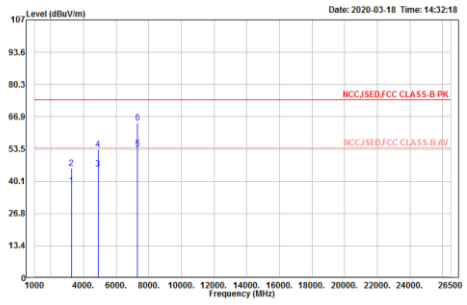
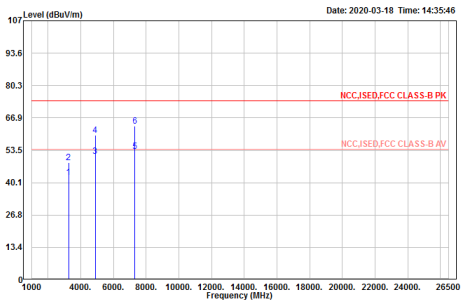
Above 1G (1 GHz-26.5 GHz): The worst mode: BR-1Mbps Middle CH**.**

Horizontal	Vertical
	

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 !	3254.700	38.38	54.00	-15.62	42.41	-4.03	Average	horizontal
2	3254.700	45.46	74.00	-28.54	49.49	-4.03	Peak	horizontal
3 !	4882.000	45.14	54.00	-8.86	44.32	0.82	Average	horizontal
4	4882.000	53.43	74.00	-20.57	52.61	0.82	Peak	horizontal
5 !	7323.000	53.56	54.00	-0.44	47.84	5.72	Average	horizontal
6 !	7323.000	64.36	74.00	-9.64	58.64	5.72	Peak	horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 !	3254.700	42.42	54.00	-11.58	46.45	-4.03	Average	vertical
2	3254.700	48.46	74.00	-25.54	52.49	-4.03	Peak	vertical
3 !	4882.000	51.13	54.00	-2.87	50.31	0.82	Average	vertical
4 !	4882.000	59.60	74.00	-14.40	58.78	0.82	Peak	vertical
5 !	7323.000	53.03	54.00	-0.97	47.31	5.72	Average	vertical
6 !	7323.000	63.52	74.00	-10.48	57.80	5.72	Peak	vertical

Level = Read Level + Factor

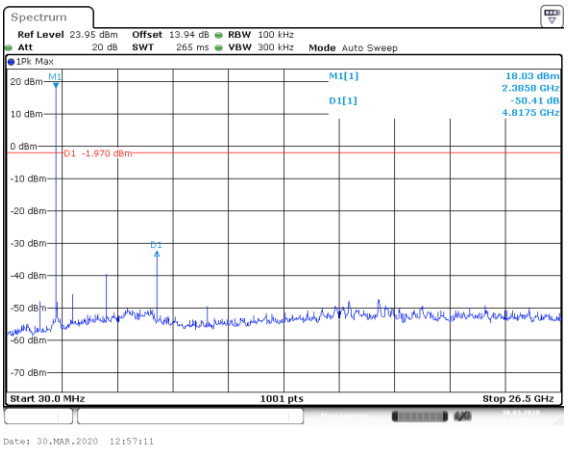
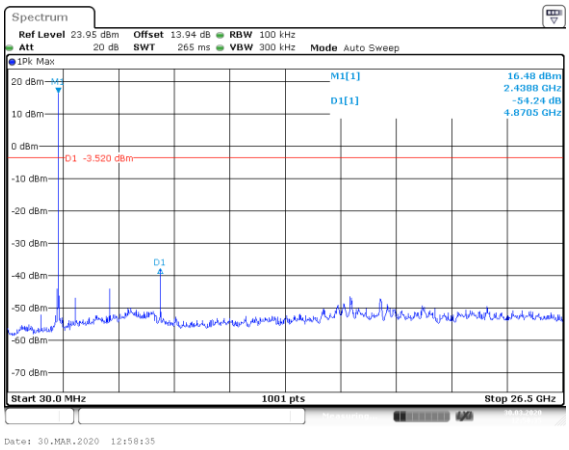
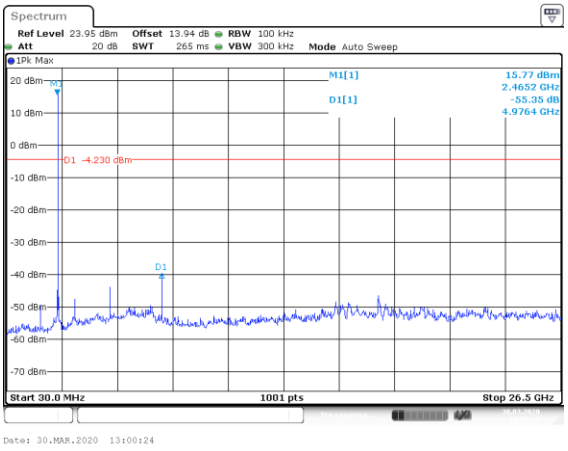
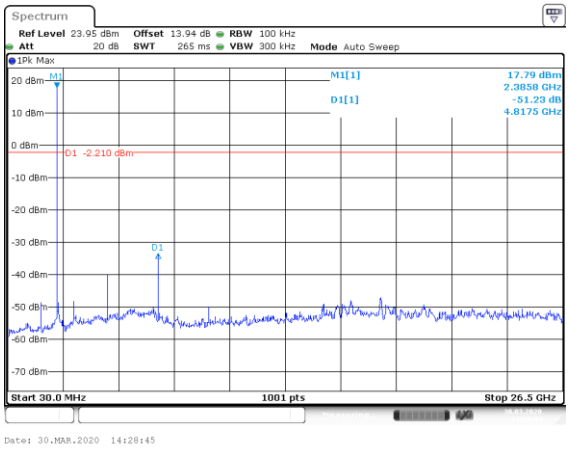
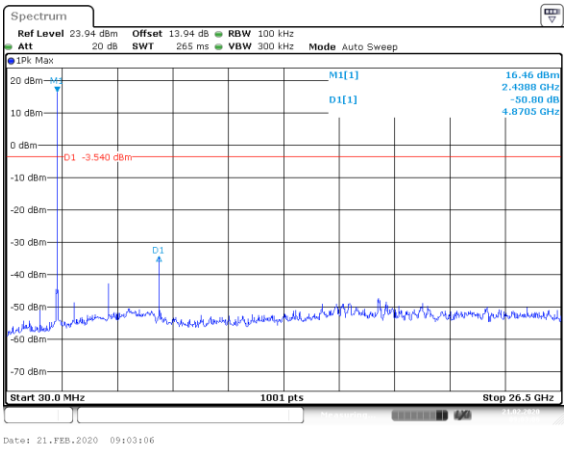
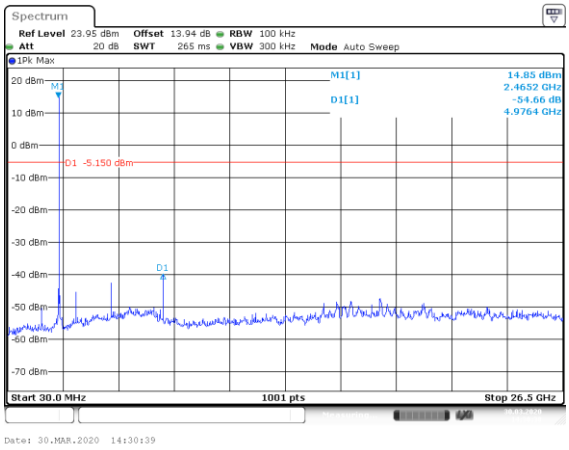
Over Limit = Level – Limit

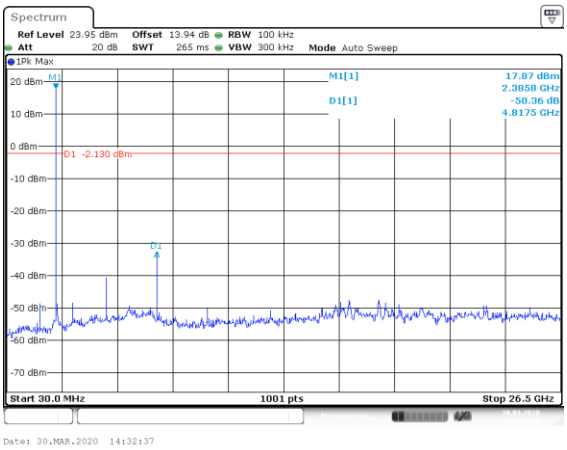
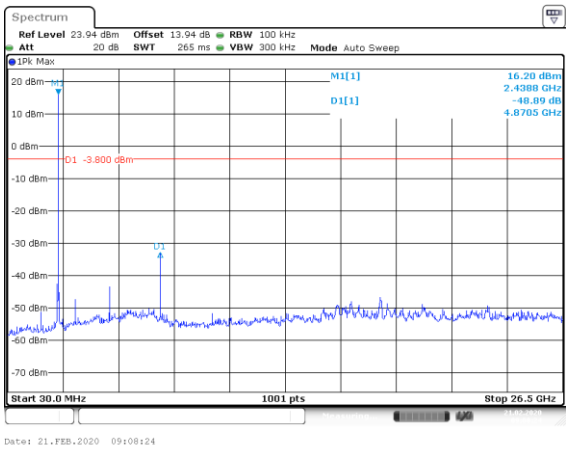
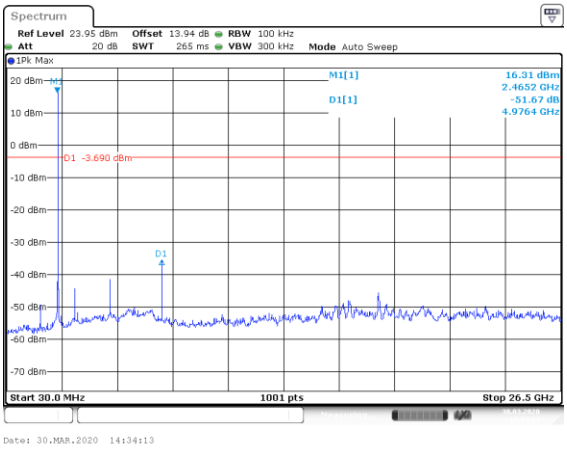
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Conducted Spurious Emissions:

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps mode				
Low	2402	50.41	≥ 20	Compliance
Mid	2441	54.24	≥ 20	Compliance
High	2480	55.35	≥ 20	Compliance
EDR-2Mbps mode				
Low	2402	51.23	≥ 20	Compliance
Mid	2441	50.80	≥ 20	Compliance
High	2480	54.66	≥ 20	Compliance
EDR-3Mbps mode				
Low	2402	50.36	≥ 20	Compliance
Mid	2441	48.89	≥ 20	Compliance
High	2480	51.67	≥ 20	Compliance

BR-1Mbps Low CH	BR-1Mbps Middle CH
	
BR-1Mbps High CH	**EDR-2Mbps Low CH**
	
EDR-2Mbps Middle CH	**EDR-2Mbps High CH**
	

EDR-3Mbps Low CH	EDR-3Mbps Middle CH
	
EDR-3Mbps High CH	**-**
	-

9 FCC §15.247(a)(1) and RSS-Gen Sec 6.7– 20 dB Emission Bandwidth

9.1 Applicable Standard

According to FCC §15.247(a) (1) the maximum 20 dB bandwidth of the hopping channel shall be presented.

According to RSS-247 §5.1

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system's radio frequency (RF) bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals

According to RSS-Gen §6.7,

The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the "x dB bandwidth" is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

9.2 Test Procedure

20dB Bandwidth:

(1) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
(2) Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
(3) Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
(4) Repeat above procedures until all frequencies measured were complete.

99% Emission Bandwidth

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

9.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
RF Cable	MTJ	MT40S	MT40S-001	Each Use	/

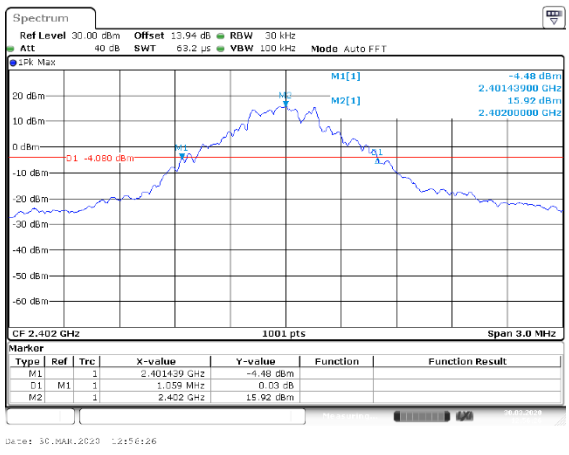
***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

9.4 Test Results

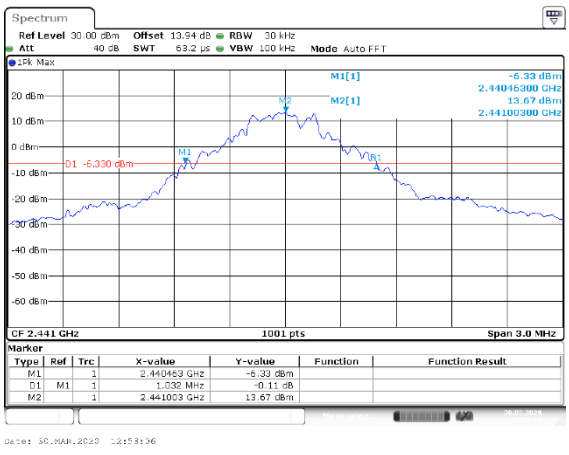
Configuration	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
BR-1Mbps Mode	Low	2402	1.06	0.94
	Middle	2441	1.03	0.97
	High	2480	1.07	0.95
EDR-2Mbps Mode	Low	2402	1.22	1.12
	Middle	2441	1.22	1.13
	High	2480	1.22	1.14
EDR-3Mbps Mode	Low	2402	1.22	1.13
	Middle	2441	1.22	1.13
	High	2480	1.22	1.13

20 dB Bandwidth

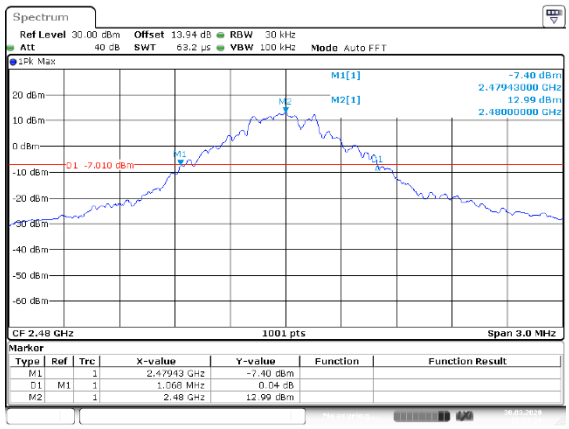
BR-1Mbps Low CH



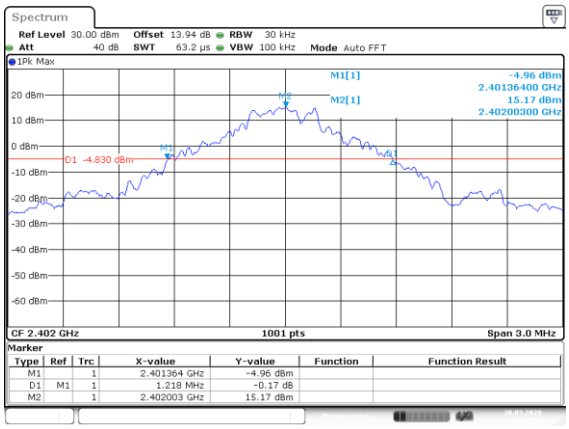
BR-1Mbps Middle CH



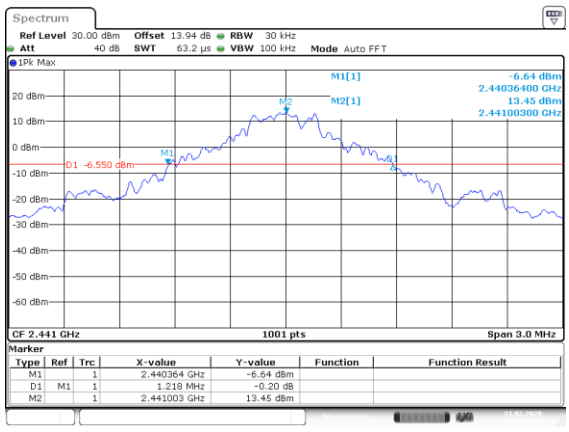
BR-1Mbps High CH



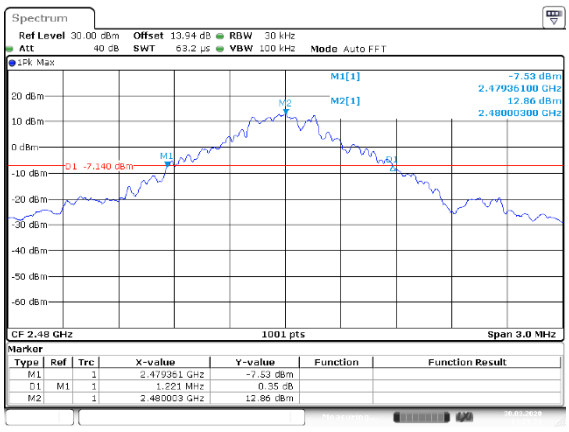
EDR-2Mbps Low CH

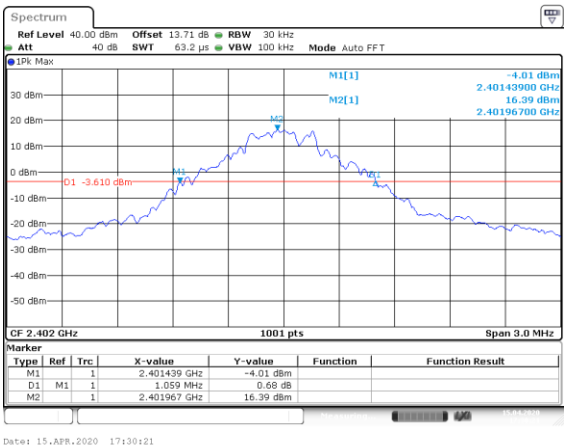
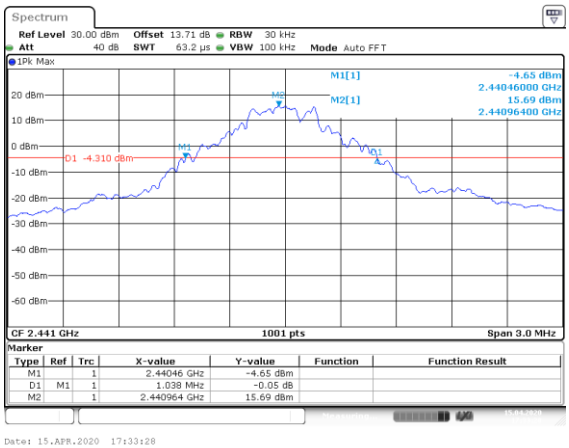


EDR-2Mbps Middle CH



EDR-2Mbps High CH



EDR-3Mbps Low CH	EDR-3Mbps Middle CH
	
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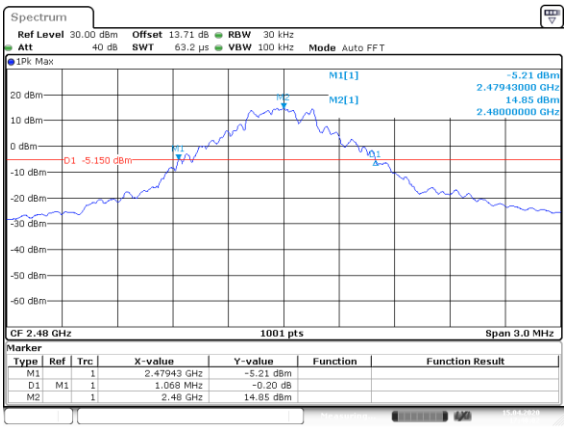
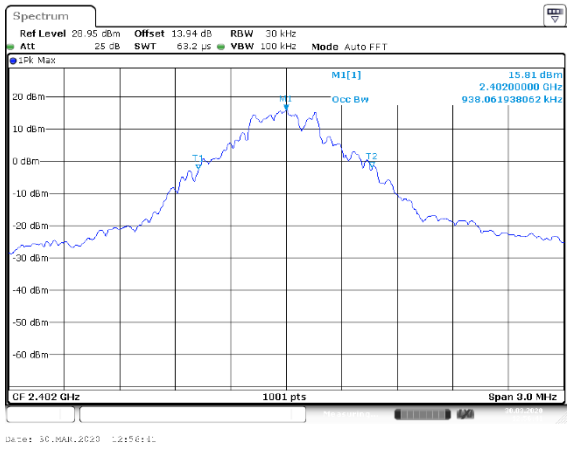
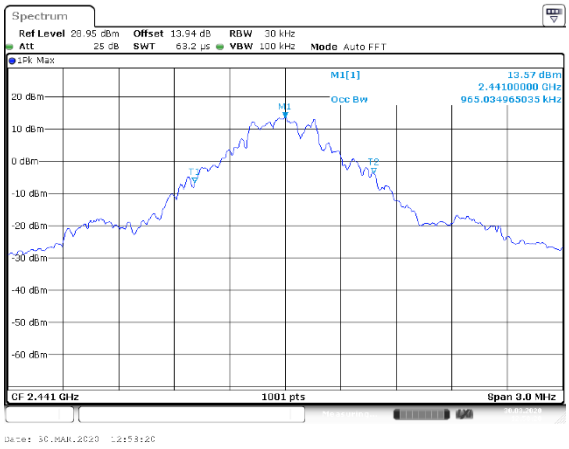
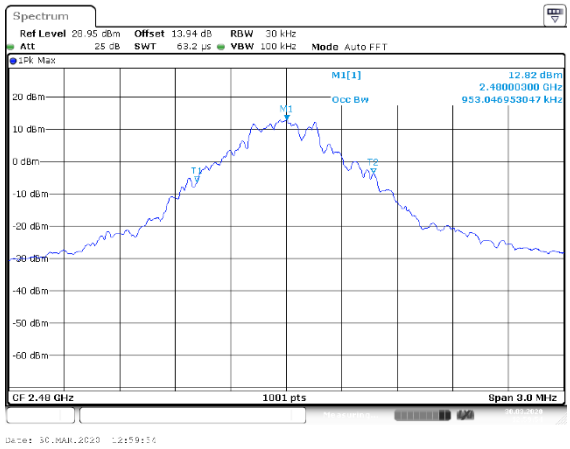
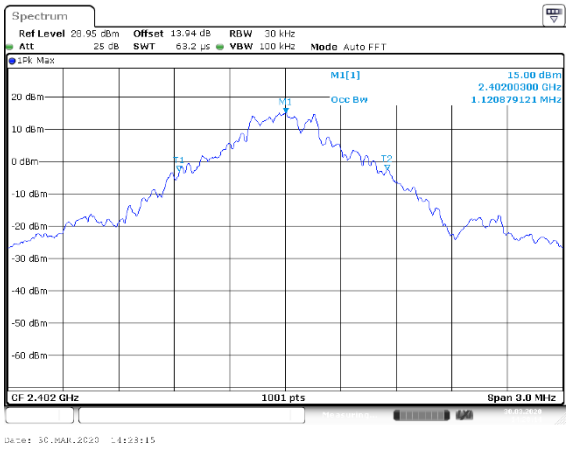
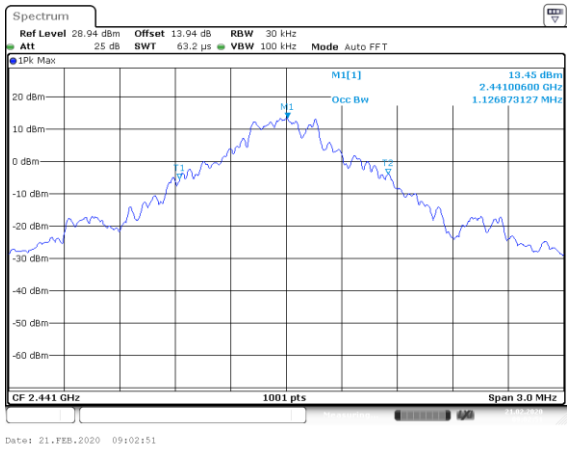
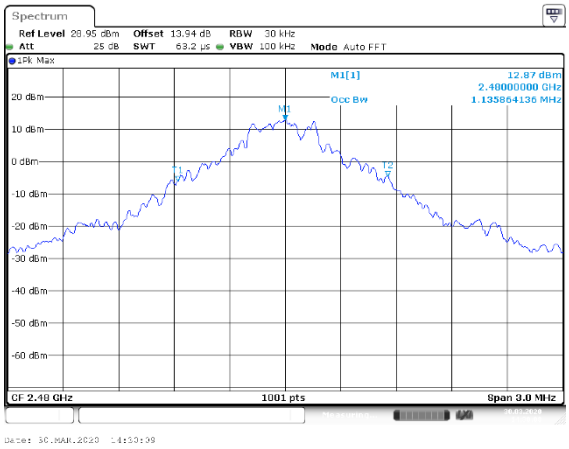
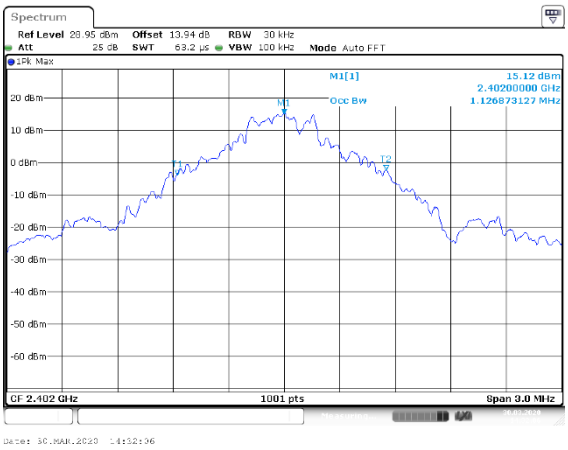
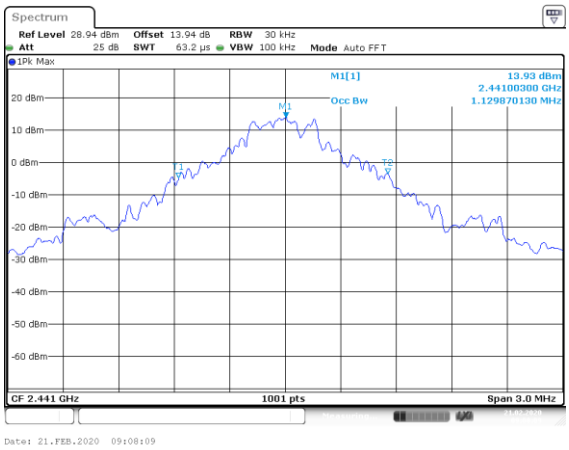
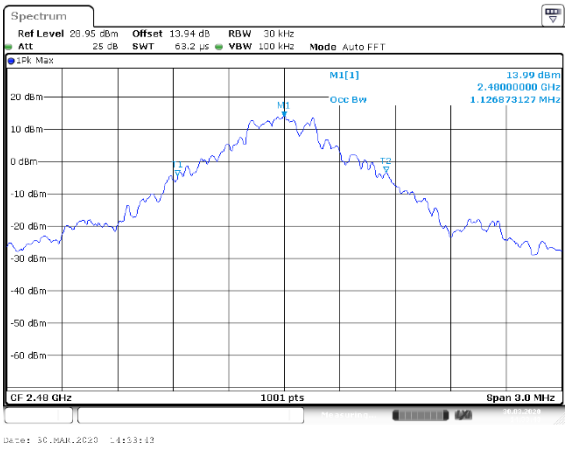
	-

Occupied Bandwidth

BR-1Mbps Low CH	BR-1Mbps Middle CH
	
BR-1Mbps High CH	**EDR-2Mbps Low CH**
	
EDR-2Mbps Middle CH	**EDR-2Mbps High CH**
	

EDR-3Mbps Low CH	EDR-3Mbps Middle CH
	
EDR-3Mbps High CH	**-**
	-

10 FCC §15.247(a)(1) and RSS-247 Sec 5.1(b)– Channel Separation Test

10.1 Applicable Standard

According to FCC §15.247(a) (1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

According to RSS-247 Sec 5.1(b):
FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

10.2 Test Procedure

Span = wide enough to capture the peaks of two adjacent channels
Resolution (or IF) Bandwidth (RBW) ≈ 30% of the channel spacing, adjust as necessary to best identify the center of each individual channel. Video (or Average) Bandwidth (VBW) ≥RBW. Sweep = auto
Detector function = peak Trace = max hold

10.3 Test Equipment List and Details

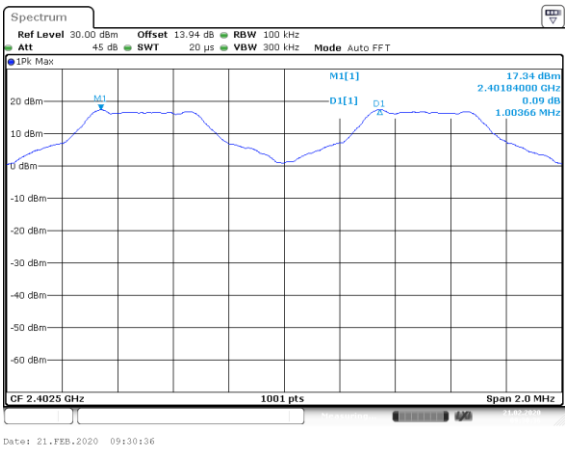
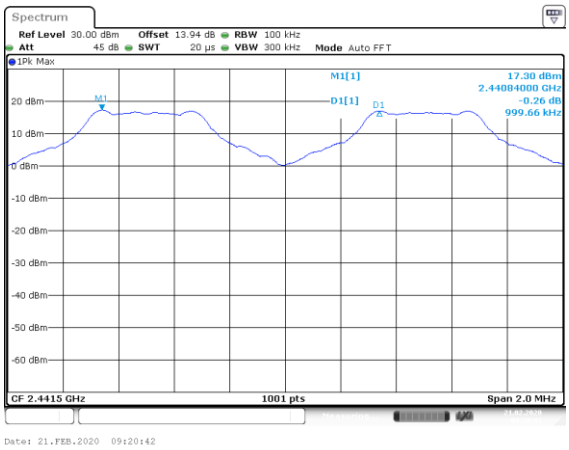
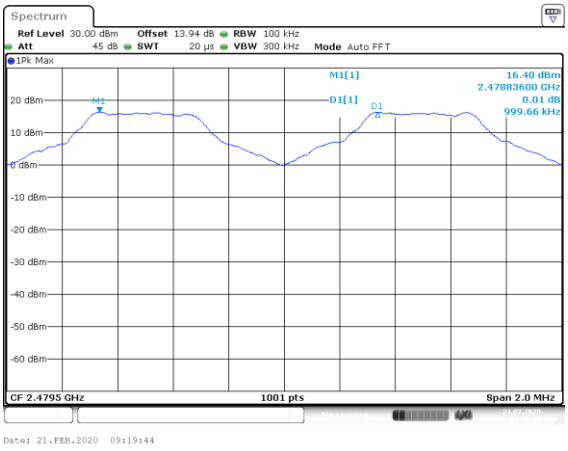
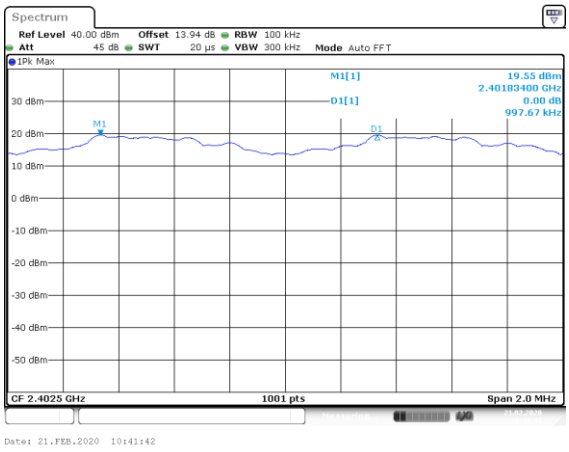
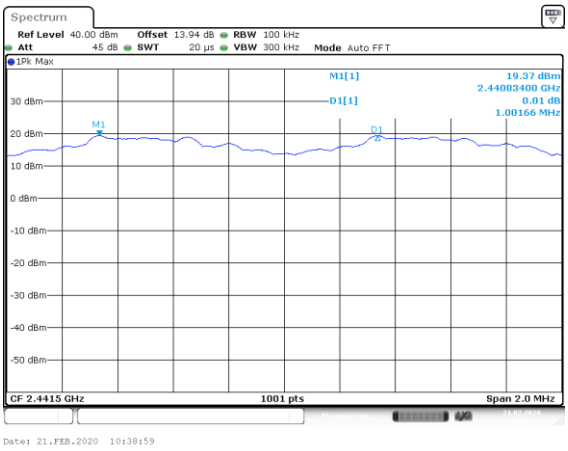
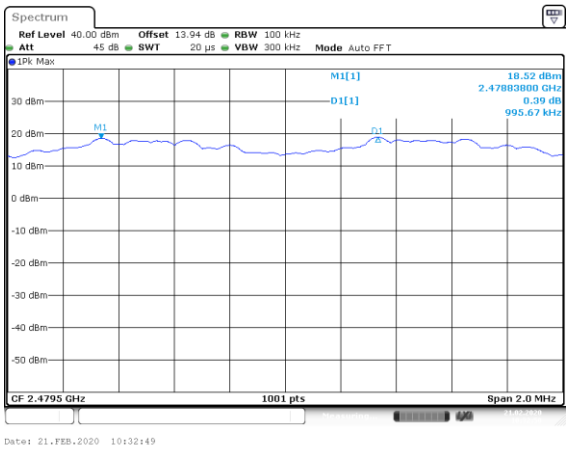
Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
RF Cable	MTJ	MT40S	MT40S-001	Each Use	/

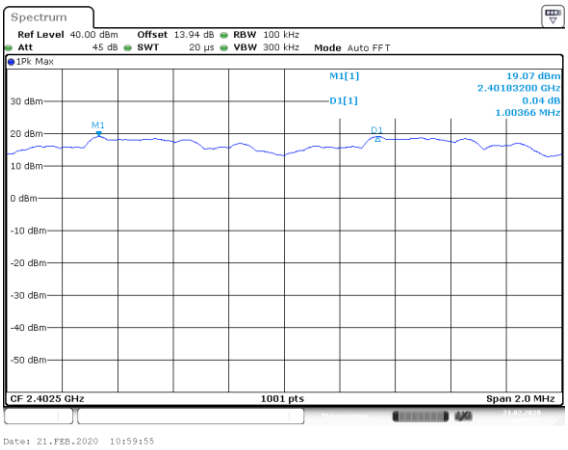
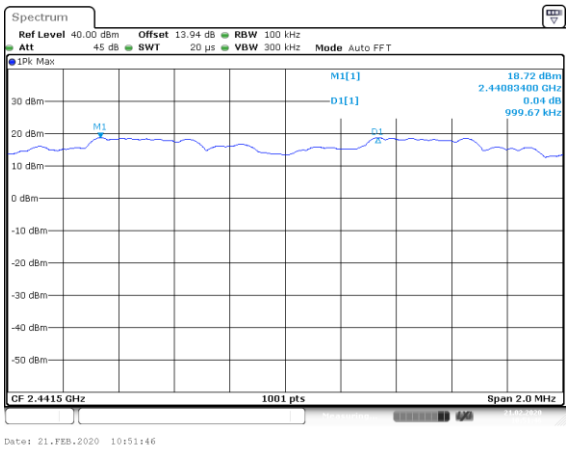
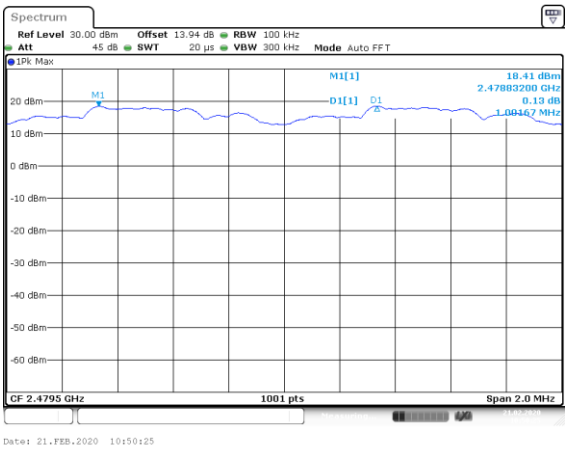
***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

10.4 Test Results

Channel	Frequency (MHz)	20 dBc BW (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
BR-1Mbps mode					
Low	2402	1.06	1.00	0.706	Compliance
Middle	2441	1.03	1.00	0.688	Compliance
High	2480	1.07	1.00	0.712	Compliance
EDR-2Mbps mode					
Low	2402	1.22	1.00	0.812	Compliance
Middle	2441	1.22	1.00	0.812	Compliance
High	2480	1.22	1.00	0.814	Compliance
EDR-3Mbps mode					
Low	2402	1.22	1.00	0.812	Compliance
Middle	2441	1.22	1.00	0.810	Compliance
High	2480	1.22	1.00	0.814	Compliance

** Limit is >two-thirds of the 20 dB bandwidth*

BR-1Mbps Low CH	BR-1Mbps Middle CH
	
BR-1Mbps High CH	**EDR-2Mbps Low CH**
	
EDR-2Mbps Middle CH	**EDR-2Mbps High CH**
	

EDR-3Mbps Low CH	EDR-3Mbps Middle CH
	
EDR-3Mbps High CH	-
	-

11 FCC §15.247(a)(1)(iii) and RSS-247 Sec 5.1(d) – Time of Occupancy (Dwell Time)

11.1 Applicable Standard

According to FCC §15.247(a)(1)(iii),

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

According to RSS-247 Sec 5.1(d),

FHSs operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

11.2 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel

RBW ≤ channel spacing and where possible RBW should be set >> 1/T, where T is the expected dwell time per channel

Sweep = as necessary to capture the entire dwell time per hopping channel Detector function = peak

Trace = max hold

Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements.

Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:

(Number of hops in the period specified in the requirements) = (number of hops on spectrum analyzer) x (period specified in the requirements / analyzer sweep time)

The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified. If the number of hops in a specific time varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation.

11.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
RF Cable	MTJ	MT40S	MT40S-001	Each Use	/

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

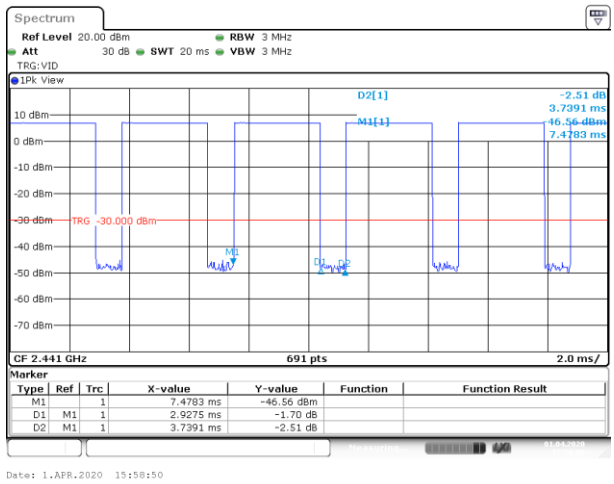
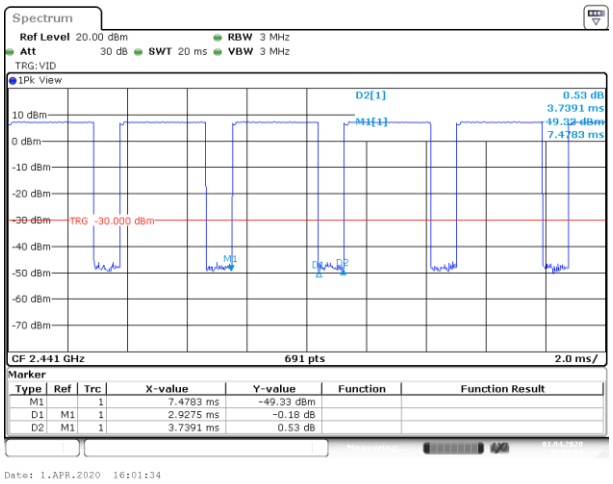
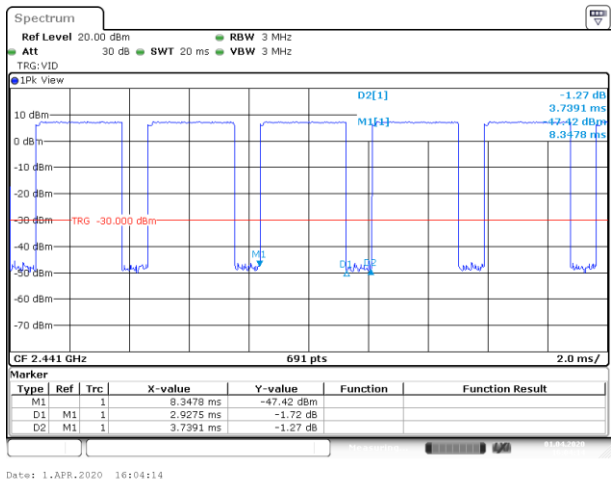
11.4 Test Results

Modulation Mode	Pulse Time per Hop (ms)	Number of Pulse in [0.4 x N sec] (s)	Dwell Time in [0.4 x N sec] (s)	Dwell Time Limits (s)
BR-1Mbps mode	2.93	106.7	0.312	0.4
EDR-2Mbps mode	2.93	106.7	0.312	0.4
EDR-3Mbps mode	2.93	106.7	0.312	0.4

**Number of Pulse in [0.4 x N sec] = 1600/79/6*(0.4*79)*

**Dwell Time in [0.4 x N sec] = (Pulse Time * Number of Pulse in [0.4 x N sec])/1000*

** Bluetooth ACL packets can be 1, 3, or 5 time slots. The DH1 packet can cover a single time slot. The DH3 packet can cover up to 3 time slots. The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.*

DH5	2-DH5
	
3-DH5	**-**
	-

12 FCC §15.247(a)(1)(iii) and RSS-247 Sec 5.1(b) –Quantity of hopping channel Test

12.1 Applicable Standard

According to FCC §15.247(a)(1)(iii),

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

According to RSS-247 Sec 5.1(b):

FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

12.2 Test Procedure

Span = the frequency band of operation.

RBW < 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller VBW ≥ RBW.

Sweep = auto. Detector function = peak Trace = max hold.

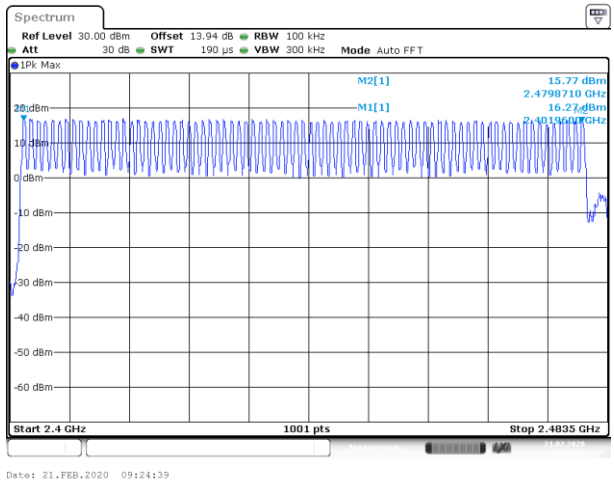
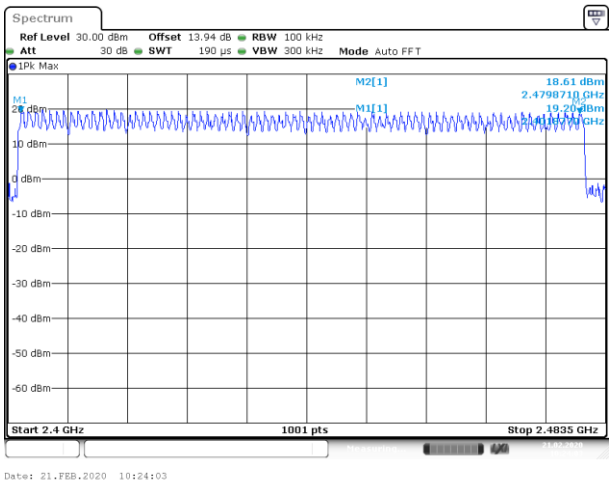
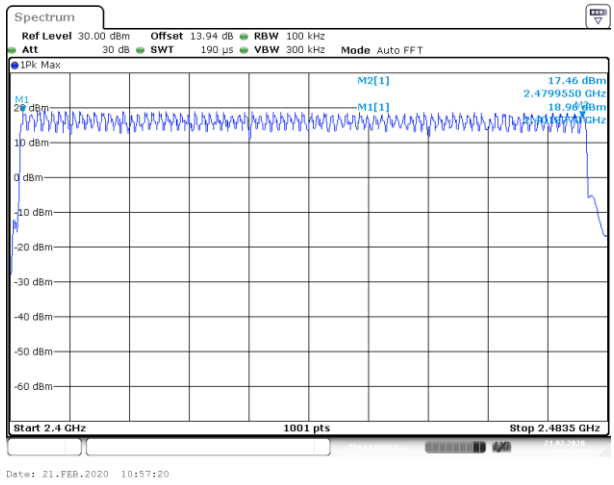
12.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
RF Cable	MTJ	MT40S	MT40S-001	Each Use	/

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

12.4 Test Results

Mode	Frequency Range (MHz)	Number of Hopping Channel	Limit (CH)	Result
BR-1Mbps mode	2402-2480	79	>15	Compliance
EDR-2Mbps mode	2402-2480	79	>15	Compliance
EDR-3Mbps mode	2402-2480	79	>15	Compliance

BR-1Mbps mode	**EDR-2Mbps mode**
	
EDR-3Mbps mode	**-**
	-

13 FCC §15.247(b)(1), RSS-247 Sec 5.1(b) and Sec 5.4(b)– Maximum Output Power

13.1 Applicable Standard

According to FCC §15.247(b) (1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

According to RSS-247 Sec 5.1(b) and Sec 5.4(b):
FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

13.2 Test Procedure

Place the EUT on a bench and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Power sensor.

13.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
USB Wideband Power Sensor	Agilent	U2021XA	MY56120026	2019/09/06	2020/09/05
RF Cable	MTJ	MT40S	MT40S-001	Each Use	/

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

13.4 Test Results

<Dipole Antenna: TAOGLAS/GW.71.5153>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	17.41	0.0551	3.80	21.21	0.1321	21	36
	Middle	2440	17.19	0.0524	3.80	20.99	0.1256	21	36
	High	2480	16.81	0.0480	3.80	20.61	0.1151	21	36
EDR-2Mbps	Low	2402	17.39	0.0548	3.80	21.19	0.1315	21	36
	Middle	2440	18.05	0.0638	3.80	21.85	0.1531	21	36
	High	2480	18.95	0.0785	3.80	22.75	0.1884	21	36
EDR-3Mbps	Low	2402	18.56	0.0718	3.80	22.36	0.1722	21	36
	Middle	2440	18.34	0.0682	3.80	22.14	0.1637	21	36
	High	2480	18.73	0.0746	3.80	22.53	0.1791	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	15.80	0.0380	3.80	19.60	0.0912	21	36
	Middle	2440	15.57	0.0361	3.80	19.37	0.0865	21	36
	High	2480	15.25	0.0335	3.80	19.05	0.0804	21	36
EDR-2Mbps	Low	2402	15.77	0.0378	3.80	19.57	0.0906	21	36
	Middle	2440	16.45	0.0442	3.80	20.25	0.1059	21	36
	High	2480	17.40	0.0550	3.80	21.20	0.1318	21	36
EDR-3Mbps	Low	2402	17.01	0.0502	3.80	20.81	0.1205	21	36
	Middle	2440	16.75	0.0473	3.80	20.55	0.1135	21	36
	High	2480	17.13	0.0516	3.80	20.93	0.1239	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Note2: Duty Cycle is 100% and Duty Factor is 0 dB

< Dipole antenna (Inside WLAN PRO-IS-299)>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	20.66	0.1164	2.50	23.16	0.2070	21	36
	Middle	2440	19.97	0.0993	2.50	22.47	0.1766	21	36
	High	2480	19.51	0.0893	2.50	22.01	0.1589	21	36
EDR-2Mbps	Low	2402	20.98	0.1253	2.50	23.48	0.2228	21	36
	Middle	2440	19.65	0.0923	2.50	22.15	0.1641	21	36
	High	2480	18.95	0.0785	2.50	21.45	0.1396	21	36
EDR-3Mbps	Low	2402	19.93	0.0984	2.50	22.43	0.1750	21	36
	Middle	2440	19.45	0.0881	2.50	21.95	0.1567	21	36
	High	2480	18.73	0.0746	2.50	21.23	0.1327	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	19.49	0.0889	2.50	21.99	0.1581	21	36
	Middle	2440	18.30	0.0676	2.50	20.80	0.1202	21	36
	High	2480	17.79	0.0601	2.50	20.29	0.1069	21	36
EDR-2Mbps	Low	2402	18.79	0.0757	2.50	21.29	0.1346	21	36
	Middle	2440	18.08	0.0643	2.50	20.58	0.1143	21	36
	High	2480	17.40	0.0550	2.50	19.90	0.0977	21	36
EDR-3Mbps	Low	2402	18.31	0.0678	2.50	20.81	0.1205	21	36
	Middle	2440	17.81	0.0604	2.50	20.31	0.1074	21	36
	High	2480	17.13	0.0516	2.50	19.63	0.0918	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Note2: Duty Cycle is 100% and Duty Factor is 0 dB

< PCB Antenna (Redpine Signals RSIA7)>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	16.65	0.0462	0.71	17.36	0.0545	21	36
	Middle	2440	17.19	0.0524	0.71	17.90	0.0617	21	36
	High	2480	17.49	0.0561	0.71	18.20	0.0661	21	36
EDR-2Mbps	Low	2402	19.68	0.0929	0.71	20.39	0.1094	21	36
	Middle	2440	19.23	0.0838	0.71	19.94	0.0986	21	36
	High	2480	18.95	0.0785	0.71	19.66	0.0925	21	36
EDR-3Mbps	Low	2402	20.14	0.1033	0.71	20.85	0.1216	21	36
	Middle	2440	19.65	0.0923	0.71	20.36	0.1086	21	36
	High	2480	19.96	0.0991	0.71	20.67	0.1167	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	15.01	0.0317	0.71	15.72	0.0373	21	36
	Middle	2440	15.57	0.0361	0.71	16.28	0.0425	21	36
	High	2480	15.90	0.0389	0.71	16.61	0.0458	21	36
EDR-2Mbps	Low	2402	18.87	0.0771	0.71	19.58	0.0908	21	36
	Middle	2440	17.65	0.0582	0.71	18.36	0.0685	21	36
	High	2480	17.40	0.0550	0.71	18.11	0.0647	21	36
EDR-3Mbps	Low	2402	18.55	0.0716	0.71	19.26	0.0843	21	36
	Middle	2440	18.08	0.0643	0.71	18.79	0.0757	21	36
	High	2480	17.36	0.0545	0.71	18.07	0.0641	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Note2: Duty Cycle is 100% and Duty Factor is 0 dB

< PIFA Antenna (SMARTEQ 4211613980)>

Mode	CH	Freq. (MHz)	Peak Output Power		Ant Gain (dBi)	EIRP Peak Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	20.57	0.1140	0.00	20.57	0.1140	21	36
	Middle	2440	18.03	0.0635	0.00	18.03	0.0635	21	36
	High	2480	17.49	0.0561	0.00	17.49	0.0561	21	36
EDR-2Mbps	Low	2402	20.08	0.1019	0.00	20.08	0.1019	21	36
	Middle	2440	18.05	0.0638	0.00	18.05	0.0638	21	36
	High	2480	17.38	0.0547	0.00	17.38	0.0547	21	36
EDR-3Mbps	Low	2402	19.81	0.0957	0.00	19.81	0.0957	21	36
	Middle	2440	18.34	0.0682	0.00	18.34	0.0682	21	36
	High	2480	18.49	0.0706	0.00	18.49	0.0706	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Mode	CH	Freq. (MHz)	Average Output Power		Ant Gain (dBi)	EIRP Average Output Power		Limit (dBm)	EIRP Limit (dBm)
			(dBm)	(W)		(dBm)	(W)		
BR-1Mbps	Low	2402	18.99	0.0793	0.00	18.99	0.0793	21	36
	Middle	2440	16.40	0.0437	0.00	16.40	0.0437	21	36
	High	2480	15.90	0.0389	0.00	15.90	0.0389	21	36
EDR-2Mbps	Low	2402	18.45	0.0700	0.00	18.45	0.0700	21	36
	Middle	2440	16.45	0.0442	0.00	16.45	0.0442	21	36
	High	2480	15.87	0.0386	0.00	15.87	0.0386	21	36
EDR-3Mbps	Low	2402	18.27	0.0671	0.00	18.27	0.0671	21	36
	Middle	2440	16.75	0.0473	0.00	16.75	0.0473	21	36
	High	2480	16.99	0.0500	0.00	16.99	0.0500	21	36

Note1: Conducted Power Limit: 0.125W = 21 dBm, 4W = 36 dBm

Note2: Duty Cycle is 100% and Duty Factor is 0 dB

14 FCC §15.247(d) and RSS-247 Sec 5.5– 100 kHz Bandwidth of Frequency Band Edge

14.1 Applicable Standard

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c)

According to RSS-247 Sec 5.5. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

14.2 Test Procedure

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.

RBW = 100 kHz VBW = 300 kHz.

Sweep = coupled. Detector function = peak Trace = max hold.

14.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room(TH-02)					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
RF Cable	MTJ	MT40S	MT40S-001	Each Use	/

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

14.4 Test Results

<Dipole Antenna: TAOGLAS/GW.71.5153>

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps mode				
Low	2402	46.64	≥ 20	Compliance
High	2480	43.99	≥ 20	Compliance
BR-1Mbps Hopping mode				
Low	2402	22.39	≥ 20	Compliance
High	2480	21.01	≥ 20	Compliance
EDR-2Mbps mode				
Low	2402	41.01	≥ 20	Compliance
High	2480	46.53	≥ 20	Compliance
EDR-2Mbps Hopping mode				
Low	2402	23.25	≥ 20	Compliance
High	2480	22.68	≥ 20	Compliance
EDR-3Mbps mode				
Low	2402	40.33	≥ 20	Compliance
High	2480	45.22	≥ 20	Compliance
EDR-3Mbps Hopping mode				
Low	2402	21.04	≥ 20	Compliance
High	2480	21.29	≥ 20	Compliance

< Dipole antenna (Inside WLAN PRO-IS-299)>

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps mode				
Low	2402	41.49	≥ 20	Compliance
High	2480	44.29	≥ 20	Compliance
BR-1Mbps Hopping mode				
Low	2402	25.99	≥ 20	Compliance
High	2480	27.04	≥ 20	Compliance
EDR-2Mbps mode				
Low	2402	40.69	≥ 20	Compliance
High	2480	45.56	≥ 20	Compliance
EDR-2Mbps Hopping mode				
Low	2402	39.84	≥ 20	Compliance
High	2480	25.16	≥ 20	Compliance
EDR-3Mbps mode				
Low	2402	43.51	≥ 20	Compliance
High	2480	45.70	≥ 20	Compliance
EDR-3Mbps Hopping mode				
Low	2402	38.38	≥ 20	Compliance
High	2480	28.81	≥ 20	Compliance

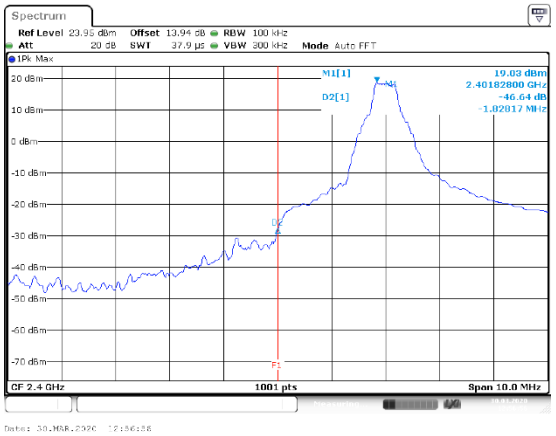
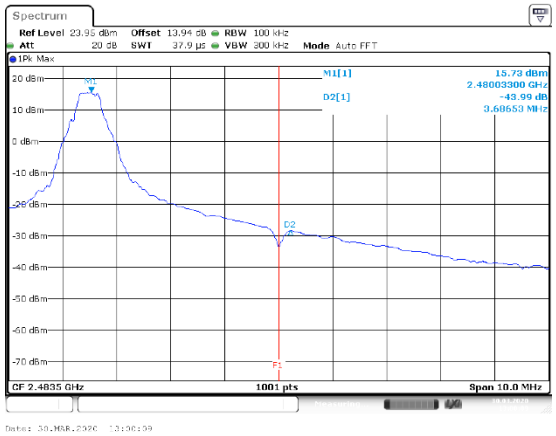
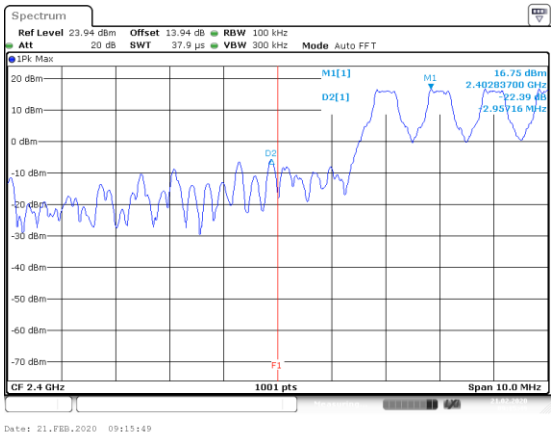
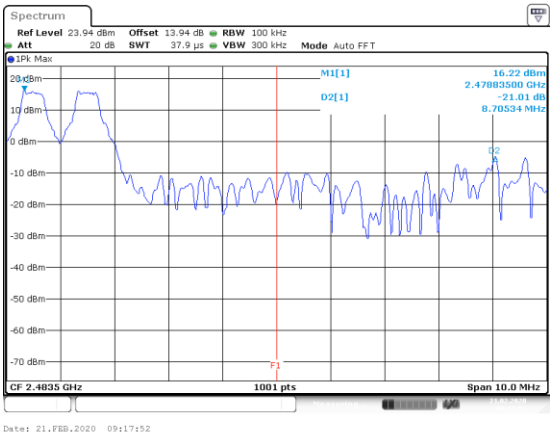
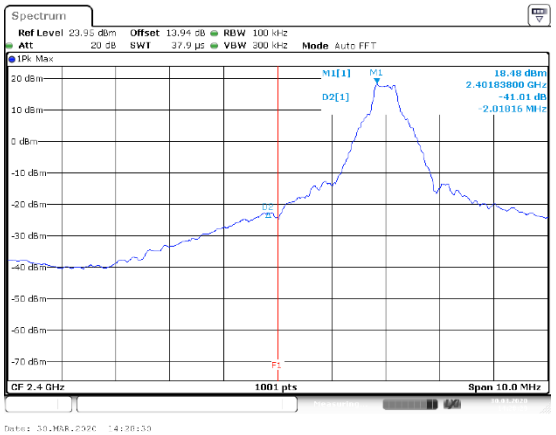
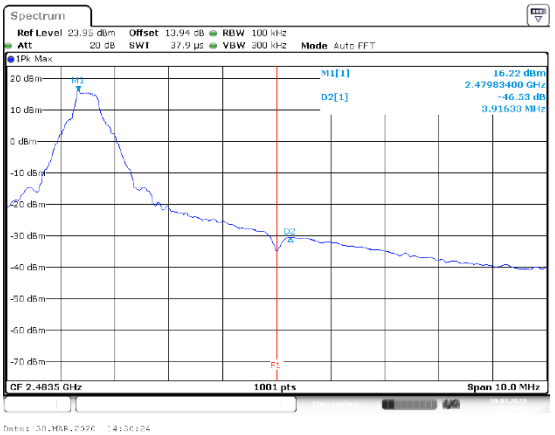
< PCB Antenna (Redpine Signals RSIA7)>

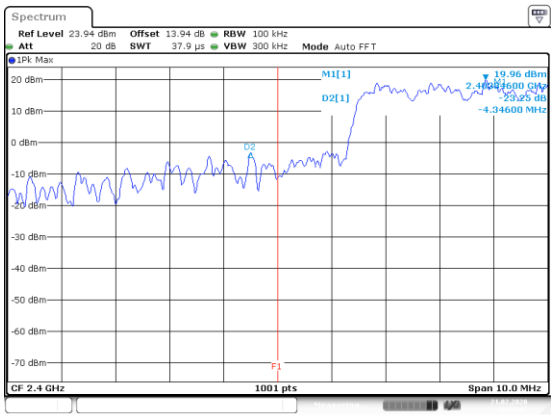
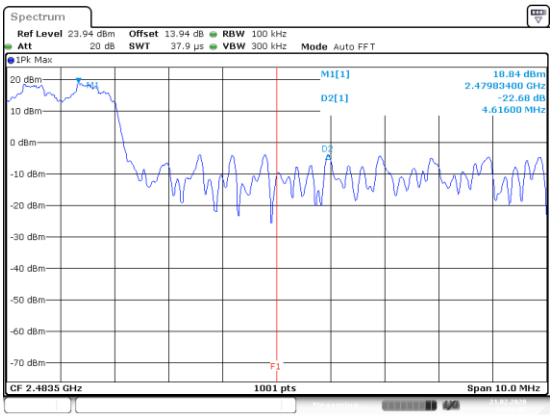
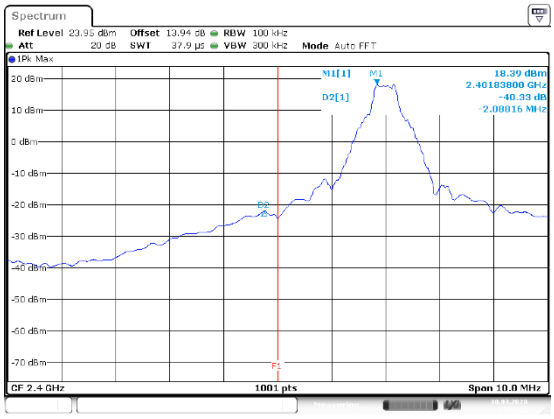
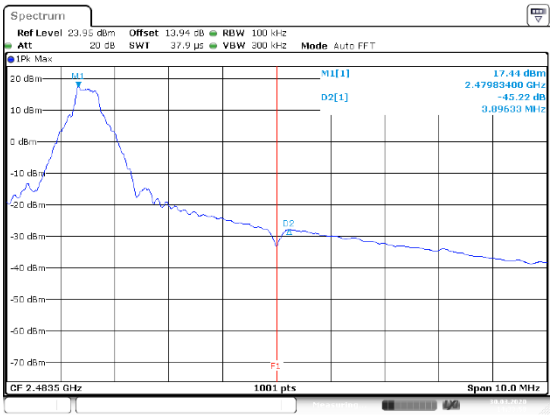
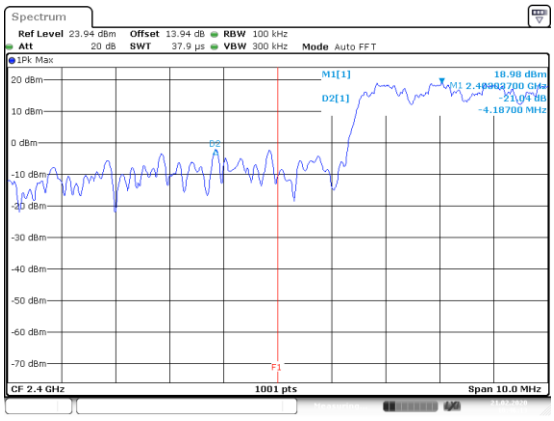
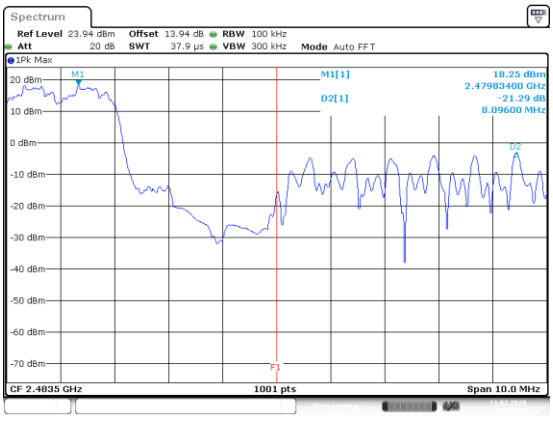
Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps mode				
Low	2402	42.24	≥ 20	Compliance
High	2480	49.07	≥ 20	Compliance
BR-1Mbps Hopping mode				
Low	2402	24.49	≥ 20	Compliance
High	2480	60.46	≥ 20	Compliance
EDR-2Mbps mode				
Low	2402	41.88	≥ 20	Compliance
High	2480	46.01	≥ 20	Compliance
EDR-2Mbps Hopping mode				
Low	2402	40.90	≥ 20	Compliance
High	2480	36.81	≥ 20	Compliance
EDR-3Mbps mode				
Low	2402	39.49	≥ 20	Compliance
High	2480	44.73	≥ 20	Compliance
EDR-3Mbps Hopping mode				
Low	2402	41.21	≥ 20	Compliance
High	2480	45.43	≥ 20	Compliance

< PIFA Antenna (SMARTEQ 4211613980)>

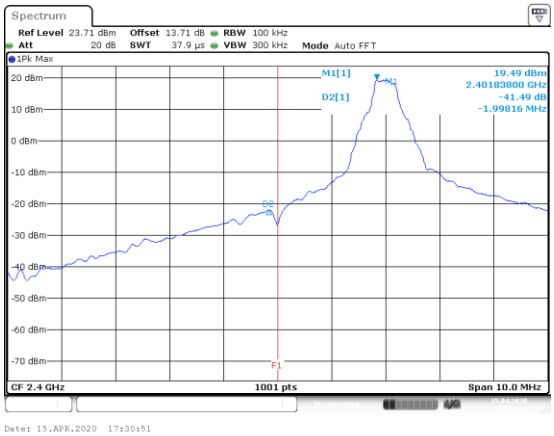
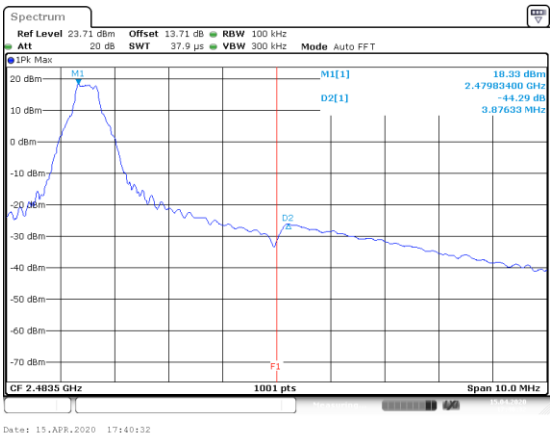
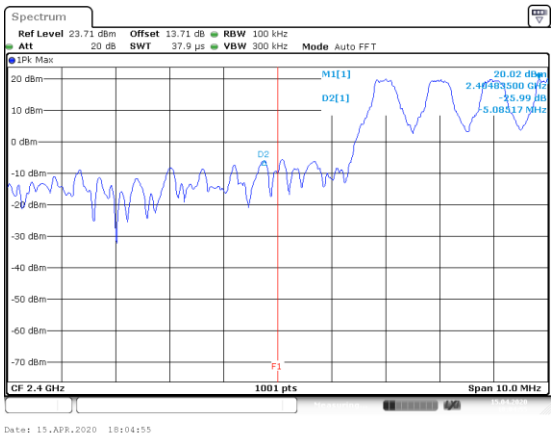
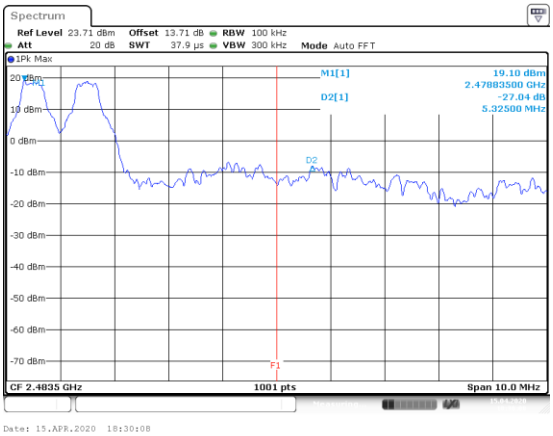
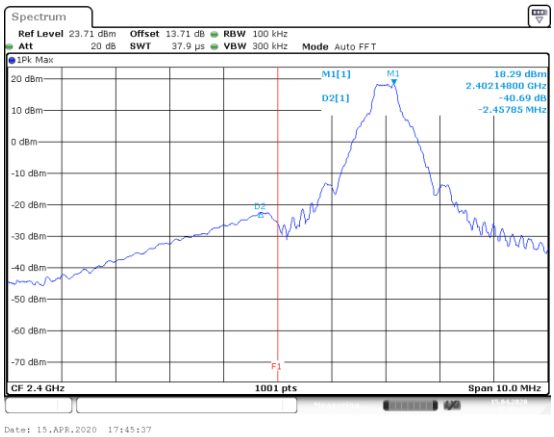
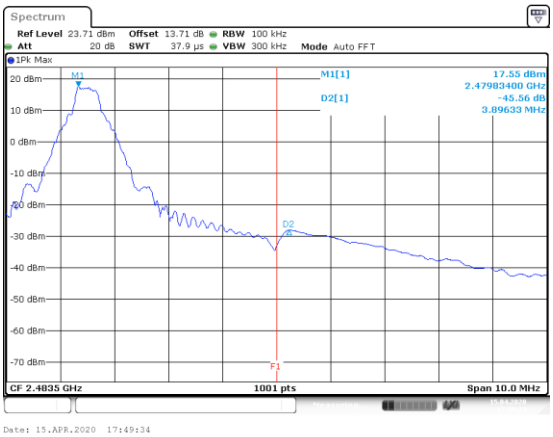
Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
BR-1Mbps mode				
Low	2402	51.88	≥ 20	Compliance
High	2480	60.59	≥ 20	Compliance
BR-1Mbps Hopping mode				
Low	2402	22.39	≥ 20	Compliance
High	2480	53.51	≥ 20	Compliance
EDR-2Mbps mode				
Low	2402	46.19	≥ 20	Compliance
High	2480	58.45	≥ 20	Compliance
EDR-2Mbps Hopping mode				
Low	2402	44.22	≥ 20	Compliance
High	2480	41.64	≥ 20	Compliance
EDR-3Mbps mode				
Low	2402	45.60	≥ 20	Compliance
High	2480	56.80	≥ 20	Compliance
EDR-3Mbps Hopping mode				
Low	2402	39.62	≥ 20	Compliance
High	2480	25.49	≥ 20	Compliance

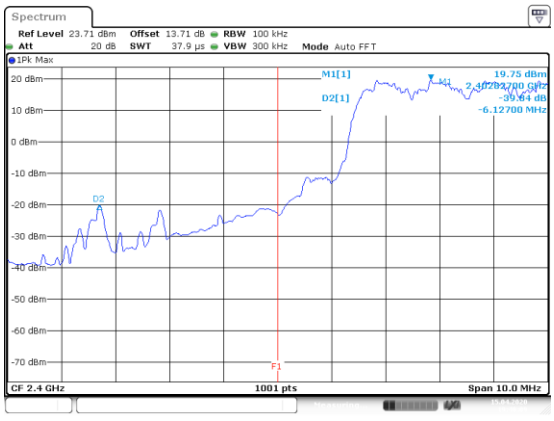
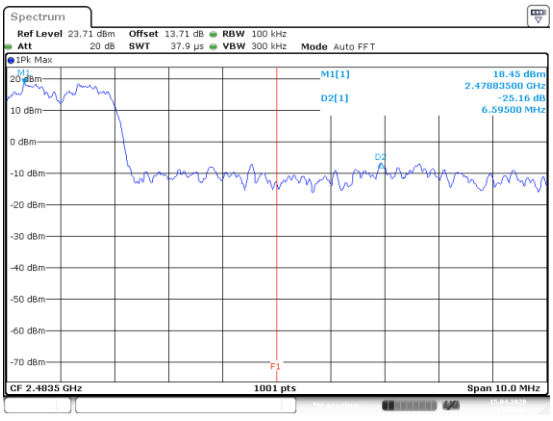
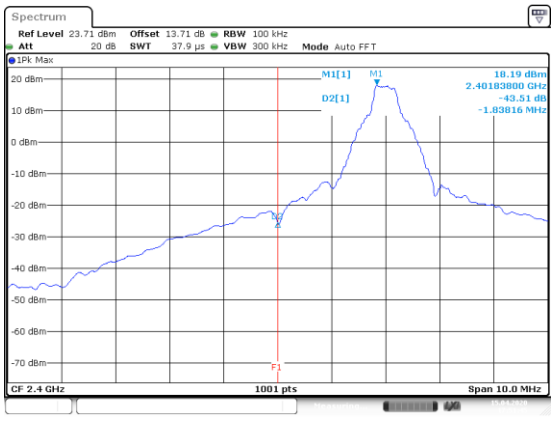
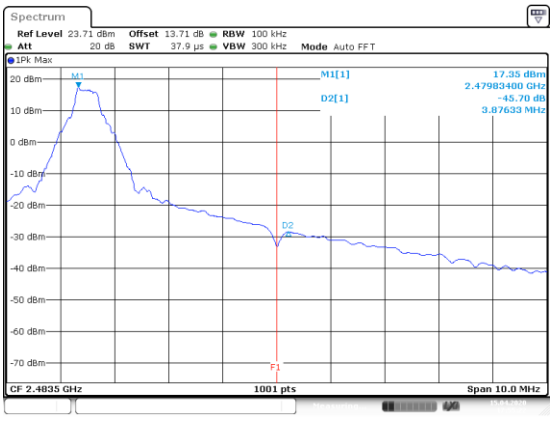
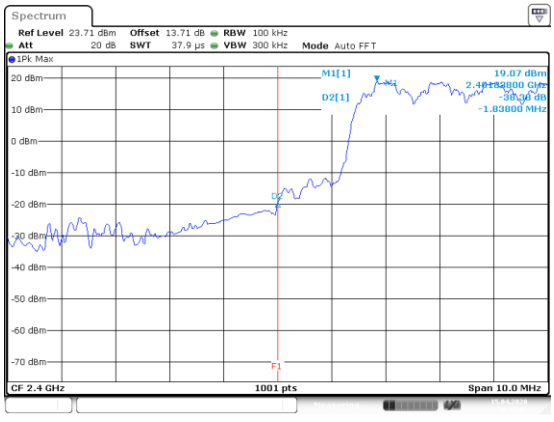
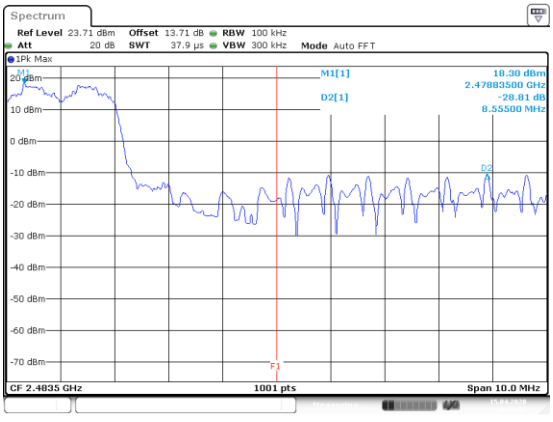
<Dipole Antenna: TAOGLAS/GW.71.5153>

BR-1Mbps Left Side	BR-1Mbps Right Side
	
BR-1Mbps Hopping Left Side	**BR-1Mbps Hopping Right Side**
	
EDR-2Mbps Left Side	**EDR-2Mbps Right Side**
	

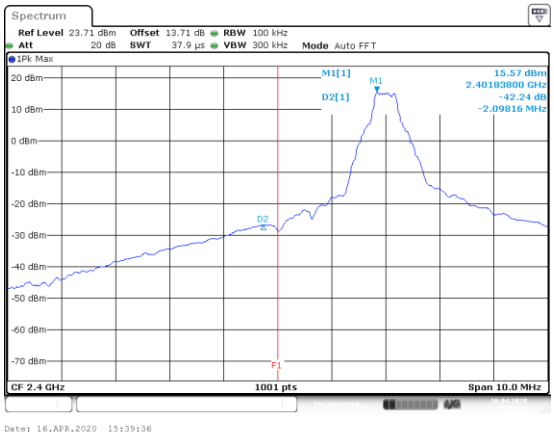
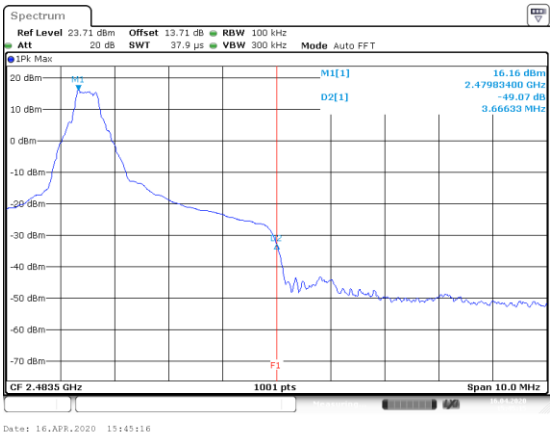
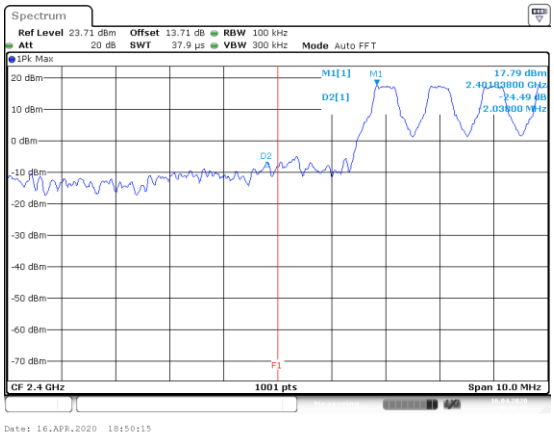
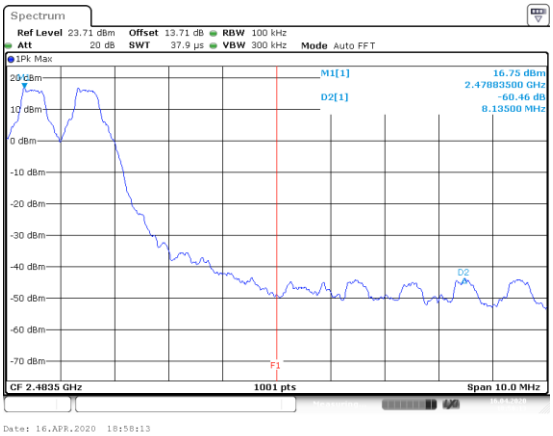
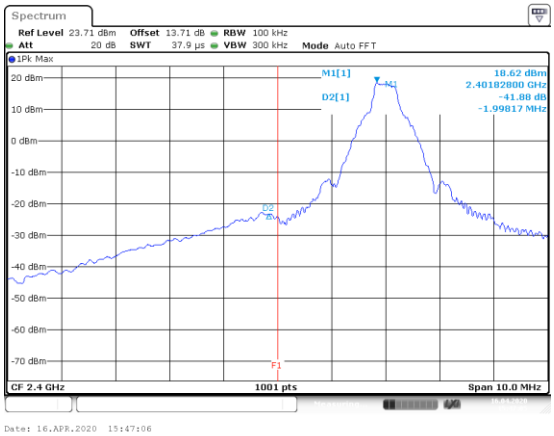
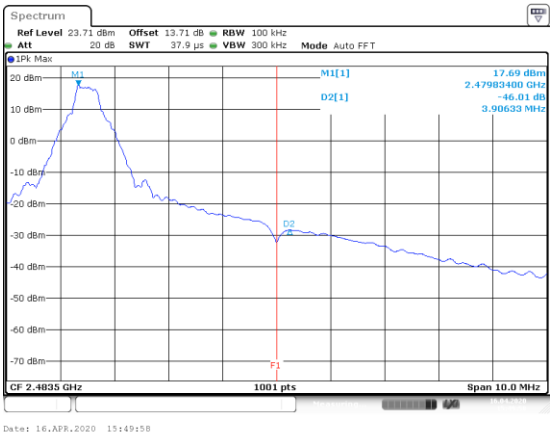
EDR-2Mbps Hopping Left Side	EDR-2Mbps Hopping Right Side
	
EDR-3Mbps Left Side	**EDR-3Mbps Right Side**
	
EDR-3Mbps Hopping Left Side	**EDR-3Mbps Hopping Right Side**
	

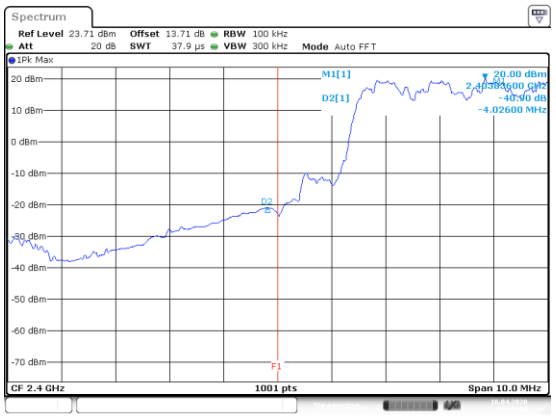
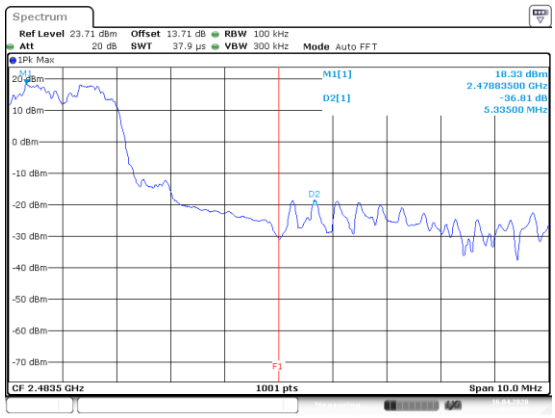
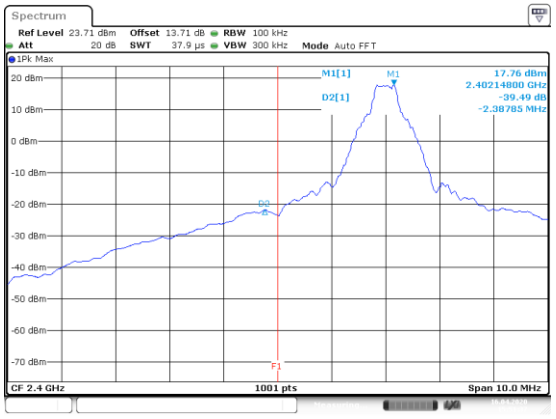
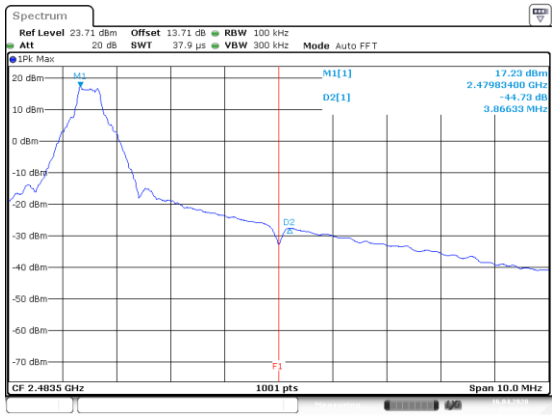
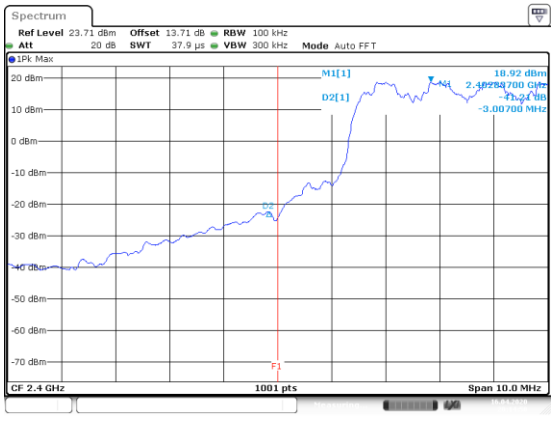
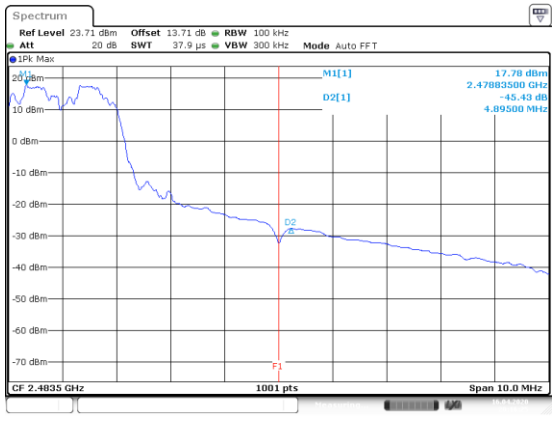
< Dipole antenna (Inside WLAN PRO-IS-299)>

BR-1Mbps Left Side	BR-1Mbps Right Side
	
BR-1Mbps Hopping Left Side	**BR-1Mbps Hopping Right Side**
	
EDR-2Mbps Left Side	**EDR-2Mbps Right Side**
	

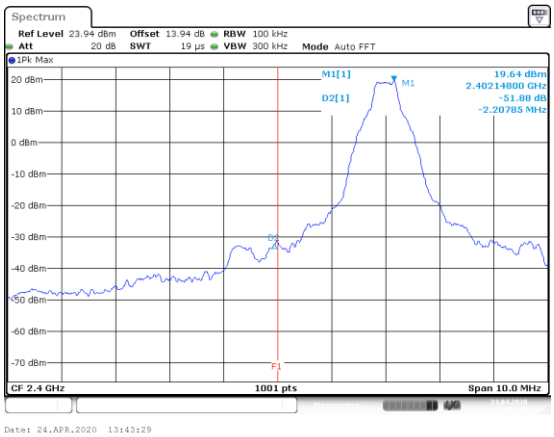
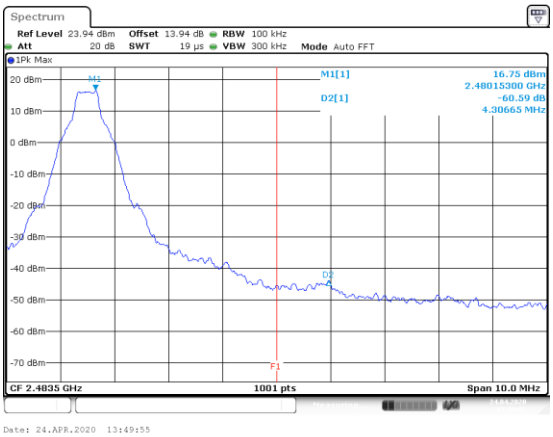
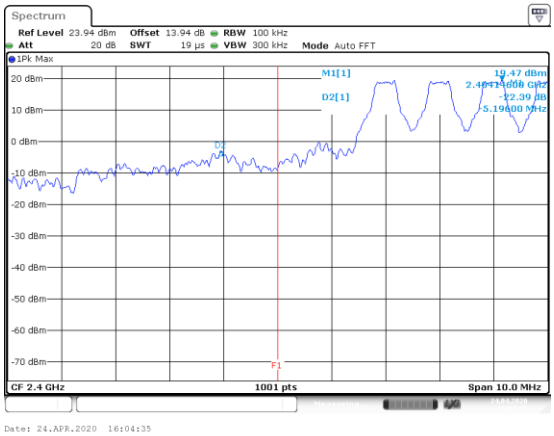
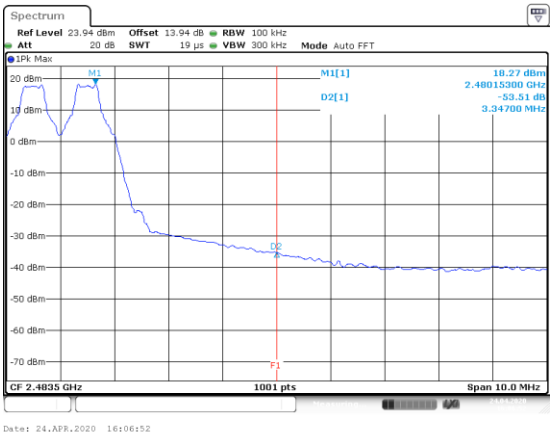
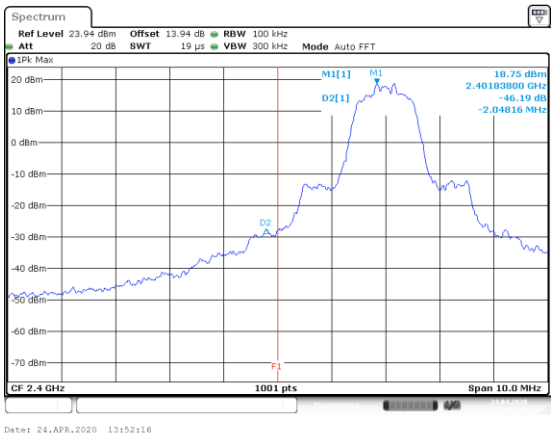
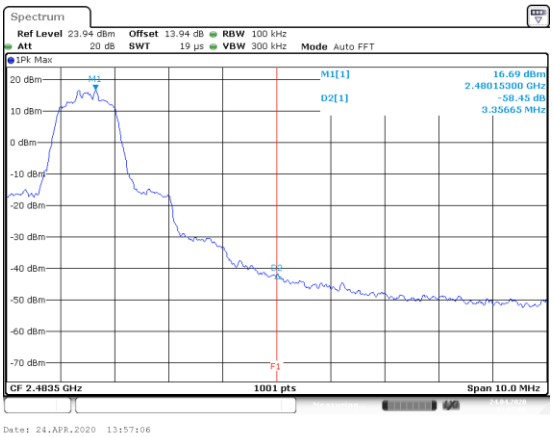
EDR-2Mbps Hopping Left Side	EDR-2Mbps Hopping Right Side
	
EDR-3Mbps Left Side	**EDR-3Mbps Right Side**
	
EDR-3Mbps Hopping Left Side	**EDR-3Mbps Hopping Right Side**
	

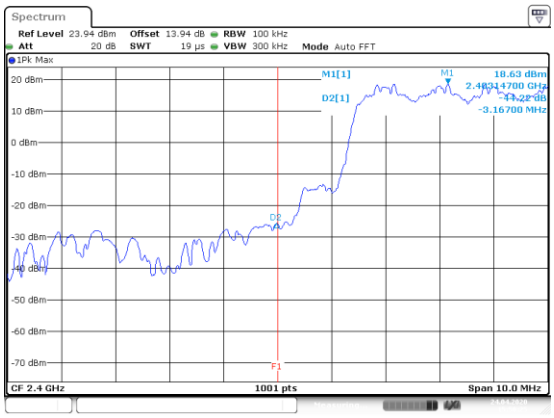
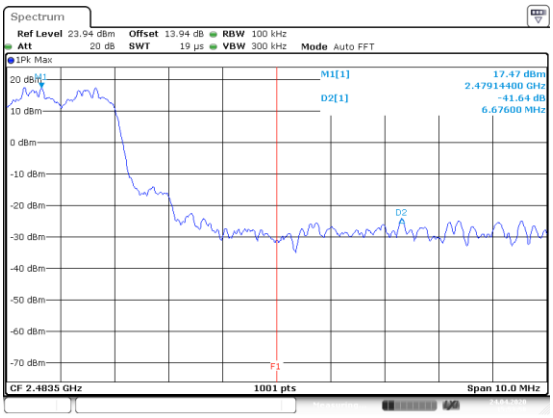
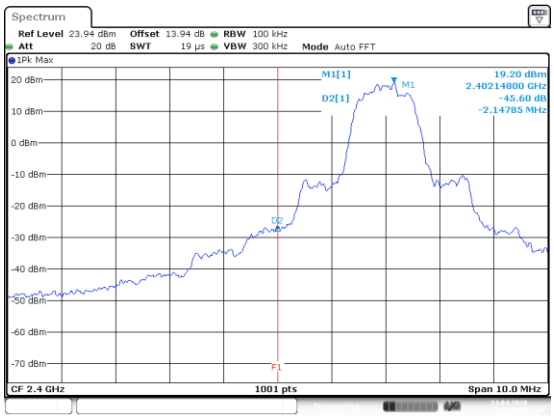
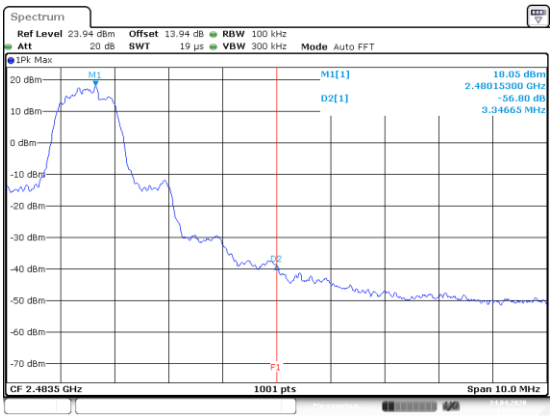
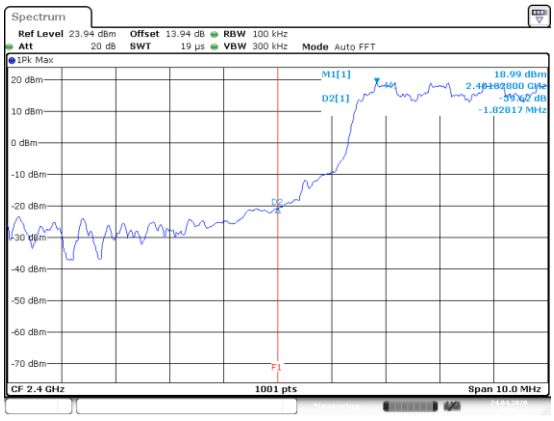
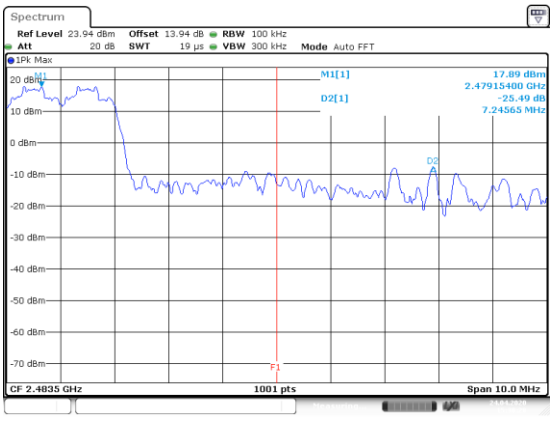
< PCB Antenna (Redpine Signals RSIA7)>

BR-1Mbps Left Side	BR-1Mbps Right Side
	
BR-1Mbps Hopping Left Side	**BR-1Mbps Hopping Right Side**
	
EDR-2Mbps Left Side	**EDR-2Mbps Right Side**
	

EDR-2Mbps Hopping Left Side	EDR-2Mbps Hopping Right Side
	
EDR-3Mbps Left Side	**EDR-3Mbps Right Side**
	
EDR-3Mbps Hopping Left Side	**EDR-3Mbps Hopping Right Side**
	

< PIFA Antenna (SMARTEQ 4211613980)>

BR-1Mbps Left Side	BR-1Mbps Right Side
	
BR-1Mbps Hopping Left Side	**BR-1Mbps Hopping Right Side**
	
EDR-2Mbps Left Side	**EDR-2Mbps Right Side**
	

EDR-2Mbps Hopping Left Side	EDR-2Mbps Hopping Right Side
	
EDR-3Mbps Left Side	**EDR-3Mbps Right Side**
	
EDR-3Mbps Hopping Left Side	**EDR-3Mbps Hopping Right Side**
	

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