Issuing Laboratory:
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.

HOKLAS 005
TEST

TEST REPORT

Report Number: 13091053HKG-002

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

1.9GHz Digital Modulation Cordless Phone with Caller ID, Speakerphone, Digital Answering Machine and Bluetooth (Base Unit)

FCC ID: EW780-9090-00

IC: 1135B-80909000

Prepared and Checked by:

Lau Chin Yu, Benny
Lead Engineer

Approved by:

Nip Ming Fung, Melvin
Assistant Manager
November 15, 2013

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GENERAL INFORMATION

Applicant Name:	VTech Telecommunications Ltd.
Applicant Address:	23/F, Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong.
FCC Specification Standard:	FCC Part 15, October 1, 2012 Edition
FCC ID:	EW780-9090-00
FCC Model(s):	TL86103, TL86XY3
IC Specification Standard:	RSS-210 Issue 8, December 2010 RSS-Gen Issue 3, December 2010
IC:	1135B-80909000
IC Model(s):	TL86103
Type of EUT:	Transmitter
Description of EUT:	1.9GHz Digital Modulation Cordless Phone with Caller ID, Speakerphone, Digital Answering Machine and Bluetooth (Base Unit)
Serial Number:	N/A
Sample Receipt Date:	Sep 30, 2013
Date of Test:	Oct 7 - Oct 10,2013
Report Date:	November 15, 2013
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

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EXHIBIT 1
TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE

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1.0 Test Results Summary & Statement of Compliance

1.1 Summary of Test Results

Test Items	FCC Part 15 Section	RSS-210/ RSS-Gen# / RSS-310^ Section	Results	Details see section
Antenna Requirement	15.203	7.1.2#	Pass	2.1
Radiated Emission Radiated Emission on the Bandedge	15.249(a), 209, & 109 15.249(d)	A2.9(a) A2.9(b)	Pass Pass	4.2 4.3
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4#	Pass	4.4

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, 2012 Edition
RSS-210 Issue 8, December 2010
RSS-Gen Issue 3, December 2010

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EXHIBIT 2
GENERAL DESCRIPTION

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2.0 **General Description**

2.1 Product Description

The TL86103 is a 1.9GHz Digital Modulation Cordless Phone with Caller ID, Speakerphone, Digital Answering Machine and Bluetooth (Base Unit). It operates at frequency range of 2402MHz-2480MHz. The Base Unit is powered by an adaptor 100-120VAC 50/60Hz to Output 1: 6.0VDC 600mA, Output 2: 5.1VDC 1000mA. The Handset is powered by a "Ni-MH" type rechargeable battery pack (2.4V 400mAh).

The Bluetooth antenna used in base unit is integral, and the test sample is a prototype.

For FCC, The Model(s): TL86XY3 are the same as the Model: TL86103 in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are color, model number, package type (material), number of handset and charger to be sold for marketing purpose. Suffix (X) indicates any alphanumeric character is presenting no. of Handset and Charger. Suffix (Y) indicates 0, 1, 2, 5, 7 or 8 which presents different package type (material) or color of enclosure, or number 3, 4, 6 or 9 is presents different package type or color of enclosure model unit package with Wireless Speaker.

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

Connection between the device and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

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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.

2.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data and conducted data are at Roof Top and 2nd 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.

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EXHIBIT 3
SYSTEM TEST CONFIGURATION

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3.0 **System Test Configuration**

3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to transmit continuously / normal mode 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 100-120VAC 50/60Hz to Output 1: 6.0VDC 600mA, Output 2: 5.1VDC 1000mA adaptor.

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the base unit attached to peripherals, they were connected and operational to simulate typical use. The handset was remotely located as far from the antenna and the base as possible to ensure full power transmission from the base. Else, the base was wired to transmit full power.

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 was 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.

The DECT module was put into transmission mode when taking radiated emission data for determining worst-case spurious emission.

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3.1 Justification - Cont'd

Detector function for radiated emissions is in peak mode. Average readings, when required, are 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 4.2.3.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF.* The effective period (Teff) was 625µs. 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 power cord connected to one LISN (Line impedance stabilization network), which provided 50ohm coupling impedance for measuring instrument. Meanwhile, the peripheral or support equipment power cords connected to a separate LISN. The ac power for all LISNs were obtained from the same power source. 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. Power cords of non-EUT equipment (peripherals) were not bundled. AC power cords of peripheral equipments draped over the rear edge of the table, and routed them down onto the floor of the ac powerline conducted emission test site to the second LISN.

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

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 used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

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3.3 Details of EUT and Description of Accessories

Details of EUT:

An AC adaptor and/or a battery (provided with the unit) were used to power the device. Their descriptions are listed below.

(1) Base Unit: An AC adaptor (100-120VAC 50/60Hz 0.3A to Output 1: 6.0VDC 600mA, Output 2: 5.1VDC 1000mA, Model: SSA-9W2 US 051100/060060, Brand: Sunstrong) (Supplied by Client)
(2) Handset: A "Ni-MH" type rechargeable battery (2.4V 400mAh), Model: BT183342/BT283342, Brand: GPI, Corun, Sanik, Coslight, Wewin (Supplied by Client)

Description of Accessories:

(1) Telephone Line Simulator (Supplied by Intertek)
(2) 2X 3m Telephone Line (Supplied by Intertek)
(3) 1m Telephone Line with Termination (Supplied by Intertek)
(4) Lenovo Notebook, Model: T61, S/N: L3-CF468, DoC product (Supplied by Intertek)
(5) HP Notebook, Model: 2540p, S/N: CND05104SY, DoC product(Supplied by Intertek)
(6) Smart-Drive External Hard Disk, Model: HD3-SU2FW, SN:0800261, DoC Product (Supplied by Intertek)
(7) 2 x USB MP3 (Supplied by Intertek)
(8) 3 x USB cable (Supplied by Intertek)
(9) Telephone Headset (Supplied by Intertek)

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.

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EXHIBIT 4
TEST RESULTS

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4.0 **Test Results**

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.

4.1 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 reflects 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 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 +1.6 -29 +0 + (-10) = 32 dBμV/m

Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

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4.2 Radiated Emissions

4.2.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at

30.752 MHz

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

4.2.2 Radiated Emission Data

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

Judgement -

Passed by 1.5 dB margin

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Mode: TX-Channel 00

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	2402.000	102.4	33	29.4	24	74.8	94.0	-19.2
H	***4804.000***	***64.3***	***33***	***34.9***	***24***	***42.2***	***54.0***	***-11.8***
H	7206.000	46.9	33	37.9	24	27.8	54.0	-26.2
H	9608.000	42.8	33	40.4	24	26.2	54.0	-27.8
H	***12010.000***	***42.4***	***33***	***40.5***	***24***	***25.9***	***54.0***	***-28.1***
H	14412.000	42.3	33	40.0	24	25.3	54.0	-28.7

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	2402.000	102.4	33	29.4	98.8	114.0	-15.2
H	***4804.000***	***64.3***	***33***	***34.9***	***66.2***	***74.0***	***-7.8***
H	7206.000	46.9	33	37.9	51.8	74.0	-22.2
H	9608.000	42.8	33	40.4	50.2	74.0	-23.8
H	***12010.000***	***42.4***	***33***	***40.5***	***49.9***	***74.0***	***-24.1***
H	14412.000	42.3	33	40.0	49.3	74.0	-24.7

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.

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Mode: TX-Channel 39

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	2441.000	102.0	33	29.4	24	74.4	94.0	-19.6
H	***4882.000***	***65.1***	***33***	***34.9***	***24***	***43.0***	***54.0***	***-11.0***
H	***7323.000***	***46.5***	***33***	***37.9***	***24***	***27.4***	***54.0***	***-26.6***
H	9764.000	42.8	33	40.4	24	26.2	54.0	-27.8
H	***12205.000***	***42.1***	***33***	***40.5***	***24***	***25.6***	***54.0***	***-28.4***
H	14646.000	43.9	33	38.4	24	25.3	54.0	-28.7

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	2441.000	102.0	33	29.4	98.4	114.0	-15.6
H	***4882.000***	***65.1***	***33***	***34.9***	***67.0***	***74.0***	***-7.0***
H	***7323.000***	***46.5***	***33***	***37.9***	***51.4***	***74.0***	***-22.6***
H	9764.000	42.8	33	40.4	50.2	74.0	-23.8
H	***12205.000***	***42.1***	***33***	***40.5***	***49.6***	***74.0***	***-24.4***
H	14646.000	43.9	33	38.4	49.3	74.0	-24.7

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.

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Mode: TX-Channel 78

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	102.6	33	29.4	24	75.0	94.0	-19.0
H	***4960.000***	***64.6***	***33***	***34.9***	***24***	***42.5***	***54.0***	***-11.5***
H	***7440.000***	***46.5***	***33***	***37.9***	***24***	***27.4***	***54.0***	***-26.6***
H	9920.000	42.2	33	40.4	24	25.6	54.0	-28.4
H	***12400.000***	***42.0***	***33***	***40.5***	***24***	***25.5***	***54.0***	***-28.5***
H	14880.000	43.9	33	38.4	24	25.3	54.0	-28.7

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	102.6	33	29.4	99.0	114.0	-15.0
H	***4960.000***	***64.6***	***33***	***34.9***	***66.5***	***74.0***	***-7.5***
H	***7440.000***	***46.5***	***33***	***37.9***	***51.4***	***74.0***	***-22.6***
H	9920.000	42.2	33	40.4	49.6	74.0	-24.4
H	***12400.000***	***42.0***	***33***	***40.5***	***49.5***	***74.0***	***-24.5***
H	14880.000	43.9	33	38.4	49.3	74.0	-24.7

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.

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Mode: Base Bluetooth + DECT Conference

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)
V	30.752	44.5	16	10.0	38.5	40.0	-1.5
V	55.326	42.6	16	11.0	37.6	40.0	-2.4
V	***124.414***	***35.6***	***16***	***14.0***	***33.6***	***43.5***	***-9.9***
V	187.874	37.6	16	16.0	37.6	43.5	-5.9
H	207.362	37.0	16	17.0	38.0	43.5	-5.5
H	***248.932***	***35.1***	***16***	***20.0***	***39.1***	***46.0***	***-6.9***
H	373.756	31.0	16	24.0	39.0	46.0	-7.0
H	497.660	29.9	16	26.0	39.9	46.0	-6.1
H	538.698	23.2	16	28.0	35.2	46.0	-10.8

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. 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.

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4.2.3 Transmitter Duty Cycle Calculation

Based on the Bluetooth Specification Version 2.0 / 2.1 + EDR, the transmitter ON time for each timeslot of Bluetooth is 625μs. DH5 has the maximum duty cycle, which consists of 5 continuous Tx slots and 1 Rx slot. Therefore one hopset take (5+1) x 625μs = 3.75ms. For one period for a pseudo-random hopping through at least 20 RF channels in adaptive mode (worst case), it take: 20 x 3.75ms = 75ms.

The dwell time for DH5 is 5 x 625μs = 3.125ms.

For the worst case calculation, there are two transmissions might occur in 100ms.

Therefore,

Duty Cycle (DC) = Maximum On time in 100ms/100ms
= 3.125ms x 2 /100ms
= 0.0625

Average Factor (AF) of Bluetooth in dB = $20 \log_{10} (0.0625)$
= -24dB

4.3 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz and 2483.5MHz). In case of emissions up to two standard bandwidths away from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2009) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in FCC Part 15 Section 15.209 / Table 5 of RSS-Gen, whichever is the lesser attenuation, which meet the requirement of FCC Part 15 Section 15.249(d) / RSS-210 A2.9(b).

The plots of radiated emission on the bandedge are saved as below.

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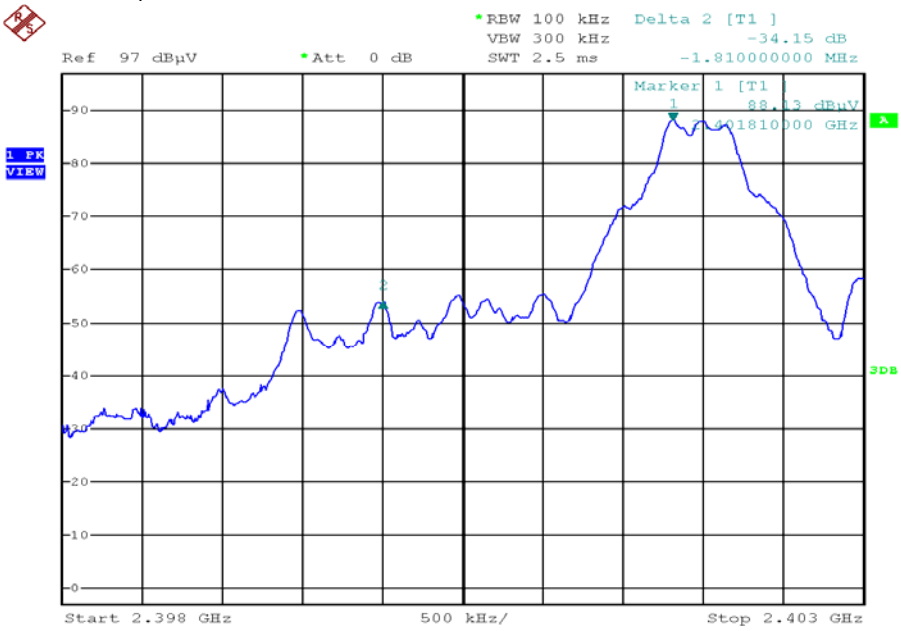
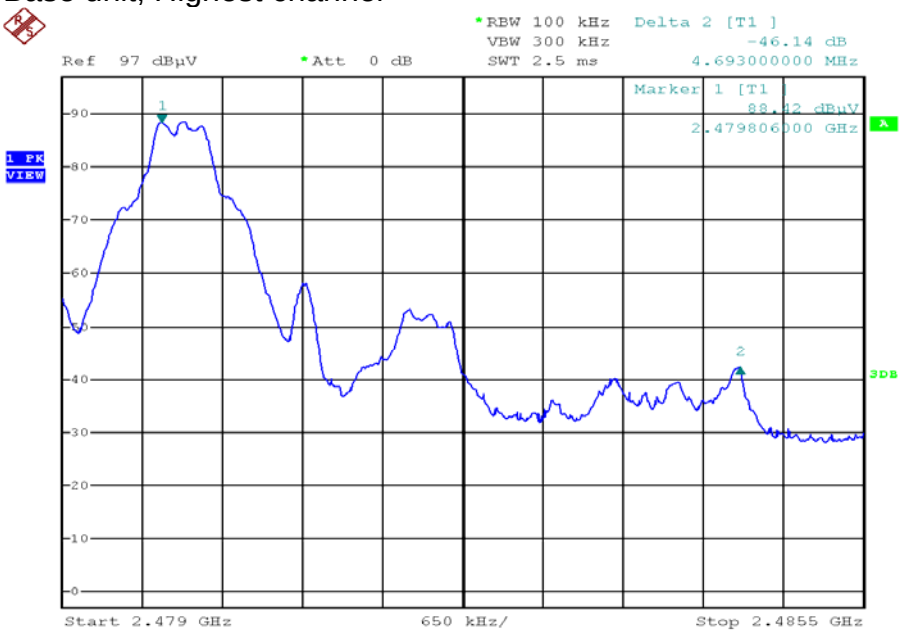
Plots of radiated emission on the bandedge

Base unit, Lowest channel



Base unit, Highest channel



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Bandedge compliance is determined by applying marker-delta method, i.e.

Resultant Field Strength = Fundamental Emissions - Delta from the plot

Resultant field strength for the lowest and/or highest channel(s), with corresponding average values are calculated as follows:

	Channel	Fundamental Emission (dBµV/m)	Delta from the Plot (dB)	Resultant Field Strength (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)
Base	Lowest	74.8	34.15	40.65	54	-13.35
	Highest	75	46.14	28.86	54	-25.14

	Channel	Fundamental Emission (dBµV/m)	Delta from the Plot (dB)	Resultant Field Strength (dBµV/m)	Peak Limit (dBµV/m)	Margin (dB)
Base	Lowest	98.8	34.15	64.65	74	-9.35
	Highest	99	46.14	52.86	74	-21.14

The resultant field strength meets the general radiated emission limit in FCC Part 15 Section 15.209 / Table 5 of RSS-Gen, which does not exceed 74dBµV/m for peak limit and also 54dBµV/m for average limit.

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4.4 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.

4.4.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at

0.380 MHz

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

4.4.2 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 15.41 dB margin compare with average limit

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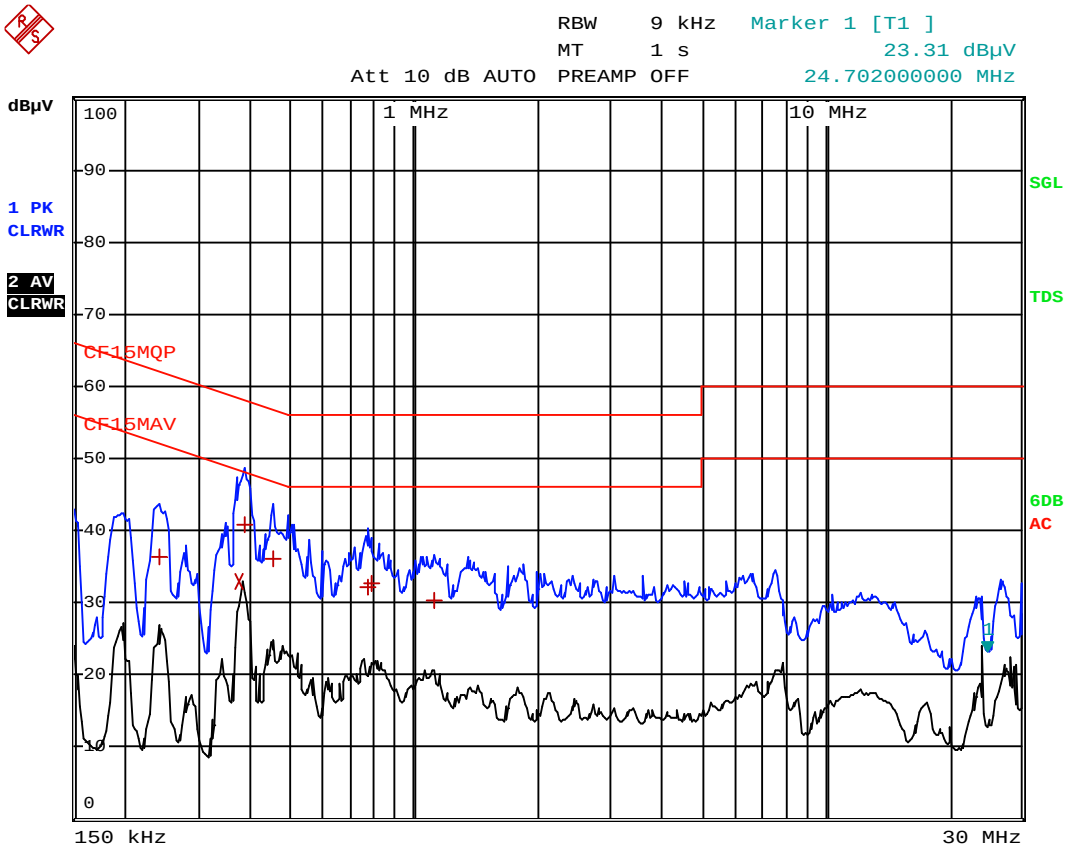
Model No.: TL86103
Worst Case: Bluetooth + Dect conference talk



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Model No.: TL86103
Worst Case: Bluetooth + Dect conference talk

EDIT PEAK LIST (Final Measurement Results)

Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

	TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	240 kHz	36.23	L1	-25.86
2	CISPR Average	379.5 kHz	32.87	N	-15.41
1	Quasi Peak	384 kHz	40.87	L1	-17.32
1	Quasi Peak	451.5 kHz	36.06	N	-20.78
1	Quasi Peak	771 kHz	32.11	L1	-23.88
1	Quasi Peak	789 kHz	32.78	N	-23.21
1	Quasi Peak	1.1175 MHz	30.36	L1	-25.63

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EXHIBIT 5
EQUIPMENT LIST

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5.0 **Equipment List**

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer	Biconical Antenna
Registration No.	EW-2500	EW-2188	EW-0571
Manufacturer	R&S	AGILENTTECH	EMCO
Model No.	ESCI	E4407B	3104C
Calibration Date	Mar 22, 2013	Nov 5, 2012	Apr 5, 2012
Calibration Due Date	Feb 28, 2014	Nov 5, 2013	Oct 5, 2013

Equipment	Log Periodic Antenna	Broad-Band Horn Antenna (14GHz-40GHz)	Double Ridged Guide Antenna
Registration No.	EW-1042	EW-1679	EW-1015
Manufacturer	EMCO	ROHDESCHWARZ	EMCO
Model No.	3148	BBHA9170	3115
Calibration Date	Apr 25, 2012	Apr. 1, 2013	Mar 5, 2013
Calibration Due Date	Oct 25, 2013	Apr. 1, 2014	Sep 5, 2014

Equipment	Biconical Antenna 20MHz to 200MHz
Registration No.	EW-0954
Manufacturer	EMCO
Model No.	3104C
Calibration Date	Apr. 30, 2013
Calibration Due Date	Oct. 30, 2014

2) Conducted Emissions Test

Equipment	Artificial Mains Network	EMI Test Receiver (9kHz to 7GHz)	Artificial Mains Network
Registration No.	EW-2501	EW-2666	EW-0192
Manufacturer	ROHDESCHWARZ	ROHDESCHWARZ	ROHDESCHWARZ
Model No.	ENV216	ESCI7	ESH3-Z5
Calibration Date	Nov. 30, 2012	Jun. 20, 2013	May. 15, 2013
Calibration Due Date	Nov. 30, 2013	Jun. 20, 2014	Apr. 15, 2014

3) Conductive Measurement Test

Equipment	Spectrum Analyzer	Digital Multimeter
Registration No.	EW-2253	EW-1017
Manufacturer	R&S	FLUKE
Model No.	FSP30	87-IV
Calibration Date	Apr. 24, 2013	Jun. 06, 2013
Calibration Due Date	Apr. 24, 2014	Jul. 06, 2014

END OF TEST REPORT

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