

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth karaoke speaker

Trade Mark: N/A

Test Model: SP-052

Additional Model No.: MI-S041S-101, MI-S041S-199

Environmental Conditions

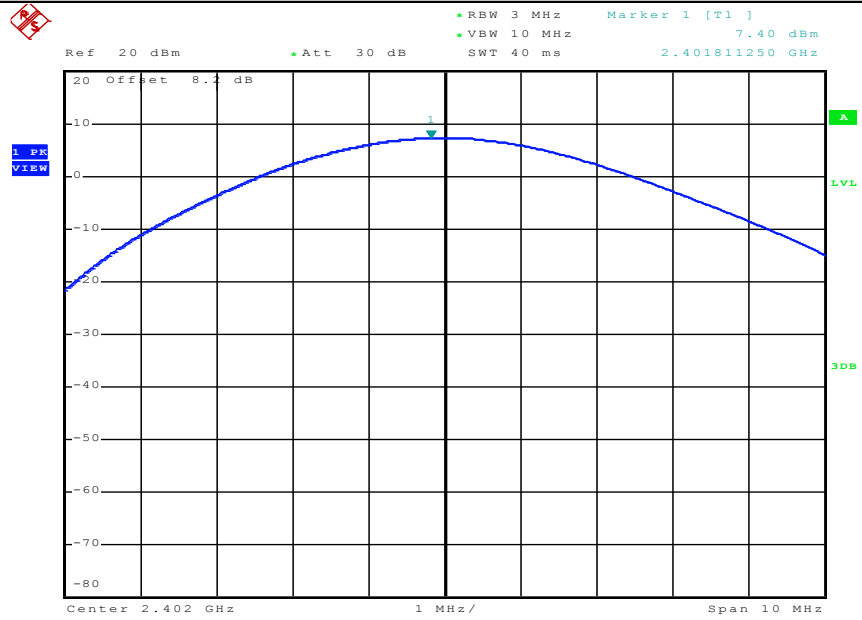
Temperature:	24.8°C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Li Huan
Supervised by:	Wang.Chuang

A.1 Maxmum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	7.400	30	PASS
	MCH	1.140	30	PASS
	HCH	1.780	30	PASS
π/4DQPSK	LCH	0.830	21	PASS
	MCH	0.380	21	PASS
	HCH	1.020	21	PASS

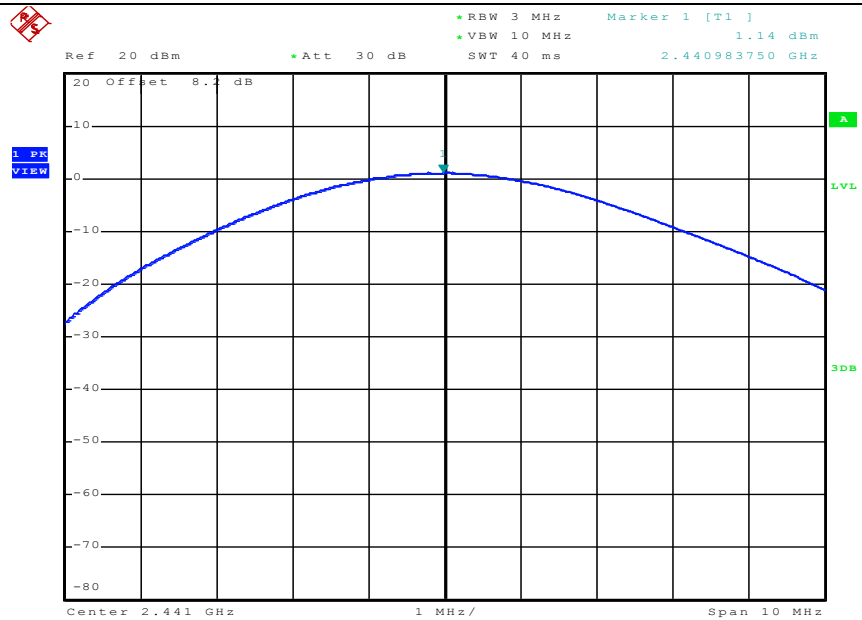
Test Graphs

GFSK/LCH



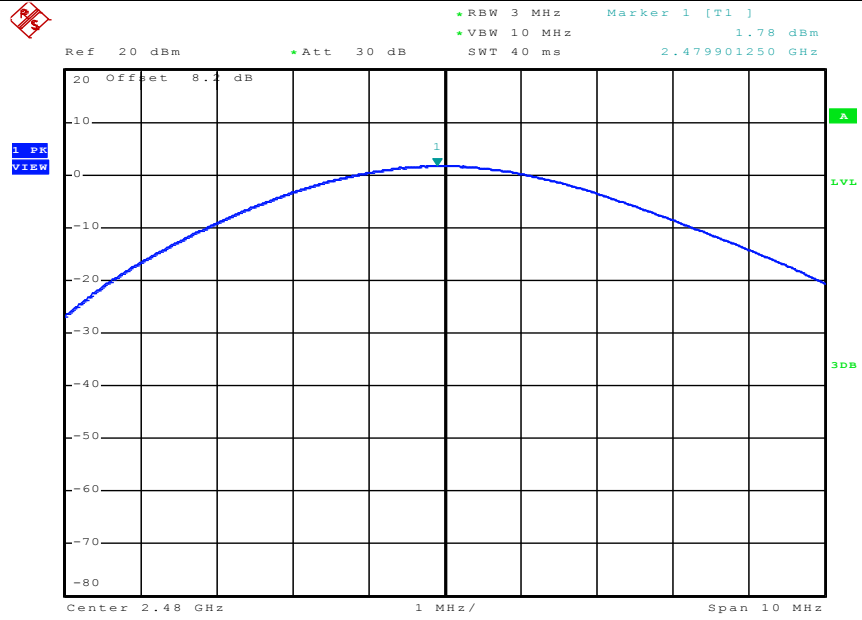
Date: 27.AUG.2019 14:50:09

GFSK/MCH



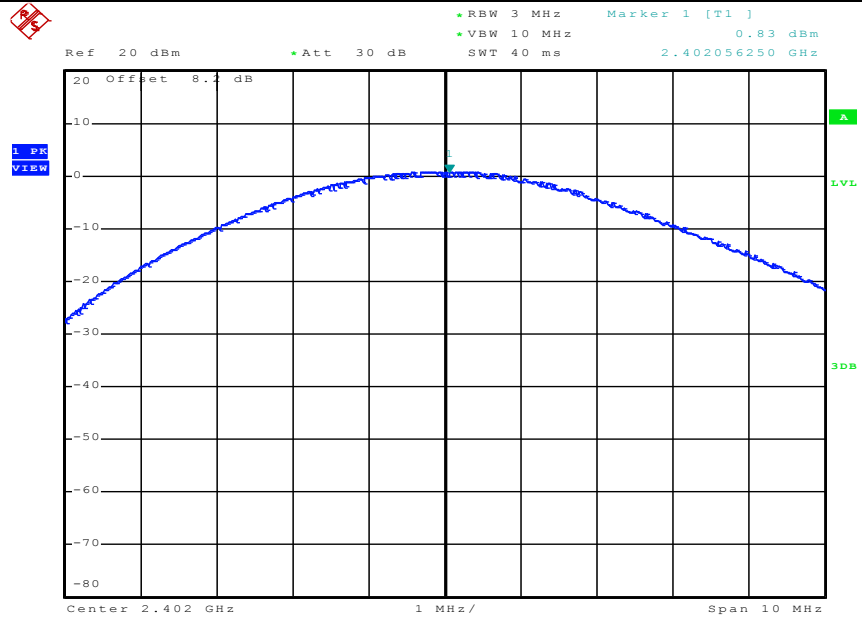
Date: 27.AUG.2019 14:54:18

GFSK/HCH



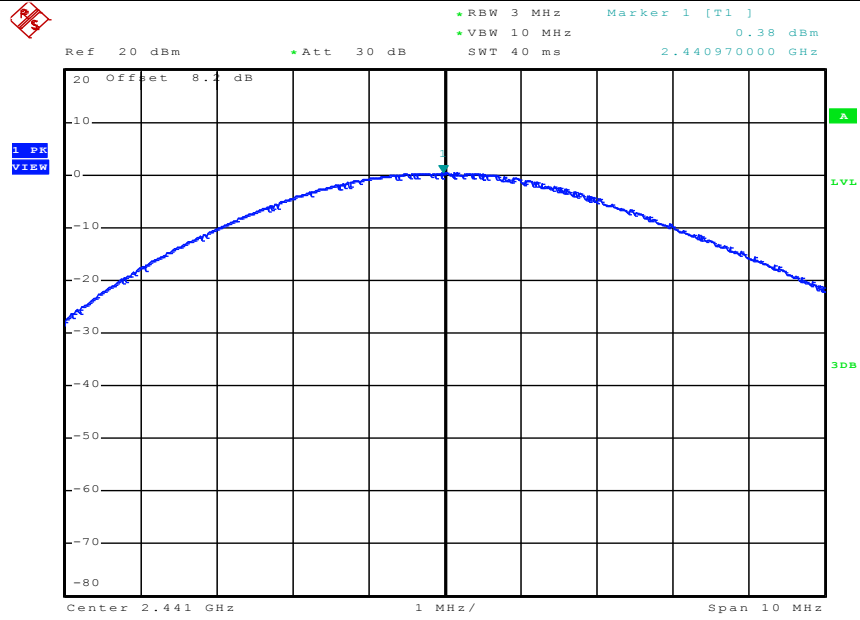
Date: 27.AUG.2019 14:55:59

$\pi/4$ DQPSK/LCH



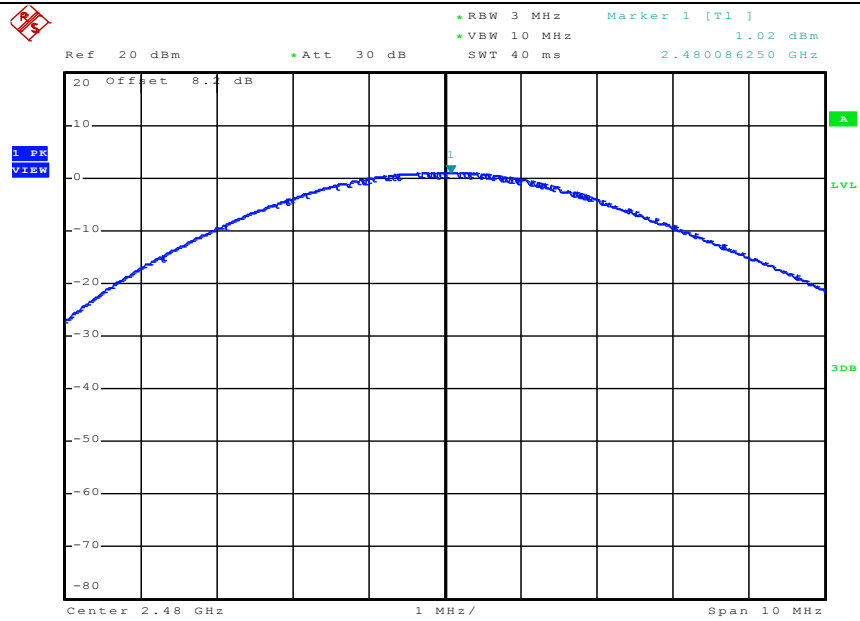
Date: 27.AUG.2019 14:58:30

$\pi/4$ DQPSK/MCH



Date: 27.AUG.2019 15:00:58

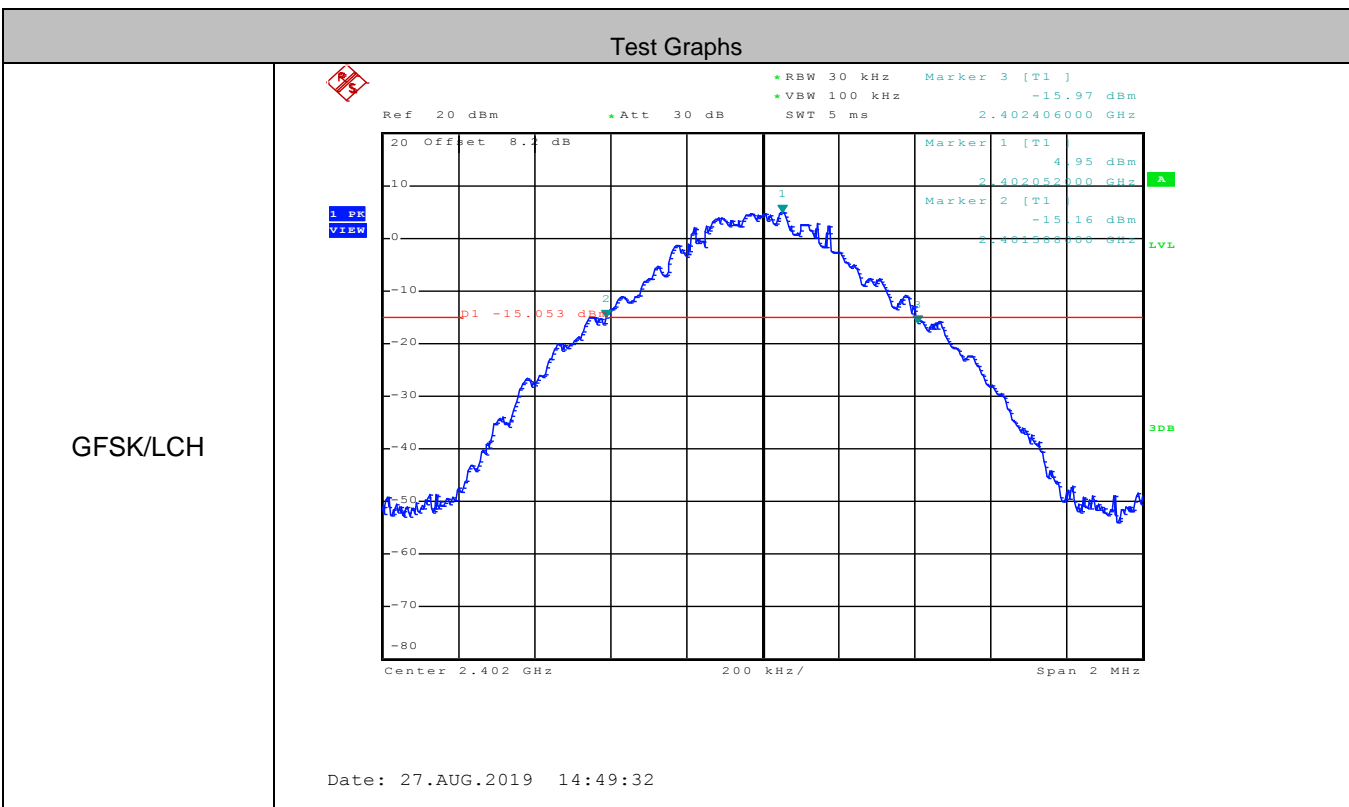
$\pi/4$ DQPSK/HCH



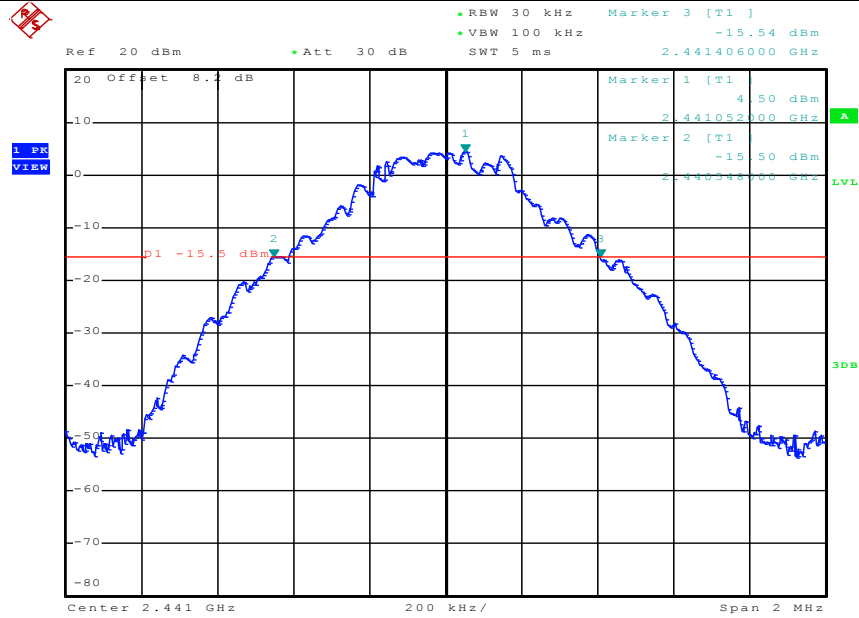
Date: 27.AUG.2019 15:02:40

A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.818	Not Specified	PASS
	MCH	0.858	Not Specified	PASS
	HCH	0.862	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.286	Not Specified	PASS
	MCH	1.260	Not Specified	PASS
	HCH	1.262	Not Specified	PASS

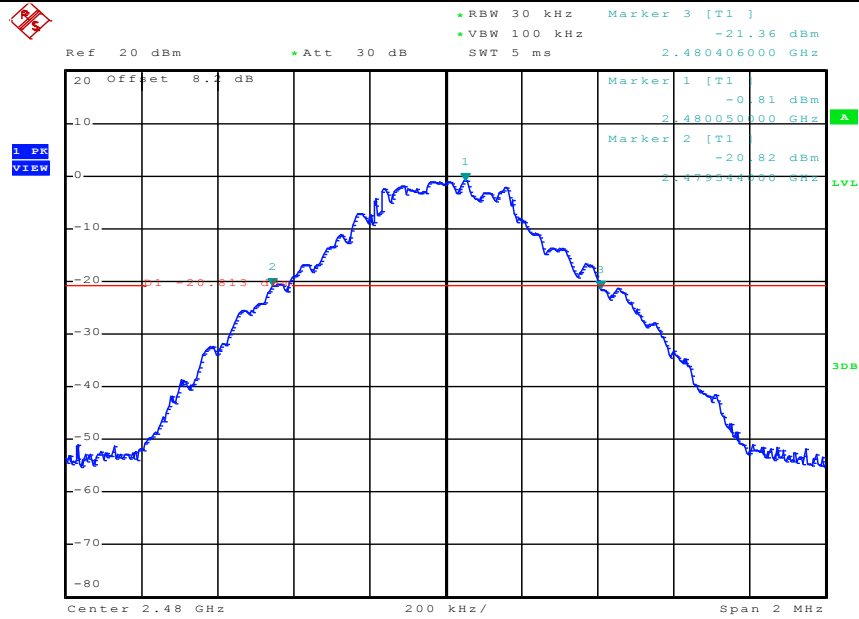


GFSK/MCH



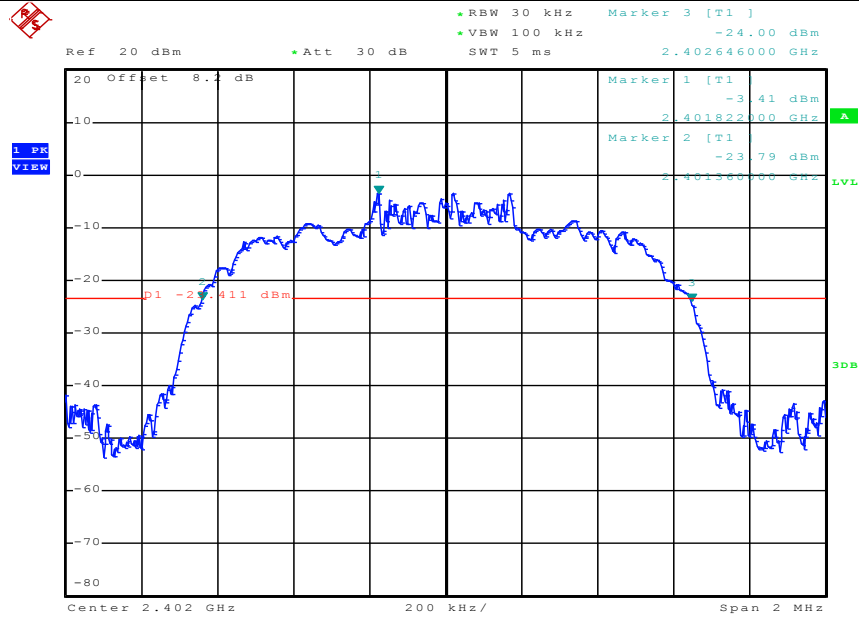
Date: 27.AUG.2019 14:51:59

GFSK/HCH



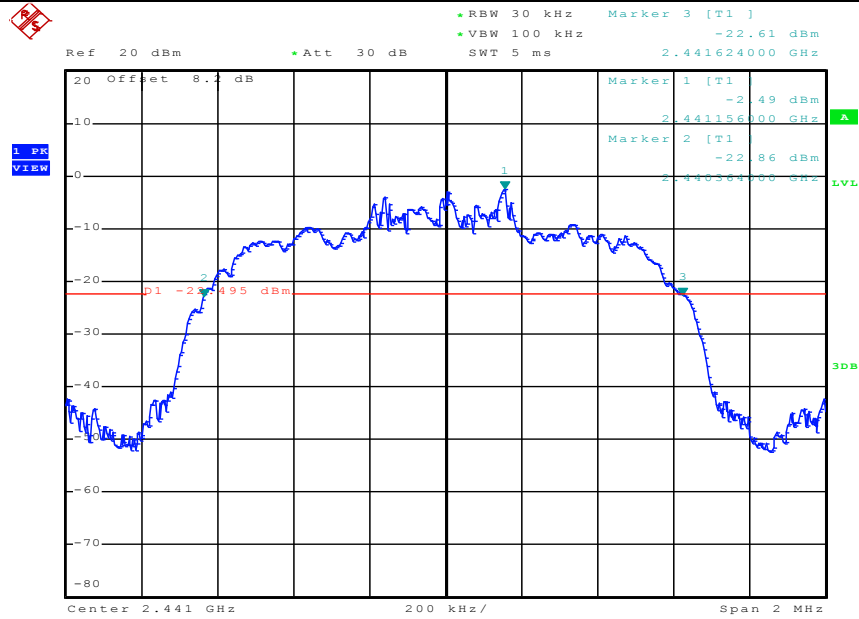
Date: 27.AUG.2019 14:55:23

$\pi/4$ DQPSK/LCH

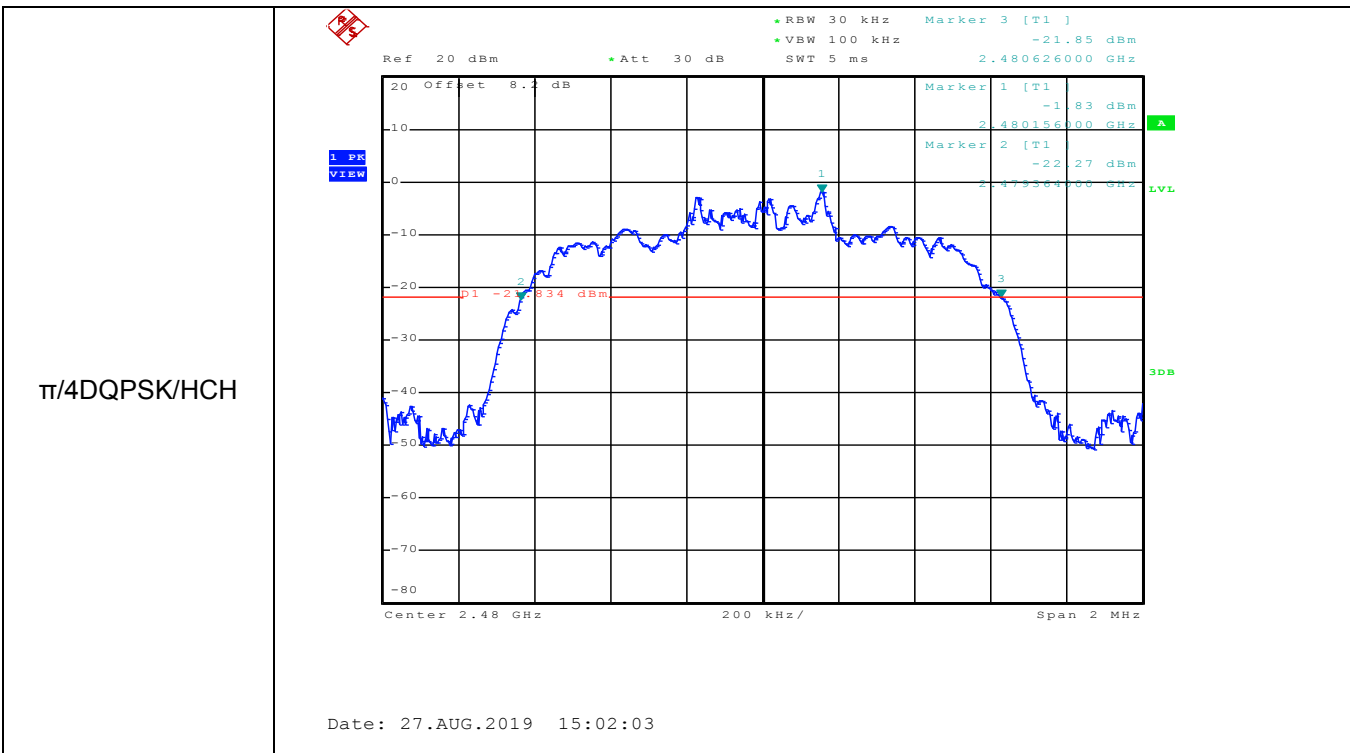


Date: 27.AUG.2019 14:57:54

$\pi/4$ DQPSK/MCH

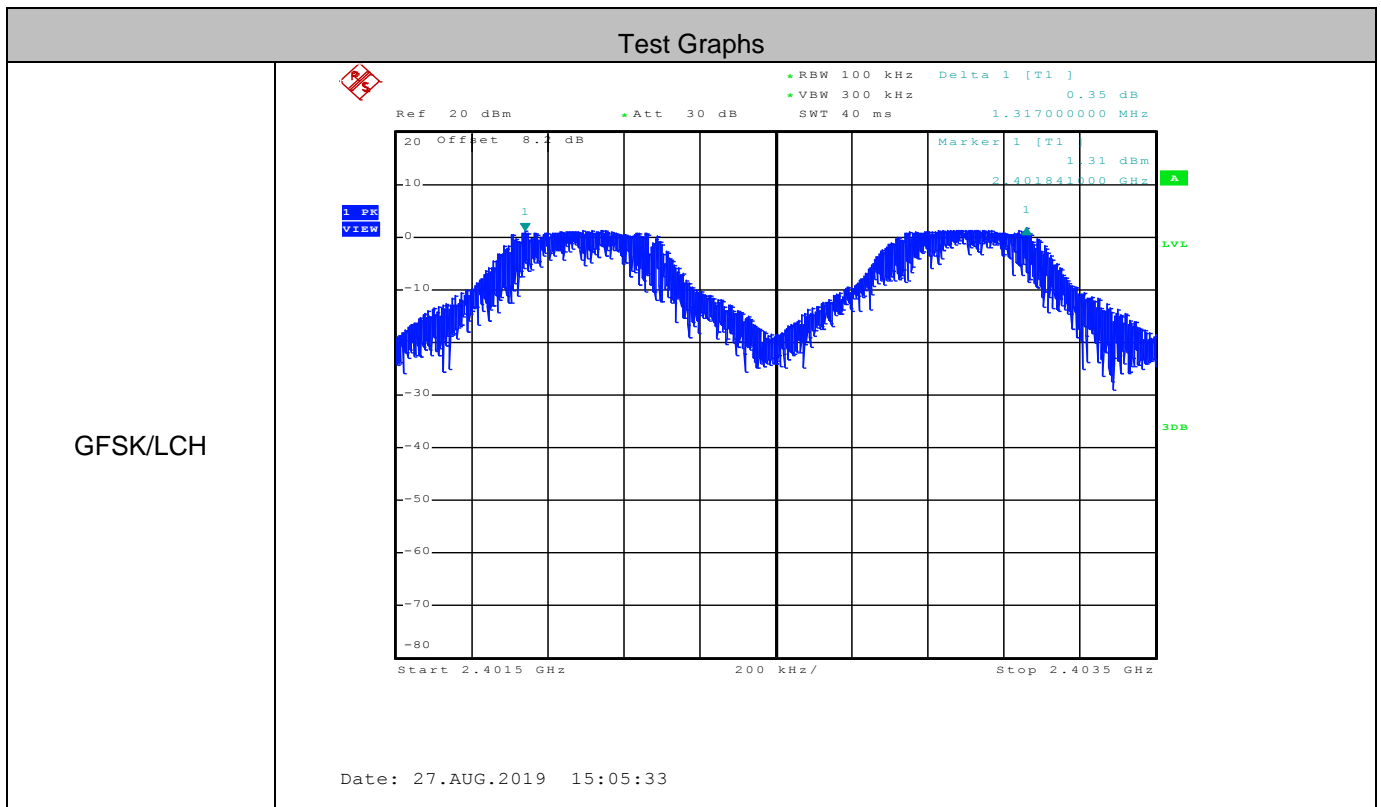


Date: 27.AUG.2019 15:00:21

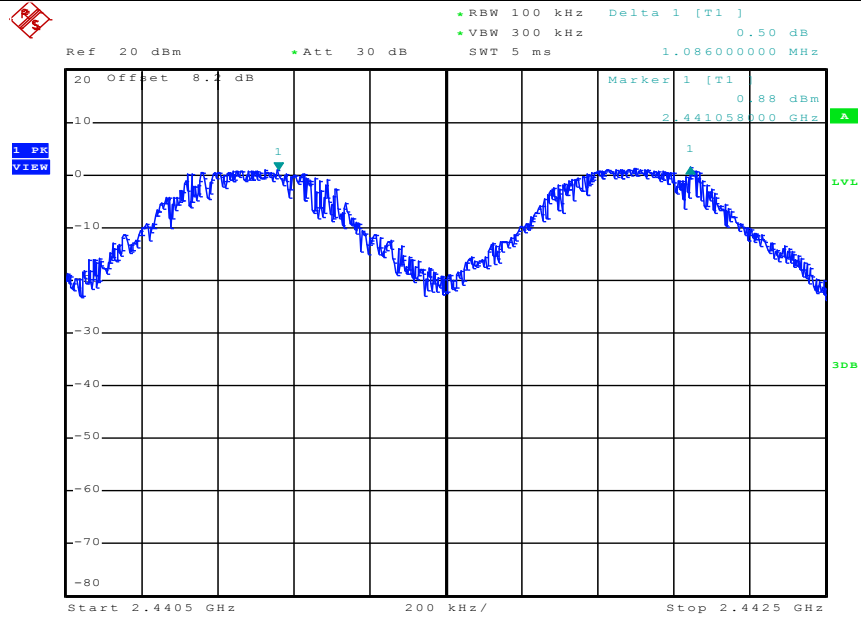


A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.317	0.575	PASS
	MCH	1.086	0.575	PASS
	HCH	1.042	0.575	PASS
π/4DQPSK	LCH	1.002	0.857	PASS
	MCH	1.308	0.857	PASS
	HCH	0.872	0.857	PASS

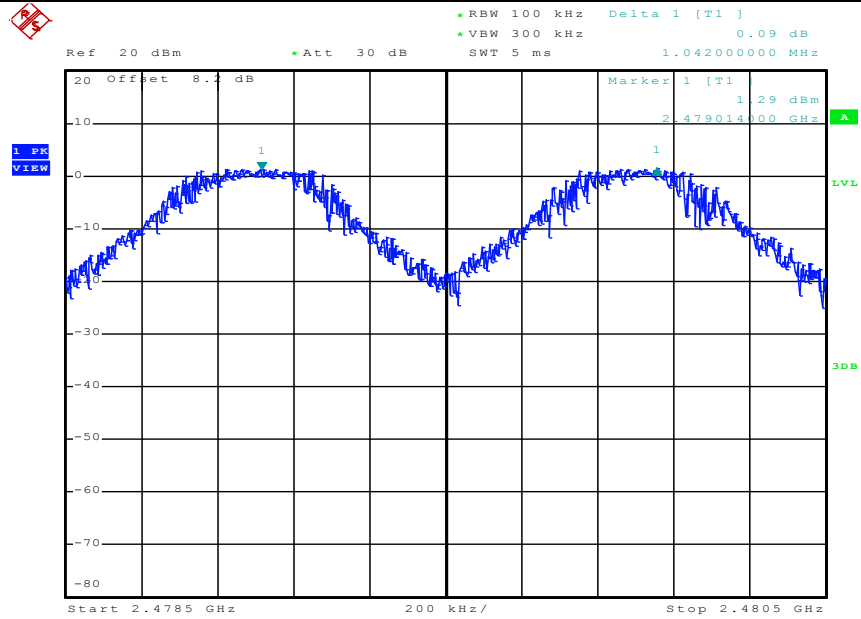


GFSK/MCH



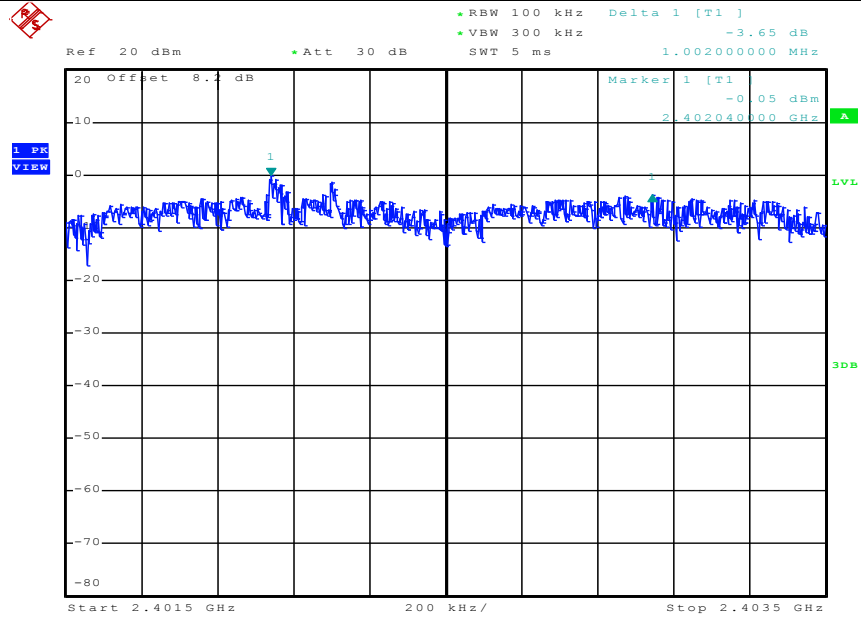
Date: 27.AUG.2019 15:07:16

GFSK/HCH



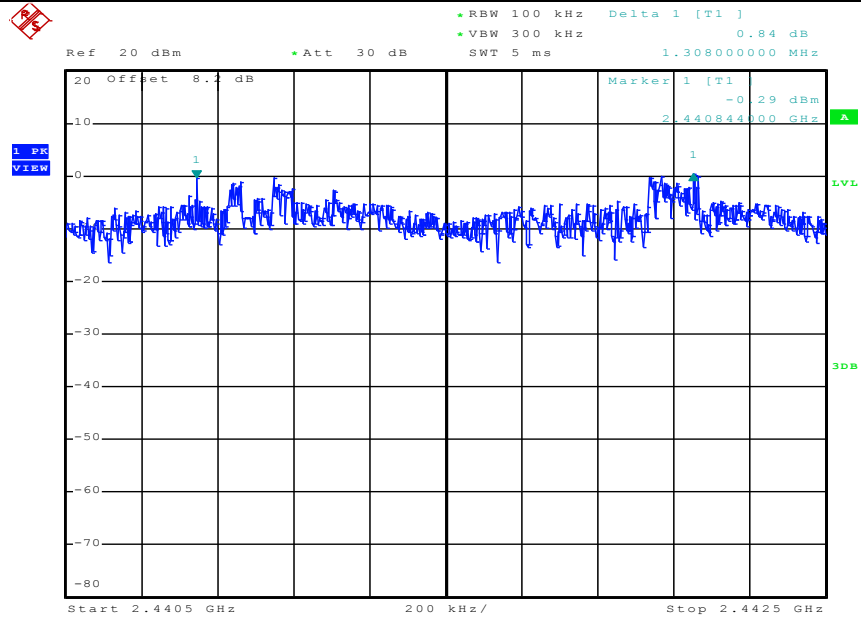
Date: 27.AUG.2019 15:07:41

$\pi/4$ DQPSK/LCH



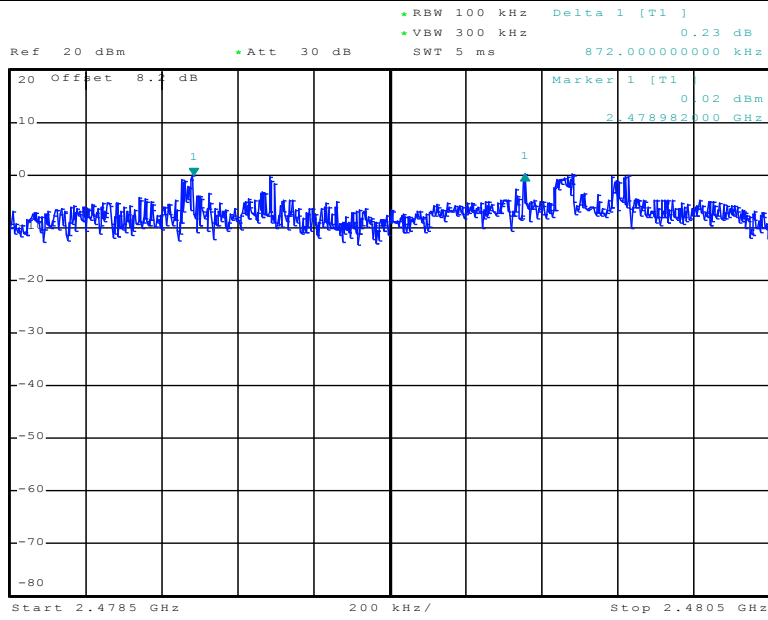
Date: 27.AUG.2019 15:12:20

$\pi/4$ DQPSK/MCH



Date: 27.AUG.2019 15:14:28

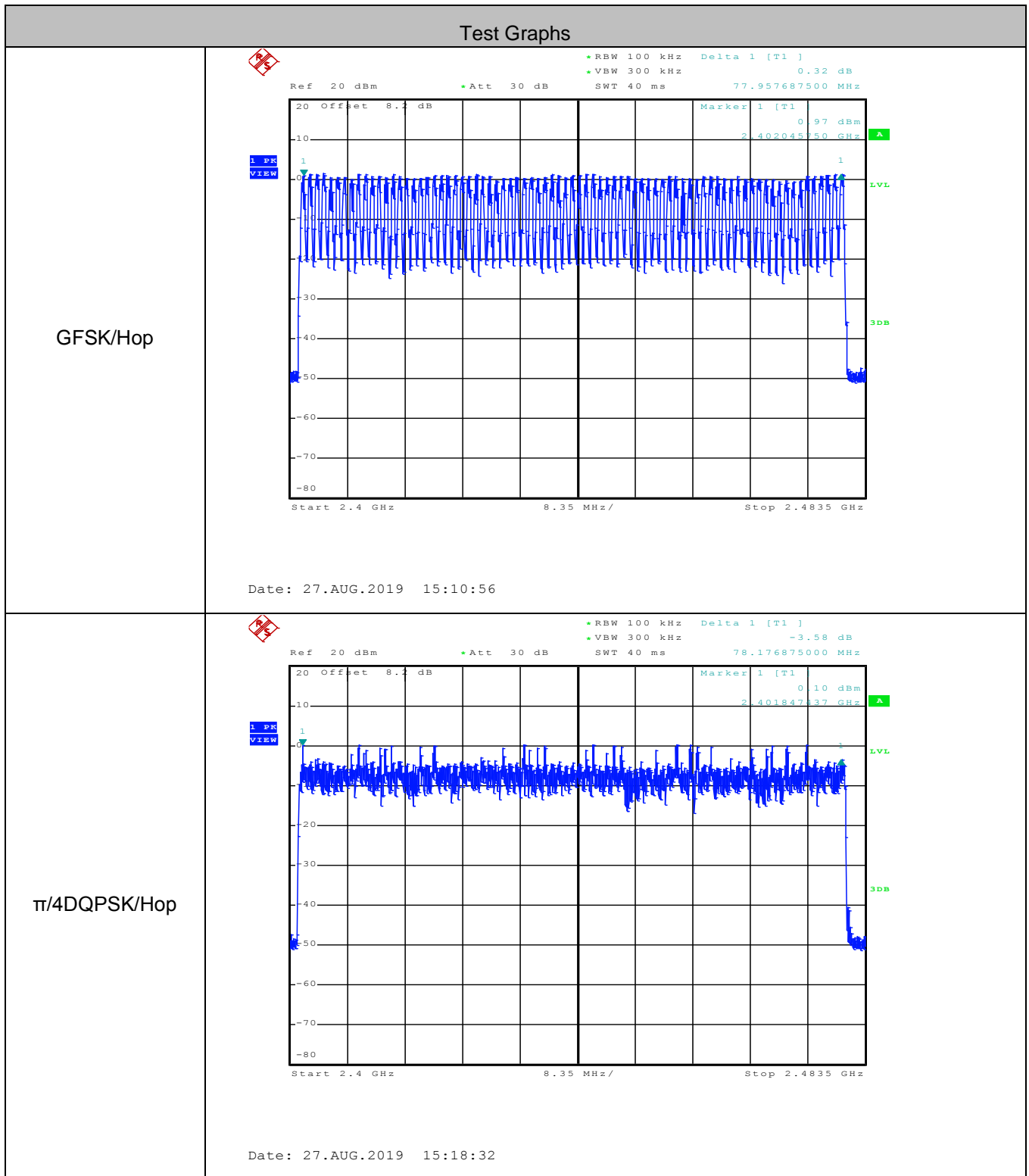
$\pi/4$ DQPSK/HCH



Date: 27.AUG.2019 15:19:20

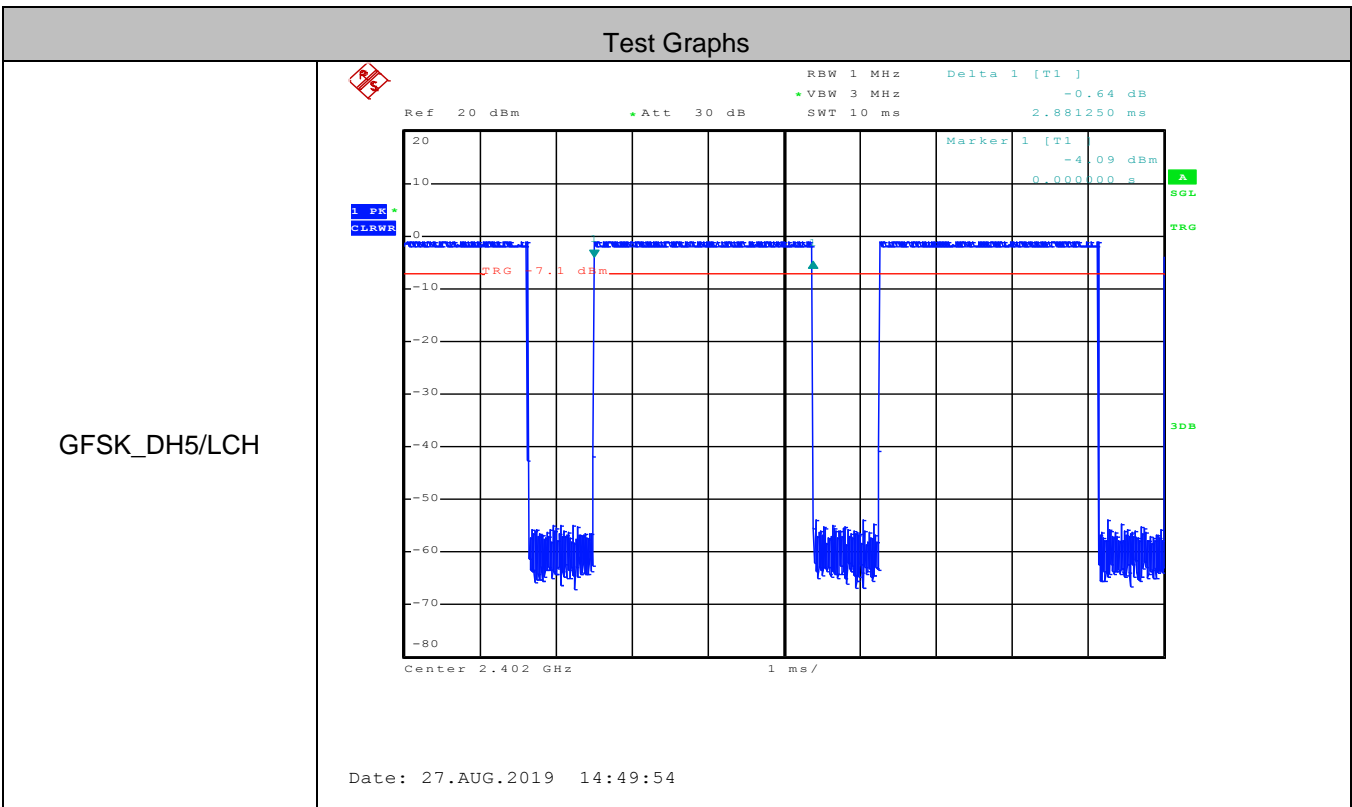
A.4 Hopping Channel Number

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

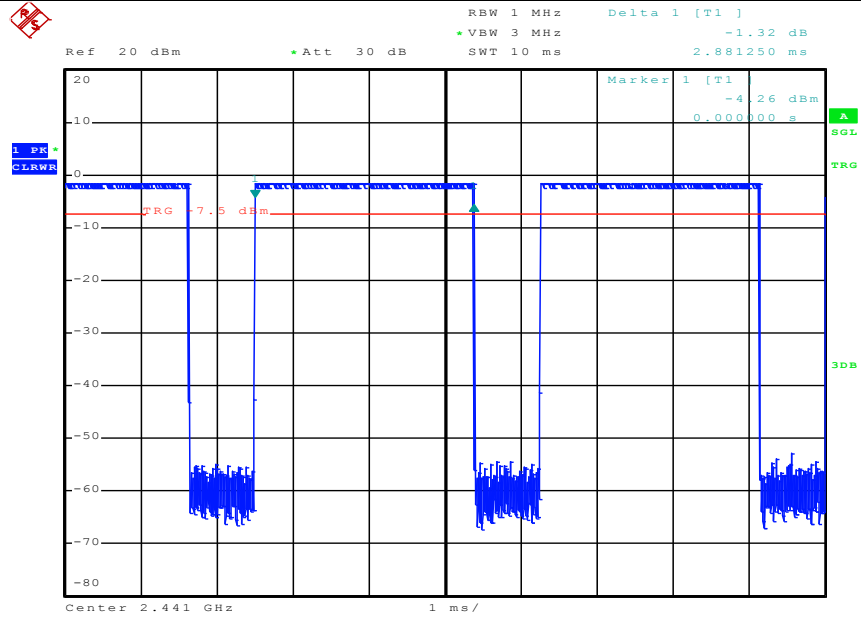


A.5 Dwell Time

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

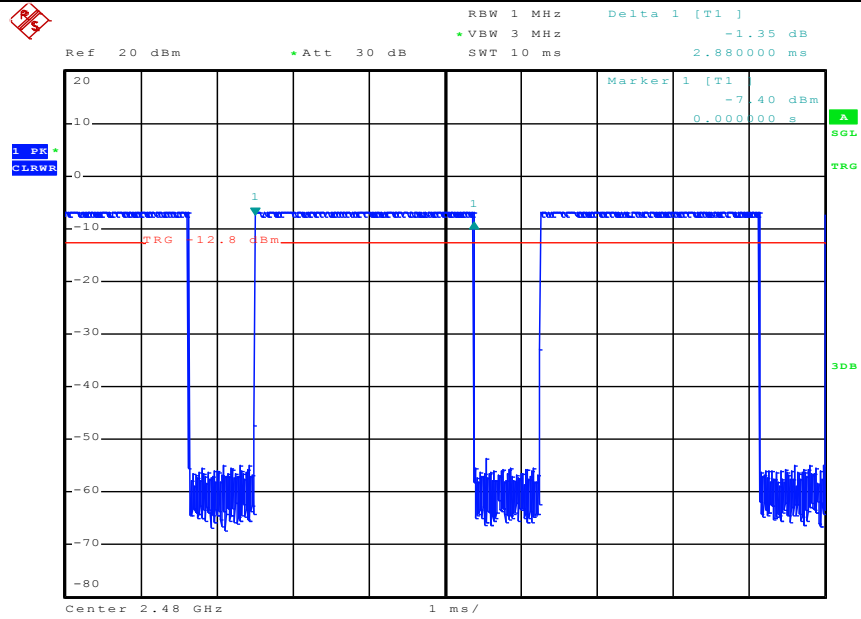


GFSK_DH5/MCH



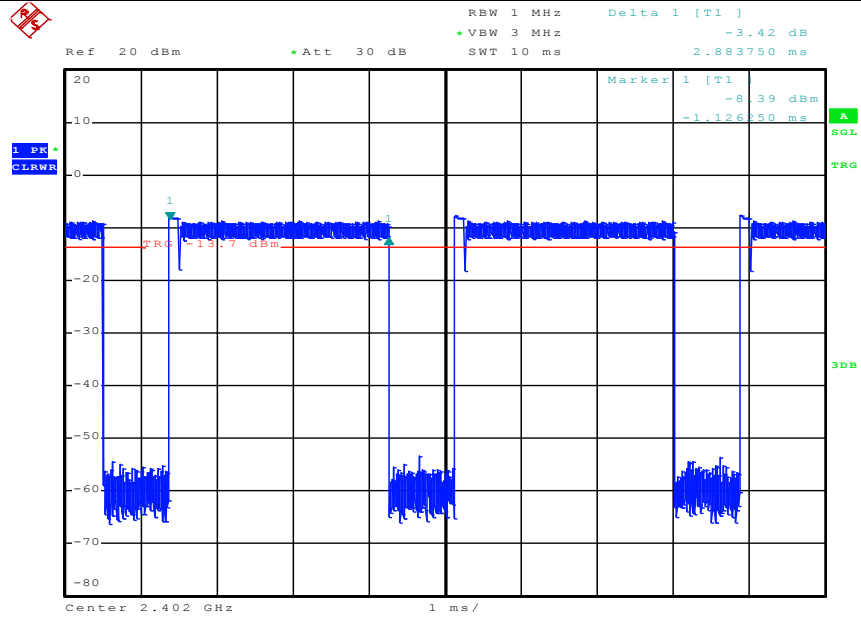
Date: 27.AUG.2019 14:52:20

GFSK_DH5/HCH



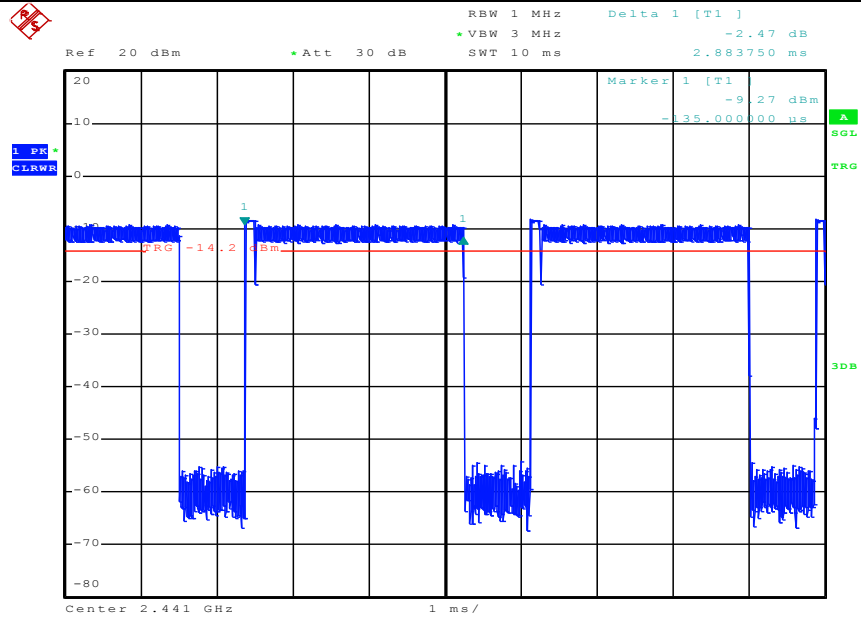
Date: 27.AUG.2019 14:55:44

$\pi/4$ DQPSK
_2DH5/LCH



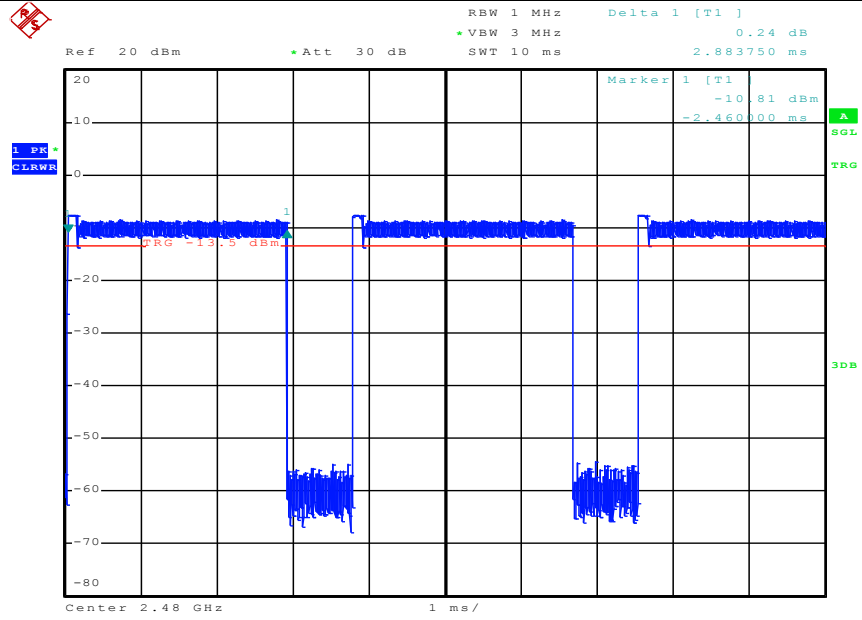
Date: 27.AUG.2019 14:58:15

$\pi/4$ DQPSK
_2DH5/MCH



Date: 27.AUG.2019 15:00:43

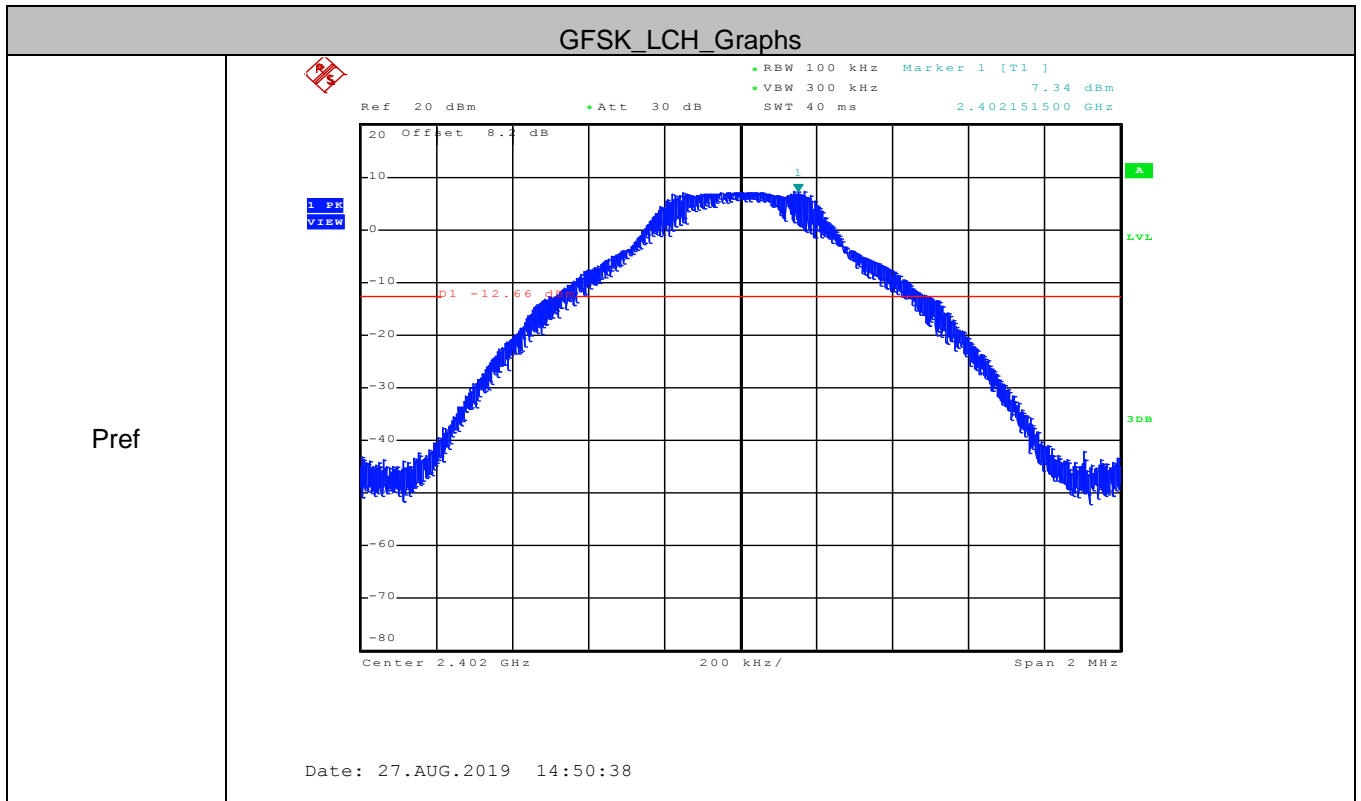
$\pi/4$ DQPSK
_2DH5/HCH



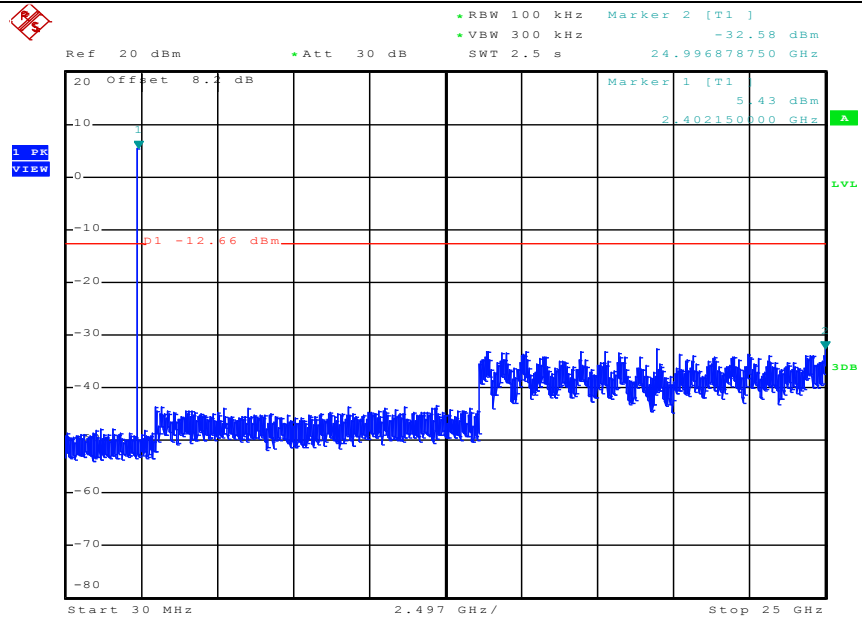
Date: 27.AUG.2019 15:02:25

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	7.34	-32.580	-12.660	PASS
	MCH	1.03	-32.670	-18.970	PASS
	HCH	1.59	-32.600	-18.410	PASS
π /4DQPSK	LCH	0.82	-32.720	-19.180	PASS
	MCH	0.37	-32.390	-19.630	PASS
	HCH	0.96	-32.520	-19.040	PASS



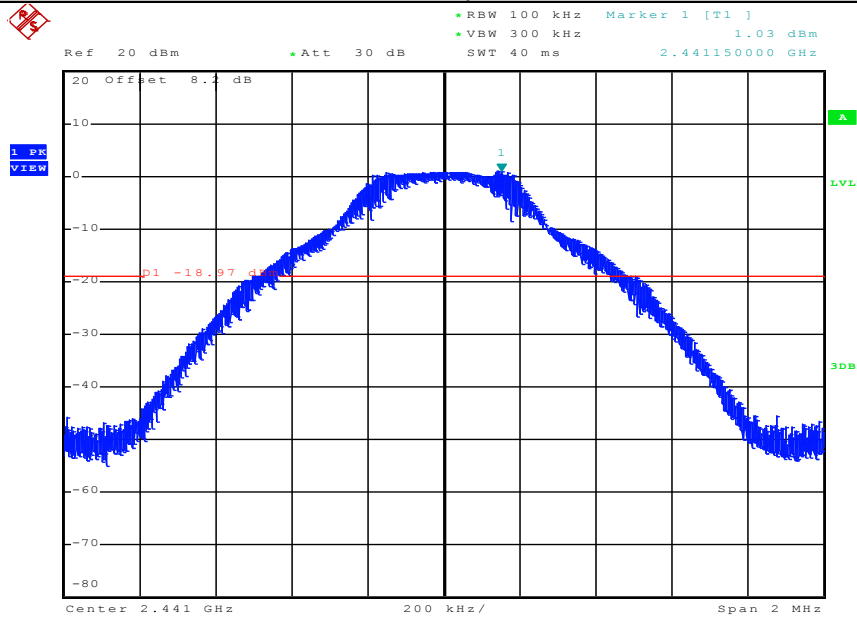
P_{uw}



Date: 27.AUG.2019 14:50:53

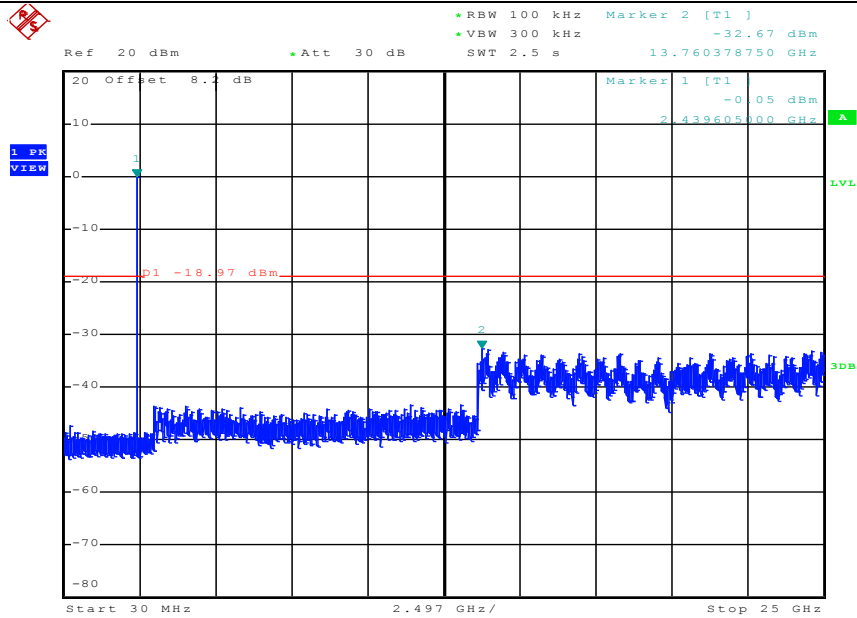
GFSK_MCH_Graphs

Pref



Date: 27.AUG.2019 14:54:31

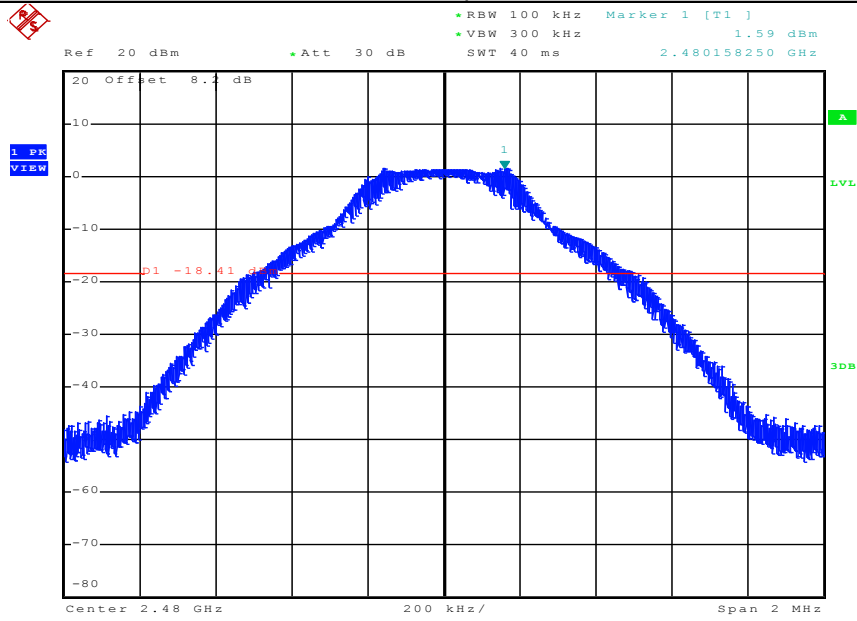
Puw



Date: 27.AUG.2019 14:54:45

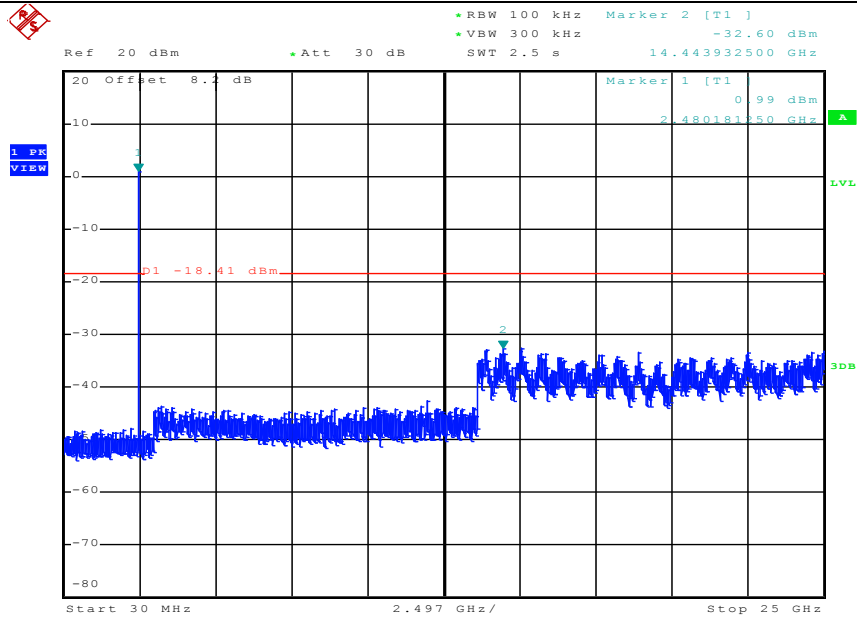
GFSK_HCH_Graphs

Pref



Date: 27.AUG.2019 14:56:28

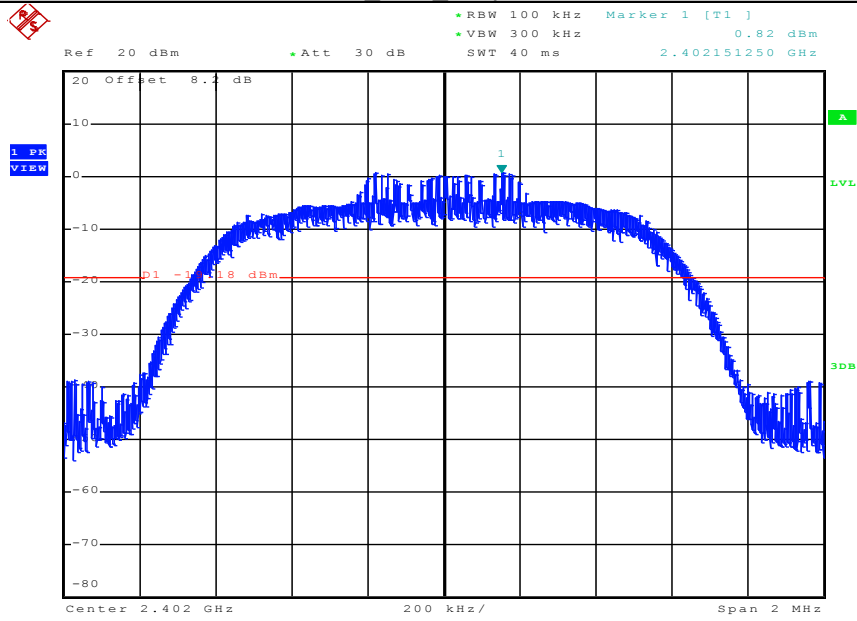
Puw



Date: 27.AUG.2019 14:56:43

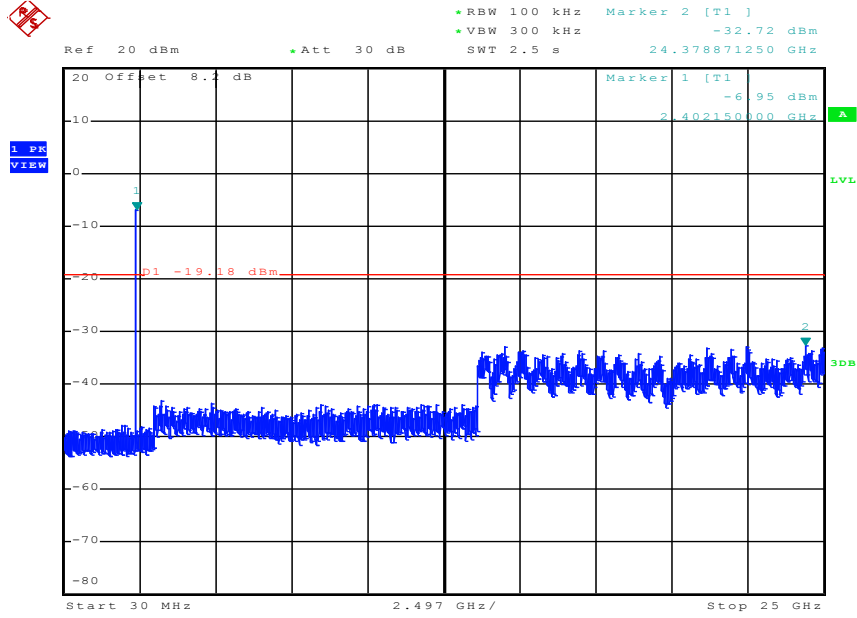
$\pi/4$ DQPSK_LCH_Graphs

Pref



Date: 27.AUG.2019 14:59:00

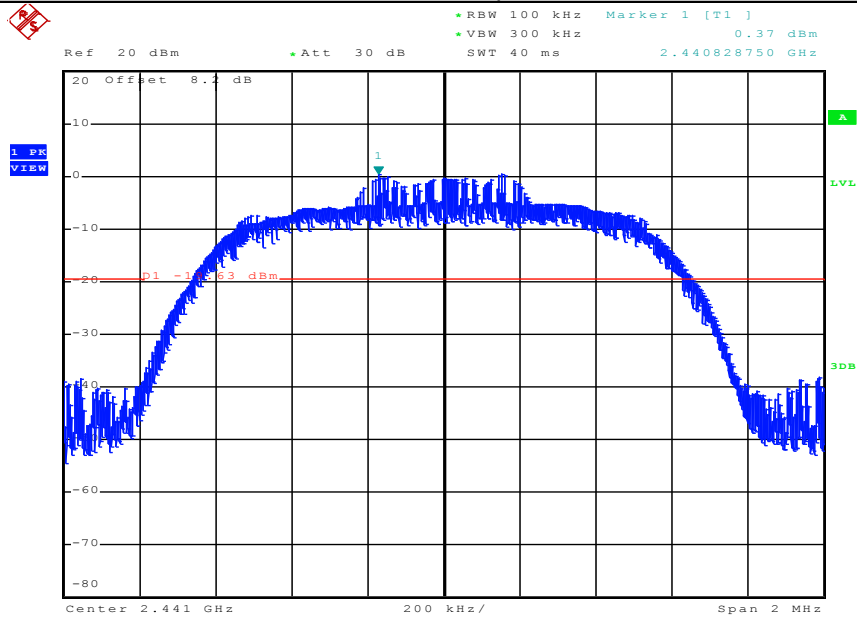
Puw



Date: 27.AUG.2019 14:59:14

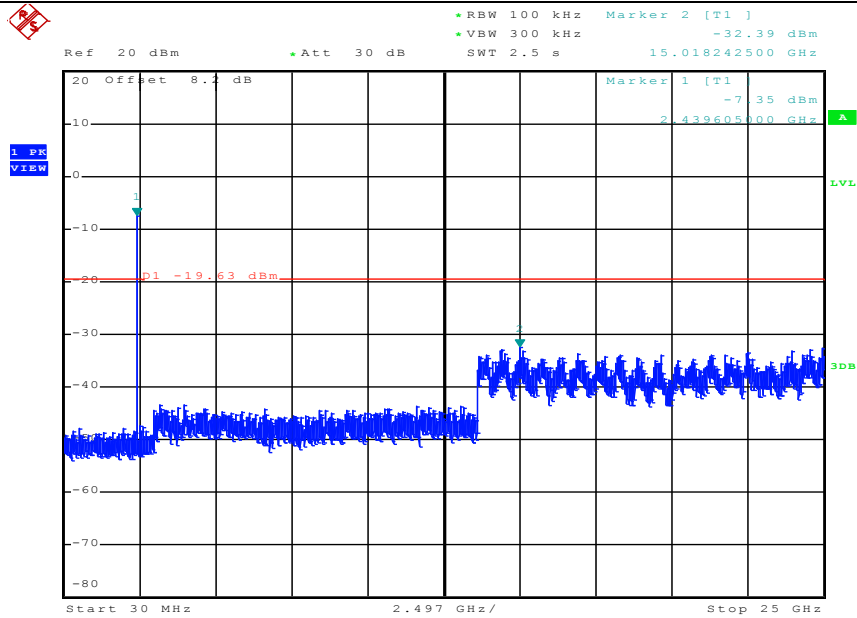
$\pi/4$ DQPSK_MCH_Graphs

Pref



Date: 27.AUG.2019 15:01:10

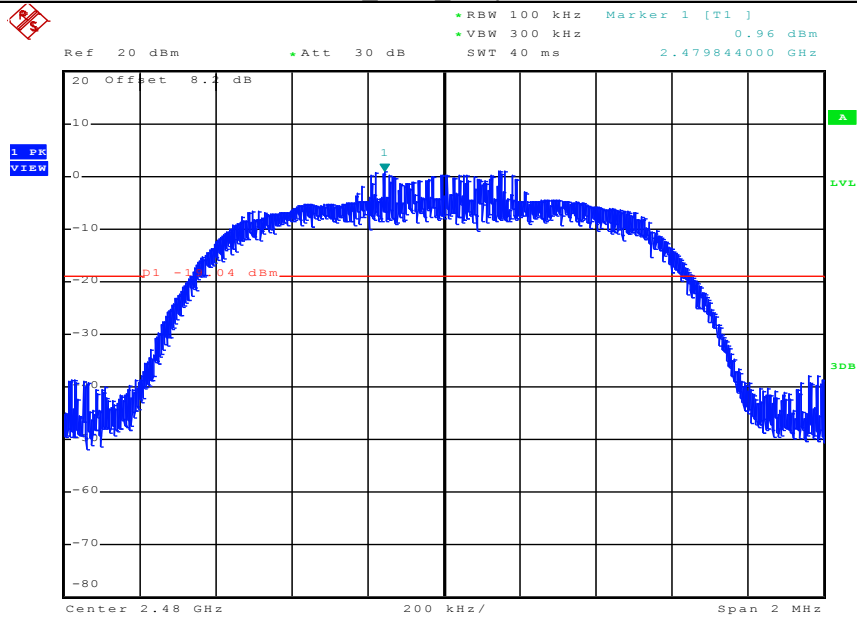
Puw



Date: 27.AUG.2019 15:01:25

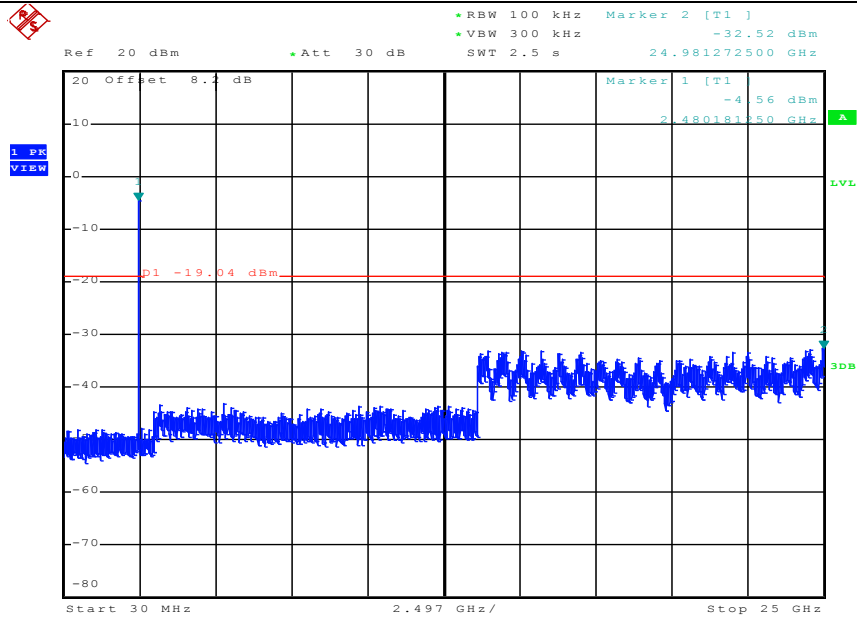
$\pi/4$ DQPSK_HCH_Graphs

Pref



Date: 27.AUG.2019 15:03:10

Puw



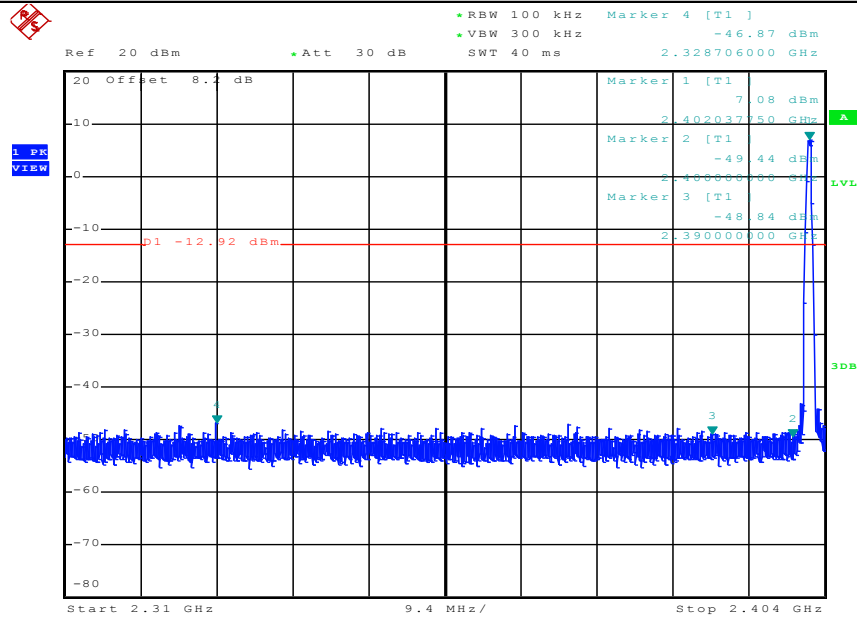
Date: 27.AUG.2019 15:03:25

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	7.080	Off	-46.874	-12.92	PASS
			1.320	On	-47.424	-18.68	PASS
	HCH	2480	1.310	Off	-47.364	-18.69	PASS
			1.240	On	-46.425	-18.76	PASS
$\pi/4$ DQPSK	LCH	2402	0.840	Off	-46.972	-19.16	PASS
			0.280	On	-46.720	-19.72	PASS
	HCH	2480	0.410	Off	-48.008	-19.59	PASS
			0.090	On	-46.972	-19.91	PASS

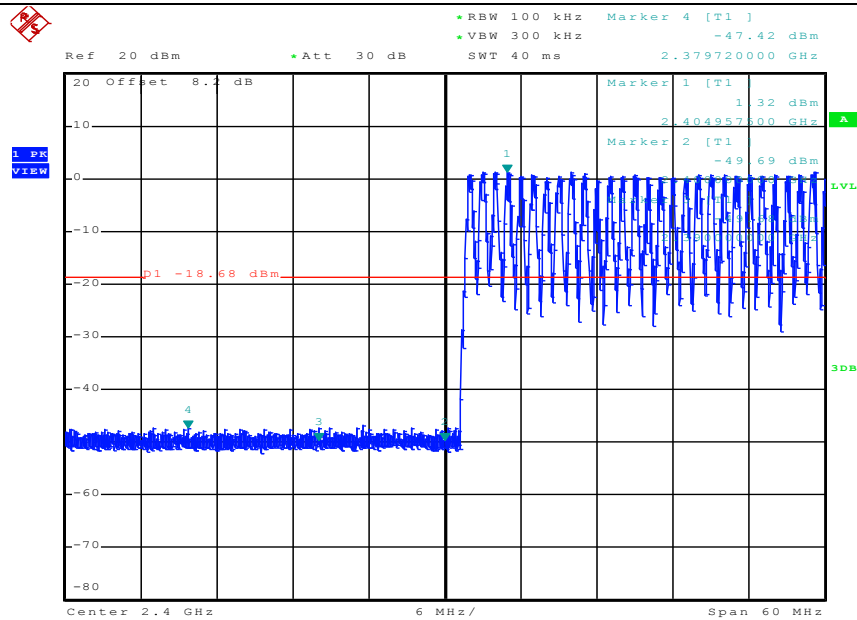
Test Graphs

GFSK/LCH/No Hop



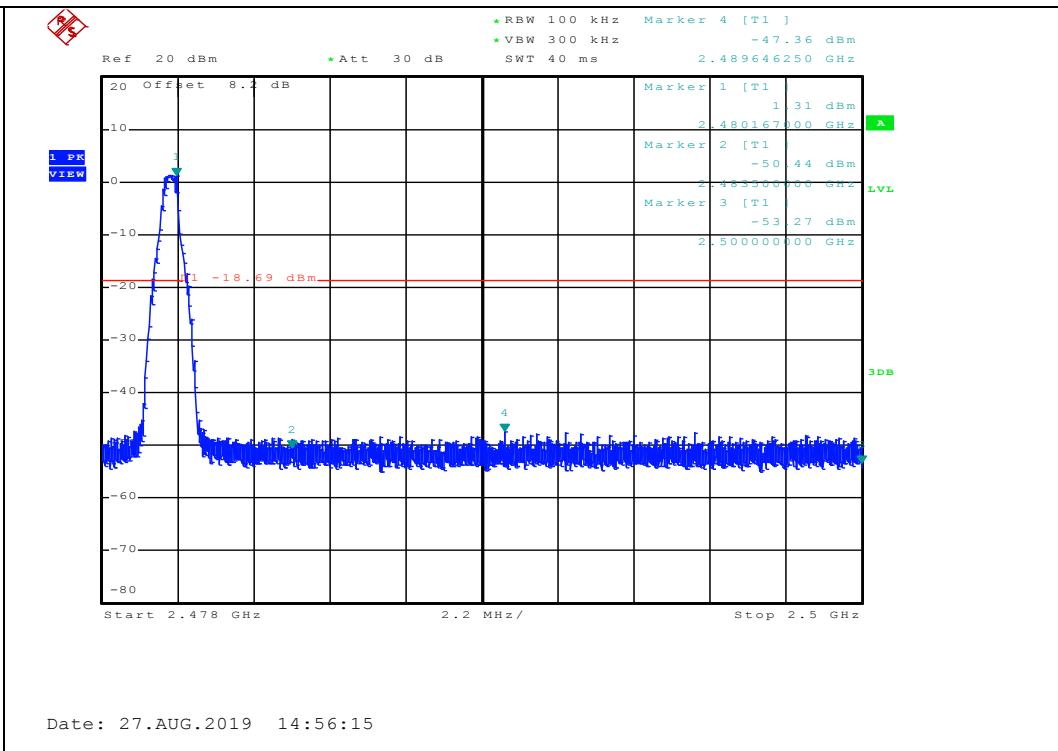
Date: 27.AUG.2019 14:50:25

GFSK/LCH/Hop

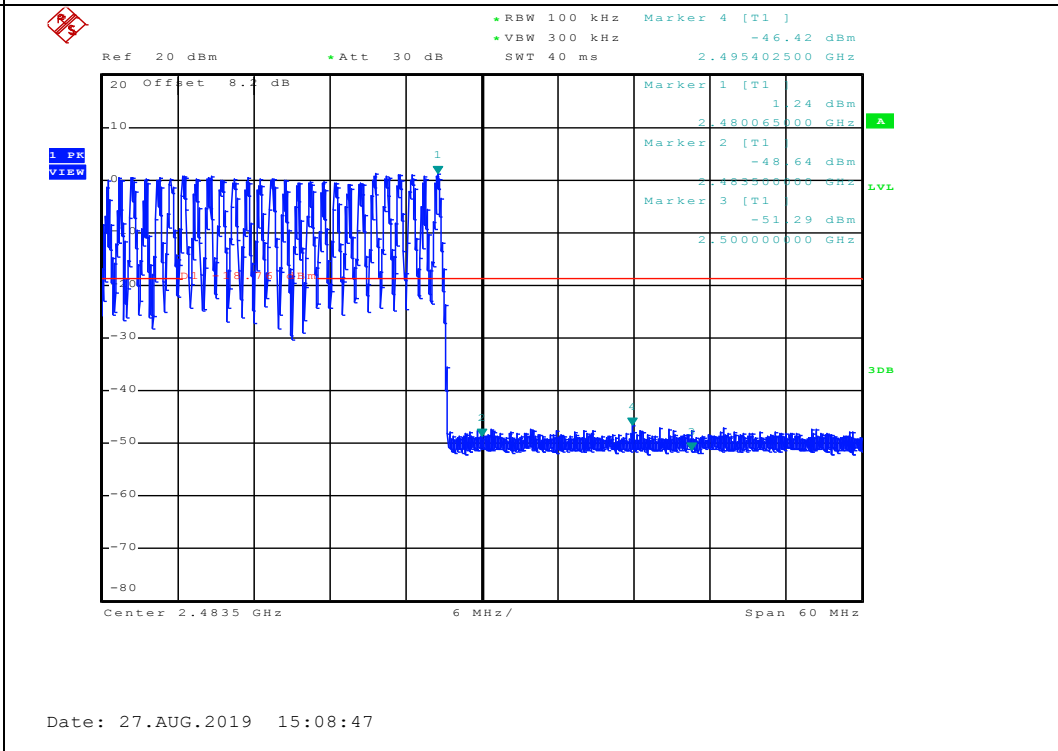


Date: 27.AUG.2019 15:06:56

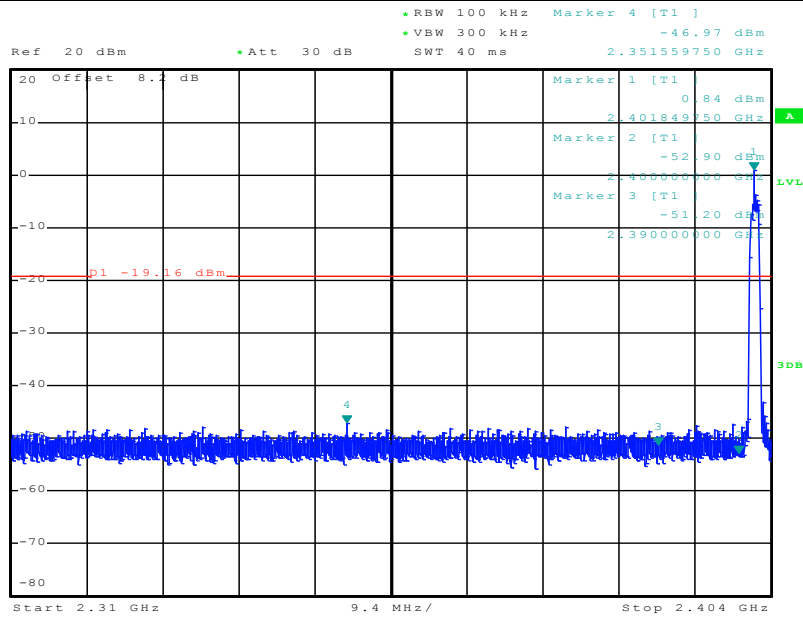
GFSK/HCH/No Hop



GFSK/HCH/Hop

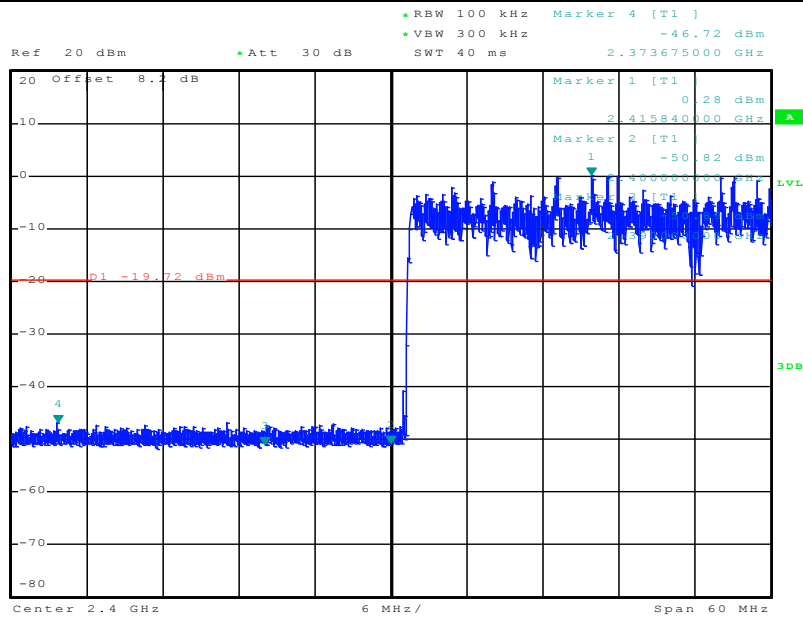


π /4DQPSK/LCH/No
Hop



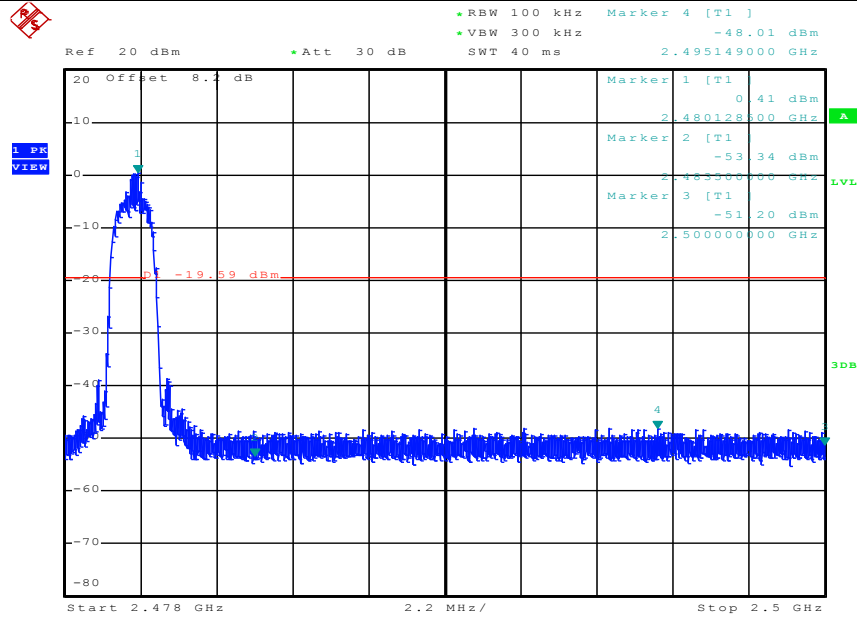
Date: 27.AUG.2019 14:58:47

π /4DQPSK/LCH/Hop



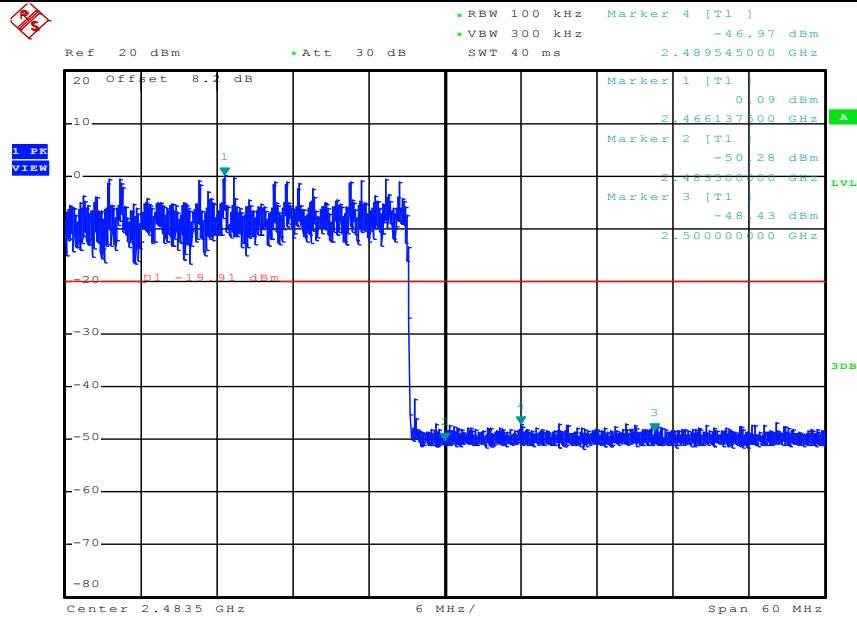
Date: 27.AUG.2019 15:13:59

π /4DQPSK/HCH/No Hop



Date: 27.AUG.2019 15:02:57

π /4DQPSK/HCH/Hop

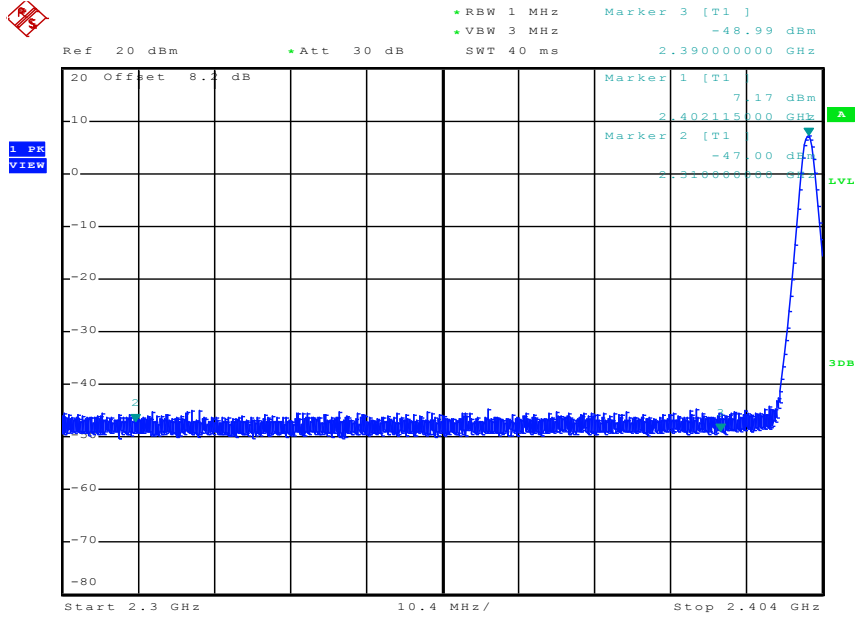


Date: 27.AUG.2019 15:16:32

A.8 Restrict-band band-edge measurements

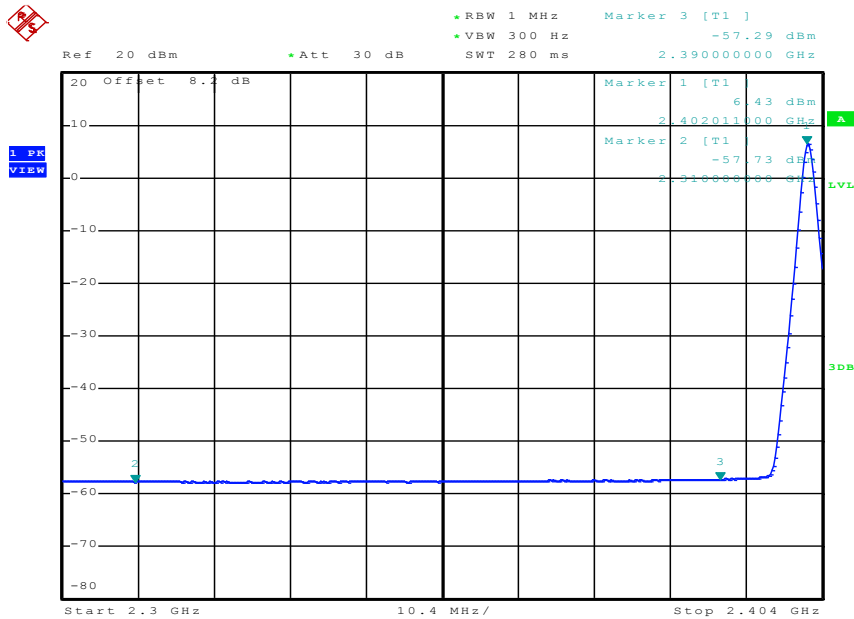
Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-47.00	2.0	0	48.26	PEAK	74	PASS
	Off	2310.0	-57.73	2.0	0	37.53	AV	54	PASS
	Off	2390.0	-48.99	2.0	0	46.27	PEAK	74	PASS
	Off	2390.0	-57.29	2.0	0	37.97	AV	54	PASS
	Off	2483.5	-38.23	2.0	0	57.03	PEAK	74	PASS
	Off	2483.5	-41.53	2.0	0	53.73	AV	54	PASS
	Off	2500.0	-48.14	2.0	0	47.12	PEAK	74	PASS
	Off	2500.0	-57.97	2.0	0	37.29	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-49.64	2.0	0	45.62	PEAK	74	PASS
	Off	2310.0	-57.61	2.0	0	37.65	AV	54	PASS
	Off	2390.0	-48.50	2.0	0	46.76	PEAK	74	PASS
	Off	2390.0	-57.30	2.0	0	37.96	AV	54	PASS
	Off	2483.5	-39.01	2.0	0	56.25	PEAK	74	PASS
	Off	2483.5	-44.55	2.0	0	50.71	AV	54	PASS
	Off	2500.0	-47.71	2.0	0	47.55	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)



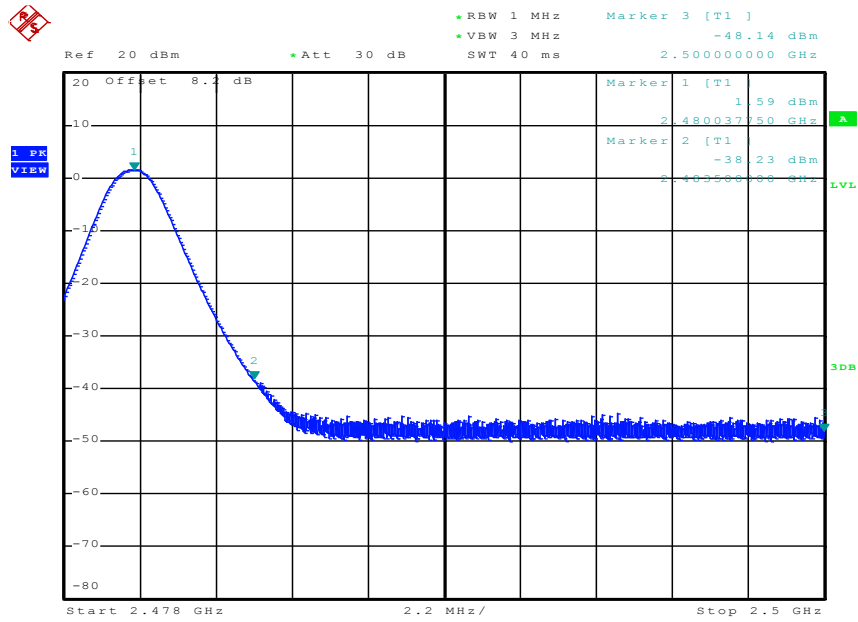
Date: 27.AUG.2019 14:51:12

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



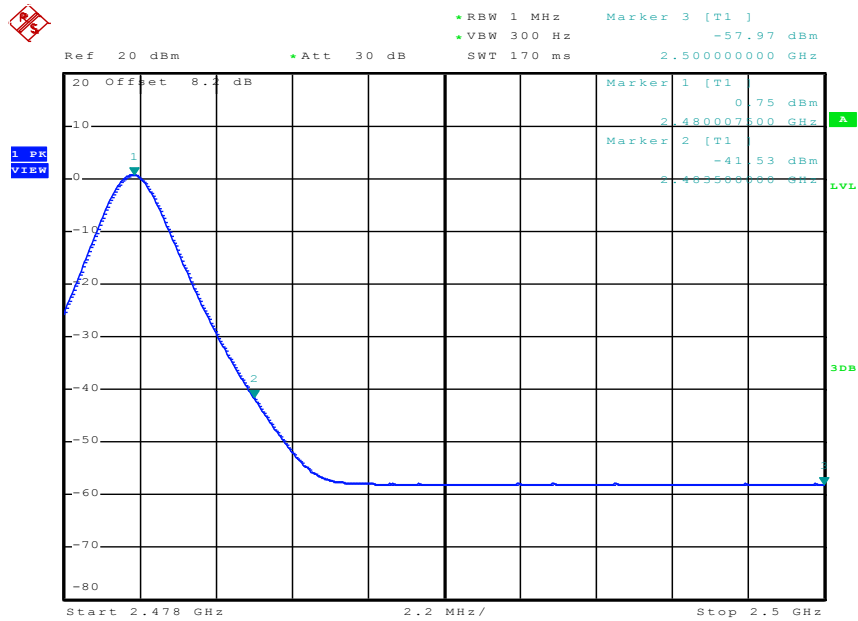
Date: 27.AUG.2019 14:51:25

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



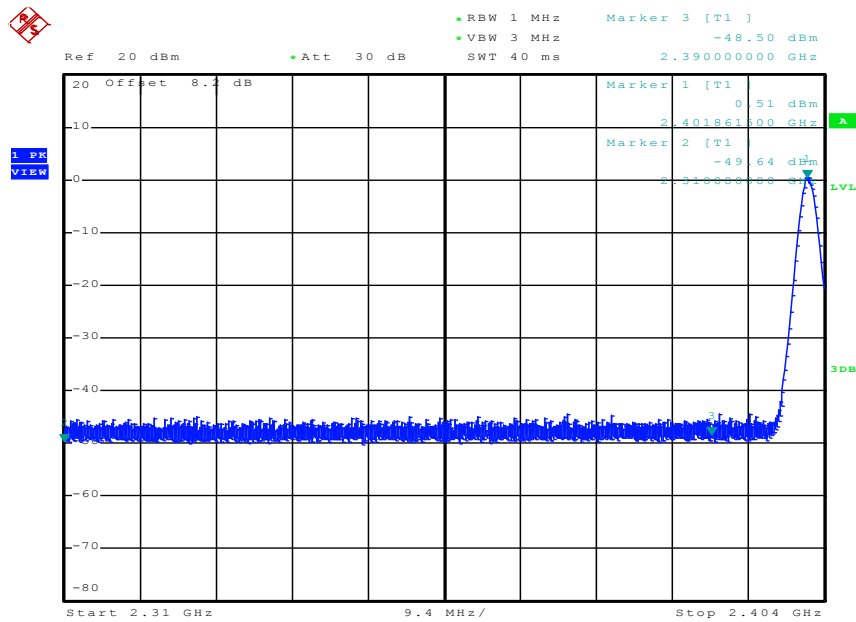
Date: 27.AUG.2019 14:57:02

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



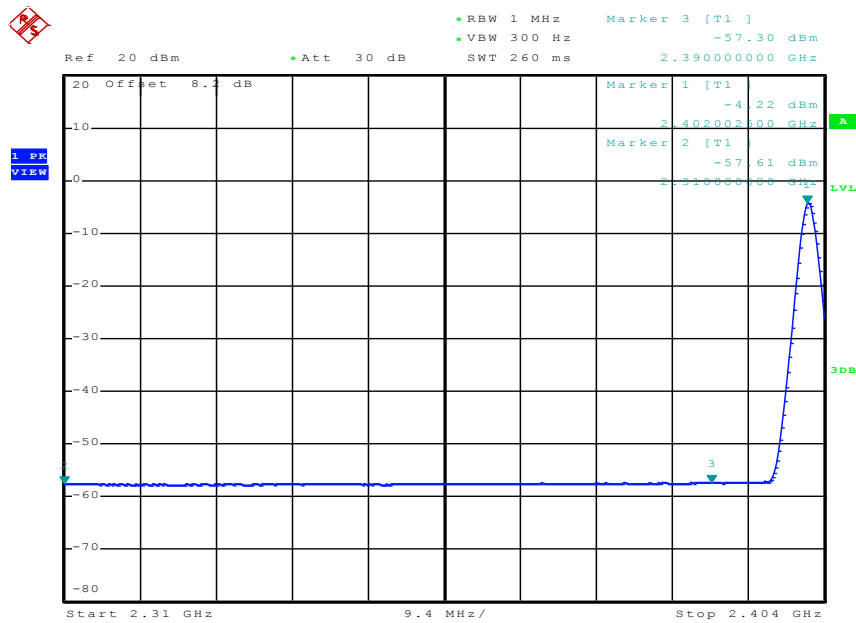
Date: 27.AUG.2019 14:57:15

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



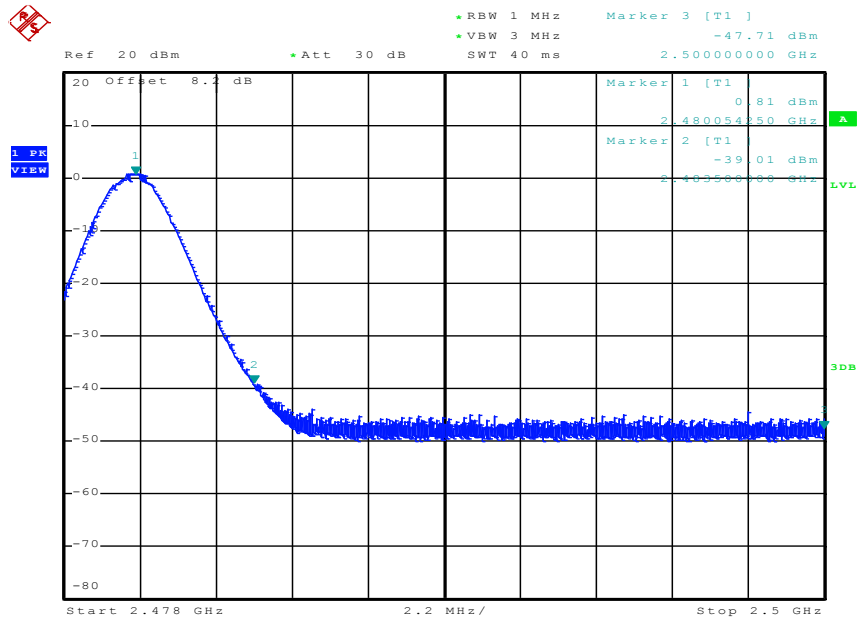
Date: 27.AUG.2019 14:59:33

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



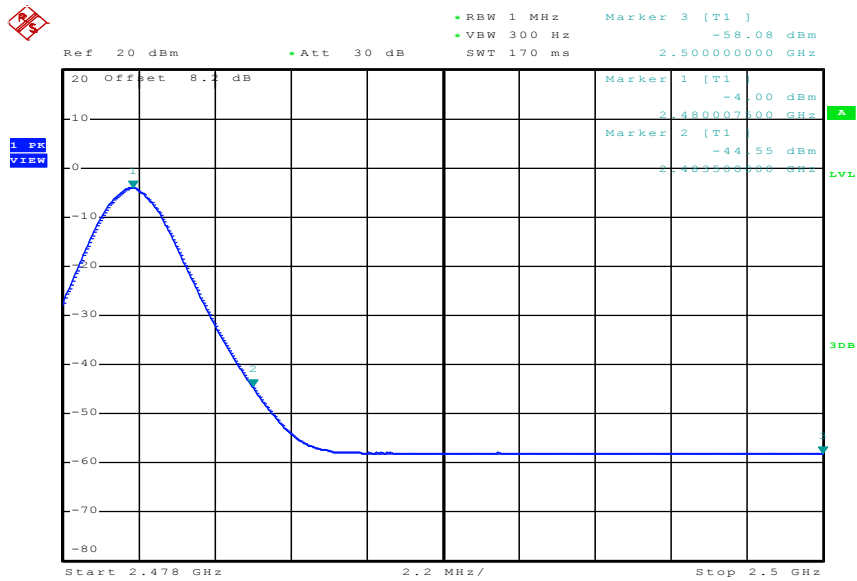
Date: 27.AUG.2019 14:59:47

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



Date: 27.AUG.2019 15:03:44

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



Date: 27.AUG.2019 15:03:57