TEST REPORT

Report Number: HK12051939-1

Application
for
Original Grant of 47 CFR Part 15 Certification
Single New of RSS-210 Issue 8 Equipment Certification

2.4GHz Digital Modulation Transceiver (Zigbee IP Bridge)

FCC ID: EW780-8913-00

IC: 1135B-80891300

Prepared and Checked by:

Signed on File
Koo Wai Ip
Senior Lead Engineer

Approved by:

Nip Ming Fung, Melvin
Assistant Manager
August 16, 2012

Intertek Testing Services Hong Kong Ltd.
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

GENERAL INFORMATION

Applicant Name:	VTech Telecommunications Ltd.
Applicant Address:	23/F., Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, N.T., Hong Kong.
FCC Specification Standard:	FCC Part 15, October 1, 2010 Edition
FCC ID:	EW780-8913-00
FCC Model(s):	Zigbee IP Bridge
IC Specification Standard:	RSS-210 Issue 8, December 2010 RSS-Gen Issue 3, December 2010
IC:	1135B-80891300
IC Model(s):	Zigbee IP Bridge
Type of EUT:	Digital Transmission System
Description of EUT:	2.4GHz Digital Modulation Transceiver (Zigbee IP Bridge)
Serial Number:	N/A
Sample Receipt Date:	May 31, 2012
Date of Test:	June 12 - August 13, 2012
Report Date:	August 16, 2012
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

Table of Contents

EXHIBIT 1
SUMMARY OF TEST RESULTS & STATEMENT OF COMPLIANCE

1.0 Summary of Test Results & Statement of Compliance

1.1 Summary of Test Results

Test Items	FCC Part 15 Section	RSS-210/ RSS-Gen# Section	Results	Details see section
Antenna Requirement	15.203	7.1.2#	Pass	2.1
Max. Conducted Output Power	15.247(b)(3)&(4)	A8.4(4)	Pass	4.1
Min. 6dB RF Bandwidth	15.247(a)(2)	A8.2(a)	Pass	4.2
99% Occupied Bandwidth	--	4.6.1#	NA	4.2
Max. Power Density	15.247(e)	A8.2(b)	Pass	4.3
Out of Band Antenna Conducted Emission	15.247(d)	A8.5	Pass	4.4
Radiated Emission in Restricted Bands and Spurious Emissions	15.247(d), 15.209 & 15.109	A8.5	Pass	4.6
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4#	Pass	4.7
Radio Frequency Radiation Exposure	15.247(i)	--	Pass	4.8

Note: Pursuant to FCC Part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

1.2 Statement of Compliance

The equipment under test is found to be complying with the following standards:

FCC Part 15, October 1, 2010 Edition
RSS-210 Issue 8, December 2010
RSS-Gen Issue 3, December 2010

EXHIBIT 2
GENERAL DESCRIPTION

2.0 General Description

2.1 Product Description

The Zigbee IP Bridge is a 2.4GHz Digital Modulation Transceiver (Zigbee IP Bridge). It operates at frequency range of 2405MHz to 2480MHz. It is powered by an adaptor 100-240VAC to 5VDC 600mA adaptor.

The antenna used in the EUT is integral, and the test sample is a prototype.

The circuit description is saved with filename: descri.pdf.

2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). Preliminary radiated scans and all radiated measurements were performed in Open Area Test Sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. Antenna port conducted measurements were performed according to ANSI C63.10 (2009) and KDB Publication No. 558074 D01 v01(01/18/2012). All other measurements were made in accordance with the procedures in 47 CFR Part 2.

2.3 Test Facility

The open area test site, AC Power Line conducted measurement facility, and antenna port conducted measurement facility used to collect the radiated data, AC Power Line conducted data, and conductive data are at Roof Top, 2nd Floor, and 5th Floor respectively of Intertek Testing Services Hong Kong Ltd., which is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC and the Industry Canada.

EXHIBIT 3
SYSTEM TEST CONFIGURATION

3.0 System Test Configuration

3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

The EUT was powered by a 100-240VAC to 5VDC 600mA adaptor.

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the EUT attached to peripherals, they were connected and operational (as typical as possible).

The signal was maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization were varied during the search for maximum signal level. The antenna height was varied from 1 to 4 meters. Radiated emissions were taken at three meters unless the signal level was too low for measurement at that distance. If necessary, a pre-amplifier was used and/or the test was conducted at a closer distance.

For any intentional radiator powered by AC power line, measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

For transmitter radiated measurement, the spectrum analyzer resolution bandwidth was 100 kHz for frequencies below 1000 MHz. The resolution bandwidth was 1 MHz for frequencies above 1000 MHz.

Radiated emission measurement for transmitter were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.209. Digital circuitry used to control additional functions other than the operation of the transmitter are subject to FCC Part 15 Section 15.109 Limits.

3.1 Justification - Cont'd

Detector function for radiated emissions was in peak mode. Average readings, when required, were taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in section 4.6.3.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF.* The effective period (Teff) was referred to Exhibit 4.6.3. With the resolution bandwidth 1MHz and spectrum analyzer IF bandwidth 3dB, the pulse desensitization factor was 0dB.

For AC line conducted emission test, the EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50ohm coupling impedance for measuring instrument. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

Different data rates were tested. Worst case was reported only.

All relevant operation modes have been tested, and the worst case data was included in this report.

3.2 EUT Exercising Software

The EUT exercise program (if any) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

3.3 Details of EUT and Description of Accessories

Details of EUT:

An AC adaptor (provided with the unit) was used to power the device. Their description are listed below.

(1) An AC adaptor (100-240VAC to 5VDC 600mA, Model: S003PU0500060) (Supplied by Client)

Description of Accessories:

(1) Buffalo Broad Band Router, Model: BBR-4HG, DoC Product (Supplied by Intertek)
(2) 1 x CAT5 LAN cable with 2.5m long (Supplied by Client)

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

EXHIBIT 4
TEST RESULTS

4.0 **Test Results**

4.1 Maximum Conducted Output Power at Antenna Terminals

The antenna port of the EUT was connected to the input of a spectrum analyzer.

☒ External attenuation and cable loss were compensated for using the OFFSET function of the analyser. The measurement procedure PK1 was used.

☐ The EUT should be configured to transmit continuously (at a minimum duty cycle of 98%) at full power over the measurement duration. The measurement procedure AVG1 was used.

Antenna Gain = 0 dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel:	10.60	11.48
Middle Channel:	9.81	9.57
High Channel:	9.20	8.32

Cable loss : 0.5 dB External Attenuation : 0 dB

Cable loss, external attenuation: ☒ included in OFFSET function
☐ added to SA raw reading

dBm max. output level = 10.60 dBm

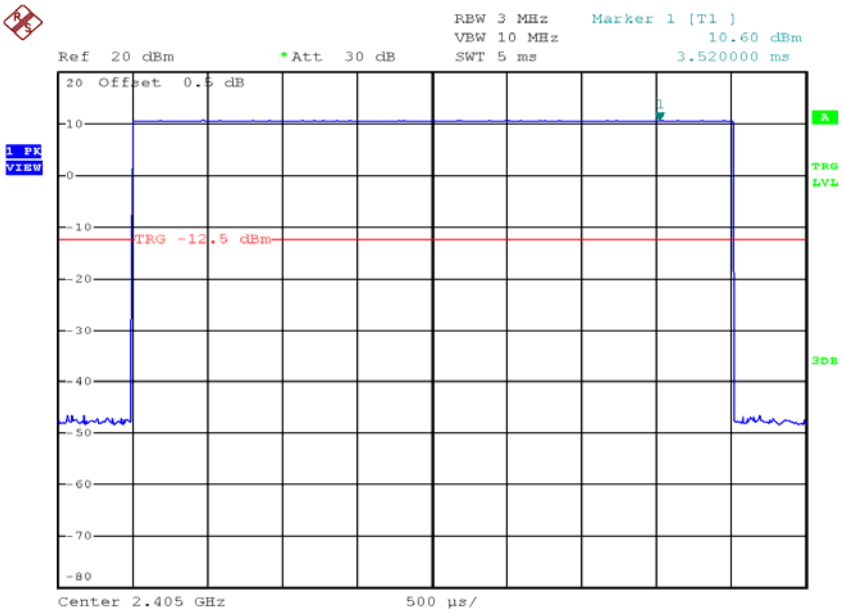
Limits:
☒ 1W (30dBm) for antennas with gains of 6dBi or less

☐ ___W (___dBm) for antennas with gains more than 6dBi

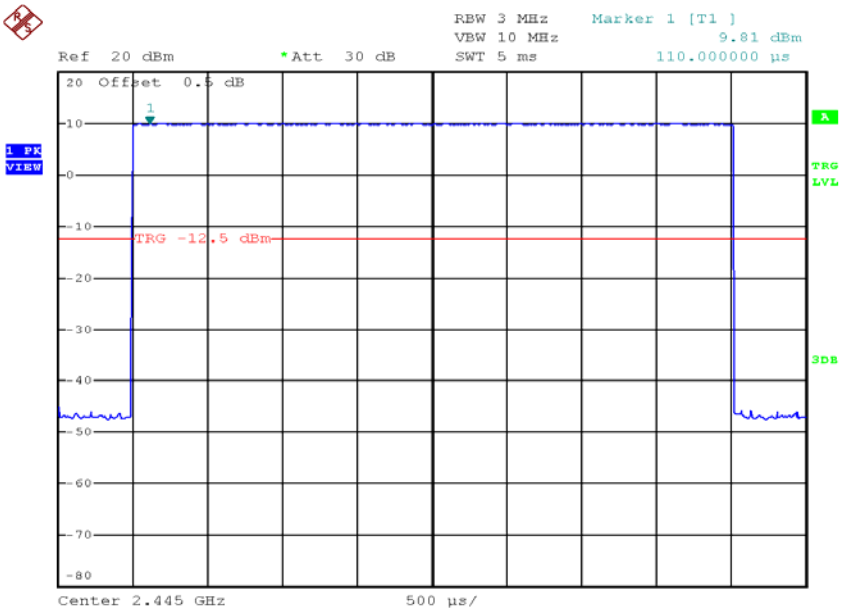
The plots of maximum conducted output power are saved as below.

Plots of maximum conducted output power

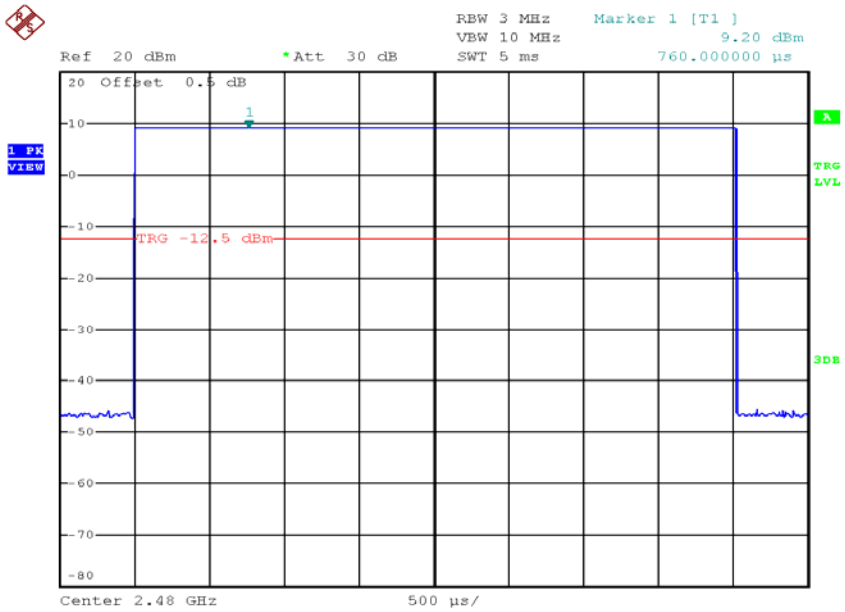
Lowest channel



Middle channel



Highest channel



4.2 Minimum 6dB RF Bandwidth

The antenna port of the EUT was connected to the input of a spectrum analyzer. The EBW measurement procedure was used. A PEAK output reading was taken, a DISPLAY line was drawn 6dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

For Industry Canada, the 99% occupied bandwidth was measured, and the procedure under the section 4.6.1 of RSS-GEN was used.

Zigbee	
Frequency (MHz)	6dB Bandwidth (kHz)
Low Channel: 2405	1580
Middle Channel: 2445	1580
High Channel: 2480	1570

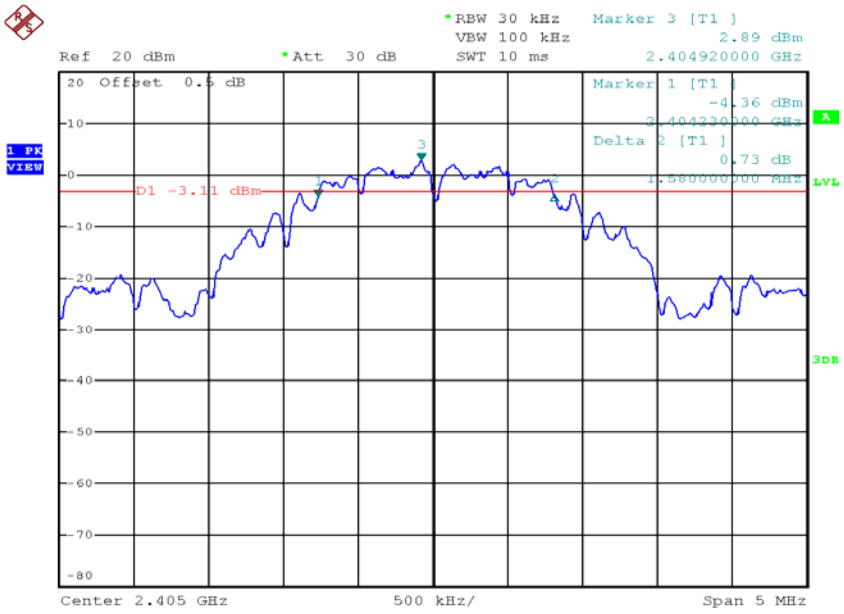
Zigbee	
Frequency (MHz)	IC 99% Occupied Bandwidth (kHz)
Low Channel: 2405	2660
Middle Channel: 2445	2650
High Channel: 2480	2640

Limits
6 dB bandwidth shall be at least 500kHz

The plots of 6dB RF bandwidth and occupied bandwidth are saved as below.

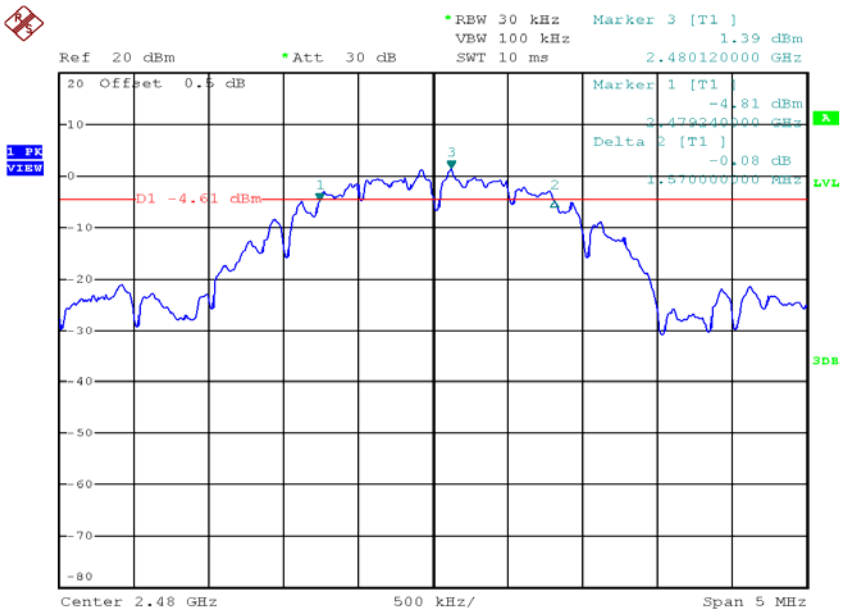
Plots of 6dB RF bandwidth

Lowest channel



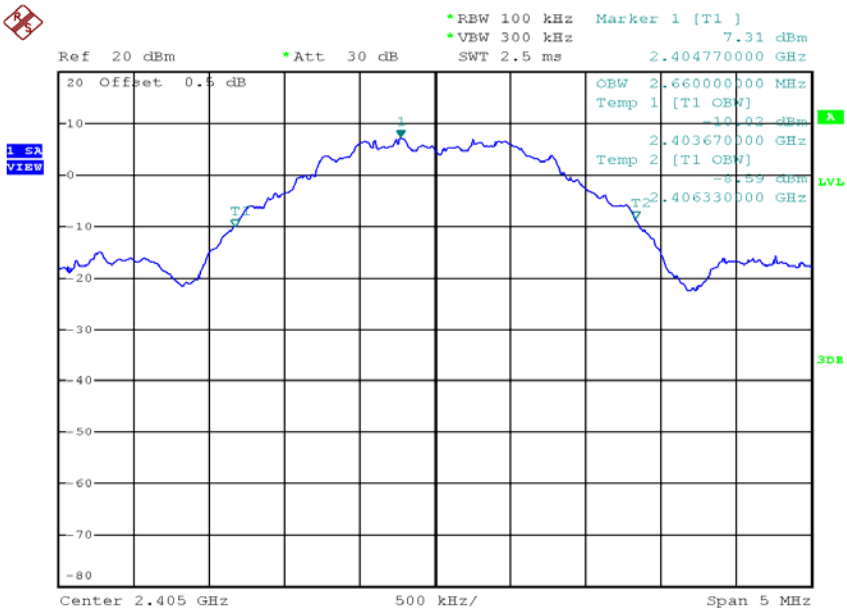
Middle channel

Highest channel

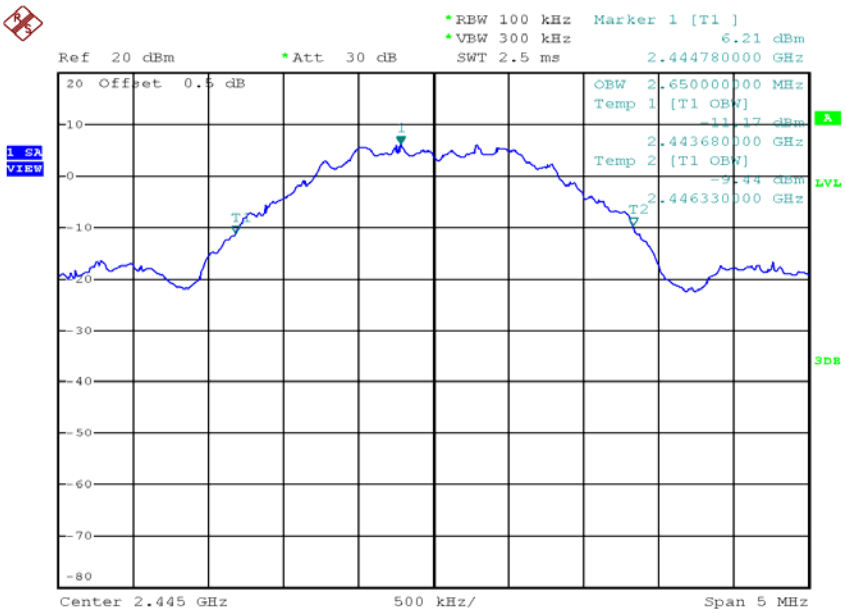


Plots of occupied bandwidth

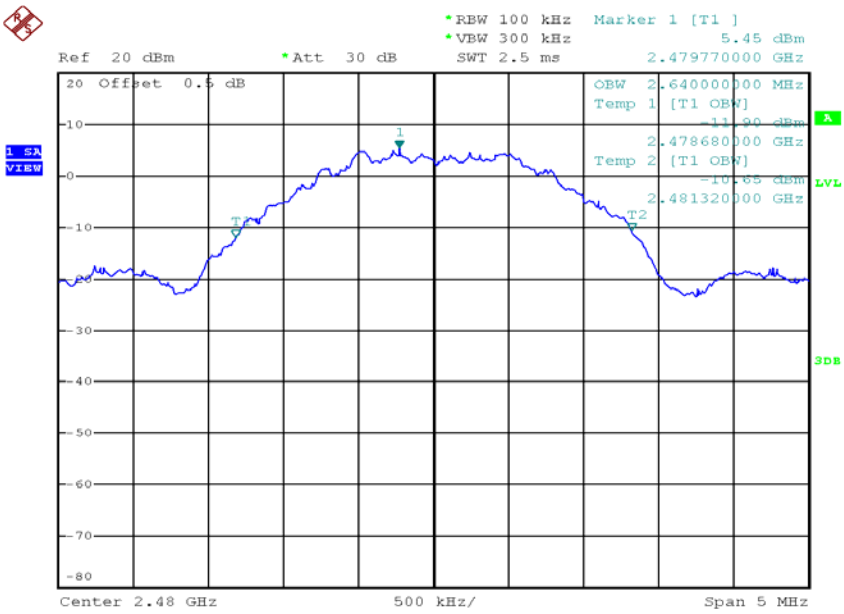
Lowest Channel



Middle Channel



Highest Channel



4.3 Maximum Power Spectral Density

Antenna output of the EUT was coupled directly to spectrum analyzer. The measurement procedure PKPSD was used. If an external attenuator and/or cable was used, these losses are compensated for using the OFFSET function of the analyser.

Zigbee		
Frequency (MHz)	PSD in 100kHz (dBm)	PSD in 3kHz (dBm)
Low Channel: 2405	7.13	-8.07
Middle Channel: 2445	6.29	-8.91
High Channel: 2480	5.59	-9.61

Cable Loss: 0.5 dB

Bandwidth correction factor (BWCF) = 10 log (3kHz/100kHz) = -15.2 dB

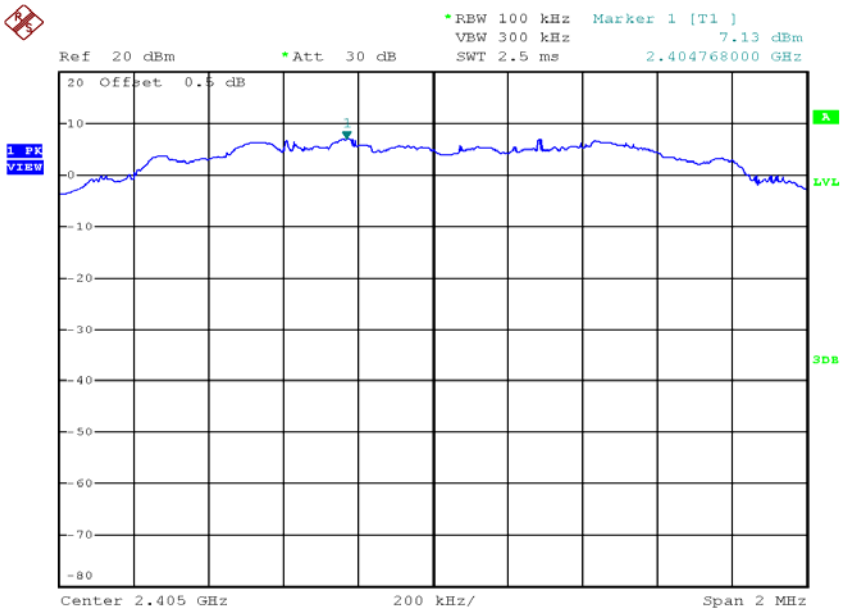
PSD in 3kHz = PSD in 100kHz + BWCF

Limit:
8dBm in 3kHz

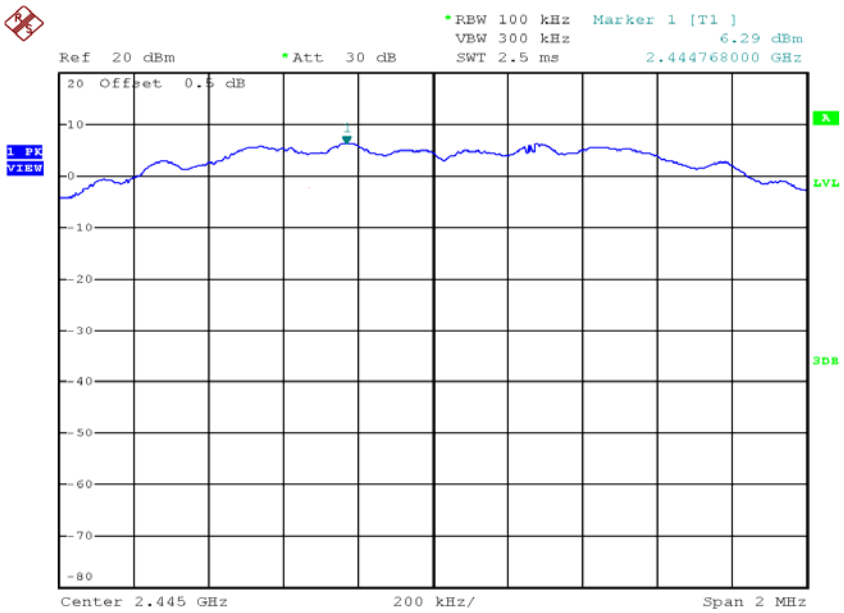
The plots of power spectral density are saved as below.

Plots of power spectral density

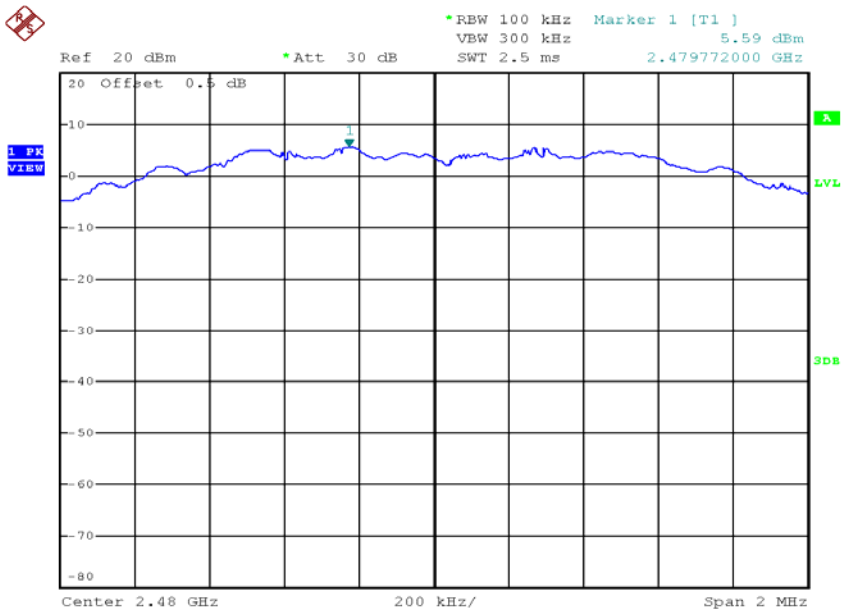
Lowest Channel



Middle Channel



Highest Channel



4.4 Out of Band Conducted Emissions

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission.

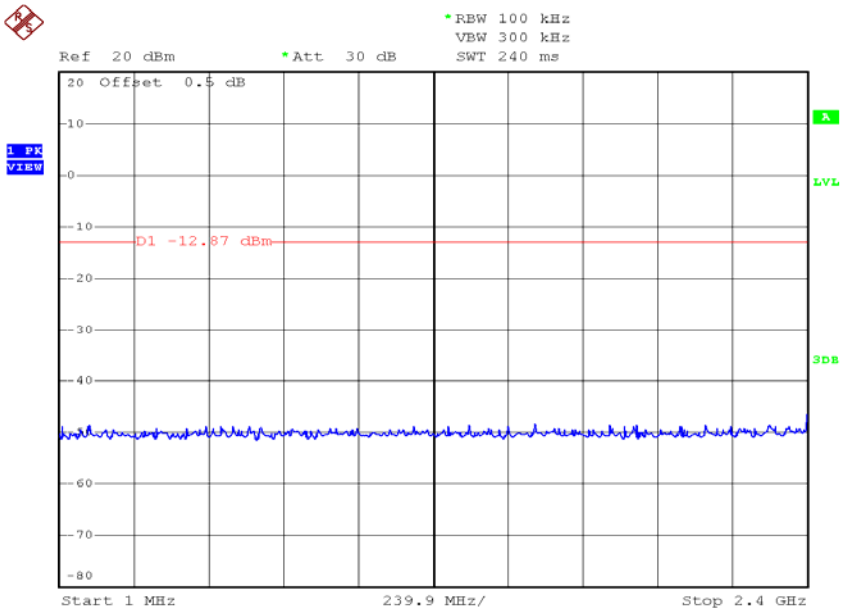
The measurement procedures under sections 5.4.1.1 and 5.4.1.2 of KDB558074 were used.

Limits:
All spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the maximum measured in-band peak PSD level.

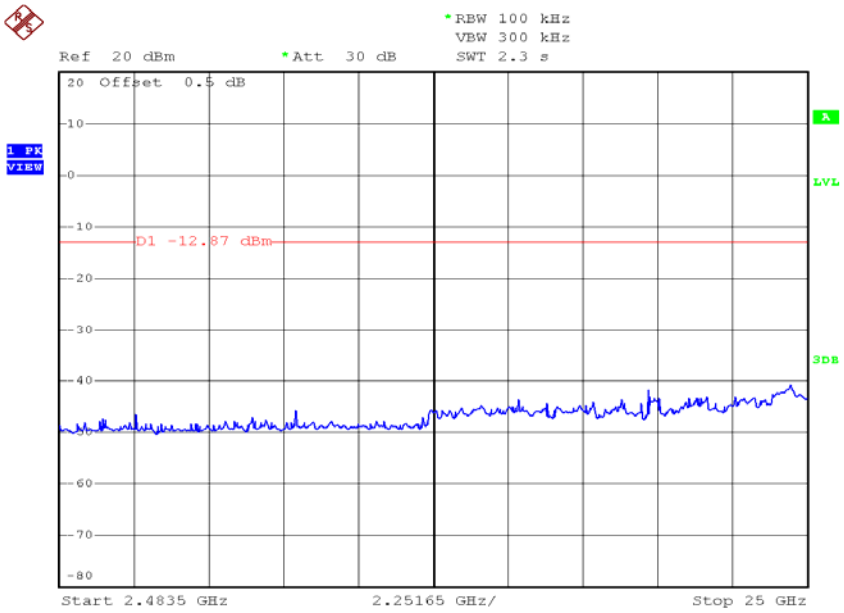
The plots of out of band conducted emissions and bandedge are saved as below.

Plots of out of band conducted emissions

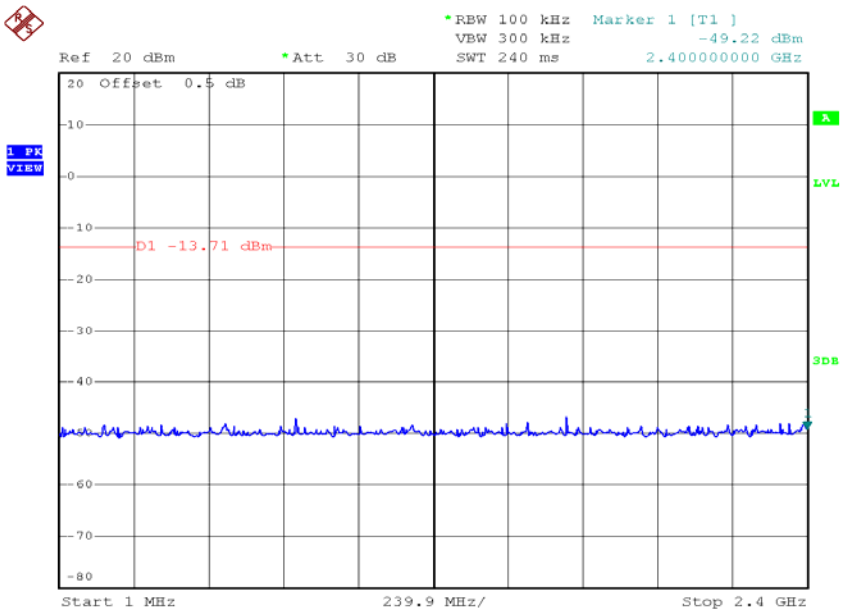
Lowest channel, Plot 1



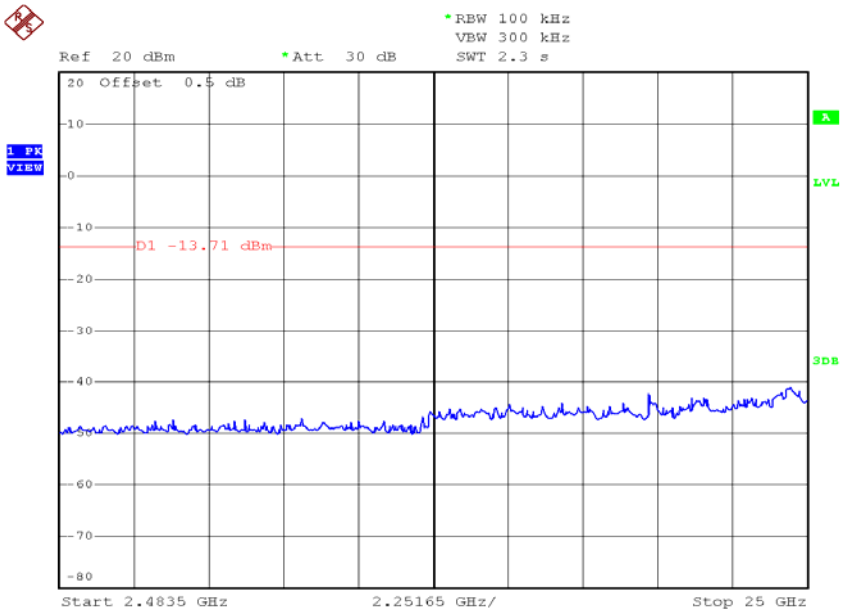
Lowest channel, Plot 2



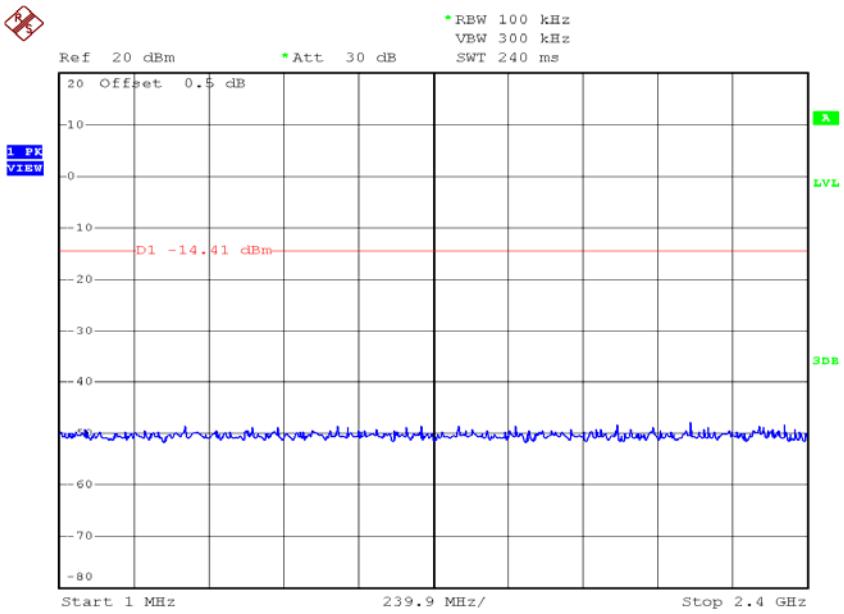
Middle channel, Plot 1



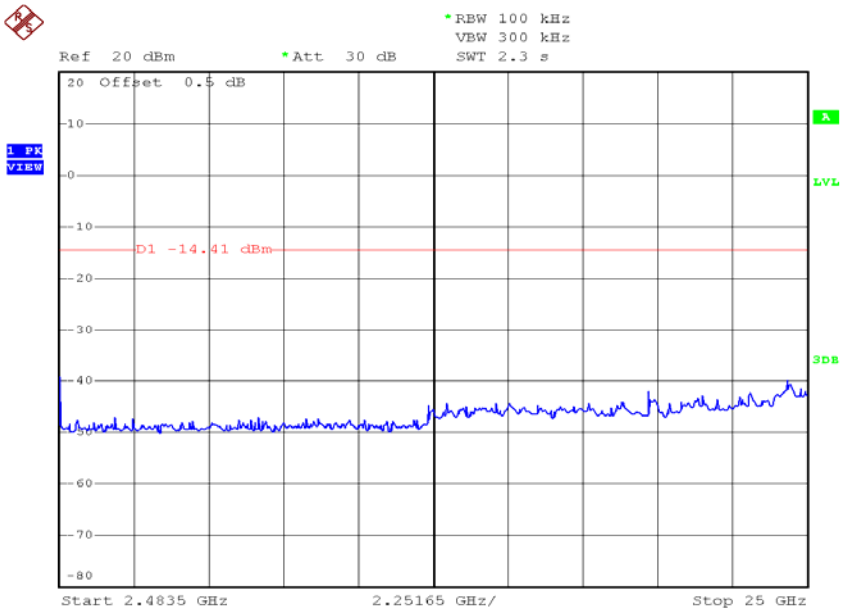
Middle channel, Plot 2



Highest channel, Plot 1

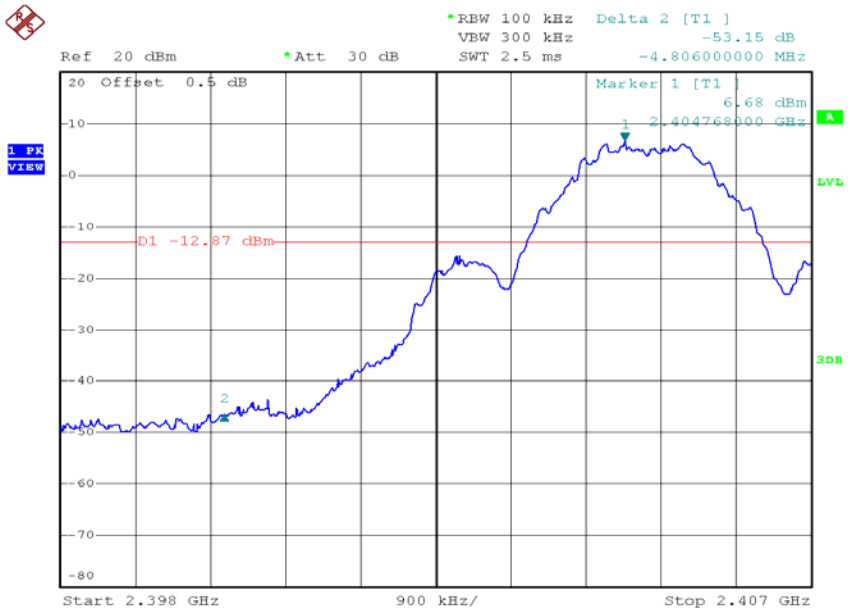


Highest channel, Plot 2

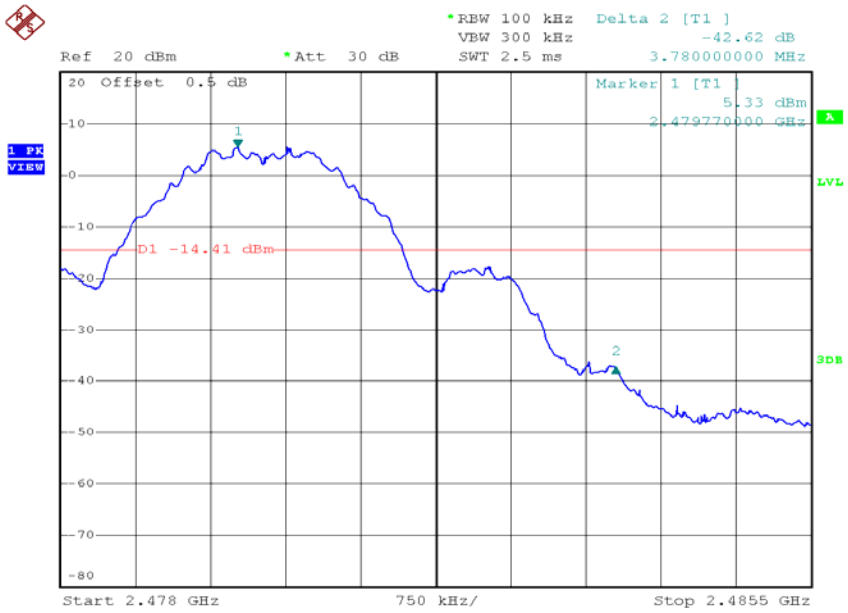


Plots of bandedge

Bandedge plot, Plot 1



Bandedge plot, Plot 2



4.5 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

Example
Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29.0 dB is subtracted. The pulse desensitization factor of the spectrum analyzer is 0.0 dB, and the resultant average factor is -10.0 dB. The net field strength for comparison to the appropriate emission limit is 32.0 dBμV/m. This value in dBμV/m is converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0.0 dB
AV = -10 dB

FS = 62.0 + 7.4 + 1.6 – 29.0 + 0.0 + (-10.0) = 32.0 dBμV/m

Level in μV/m = Common Antilogarithm [(32.0 dBμV/m)/20] = 39.8 μV/m

4.6 Transmitter Radiated Emissions in Restricted Bands and Spurious Emissions

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

4.6.1 Radiated Emission Configuration Photograph

Worst Case Restricted Band Radiated Emission
at

375.000 MHz & 750.000 MHz

The worst case radiated emission configuration photographs are saved with filename: config photos.pdf

4.6.2 Radiated Emission Data

The data in tables 1-4 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 1.0 dB margin

4.6.3 Transmitter Duty Cycle Calculation

Duty Cycle (DC) = 4.608/15.42

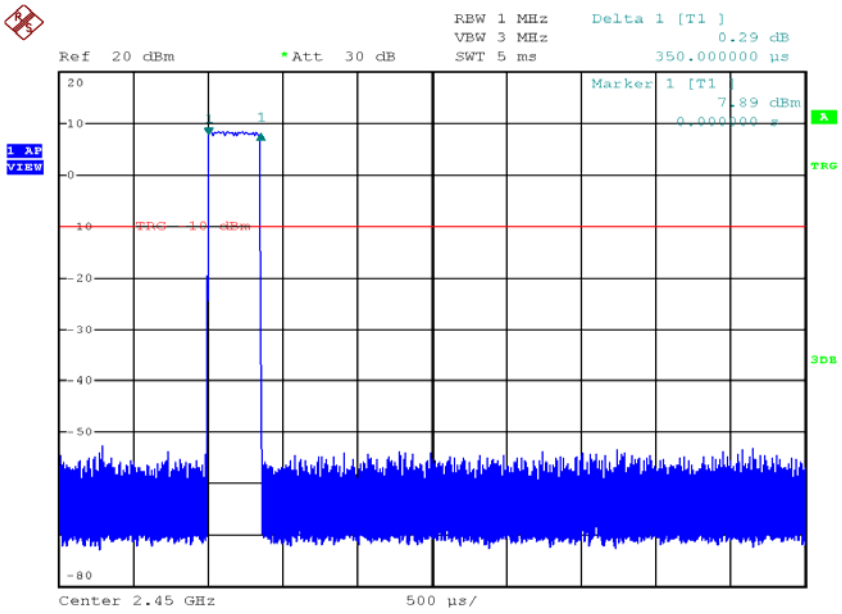
Please refer to Technical Description (descri.pdf) for Duty Cycle.

Average Factor (AF) = 20 log(DC)
= 20* log (0.299)
= -10.4 dB

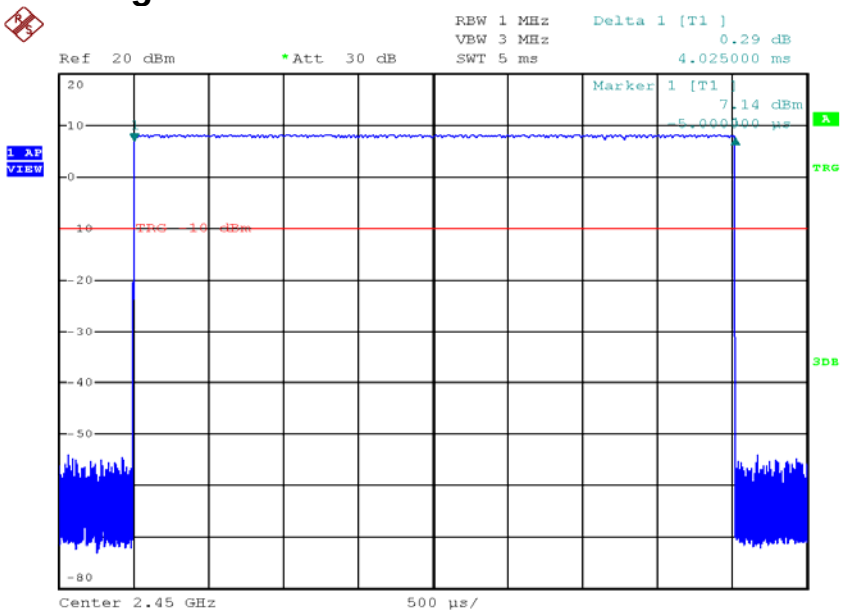
The plots of transmission ON time are saved as below.

Plots of transmission ON time

TX ACK



TX Long Data Frame



Mode: TX-Channel 11

Table 1

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2405.000	107.6	33	29.4	10.4	93.6	--	--
V	***4810.000***	***48.7***	***33***	***34.9***	***10.4***	***40.2***	***54.0***	***-13.8***
V	***12025.000***	***46.5***	***33***	***40.5***	***10.4***	***43.6***	***54.0***	***-10.4***

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2405.000	107.6	33	29.4	104.0	---	---
V	***4810.000***	***48.7***	***33***	***34.9***	***50.6***	***74.0***	***-23.4***
V	***12025.000***	***46.5***	***33***	***40.5***	***54.0***	***74.0***	***-20.0***

NOTES:
1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 19

Table 2

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	2445.000	107.6	33	29.4	10.4	93.6	--	--
V	***4890.000***	***52.2***	***33***	***34.9***	***10.4***	***43.7***	***54.0***	***-10.3***
V	***7335.000***	***55.7***	***33***	***37.9***	***10.4***	***50.2***	***54.0***	***-3.8***
V	***12225.000***	***46.9***	***33***	***40.5***	***10.4***	***44.0***	***54.0***	***-10.0***

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	2445.000	107.6	33	29.4	104.0	--	--
V	***4890.000***	***52.2***	***33***	***34.9***	***54.1***	***74.0***	***-19.9***
V	***7335.000***	***55.7***	***33***	***37.9***	***60.6***	***74.0***	***-13.4***
V	***12225.000***	***46.9***	***33***	***40.5***	***54.4***	***74.0***	***-19.6***

NOTES:
1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 26

Table 3

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
**V	2480.000	107.2	33	29.4	10.4	93.2	--	--
V	***4960.000***	***55.6***	***33***	***34.9***	***10.4***	***47.1***	***54.0***	***-6.9***
V	***7440.000***	***52.9***	***33***	***37.9***	***10.4***	***47.4***	***54.0***	***-6.6***
V	***12400.000***	***46.7***	***33***	***40.5***	***10.4***	***43.8***	***54.0***	***-10.2***

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
**V	2480.000	107.2	33	29.4	103.6	--	--
V	***4960.000***	***55.6***	***33***	***34.9***	***57.5***	***74.0***	***-16.5***
V	***7440.000***	***52.9***	***33***	***37.9***	***57.8***	***74.0***	***-16.2***
V	***12400.000***	***46.7***	***33***	***40.5***	***54.2***	***74.0***	***-19.8***

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

** Fundamental emission was measured for determining band-edge compliance of using delta measurement technique. Peak level and average level at the upper bandedge (2483.500MHz) were 60.98 dBµV/m and 50.58 dBµV/m respectively.

Mode: Talk

Table 4

Radiated Emission Data

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
H	***125.000***	***37.1***	***16***	***14.0***	***35.1***	***43.5***	***-8.4***
H	***150.000***	***37.6***	***16***	***14.0***	***35.6***	***43.5***	***-7.9***
H	175.000	30.6	16	19.0	33.6	43.5	-9.9
H	225.000	28.4	16	18.0	30.4	46.0	-15.6
H	***250.000***	***34.4***	***16***	***20.0***	***38.4***	***46.0***	***-7.6***
H	375.000	37.0	16	24.0	45.0	46.0	-1.0
H	***400.000***	***31.0***	***16***	***25.0***	***40.0***	***46.0***	***-6.0***
H	450.000	28.0	16	26.0	38.0	46.0	-8.0
H	700.000	30.1	16	30.0	44.1	46.0	-1.9
H	750.000	31.0	16	30.0	45.0	46.0	-1.0
H	800.000	28.1	16	31.0	43.1	46.0	-2.9
H	900.000	26.0	16	32.0	42.0	46.0	-4.0
H	***975.000***	***23.9***	***16***	***33.0***	***40.9***	***54.0***	***-13.1***

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

4.7 AC Power Line Conducted Emission

☐ Not applicable – EUT is only powered by battery for operation.

☒ EUT connects to AC power line. Emission Data is listed in following pages.

☐ Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

4.7.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at

15.5985 MHz

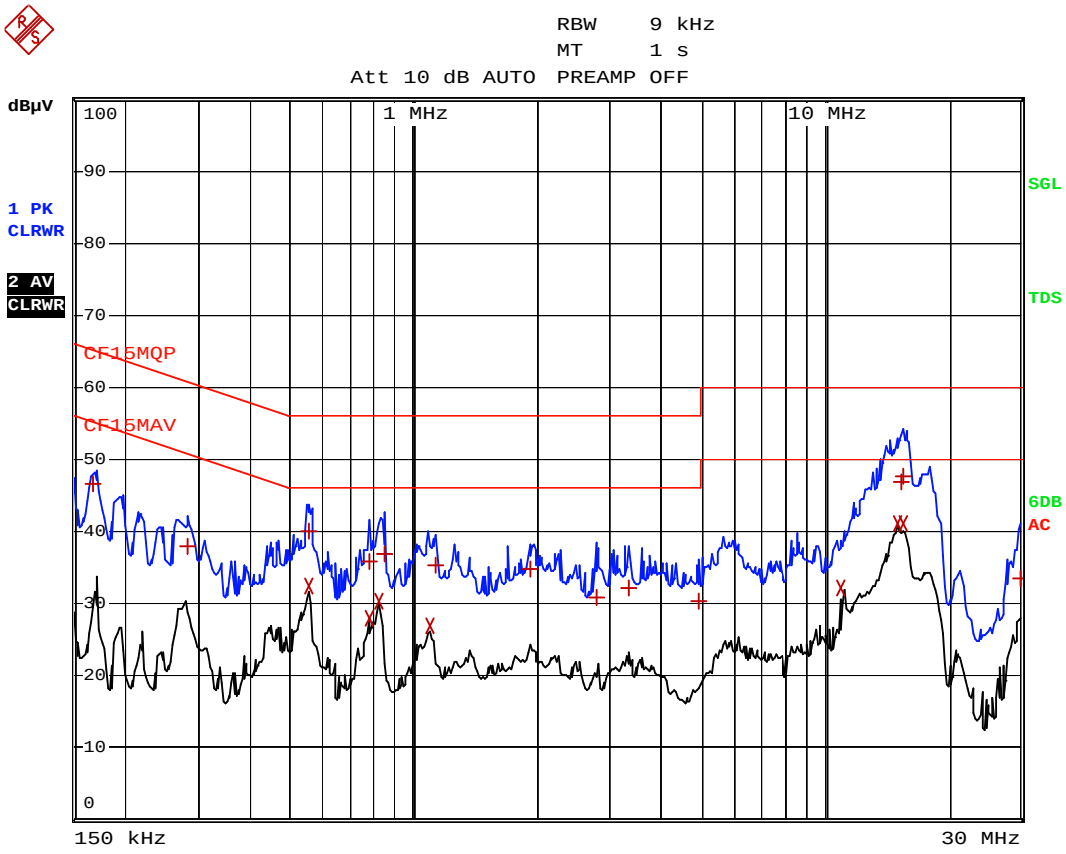
The worst case line conducted configuration photographs are saved with filename: config photos.pdf

4.7.2 AC Power Line Conducted Emission Data

The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance

Passed by 8.81 dB margin compare with average limit

Worst Case: TX



Date: 15.JUN.2012 11:04:17

Worst Case: TX

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	168 kHz	46.54	L1	-18.51
1	Quasi Peak	280.5 kHz	38.02	N	-22.78
1	Quasi Peak	555 kHz	40.13	N	-15.86
2	CISPR Average	555 kHz	32.39	N	-13.61
1	Quasi Peak	775.5 kHz	35.83	N	-20.16
2	CISPR Average	775.5 kHz	27.99	N	-18.00
2	CISPR Average	820.5 kHz	30.22	N	-15.77
1	Quasi Peak	847.5 kHz	36.98	N	-19.01
2	CISPR Average	1.0995 MHz	26.94	N	-19.05
1	Quasi Peak	1.1265 MHz	35.36	N	-20.63
1	Quasi Peak	1.932 MHz	34.87	N	-21.12
1	Quasi Peak	2.796 MHz	30.79	N	-25.20
1	Quasi Peak	3.327 MHz	32.19	N	-23.80
1	Quasi Peak	4.938 MHz	30.34	N	-25.65
2	CISPR Average	10.9995 MHz	32.24	N	-17.75
2	CISPR Average	15.027 MHz	41.14	N	-8.85
1	Quasi Peak	15.3195 MHz	46.95	N	-13.04
2	CISPR Average	15.5985 MHz	41.18	N	-8.81
1	Quasi Peak	15.6075 MHz	47.54	N	-12.45
1	Quasi Peak	29.976 MHz	33.46	L1	-26.53

Date: 15.JUN.2012 11:01:29

4.8 Radio Frequency Radiation Exposure

EUT is subject to the radio frequency exposure requirements specified in FCC Rule §§ 1.1307. It shall be considered to operate in a “general population / uncontrolled” environment.

☐ Output power is less than the applicable low threshold from SAR evaluation. The evaluation calculation results are saved with filename: RF exposure info.pdf

☒ EUT was evaluated for Maximum Permissible Exposure (MPE) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). The evaluation calculation results are saved with filename: RF exposure info.pdf

☐ EUT was evaluated for Specific Absorption Rate (SAR) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). It is in compliance with the SAR evaluation requirements. A SAR test report was submitted at same time and saved as SAR Report.pdf

EXHIBIT 5
EQUIPMENT LIST

5.0 **Equipment List**

1) Radiated Emissions Test

Equipment	Biconical Antenna	Log Periodic Antenna	EMI Test Receiver
Registration No.	EW-2512	EW-0446	EW-2500
Manufacturer	EMCO	EMCO	ROHDESCHWARZ
Model No.	3104C	3146	ESCI
Calibration Date	Nov. 15, 2011	Oct. 31, 2011	Feb. 24, 2012
Calibration Due Date	May. 15, 2013	Apr. 30, 2013	Feb. 24, 2013

Equipment	Double Ridged Guide Antenna (1GHz - 18GHz)	Spectrum Analyzer
Registration No.	EW-1133	EW-2188
Manufacturer	EMCO	AGILENTTECH
Model No.	3115	E4407B
Calibration Date	Mar. 02, 2011	Sep. 26, 2011
Calibration Due Date	Sep. 02, 2012	Sep. 26, 2012

Equipment	Broad-Band Horn Antenna with frequency range 14G - 40GHz	Digital Multimeter
Registration No.	EW-1679	EW-1237
Manufacturer	SCHWARZBECK	FLUKE
Model No.	BBHA9170	179
Calibration Date	Mar. 21, 2012	Sep. 05, 2011
Calibration Due Date	Mar. 21, 2013	Oct. 01, 2012

2) Conducted Emissions Test

Equipment	EMI Test Receiver (9kHz to 7GHz)	Artificial Mains	Pulse Limiter
Registration No.	EW-2666	EW-0192	EW-0698
Manufacturer	ROHDESCHWARZ	ROHDESCHWARZ	R&S
Model No.	ESCI7	ESH3-Z5	ESH3-Z2
Calibration Date	May. 21, 2012	Apr. 11, 2012	Apr. 06, 2012
Calibration Due Date	May. 21, 2013	Apr. 11, 2013	Apr. 06, 2013

3) Conductive Measurement Test

Equipment	Spectrum Analyzer 40GHz
Registration No.	EW-2253
Manufacturer	R&S
Model No.	FSP40
Calibration Date	Jan. 12, 2012
Calibration Due Date	Jan. 12, 2013

END OF TEST REPORT