Prüfbericht - Nr.: *Test Report No.:*	**16025534 001**	**Seite 1 von 28** *Page 1 of 28*

Auftraggeber: *Client:*	**Zhongshan K-mate General Elec. Co., Ltd.** *Fuwan Industrial Zone, Fuwan South Road, Sunwen East Road, East District, Zhongshan, Guangdong 528403, P.R. China*		
Gegenstand der Prüfung: *Test item:*	**Bluetooth Mono Headset**		
Bezeichnung: *Identification:*	**BTE018**	**Certificate Number:** *Certificate Number*	**FCC ID: WAD-BTE018**
Wareneingangs-Nr.: *Receipt No.:*	**173055828**	**Eingangsdatum:** *Date of receipt:*	**Sep. 3, 2010**
Prüfort: *Testing location:*	**TÜV Rheinland (Guangdong) Ltd. EMC Laboratory** **Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650,** **P. R. China**		**Listed test laboratory according to FCC rules section 2.948 for measuring devices.**
Prüfgrundlage: *Test specification:*	**ANSI C63.4: 2003** **FCC Part 15: July 10, 2008, Subpart C section 15.247**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (Guangdong) Ltd.**		

geprüft/ *tested by*:			**kontrolliert**/ *reviewed by*:		
Oct. 19, 2010	Ken Kuang Project Engineer		Oct. 19, 2010	Liangdong Xie Project Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ Other Aspects:

Abkürzungen:				*Abbreviations:*			
P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*	
F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*	
N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*	
N/T	=	*nicht getestet*		*N/T*	=	*not tested*	

Test Summary

FCC test specification FCC rules	Test items	Result
Part 15 Per Section 15.209(a)	Transmitter Radiated Spurious Emission	Pass
Part 15 Per Section 15.203	Antenna Requirement	Pass
Part 15 Per Section 15.247(b)(1)	Maximum Peak Conducted Output Power	Pass
Part 15 Per Section 15.247(a)(1)	20dB Bandwidth	Pass
Part 15 Per Section 15.247(a)(1)	Hopping Channel Carrier Frequency Separation	Pass
Part 15 Per Section 15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass
Part 15 Per Section 15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Pass
Part 15 Per Section 15.247(d)	Out-Of-Band Emission measurement	Pass

Contents

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test result

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

Guangzhou Auto Market, Yuan Gang Section of Guangshan Road
Guangzhou 510650

P. R. China

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Type	Manufacturer	S/N	Calibrated until	Calibrated Interval
EMI Test Receiver	ESCI-3	Rohde & Schwarz	100216	2011-03-16	1 year
Spectrum Analyzer	FSP30	Rohde & Schwarz	100286	2011-03-16	1 year
Loop Antenna	HFH2-Z2	Rohde & Schwarz	100111	2011-03-16	1 year
Trilog-Broadband Antenna	VULB9168	SCHWARZBECK MESS-ELEKTRONIK	209	2011-08-21	2 years
Double-Ridged Waveguide Horn Antenna	HF906	Rohde & Schwarz	100385	2011-08-24	2 years
Pre-amplifier	AFS42-00101800-25-S-42	MITEQ	1101599	2011-03-16	2 years
Band Reject Filter	BRM50702	Micro-Tronics	023	2011-03-16	2 years
Standard Gain Horn Antenna	3160-09	EMCO	21642	2014-06-26	5 years
Pre-amplifier	AFS33-18002650-30-8P-44	MITEQ	1108282	2011-03-16	2 years
3m Anechoic Chamber	N/A	Albatross Project GmbH	N/A	2011-03-16	1 year
Spectrum Analyzer	E4404B	Agilent	MY414 40753	2011-03-16	1 year

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

Uncertainty for conducted emissions measurements is ± 2.68dB.
Uncertainty for radiated emissions measurements is ± 4.94dB (30MHz-1GHz), ± 4.88dB (>1GHz).

The reported expanded uncertainty is based on a standard uncertainty multiply by a coverage factor k=2, providing a level of confidence of approximately 95%.

2.6 Location of original data

The original copies of test data taken during actual testing were attached at Appendix 1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Guangdong) file for certification follow-up purposes.

2.7 Status of facility used for testing

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory; Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650, P. R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements, the register no. 833845

3 General Product Information

The submitted sample is a Bluetooth mono headset.

3.1 Product Function and Intended Use

Refer to user manual for more information.

3.2 Ratings and System Details

Bluetooth Specification	:	V2.1+EDR
Frequency range	:	2402.0MHz – 2480.0MHz
Total Number of channels	:	79 channels
Channel Spacing	:	1MHz
Modulation Type	:	FHSS
Type of antenna	:	Integral antenna
Power supply	:	DC 3.7V (battery)
Ports	:	DC 5V charge port
Protection Class	:	III

The above information was declared by client. Refer to the Technical Documentation for further information

3.3 Independent Operation Modes

A: RF Transmitting and receiving at BR mode.
B: RF Transmitting and receiving at EDR mode

For further information refer to User Manual

3.4 Submitted Documents

Operation Description
Block Diagram
Schematics
FCC label and its location
User Manual
Internal Photos
External Photos
Application form

4 Test Set-up and Operation Mode

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Refer to test set-up in chapter 5.

4.3 Special Accessories and Auxiliary Equipment

The products have been tested together with the following device:

Device	Manufacture	Model	Serial no./ Version
Laptop notebook	IBM R40e	2684	99-CYY55
Bluetooth test Software	CSR	BlueTest	1.2.4

4.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the technical document. No additional measures were employed to achieve compliance.

4.5 Test set-up

Diagram 1 of Configuration for Testing Radiated Emission below 30MHz

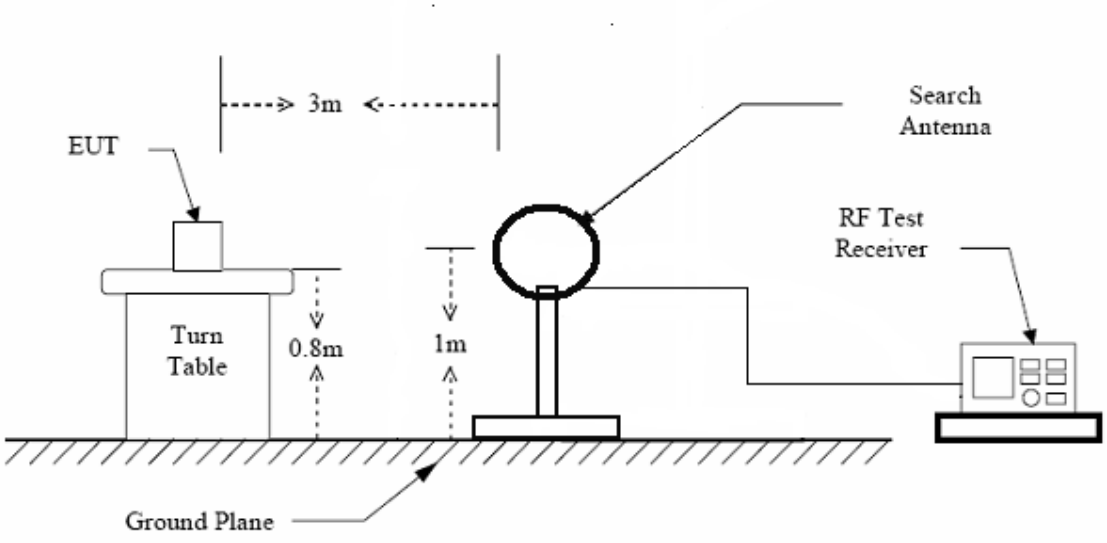


Diagram 2 of Configuration for Testing Radiated Emission from 30MHz to 1 GHz

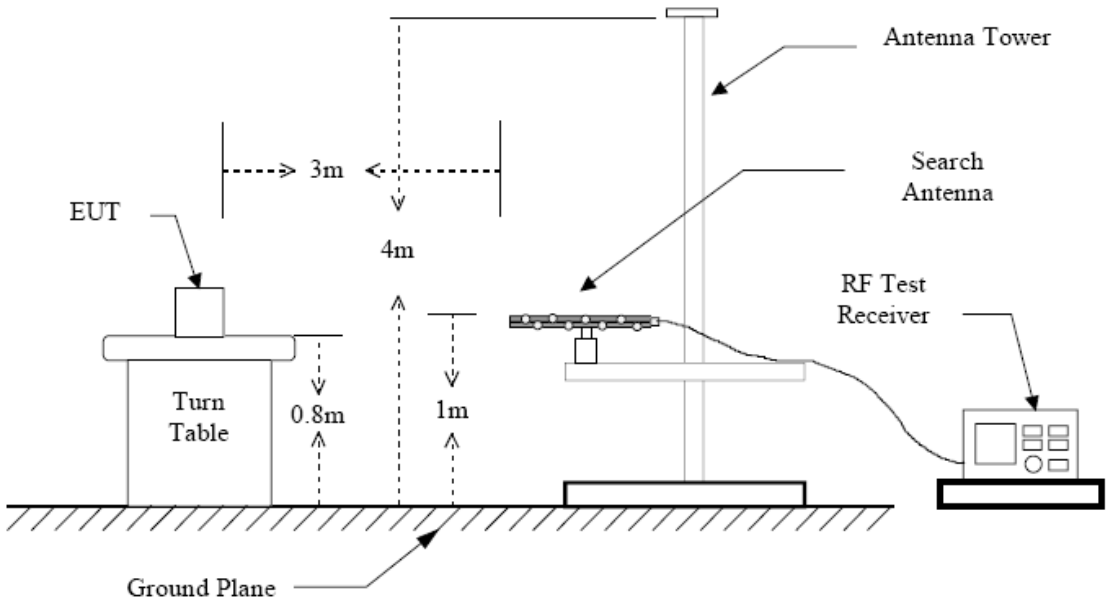


Diagram 3 of Configuration for Testing Radiated Emission above 1 GHz

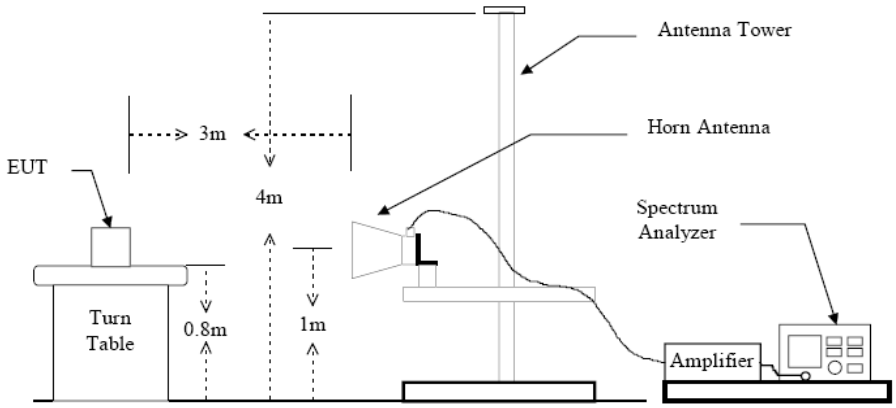
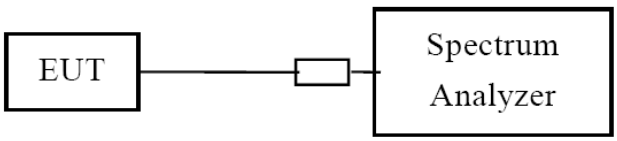


Diagram 4 of Configuration for Testing other test items



5 Test Results

5.1 Transmitter Radiated Spurious Emission

RESULT: **Pass**

Date of testing	:	Sep. 20, 2010 to Sep. 21, 2010
Test specification	:	FCC Part 15 Per Section 15.209(a)
Limits	:	FCC Part 15 Per Section 15.209(a)
Test procedure	:	Procedure specified in ANSI C63.4 were followed
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Semi-anechoic chamber
Operation mode	:	Transmitting at BR / EDR mode
Power supply	:	DC 3.7V
Temperature	:	23°C
Humidity	:	50%

Test procedure:

1. The EUT was placed on the top of a rotatable table 0.8 meters above the ground with 3-orthogonal direction and be kept close enough to the receiving antenna. The table was rotated 360 degrees to determine the suspected emission frequency and the position of the worst radiation case with both horizontal and vertical antenna polarization.
2. The EUT was then set 3 meters away from the receiving antenna, which was mounted on a variable-height antenna tower.
3. For each suspected emission frequency recorded in step 1, the EUT was arranged to its worst case and:
for tests below 30MHz the loop antenna is positioned with its plane vertical and the center of it is 1m above the ground. During the tests it is rotated about its vertical axis for maximum response at each azimuth about the EUT;
for tests above 30MHz the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to read the maximum emission.
4. The RBW and VBW of the test receiver were 120 kHz and 120 kHz for Quasi-peak detection at frequency below 1GHz.
The RBW and VBW of the test receiver were 1MHz and 3MHz for Peak detection at frequency above 1GHz.
For Average measurement at frequency above 1GHz.The resolution bandwidth of the test receiver was 1MHz, video bandwidth is 10Hz. If the peak value was below the AV limit, AV measurement was skipped.

Table 2: Radiated Emission (BR mode, Transmitting at 2402MHz)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
1601.00	--	--	36.4	H	N/A	54	74
4804.00	--	43.3	57.2	H	N/A	54	74
8418.00	--	--	46.8	H	N/A	54	74
1601.00	--	--	47.0	V	N/A	54	74
4804.00	--	48.2	62.1	V	N/A	54	74
9400.00	--	--	48.3	V	N/A	54	74
*)---							

Table 3: Radiated Emission (BR mode, Transmitting at 2441MHz)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
1627.00	--	--	36.8	H	N/A	54	74
4882.00	--	--	52.8	H	N/A	54	74
11636.00	--	--	49.1	H	N/A	54	74
1627.00	--	--	40.8	V	N/A	54	74
4882.00	--	50.3	57.5	V	N/A	54	74
9874.00	--	--	48.0	V	N/A	54	74
*)---							

Table 4: Radiated Emission (BR mode, Transmitting at 2480MHz)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dBµV/m]			(H/V)	[dBµV/m]		
1831.00	--	--	35.4	H	N/A	54	74
4960.00	--	--	53.2	H	N/A	54	74
9419.00	--	--	48.3	H	N/A	54	74
1652.00	--	--	39.4	V	N/A	54	74
4960.00	--	48.6	55.6	V	N/A	54	74
9551.00	--	--	49.1	V	N/A	54	74
*)---							

*) Measurement is made from 26MHz to 26 GHz. Disturbances other than those mentioned above are small or not detectable.
Emission at BR mode was found to be the worse case in the test.

5.2 Antenna requirement

RESULT: **Pass**

Date of testing	:	---
Test specification	:	FCC Part 15 Per Section 15.203 FCC Part 15 Per Section 15.247(b)

For intentional device, according to 15.203, and 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 15.247(b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by amount in dB than the directional gain of the antenna exceeds of 6dBi.

As the antenna is permanently mounted on RF Board, there is no possibility of replacement.

And the max gain of the antenna is 2dBi.

5.3 Maximum Peak Conducted Output Power

RESULT: **Pass**

Date of testing	:	Sep. 25, 2010
Test specification	:	FCC Part 15 Per Section 15.247(b)(1)
Limits	:	FCC Part 15 Per Section 15.247(b)(1) For frequency hopping systems operating in the band 2400-2483.5 MHz employing at least 75 hopping channels, the maximum peak conducted output power shall not exceed 1 W.
Deviations from Standard Test procedures	:	None
Test procedure	:	Procedure specified in ANSI C63.4 were followed
Kind of test site	:	Shielded room
Operation mode	:	Transmitting at BR / EDR mode
Power supply	:	DC 3.7V
Temperature	:	22°C
Humidity	:	50%

Test procedure:

1. Connect the antenna output of the EUT to the power meter by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Read the power from power meter and add the cable loss correction.

Table 5: Peak Conducted Power (BR mode)

Channel	Frequency (MHz)	Power Reading(dBm)	Cable Loss (dB)	Output Power		Limit (mW) *
				(dBm)	(mW)	
Low	2402	2.53	0.40	2.93	1.96	1000
Mid	2441	2.66	0.40	3.06	2.02	1000
High	2480	2.46	0.40	2.86	1.93	1000

Table 6: Peak Conducted Power (EDR mode)

Channel	Frequency (MHz)	Power Reading(dBm)	Cable Loss (dB)	Output Power		Limit (mW) *
				(dBm)	(mW)	
Low	2402	0.17	0.40	0.57	1.14	1000
Mid	2441	0.13	0.40	0.53	1.13	1000
High	2480	-0.15	0.40	0.25	1.06	1000

*Note: Refer to the test result of “Number of Hopping Channel Used” for the non-overlap channel number.

5.4 20dB Bandwidth

RESULT: **Pass**

Date of testing	:	Sep. 25, 2010
Test specification	:	FCC Part 15 Per Section 15.247(a)(1)
Limits	:	No limit
Deviations from Standard Test procedures	:	None
Test procedure	:	Procedure specified in ANSI C63.4 were followed
Operation mode	:	Transmitting at BR / EDR mode
Kind of test site	:	Shielded room
Power supply	:	DC 3.7V
Temperature	:	23°C
Humidity	:	50%

Test procedure:
1. Connect the antenna port of the EUT to the spectrum analyzer by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: Centered Frequency= measured channel, RBW=10kHz, VBW=30kHz.
4. Mark the peak power frequency point and the -20dB upper and lower frequency points.
5. Read the frequency delta value between the -20dB upper and lower frequency points.
6. Repeat step 2 to 5 until all the channels required are finished.

Table 7: 20dB Bandwidth (BR mode)

Channel	Frequency (MHz)	Test Result (kHz)
Low	2402	945
Mid	2441	945
High	2480	953

Table 8: 20dB Bandwidth (EDR mode)

Channel	Frequency (MHz)	Test Result (kHz)
Low	2402	1328
Mid	2441	1328
High	2480	1328

Please refer to Appendix 1 for the plot.

5.5 Hopping Channel Carrier Frequency Separation

RESULT: **Pass**

Date of testing	:	Sep. 25, 2010
Test specification	:	FCC Part 15 Per Section 15.247(a)(1)
Limits	:	FCC Part 15 Per Section 15.247(a)(1) Frequency hopping systems 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 the systems operate with an output power no greater than 0.125W.
Deviations from Standard Test procedures	:	None
Test procedure	:	Procedure specified in ANSI C63.4
Kind of test site	:	Shielded room
Operation mode	:	Bluetooth transmitting with hopping at the full channel set
Power supply	:	DC 3.7V
Temperature	:	23°C
Humidity	:	50%

Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: Centered Frequency = measured channel, RBW = 100 kHz, VBW = 100 kHz, Frequency Span = wide enough to cover the adjacent channel.
4. Mark the peak power frequency point of the measured channel and its adjacent channel(s)
5. Read the frequency delta value between the measured channel and its adjacent channel(s)
6. Repeat step 3 to 5 until all the channels measured are finished.

Table 9: Hopping Channel Carrier Frequency Separation

Channel	**Adjacent Hopping channel separation (kHz)**	**Limit**
Low	998	At least 25kHz or tow-thirds of the 20dB bandwidth of the hopping channel, whichever is greater. Note: refer to table 8 and 9 for the value of 20dB bandwidth
Mid	1005	
High	1035	

Please refer to Appendix 1 for the plot.

5.6 Number of Hopping Frequency Used

RESULT: **Pass**

Date of testing	:	Sep. 25, 2010
Test specification	:	FCC Part 15 Per Section 15.247(a)(1)(iii)
Limits	:	FCC Part 15 Per Section 15.247(a)(1)(iii) Frequency hopping system in the 2400-2483.5 MHz band shall use at least 15 non-overlapping channels
Deviations from Standard Test procedures	:	None
Test procedure	:	Procedure specified in ANSI C63.4
Kind of test site	:	Shielded room
Operation mode	:	Bluetooth transmitting with hopping at the full channel set
Power supply	:	DC 3.7V
Temperature	:	23°C
Humidity	:	50%

Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: RBW = 100 kHz, VBW≥RBW, Frequency Span = wide enough to cover the channels to be plotted.
4. Set the spectrum analyzer to Max-hold mode and plot the result(s) with record of all hopping channel.

Table 10: Number of hopping frequency

Number of hopping frequency:	79
Limit:	At least 15 non-overlapping channels

Please refer to Appendix 1 for measurement data.

5.7 Time of Occupancy (Dwell Time)

RESULT: **Pass**

Date of testing	:	Sep. 25, 2010
Test specification	:	FCC Part 15 Per Section 15.247(a)(1)(iii)
Limits	:	FCC Part 15 Per Section 15.247(a)(1)(iii) For frequency hopping system operating in the 2400-2483.5MHz band, 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.
Deviations from Standard Test procedures	:	None
Test Procedure	:	Procedure specified in ANSI C63.4
Kind of test site	:	Shielded room
Operation mode	:	Bluetooth transmitting with hopping at the full channel set (DH5 mode)
Power supply	:	DC 3.7V
Temperature	:	23°C
Humidity	:	50%

Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: Centered Frequency = measured channel, RBW = 1MHz, VBW≥RBW, Frequency Span = 0 Hz.
4. Set sweep time properly to capture the entire dwell time per hopping channel.
5. Set detector type to Peak and trace mode to Max Hold and make the measurement.
6. Repeat step 3-5 until all channels measured were complete.

Table 11: Dwell Time (DH5 mode)

channel	Frequency (MHz)	Dwell time of one signal Burst (ms)	Total Dwell Time (ms)	Limit (ms)
Low	2402	2.98	(2.98 x **106.81**) = 318.29	400
Mid	2441	2.98	(2.98 x **106.81**) =318.29	400
High	2480	2.98	(2.98x **106.81**) = 318.29	400

Note :
DH5 mode was found to be the worst case in the test.

Period = 0.4 (seconds) x 79 (channels) = 31.6 seconds

For Bluetooth system, there are 1600 timeslots in one second. The DH5 mode operates on a 5-slot transmission and 1-slot receiving basis. Thus there are 1600/ (5+1) = 266.7 transmission per second. In one period for each particular channel there are (266.7/79) x 31.6 = 106.81 times of transmission.

Dwell Time in one period(ms) = Dwell time of one-slot transmission(ms) multiplexes **106.81**

Please refer to Appendix 1 for measurement data.

5.8 Out-of-Band Emission

RESULT: **Pass**

Date of testing	:	Sep. 25, 2010
Test specification	:	FCC Part 15 Per Section 15.247(d)
Limits	:	FCC Part 15 Per Section 15.247(d) In any 100kHz 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 20dB below that in the 100kHz 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: FCC Part 15 - radiated emission which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a).
Deviations from Standard Test procedures	:	None
Test Procedure	:	Procedure specified in ANSI C63.4 were followed
Kind of test site	:	Shielded room
Operation mode	:	Transmitting at BR / EDR mode
Power supply	:	DC 3.7V
Temperature	:	23°C
Humidity	:	50%

Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: RBW = 100 kHz, VBW≥RBW.
4. Set proper frequency span respectively for out-of-band emission measurement of the band edge and the whole range (up to 10 times of the carrier frequency.)
5. Set the trace mode to Max Hold and mark the peak reading of any spurious emission recorded.
6. The band edge radiated emission was measured according to the procedure in clause 5.2 of this report.

Table 12: Out-Of-Band Emission measurement (conducted)

Emission (Max reading among Channel low, mid and high)	**Attenuation**	**Limit (dB)**
30MHz to 25GHz	All emission in this 100kHz bandwidth are attenuated more than 20dB from the carrier	△≥20

*** Note:** Please refer to the Appendix 1 for the plot of the peak value.

Table 13: Band Edges Emission in the Restricted Bands (BR mode)

Frequency [MHz]	**dBc** [dB]	**PK** [dBμV/m]	**AV** [dBμV/m]	**Polarity** (H/V)	**PK limit** [dBμV/m]	**AV limit** [dBμV/m]
2483.5	48.3	40.6	---	V	74	54
Remark: The max. peak carrier field strength of the high channel is 88.9 dBuV/m (vertical)						

Table 14: Band Edges Emission in the Restricted Bands (EDR mode)

Frequency [MHz]	**dBc** [dB]	**PK** [dBμV/m]	**AV** [dBμV/m]	**Polarity** (H/V)	**PK limit** [dBμV/m]	**AV limit** [dBμV/m]
2483.5	45.6	38.2	---	V	74	54
Remark: The max. peak carrier field strength of the high channel is 83.8dBuV/m (vertical)						

NOTE:
1. Marker-delta method was used to calculate the band edges emission: The dBc value between the carrier maximum power and band edge emission power of the frequency listed in the table is calculated from the test record showed in Appendix 1.
Peak value of the high/low band edge emission listed in the table is calculated by the below formula:
PK value of band edge emission = Peak carrier field strength – dBc value

2. Disturbances other than those mentioned above are small or not detectable.

6 Photographs of the Test Set-Up

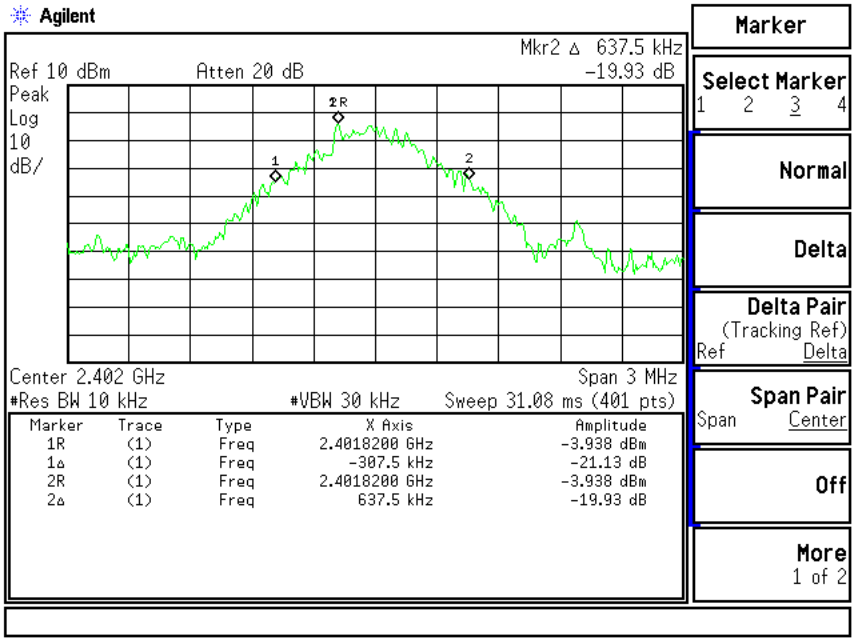
Photograph 1: Set-up for Radiation Measurement below 1GHz

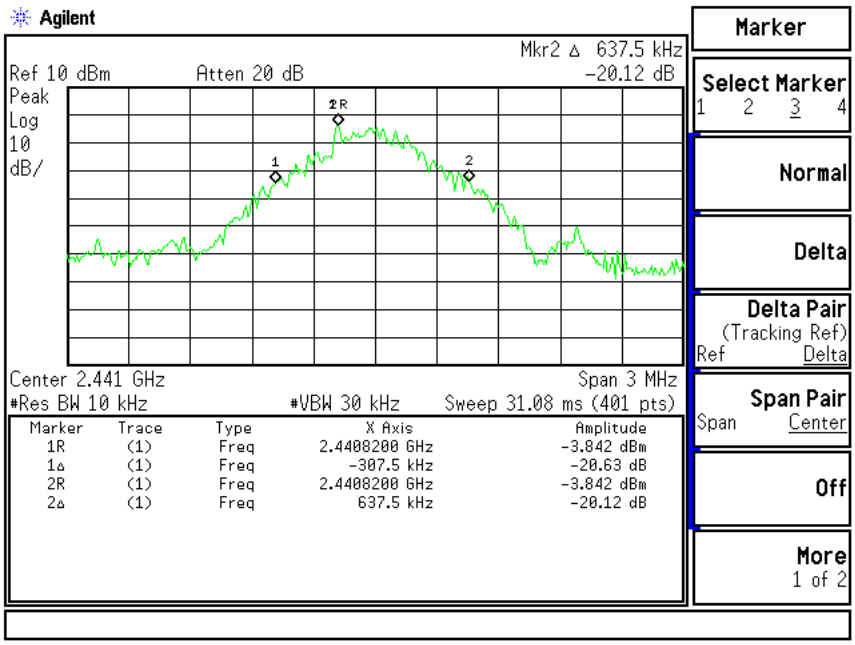
Photograph 2: Set-up for Radiation Measurement above 1GHz

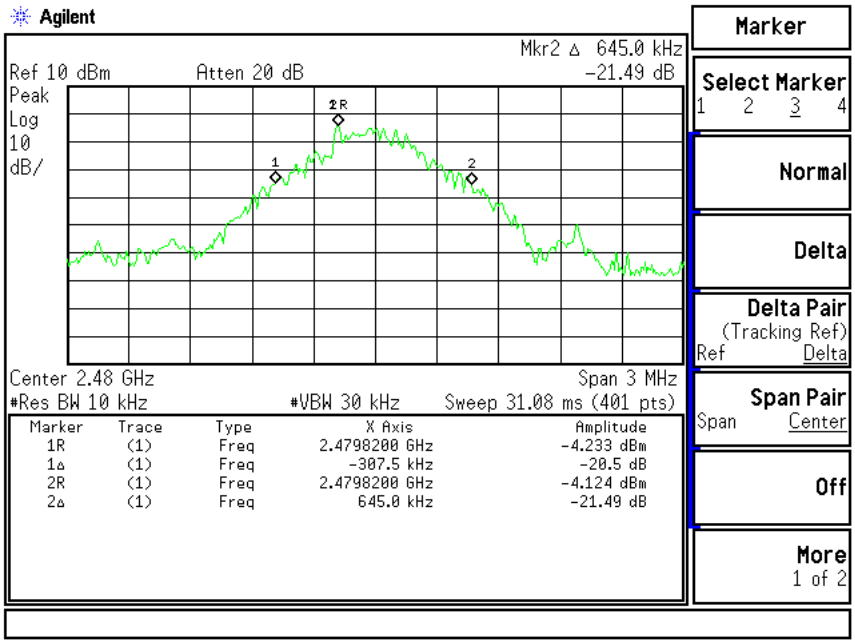
7 List of Tables

8 List of Photographs

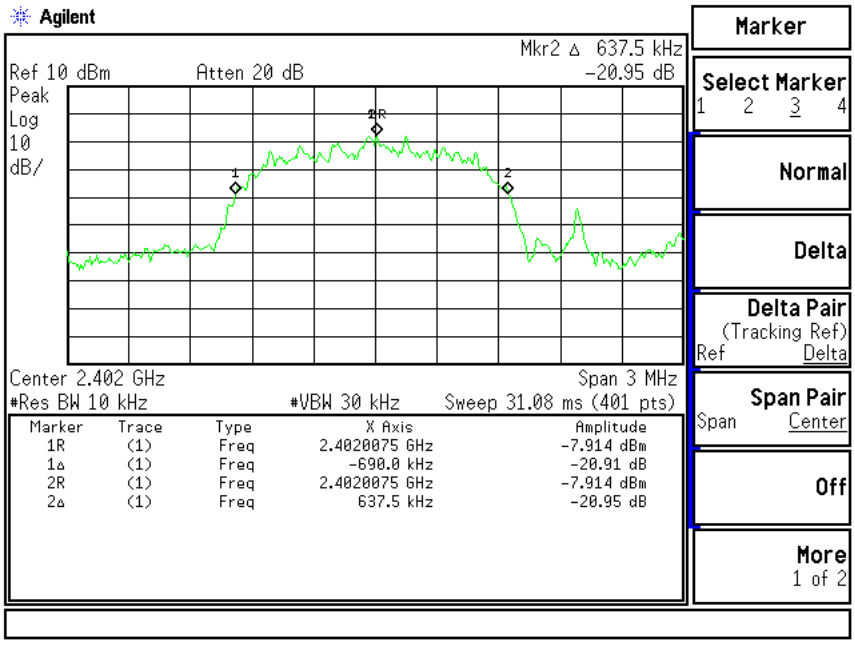
20dB Bandwidth (BR mode)

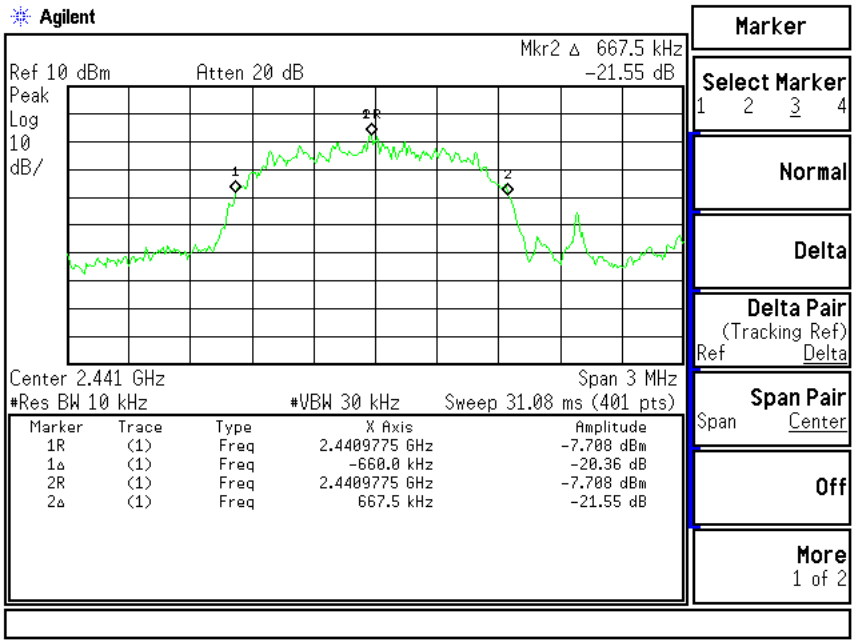


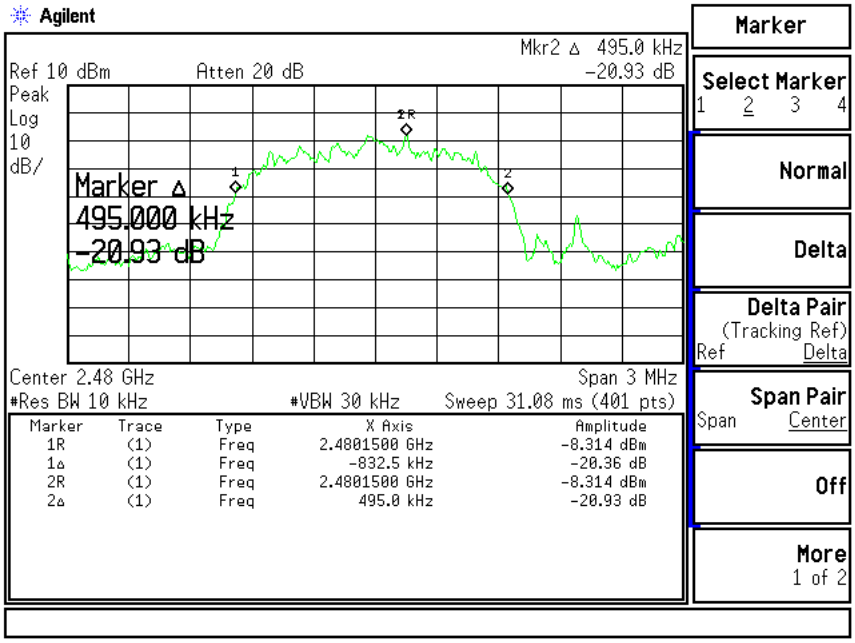




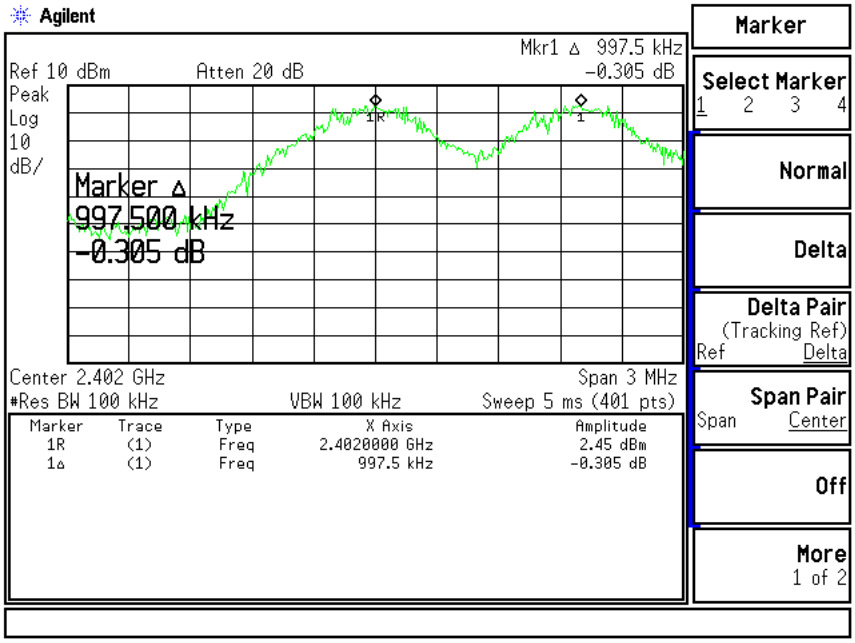
20dB Bandwidth (EDR mode)

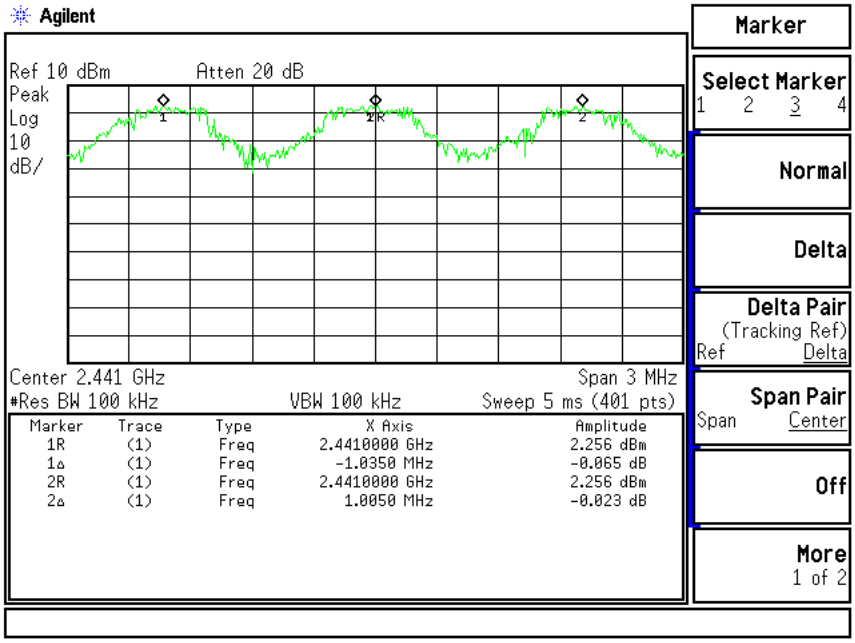


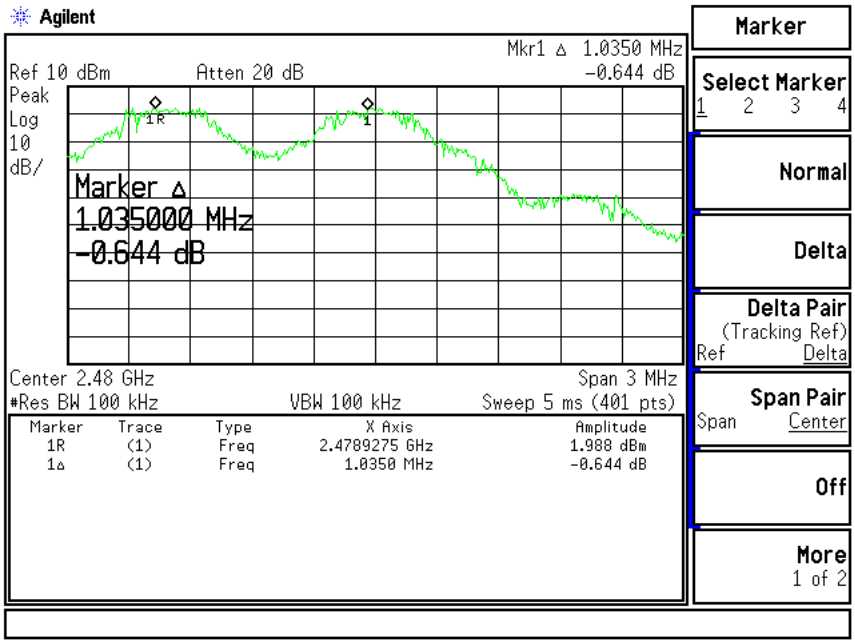

Agilent
Mkr2 Δ 667.5 kHz
Ref 10 dBm
Atten 20 dB
-21.55 dB
Peak
Log
10
dB/
Center 2.441 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
Sweep 31.08 ms (401 pts)
Marker Trace Type X Axis Amplitude
1R (1) Freq 2.4409775 GHz -7.708 dBm
1Δ (1) Freq -660.0 kHz -20.36 dB
2R (1) Freq 2.4409775 GHz -7.708 dBm
2Δ (1) Freq 667.5 kHz -21.55 dB
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2


Agilent
Mkr2 Δ 495.0 kHz
Ref 10 dBm
Atten 20 dB
-20.93 dB
Peak
Log
10
dB/
Marker Δ
495.000 kHz
-20.93 dB
Center 2.48 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
Sweep 31.08 ms (401 pts)
Marker Trace Type X Axis Amplitude
1R (1) Freq 2.4801500 GHz -8.314 dBm
1Δ (1) Freq -832.5 kHz -20.36 dB
2R (1) Freq 2.4801500 GHz -8.314 dBm
2Δ (1) Freq 495.0 kHz -20.93 dB
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

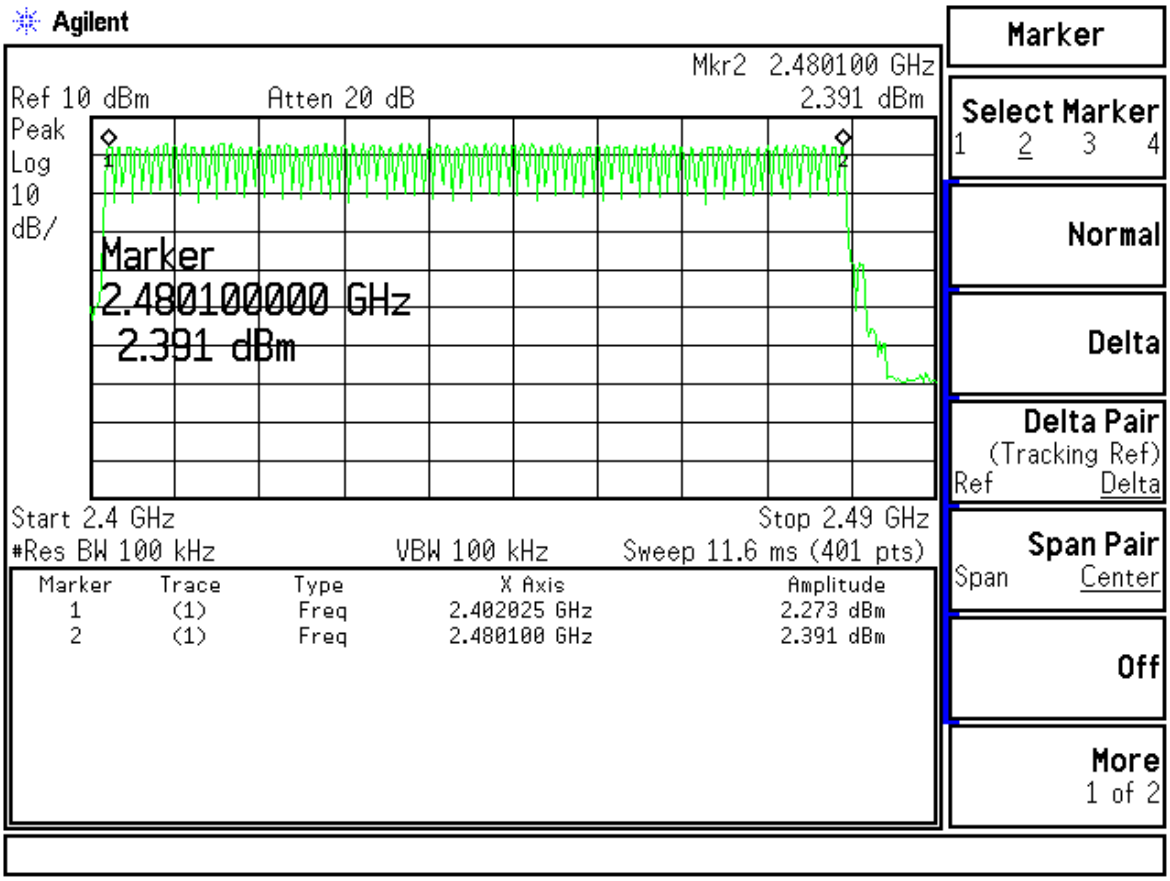
Hopping Channel Carrier Frequency Separation



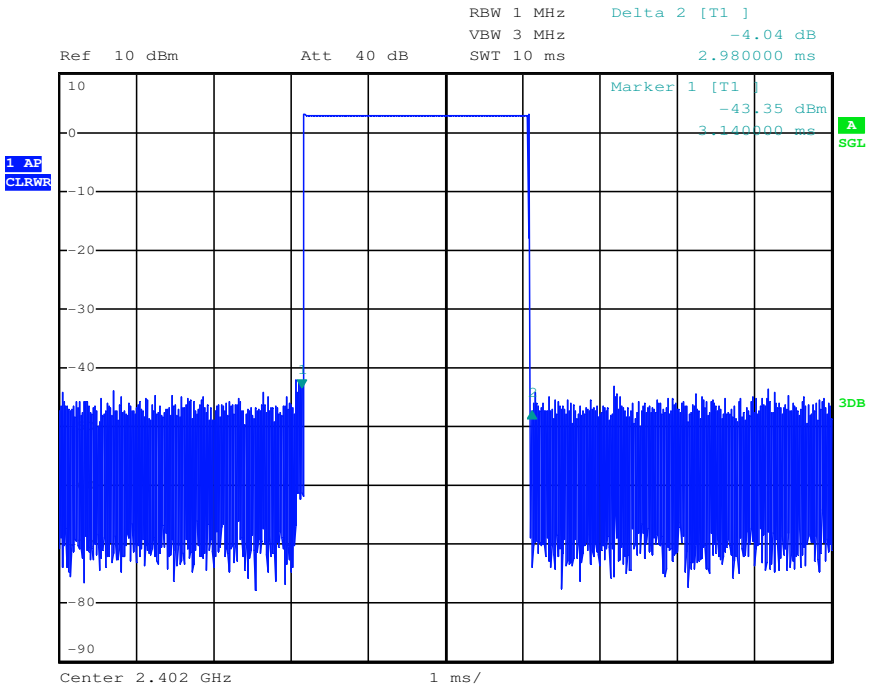


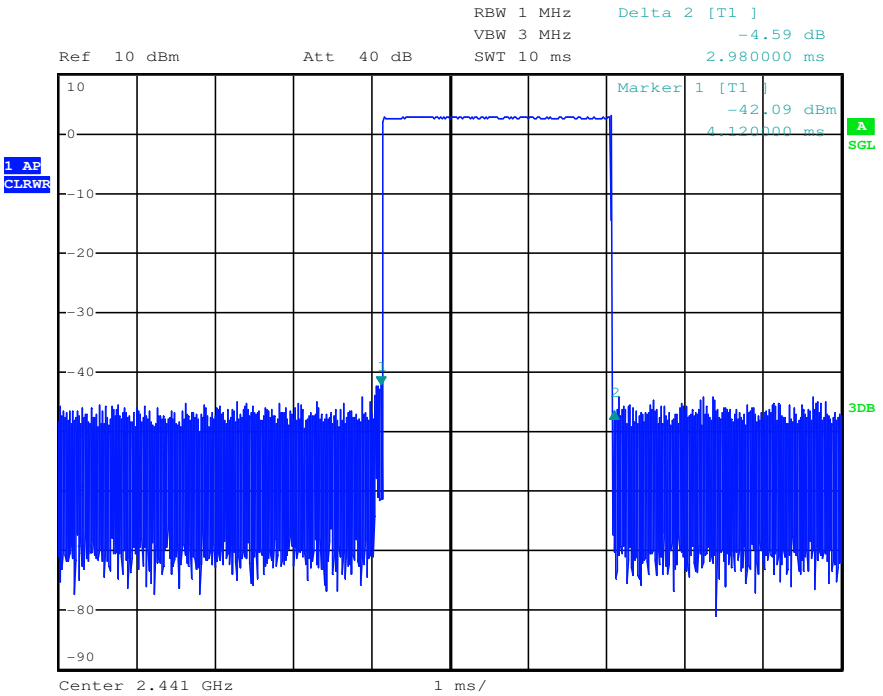

Agilent
Mkr1 Δ 1.0350 MHz
Ref 10 dBm
Atten 20 dB
-0.644 dB
Peak
Log
10
dB/
1R
1
Marker Δ
1.035000 MHz
-0.644 dB
Center 2.48 GHz
Span 3 MHz
#Res BW 100 kHz
VBW 100 kHz
Sweep 5 ms (401 pts)
Marker Trace Type X Axis Amplitude
1R (1) Freq 2.4789275 GHz 1.988 dBm
1Δ (1) Freq 1.0350 MHz -0.644 dB
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

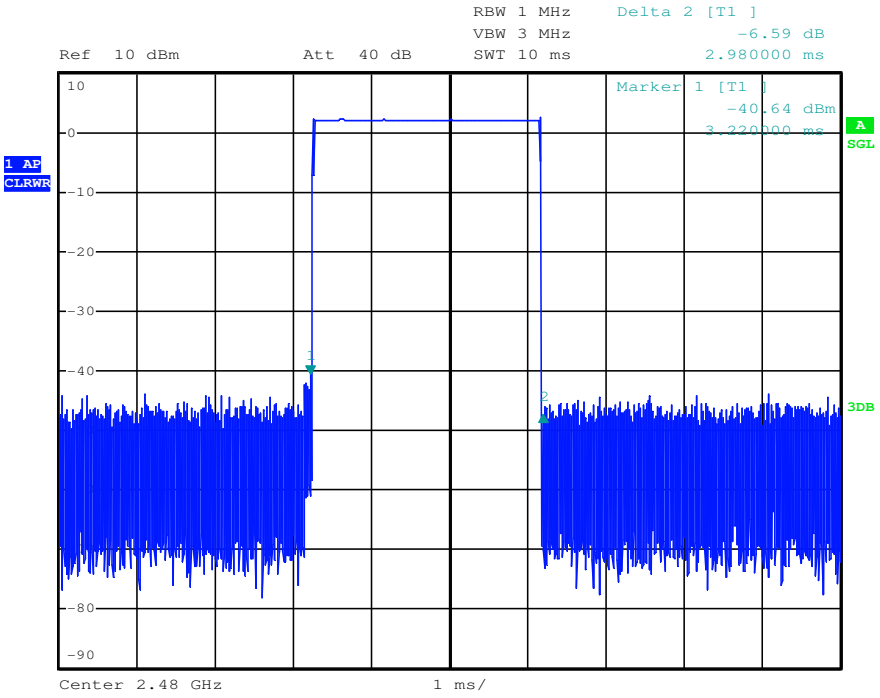
Number of Hopping Frequency Used



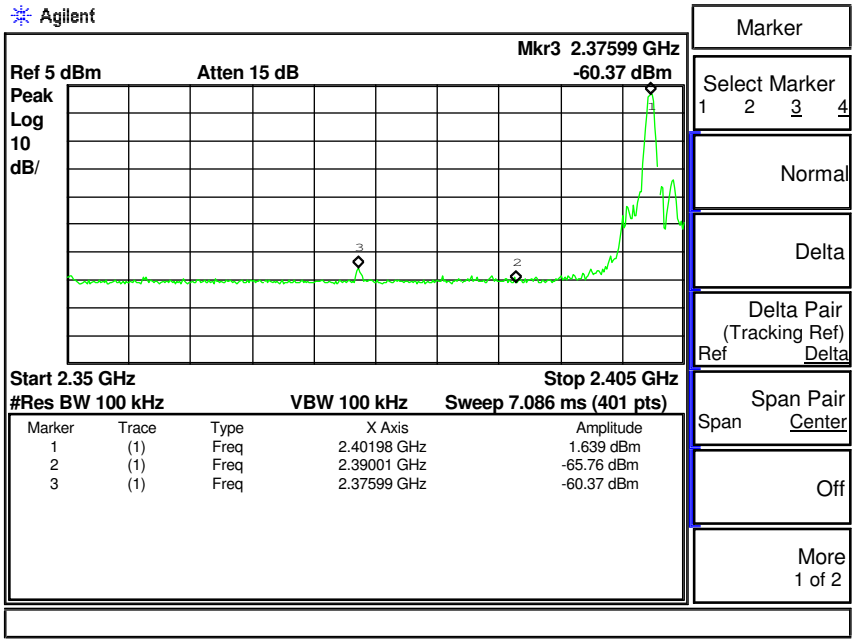
Time of Occupancy (Dwell Time)

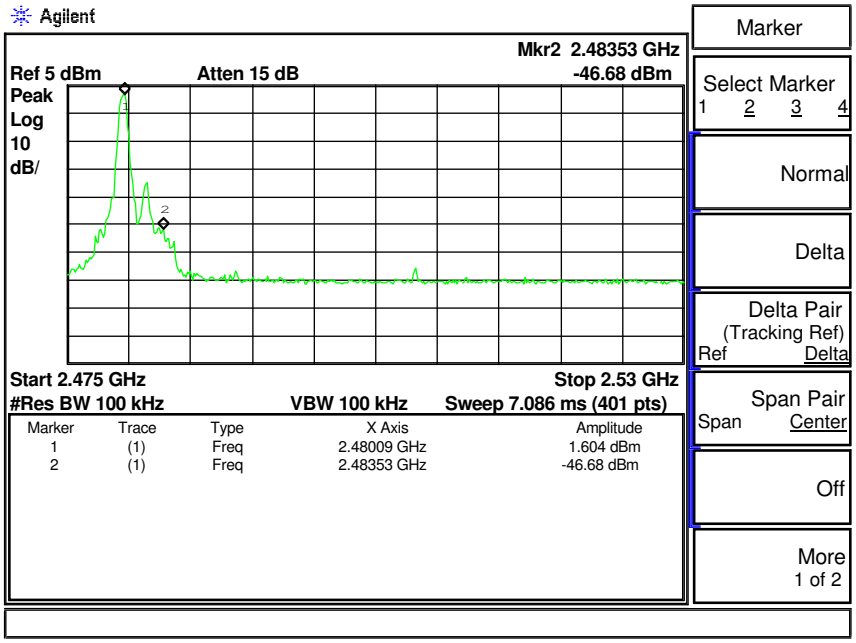




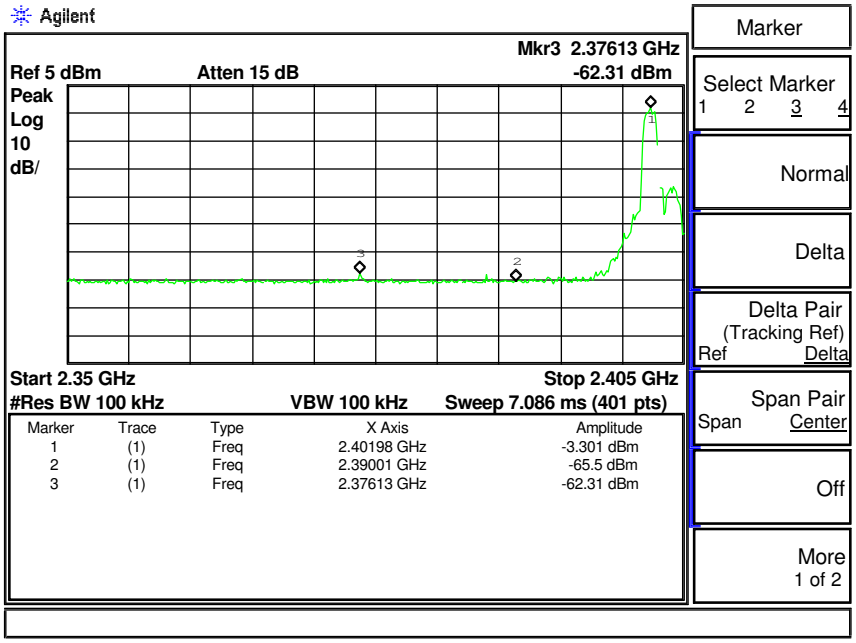

RBW 1 MHz
VBW 3 MHz
SWT 10 ms
Delta 2 [T1]
-6.59 dB
2.980000 ms
Ref 10 dBm
Att 40 dB
Marker 1 [T1]
-40.64 dBm
3.220000 ms
1 AP
CLRWR
A
SGL
3DB
10
0
-10
-20
-30
-40
-80
-90
Center 2.48 GHz
1 ms/

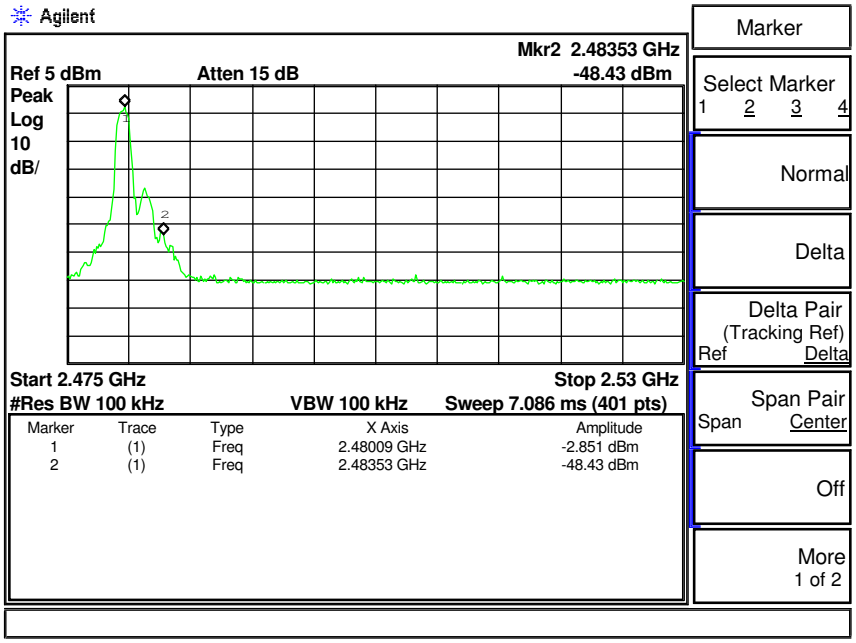
Band Edge Emission (BR mode)



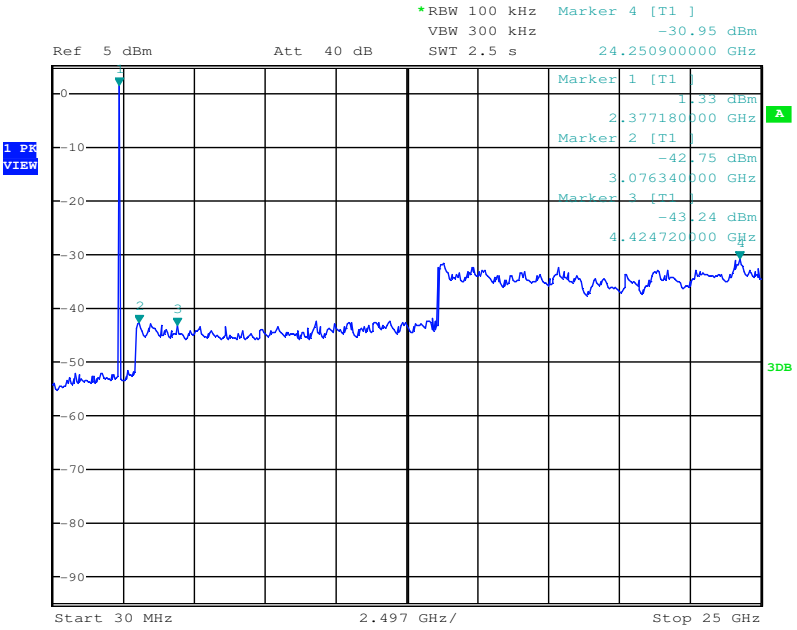


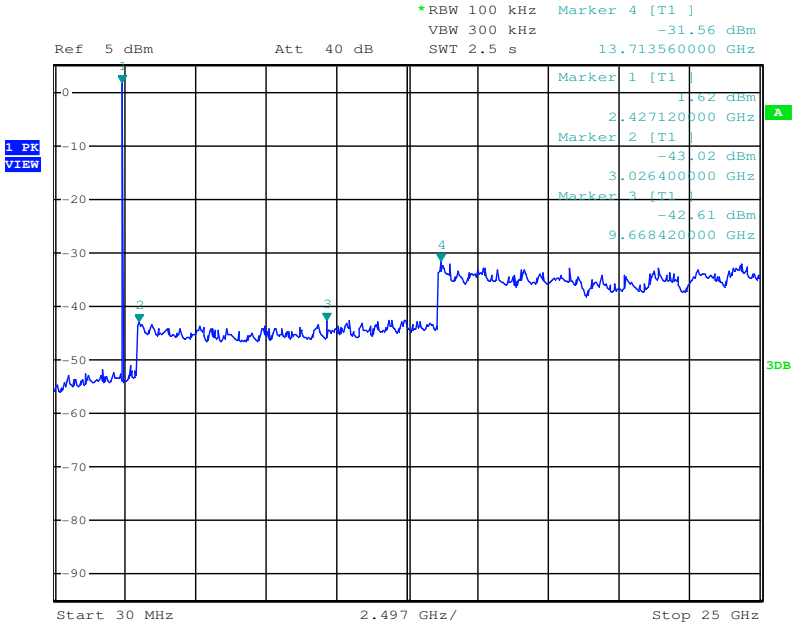
Band Edge Emission (EDR mode)

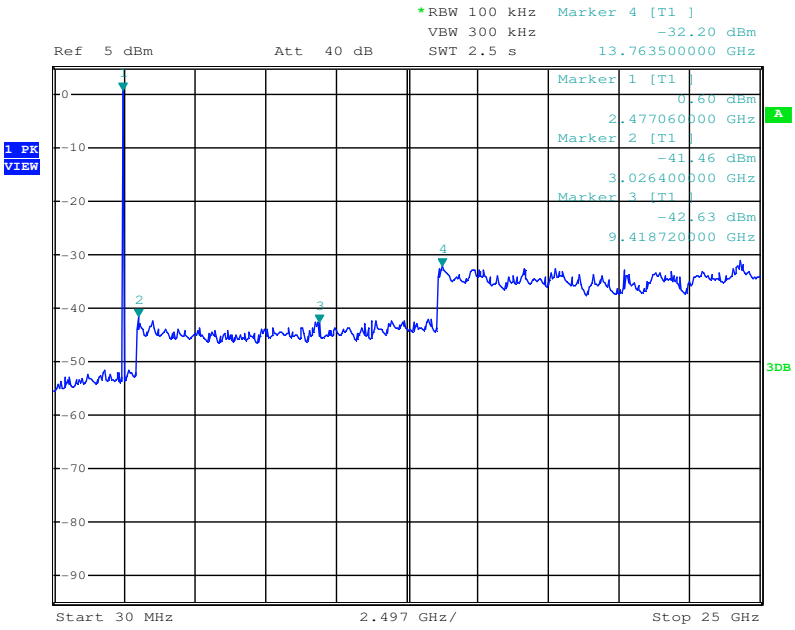




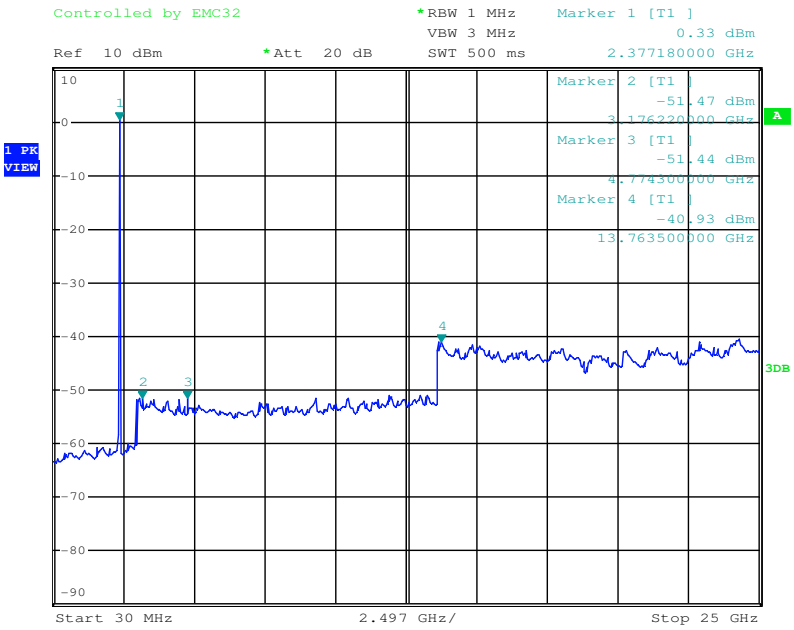
Out-Of-Band Emission (BR mode)

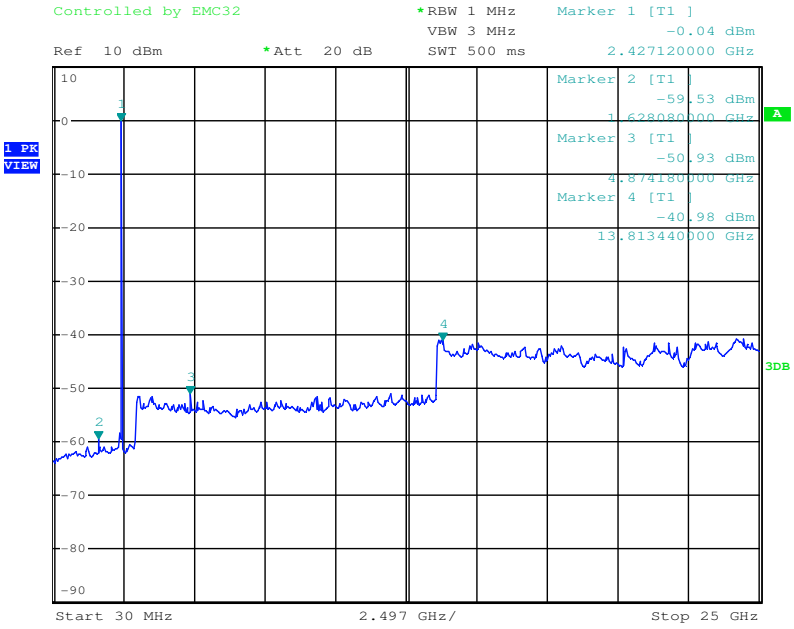


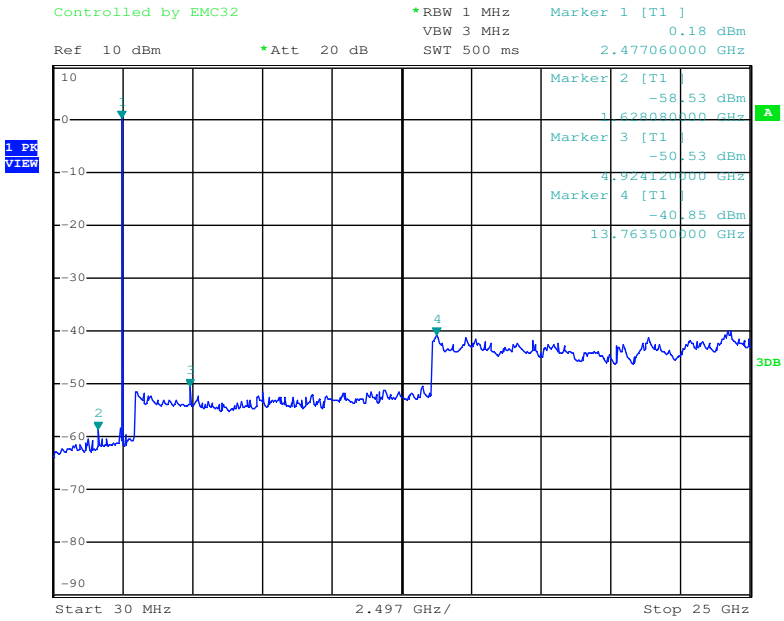



*RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
Marker 4 [T1]
-32.20 dBm
13.763500000 GHz
Ref 5 dBm
Att 40 dB
Marker 1 [T1]
0.60 dBm
2.477060000 GHz
Marker 2 [T1]
-41.46 dBm
3.026400000 GHz
Marker 3 [T1]
-42.63 dBm
9.418720000 GHz
1 PK
VIEW
A
3DB
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 30 MHz
2.497 GHz/
Stop 25 GHz

Out-Of-Band Emission (EDR mode)






Controlled by EMC32
*RBW 1 MHz
VBW 3 MHz
SWT 500 ms
Marker 1 [T1]
0.18 dBm
2.477060000 GHz
Ref 10 dBm
*Att 20 dB
Marker 2 [T1]
-58.53 dBm
1.628080000 GHz
Marker 3 [T1]
-50.53 dBm
4.924120000 GHz
Marker 4 [T1]
-40.85 dBm
13.763500000 GHz
1 PK VIEW
A
3DB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 30 MHz
2.497 GHz/
Stop 25 GHz