FCC RF
TEST REPORT

Test Laboratory:
SK Tech Co., Ltd.
802-2, Wolmoon-ri, Wabu-up,
Namyangju-si, Kyunggi-do
472-905 South Korea
TEL: +82-31-576-2204
FAX: +82-31-576-2205

Test Report Number: SKT-RFC-140003

Date of issue: March 20, 2014

Applicant:	**G.I.T Co., Ltd.** GIT BLDG., 38-5 Garakbon-Dong, Songpa-Gu, Seoul, 138-801 Korea
Manufacturer:	**G.I.T Co., Ltd.** GIT BLDG., 38-5 Garakbon-Dong, Songpa-Gu, Seoul, 138-801 Korea
Product:	Scan Tool
Model:	**GDS Trigger** (please see P5 for all the model numbers)
FCC ID:	TMGG1JDDMN001
File number:	SKTEU14-0181
EUT received:	February 20, 2014
Applied standards:	ANSI C63.10-2009 and ANSI C63.4-2009
Rule parts:	FCC Part 15 Subpart C - Intentional radiators
Equipment Class:	**DSS - Part 15 Spread Spectrum Transmitter**

Remarks to the standards: None

The above equipment has been tested by SK Tech Co., Ltd., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product or system, which was tested.

Jungtae Kim **/ Testing Engineer**

Jongsoo Yoon **/ Technical Manager**

Revision History of Report

Rev.	Revisions	Effect page	Reviewed by	Date
-	Initial issue	All	Jongsoo Yoon	March 20, 2014

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1 Summary of test results

Requirement	CFR 47 Section	Result
Antenna Requirement	15.203, 15.247(b)(4)	Meets the requirements
Maximum Peak Output Power	15.247(b)(1), (4)	Meets the requirements
Carrier Frequency Separation	15.247(a)(1)	Meets the requirements
20dB Channel Bandwidth	15.247(a)(1)	Meets the requirements
Number of Hopping Channels	15.247(a)(iii), 15.247(b)(1)	Meets the requirements
Time of Occupancy (Dwell Time)	15.247(a)(iii)	Meets the requirements
Spurious Emission, Band Edge, and Restricted bands	15.247(d), 15.205(a), 15.209(a)	Meets the requirements
AC power line Conducted emissions	15.207(a)	N/A

** The product is powered from a DC 12 V or 24 V lead-acid battery in a vehicle.

2 Description of equipment under test (EUT)

Product:	Scan Tool
Model:	**GDS Trigger**
Serial number:	None (prototype)

Model differences:

Model name	Difference	Tested (checked)
GDS Trigger	Original (basic model that was fully tested)	☒

Note: *All the differences were compared with the tested sample.*

Technical data:

Power source	12 V/ 24 V lead-acid battery installed in vehicles
Local Oscillator or X-Tal	25 MHz, 26 MHz
Transmit Frequency	2402 MHz to 2480 MHz (79 channels)
Antenna Type	Integral chip antenna, peak gain: 1.99 dBi
Type of Modulation	GFSK
RF Output power	-1.66 dBm (measured conducted RF power)

Note:

I/O port	Type	Q'ty	Remark

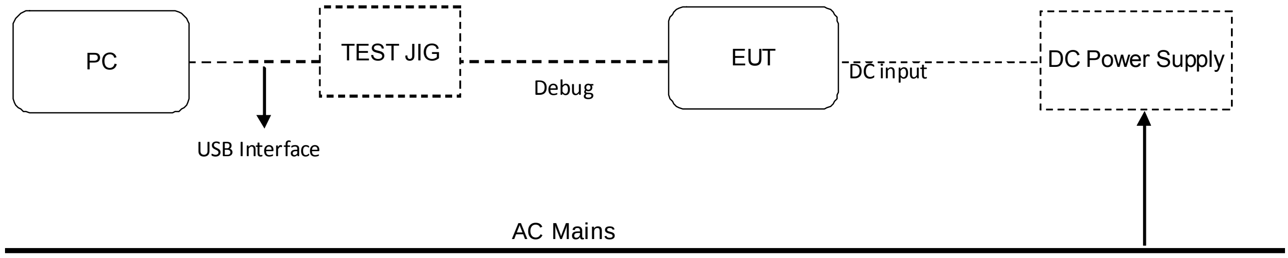
Equipment Modifications

none

3 Test and measurement conditions

3.1. Test configuration (arrangement of EUT)

The measurements were taken in continuous transmitting mode using the TEST MODE. For controlling the EUT as TEST MODE, the test program and the cable assembly were provided by the applicant.



3.2. Description of support units (accessory equipment)

The following support units or accessories were used to form a representative test configuration during the tests.

#	Equipment	Manufacturer	Model No.	Serial No.
1	PC	DELL INC.	7XH86BX	17261795085
2	TEST JIG	-	-	-

Note: *1) For control of the RF module via USB interface at the Debug port(SPI) in the EUT.*
2) For radiated spurious emission measurements, the measurements were performed without PC after setting the radio module to TEST MODE.
3) If not otherwise stated, for modulating the transmitter, a pseudo random bit sequence with each pattern type DH5 for GFSK was used. The power setting value of 48 was used as the applicant provided. BC4 (Hardware ID 0x26) firmware version 6705

3.3. Interconnection and I/O cables

The following support units or accessories were used to form a representative test configuration during the tests.

#	Start		End		Cable	
	Name	I/O port	Name	I/O port	length (m)	shielded (Y/N)
1	EUT	Debug	TEST JIG	RJ-45	1.0	N
2	TEST JIG	USB	PC	USB	2.0	N

Note: *1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3.4. Measurement Uncertainty (*U*)

Measurement Item	Combined Standard Uncertainty *Uc*	Expanded Uncertainty $U = k \times Uc$ (k = 2)
Conducted RF power	±1.49 dB	±2.98 dB
Radiated disturbance	±2.30 dB	±4.60 dB
Conducted disturbance	±1.96 dB	±3.92 dB

3.5. Test date

Date Tested	March 3, 2014 – March 13, 2014

4 Facilities and accreditations

4.1. Facilities

All of the measurements described in this report were performed at SK Tech Co., Ltd
Site I: 88, Geulgaeul-ro 81beon-gil, Wabu-up, Namyangju-si, Kyunggi-do, Korea
Site II: 124-8, Geulgaeul-ro, Wabu-up, Namyangju-si, Kyunggi-do, Korea

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-4. The sites comply with the Normalized Site Attenuation requirements given in ANSI C63.4, and site VSWR requirements specified in CISPR 16-1-4. The measuring apparatus and ancillary equipment conform to CISPR 16-1 series.

4.2. Accreditations

The laboratory has been also notified to FCC by RRA as a Conformity Assessment Body, and designated to perform compliance testing on equipment subject to Declaration of Conformity (DOC) and Certification under Parts 15 and 18 of the FCC Rules.

Designation No.	KR0007

4.3. List of test and measurement instruments

No	Description	Manufacturer	Model	Serial No.	Cal. due	Use
1	Spectrum Analyzer	Agilent	E4405B	US40520856	2015.03.06	
2	Spectrum Analyzer	Agilent	E4440A	MY46186322	2015.03.07	☒
3	EMC Spectrum Analyzer	Agilent	E7405A	US40240203	2014.07.08	
4	EMI Test Receiver	Rohde&Schwarz	ESPI7	101206	2014.07.08	☒
5	EMI Test Receiver	Rohde&Schwarz	ESHS10	835871/002	2014.07.08	
6	Artificial Mains Network	Rohde&Schwarz	ESH2-Z5	834549/011	2014.07.08	
7	Pre-amplifier	HP	8447F	3113A05153	2014.07.08	☒
8	Pre-amplifier	MITEQ	AFS44	1116321	2014.12.06	
9	Pre-amplifier	MITEQ	AFS44	1116322	2015.03.06	☒
10	Power Meter	Agilent	E4417A	MY45100426	2014.07.09	
11	Power Meter	Agilent	E4418B	US39402176	2014.07.09	
12	Power Sensor	Agilent	E9327A	MY44420696	2014.07.09	
13	Power Sensor	Agilent	8485A	3318A13916	2014.07.09	
14	Attenuator (10dB)	HP	8491B	38072	2014.07.08	☒
15	High Pass Filter	Wainwright	WHKX3.0/18G	8	2014.07.08	☒
16	VHF Precision Dipole Antenna (TX/RX)	Schwarzbeck	VHAP	1014 / 1015	2014.10.25	
17	UHF Precision Dipole Antenna (TX/RX)	Schwarzbeck	UHAP	989 / 990	2014.10.25	
18	Loop Antenna	Schwarzbeck	HFH2-Z2	863048/019	2015.12.04	☒
19	TRILOG Broadband Antenna	Schwarzbeck	VULB9168	189	2014.05.21	☒
20	Horn Antenna	AH Systems	SAS-200/571	304	N/A	
21	Horn Antenna	EMCO	3115	00040723	2014.03.26	☒
22	Horn Antenna	EMCO	3115	00056768	2014.09.05	
23	Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170318	2015.09.06	☒
24	Vector Signal Generator	Agilent	E4438C	MY42080359	2014.07.09	
25	PSG analog signal generator	Agilent	E8257D-520	MY45141255	2014.07.09	
26	DC Power Supply	HP	6622A	3348A03223	2014.07.09	☒
27	DC Power Supply	TOYOTECH	DP30-05A	-	N/A	☒
28	Hygro/Thermo Graph	SATO	PC-5000TRH-II	-	2014.07.12	☒
29	Temperature/Humidity Chamber	All Three	ATM-50M	20030425	2015.03.06	

5 Test and measurements

5.1. Antenna requirement

5.1.1 Regulation

According to §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.
And according to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.1.2 Result: PASS

The transmitter has the internal chip antenna. The directional gain of the antenna is 1.99 dBi.

5.2. Maximum peak output power

5.2.1 Regulation

According to §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 §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2.2 Test Procedure

1. Connect the antenna port of the EUT to RF input on the spectrum analyzer via a low loss cable and attenuator.
2. The measurements were taken in TEST MODE provided by the applicant for controlling the EUT.
3. Set the spectrum analyzer as follows:
   Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
   RBW > the 20 dB bandwidth of the emission being measured
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold
4. Measure the highest amplitude appearing on spectral display and record the level to calculate results.
5. Repeat above procedures until all frequencies measured were complete.

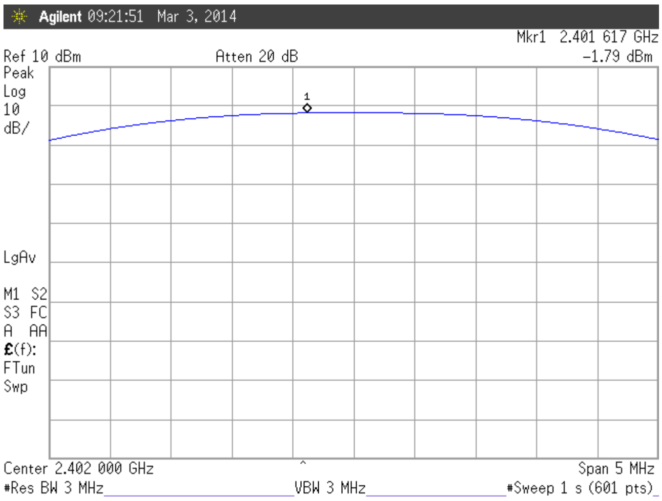
5.2.3 Test Results: PASS

Table 1: Measured values of the Maximum Peak Conducted Output Power

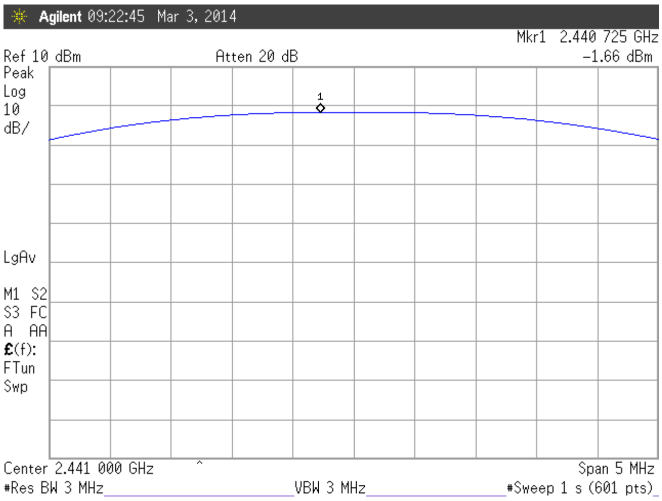
Modulation	Operating Frequency	Resolution Bandwidth	Measured value		Limit
			dBm	W	
Basic (GFSK)	2402 MHz	3 MHz	-1.79	0.000 66	1 W (the number of the non-overlapping hopping channels is equal to or greater than 75)
	2441 MHz	3 MHz	-1.66	0.000 68	
	2480 MHz	3 MHz	-2.02	0.000 63	

Figure 1. Plot of the Maximum Peak Conducted Output Power (Conducted)

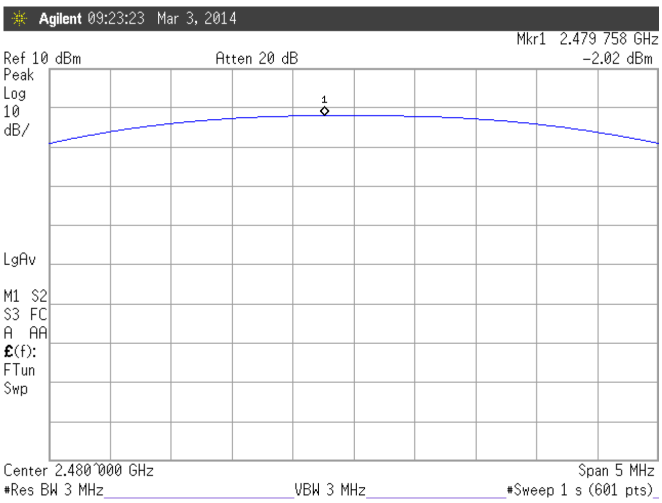
Lowest Channel (2402 MHz)



Middle Channel (2441 MHz)



Highest Channel (2480 MHz)



5.3. Carrier frequency separations and 20 dB bandwidth

5.3.1 Regulation

According to §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.

5.3.2 Test Procedure

1. Connect the antenna port of the EUT to RF input on the spectrum analyzer via a low loss cable and attenuator.
2. The measurements were taken in TEST MODE provided by the applicant for controlling the EUT.
3. Set the spectrum analyzer as follows:
   For measurements of Carrier Frequency Separation
   Span = wide enough to capture the peaks of two adjacent channels
   Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span
   Video (or Average) Bandwidth (VBW) ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold
   For measurements of 20 dB Bandwidth
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
   RBW ≥ 1% of the 20 dB bandwidth
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold
4. Measure the separation between the peaks of the adjacent channels using the marker-delta function.
5. Repeat above procedures until all frequencies measured were complete.

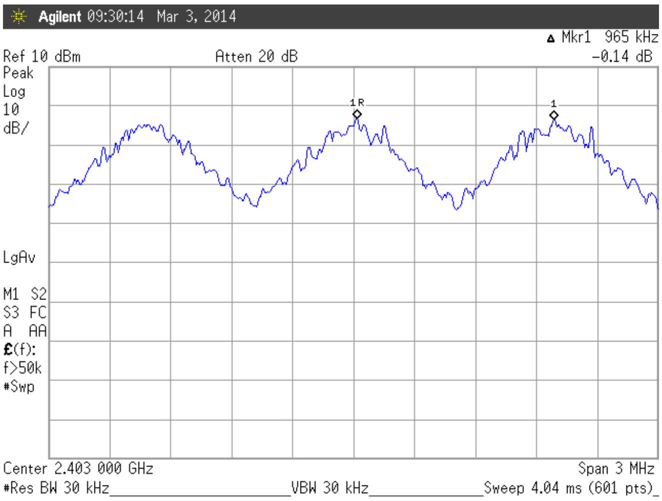
5.3.3 Test Results: PASS

Table 2: Measured values of the Carrier Frequency Separation and 20 dB Bandwidth

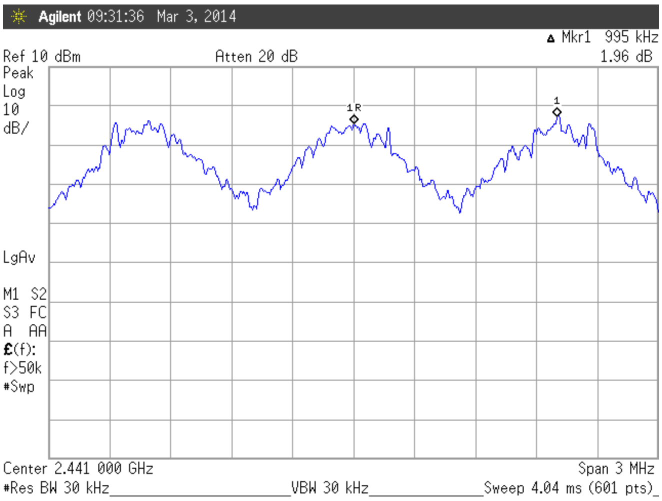
Modulation	Operating Frequency	Frequency Separation	20 dB Bandwidth	LIMIT (Frequency Separation)
Basic (GFSK)	2402 MHz	965 kHz	933 kHz	≥ 25 kHz or 20 dB bandwidth, whichever is greater
	2441 MHz	995 kHz	933 kHz	
	2480 MHz	985 kHz	942 kHz	

Figure 2. Plot of the Carrier Frequency Separation

Lowest Channel (2402 MHz)



Middle Channel (2441 MHz)



Highest Channel (2480 MHz)

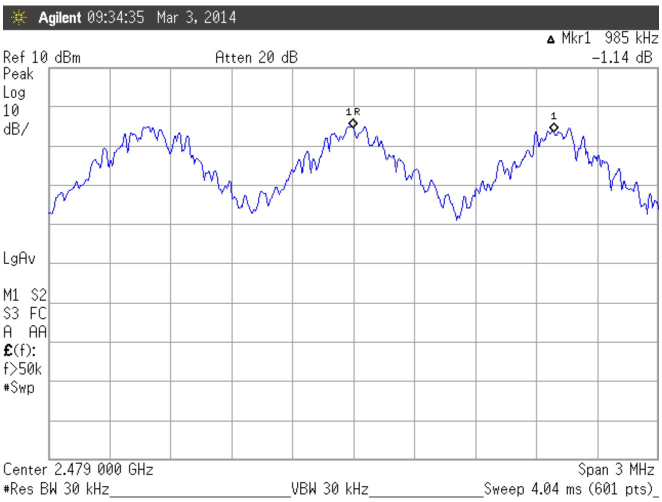
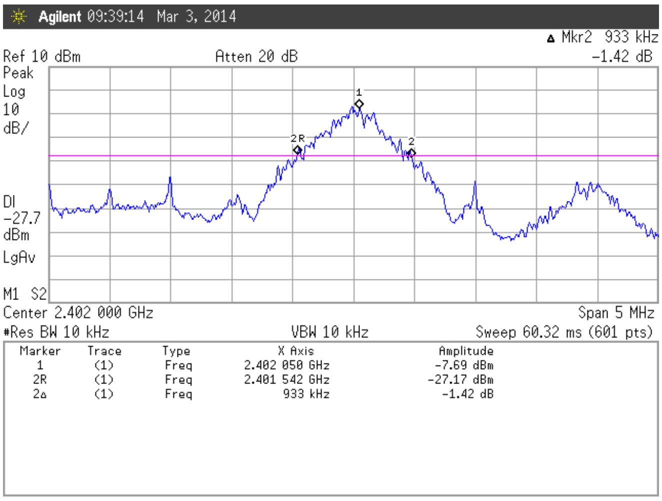
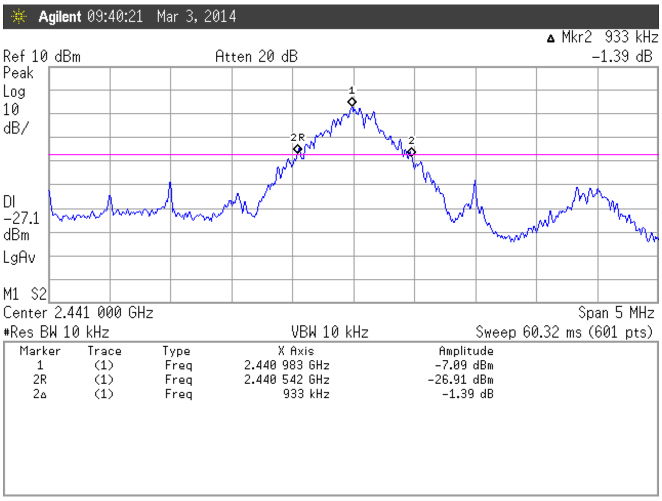


Figure 3. Plot of the 20 dB Channel Bandwidth

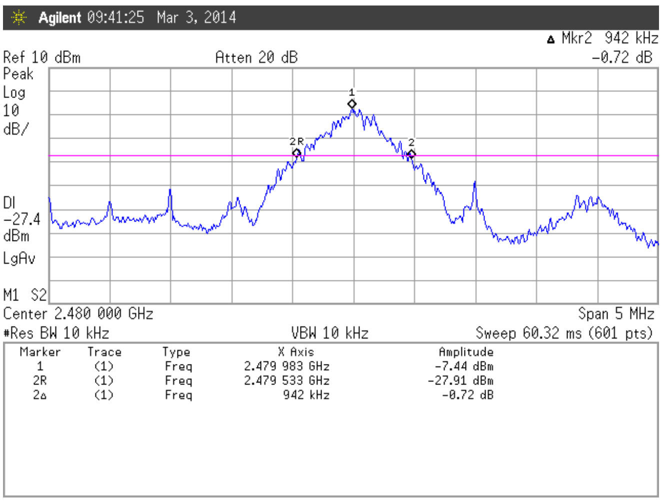
Lowest Channel (2402 MHz)



Middle Channel (2441 MHz)



Highest Channel (2480 MHz)



5.4. Number of Hopping channels

5.4.1 Regulation

According to §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 §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.

5.4.2 Test Procedure

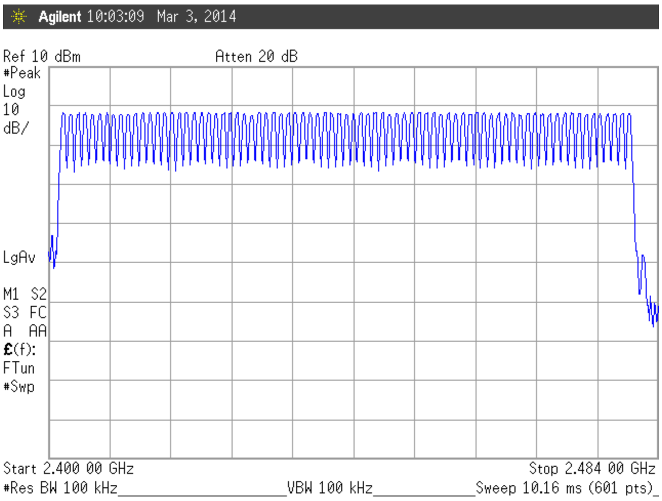
1. Connect the antenna port of the EUT to RF input on the spectrum analyzer via a low loss cable and attenuator.
2. The measurements were taken in TEST MODE provided by the applicant for controlling the EUT.
3. Set the spectrum analyzer as follows:
   Span = the frequency band of operation
   RBW ≥ 1% of the span
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold
4. Record the number of hopping channels.

5.4.3 Test Results: PASS

Table 3: Measured values of the Number of Hopping Channels

Modulation	Operating Frequency	Number of hopping channels	LIMIT
Basic (GFSK)	2402 - 2480 MHz	79	≥ 15

Figure 4. Plot of the Number of Hopping Channels



5.5. Time of occupancy (Dwell time)

5.5.1 Regulation

According to §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.

5.5.2 Test Procedure

1. Connect the antenna port of the EUT to RF input on the spectrum analyzer via a low loss cable.
2. The measurements were taken in TEST MODE provided by the applicant for controlling the EUT.
3. Set the spectrum analyzer as follows:
   Span = zero span, centered on a hopping channel
   RBW = 1 MHz
   VBW ≥ RBW
   Sweep = as necessary to capture the entire dwell time per hopping channel
   Detector function = peak
   Trace = max hold
4. Measure the dwell time using the marker-delta function.
5. Repeat above procedures until all frequencies measured were complete.
6. Repeat this test for different modes of operation (e.g., data rate, modulation format, etc.), if applicable.

5.5.3 Test Results: PASS

Table 4: Measured values of the Time of Occupancy

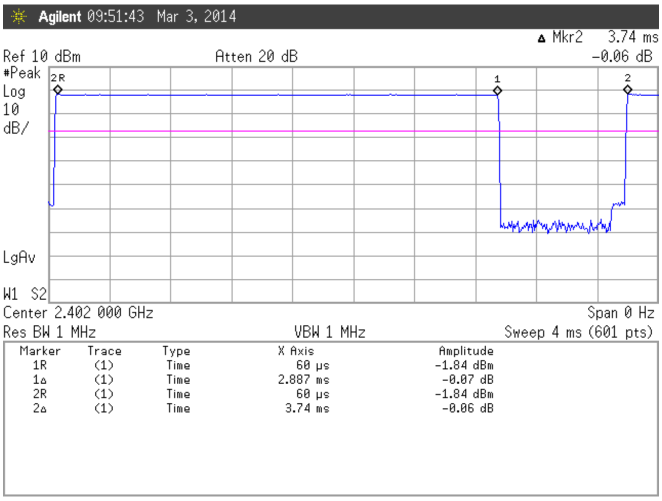
Modulation	Operating Frequency	Reading (ms)	Hopping rate (hops/s)	Number of Channels	Actual (seconds)	LIMIT (seconds)
Basic (GFSK)	2402 MHz	2.887	266.667	79	0.31	0.4
	2441 MHz	2.887	266.667	79	0.31	0.4
	2480 MHz	2.887	266.667	79	0.31	0.4

Actual = Reading × (Hopping rate / Number of channels) × Test period
Test period = 0.4 [seconds / channel] × 79 [channel] = 31.6 [seconds]

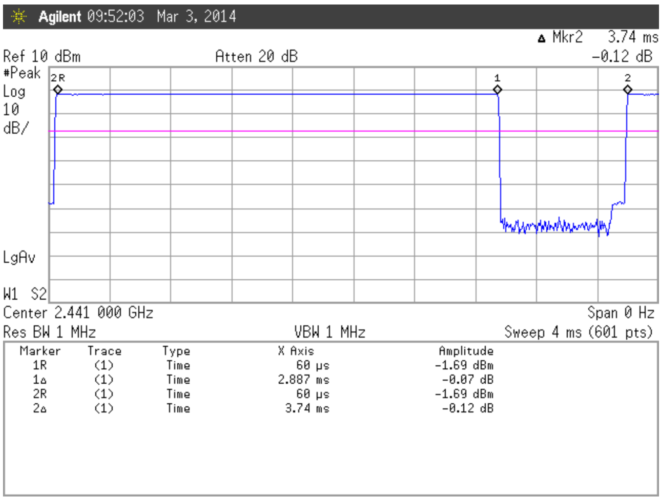
NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625μs with 79 channels. The DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

Figure 5. Plot of the Time of Occupancy

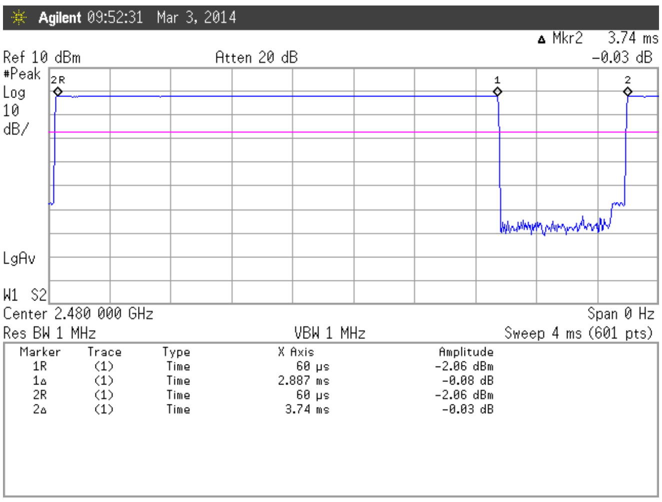
Lowest Channel (2402 MHz)



Middle Channel (2441 MHz)



Highest Channel (2480 MHz)



5.6. Spurious emissions, Band edge, and Restricted bands

5.6.1 Regulation

According to §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 Section 15.209(a) is not required. In addition, radiated emissions 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) (see Section 15.205(c)).

According to §15.209(a), for an intentional device, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Field strength (μV/m @ 3m)	Field strength (dBμV/m @ 3m)
30–88	100	40.0
88–216	150	43.5
216–960	200	46.0
Above 960	500	54.0

According to §15.109(a), for an unintentional device, except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the above table.

** The emission limits shown in the above table are based on measurement instrumentation employing a CISPR quasi-peak detector and above 1000 MHz are based on the average value of measured emissions.

5.6.2 Test Procedure

1) Band-edge measurements for RF conducted emissions

1. Set the spectrum analyzer as follows:

   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 ≥ 1 % of spectrum analyzer display span

   VBW ≥ RBW

   Sweep = auto

   Detector function = peak

   Trace = max hold

2. Allow the trace to stabilize. Set the marker on the emission at the band-edge, or on the highest modulation product outside of the band, if this level is greater than that at the band-edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.
3. 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.

2) Spurious RF Conducted Emissions:

1. Set the spectrum analyzer as follows:
   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. Typically, several plots are required to cover this entire span.
   RBW = 100 kHz
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.

3) Spurious Radiated Emissions:

1. The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions in an anechoic chamber at a distance of 3 meters for above 30 MHz, and at 1 meter / 3 meter distance for below 30 MHz.
2. The EUT was placed on the top of the 0.8-meter height, 1 × 1.5 meter non-metallic table. To find the maximum emission levels, the height of a measuring antenna was changed and the turntable was rotated 360˚.
3. The antenna polarization was also changed from vertical to horizontal. The spectrum was scanned from 9 kHz to 30 MHz using the loop antenna, from 30 to 1000 MHz using the Trilog broadband antenna, and from 1 GHz to tenth harmonic of the highest fundamental frequency using the horn antenna.
4. To obtain the final measurement data, the EUT was arranged on a turntable situated on a 4 × 4 meter at the Open Area Test Site. The EUT was tested at a distance 3 meters.
5. Each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector function with specified bandwidth.
6. The EUT is situated in three orthogonal planes (if appropriate)
7. The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT.
8. If the emission on which a radiated measurement must be made is located at the edge of the authorized band of operation, then the alternative “marker-delta” method may be employed.

4) Marker-Delta Method at the edge of the authorized band of operation:

1. Perform an in-band field strength measurement of the fundamental emission using the RBW and detector function specified in 6.3 and 6.4, 6.5, or 6.6, as applicable, and the appropriate regulatory requirements for the frequency being measured.43
2. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to approximately 1 % to 5 % of the total span, unless otherwise specified, with a video bandwidth equal to or greater than the RBW.
   Record the peak levels of the fundamental emission and the relevant band-edge emission (i.e., run several sweeps in peak hold mode). Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not an absolute field strength measurement; it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.
3. Subtract the delta measured in b) from the field strengths measured in a). The resultant field strengths (CISPR QP, average, or peak, as appropriate) are then used to determine band-edge compliance of the restricted bands, described in 5.9.
4. The above “delta” measurement technique may be used for measuring emissions that are up to two “standard” bandwidths away from the band edge, where a “standard” bandwidth is the bandwidth specified by 4.2.3.2 for the frequency being measured. For example, band-edge measurements in the restricted band that begins at 2483.5 MHz require a measurement bandwidth of at least 1 MHz.
   Therefore the “delta” technique for measuring emissions up to 2 MHz removed from the band edge may be used. Radiated emissions that are removed by more than two “standard” bandwidths shall be measured in the conventional manner.

5.6.3 Test Results: PASS

Band-edge compliance of RF conducted/radiated emissions was shown in the Figure 6 and 7.
Spurious RF conducted emissions were shown in the Figure 8.

NOTE : for conducted measurement, we took the insertion loss of the cable loss into consideration within the measuring instrument. And for radiated measurement, the results were calibrated to the field strength within the measuring instrument; Table 5 contains the correction factors at the operating frequencies such as antenna factor, cable loss, etc.

Table 5: Measured values of the Field strength of spurious emission (Radiated)

BELOW 1 GHz

Frequency	Receiver Bandwidth	Pol.	Antenna Height	Turn Table	Reading	Amp Gain	ATT	AF	CL	Actual	Limit	Margin
[MHz]	[kHz]	[V/H]	[m]	[degree]	[dB(μV)]	[dB]	[dB]	dB(1/m)	[dB]	[dB(μV/m)]	[dB(μV/m)]	[dB]
Average/Peak/Quasi-peak data, emissions below 30 MHz												
	No Radiated Spurious Emissions Found											
Quasi-peak data, emissions below 1000 MHz												
335.92	100	H	1.86	30	45.7	28.0	-	14.3	2.3	34.3	46.0	11.7
335.92	100	H	1.77	47	43.1	28.0	-	14.3	2.3	31.7	46.0	14.3

Margin (dB) = Limit – Actual

[Actual = Reading – Amp Gain + Attenuator + AF + CL]

1. H = Horizontal, V = Vertical Polarization
2. ATT = Attenuation (10dB pad and/or Insertion Loss of HPF), AF/CL = Antenna Factor and Cable Loss

NOTE: All emissions not reported were more than 20 dB below the specified limit or in the noise floor.

Measured values of the Field strength of spurious emission (Radiated) *(continued)*												
ABOVE 1 GHz												
Frequency	Receiver Bandwidth	Pol.	Antenna Height	Turn Table	Reading	Amp Gain	ATT	AF	CL	Actual	Limit	Margin
[MHz]	[kHz]	[V/H]	[m]	[degree]	[dB(μV)]	[dB]	[dB]	dB(1/m)	[dB]	[dB(μV/m)]	[dB(μV/m)]	[dB]
PEAK data, emissions above 1000 MHz												
2402.0	1000	H	1.24	196	103.86	48.46	10.23	28.15	6.50	100.28	Not Applicable	
2402.0	1000	V	1.13	223	98.90	48.46	10.23	28.15	6.50	95.32		
2386.0	1000	H	1.24	196	61.65	48.45	10.23	28.10	6.48	58.01	74.00	15.99
2386.0	1000	V	1.13	223	57.34	48.45	10.23	28.10	6.48	53.70	74.00	20.30
4804.1	1000	H	1.10	230	66.14	49.00	0.43	33.12	9.68	60.37	74.00	13.63
4804.1	1000	V	1.05	220	63.00	49.00	0.43	33.12	9.68	57.23	74.00	16.77
2441.0	1000	H	1.20	210	104.23	48.48	10.23	28.28	6.56	100.82	Not Applicable	
2441.0	1000	V	1.10	227	99.87	48.48	10.23	28.28	6.56	96.46		
4881.0	1000	H	1.07	227	66.32	49.02	0.38	33.17	9.76	60.61	74.00	13.39
4881.0	1000	V	1.13	236	63.93	49.02	0.38	33.17	9.76	58.22	74.00	15.78
2480.0	1000	H	1.17	224	102.61	48.49	10.23	28.40	6.61	99.36	Not Applicable	
2480.0	1000	V	1.07	230	99.29	48.49	10.23	28.40	6.61	96.04		
2483.6	1000	H	1.17	224	60.25	48.50	10.23	28.41	6.62	57.01	74.00	16.99
2483.6	1000	V	1.07	230	58.16	48.50	10.23	28.41	6.62	54.92	74.00	19.08
4960.0	1000	H	1.03	221	63.57	49.04	0.34	33.22	9.83	57.92	74.00	16.08
4960.0	1000	V	1.10	224	62.10	49.04	0.34	33.22	9.83	56.45	74.00	17.55
AVERAGE data, emissions above 1000 MHz												
2402.0	1000	H	1.24	196	100.91	48.46	10.23	28.15	6.50	97.33	Not Applicable	
2402.0	1000	V	1.13	223	95.96	48.46	10.23	28.15	6.50	92.38		
2386.0	1000	H	1.24	196	41.21	48.45	10.23	28.10	6.48	37.57	54.00	16.43
2386.0	1000	V	1.13	223	39.81	48.45	10.23	28.10	6.48	36.17	54.00	17.83
4804.1	1000	H	1.10	230	52.55	49.00	0.43	33.12	9.68	46.78	54.00	7.22
4804.1	1000	V	1.05	220	49.33	49.00	0.43	33.12	9.68	43.56	54.00	10.44
2441.0	1000	H	1.20	210	101.35	48.48	10.23	28.28	6.56	97.94	Not Applicable	
2441.0	1000	V	1.10	227	96.99	48.48	10.23	28.28	6.56	93.58		
4881.0	1000	H	1.07	227	52.30	49.02	0.38	33.17	9.76	46.59	54.00	7.41
4881.0	1000	V	1.13	236	49.87	49.02	0.38	33.17	9.76	44.16	54.00	9.84
2480.0	1000	H	1.17	224	99.73	48.49	10.23	28.40	6.61	96.48	Not Applicable	
2480.0	1000	V	1.07	230	96.32	48.49	10.23	28.40	6.61	93.07		
2483.6	1000	H	1.17	224	48.58	48.50	10.23	28.41	6.62	45.34	54.00	8.66
2483.6	1000	V	1.07	230	46.02	48.50	10.23	28.41	6.62	42.78	54.00	11.22
4960.0	1000	H	1.03	221	48.81	49.04	0.34	33.22	9.83	43.16	54.00	10.84
4960.0	1000	V	1.10	224	47.27	49.04	0.34	33.22	9.83	41.62	54.00	12.38

Margin (dB) = Limit – Actual

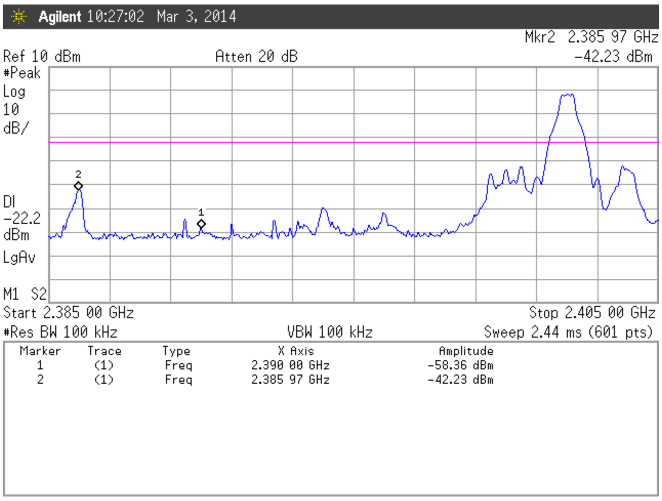
[Actual = Reading – Amp Gain + Attenuator + AF + CL]

1. H = Horizontal, V = Vertical Polarization
2. ATT = Attenuation (10dB pad and/or Insertion Loss of HPF), AF/CL = Antenna Factor and Cable Loss

NOTE: All emissions not reported were more than 20 dB below the specified limit or in the noise floor.

Figure 6. Plot of the Band Edge (Conducted)

Lowest Channel (2402 MHz)



Highest Channel (2480 MHz)

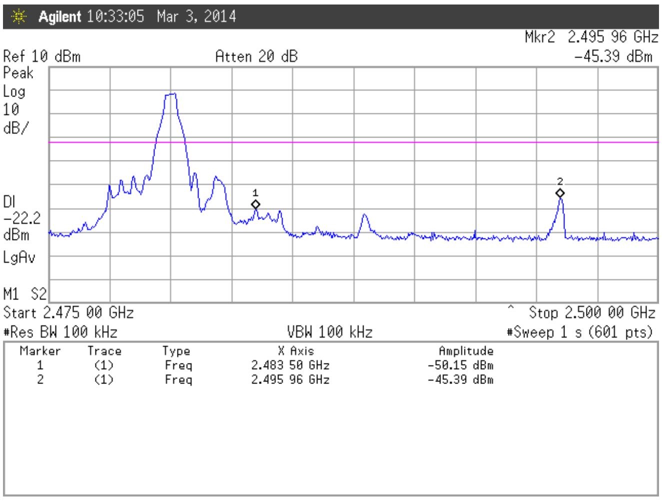
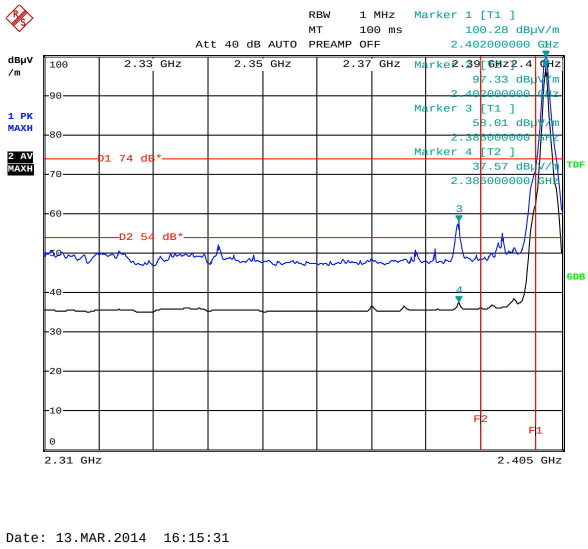
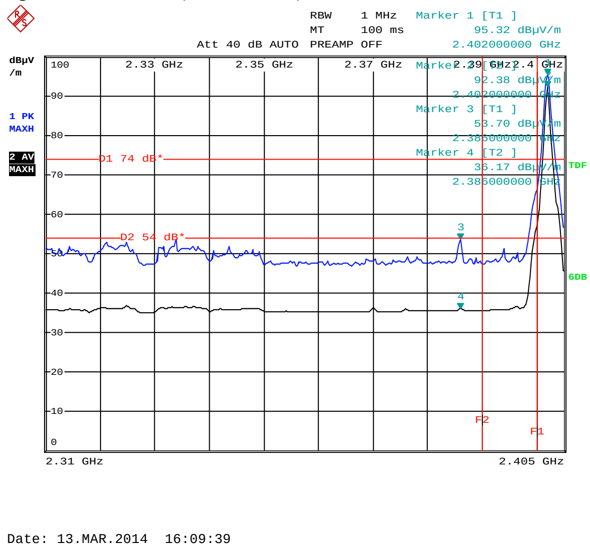


Figure 7. Plot of the Band Edge (Radiated)

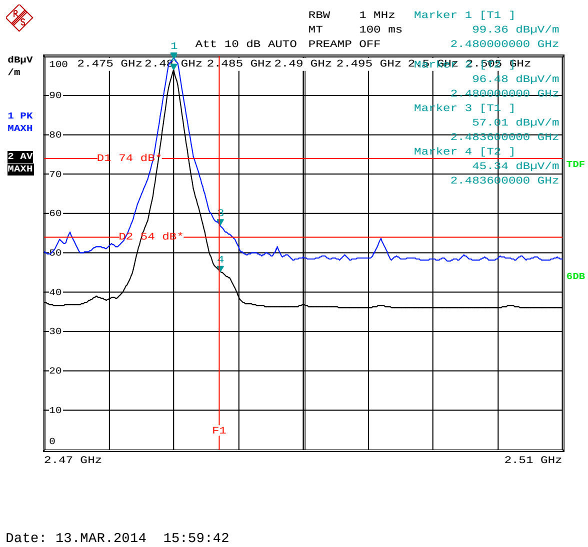
Lowest Channel (2402 MHz) - Horizontal



Highest Channel (2402 MHz) - Vertical



Lowest Channel (2480 MHz) - Horizontal



Highest Channel (2480 MHz) - Vertical

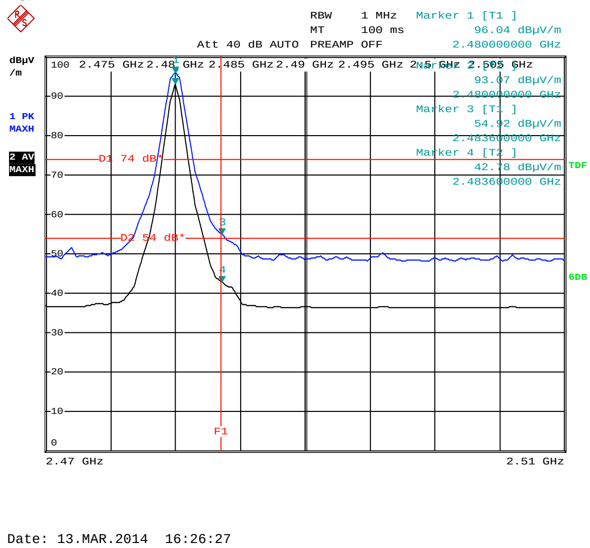
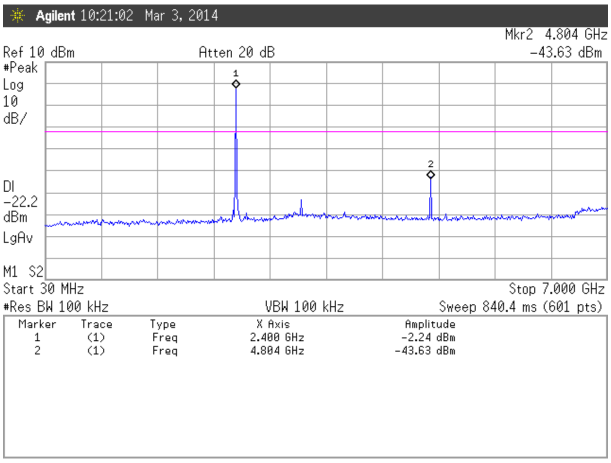
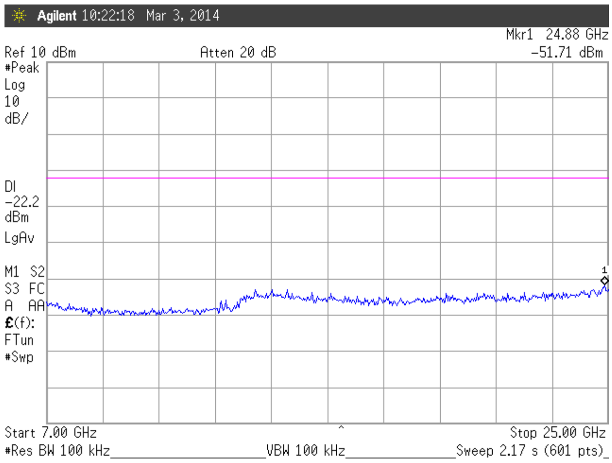


Figure 8. Spurious RF conducted emissions

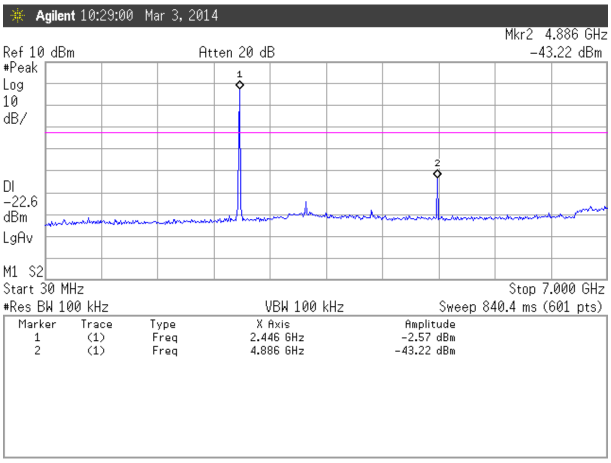
Lowest Channel(2402 MHz): 30 MHz ~ 7 GHz



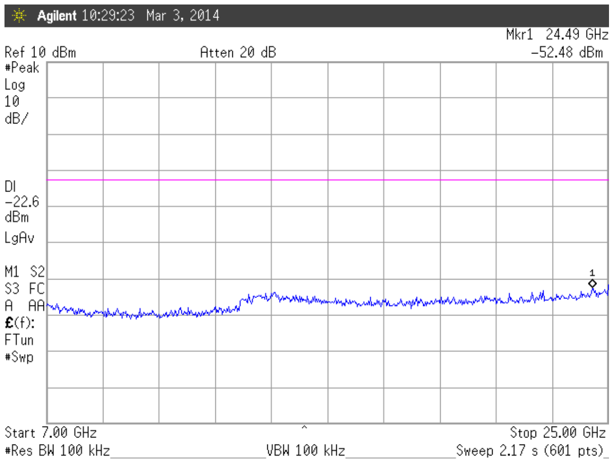
Lowest Channel (2402 MHz): 7 GHz ~ 25 GHz



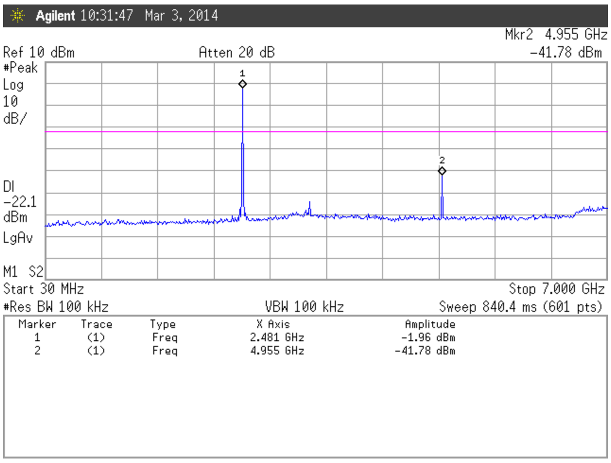
Middle Channel (2441 MHz): 30 MHz ~ 7 GHz



Middle Channel (2441 MHz): 7 GHz ~ 25 GHz



Highest Channel(2480 MHz): 30 MHz ~ 7 GHz



Highest Channel(2480 MHz): 7 GHz ~ 25 GHz