

9.6 CONDUCTED SUPRIIOUS EMISSION

9.6.1 Applicable Standard

According to FCC Part 15.247(d) and DA 00-705

9.6.2 Conformance Limit

According to FCC Part 15.247(d):

In any 100 kHz bandwidth outside the frequency band 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, provided the transmitter demonstrates compliance with the peak conducted power limits.

9.6.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

9.6.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

■ Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DSS channel center frequency.

Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel.

Set the RBW = 100 kHz. Set the VBW $\geq 3 \times$ RBW.

Set Detector = peak. Set Sweep time = auto couple.

Set Trace mode = max hold. Allow trace to fully stabilize.

Use the peak marker function to determine the maximum Maximum conduceted level.

Note that the channel found to contain the maximum conduceted level can be used to establish the reference level.

■ Band-edge Compliance of RF Conducted Emissions

Use the following spectrum analyzer settings:

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

Set RBW $\geq 1\%$ of the span=100kHz Set VBW $\geq$ RBW

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

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission.

The marker-delta value now displayed must comply with the limit specified in this Section.

Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

■ Conduceted Spurious RF Conducted Emission

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.(30MHz to 25GHz). Set RBW = 100 kHz Set VBW $\geq$ RBW

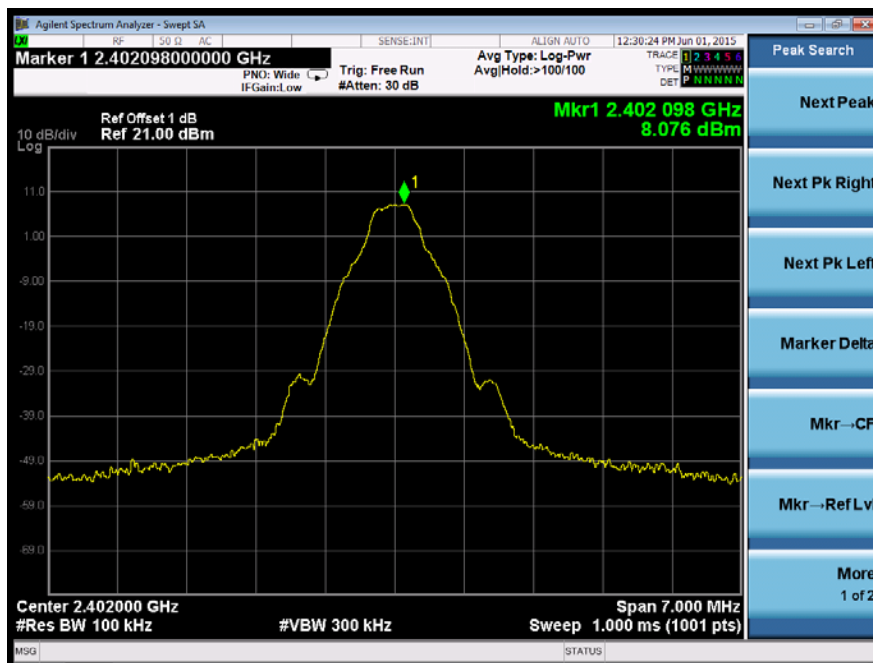
Set Sweep = auto Set Detector function = peak Set Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

9.6.5 Test Results

Bluetooth (GFSK, pi/4-DQPSK, 8DPSK) mode have been tested, and the worst result(GFSK) was report as below:

Test Model	Maximum Conduced Level RBW=100kHz	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 0: 2402MHz	GFSK



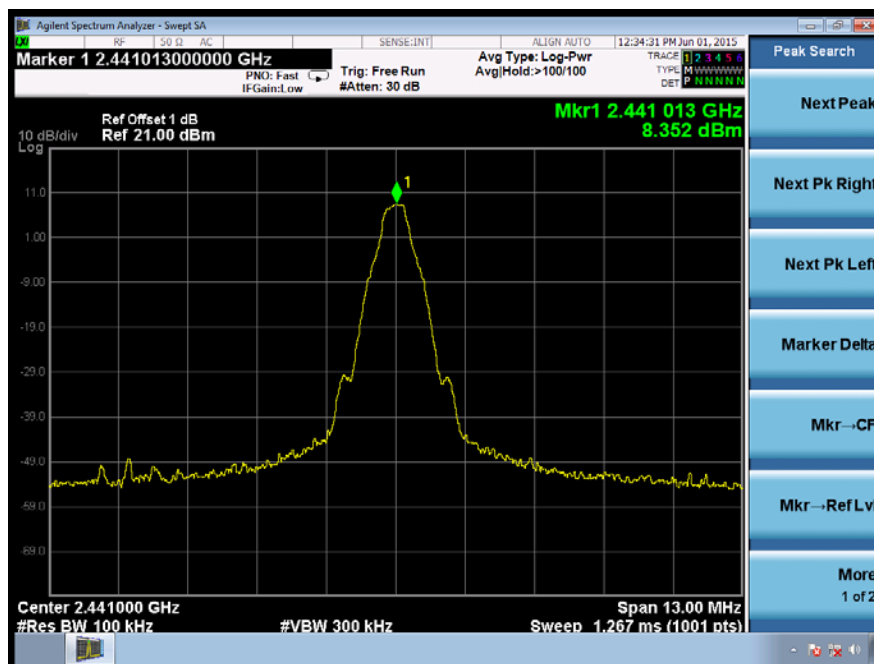
Test Model	Conduced Spurious RF Conducted Emission	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 0: 2402MHz	GFSK



Test Model	Band-edge Conducted Emissions	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 0: 2402MHz	GFSK



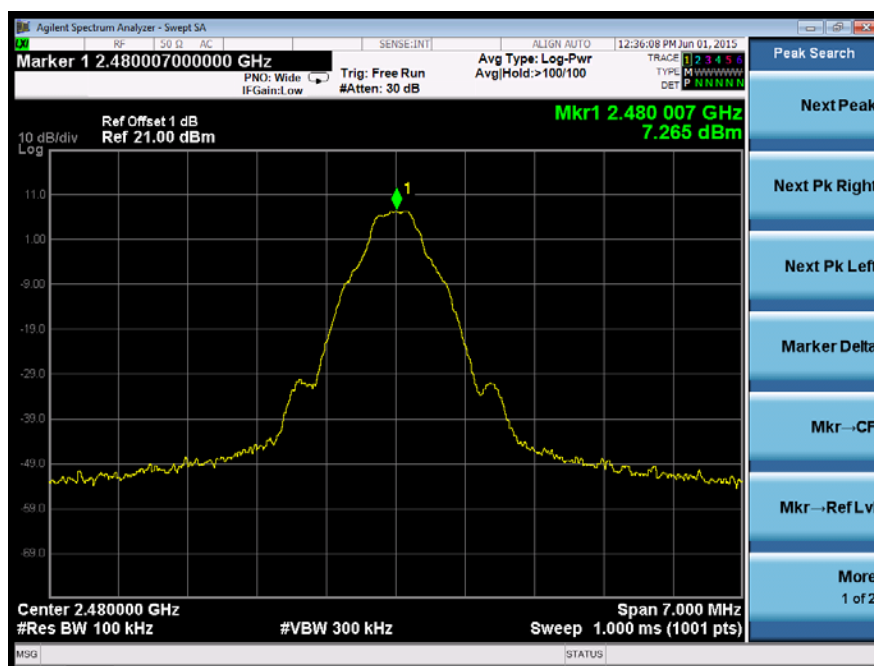
Test Model	Maximum Conducted Level RBW=100kHz	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 39: 2441MHz	GFSK



Test Model	Conducted Spurious RF Conducted Emission	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 39: 2441MHz	GFSK



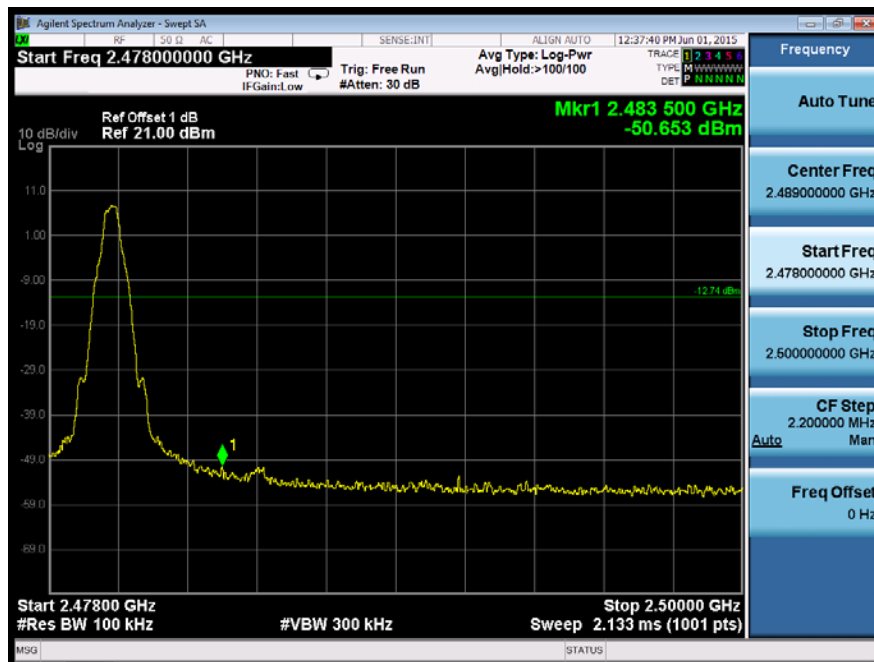
Test Model	Maximum Conducted Level RBW=100kHz	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 78: 2480MHz	GFSK



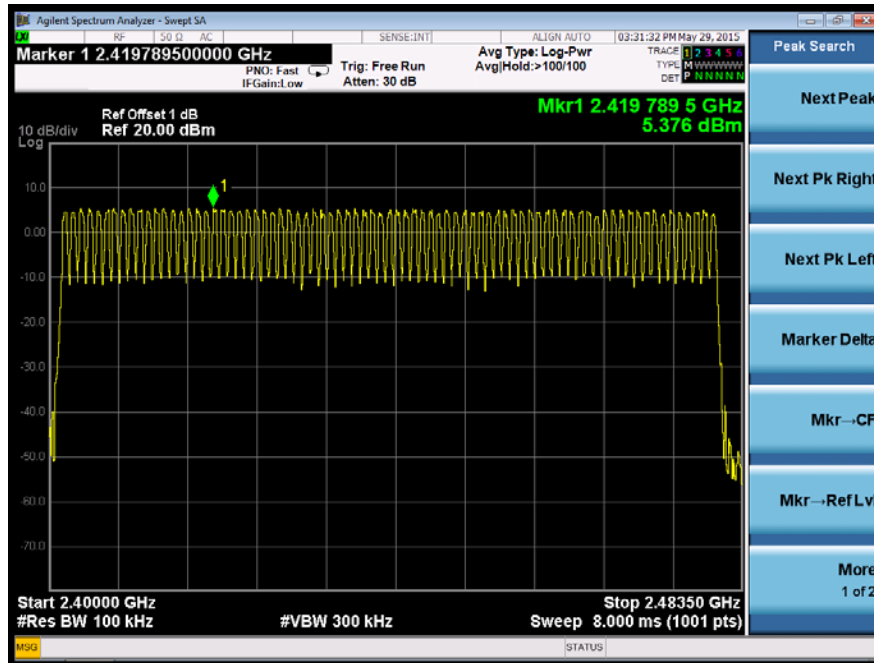
Test Model	Conducted Spurious RF Conducted Emission	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 78: 2480MHz	GFSK



Test Model	Band-edge Conducted Emissions	
	Bluetooth v2.0 /v2.1/v3.0	
	Channel 78: 2480MHz	GFSK



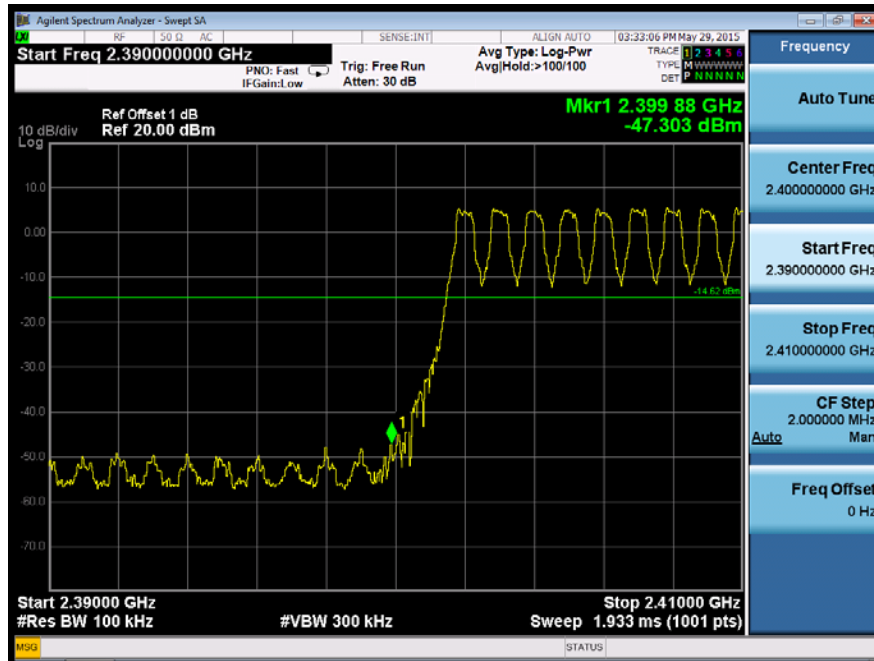
Test Model	Maximum Conduced Level RBW=100kHz	
	Bluetooth v2.0 /v2.1/v3.0	
	Hopping	GFSK



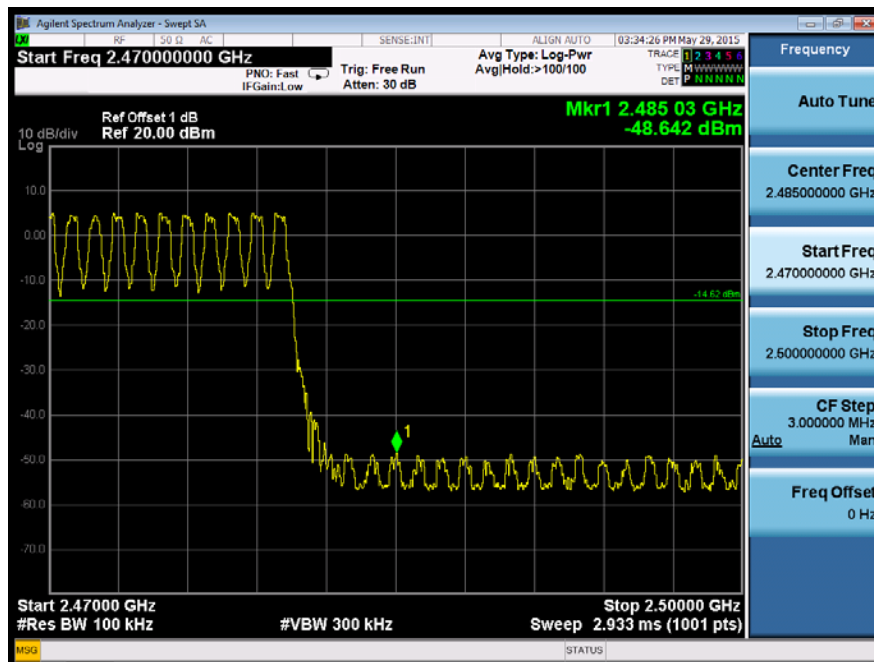
Test Model	Conduced Spurious RF Conducted Emission	
	Bluetooth v2.0 /v2.1/v3.0	
	Hopping	GFSK



Test Model	Band-edge Conducted Emissions	
	Bluetooth v2.0 /v2.1/v3.0	
	Hopping	GFSK



Test Model	Band-edge Conducted Emissions	
	Bluetooth v2.0 /v2.1/v3.0	
	Hopping	GFSK



9.7 RADIATED SPURIOUS EMISSION

9.7.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and DA 00-705

9.7.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

According to FCC Part 15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	2400/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Remark :1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor.

for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10*lg(100 [kHz]/narrower RBW [kHz]). , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

9.7.3 Test Configuration

Test according to clause 7.2 radio frequency test setup 2

9.7.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

For Above 1GHz:

The EUT was placed on a turn table which is 1.5m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

VBW $\geq$ RBW for peak measurement

VBW = 10Hz for Average measurement

Sweep = auto

Detector function = peak

Trace = max hold

For Below 1GHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

9.7.5 Test Results

■ Spurious Emission below 30MHz (9KHz to 30MHz)

Temperature: 24°C
Humidity: 53 %
Test mode: TX Mode

Test Date: May 17, 2015
Test By: KING KONG

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance}/\text{test distance})$ (dB);

Limit line = Specific limits(dBuV) + distance extrapolation factor

■ Spurious Emission Above 1GHz (1GHz to 25GHz)

Bluetooth v2.0 /v2.1/v3.0 GFSK mode have been tested, and the worst result was report as below:

Temperature: 24℃ Test Date: May 17, 2015
Humidity: 53 % Test By: KING KONG
Test mode: GFSK Frequency: Channel 0: 2402MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
16572.00	V	53.04	37.90	74.00	54.00	-20.96	-16.10
17150.00	V	52.37	37.70	74.00	54.00	-21.63	-16.30
18000.00	V	53.49	38.20	74.00	54.00	-20.51	-15.80
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
15059.00	H	52.28	37.20	74.00	54.00	-21.72	-16.80
16504.00	H	52.41	36.90	74.00	54.00	-21.59	-17.10
17150.00	H	53.49	38.20	74.00	54.00	-20.51	-15.80

Temperature: 24℃ Test Date: May 17, 2015
Humidity: 53 % Test By: KING KONG
Test mode: GFSK Frequency: Channel 39: 2441MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
14940.00	V	51.31	37.20	74.00	54.00	-22.69	-16.80
16878.00	V	51.94	37.80	74.00	54.00	-22.06	-16.20
17490.00	V	52.03	37.60	74.00	54.00	-21.97	-16.40
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
14753.00	H	52.12	37.30	74.00	54.00	-21.88	-16.70
15824.00	H	51.99	37.60	74.00	54.00	-22.01	-16.40
17660.00	H	52.05	37.90	74.00	54.00	-21.95	-16.10

Temperature: 24℃ Test Date: May 17, 2015
Humidity: 53 % Test By: KING KONG
Test mode: GFSK Frequency: Channel 78: 2480MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
16419.00	V	51.84	37.50	74.00	54.00	-22.16	-16.50
17031.00	V	52.40	38.60	74.00	54.00	-21.60	-15.40
17371.00	V	52.44	38.60	74.00	54.00	-21.56	-15.40
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
15518.00	H	52.59	38.20	74.00	54.00	-21.41	-15.80
16487.00	H	53.87	38.60	74.00	54.00	-20.13	-15.40
17201.00	H	53.81	37.60	74.00	54.00	-20.19	-16.40

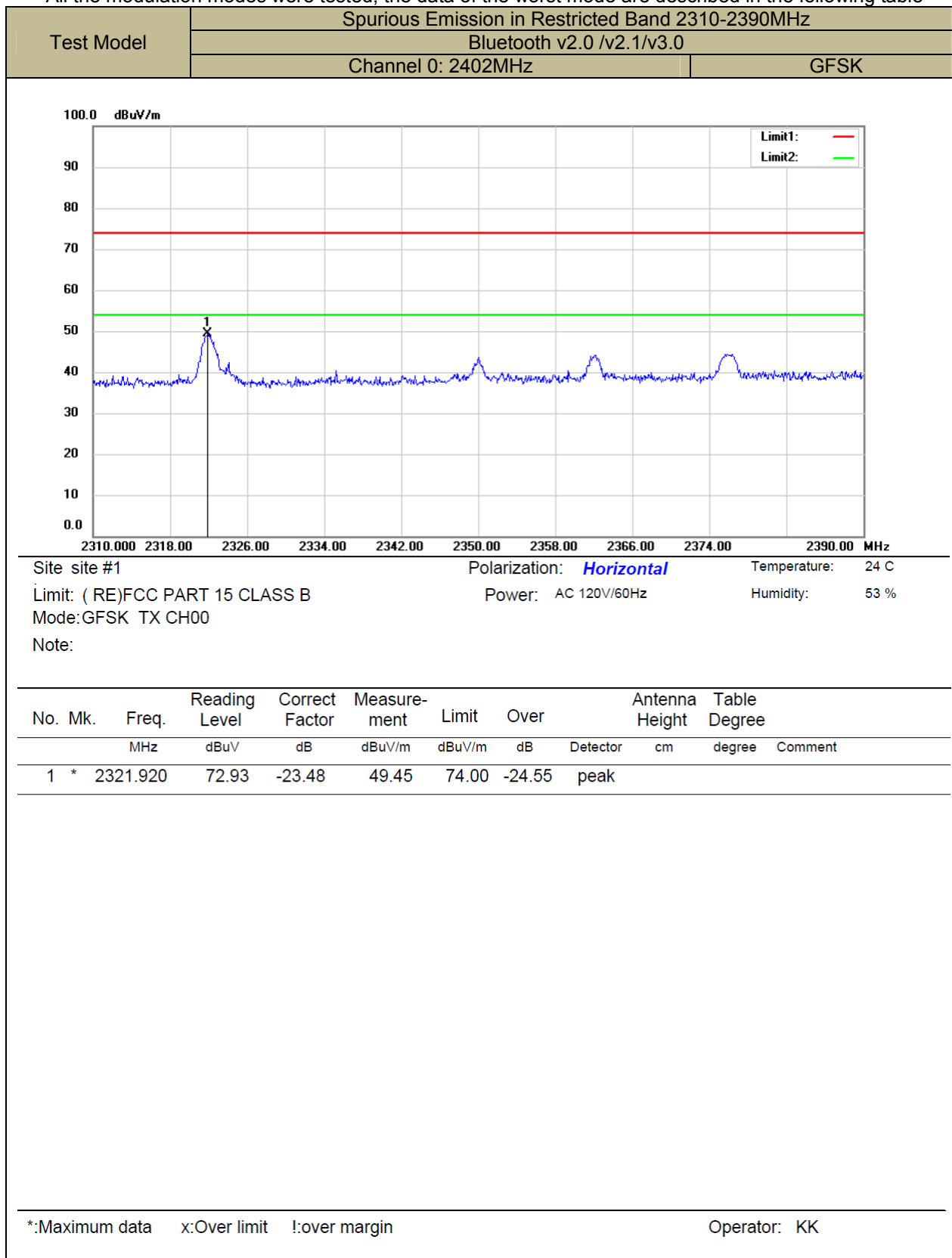
Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

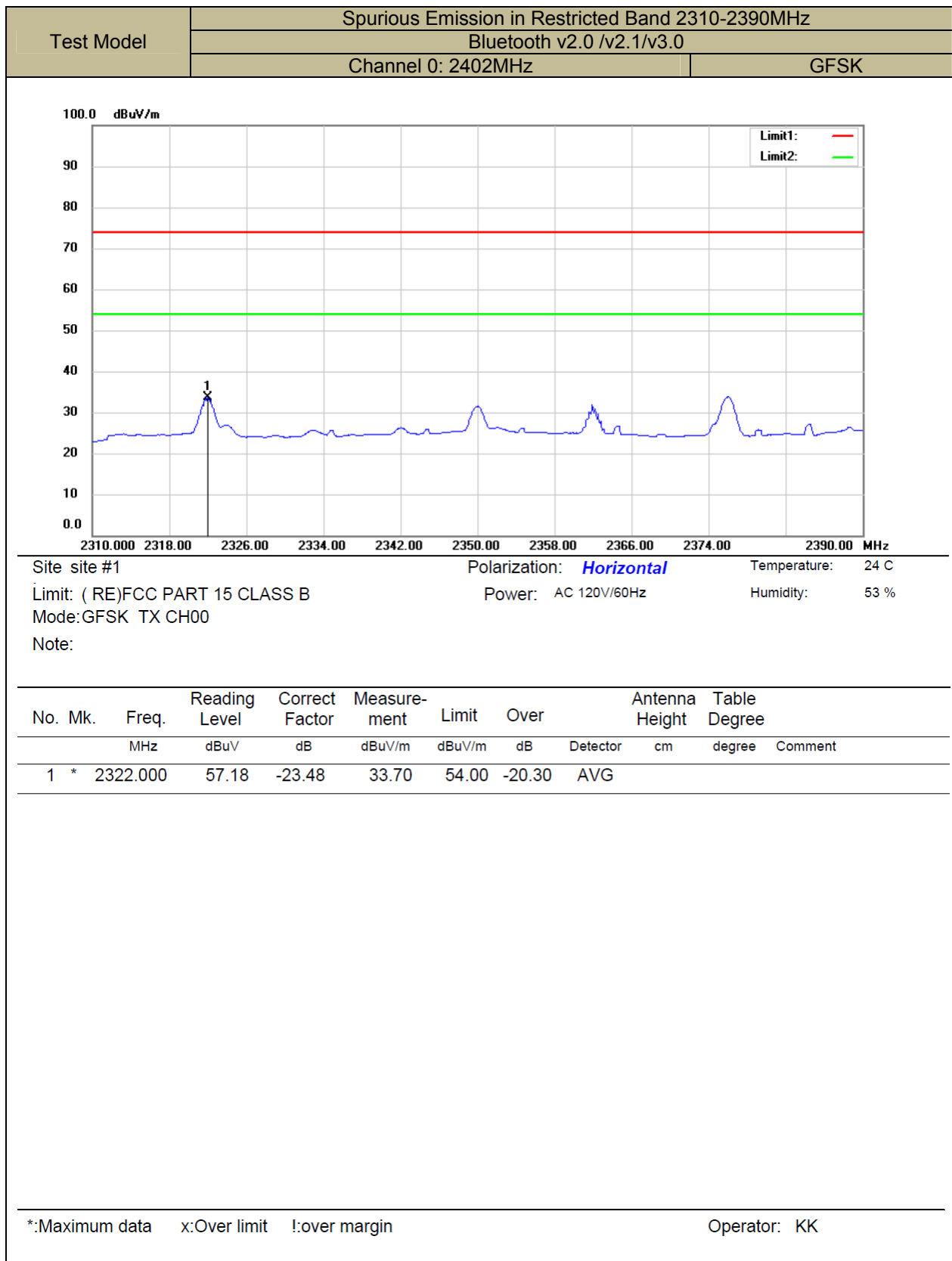
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

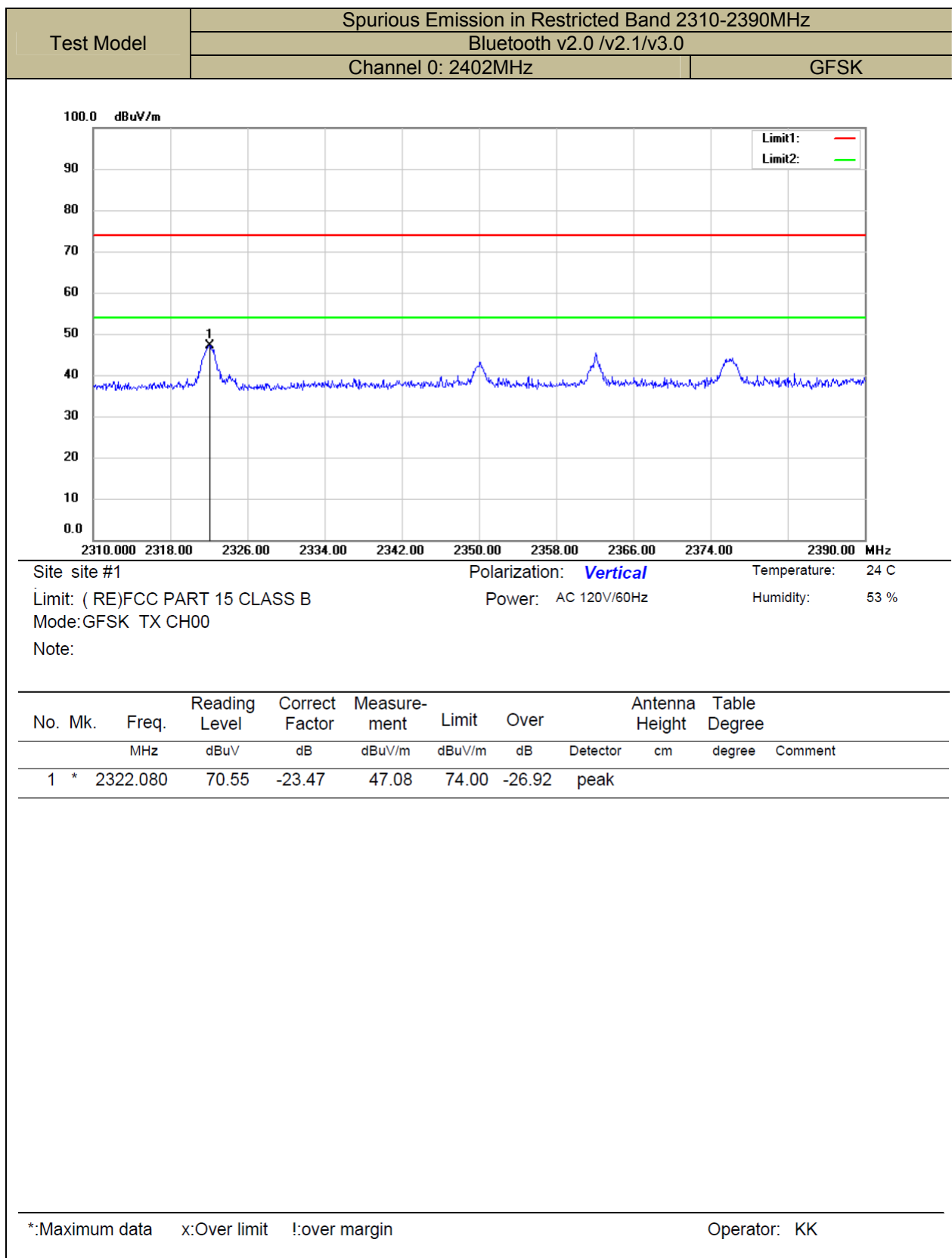
(3) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

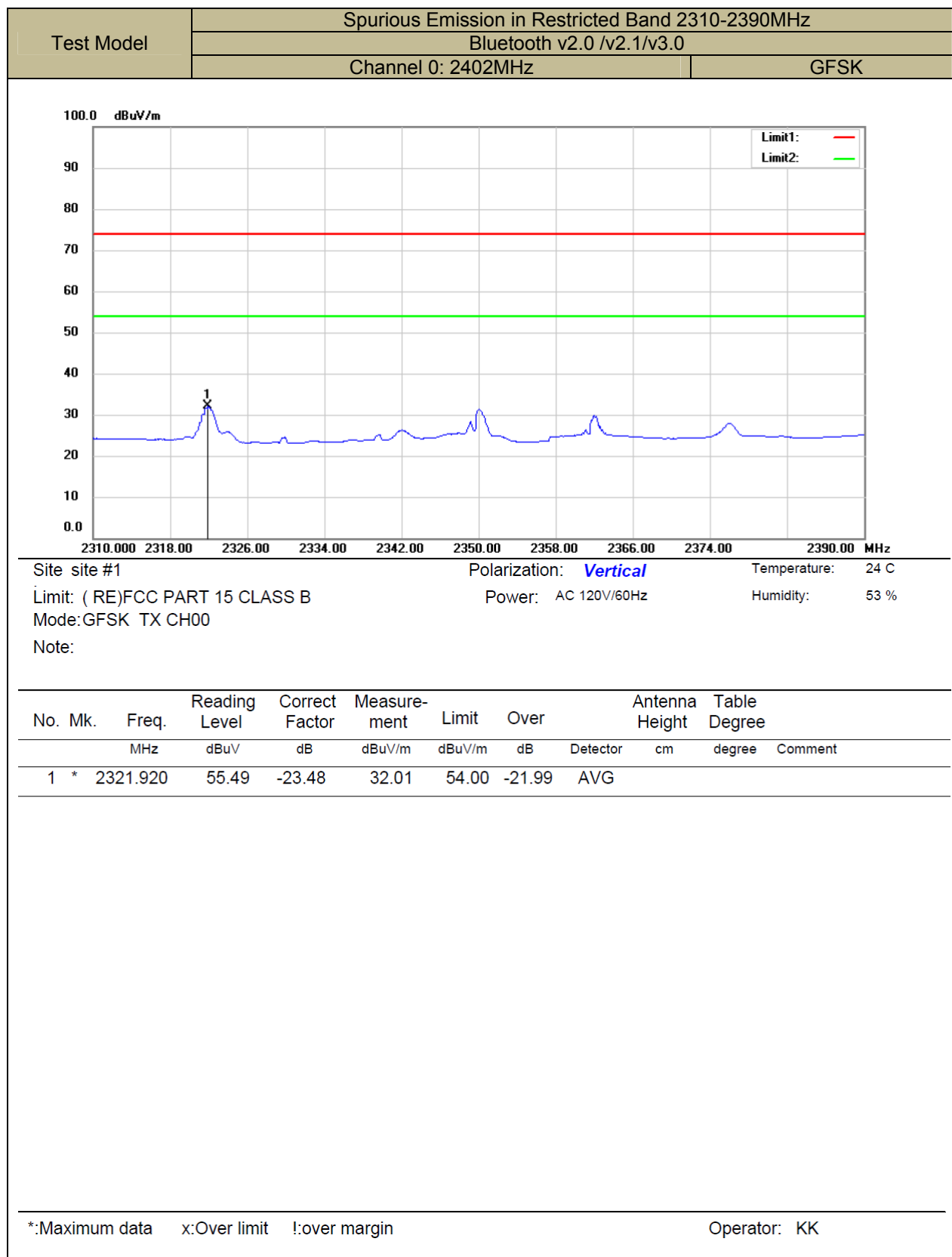
■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

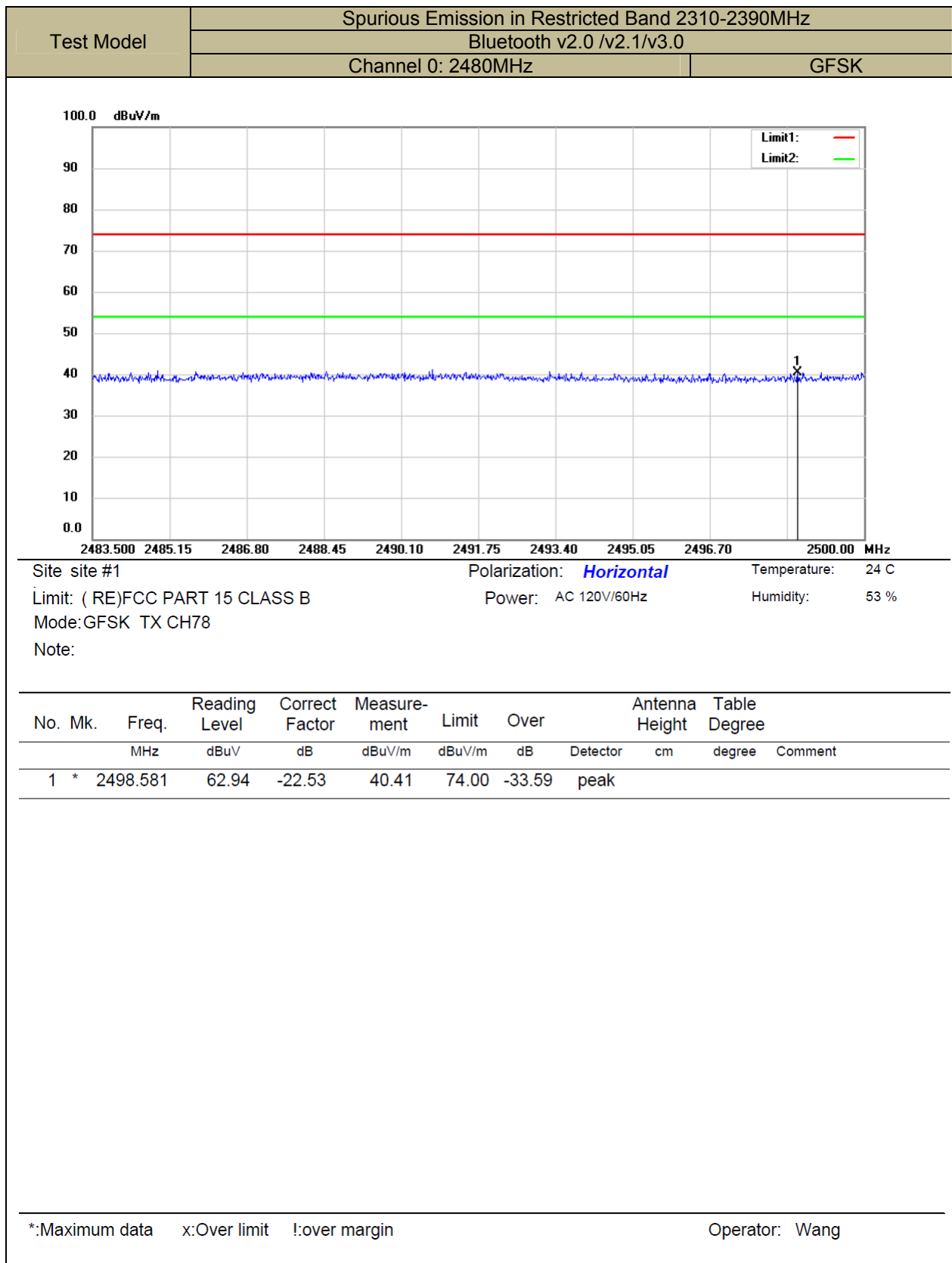
All the modulation modes were tested, the data of the worst mode are described in the following table

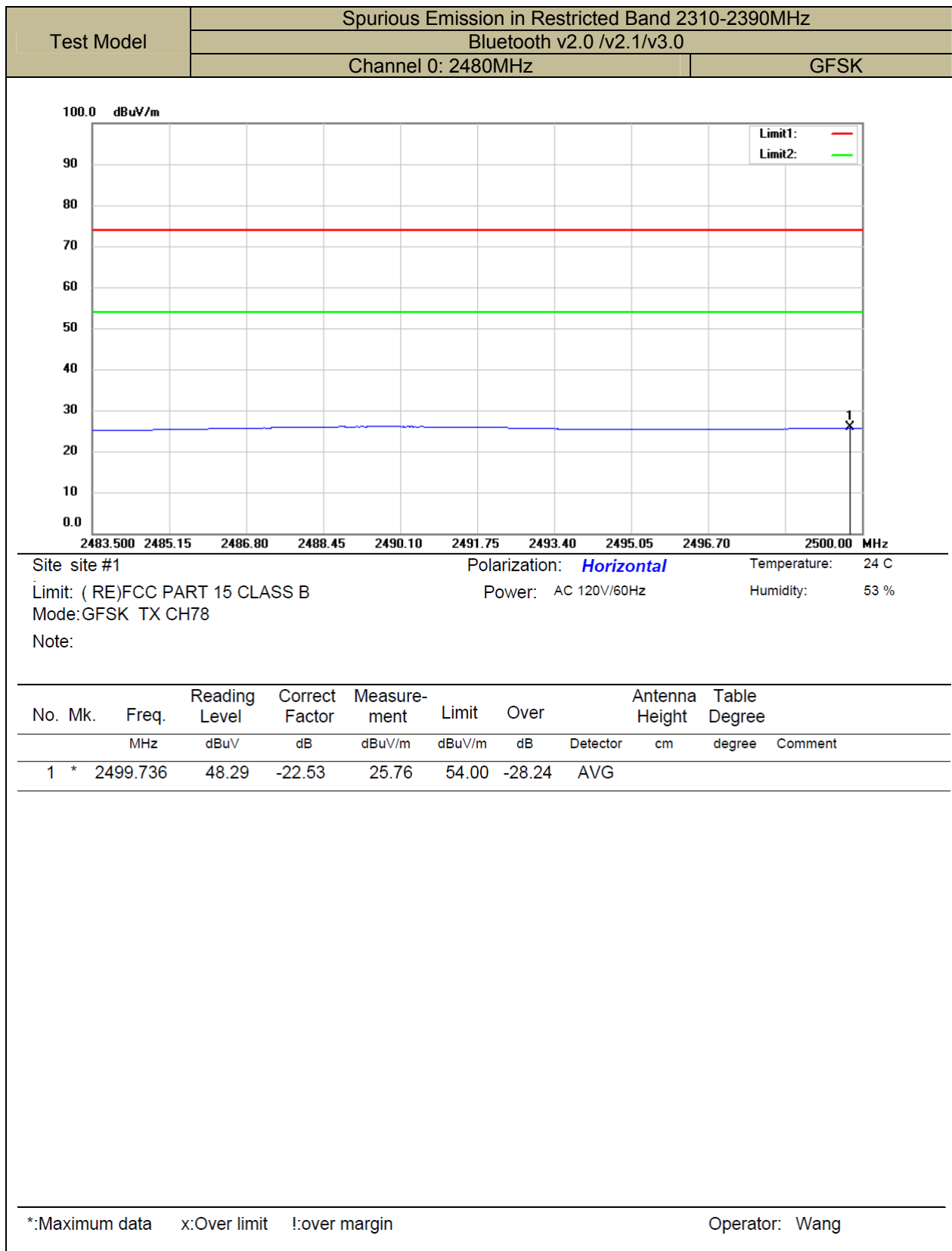


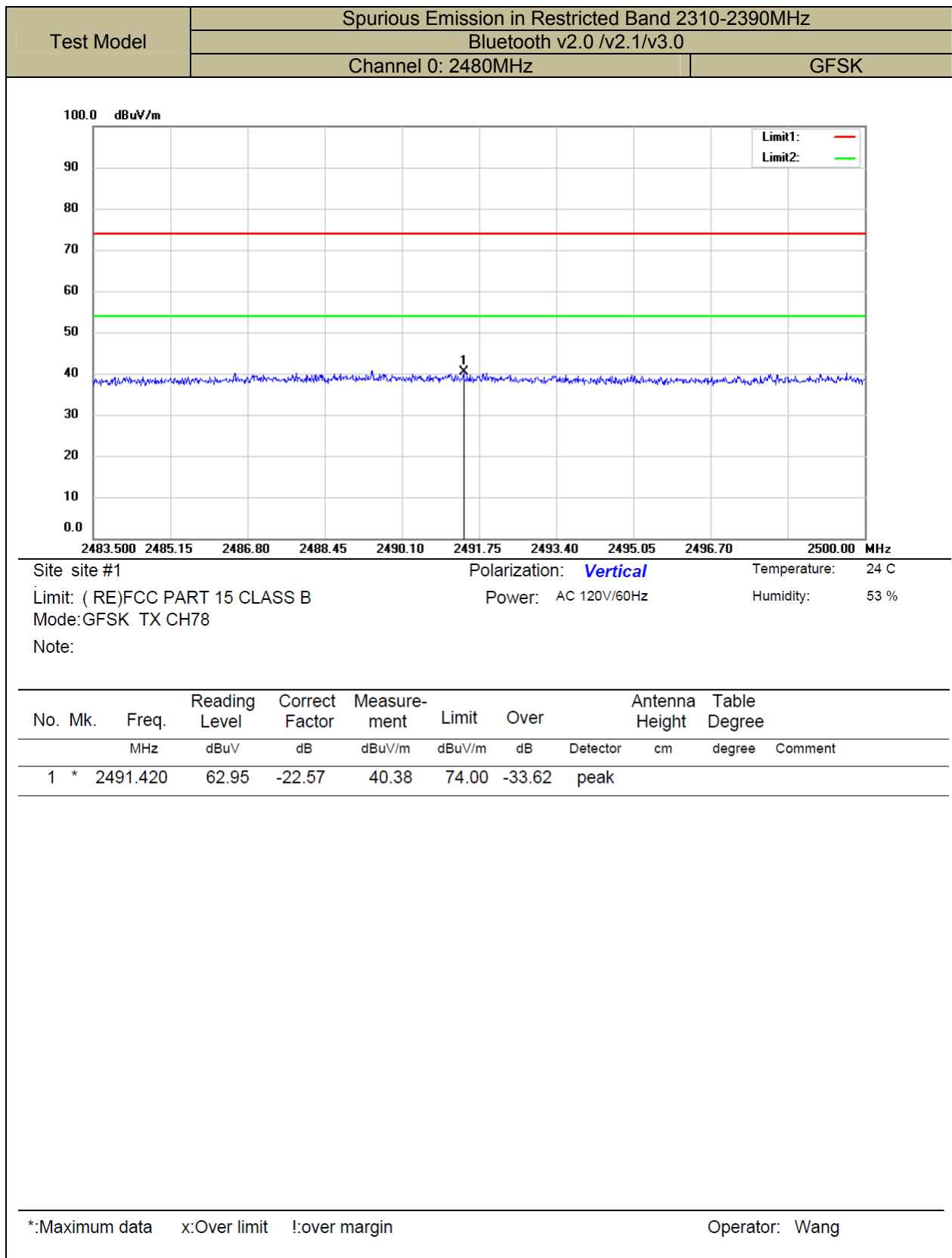


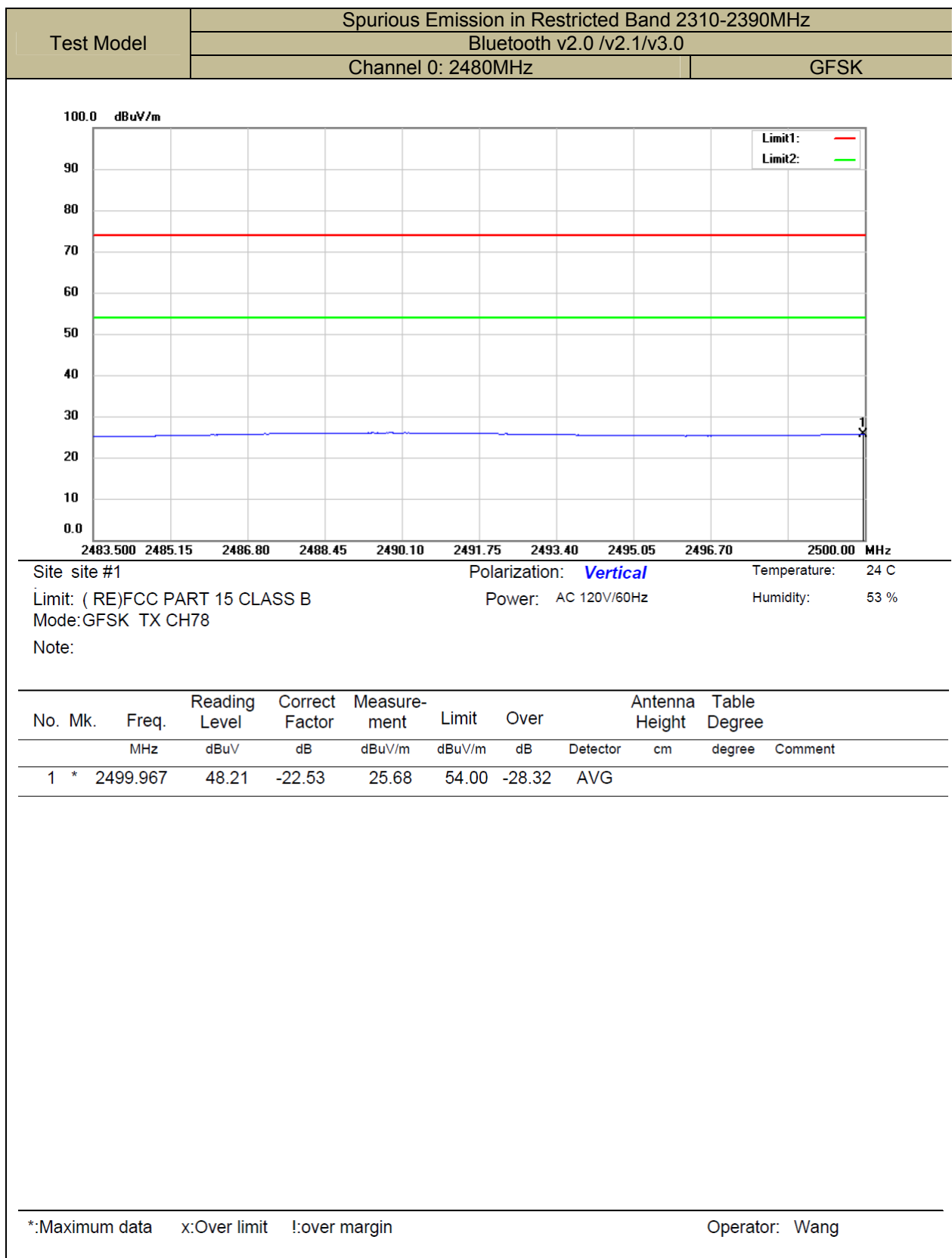


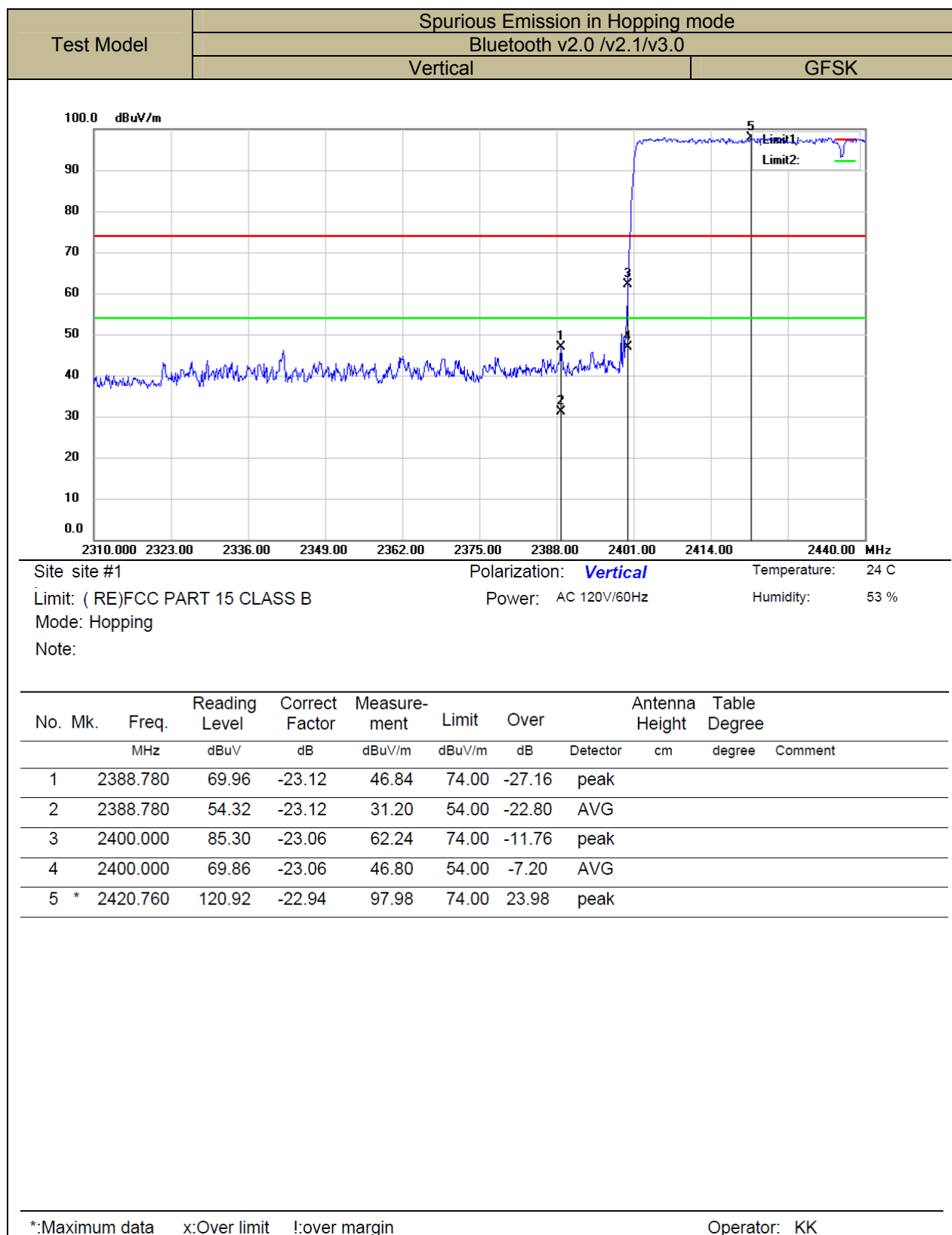


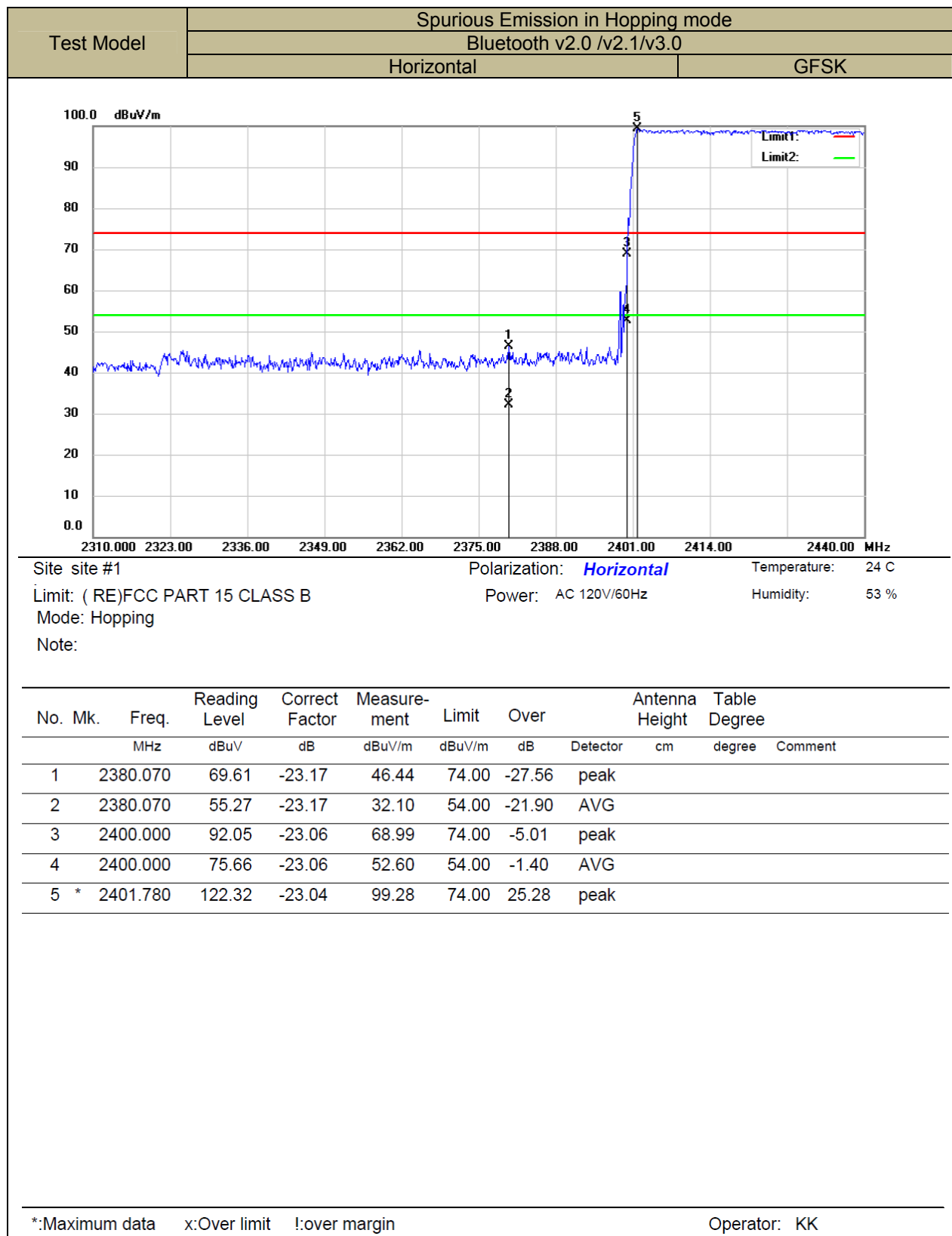


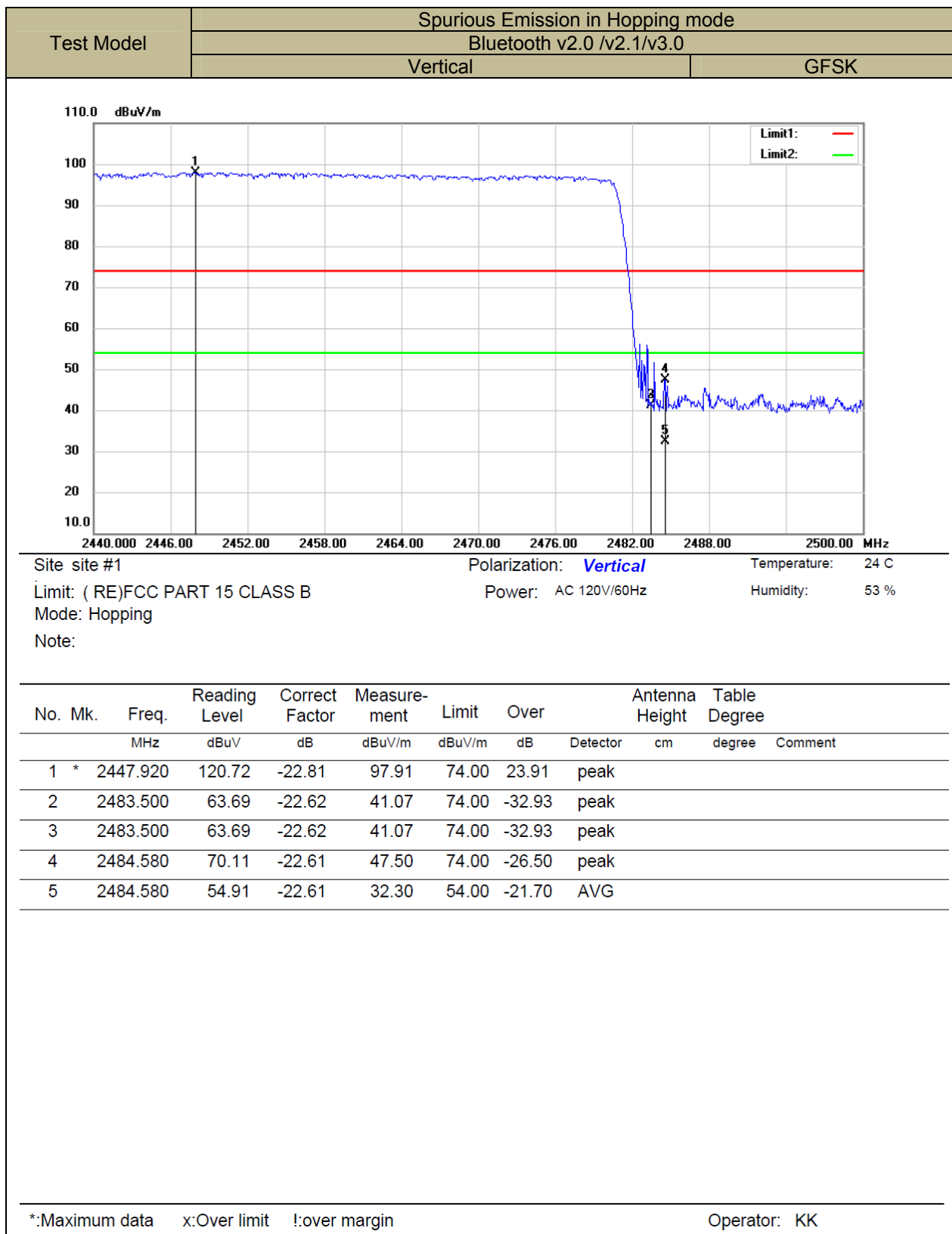


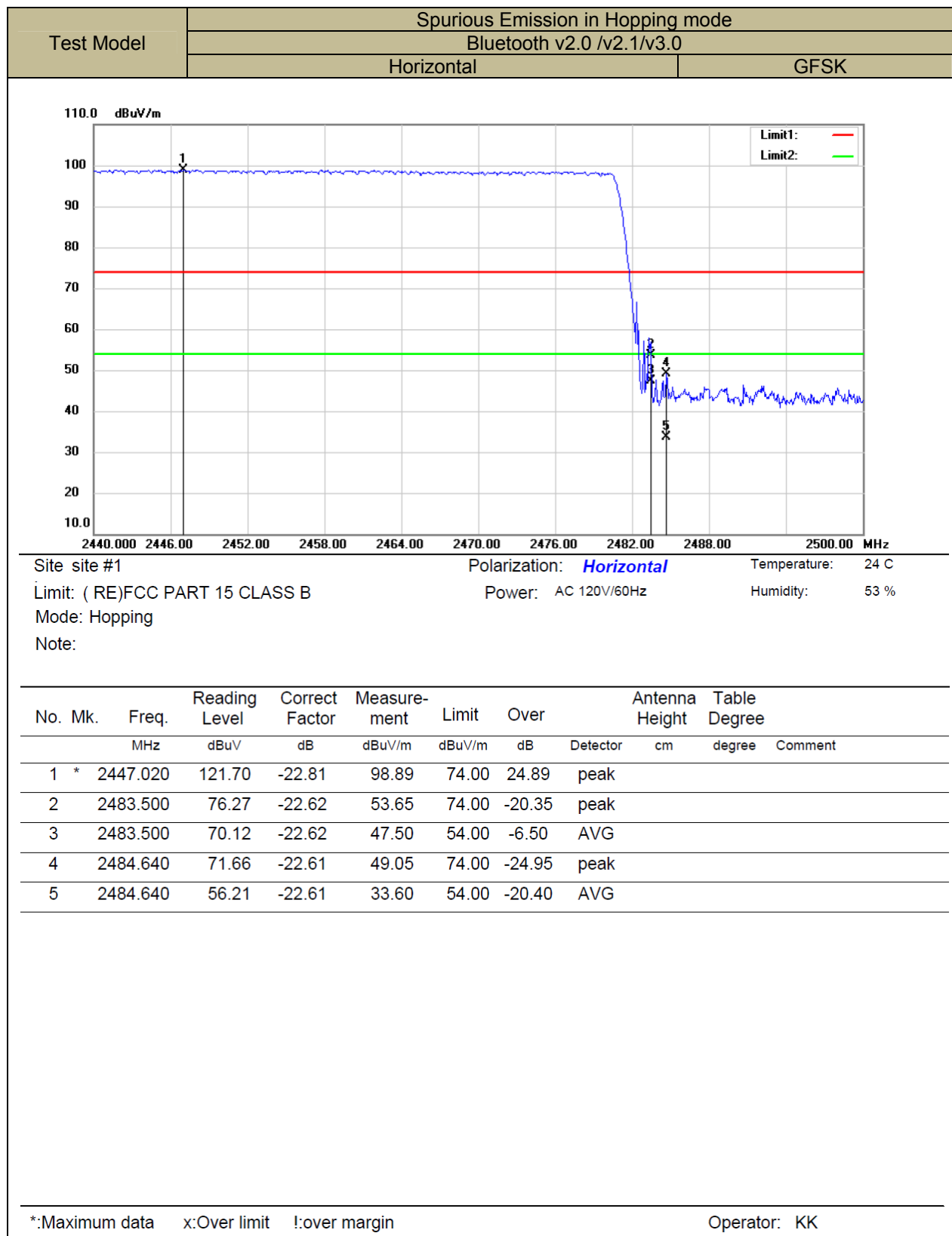






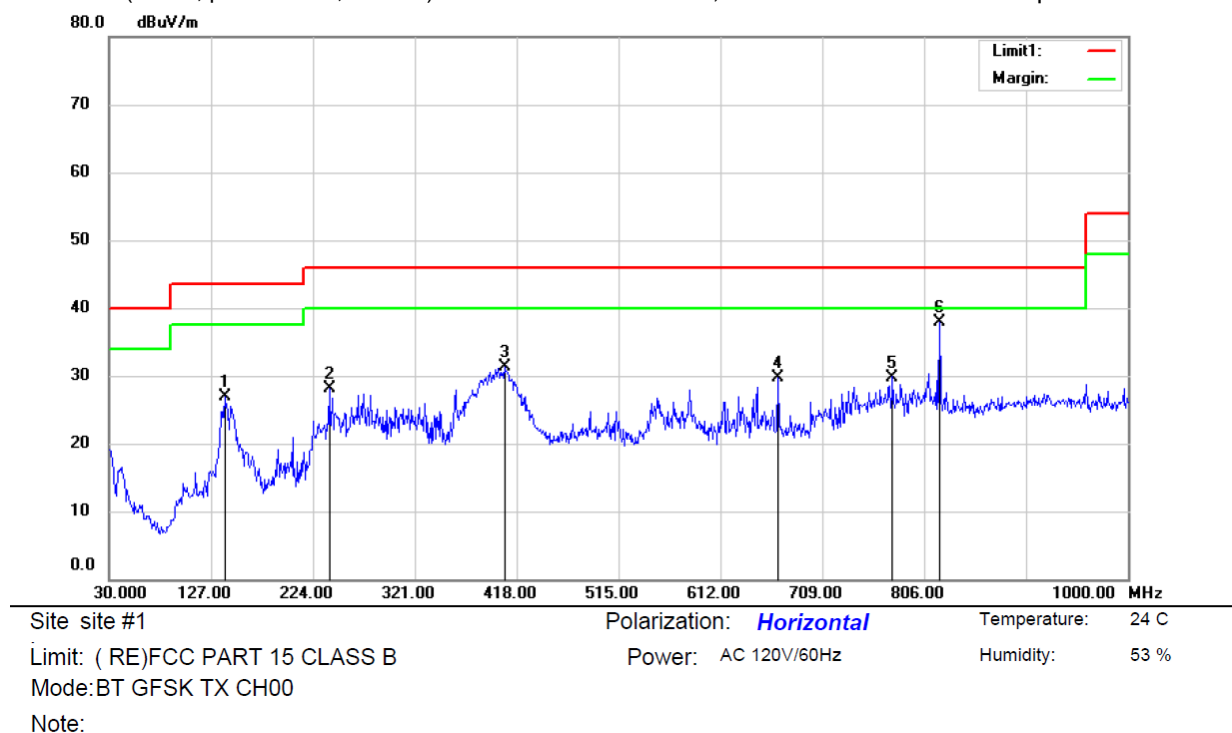






■ Spurious Emission below 1GHz (30MHz to 1GHz)

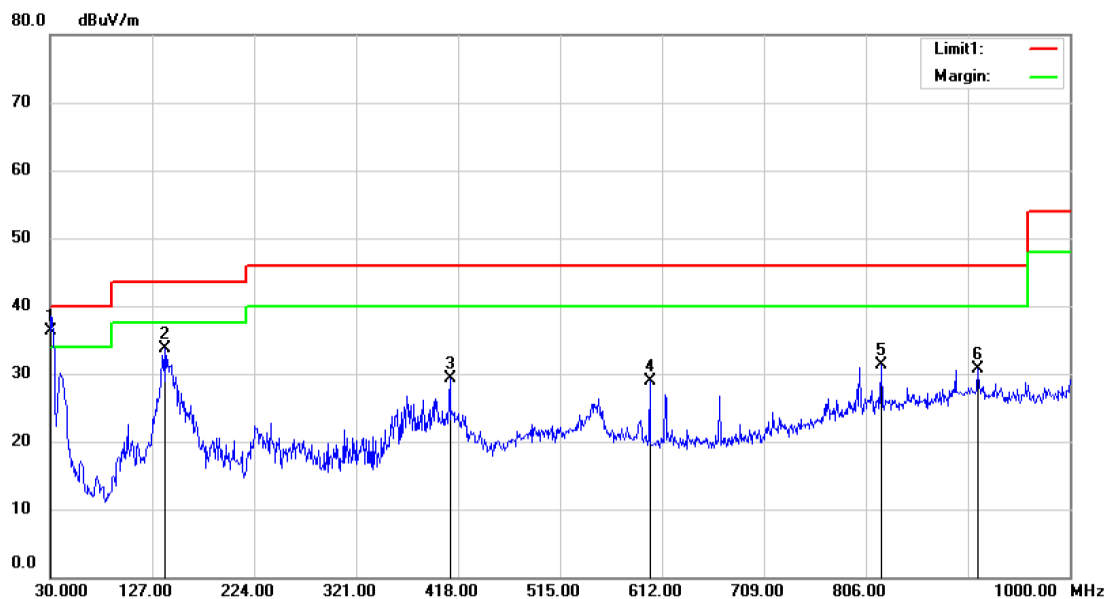
Bluetooth (GFSK, pi/4-DQPSK, 8DPSK) mode have been tested, and the worst result was report as below:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		140.5800	44.69	-17.80	26.89	43.50	-16.61	QP		
2		239.5200	42.00	-13.89	28.11	46.00	-17.89	QP		
3		406.3600	40.29	-9.04	31.25	46.00	-14.75	QP		
4		667.2900	36.06	-6.30	29.76	46.00	-16.24	QP		
5		775.9300	33.42	-3.62	29.80	46.00	-16.20	QP		
6	*	820.5500	40.27	-2.41	37.86	46.00	-8.14	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site site #1

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

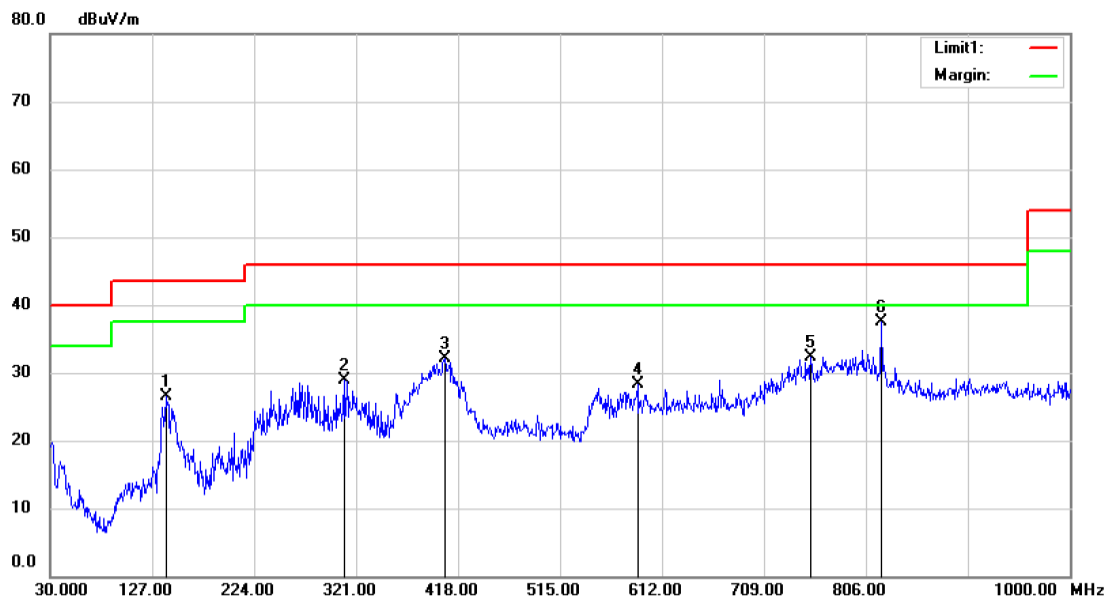
Mode:BT GFSK TX CH00

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	30.9700	52.67	-16.27	36.40	40.00	-3.60	QP		
2		138.6400	51.33	-17.70	33.63	43.50	-9.87	QP		
3		410.2400	38.53	-9.16	29.37	46.00	-16.63	QP		
4		600.3600	35.90	-6.99	28.91	46.00	-17.09	QP		
5		820.5500	33.78	-2.41	31.37	46.00	-14.63	QP		
6		912.7000	31.43	-0.64	30.79	46.00	-15.21	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK

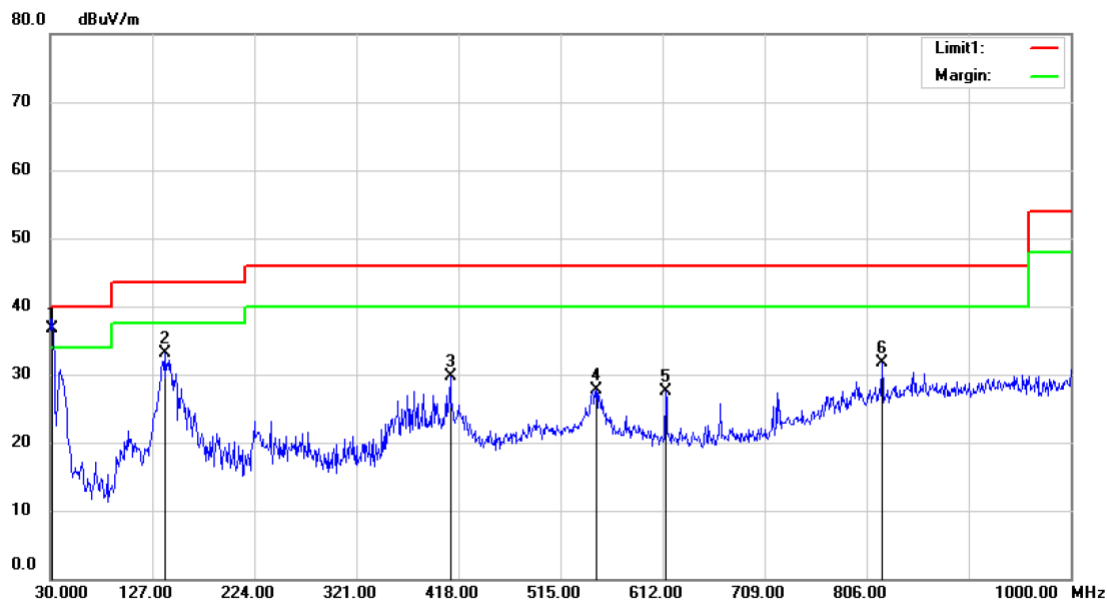


Site site #1
Limit: (RE)FCC PART 15 CLASS B
Mode:BT GFSK TX CH39
Note:
Polarization: **Horizontal**
Power: AC 120V/60Hz
Temperature: 24 C
Humidity: 53 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		140.5800	44.21	-17.80	26.41	43.50	-17.09	QP		
2		309.3600	42.63	-13.68	28.95	46.00	-17.05	QP		
3		405.3900	41.05	-9.02	32.03	46.00	-13.97	QP		
4		588.7200	35.43	-7.07	28.36	46.00	-17.64	QP		
5		753.6200	36.55	-4.31	32.24	46.00	-13.76	QP		
6	*	820.5500	39.86	-2.41	37.45	46.00	-8.55	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK

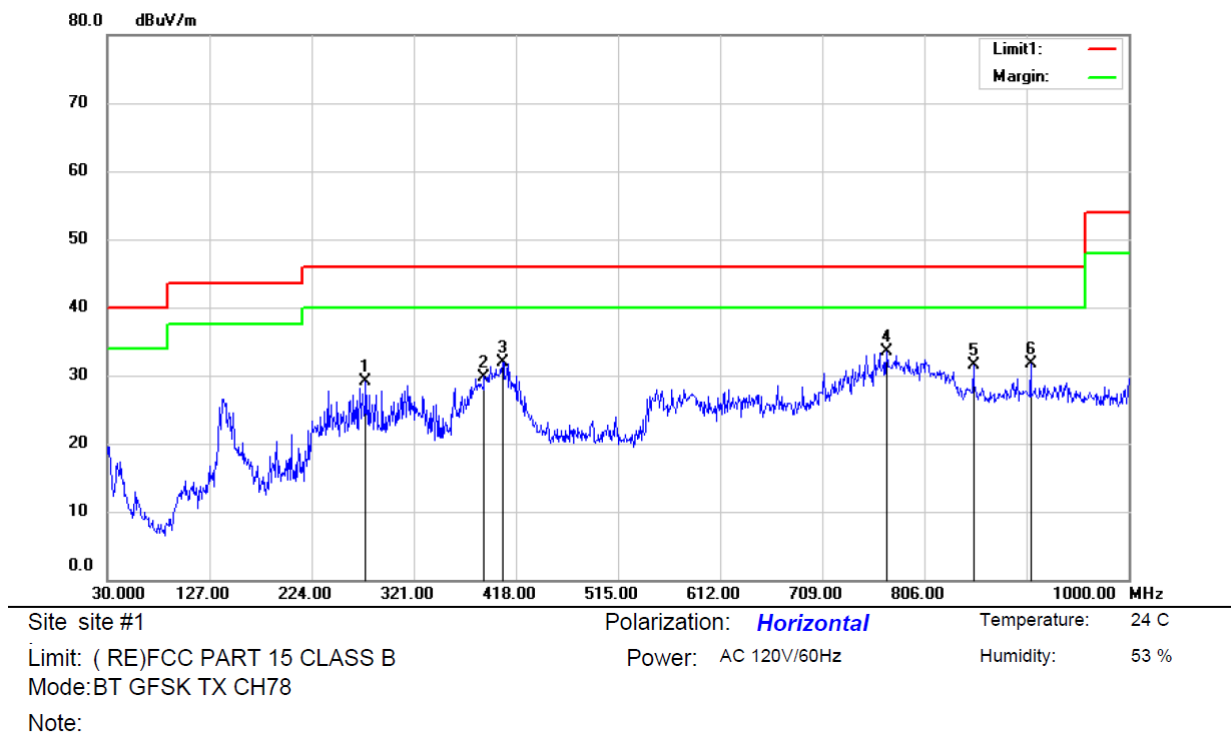


Site site #1 Polarization: **Vertical** Temperature: 24 C
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 53 %
Mode:BT GFSK TX CH39
Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	31.9400	52.88	-16.08	36.80	40.00	-3.20	QP		
2		138.6400	50.85	-17.70	33.15	43.50	-10.35	QP		
3		410.2400	38.94	-9.16	29.78	46.00	-16.22	QP		
4		548.9500	35.18	-7.40	27.78	46.00	-18.22	QP		
5		614.9100	34.43	-6.85	27.58	46.00	-18.42	QP		
6		820.5500	34.12	-2.41	31.71	46.00	-14.29	QP		

*:Maximum data x:Over limit !:over margin

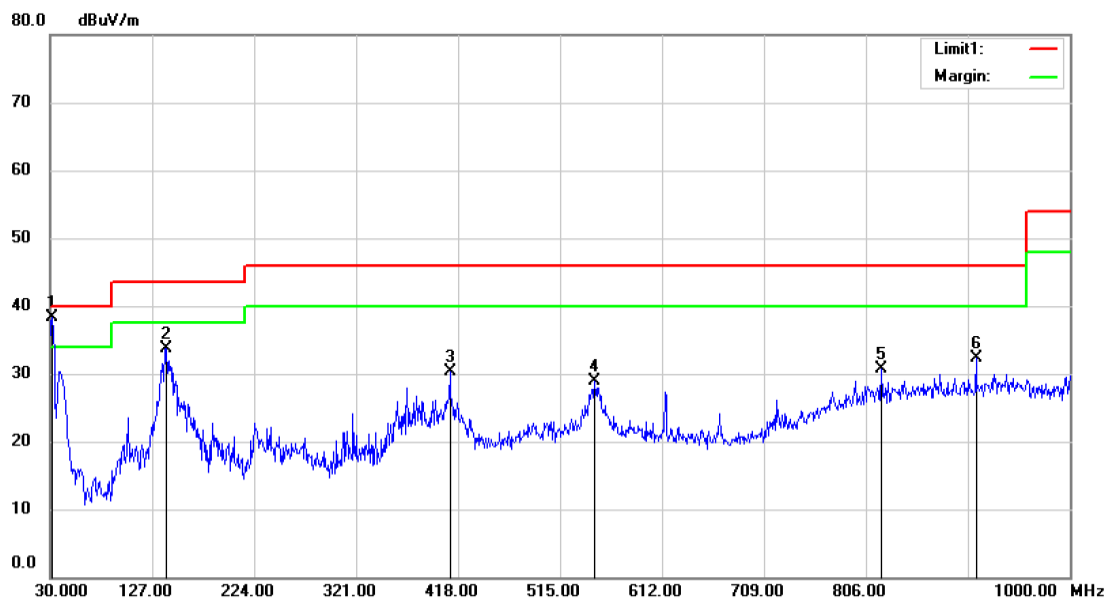
Operator: KK



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		275.4100	41.64	-12.62	29.02	46.00	-16.98	QP		
2		387.9300	39.35	-9.55	29.80	46.00	-16.20	QP		
3		405.3900	40.83	-9.02	31.81	46.00	-14.19	QP		
4	*	770.1100	37.35	-3.80	33.55	46.00	-12.45	QP		
5		852.5600	33.11	-1.69	31.42	46.00	-14.58	QP		
6		906.8800	32.40	-0.63	31.77	46.00	-14.23	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site site #1 Polarization: **Vertical** Temperature: 24 C
 Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 53 %
 Mode:BT GFSK TX CH78
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	31.9400	52.41	-16.08	36.33	40.00	-3.67	QP		
2		140.5800	51.58	-17.80	33.78	43.50	-9.72	QP		
3		410.2400	39.47	-9.16	30.31	46.00	-15.69	QP		
4		547.9800	36.41	-7.42	28.99	46.00	-17.01	QP		
5		820.5500	33.15	-2.41	30.74	46.00	-15.26	QP		
6		910.7600	33.04	-0.64	32.40	46.00	-13.60	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK

9.8 CONDUCTED EMISSION TEST

9.8.1 Applicable Standard

According to FCC Part 15.207(a)

9.8.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50
Note: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.		

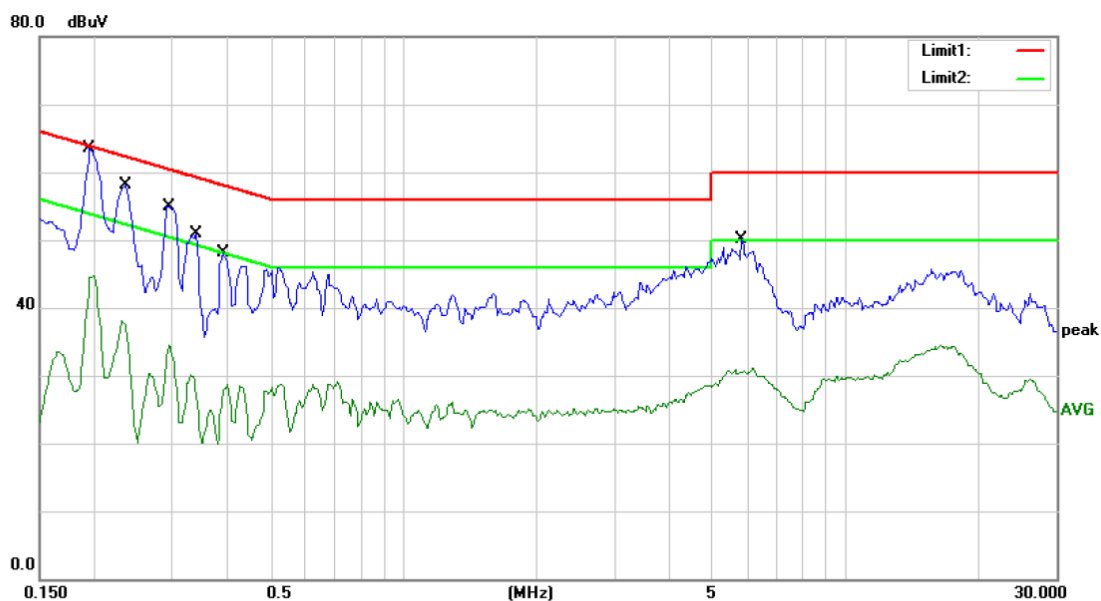
9.8.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

9.8.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
 Maximum procedure was performed on the highest emissions to ensure EUT compliance.
 Repeat above procedures until all frequency measured were complete.

9.8.5 Test Results



Site: Conduction #2

Phase: **L1**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

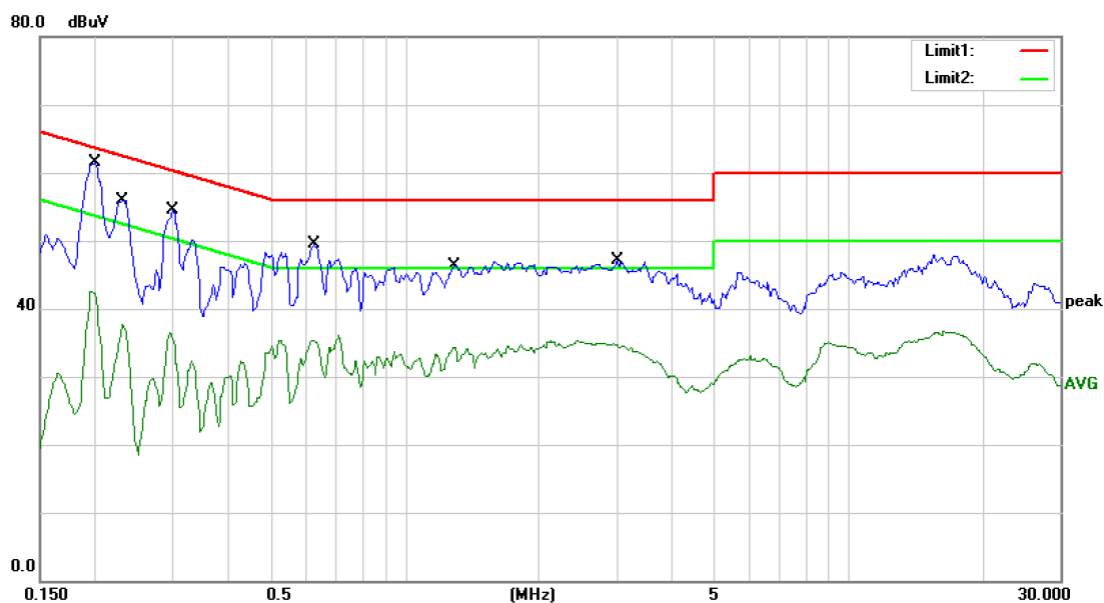
Humidity: 55 %

Mode: ON

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1950	57.10	0.00	57.10	63.82	-6.72	QP	
2		0.1950	44.79	0.00	44.79	53.82	-9.03	AVG	
3		0.2350	54.30	0.00	54.30	62.27	-7.97	QP	
4		0.2350	38.02	0.00	38.02	52.27	-14.25	AVG	
5	*	0.2950	54.88	0.00	54.88	60.38	-5.50	QP	
6		0.2950	34.55	0.00	34.55	50.38	-15.83	AVG	
7		0.3400	50.95	0.00	50.95	59.20	-8.25	QP	
8		0.3400	30.04	0.00	30.04	49.20	-19.16	AVG	
9		0.3900	48.14	0.00	48.14	58.06	-9.92	QP	
10		0.3900	28.68	0.00	28.68	48.06	-19.38	AVG	
11		5.8300	50.12	0.00	50.12	60.00	-9.88	QP	
12		5.8300	31.09	0.00	31.09	50.00	-18.91	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: CSL



Site: Conduction #2

Phase: **N**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

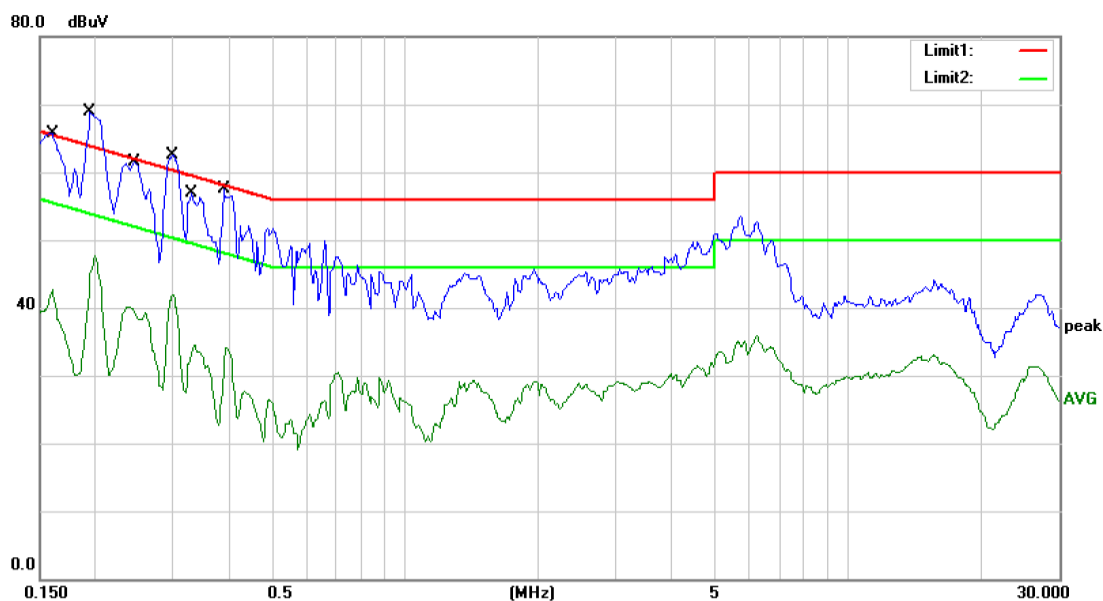
Humidity: 55 %

Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.2000	57.90	0.00	57.90	63.61	-5.71	QP	
2		0.2000	42.46	0.00	42.46	53.61	-11.15	AVG	
3		0.2300	55.93	0.00	55.93	62.45	-6.52	QP	
4		0.2300	37.78	0.00	37.78	52.45	-14.67	AVG	
5		0.3000	54.41	0.00	54.41	60.24	-5.83	QP	
6		0.3000	36.49	0.00	36.49	50.24	-13.75	AVG	
7		0.6250	49.45	0.00	49.45	56.00	-6.55	QP	
8		0.6250	35.31	0.00	35.31	46.00	-10.69	AVG	
9		1.2950	46.38	0.00	46.38	56.00	-9.62	QP	
10		1.2950	34.33	0.00	34.33	46.00	-11.67	AVG	
11		3.0250	47.12	0.00	47.12	56.00	-8.88	QP	
12		3.0250	34.82	0.00	34.82	46.00	-11.18	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: CSL



Site Conduction #2

Phase: **L1**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 240V/50Hz

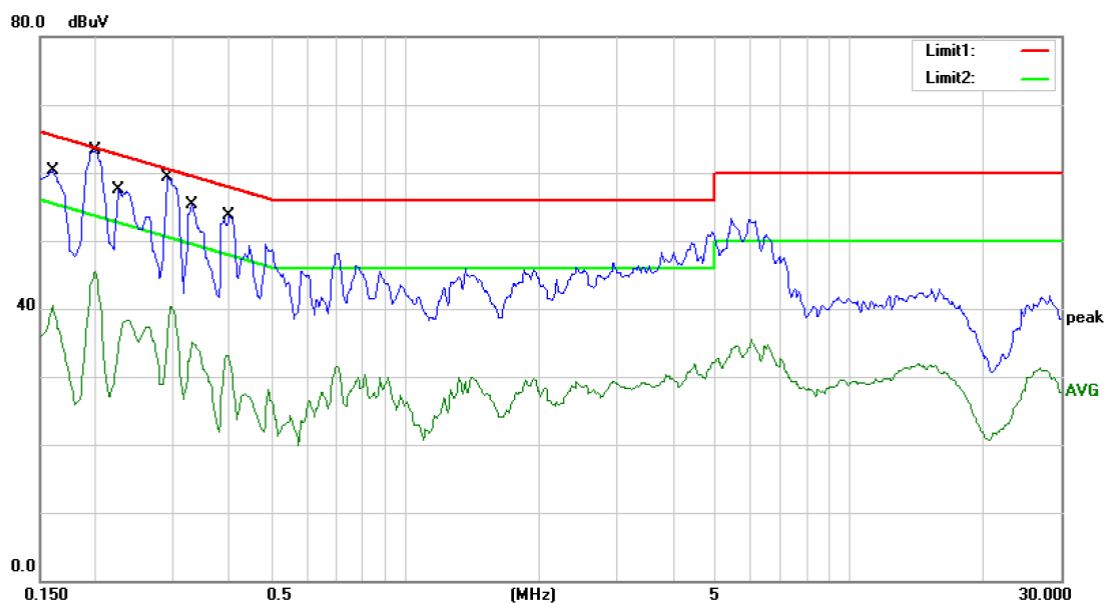
Humidity: 55 %

Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1600	53.80	0.00	53.80	65.46	-11.66	QP	
2		0.1600	42.73	0.00	42.73	55.46	-12.73	AVG	
3		0.1950	57.60	0.00	57.60	63.82	-6.22	QP	
4	*	0.1950	47.77	0.00	47.77	53.82	-6.05	AVG	
5		0.2450	48.90	0.00	48.90	61.92	-13.02	QP	
6		0.2450	40.18	0.00	40.18	51.92	-11.74	AVG	
7		0.3000	53.50	0.00	53.50	60.24	-6.74	QP	
8		0.3000	42.00	0.00	42.00	50.24	-8.24	AVG	
9		0.3300	45.90	0.00	45.90	59.45	-13.55	QP	
10		0.3300	34.59	0.00	34.59	49.45	-14.86	AVG	
11		0.3900	47.30	0.00	47.30	58.06	-10.76	QP	
12		0.3900	34.16	0.00	34.16	48.06	-13.90	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: CSL



Site Conduction #2

Phase: **N**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 240V/50Hz

Humidity: 55 %

Mode: ON

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1600	60.35	0.00	60.35	65.46	-5.11	QP	
2		0.1600	40.43	0.00	40.43	55.46	-15.03	AVG	
3		0.2000	57.55	0.00	57.55	63.61	-6.06	QP	
4		0.2000	45.59	0.00	45.59	53.61	-8.02	AVG	
5		0.2255	57.40	0.00	57.40	62.61	-5.21	QP	
6		0.2255	38.34	0.00	38.34	52.61	-14.27	AVG	
7		0.2900	54.30	0.00	54.30	60.52	-6.22	QP	
8		0.2900	37.97	0.00	37.97	50.52	-12.55	AVG	
9		0.3300	53.30	0.00	53.30	59.45	-6.15	QP	
10		0.3300	35.10	0.00	35.10	49.45	-14.35	AVG	
11		0.4000	51.60	0.00	51.60	57.85	-6.25	QP	
12		0.4000	33.05	0.00	33.05	47.85	-14.80	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: CSL

9.9 ANTENNA APPLICATION

9.9.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

9.9.2 Result

The EUT'S antenna is PIFA antenna, and the antenna can't be replaced by the user, which in accordance to section 15.203, please refer to the internal photos. The antenna's gain is 2.5dBi and meets the requirement.

END OF REPORT