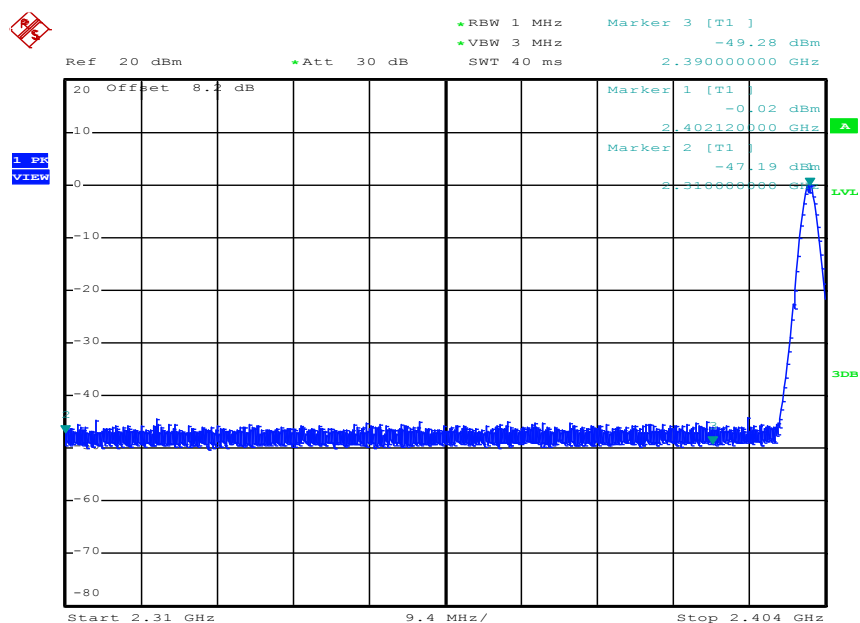
Date: 20.SEP.2019 10:21:54

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



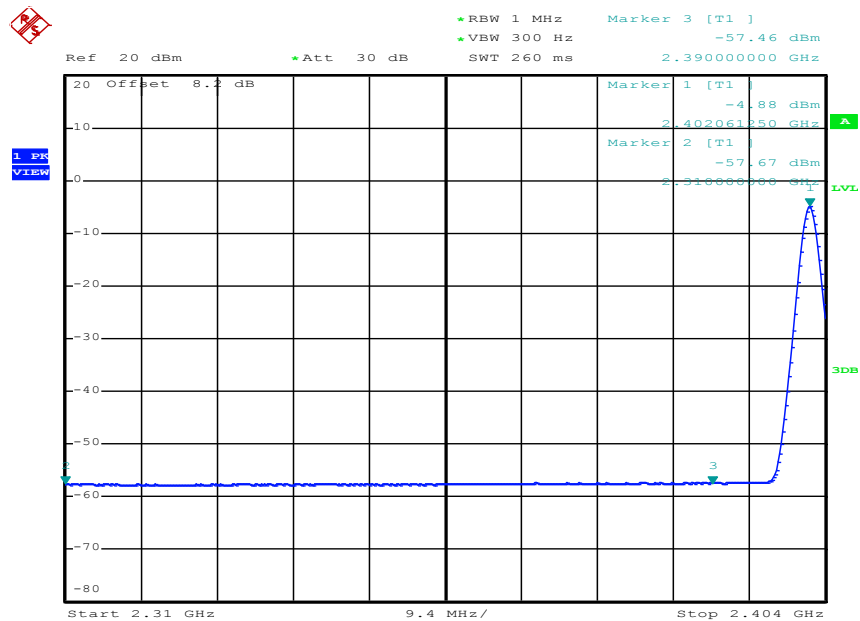
Date: 20.SEP.2019 10:22:07

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



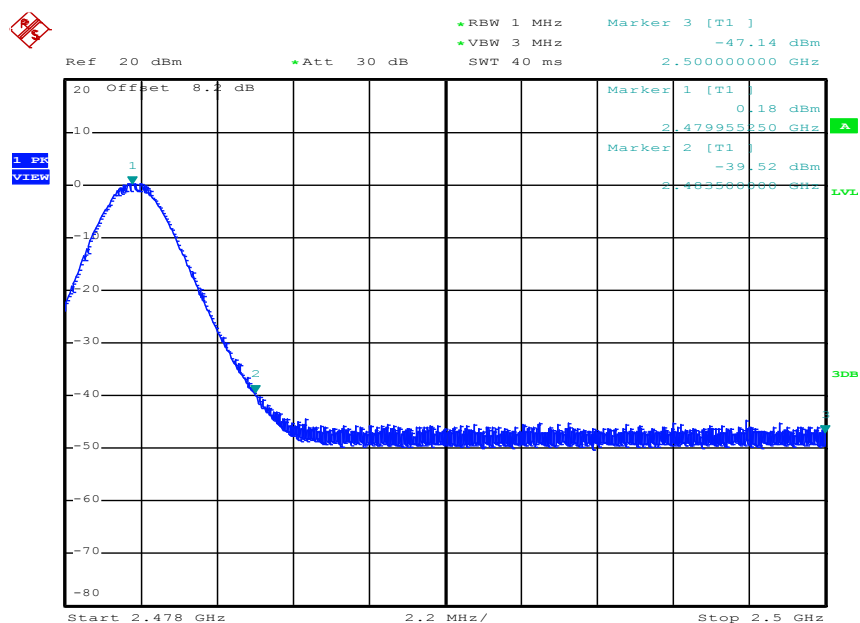
Date: 20.SEP.2019 10:24:27

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



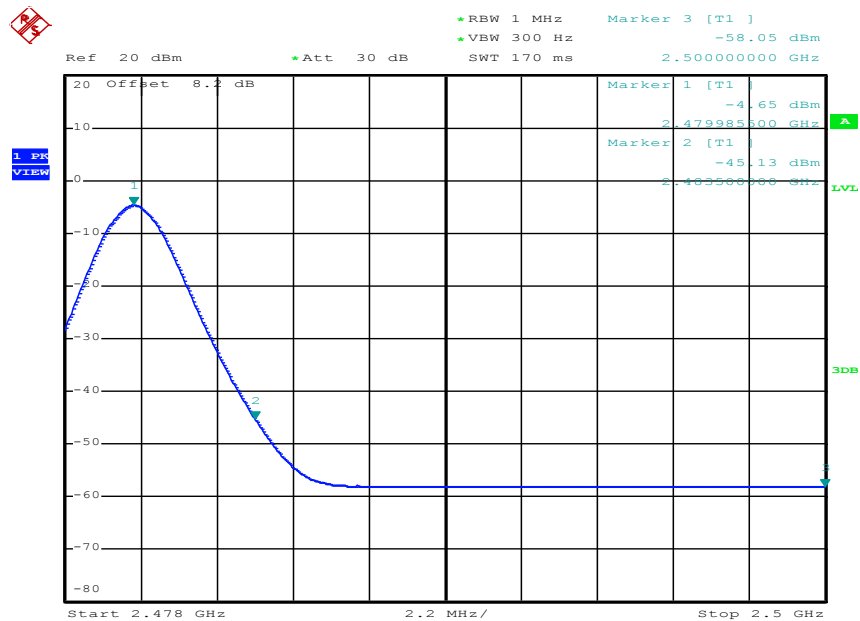
Date: 20.SEP.2019 10:24:40

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



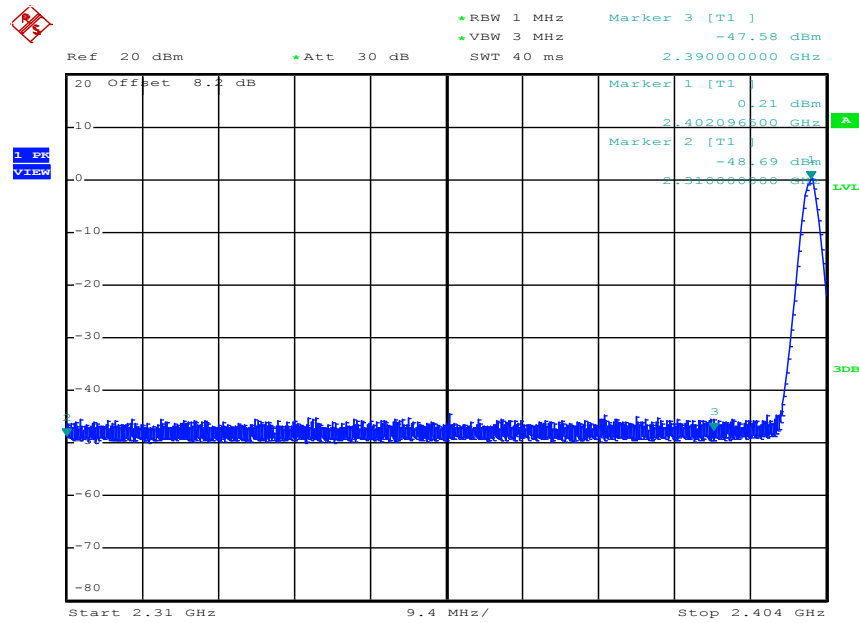
Date: 20.SEP.2019 10:29:54

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



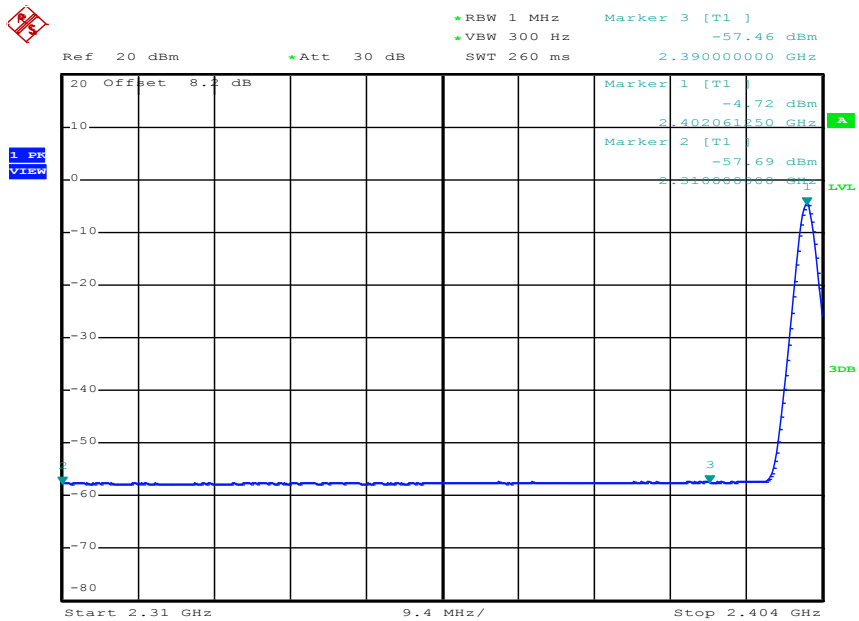
Date: 20.SEP.2019 10:30:08

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



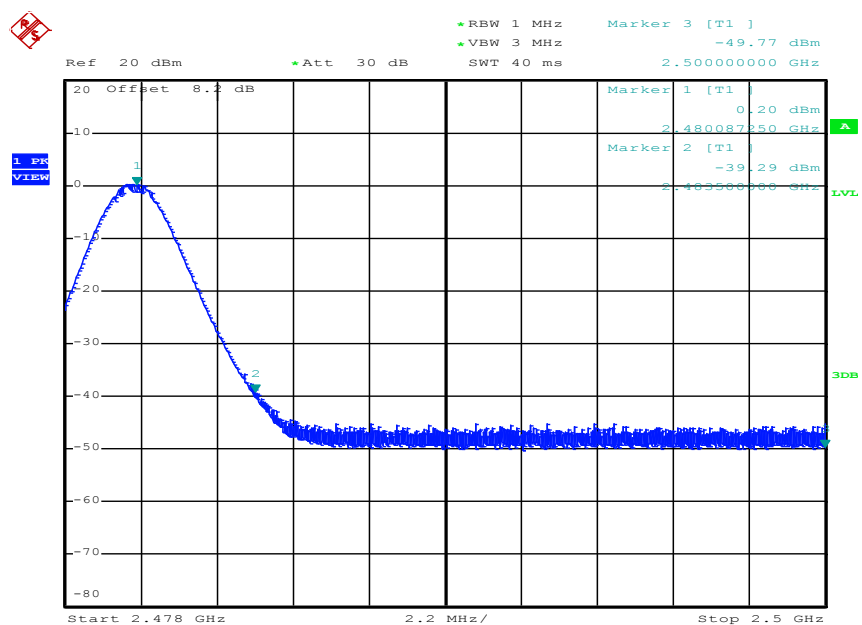
Date: 20.SEP.2019 10:34:07

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



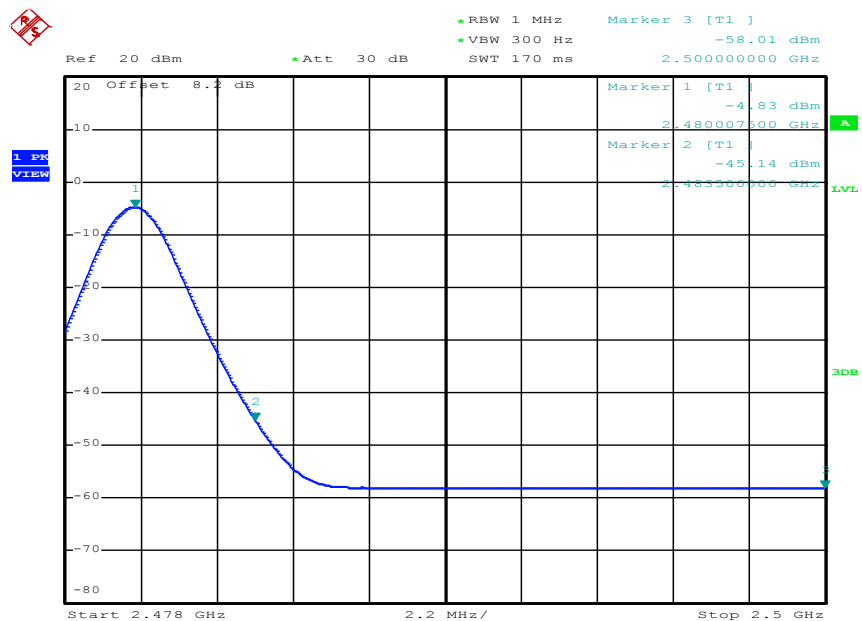
Date: 20.SEP.2019 10:34:20

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



Date: 20.SEP.2019 10:38:46

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



Date: 20.SEP.2019 10:38:59