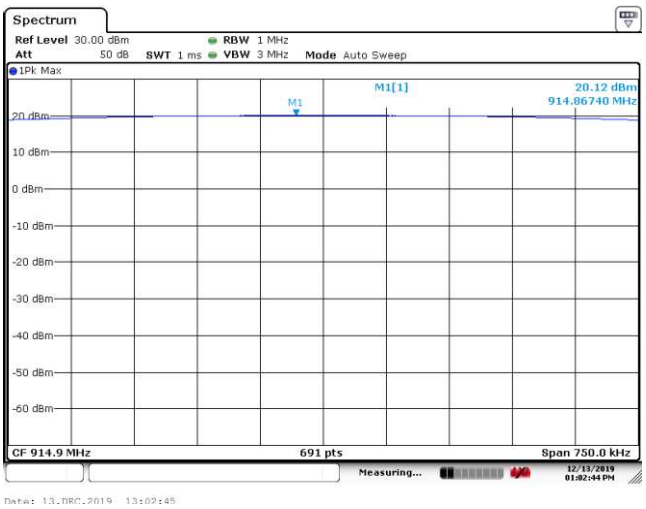
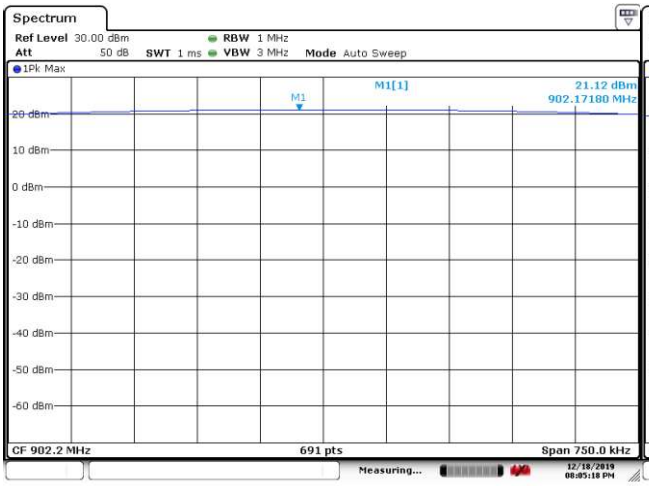
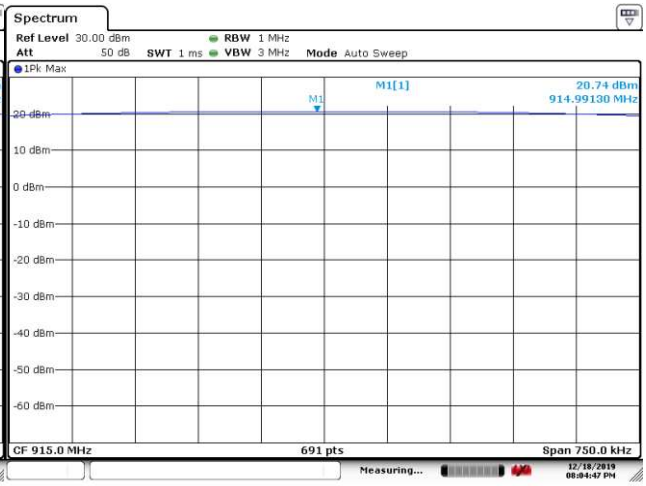
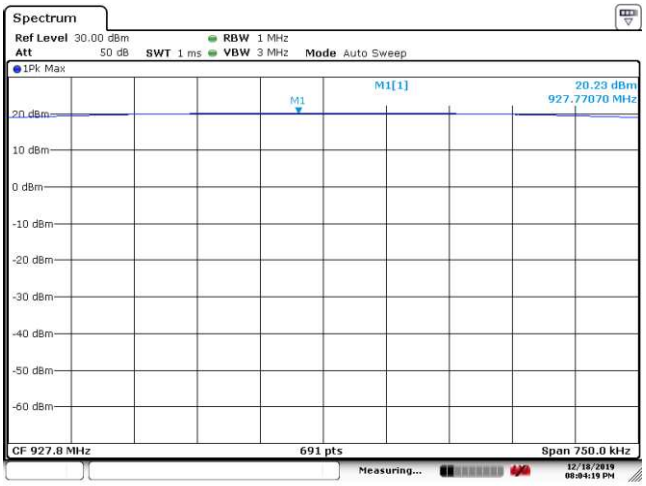


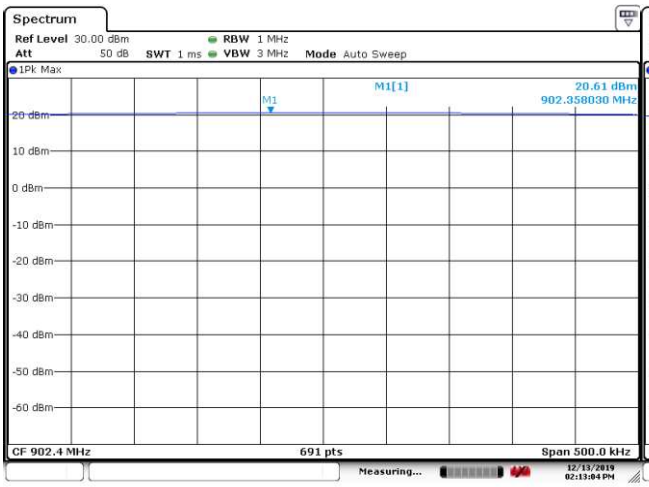
7. LoRa 125KHz FHSS, Maximum Peak Conducted Output Power, 902.2MHz~927.8MHz

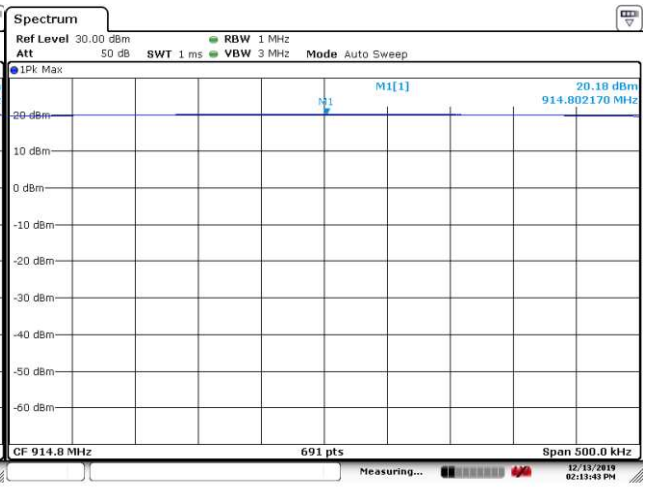


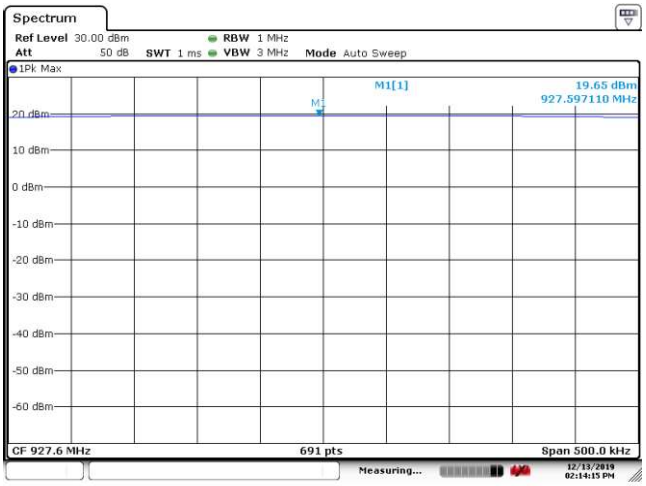




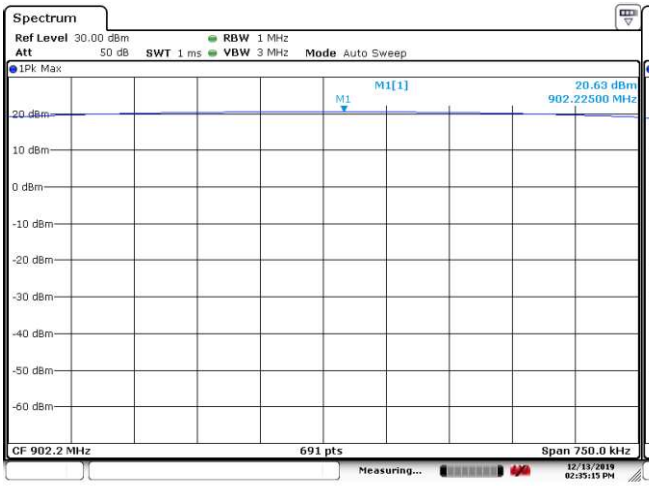
8. FSK 150Kbps FHSS, Maximum Peak Conducted Output Power, 902.4MHz~927.6MHz

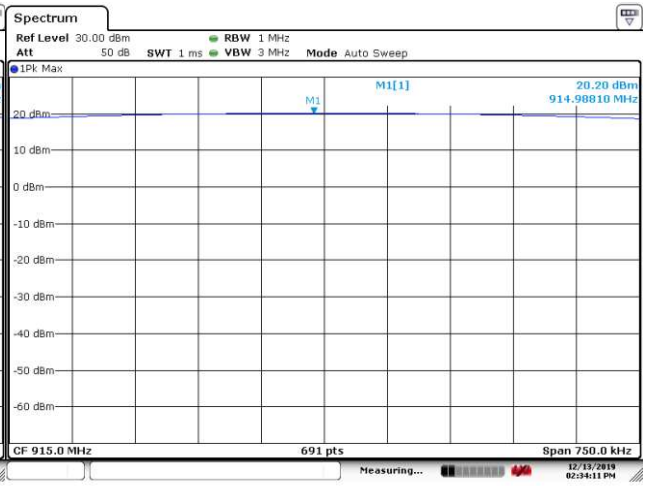


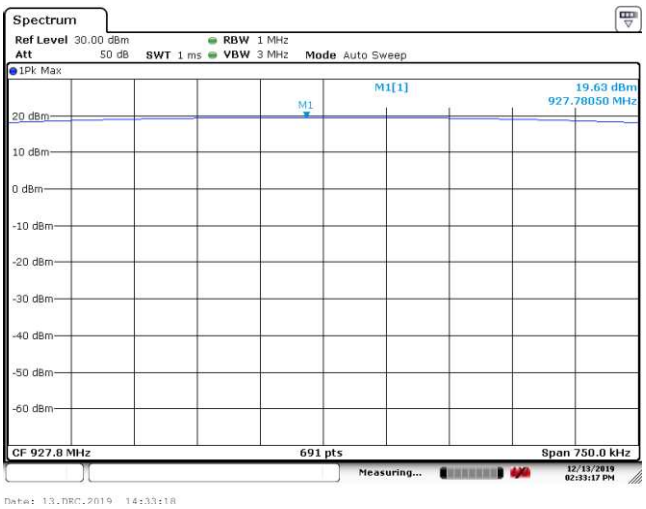




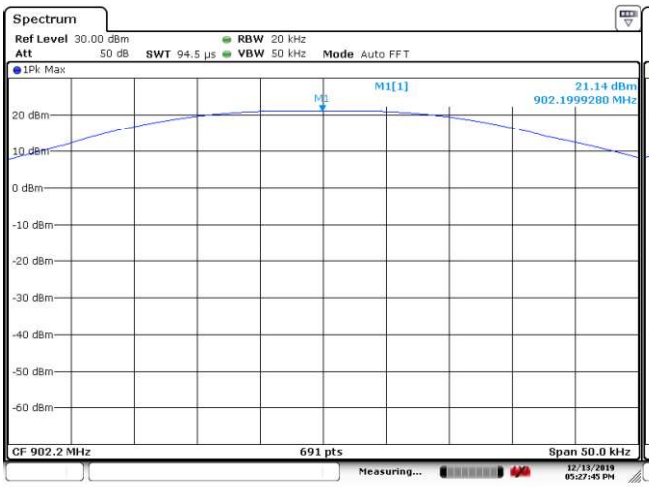
9. FSK 50Kbps FHSS, Maximum Peak Conducted Output Power, 902.2MHz~927.8MHz

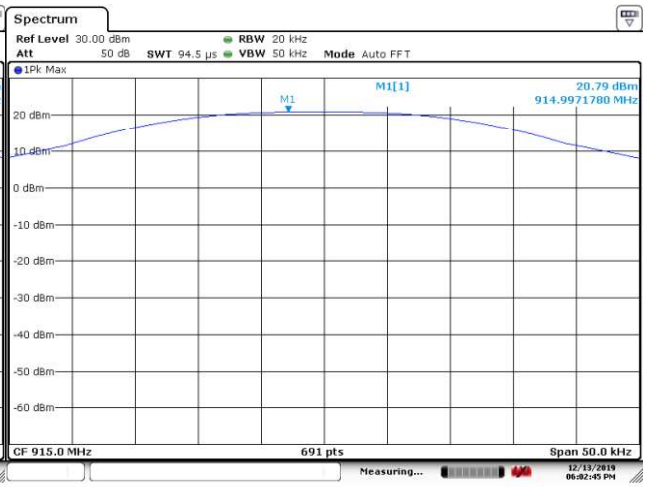


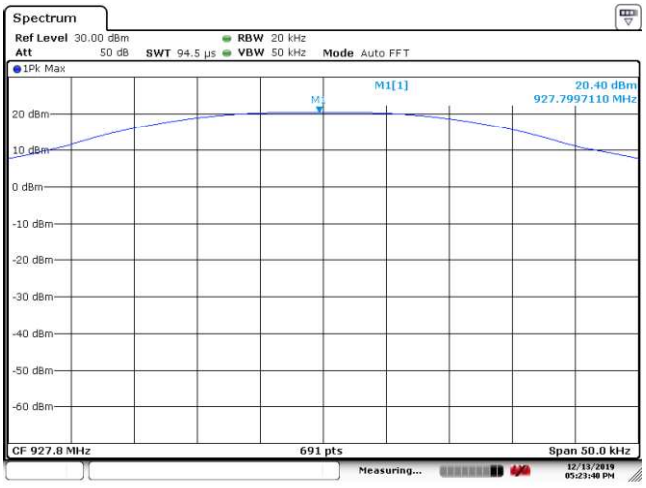




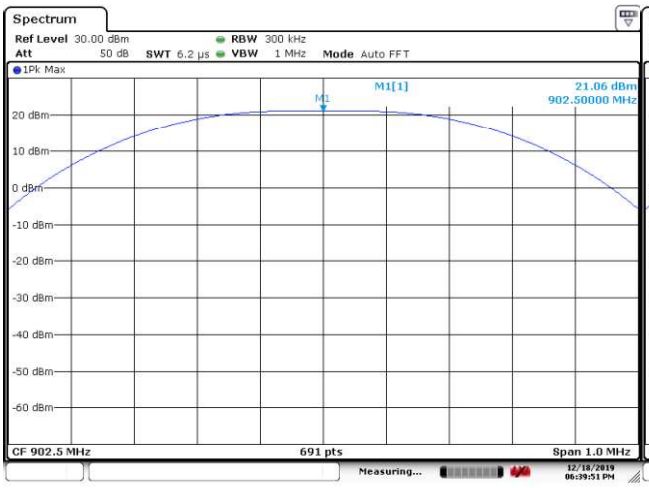
10. FSK 5Kbps FHSS, Maximum Peak Conducted Output Power, 902.2MHz~927.8MHz







11. FSK 250Kbps FHSS, Maximum Peak Conducted Output Power, 902.5MHz~927.5MHz



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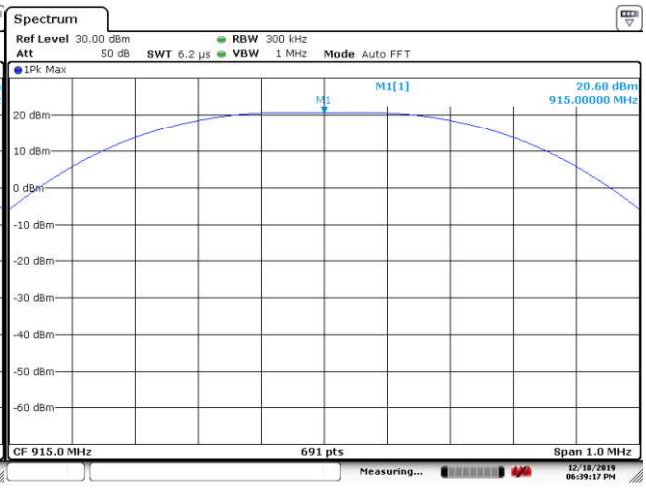

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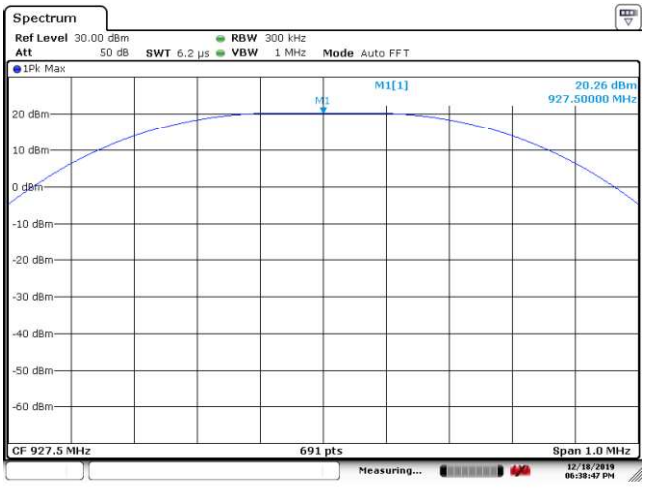


Date: 18.DEC.2019 18:38:47

4.1.5 Equivalent Isotropically Radiated Power

Result: **Pass**

Test Specification
Test standard : RSS-247 Issue 2 February 2017 Clause 5.4(a)&(d)
Limits : For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz: 4 Watt (36dBm)
Kind of test site : Shielded Room

Test Setup

Date of testing : 13.12.2019~18.12.2019
Input voltage : DC 3.7V
Operational mode : Test mode of BLE, LoRa DTS, LoRa FHSS, FSK FHSS
Test channel : Lo, Mi, Hi
Temperature : 20-22°C
Relative humidity : 54-57%
Atmospheric pressure : 101 kPa

Table 5: Test result of E.I.R.P. for BLE, LoRa DTS, LoRa FHSS and FSK FHSS

Modulation Type and Operation band	Channel	Channel Frequency (MHz)	Peak Output Power (dBm)	Antenna Gain (dBi)	E.I.R.P. (dBm)	Limit (dBm)
1. BLE 2402MHz~2480MHz	Low Channel	2402	3.43	3.26	6.69	36
	Mid Channel	2440	3.31	3.26	6.57	36
	High Channel	2480	3.03	3.26	6.29	36
2. LoRa 500KHz DTS 902.5MHz~926.5	Low Channel	902.5	20.00	0.14	20.14	36
	Mid Channel	914.5	19.39	0.14	19.53	36
	High Channel	926.5	18.91	0.14	19.05	36
3. LoRa 500KHz DTS 903MHz~914.2MHz	Low Channel	903	19.97	0.14	20.11	36
	Mid Channel	907.8	19.78	0.14	19.92	36
	High Channel	914.2	19.42	0.14	19.56	36
4. LoRa 500KHz DTS 923.3MHz~926.9MHz	Low Channel	923.3	18.98	0.14	19.12	36
	Mid Channel	925.1	18.96	0.14	19.10	36
	High Channel	926.9	18.84	0.14	18.98	36
5. LoRa 250KHz FHSS 902.3MHz~926.7MHz	Low Channel	902.3	20.75	0.14	20.89	36
	Mid Channel	914.3	20.30	0.14	20.44	36
	High Channel	926.7	20.04	0.14	20.18	36
6. LoRa 125KHz FHSS 902.3MHz~914.9MHz	Low Channel	902.3	20.59	0.14	20.73	36
	Mid Channel	908.5	20.43	0.14	20.57	36
	High Channel	914.9	20.12	0.14	20.26	36

7. LoRa 125KHz FHSS 902.2MHz~927.8MHz	Low Channel	902.2	20.12	0.14	20.26	36
	Mid Channel	915	20.74	0.14	20.88	36
	High Channel	927.8	20.23	0.14	20.37	36
8. FSK 150Kbps FHSS 902.4MHz~927.6MHz	Low Channel	902.4	20.61	0.14	20.75	36
	Mid Channel	914.8	20.18	0.14	20.32	36
	High Channel	927.6	19.65	0.14	19.79	36
9. FSK 50Kbps FHSS 902.2MHz~927.8MHz	Low Channel	902.2	20.63	0.14	20.77	36
	Mid Channel	915	20.20	0.14	20.34	36
	High Channel	927.8	19.63	0.14	19.77	36
10. FSK 5Kbps FHSS 902.2MHz~927.8MHz	Low Channel	902.2	21.14	0.14	21.28	36
	Mid Channel	915	20.97	0.14	21.11	36
	High Channel	927.8	20.40	0.14	20.54	36
11. FSK 250Kbps FHSS 902.5MHz~927.5MHz	Low Channel	902.5	21.06	0.14	21.20	36
	Mid Channel	915	20.68	0.14	20.82	36
	High Channel	927.5	20.26	0.14	20.40	36

4.1.6 Power Spectral Density

Result: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(e)
		RSS-247 Issue 2 February 2017 Clause 5.2(b)
Basic standard	:	ANSI C63.10: 2013
Limits	:	Not more than 8 dBm in any 3 kHz band
Kind of test site	:	Shielded Room

Test Setup

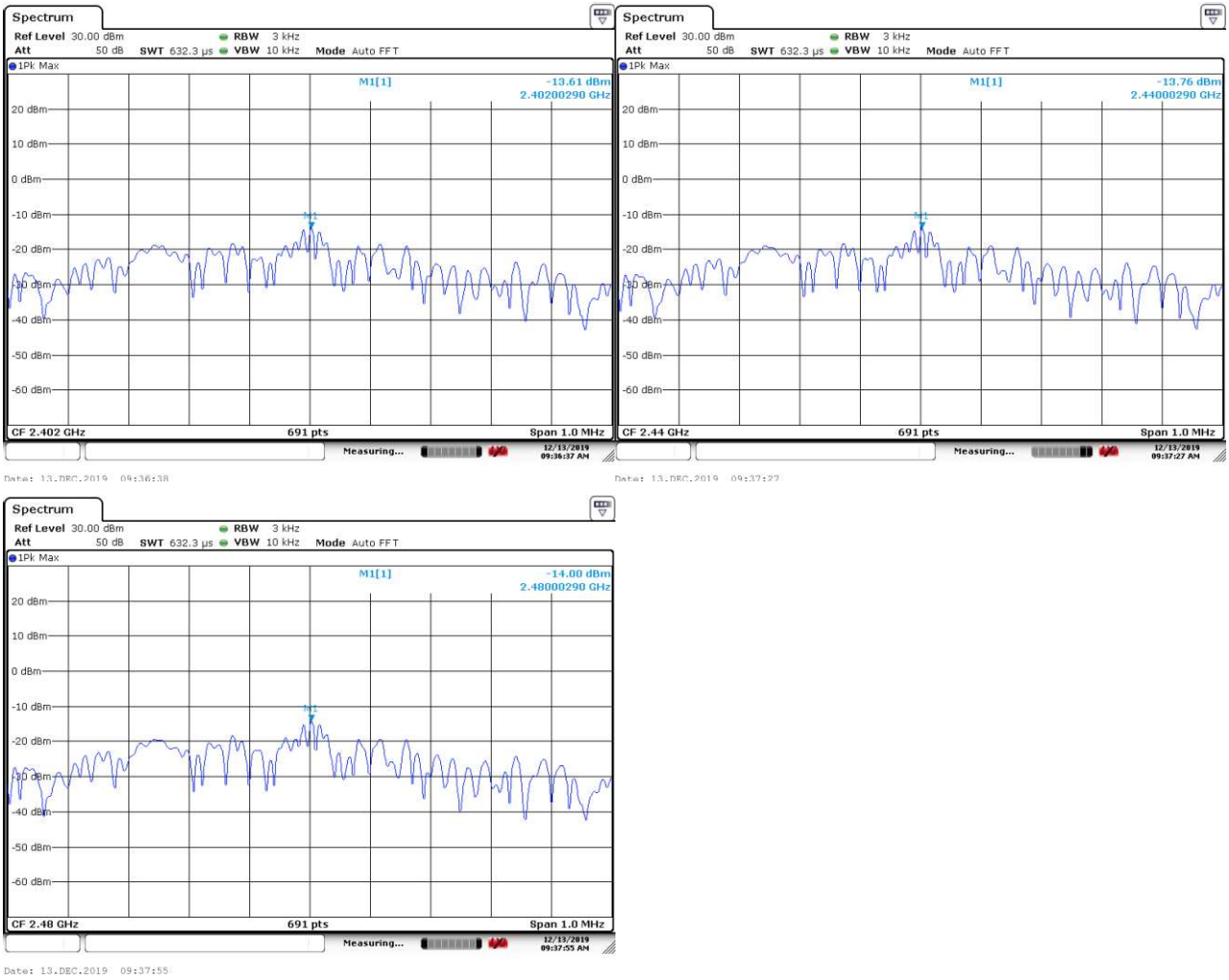
Date of testing	:	13.12.2019~18.12.2019
Input voltage	:	DC 3.7V
Operational mode	:	On, BLE, LoRa DTS
Test channel	:	Lo, Mi, Hi
Temperature	:	20-22°C
Relative humidity	:	54-57%
Atmospheric pressure	:	101 kPa

Table 6: Test result of Power Spectral Density for BLE, LoRa DTS

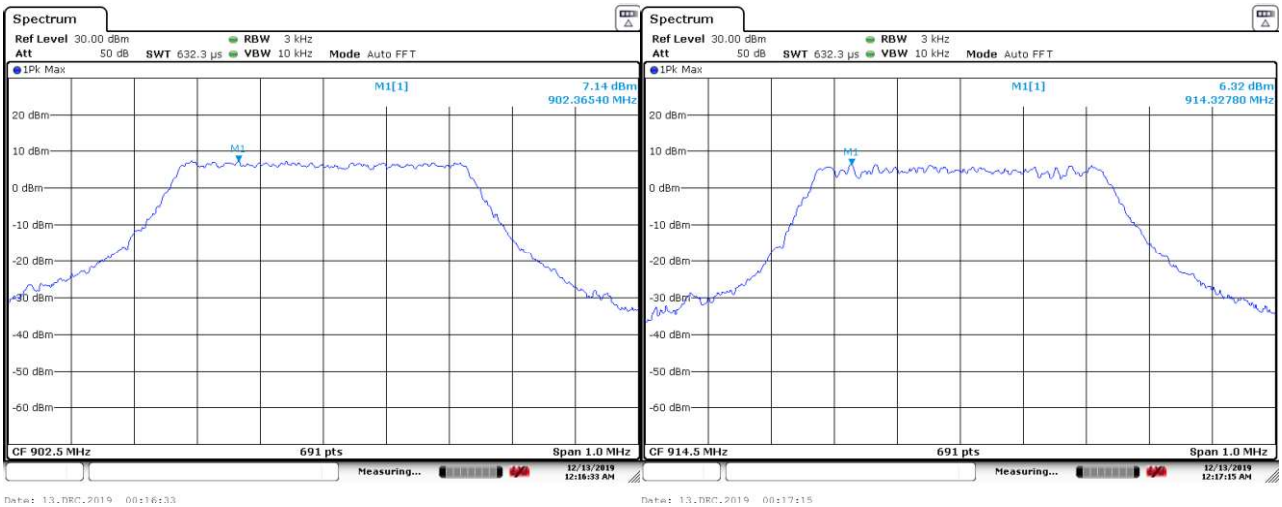
Modulation Type and Operation band	Channel	Channel Frequency (MHz)	Measured Power Density (dBm)	Limit (dBm)	Result
1. BLE 2402MHz~2480MHz	Low Channel	2402	-13.61	8.0	Pass
	Mid Channel	2440	-13.76	8.0	Pass
	High Channel	2480	-14.00	8.0	Pass
2. LoRa 500KHz DTS 902.5MHz~926.5	Low Channel	902.5	7.14	8.0	Pass
	Mid Channel	914.5	6.32	8.0	Pass
	High Channel	926.5	6.21	8.0	Pass
3. LoRa 500KHz DTS 903MHz~914.2MHz	Low Channel	903	7.36	8.0	Pass
	Mid Channel	907.8	7.22	8.0	Pass
	High Channel	914.2	6.86	8.0	Pass
4. LoRa 500KHz DTS 923.3MHz~926.9MHz	Low Channel	923.3	6.42	8.0	Pass
	Mid Channel	925.1	6.26	8.0	Pass
	High Channel	926.9	6.19	8.0	Pass

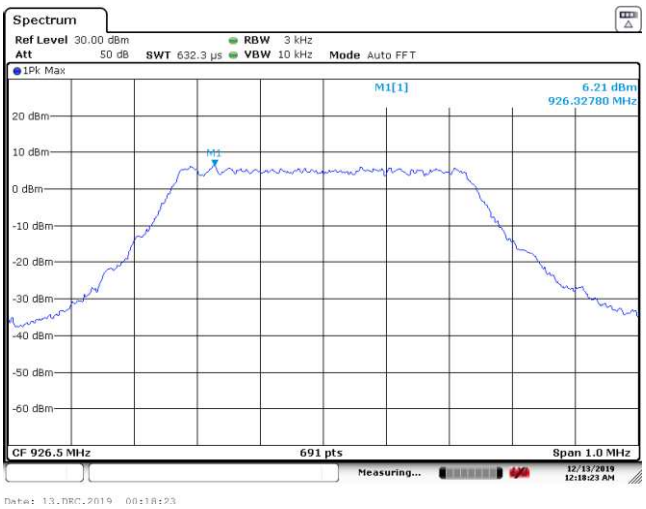
Figure 4: Power Spectral Density

1. BLE, Maximum Conducted Output Power, 2402MHz~2480MHz

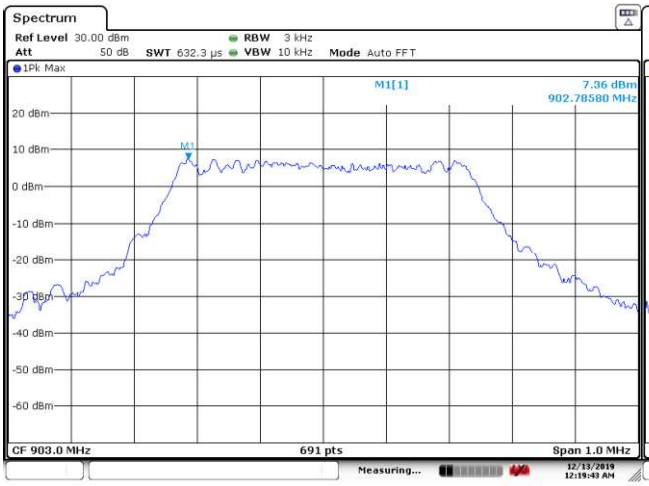


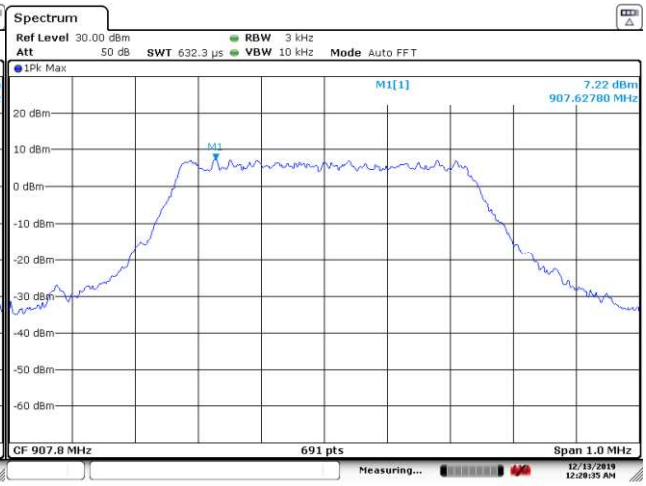
2. LoRa 500KHz DTS, Maximum Conducted Output Power, 902.5MHz~926.5

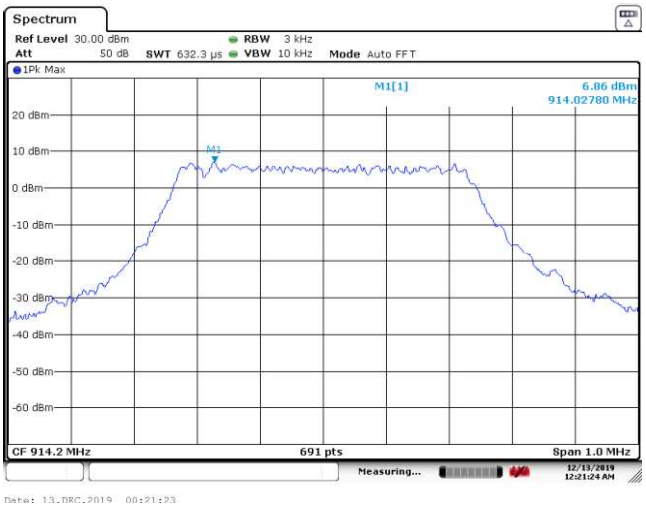




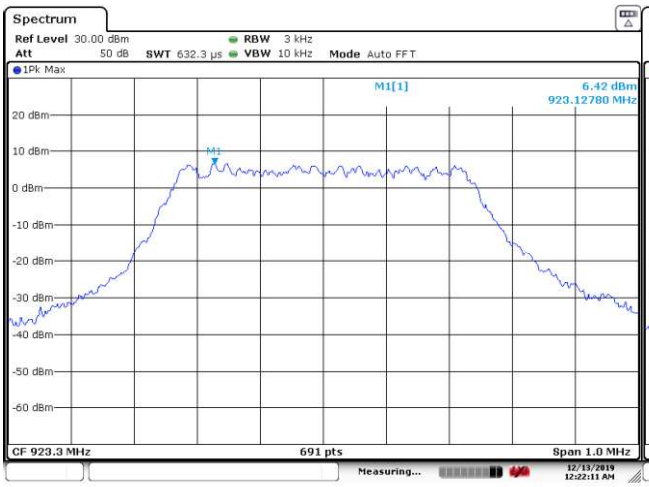
3. LoRa 500KHz DTS, Maximum Conducted Output Power, 903MHz~914.2MHz

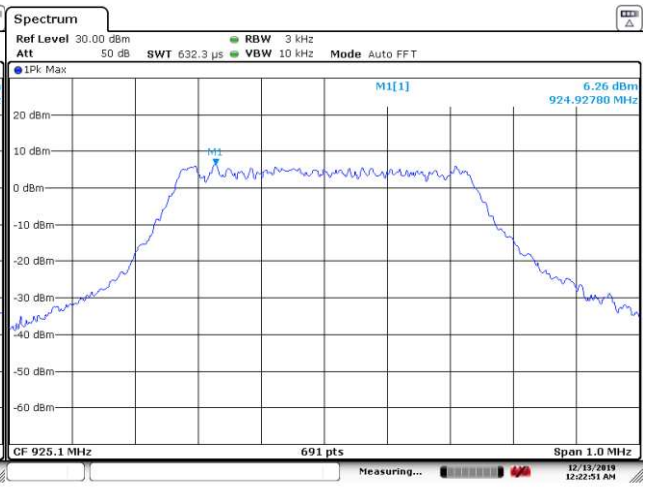


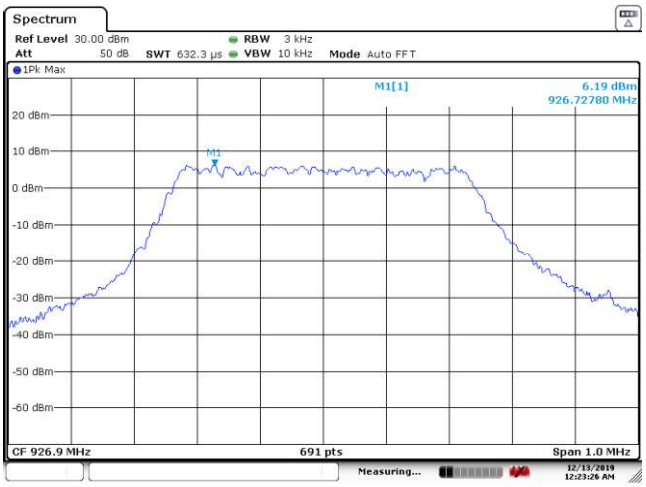




4. LoRa 500KHz DTS, Maximum Conducted Output Power, 923.3MHz~926.9MHz







4.1.7 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Result: **Pass**

Test Specification		
Test standard	:	FCC Part 15.247(d) RSS-247 Issue 2 February 2017 Clause 5.5
Basic standard	:	ANSI C63.10: 2013
Limits	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);
Kind of test site	:	Shielded Room

Test Setup

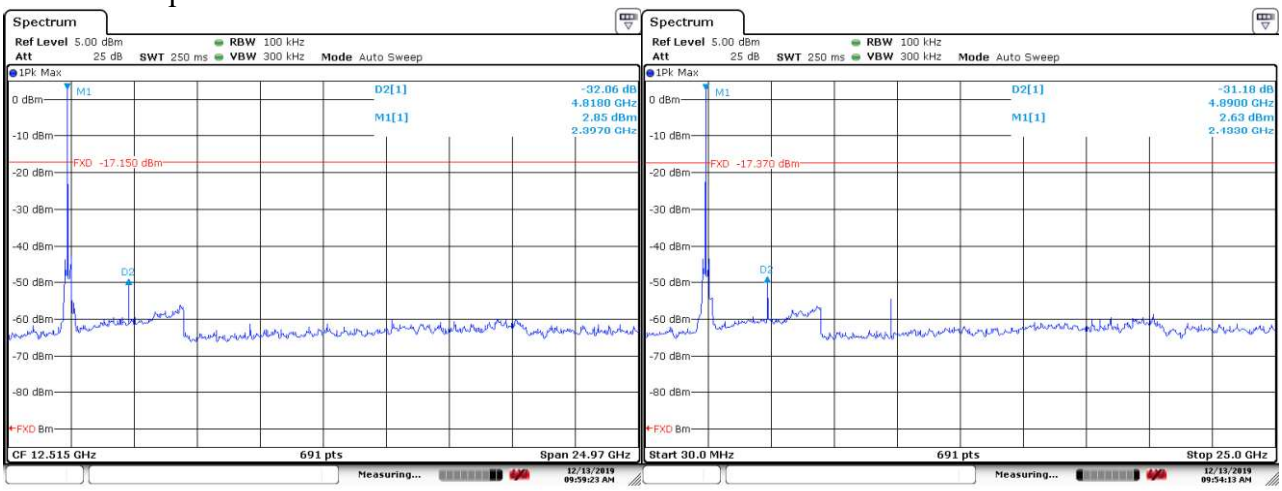
Date of testing	:	13.12.2019~18.12.2019
Input voltage	:	DC 3.7V
Operational mode	:	Test mode of BLE, LoRa DTS, LoRa FHSS, FSK FHSS
Test channel	:	Lo, Mi, Hi
Temperature	:	20-22°C
Relative humidity	:	54-57%
Atmospheric pressure	:	101 kPa

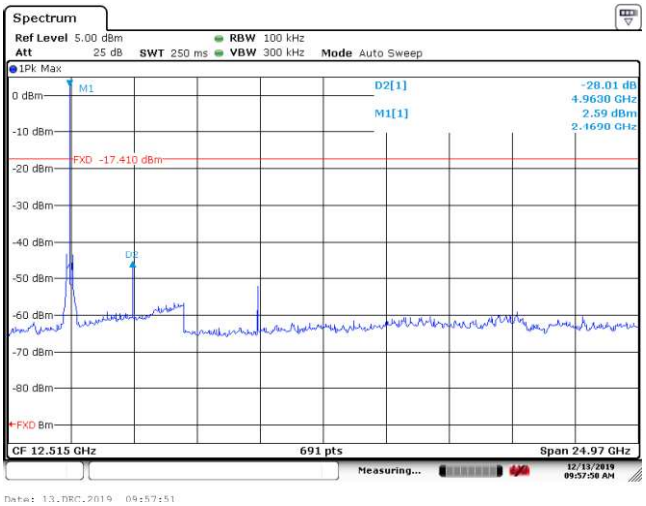
All emissions are more than 20dB below fundamental, compliance is achieved as well.

Figure 5: Conducted Spurious Emission

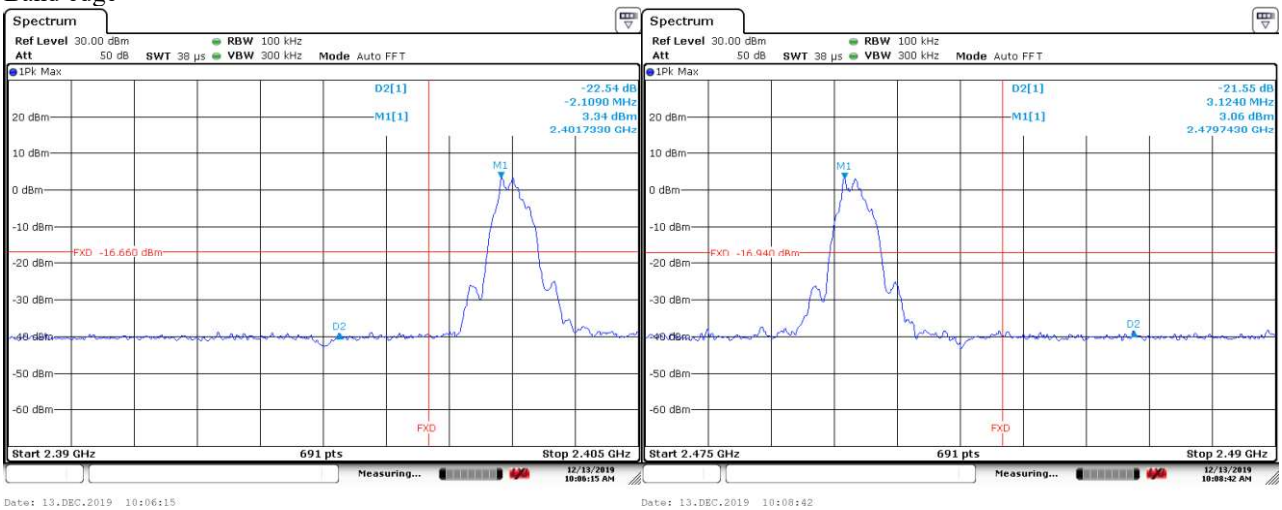
1. BLE, Conducted Spurious Emission and Band edge, 2402MHz~2480MHz

Conducted Spurious Emission



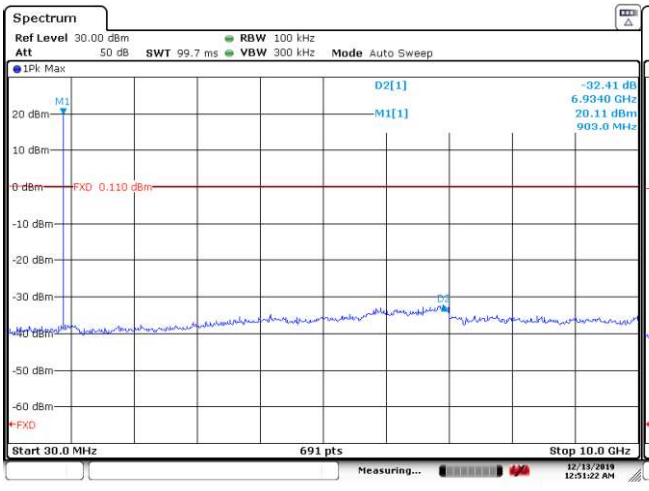


Band edge



2. LoRa 500KHz DTS, Conducted Spurious Emission and Band edge, 902.5MHz~926.5

Conducted Spurious Emission



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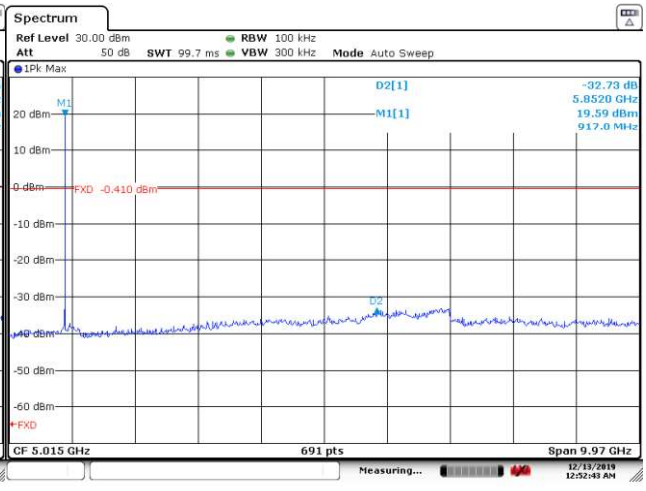

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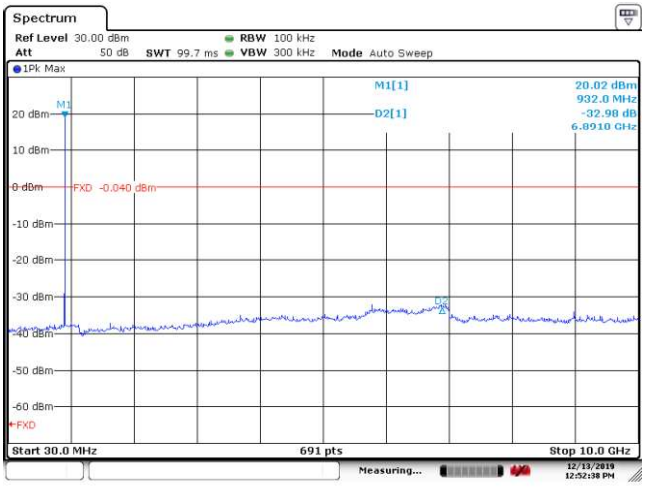

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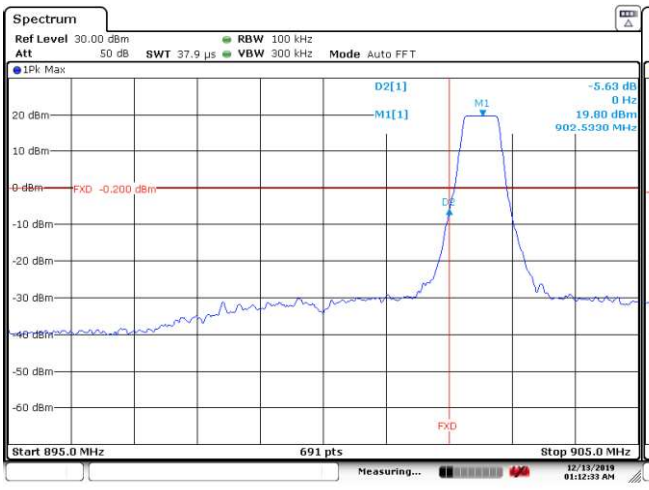
Band edge



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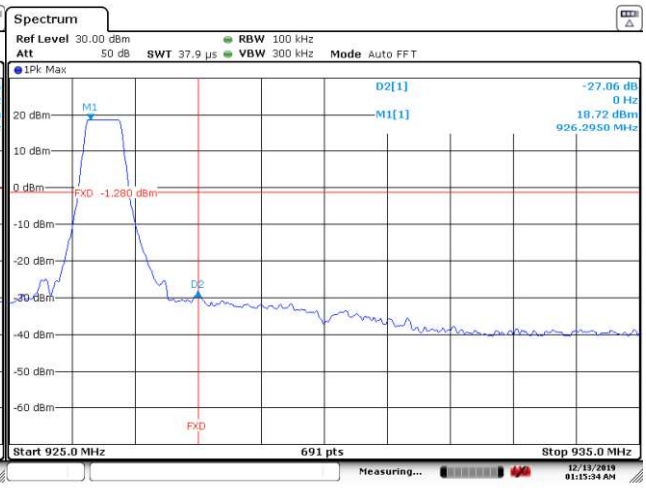

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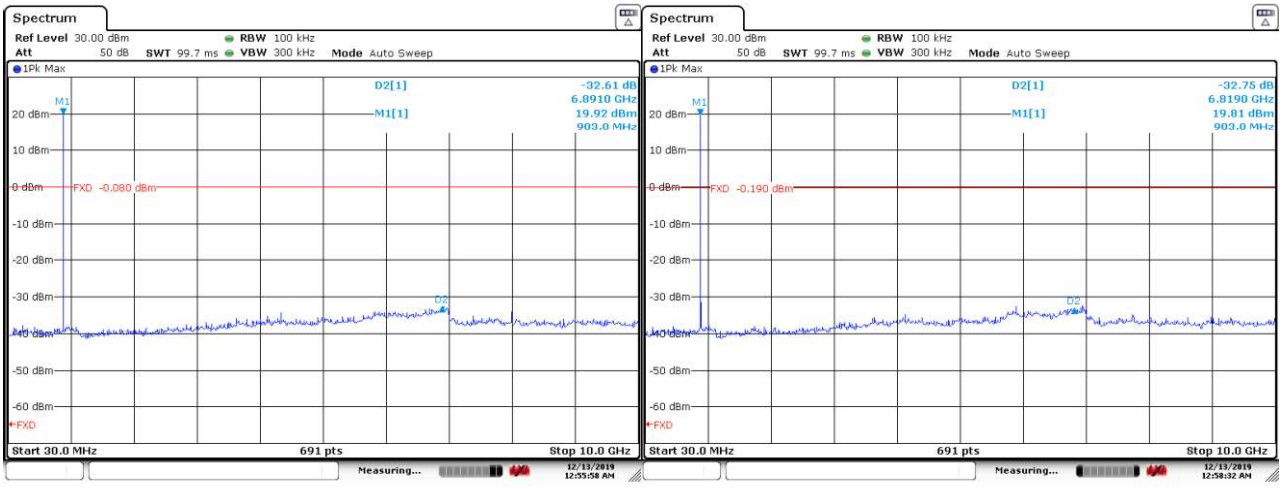
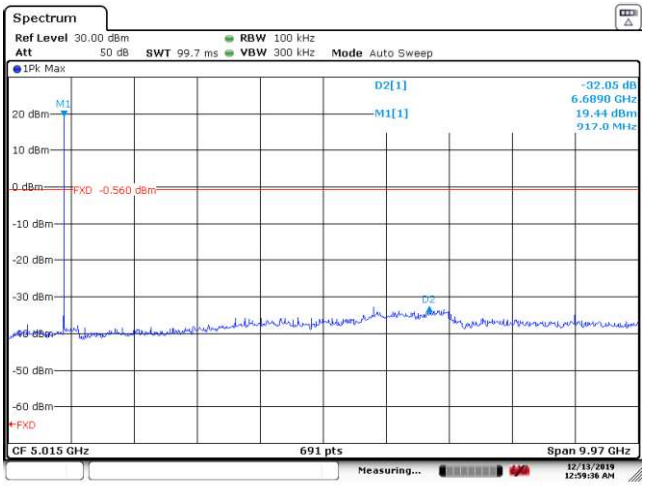
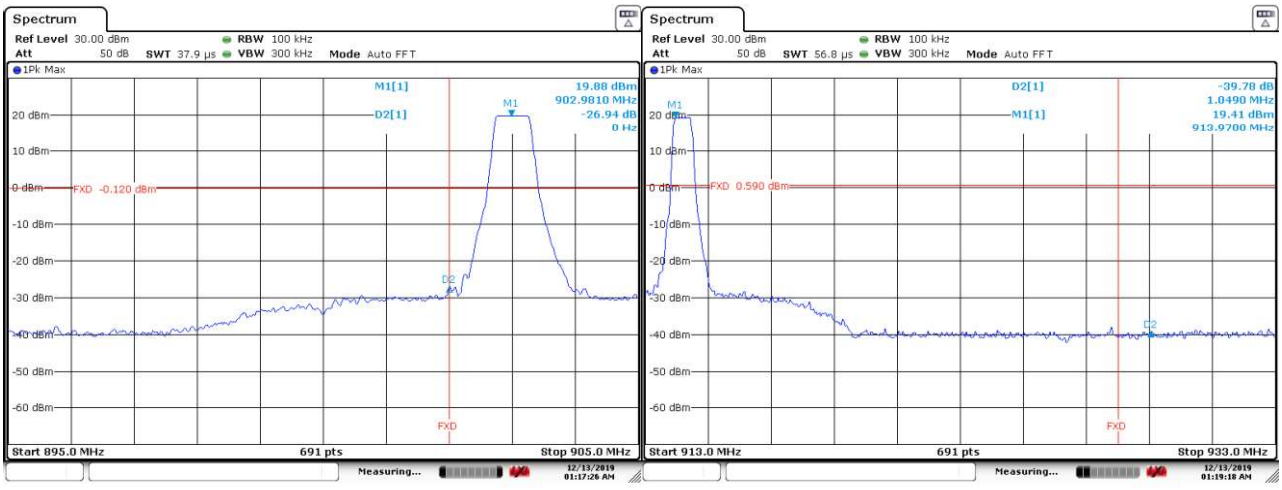
3. LoRa 500KHz DTS, Conducted Spurious Emission and Band edge, 903MHz~914.2MHz

Conducted Spurious Emission



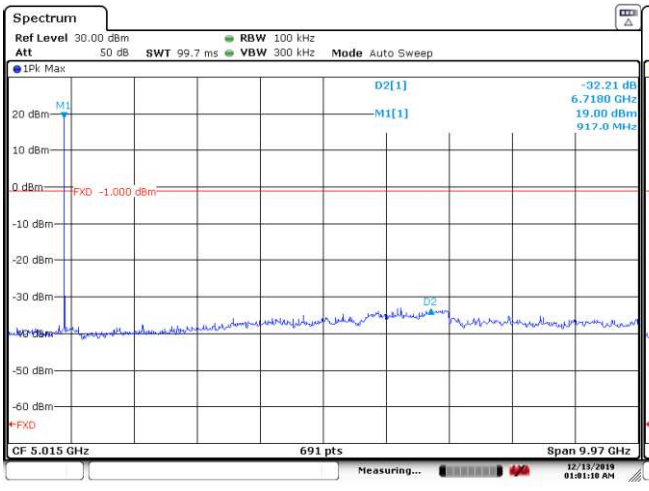


Band edge



4. LoRa 500KHz DTS, Conducted Spurious Emission and Band edge, 923.3MHz~926.9MHz

Conducted Spurious Emission



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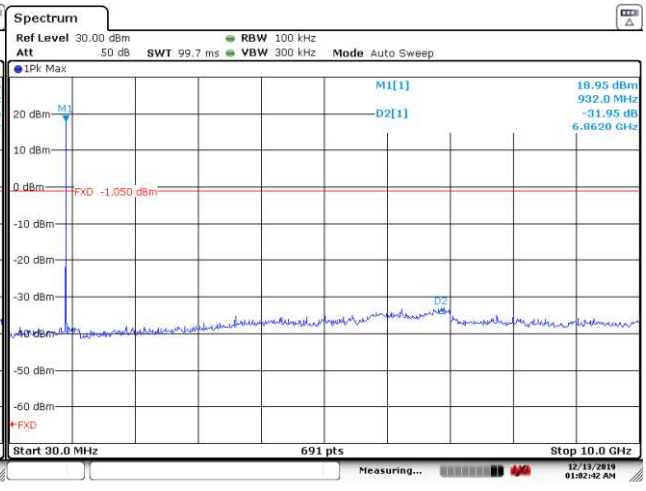

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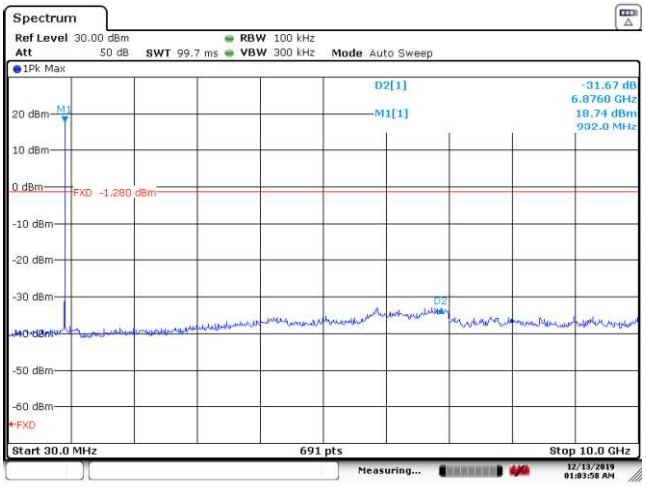

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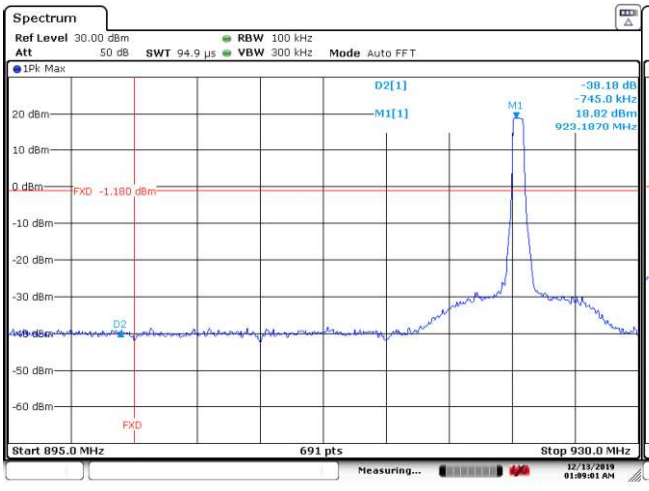
Band edge



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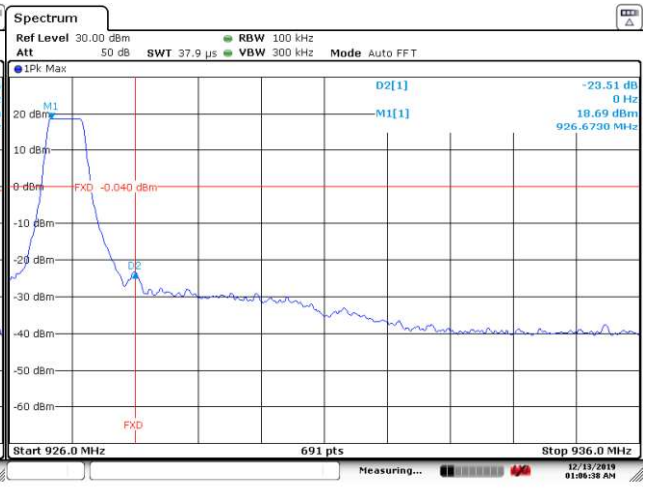

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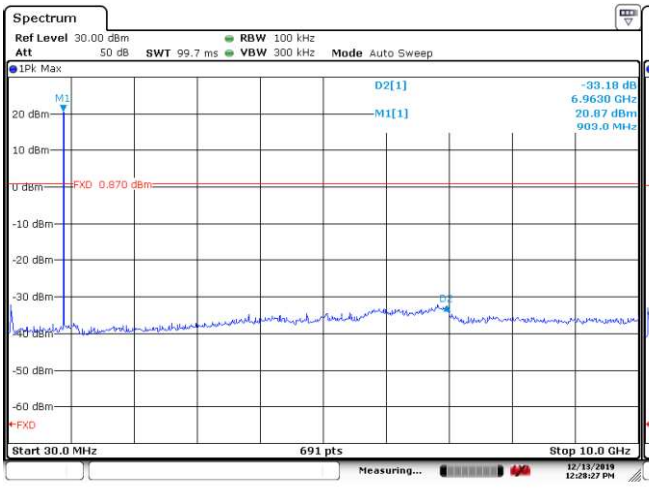
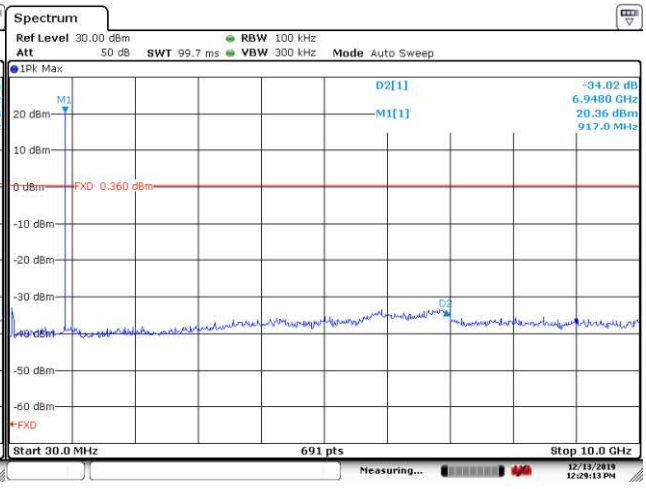
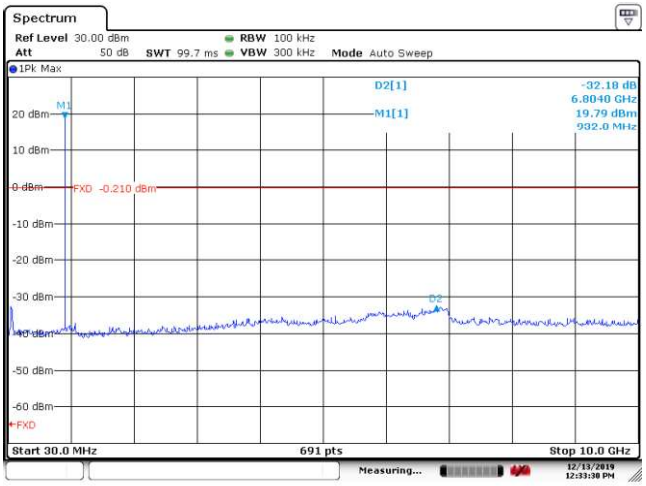
5. LoRa 250KHz FHSS, Conducted Spurious Emission and Band edge, 902.3MHz~926.7MHz

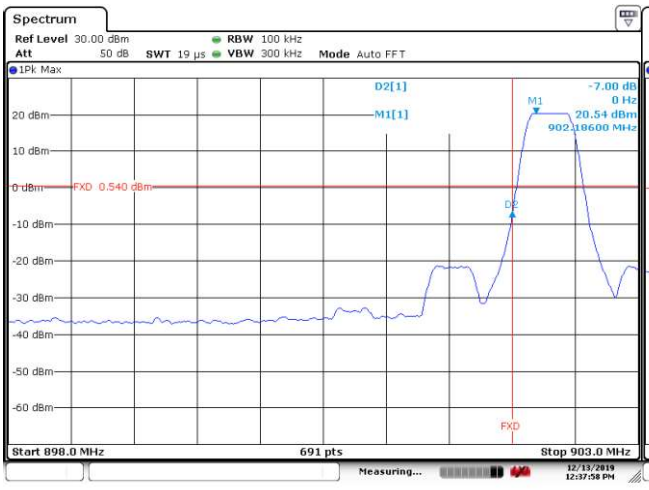
Conducted Spurious Emission

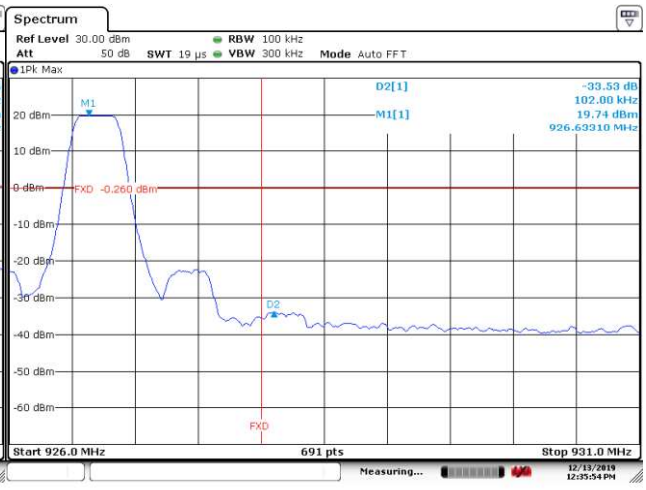


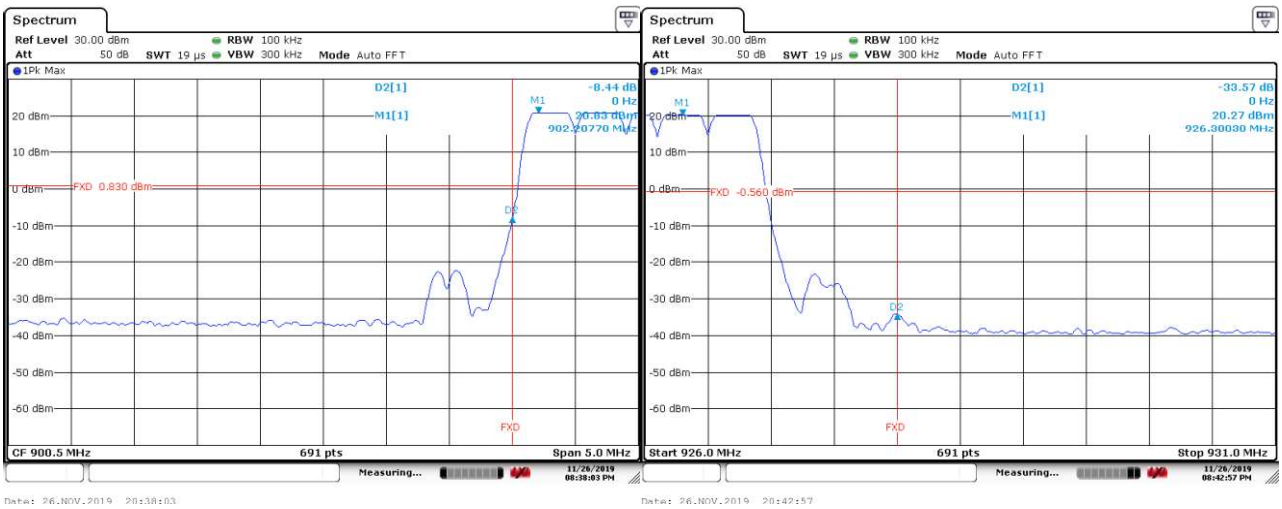




Band edge

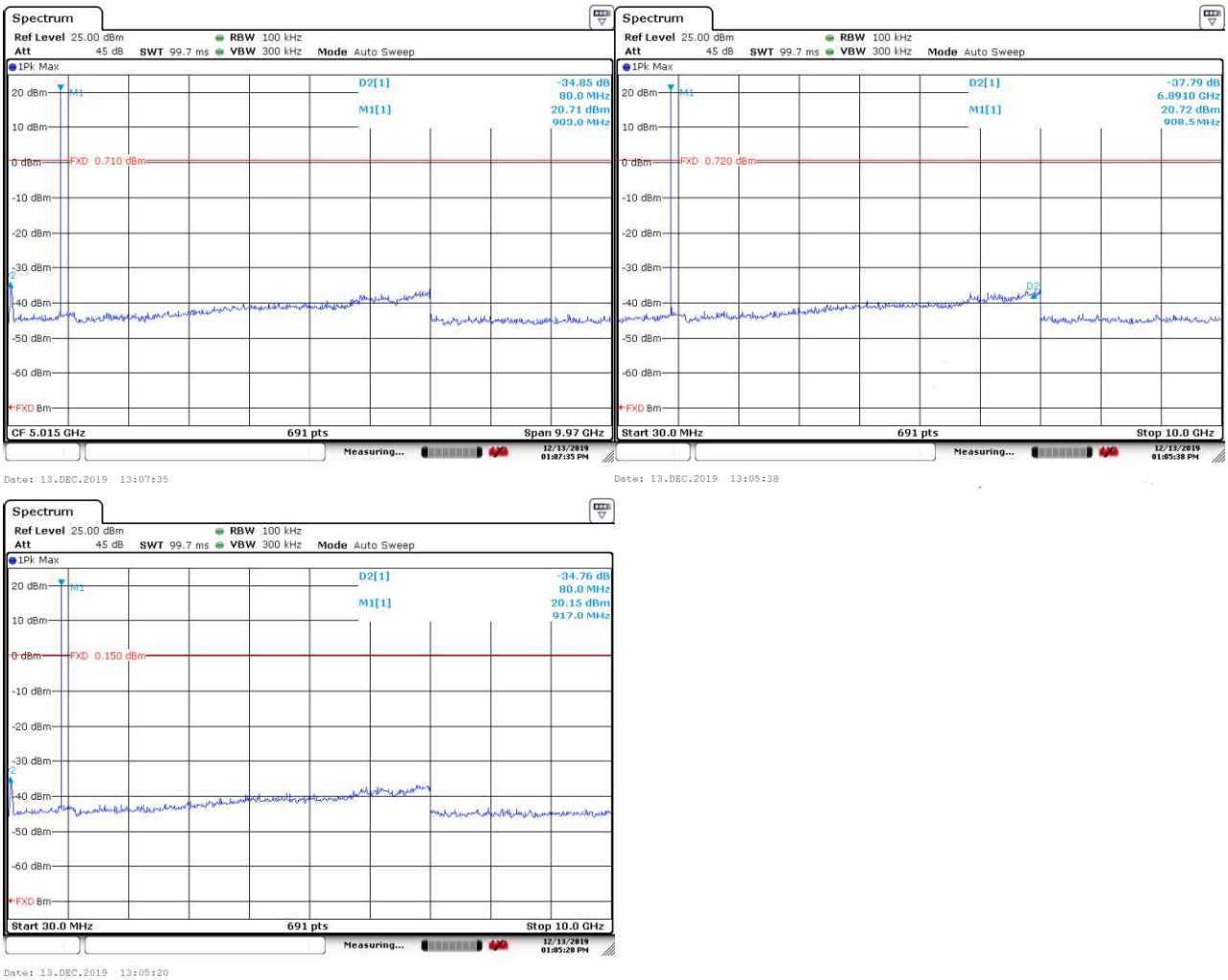




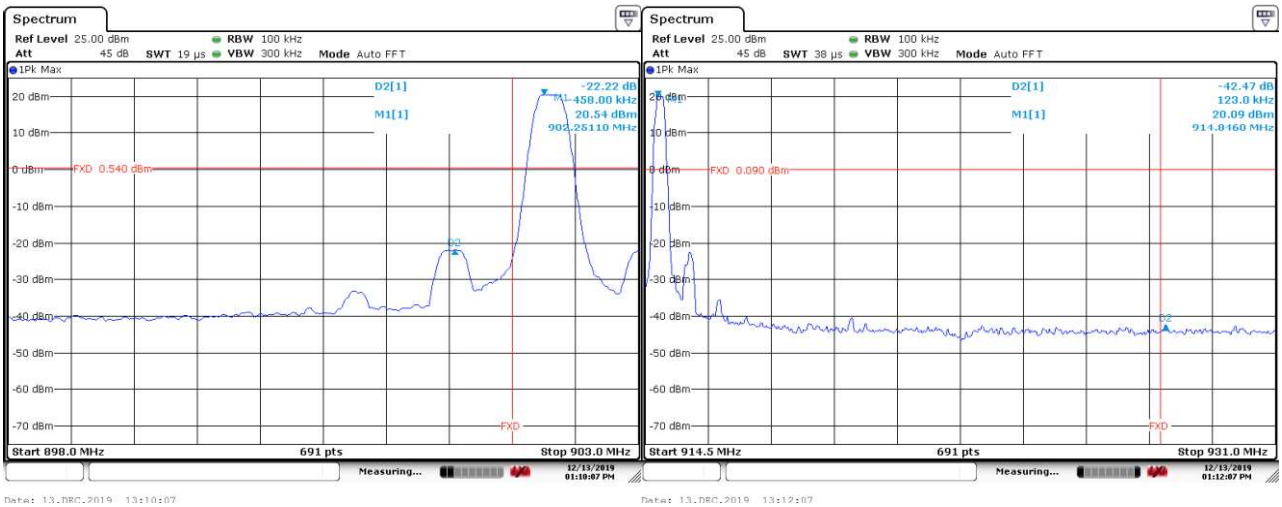


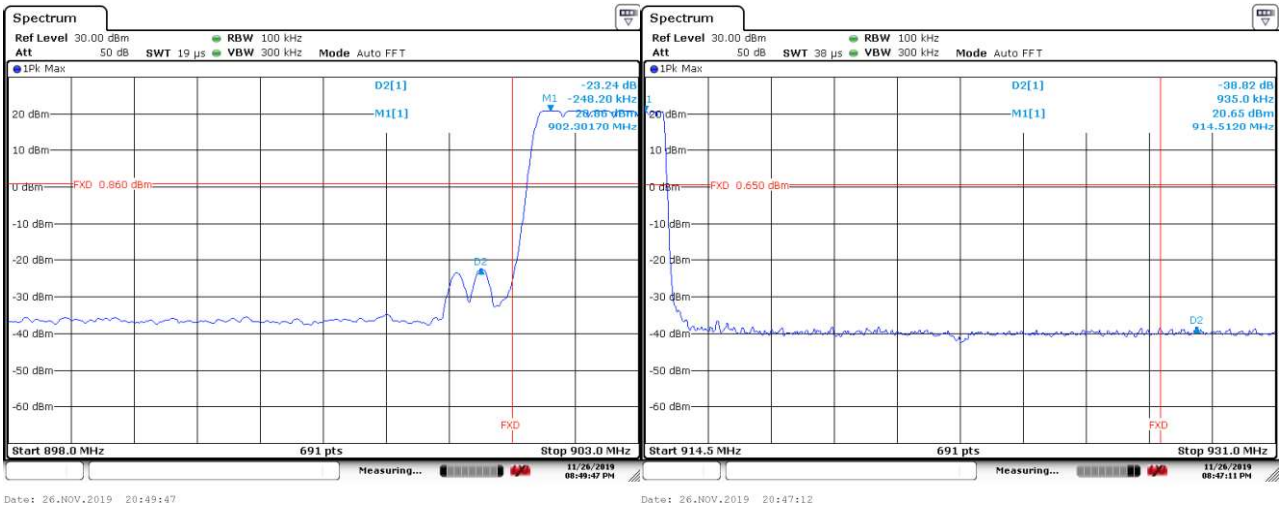
6. LoRa 125KHz FHSS, Conducted Spurious Emission, 902.3MHz~914.9MHz

Conducted Spurious Emission



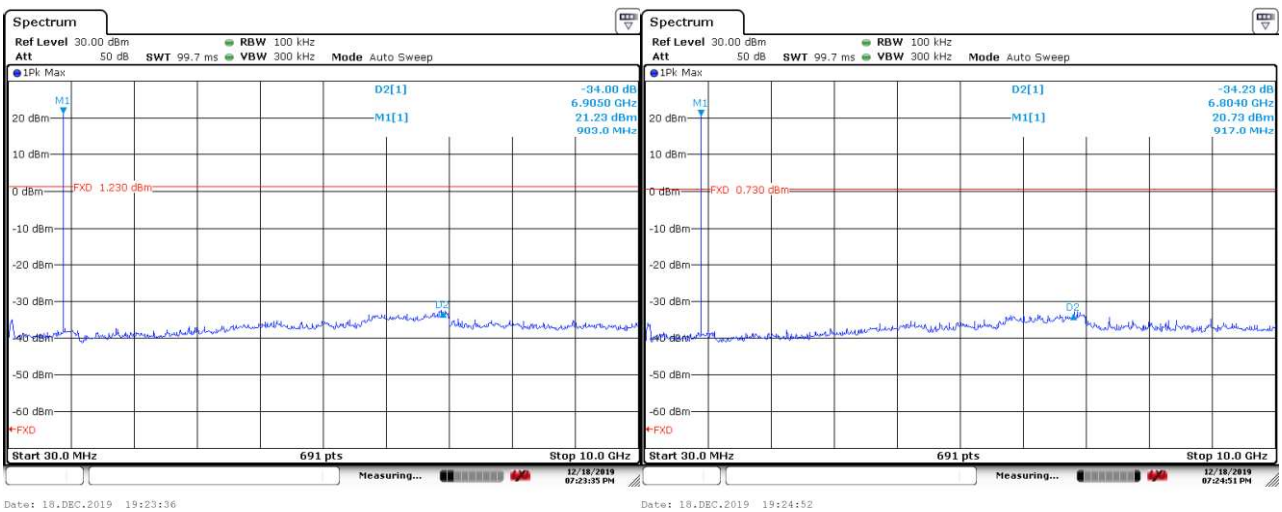
Band edge

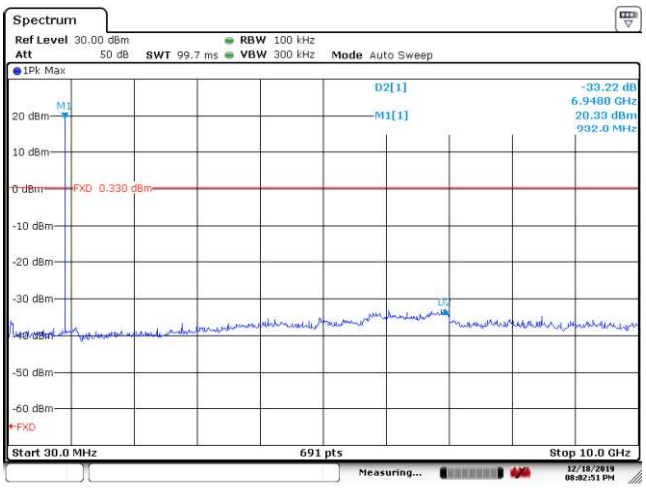




7. LoRa 125KHz FHSS, Conducted Spurious Emission, 902.2MHz~927.8MHz

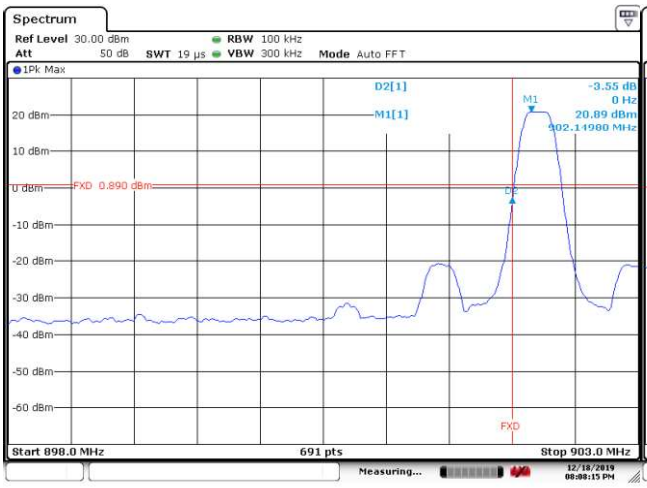
Conducted Spurious Emission



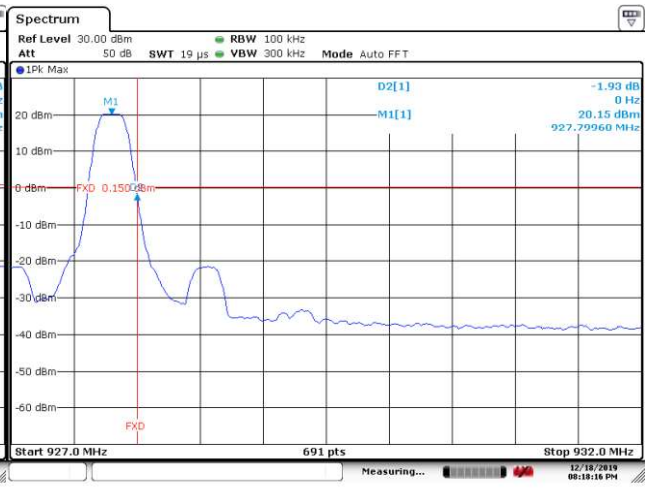


Date: 18.DEC.2019 20:02:52

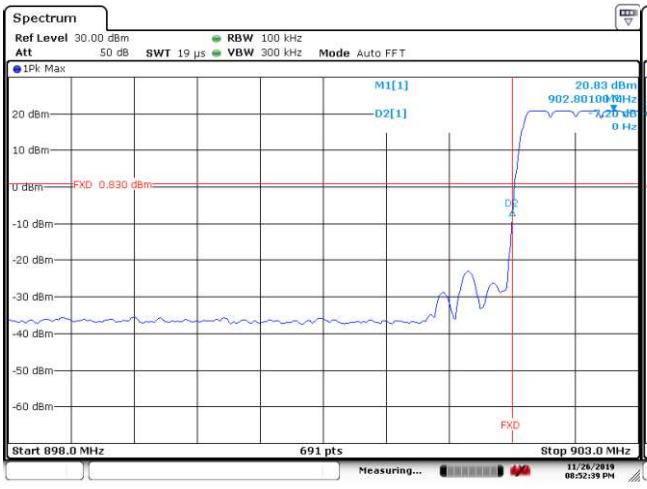
Band edge



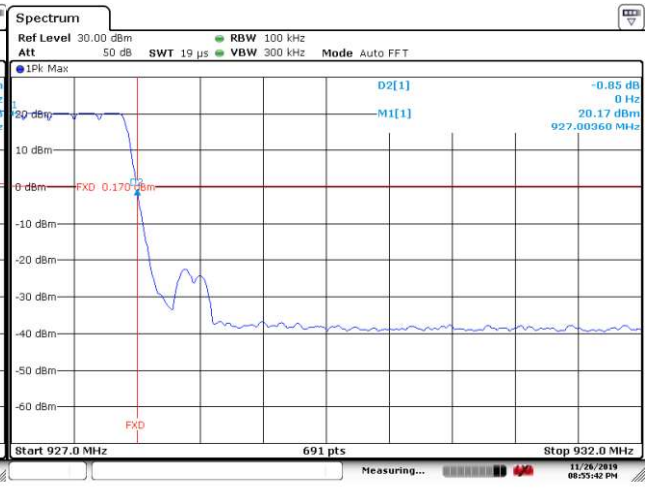
Date: 18.DEC.2019 20:08:15



Date: 18.DEC.2019 20:18:17



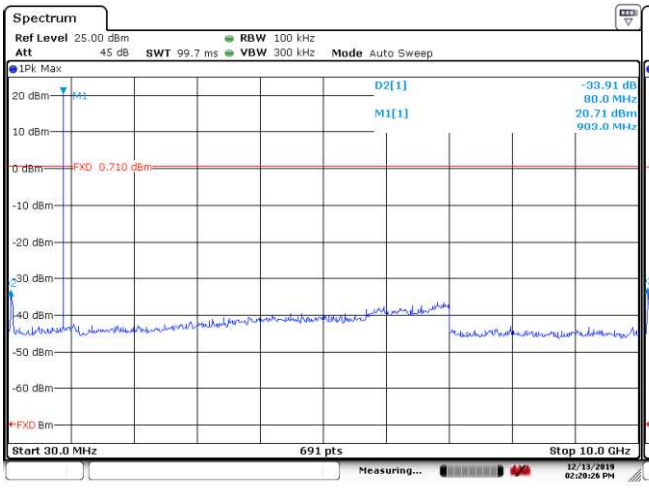
Date: 26.NOV.2019 20:52:40



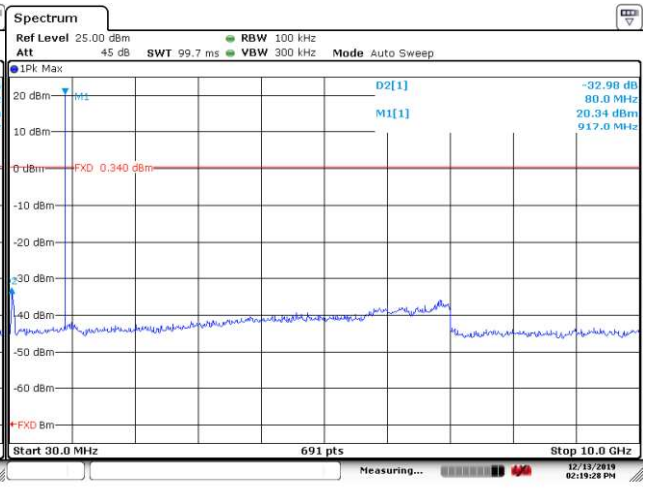
Date: 26.NOV.2019 20:55:42

8. FSK 150Kbps FHSS, Conducted Spurious Emission and Band edge, 902.4MHz~927.6MHz

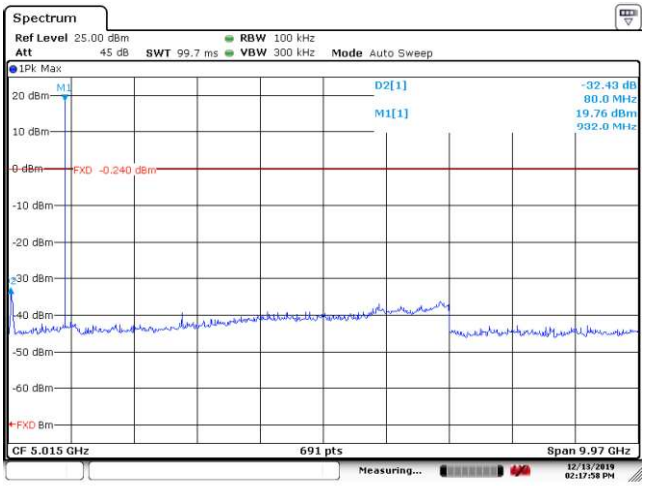
Conducted Spurious Emission



Date: 13.DEC.2019 14:20:27

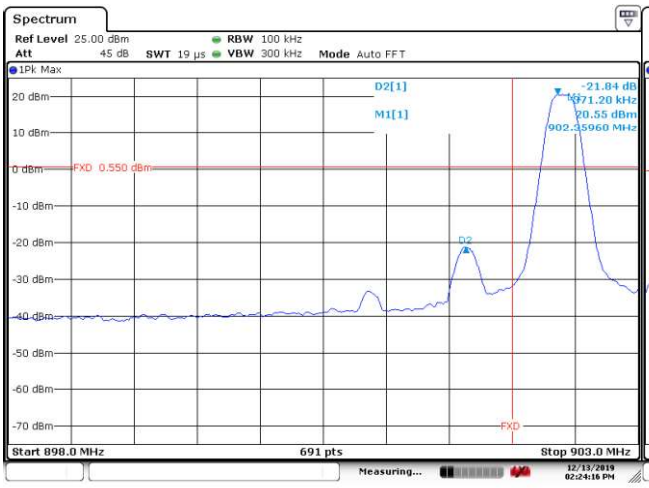


Date: 13.DEC.2019 14:19:28

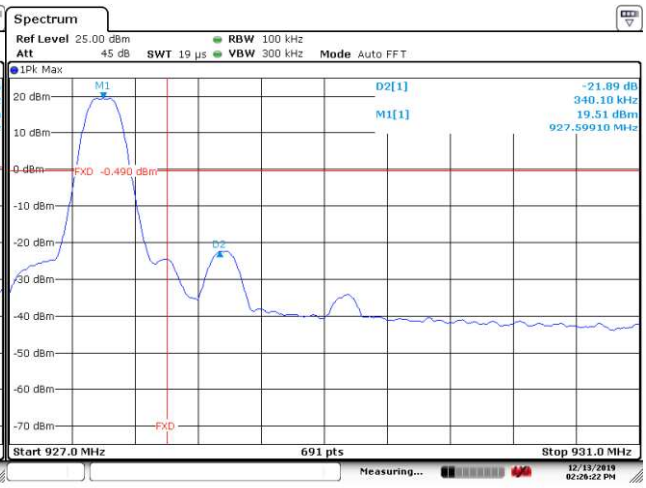


Date: 13.DEC.2019 14:17:58

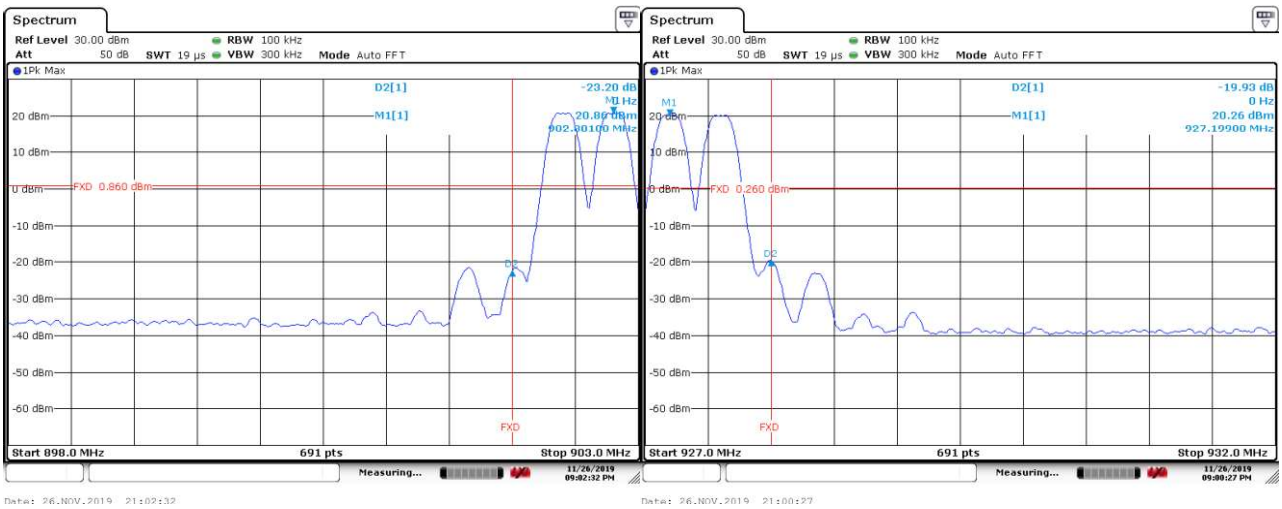
Band edge



Date: 13.DEC.2019 14:24:16

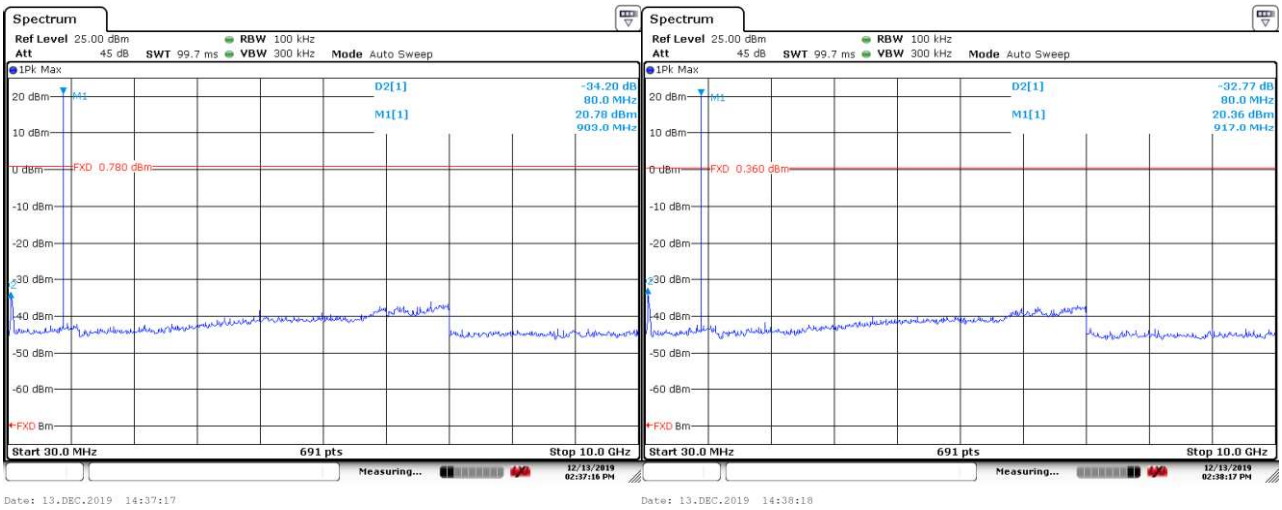


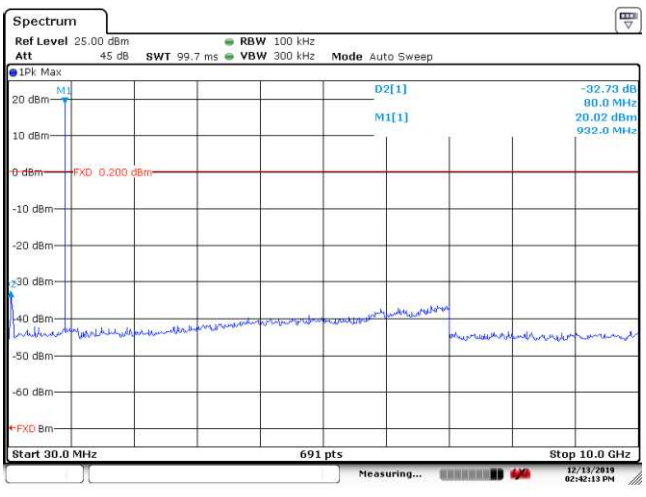
Date: 13.DEC.2019 14:26:22



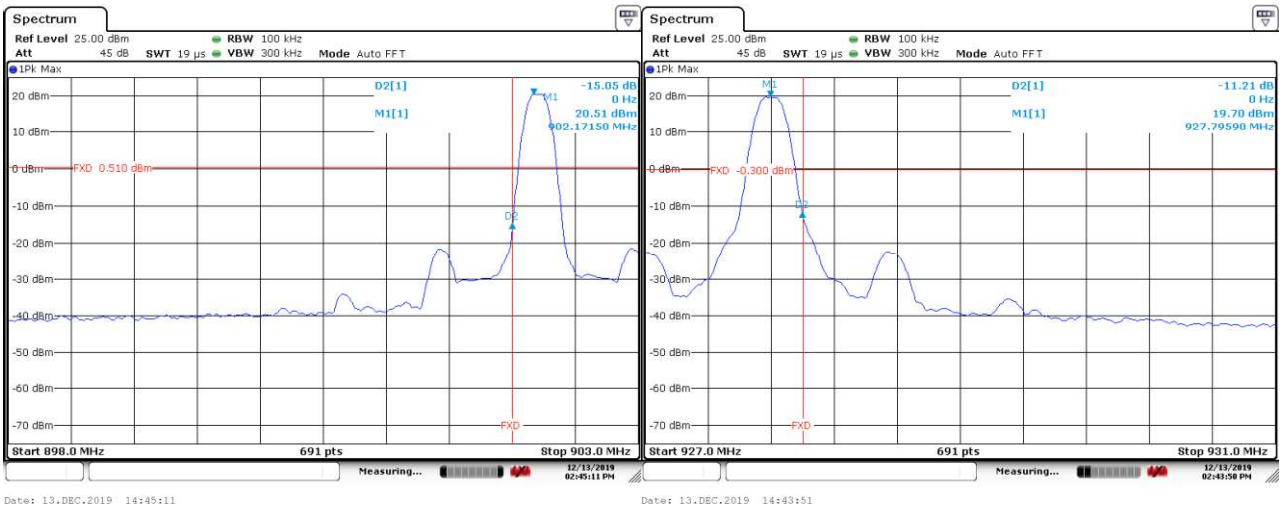
9. FSK 50Kbps FHSS, Conducted Spurious Emission and Band edge, 902.2MHz~927.8MHz

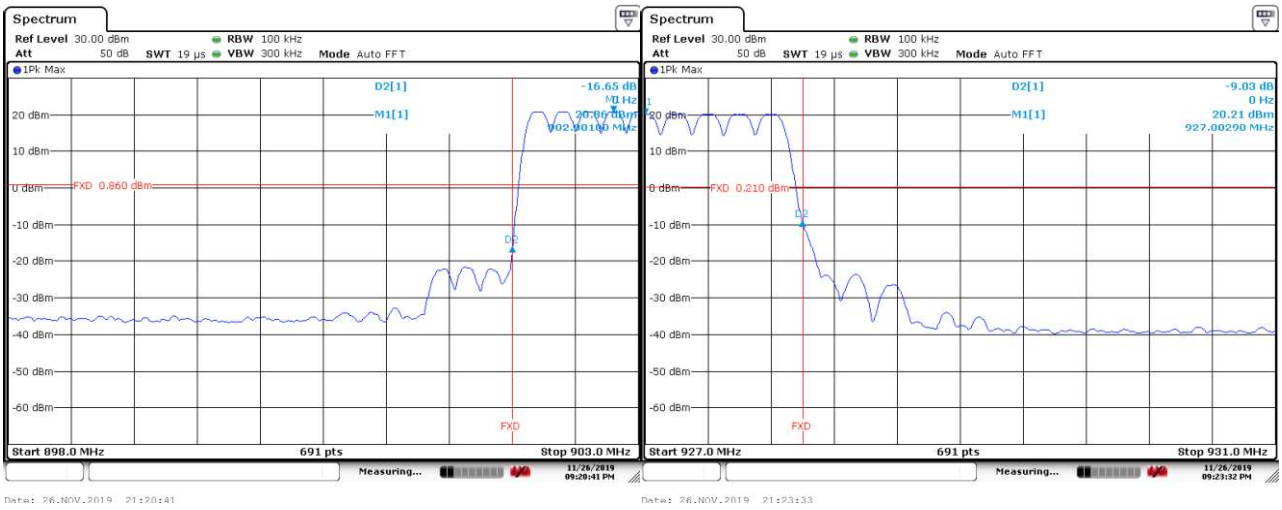
Conducted Spurious Emission





Band edge





10. FSK 5Kbps FHSS, Conducted Spurious Emission and Band edge, 902.2MHz~927.8MHz

Conducted Spurious Emission