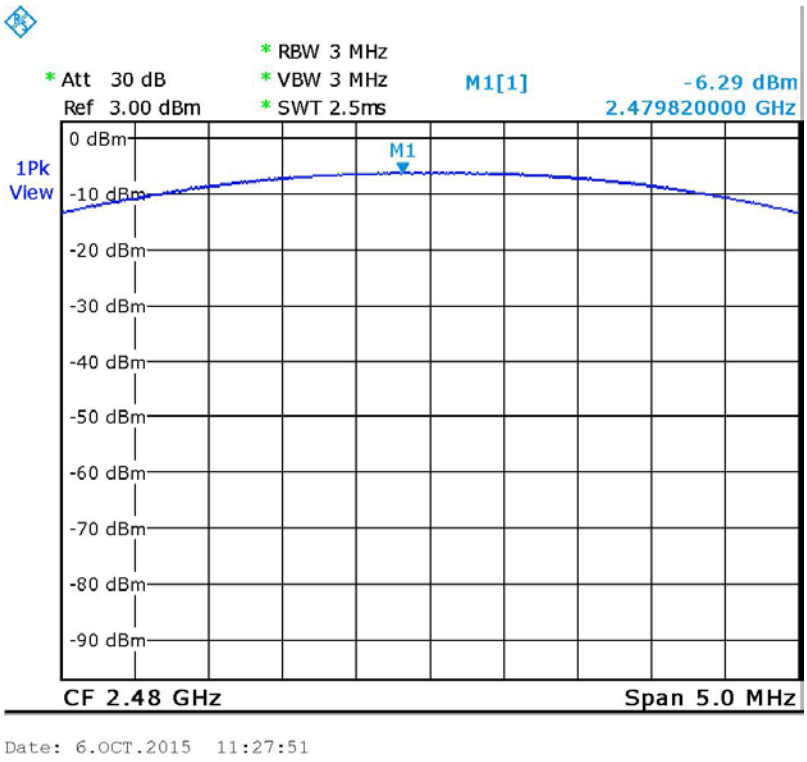
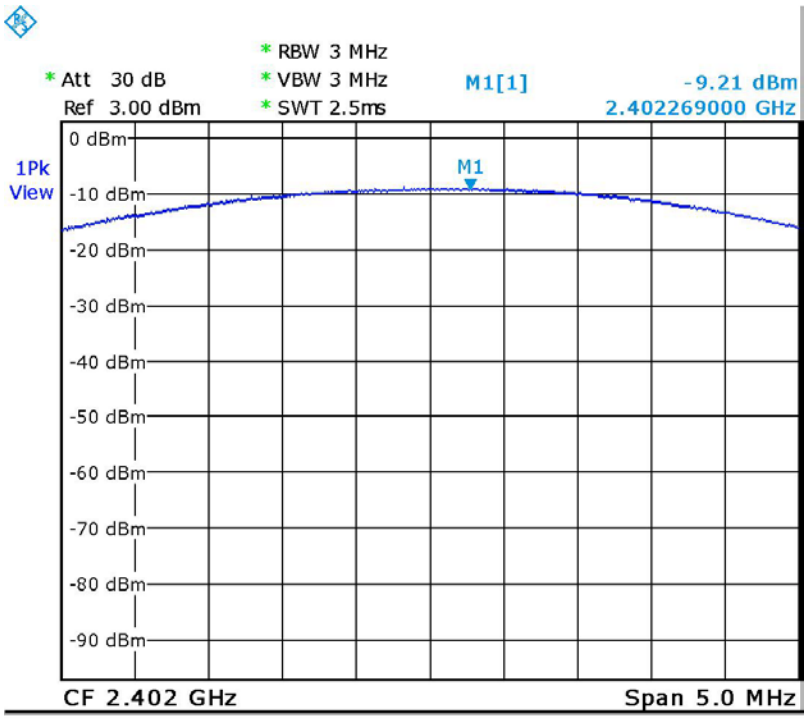
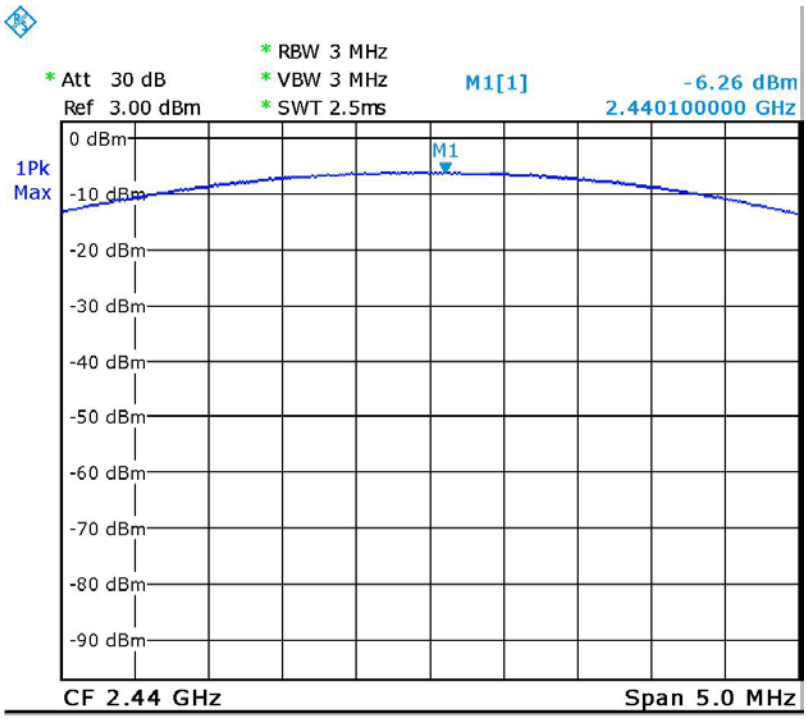
Test Mode : BT (1 Mbps) DH5 Channel : 78



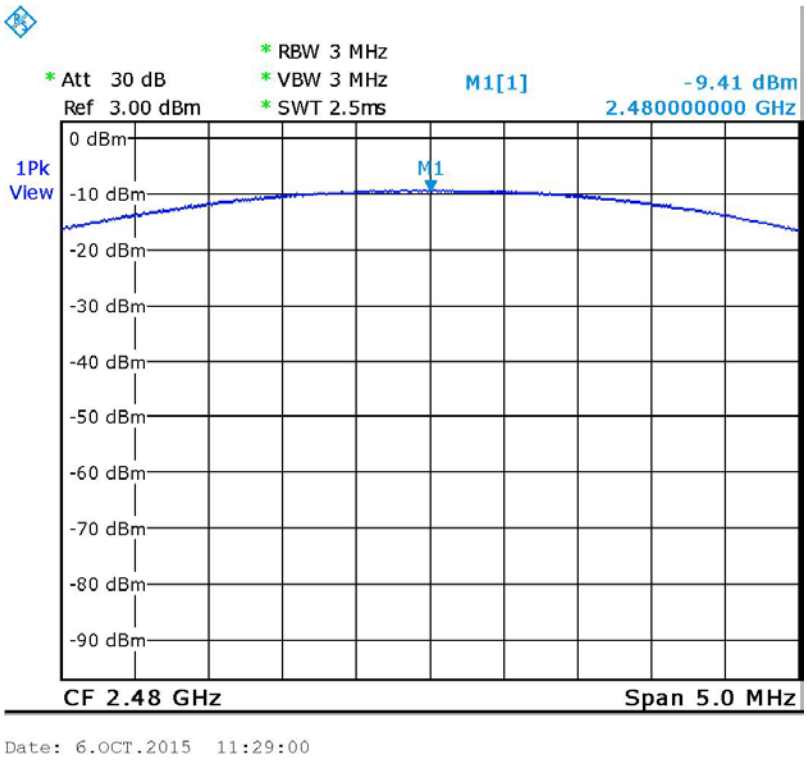
Temperature	:	22℃	Humidity	:	57%
Test Date	:	06-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (2 Mbps) DH5	Channel	:	00



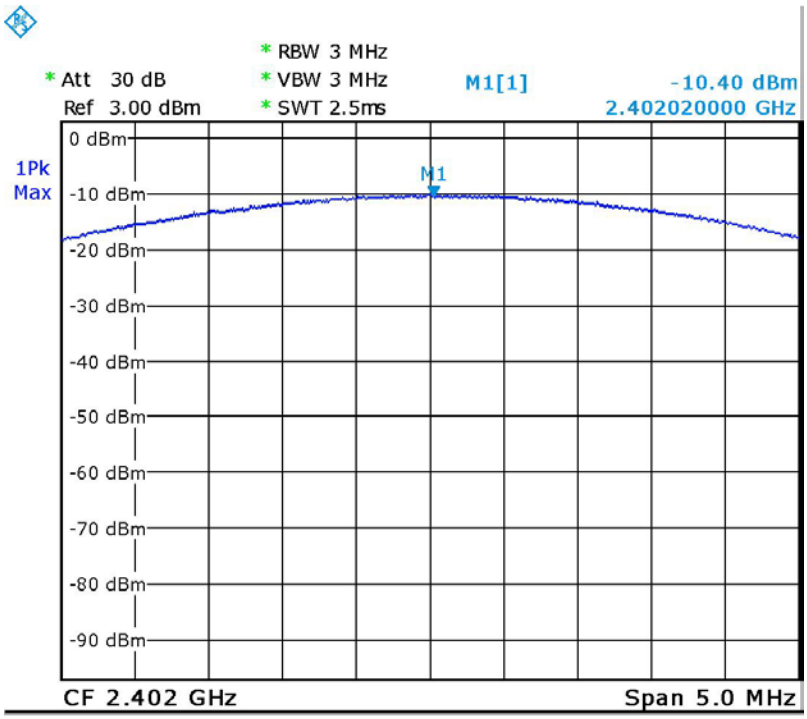
Test Mode : BT (2 Mbps) DH5 Channel : 39



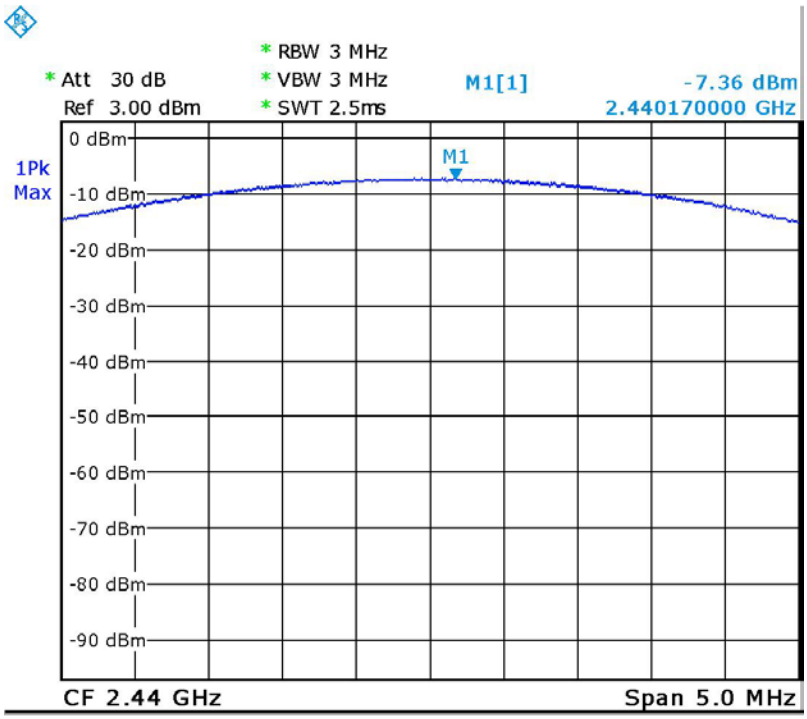
Test Mode : BT (1 Mbps) DH5 Channel : 78



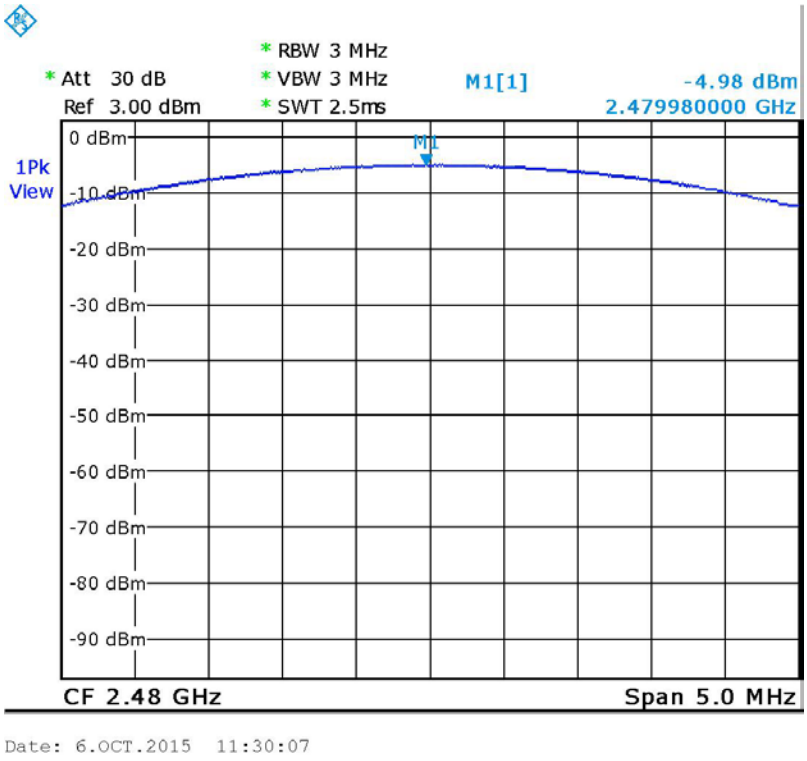
Temperature	:	22℃	Humidity	:	57%
Test Date	:	06-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (3 Mbps) DH5	Channel	:	00



Test Mode : BT (3 Mbps) DH5 Channel : 39



Test Mode : BT (3 Mbps) DH5 Channel : 78

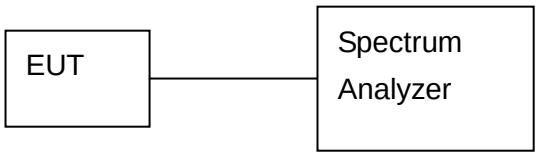


9 100kHz Bandwidth of Band Edges

9.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

9.2 Test Arrangement and Procedure



1. Remove the antenna from the transmitter and connected it to a spectrum analyzer through a low loss RF cable (connect an attenuator, if it's necessary).
2. The RBW is set to 100 kHz and VBW is set to 300 kHz. Sweep set to Auto. Span set to 100MHz.
3. Max Hold. Mark Peak and record max level.
4. Keep the same instrument setting, perform the hopping function.
5. Max Hold. Mark Peak and record max level.

9.3 Limit (§ 15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, 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)).

9.4 Test Result

Compliance.

The final test data are shown on the following page(s).

Since the fix channel mode is the worst case, data of the hopping mode were not recorded in this report.

Bluetooth (1Mbps) Channel: 00						
Measured Result					Result (dB)	Limit (dB)
Mode	Lower Channel (MHz)	Max Peak Power (dBm)	Highest Freq. at Lower Band edge (MHz)	Max Peak Power at Lower Band edge (dBm)		
non-Hopping	2402.11	-12.02	2400.01	-56.11	44.09	20
Hopping	2414.06	-5.71	2400.01	-55.52	49.81	20

Remark: Result (dB) = Max Peak Power – Max Peak power at lower band edge. When Result > Limit, it's a pass.

Bluetooth (2Mbps) Channel: 00						
Measured Result					Result (dB)	Limit (dB)
Mode	Lower Channel (MHz)	Max Peak Power (dBm)	Highest Freq. at Lower Band edge (MHz)	Max Peak Power at Lower Band edge (dBm)		
non-Hopping	2402.11	-8.95	2400.01	-55.16	46.21	20
Hopping	2406.09	-5.63	2400.01	-56.36	50.73	20

Remark: Result (dB) = Max Peak Power – Max Peak power at lower band edge. When Result > Limit, it's a pass.

Bluetooth (3Mbps) Channel: 00						
Measured Result					Result (dB)	Limit (dB)
Mode	Lower Channel (MHz)	Max Peak Power (dBm)	Highest Freq. at Lower Band edge (MHz)	Max Peak Power at Lower Band edge (dBm)		
non-Hopping	2402.11	-9.07	2400.01	-54.65	45.58	20
Hopping	2407.98	-9.00	2400.01	-56.50	47.50	20

Remark: Result (dB) = Max Peak Power – Max Peak power at lower band edge. When Result > Limit, it's a pass.

Bluetooth (1Mbps) Channel: 78						
Measured Result					Result (dB)	Limit (dB)
Mode	Upper Channel (MHz)	Max Peak Power (dBm)	Highest Freq. at Lower Band edge (MHz)	Max Peak Power at Lower Band edge (dBm)		
non-Hopping	2479.88	-5.64	2583.95	-54.07	48.43	20
Hopping	2470.22	-4.71	2559.04	-53.73	49.02	20

Remark: Result (dB) = Max Peak Power – Max Peak power at lower band edge. When Result > Limit, it's a pass.

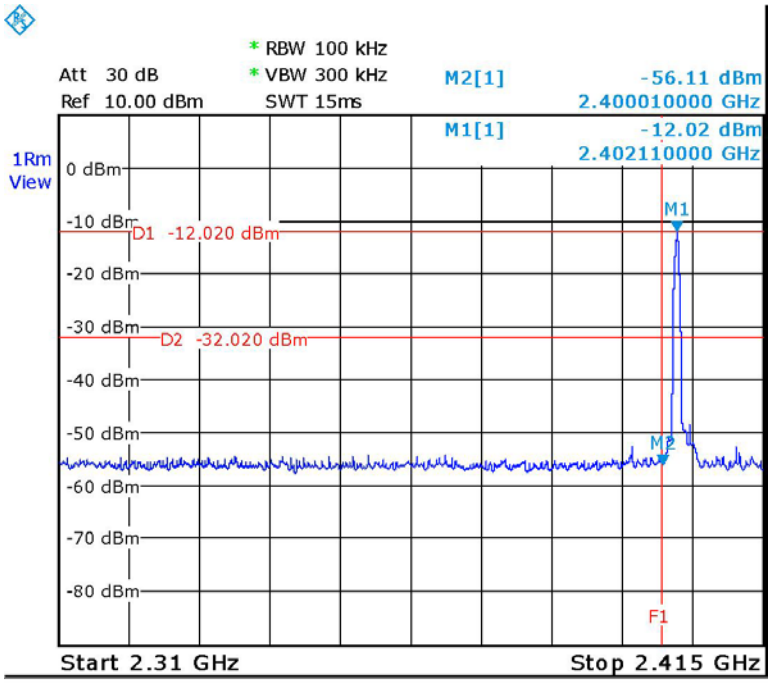
Bluetooth (2Mbps) Channel: 78						
Measured Result					Result (dB)	Limit (dB)
Mode	Upper Channel (MHz)	Max Peak Power (dBm)	Highest Freq. at Lower Band edge (MHz)	Max Peak Power at Lower Band edge (dBm)		
non-Hopping	2479.88	-9.90	2491.30	-54.43	44.53	20
Hopping	2475.05	-11.87	2554.53	-54.66	42.79	20

Remark: Result (dB) = Max Peak Power – Max Peak power at lower band edge. When Result > Limit, it's a pass.

Bluetooth (3Mbps) Channel: 78						
Measured Result					Result (dB)	Limit (dB)
Mode	Upper Channel (MHz)	Max Peak Power (dBm)	Highest Freq. at Lower Band edge (MHz)	Max Peak Power at Lower Band edge (dBm)		
non-Hopping	2480.32	-11.32	2520.28	-55.24	43.92	20
Hopping	2479.00	-12.93	2543.11	-54.59	41.66	20

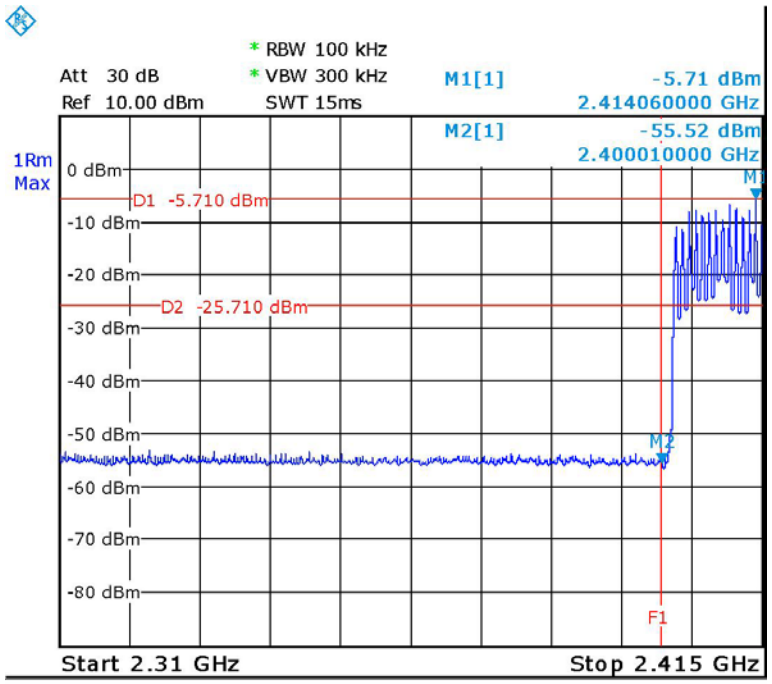
Remark: Result (dB) = Max Peak Power – Max Peak power at lower band edge. When Result > Limit, it's a pass.

Temperature	:	22℃	Humidity	:	57%
Test Date	:	12-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (1Mbps) non-hopping mode	Channel	:	00



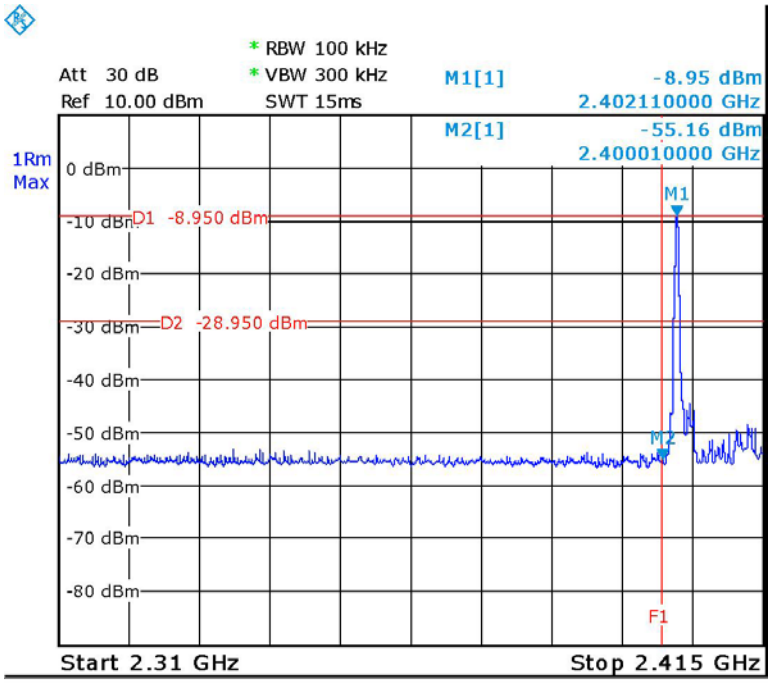
Date: 12.OCT.2015 19:08:46

Test Mode	:	BT (1Mbps) hopping mode	Channel	:	00



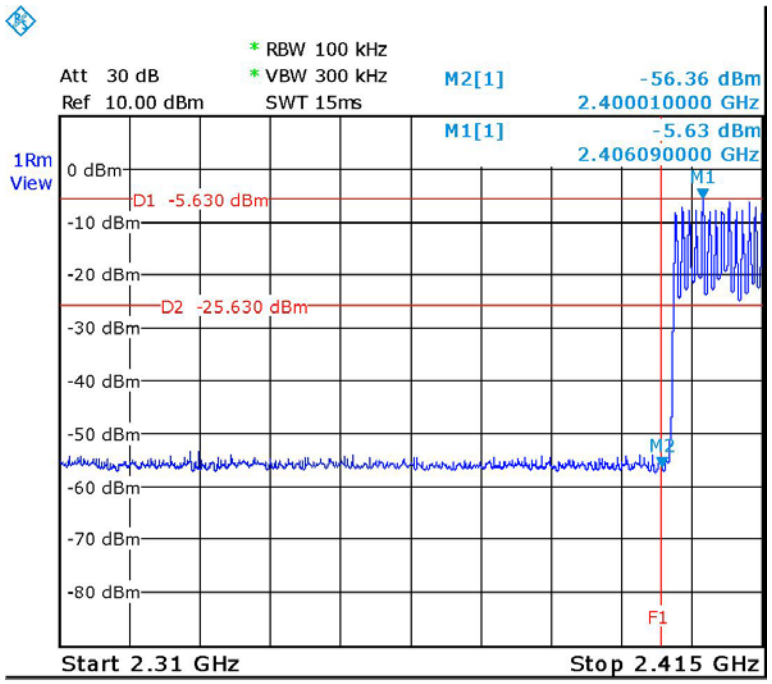
Date: 12.OCT.2015 19:19:56

Temperature	:	22℃	Humidity	:	57%
Test Date	:	12-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (2Mbps) non-hopping mode	Channel	:	00



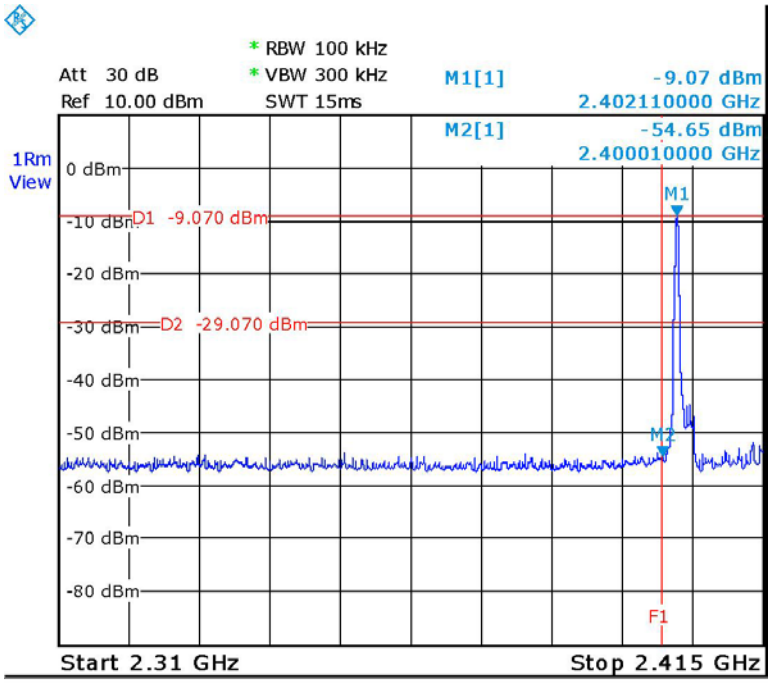
Date: 12.OCT.2015 19:22:00

Test Mode	:	BT (2Mbps) hopping mode	Channel	:	00



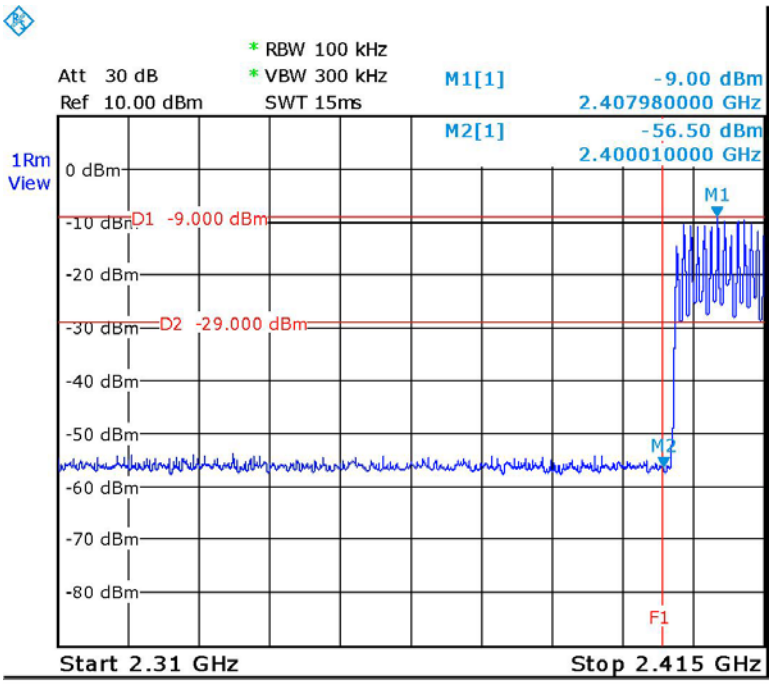
Date: 12.OCT.2015 19:14:50

Temperature	:	22℃	Humidity	:	57%
Test Date	:	12-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (3Mbps) non-hopping mode	Channel	:	00



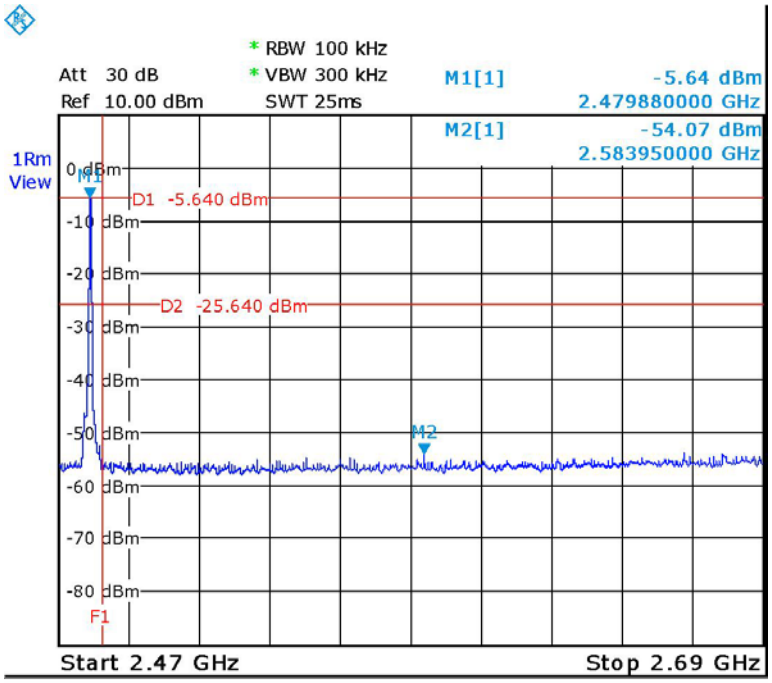
Date: 12.OCT.2015 19:24:23

Test Mode	:	BT (3Mbps) hopping mode	Channel	:	00



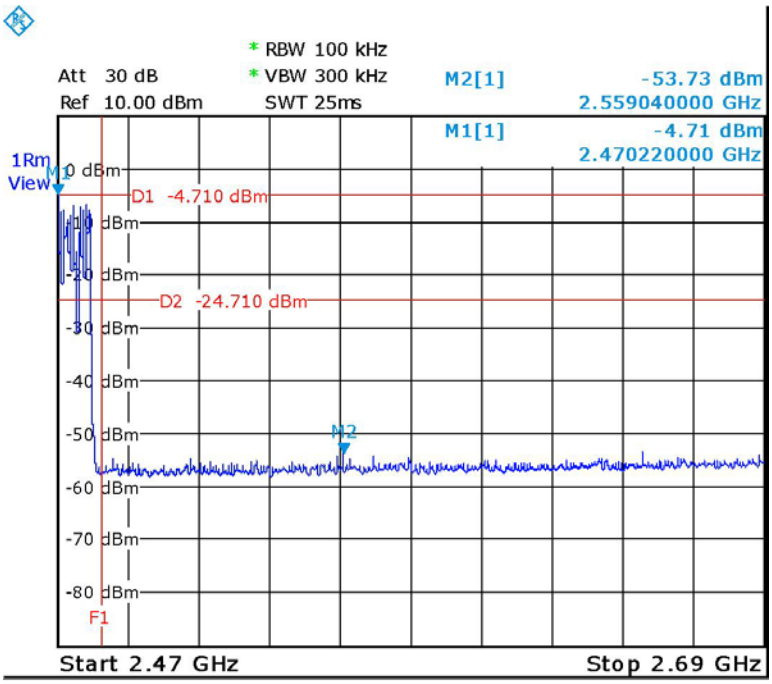
Date: 12.OCT.2015 19:26:35

Temperature	:	22℃	Humidity	:	57%
Test Date	:	12-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (1Mbps) non-hopping mode	Channel	:	78



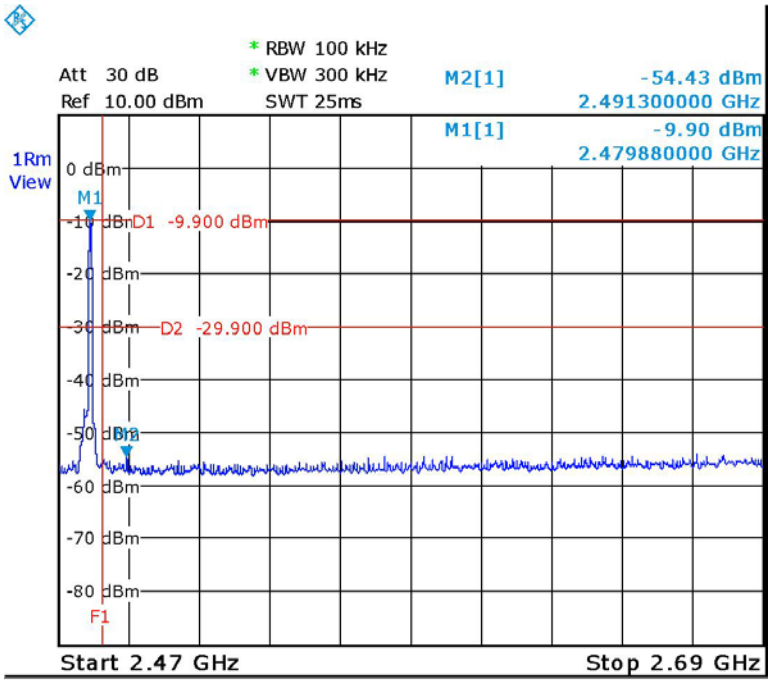
Date: 12.OCT.2015 19:37:20

Test Mode	:	BT (1Mbps) hopping mode	Channel	:	78



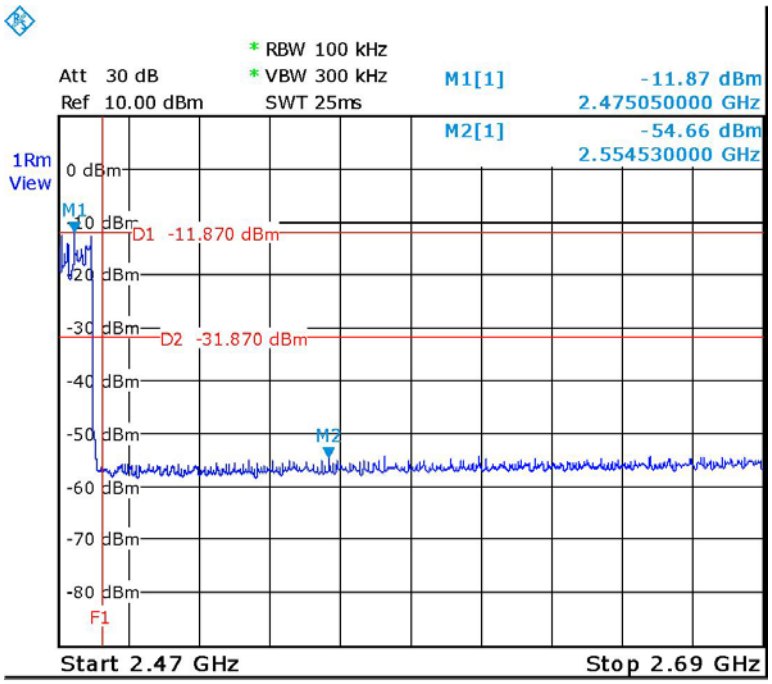
Date: 12.OCT.2015 19:34:20

Temperature	:	22℃	Humidity	:	57%
Test Date	:	12-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (2Mbps) non-hopping mode	Channel	:	78



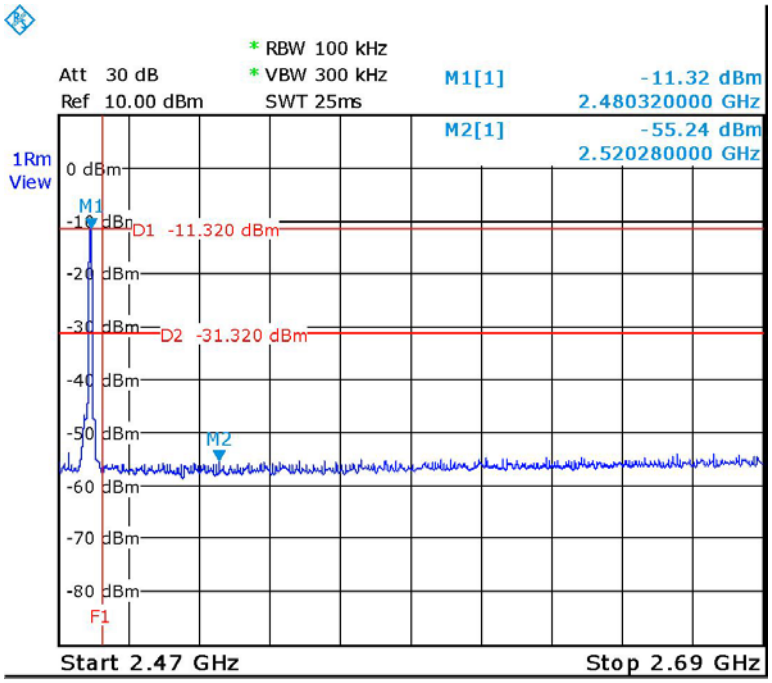
Date: 12.OCT.2015 19:39:31

Test Mode	:	BT (2Mbps) hopping mode	Channel	:	78



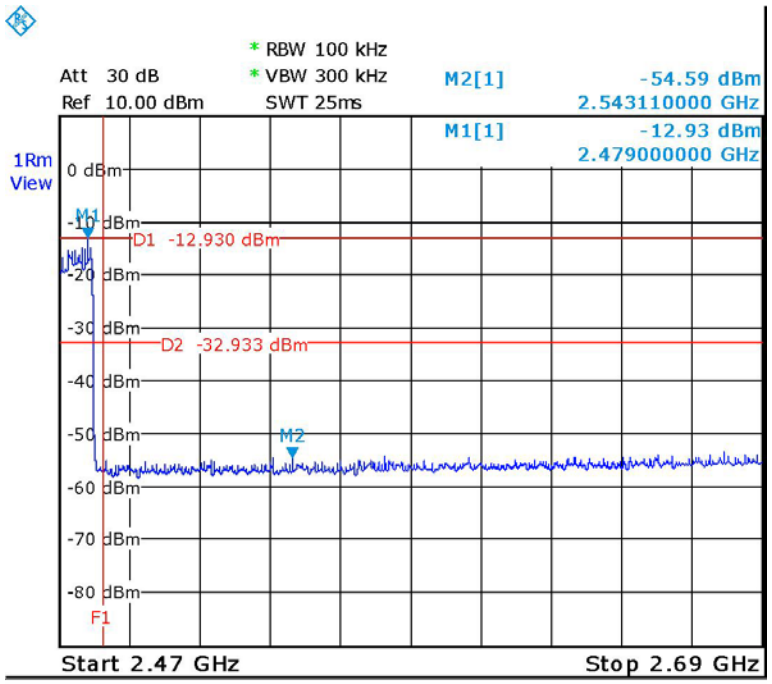
Date: 12.OCT.2015 19:41:12

Temperature	:	22℃	Humidity	:	57%
Test Date	:	12-OCT-2015	Tested by	:	Leon Chen
Test Mode	:	BT (3Mbps) non-hopping mode	Channel	:	78



Date: 12.OCT.2015 19:45:27

Test Mode	:	BT (3Mbps) hopping mode	Channel	:	78



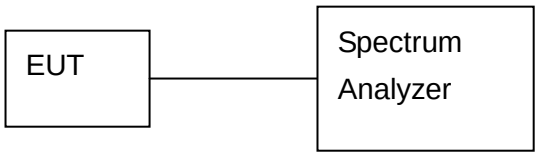
Date: 12.OCT.2015 19:43:43

10 Spurious RF Conducted Emissions

10.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

10.2 Test Arrangement and Procedure



1. Remove the antenna from the transmitter and connected it to a spectrum analyzer through a low loss RF cable (connect an attenuator, if it's necessary).
2. 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.
3. Typically, several plots are required to cover this entire span.
4. RBW = 100 kHz ; VBW ≧ RBW ; Sweep = auto
5. Detector function = peak ; Trace = max hold ; Allow the trace to stabilize.
6. Set the marker on the peak of any spurious emission recorded.
7. The level displayed must comply with the limit specified in this Section.
8. Submit these plots.

10.3 Limit (§ 15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, 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)).

10.4 Test Result

Compliance.

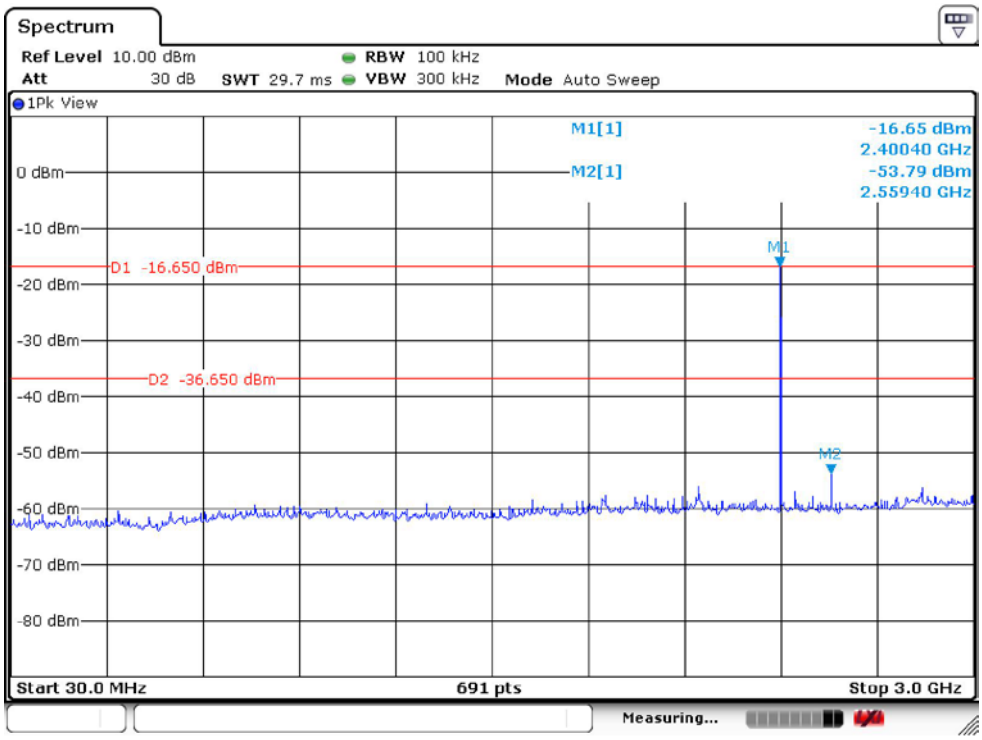
The final test data are shown on the following page(s).

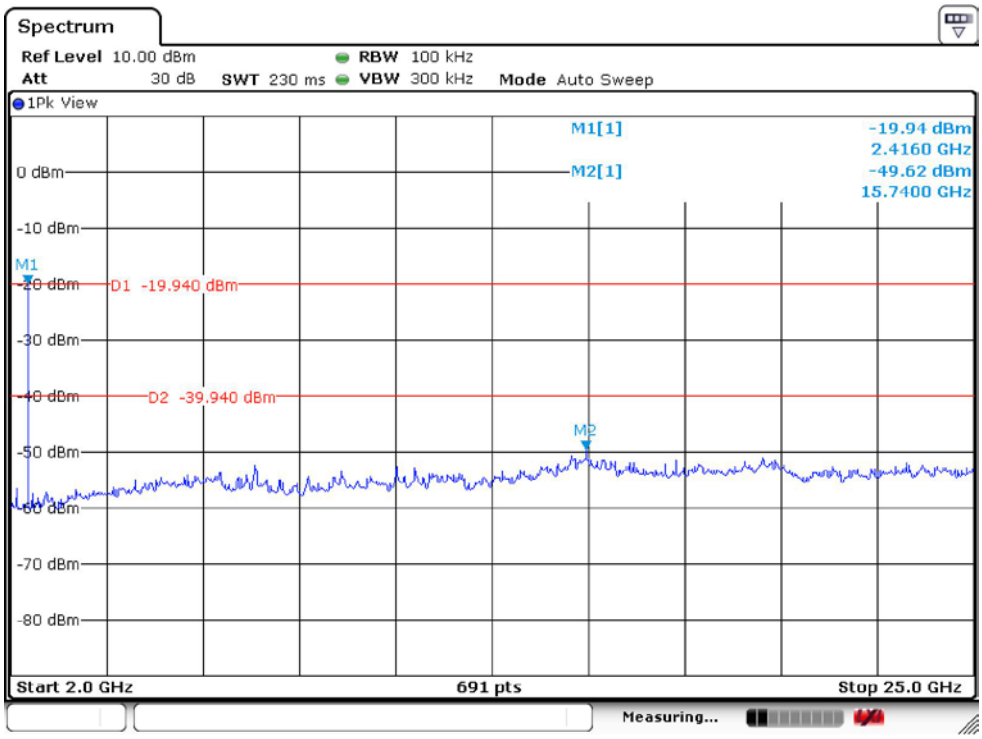
Since the fix channel mode is the worst case, data of the hopping mode were not recorded in this report.

Bluetooth (3Mbps) Channel: 00					
Measured Result				Result (dB)	Limit (dB)
(GHz)	Max Peak Power (dBm)	Highest Freq. at spurious emissions (GHz)	Max Peak Power at spurious emissions (dBm)		
2.40040	-16.65	2.55940	-53.79	37.14	20
2.4160	-19.94	15.7400	-49.62	29.68	20

Remark: Result (dB) = Max Peak Power – Max Peak power at spurious emissions.

When Result > Limit, it's a pass.

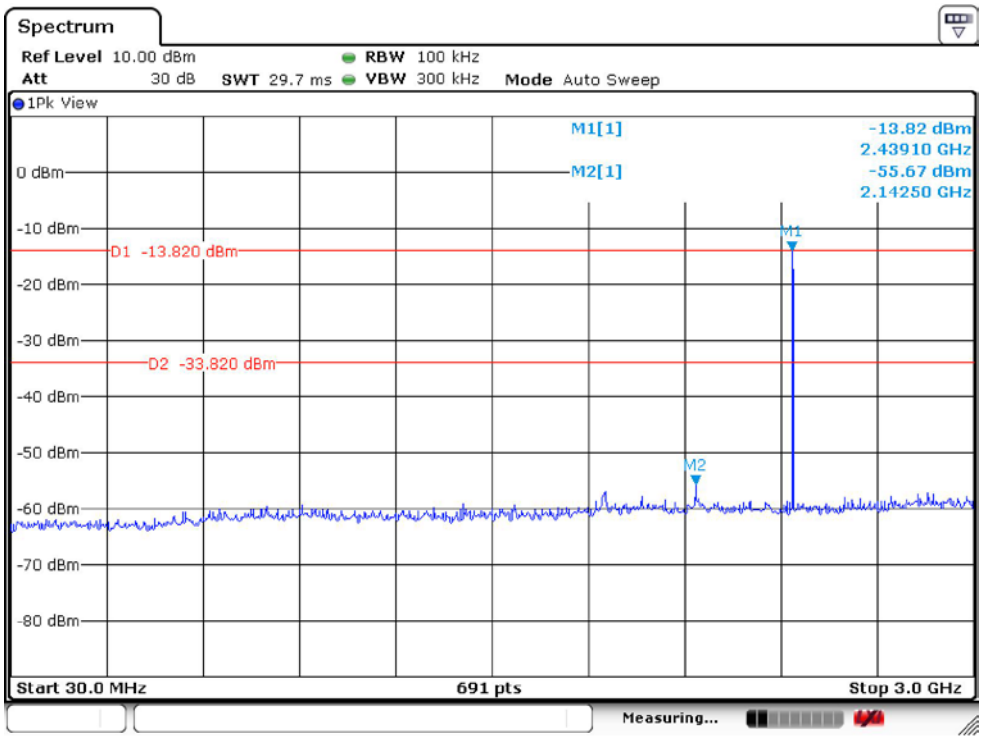


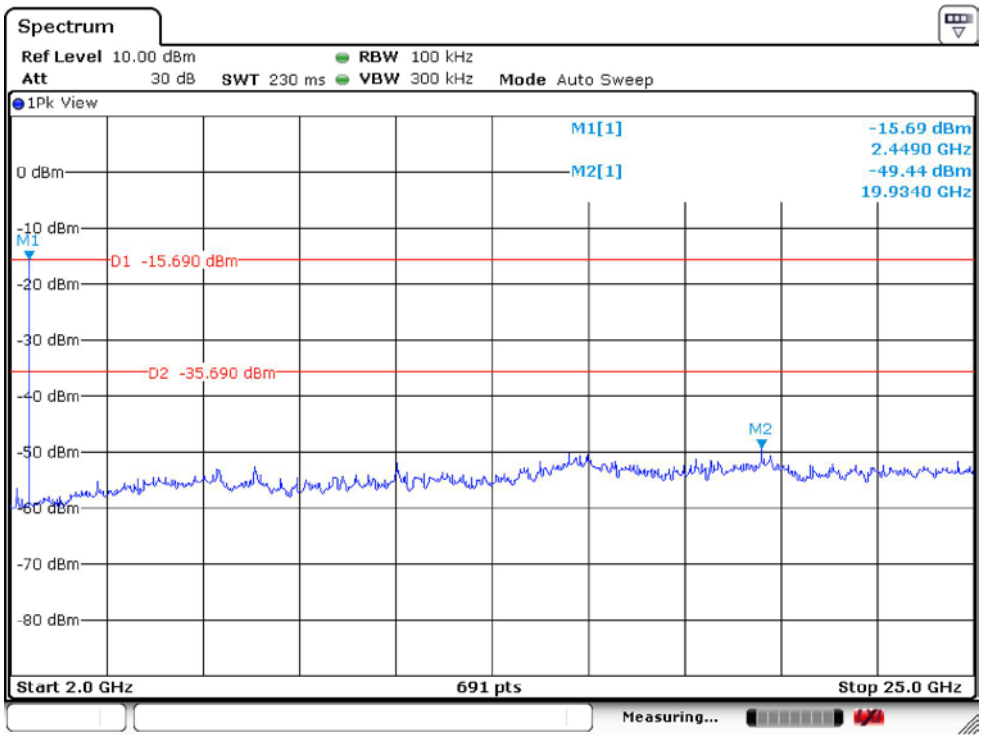


Bluetooth (3Mbps) Channel: 39					
Measured Result				Result (dB)	Limit (dB)
(GHz)	Max Peak Power (dBm)	Highest Freq. at spurious emissions (GHz)	Max Peak Power at spurious emissions (dBm)		
2.43910	-13.82	2.14250	-55.67	41.85	20
2.4490	-15.69	19.9340	-49.44	33.75	20

Remark: Result (dB) = Max Peak Power – Max Peak power at spurious emissions.

When Result > Limit, it's a pass.

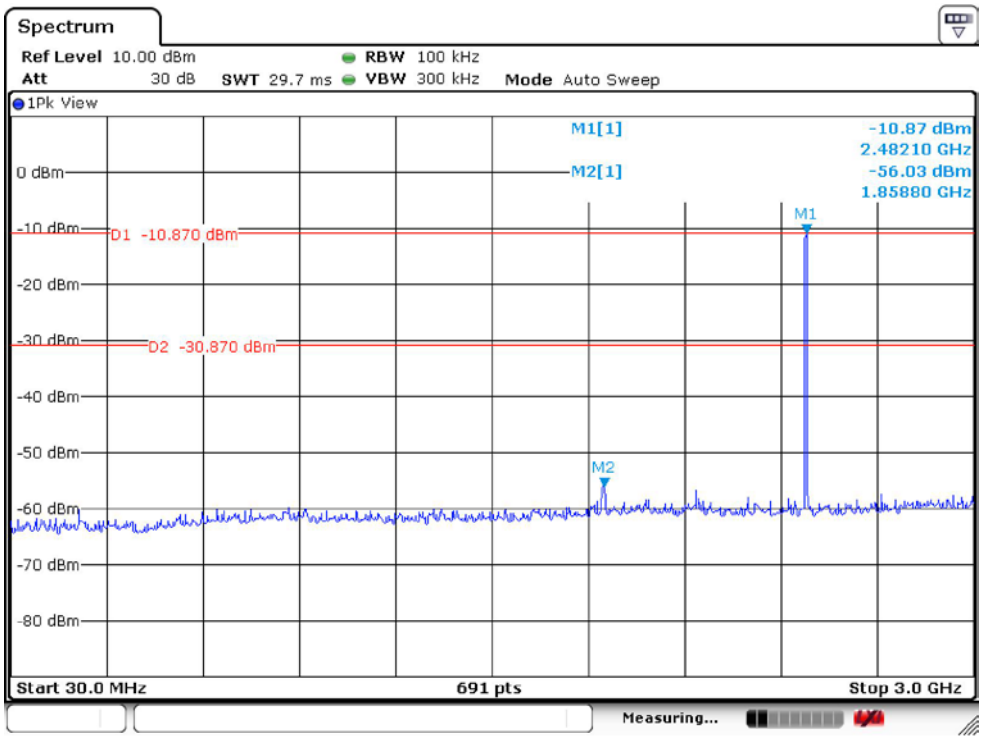


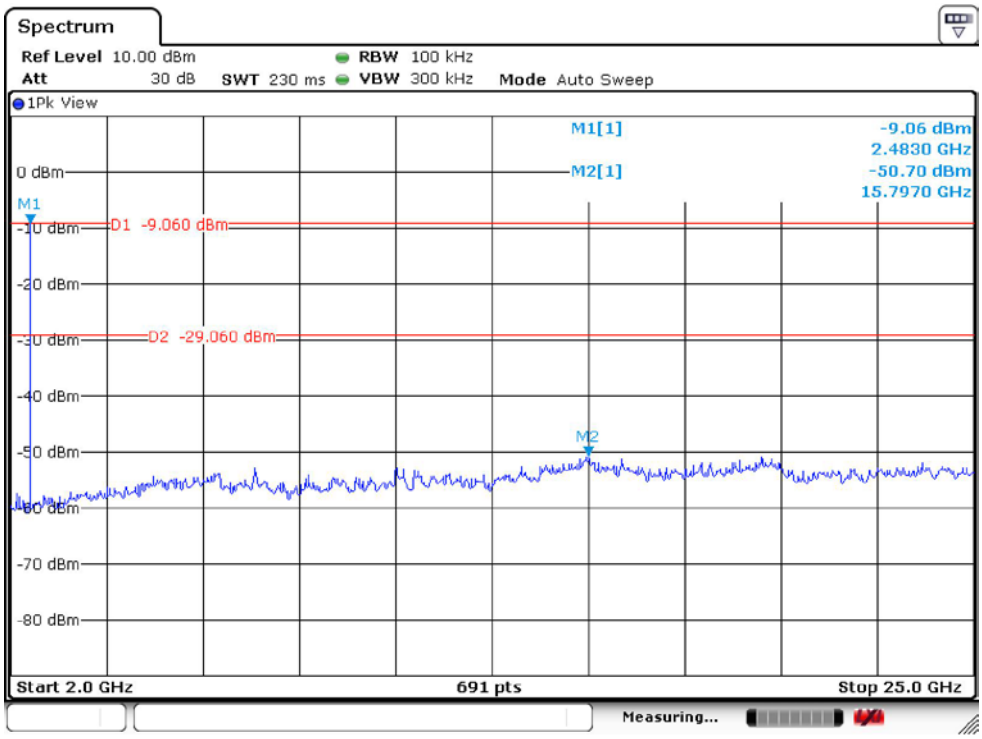


Bluetooth (3Mbps) Channel: 78					
Measured Result				Result (dB)	Limit (dB)
(GHz)	Max Peak Power (dBm)	Highest Freq. at spurious emissions (GHz)	Max Peak Power at spurious emissions (dBm)		
2.4821	-10.87	1.85880	-56.03	45.16	20
2.4830	-9.06	15.7970	-50.70	41.64	20

Remark: Result (dB) = Max Peak Power – Max Peak power at spurious emissions.

When Result > Limit, it's a pass.





11 Antenna requirement

11.1 Limit (§ 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 uniue 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.

11.2 Test Result

Compliance.

The EUT applies a PCB antenna.

12 Information about the FHSS characteristics

12.1 Pseudorandom Frequency Hopping Sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels.

The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master.

The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1600 hops/s.

12.2 Example of a 79 hopping sequence in data mode:

02, 05, 31 , 24, 20, 10,43, 36, 30, 23, 40, 06, 21, 50, 44, 09, 71 , 78, 01, 13, 73, 07, 70, 72, 35, 62, 42, 11, 41, 08, 16, 29, 60, 15, 34, 61, 58, 04, 67, 12, 22, 53, 57, 18, 27, 76, 39, 32, 17, 77, 52, 33, 56, 46, 37, 47, 64, 49, 45, 38, 69, 14, 51, 26, 79, 19, 28, 65, 75, 54, 48, 03, 25, 66, 05, 16, 68, 74, 59, 63, 55

12.3 Equal Hopping Frequency Use

Due to each the GFSK, π/4-DQPSK and 8-DPSK modulation of hopping frequency will be transmitted in accordance to the frequency tables described above, there is no any frequency will be able to hop more times than other. Therefore each frequency will be used equally.

— End of Test Report —