

TEST REPORT

Report No.: 17100159HKG-001

Application For Original Grant of 47 CFR Part 15 Certification

New Family of RSS-210 Issue 9 Equipment Certification

This report contains the data of Bluetooth 3.0 portion only

VoIP Phone

FCC ID: EW780-S013-00

IC: 1135B-80S01300

PREPARED AND CHECKED BY:

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Date: April 20, 2018

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TEST REPORT**GENERAL INFORMATION**

Grantee:	VTech Telecommunications Ltd.
Grantee 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, 2016 Edition
FCC ID:	EW780-S013-00
FCC Model(s):	D375, snom D375, snom 375, 375, VSP875G
IC Specification Standard:	RSS-210 Issue 9, August 2016 RSS-Gen Issue 4, November 2014
IC:	1135B-80S01300
HVIN	D375, VSP875G
PMN	VoIP Phone (used for D375), ErisTerminal SIP Deskset (used for VSP875G)
Type of EUT:	Transceiver
Description of EUT:	VoIP Phone
Serial Number:	N/A
Sample Receipt Date:	October 06, 2017
Date of Test:	October 10, 2017 to February 23, 2018
Report Date:	April 20, 2018
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

TEST REPORT

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EXHIBIT 1 TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE

1.0 Test Results Summary & Statement of Compliance

1.1 Summary of Test Results

TEST ITEMS	FCC PART 15 SECTION	RSS-210/ RSS-GEN [#]	RESULTS	DETAILS SEE SECTION
Antenna Requirement	15.203	8.3 [#]	Pass	2.1
Security Code Information	15.214(d)	2.4	Pass	2.1
Radiated Emission	15.249(a), 209, & 109	A2.9(a)	Pass	4.2
Radiated Emission on the Bandedge	15.249(d)	A2.9(b)	Pass	4.3
Radiated Emission in Restricted Bands	15.205	2.2	Pass	4.2
AC Power Line Conducted Emission	15.207 & 15.107	8.8 [#]	Pass	4.4
Occupied Bandwidth	--	6.6 [#]	Pass	4.5

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, 2016 Edition
- RSS-210 Issue 9, August 2016
- RSS-Gen Issue 4, November 2014

TEST REPORT**EXHIBIT 2 GENERAL DESCRIPTION****2.0 General Description****2.1 Product Description**

The D375 is a VoIP Phone. The EUT was powered by 120AC adaptor or POE. It can support Bluetooth 3.0 and 4.0.

For Bluetooth 3.0, it operates at frequency range of 2402MHz to 2480MHz with 1MHz channel spacing.

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

For FCC, the Model(s): snom D375, snom 375, 375 and VSP875G are the same as the Model: D375 in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are model number and trade name to be sold for marketing purpose.

For IC, the Model(s): VSP875G is the same as the Model: D375 in electronics/electrical designs including software & firmware, PCB layout and construction design/physical design/enclosure. The only differences between these models are model number and trade name to be sold for marketing purpose.

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.

2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Preliminary radiated scans and all radiated measurements were performed in Radiated Emission 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 radiated emission test sites and conducted measurement facility used to collect the radiated data and conducted data are at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC and IC No. 2042V.

TEST REPORT**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 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 100-120AC 50/60MHz adaptor.

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable which is four feet in diameter and approximately 0.8m in height above the ground plane for emission measurement at or below 1GHz and 1.5m in height above the ground plane for emission measurement above 1GHz. 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 (T_{eff}) was $625\mu s$. 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.

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 Radiated Emission Test Setup

The figure below shows the test setup, which is utilized to make these measurements.

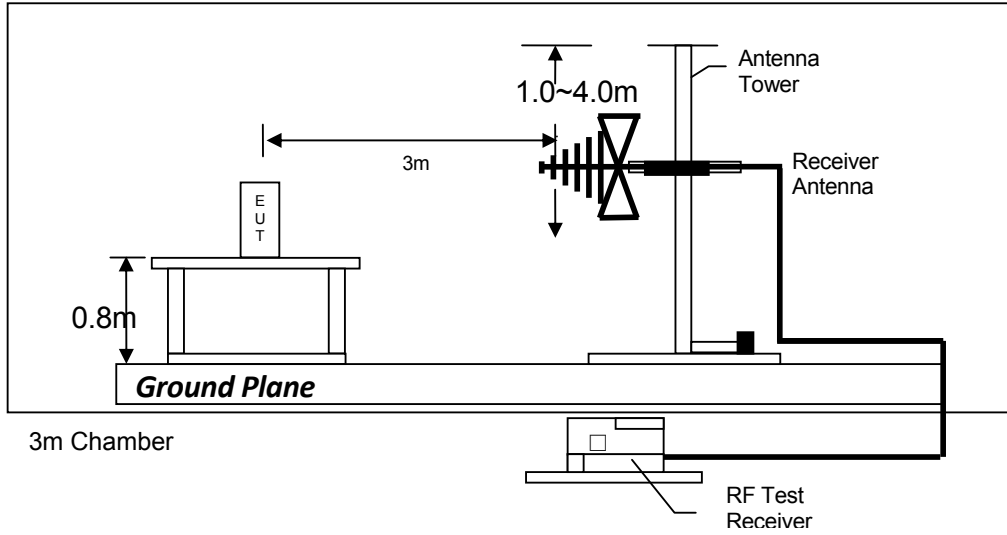


Figure 3.3.1 Test setup of radiated emissions up to 1GHz

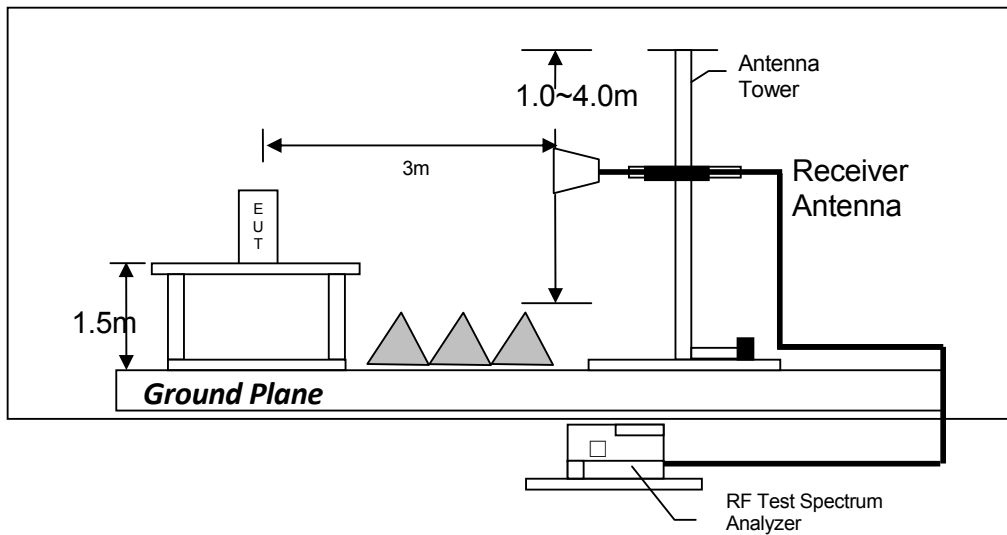


Figure 3.3.2 Test setup of radiated emissions above 1GHz

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3.4 Conducted Emission Test Setup

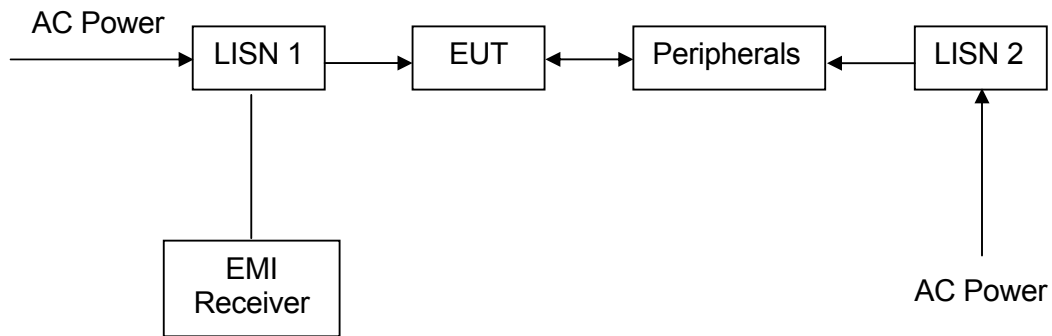


Figure 3.4.1

TEST REPORT**3.5 Details of EUT and Description of Accessories***Details of EUT:*

Three kinds of AC adaptors (provided with the unit) were used to power the device. Their description are listed below.

- (1) An AC adaptor with ferrite (Brand: SIL, Input: 100-240V, 50/60Hz, 300mA to Output: 5V, 2000mA, Model: SSA-050200US) (Supplied by Client)
- (2) An AC adaptor (Brand: PHIHONG, Input: 100-240V, 50/60Hz, 300mA to Output: 5V, 2000mA, Model: PSM10R-050) (Supplied by Client)
- (3) An AC adaptor (Brand: TenPao, Input: 100-240V, 50/60Hz, 500mA to Output: 5V, 2000mA, Model: S018BAM0500200) (Supplied by Client)

Description of Accessories:

- (1) Expansion Module (Brand: Snom, Model: D3, PN: 00004327) (Supplied by Client)
- (2) Notebook (Brand: HP) (Supplied by Intertek)
- (3) LAN Cable x2 with the length of 1m (Supplied by Intertek)
- (4) Headset Wired Binaural (Brand: Snom, Model: A100D, PN: 00004342) (Supplied by Client)
- (5) USB Bluetooth Adapter (Brand: Orico, Model: BTA-402) (Supplied by Client)
- (6) PoE (Power over Ethernet), Brand: TP-LINK, Model: TL-POE150S with Adaptor (Model: MU24-1480050-B2, Input: 100-240V, 50/60Hz, 1.0A; Output: 48V, 0.5A) (Supplied by Intertek)

3.6 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered. The values of the Measurement uncertainty for radiated emission test, AC line conducted emission test and RF conducted test, frequency stability and timing jitter are $\pm 5.3\text{dB}$, $\pm 4.2\text{dB}$, $\pm 1\text{dB}$, $\pm 23\text{Hz}$, $0.1\mu\text{s}$ respectively.

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.

TEST REPORT**EXHIBIT 4 TEST RESULTS****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 dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- 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 dB μ V 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 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

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4.2 Radiated Emissions

4.2.1 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at

PHIHONG Adaptor: 50.4 MHz

SIL Adaptor: 50.4 MHz

TenPao Adaptor: 50.4 MHz

PoE: 50.4 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 1-16 list the significant emission frequencies, the limit and the margin of compliance. Test setup is shown in section 3.3 Figure 3.3.1 and 3.3.2.

Judgement -

PHIHONG Adaptor: Passed by 0.8 dB margin

SIL Adaptor: 1.2 dB margin

TenPao Adaptor: 1.0 dB margin

PoE: 1.6 dB margin

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RADIATED EMISSION DATA

Lowest Channel

Table 1 (PHIHONG Adaptor)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2402.000	92.9	33	29.4	89.3	24	65.3	94.0	-28.7
V	4804.000	51.4	33	34.9	53.3	24	29.3	54.0	-24.7
V	7206.000	46.3	33	37.9	51.2	24	27.2	54.0	-26.8
H	9608.000	38.7	33	40.4	46.1	24	22.1	54.0	-31.9
H	12010.000	37.3	33	40.5	44.8	24	20.8	54.0	-33.2
V	14412.000	38.6	33	40.0	45.6	24	21.6	54.0	-32.4

Polarization	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)
H	2402.000	92.9	33	29.4	89.3	114.0	-24.7
V	4804.000	51.4	33	34.9	53.3	74.0	-20.7
V	7206.000	46.3	33	37.9	51.2	74.0	-22.8
H	9608.000	38.7	33	40.4	46.1	74.0	-27.9
H	12010.000	37.3	33	40.5	44.8	74.0	-29.2
V	14412.000	38.6	33	40.0	45.6	74.0	-28.4

- 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 4.1.

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Middle Channel

Table 2 (PHIHONG Adaptor)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2441.000	96.0	33	29.4	92.4	24	68.4	94.0	-25.6
V	4882.000	52.9	33	34.9	54.8	24	30.8	54.0	-23.2
V	7323.000	47.5	33	37.9	52.4	24	28.4	54.0	-25.6
H	9764.000	36.8	33	40.4	44.2	24	20.2	54.0	-33.8
H	12205.000	38.2	33	40.5	45.7	24	21.7	54.0	-32.3
V	14646.000	40.2	33	38.4	45.6	24	21.6	54.0	-32.4

Polarization	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)
H	2441.000	96.0	33	29.4	92.4	114.0	-21.6
V	4882.000	52.9	33	34.9	54.8	74.0	-19.2
V	7323.000	47.5	33	37.9	52.4	74.0	-21.6
H	9764.000	36.8	33	40.4	44.2	74.0	-29.8
H	12205.000	38.2	33	40.5	45.7	74.0	-28.3
V	14646.000	40.2	33	38.4	45.6	74.0	-28.4

- 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 4.1.

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Highest Channel

Table 3 (PHIHONG Adaptor)

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
H	2480.000	96.2	33	29.4	92.6	24	68.6	94.0	-25.4
V	4960.000	48.6	33	34.9	50.5	24	26.5	54.0	-27.5
V	7440.000	47.6	33	37.9	52.5	24	28.5	54.0	-25.5
H	9920.000	43.1	33	40.4	50.5	24	26.5	54.0	-27.5
H	12400.000	36.8	33	40.5	44.3	24	20.3	54.0	-33.7
V	14880.000	40.2	33	38.4	45.6	24	21.6	54.0	-32.4

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
H	2480.000	96.2	33	29.4	92.6	114.0	-21.4
V	4960.000	48.6	33	34.9	50.5	74.0	-23.5
V	7440.000	47.6	33	37.9	52.5	74.0	-21.5
H	9920.000	43.1	33	40.4	50.5	74.0	-23.5
H	12400.000	36.8	33	40.5	44.3	74.0	-29.7
V	14880.000	40.2	33	38.4	45.6	74.0	-28.4

- 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 4.1.

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Mode: Bluetooth On

Table 4 (PHIHONG Adaptor)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	30.680	39.8	16	10.0	33.8	40.0	-6.2
V	39.520	39.6	16	10.0	33.6	40.0	-6.4
V	50.400	44.2	16	11.0	39.2	40.0	-0.8
V	69.780	43.3	16	7.0	34.3	40.0	-5.7
V	77.260	46.8	16	6.0	36.8	40.0	-3.2
V	103.780	40.4	16	13.0	37.4	43.5	-6.1
V	106.840	41.9	16	13.0	38.9	43.5	-4.6
V	172.800	38.5	16	18.0	40.5	43.5	-3.0
H	249.900	31.3	16	20.0	35.3	46.0	-10.7
H	292.900	30.9	16	22.0	36.9	46.0	-9.1
H	339.800	33.5	16	24.0	41.5	46.0	-4.5
V	500.000	26.8	16	26.0	36.8	46.0	-9.2
H	750.100	21.1	16	30.0	35.1	46.0	-10.9
V	796.600	18.4	16	31.0	33.4	46.0	-12.6
H	950.100	15.8	16	33.0	32.8	46.0	-13.2

- NOTES:
1. Peak Detector Data is used for the emission measurement.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 harmonic emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative sign in the column shows value 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 4.1.

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Lowest Channel

Table 5 (SIL Adaptor)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2402.000	92.5	33	29.4	88.9	24	64.9	94.0	-29.1
V	4804.000	51.2	33	34.9	53.1	24	29.1	54.0	-24.9
V	7206.000	46.3	33	37.9	51.2	24	27.2	54.0	-26.8
H	9608.000	38.3	33	40.4	45.7	24	21.7	54.0	-32.3
H	12010.000	37.3	33	40.5	44.8	24	20.8	54.0	-33.2
V	14412.000	38.4	33	40.0	45.4	24	21.4	54.0	-32.6

Polarization	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)
H	2402.000	92.5	33	29.4	88.9	114.0	-25.1
V	4804.000	51.2	33	34.9	53.1	74.0	-20.9
V	7206.000	46.3	33	37.9	51.2	74.0	-22.8
H	9608.000	38.3	33	40.4	45.7	74.0	-28.3
H	12010.000	37.3	33	40.5	44.8	74.0	-29.2
V	14412.000	38.4	33	40.0	45.4	74.0	-28.6

- 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.
 6. Horn antenna is used for the emission over 1000MHz.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Middle Channel

Table 6 (SIL Adaptor)

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
H	2441.000	95.7	33	29.4	92.1	24	68.1	94.0	-25.9
V	4882.000	52.9	33	34.9	54.8	24	30.8	54.0	-23.2
V	7323.000	47.6	33	37.9	52.5	24	28.5	54.0	-25.5
H	9764.000	36.9	33	40.4	44.3	24	20.3	54.0	-33.7
H	12205.000	38.2	33	40.5	45.7	24	21.7	54.0	-32.3
V	14646.000	39.7	33	38.4	45.1	24	21.1	54.0	-32.9

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
H	2441.000	95.7	33	29.4	92.1	114.0	-21.9
V	4882.000	52.9	33	34.9	54.8	74.0	-19.2
V	7323.000	47.6	33	37.9	52.5	74.0	-21.5
H	9764.000	36.9	33	40.4	44.3	74.0	-29.7
H	12205.000	38.2	33	40.5	45.7	74.0	-28.3
V	14646.000	39.7	33	38.4	45.1	74.0	-28.9

- 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.
 6. Horn antenna is used for the emission over 1000MHz.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Highest Channel

Table 7 (SIL Adaptor)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2480.000	96.0	33	29.4	92.4	24	68.4	94.0	-25.6
V	4960.000	48.3	33	34.9	50.2	24	26.2	54.0	-27.8
V	7440.000	47.2	33	37.9	52.1	24	28.1	54.0	-25.9
H	9920.000	42.9	33	40.4	50.3	24	26.3	54.0	-27.7
H	12400.000	36.6	33	40.5	44.1	24	20.1	54.0	-33.9
V	14880.000	40.3	33	38.4	45.7	24	21.7	54.0	-32.3

Polarization	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)
H	2480.000	96.0	33	29.4	92.4	114.0	-21.6
V	4960.000	48.3	33	34.9	50.2	74.0	-23.8
V	7440.000	47.2	33	37.9	52.1	74.0	-21.9
H	9920.000	42.9	33	40.4	50.3	74.0	-23.7
H	12400.000	36.6	33	40.5	44.1	74.0	-29.9
V	14880.000	40.3	33	38.4	45.7	74.0	-28.3

- 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.
 6. Horn antenna is used for the emission over 1000MHz.
 7. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Mode: Bluetooth On

Table 8 (SIL Adaptor)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	30.680	39.8	16	10.0	33.8	40.0	-6.2
V	39.520	39.6	16	10.0	33.6	40.0	-6.4
V	50.400	43.8	16	11.0	38.8	40.0	-1.2
V	69.780	43.3	16	7.0	34.3	40.0	-5.7
V	77.260	46.8	16	6.0	36.8	40.0	-3.2
V	103.780	40.3	16	13.0	37.3	43.5	-6.2
V	106.840	41.9	16	13.0	38.9	43.5	-4.6
V	172.800	38.7	16	18.0	40.7	43.5	-2.8
H	249.900	32.1	16	20.0	36.1	46.0	-9.9
H	292.900	30.5	16	22.0	36.5	46.0	-9.5
H	339.800	33.1	16	24.0	41.1	46.0	-4.9
V	500.000	26.8	16	26.0	36.8	46.0	-9.2
H	750.100	21.0	16	30.0	35.0	46.0	-11.0
V	796.600	18.3	16	31.0	33.3	46.0	-12.7
H	950.100	15.9	16	33.0	32.9	46.0	-13.1

- NOTES:
1. Peak Detector Data is used for the emission measurement.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 harmonic emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative sign in the column shows value 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 4.1.

TEST REPORT

Lowest Channel

Table 9 (TenPao Adaptor)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2402.000	91.6	33	29.4	88.0	24	64.0	94.0	-30.0
V	4804.000	51.2	33	34.9	53.1	24	29.1	54.0	-24.9
V	7206.000	46.1	33	37.9	51.0	24	27.0	54.0	-27.0
H	9608.000	37.4	33	40.4	44.8	24	20.8	54.0	-33.2
H	12010.000	36.7	33	40.5	44.2	24	20.2	54.0	-33.8
V	14412.000	38.3	33	40.0	45.3	24	21.3	54.0	-32.7

Polarization	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)
H	2402.000	91.6	33	29.4	88.0	114.0	-26.0
V	4804.000	51.2	33	34.9	53.1	74.0	-20.9
V	7206.000	46.1	33	37.9	51.0	74.0	-23.0
H	9608.000	37.4	33	40.4	44.8	74.0	-29.2
H	12010.000	36.7	33	40.5	44.2	74.0	-29.8
V	14412.000	38.3	33	40.0	45.3	74.0	-28.7

- 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.
 8. Horn antenna is used for the emission over 1000MHz.
 9. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Middle Channel

Table 10 (TenPao Adaptor)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2441.000	95.4	33	29.4	91.8	24	67.8	94.0	-26.2
V	4882.000	52.9	33	34.9	54.8	24	30.8	54.0	-23.2
V	7323.000	46.8	33	37.9	51.7	24	27.7	54.0	-26.3
H	9764.000	37.1	33	40.4	44.5	24	20.5	54.0	-33.5
H	12205.000	38.3	33	40.5	45.8	24	21.8	54.0	-32.2
V	14646.000	37.8	33	38.4	43.2	24	19.2	54.0	-34.8

Polarization	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)
H	2441.000	95.4	33	29.4	91.8	114.0	-22.2
V	4882.000	52.9	33	34.9	54.8	74.0	-19.2
V	7323.000	46.8	33	37.9	51.7	74.0	-22.3
H	9764.000	37.1	33	40.4	44.5	74.0	-29.5
H	12205.000	38.3	33	40.5	45.8	74.0	-28.2
V	14646.000	37.8	33	38.4	43.2	74.0	-30.8

- 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.
 8. Horn antenna is used for the emission over 1000MHz.
 9. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Highest Channel

Table 11 (TenPao Adaptor)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2480.000	96.4	33	29.4	92.8	24	68.8	94.0	-25.2
V	4960.000	48.2	33	34.9	50.1	24	26.1	54.0	-27.9
V	7440.000	46.5	33	37.9	51.4	24	27.4	54.0	-26.6
H	9920.000	42.7	33	40.4	50.1	24	26.1	54.0	-27.9
H	12400.000	37.1	33	40.5	44.6	24	20.6	54.0	-33.4
V	14880.000	40.4	33	38.4	45.8	24	21.8	54.0	-32.2

Polarization	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)
H	2480.000	96.4	33	29.4	92.8	114.0	-21.2
V	4960.000	48.2	33	34.9	50.1	74.0	-23.9
V	7440.000	46.5	33	37.9	51.4	74.0	-22.6
H	9920.000	42.7	33	40.4	50.1	74.0	-23.9
H	12400.000	37.1	33	40.5	44.6	74.0	-29.4
V	14880.000	40.4	33	38.4	45.8	74.0	-28.2

- 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.
 8. Horn antenna is used for the emission over 1000MHz.
 9. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Mode: Bluetooth On

Table 12 (TenPao Adaptor)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	30.680	39.6	16	10.0	33.6	40.0	-6.4
V	39.520	39.6	16	10.0	33.6	40.0	-6.4
V	50.400	44.0	16	11.0	39.0	40.0	-1.0
V	69.780	44.8	16	7.0	35.8	40.0	-4.2
V	77.260	46.5	16	6.0	36.5	40.0	-3.5
V	103.780	40.1	16	13.0	37.1	43.5	-6.4
V	106.840	40.9	16	13.0	37.9	43.5	-5.6
V	172.800	38.9	16	18.0	40.9	43.5	-2.6
H	249.900	32.1	16	20.0	36.1	46.0	-9.9
H	292.900	30.8	16	22.0	36.8	46.0	-9.2
H	339.800	33.5	16	24.0	41.5	46.0	-4.5
V	500.000	26.8	16	26.0	36.8	46.0	-9.2
H	750.100	21.2	16	30.0	35.2	46.0	-10.8
V	796.600	18.3	16	31.0	33.3	46.0	-12.7
H	950.100	15.7	16	33.0	32.7	46.0	-13.3

- NOTES:
1. Peak Detector Data is used for the emission measurement.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 harmonic emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative sign in the column shows value 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 4.1.

TEST REPORT

Lowest Channel

Table 13 (PoE)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Average Factor (dB)	Calculated at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	2402.000	91.8	33	29.4	88.2	24	64.2	94.0	-29.8
V	4804.000	51.3	33	34.9	53.2	24	29.2	54.0	-24.8
V	7206.000	44.9	33	37.9	49.8	24	25.8	54.0	-28.2
H	9608.000	37.3	33	40.4	44.7	24	20.7	54.0	-33.3
H	12010.000	37.3	33	40.5	44.8	24	20.8	54.0	-33.2
V	14412.000	38.8	33	40.0	45.8	24	21.8	54.0	-32.2

Polarization	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)
H	2402.000	91.8	33	29.4	88.2	114.0	-25.8
V	4804.000	51.3	33	34.9	53.2	74.0	-20.8
V	7206.000	44.9	33	37.9	49.8	74.0	-24.2
H	9608.000	37.3	33	40.4	44.7	74.0	-29.3
H	12010.000	37.3	33	40.5	44.8	74.0	-29.2
V	14412.000	38.8	33	40.0	45.8	74.0	-28.2

- 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.
 10. Horn antenna is used for the emission over 1000MHz.
 11. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Middle Channel

Table 14 (PoE)

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Average Factor (dB)	Calculated at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
H	2441.000	95.5	33	29.4	91.9	24	67.9	94.0	-26.1
V	4882.000	52.5	33	34.9	54.4	24	30.4	54.0	-23.6
V	7323.000	47.1	33	37.9	52.0	24	28.0	54.0	-26.0
H	9764.000	37.4	33	40.4	44.8	24	20.8	54.0	-33.2
H	12205.000	37.8	33	40.5	45.3	24	21.3	54.0	-32.7
V	14646.000	36.9	33	38.4	42.3	24	18.3	54.0	-35.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
H	2441.000	95.5	33	29.4	91.9	114.0	-22.1
V	4882.000	52.5	33	34.9	54.4	74.0	-19.6
V	7323.000	47.1	33	37.9	52.0	74.0	-22.0
H	9764.000	37.4	33	40.4	44.8	74.0	-29.2
H	12205.000	37.8	33	40.5	45.3	74.0	-28.7
V	14646.000	36.9	33	38.4	42.3	74.0	-31.7

- 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.
 10. Horn antenna is used for the emission over 1000MHz.
 11. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Highest Channel

Table 15 (PoE)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Average Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	2480.000	96.7	33	29.4	93.1	24	69.1	94.0	-24.9
V	4960.000	49.3	33	34.9	51.2	24	27.2	54.0	-26.8
V	7440.000	47.1	33	37.9	52.0	24	28.0	54.0	-26.0
H	9920.000	42.9	33	40.4	50.3	24	26.3	54.0	-27.7
H	12400.000	37.3	33	40.5	44.8	24	20.8	54.0	-33.2
V	14880.000	40.3	33	38.4	45.7	24	21.7	54.0	-32.3

Polarization	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)
H	2480.000	96.7	33	29.4	93.1	114.0	-20.9
V	4960.000	49.3	33	34.9	51.2	74.0	-22.8
V	7440.000	47.1	33	37.9	52.0	74.0	-22.0
H	9920.000	42.9	33	40.4	50.3	74.0	-23.7
H	12400.000	37.3	33	40.5	44.8	74.0	-29.2
V	14880.000	40.3	33	38.4	45.7	74.0	-28.3

- 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.
 10. Horn antenna is used for the emission over 1000MHz.
 11. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 4.1.

TEST REPORT

Mode: Bluetooth On

Table 16 (PoE)

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	30.680	39.7	16	10.0	33.7	40.0	-6.3
V	39.520	39.5	16	10.0	33.5	40.0	-6.5
V	50.400	43.4	16	11.0	38.4	40.0	-1.6
V	69.780	44.9	16	7.0	35.9	40.0	-4.1
V	77.260	46.5	16	6.0	36.5	40.0	-3.5
V	103.780	40.2	16	13.0	37.2	43.5	-6.3
V	106.840	40.9	16	13.0	37.9	43.5	-5.6
V	172.800	39.0	16	18.0	41.0	43.5	-2.5
H	249.900	32.5	16	20.0	36.5	46.0	-9.5
H	292.900	30.8	16	22.0	36.8	46.0	-9.2
H	339.800	33.2	16	24.0	41.2	46.0	-4.8
V	500.000	26.9	16	26.0	36.9	46.0	-9.1
H	750.100	21.2	16	30.0	35.2	46.0	-10.8
V	796.600	18.7	16	31.0	33.7	46.0	-12.3
H	950.100	16.0	16	33.0	33.0	46.0	-13.0

- NOTES:
1. Peak Detector Data is used for the emission measurement.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 harmonic emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative sign in the column shows value 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 4.1.

TEST REPORT**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 $(5+1) \times 625\mu\text{s} = 3.75\text{ms}$. For one period for a pseudo-random hopping through at least 20 RF channels in adaptive mode (worst case), it take: $20 \times 3.75\text{ms} = 75\text{ms}$.

The dwell time for DH5 is $5 \times 625\mu\text{s} = 3.125\text{ms}$

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

Therefore,

$$\begin{aligned}\text{Duty Cycle (DC)} &= \text{Maximum On time in } 100\text{ms}/100\text{ms} \\ &= 3.125\text{ms} \times 2 / 100\text{ms} \\ &= 0.0625\end{aligned}$$

$$\begin{aligned}\text{Average Factor (AF) of Bluetooth in dB} &= 20 \log_{10} (0.0625) \\ &= -24.0\text{dB}\end{aligned}$$

TEST REPORT**4.3 Radiated Emission on the Bandedge**

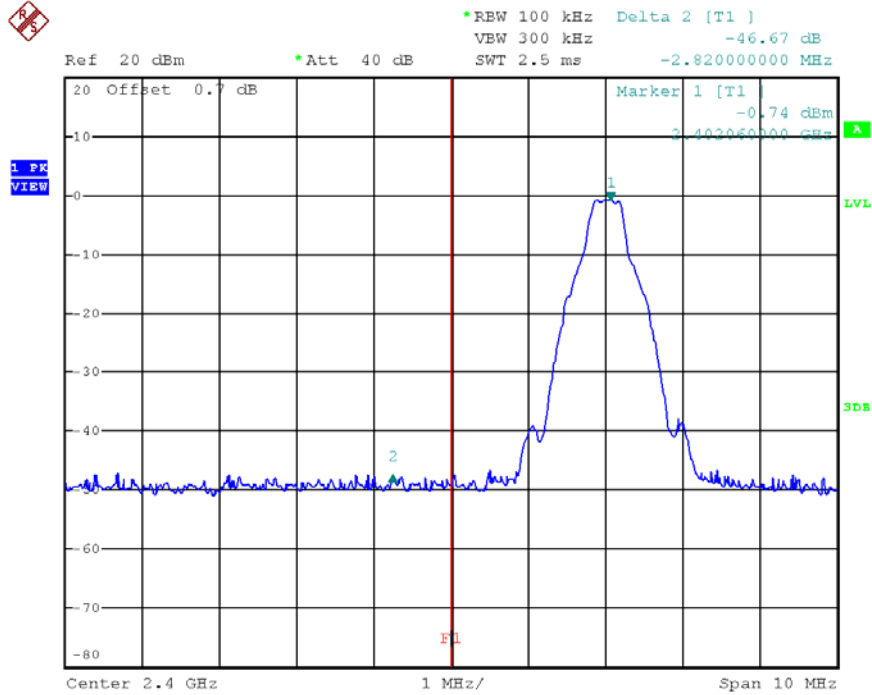
From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz and 2483.5MHz). In case of emissions up to two standard bandwidths away from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.10 (2013) 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 / RSS-210 4.4, whichever is the lesser attenuation, which meet the requirement of FCC Part 15 Section 15.249(d) /RSS-210 B.10.

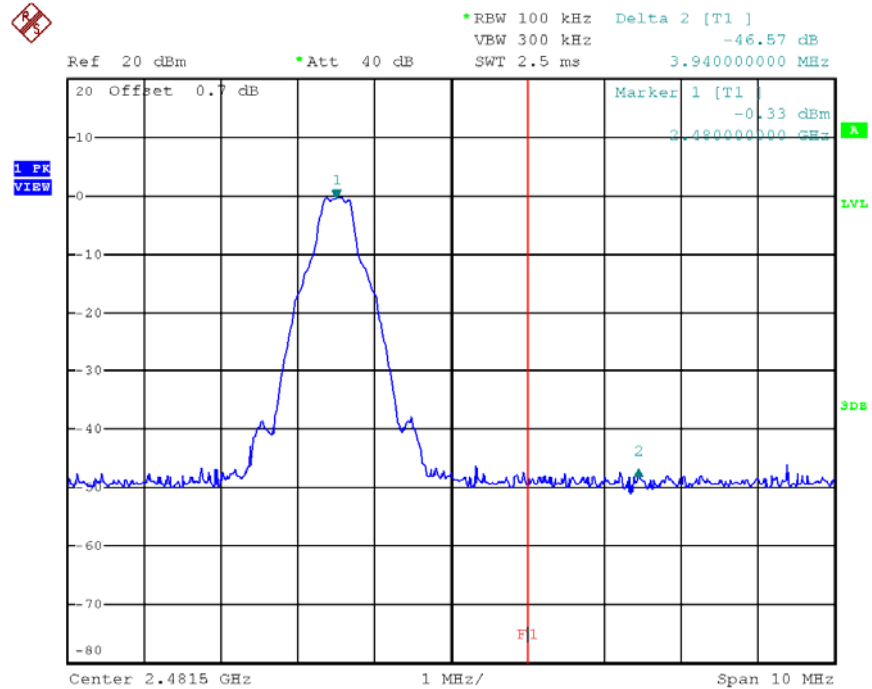
The plots of radiated emission on the bandedge are saved as below.

TEST REPORT

LOWEST CHANNEL



HIGHEST CHANNEL



TEST REPORTPeak Measurement (Bluetooth 3.0)

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

Lower bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=89.3dB μ V/m –46.7dB

=42.6 dB μ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=65.3dB μ V/m – 46.7dB

=18.6dB μ V/m

Upper bandedge

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the plot

=92.6dB μ V/m – 46.6dB

=46.0 dB μ V/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the plot

=68.6dB μ V/m – 46.6dB

=22.0 dB μ V/m

The resultant field strength meets the general radiated emission limit in Section 15.209 / RSS-210 4.4, which does not exceed 74 dB μ V/m (Peak Limit) and 54 dB μ V/m (Average Limit).

TEST REPORT

4.4 AC Power Line Conducted Emission

- [] Not applicable – EUT is only powered by battery for operation.
- [x] 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.

Test setup is shown in section 3.4 Figure 3.4.1.

4.4.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at

PHIHONG Adaptor: 3.1425 MHz
SIL Adaptor: 573 KHz
TenPao Adaptor: 1.176 MHz
PoE: 411 KHz

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

4.4.2 AC Power Line Conducted Emission Data

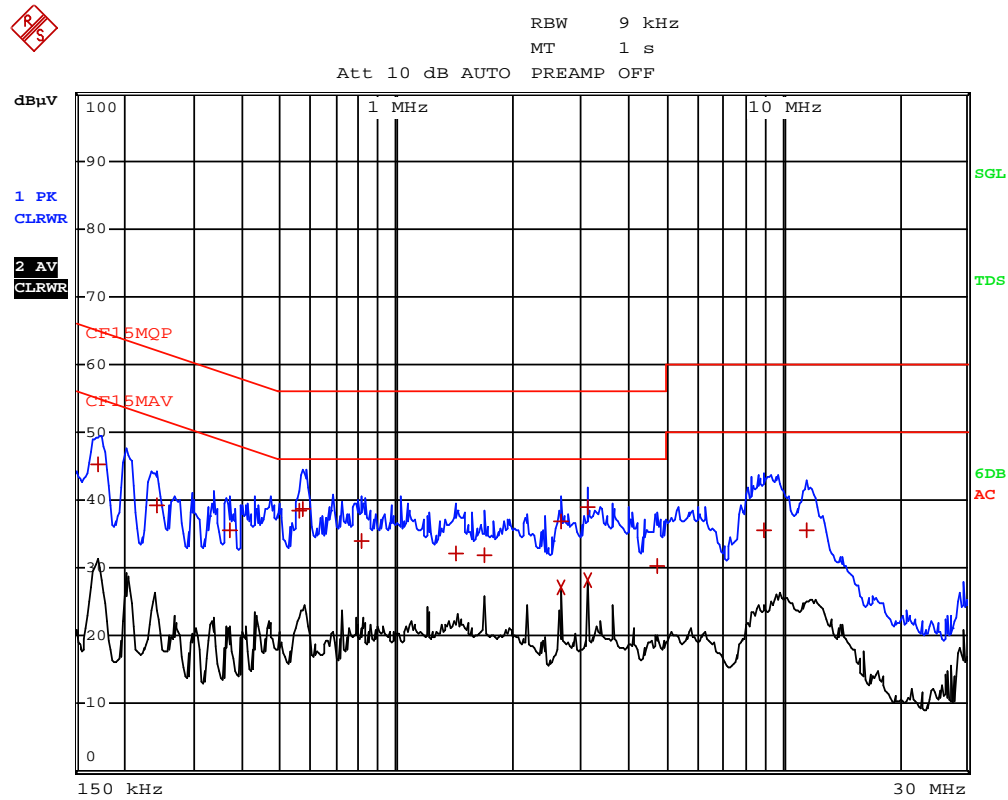
The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance.

Passed by
PHIHONG Adaptor: 17.14 dB margin compared with quasi-peak limit
SIL Adaptor: 15.01 dB margin compared with quasi-peak limit
TenPao Adaptor: 17.17 dB margin compared with CISPR Average limit
PoE: 15.80 dB margin compared with quasi-peak limit

TEST REPORT

CONDUCTED EMISSION DATA

Worst Case: Bluetooth On (PHIHONG Adaptor)



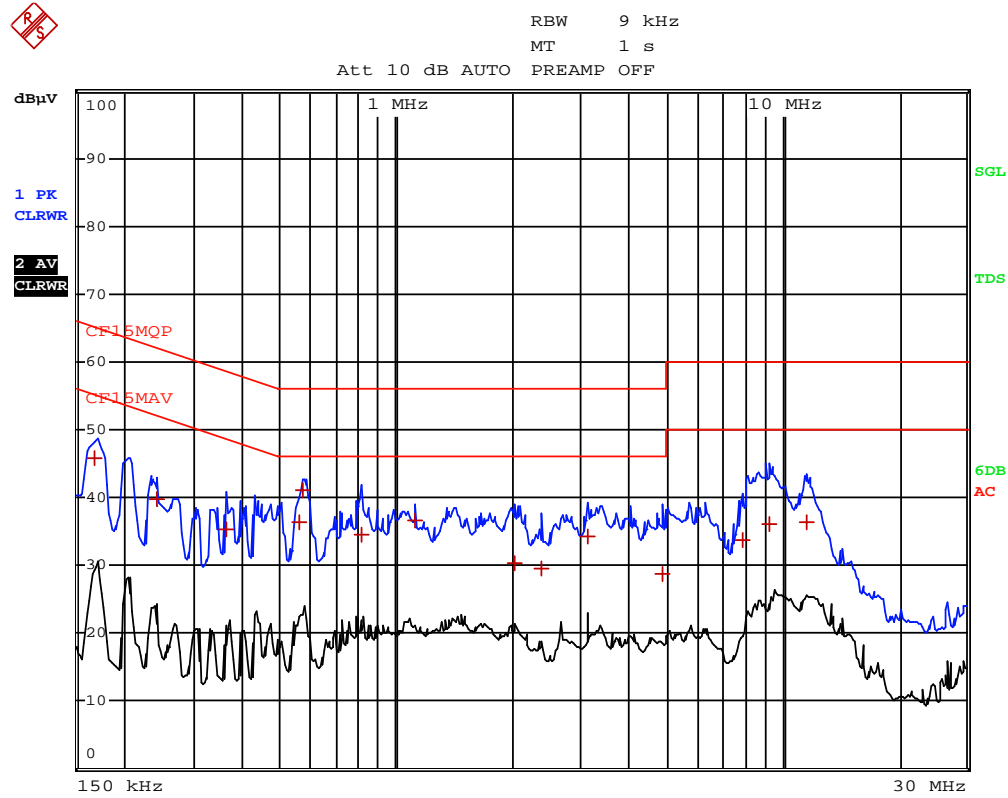
TEST REPORT

Worst Case: Bluetooth On (PHIHONG Adaptor)

EDIT PEAK LIST (Final Measurement Results)					
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
1	Quasi Peak	172.5 kHz	45.24	L1	-19.59
1	Quasi Peak	240 kHz	39.12	L1	-22.97
1	Quasi Peak	370.5 kHz	35.52	N	-22.97
1	Quasi Peak	564 kHz	38.56	L1	-17.43
1	Quasi Peak	573 kHz	38.76	N	-17.23
1	Quasi Peak	816 kHz	33.92	N	-22.07
1	Quasi Peak	1.428 MHz	32.23	N	-23.76
1	Quasi Peak	1.689 MHz	31.80	L1	-24.19
1	Quasi Peak	2.661 MHz	36.80	N	-19.19
2	CISPR Average	2.661 MHz	27.26	N	-18.73
1	Quasi Peak	3.1425 MHz	38.86	L1	-17.14
2	CISPR Average	3.1425 MHz	28.11	N	-17.89
1	Quasi Peak	4.7445 MHz	30.33	N	-25.66
1	Quasi Peak	8.9925 MHz	35.57	N	-24.42
1	Quasi Peak	11.5035 MHz	35.58	L1	-24.41

TEST REPORT

Worst Case: Bluetooth On (SIL Adaptor)



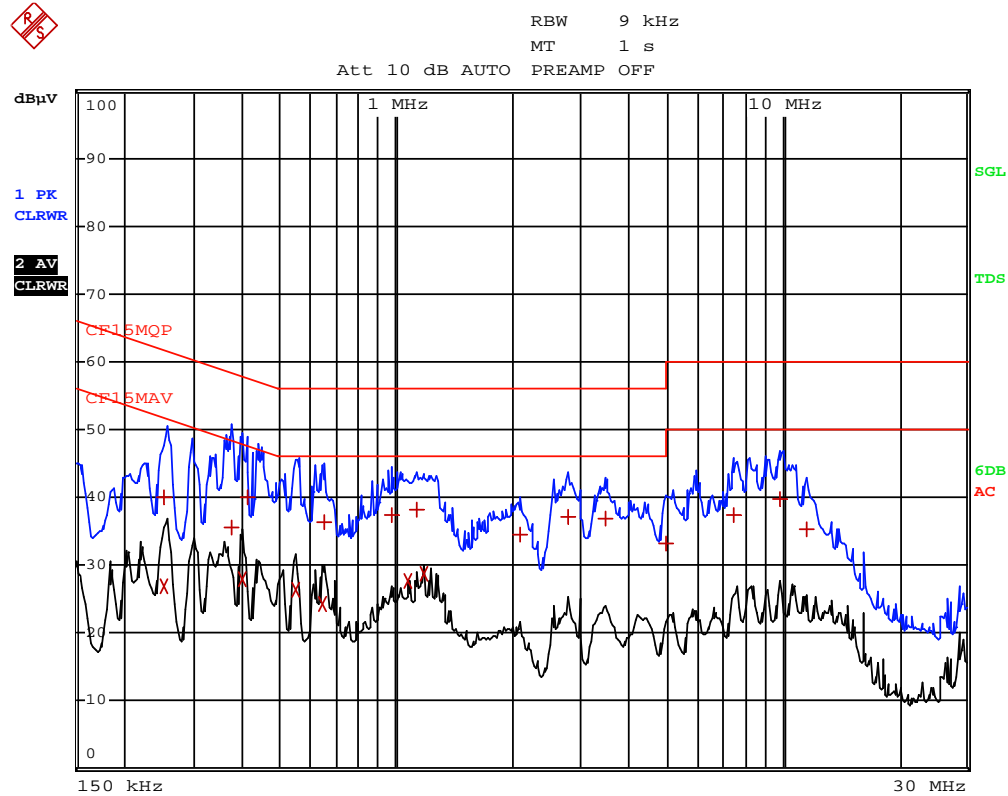
TEST REPORT

Worst Case: Bluetooth On (SIL Adaptor)

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CF15MQP			
Trace2:	CF15MAV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1 Quasi Peak	168 kHz	45.79	L1	-19.26
1 Quasi Peak	240 kHz	39.84	L1	-22.24
1 Quasi Peak	361.5 kHz	35.38	N	-23.30
1 Quasi Peak	559.5 kHz	36.35	L1	-19.65
1 Quasi Peak	573 kHz	40.98	N	-15.01
1 Quasi Peak	816 kHz	34.63	N	-21.36
1 Quasi Peak	1.1175 MHz	36.48	L1	-19.51
1 Quasi Peak	2.0355 MHz	30.39	L1	-25.60
1 Quasi Peak	2.3685 MHz	29.59	L1	-26.41
1 Quasi Peak	3.1425 MHz	34.20	L1	-21.79
1 Quasi Peak	4.893 MHz	28.76	N	-27.24
1 Quasi Peak	7.8495 MHz	33.74	L1	-26.25
1 Quasi Peak	9.2715 MHz	36.07	N	-23.92
1 Quasi Peak	11.544 MHz	36.38	L1	-23.61

TEST REPORT

Worst Case: Bluetooth On (TenPao Adaptor)



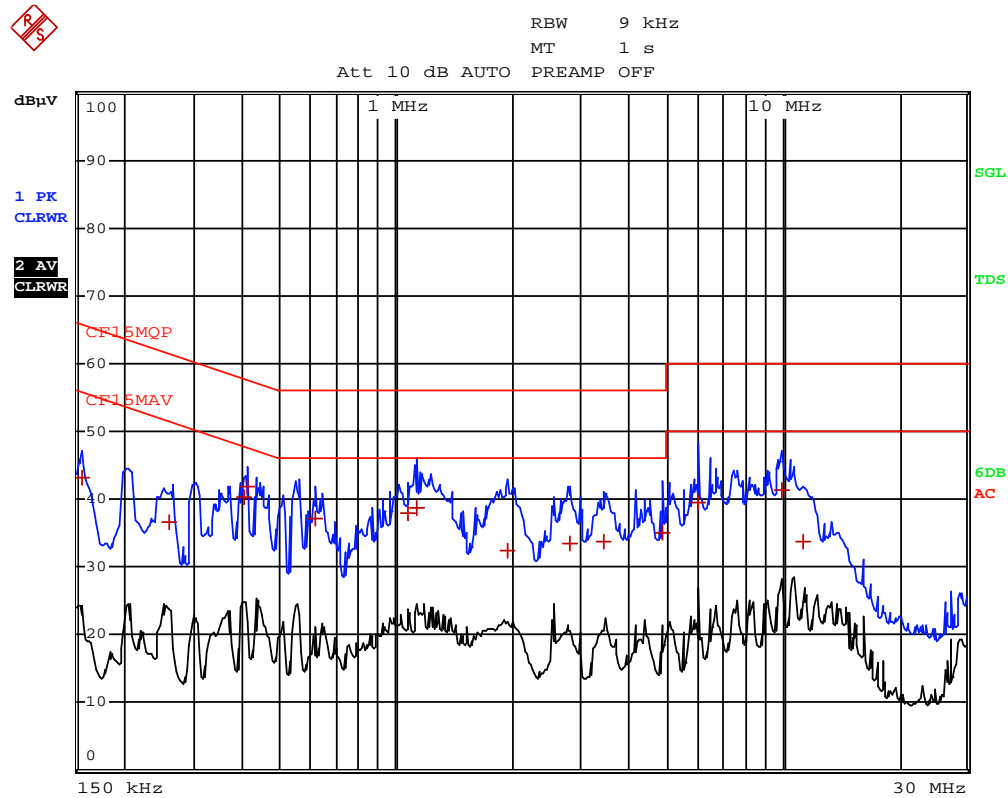
TEST REPORT

Worst Case: Bluetooth On (TenPao Adaptor)

EDIT PEAK LIST (Final Measurement Results)					
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
1	Quasi Peak	253.5 kHz	40.09	L1	-21.55
2	CISPR Average	253.5 kHz	26.96	L1	-24.67
1	Quasi Peak	375 kHz	35.63	L1	-22.75
2	CISPR Average	397.5 kHz	27.85	N	-20.04
1	Quasi Peak	411 kHz	40.12	N	-17.50
2	CISPR Average	550.5 kHz	26.34	N	-19.65
2	CISPR Average	645 kHz	24.25	L1	-21.74
1	Quasi Peak	649.5 kHz	36.39	N	-19.61
1	Quasi Peak	973.5 kHz	37.32	L1	-18.67
2	CISPR Average	1.077 MHz	27.75	N	-18.24
1	Quasi Peak	1.1355 MHz	38.06	N	-17.93
2	CISPR Average	1.176 MHz	28.82	N	-17.17
1	Quasi Peak	2.0895 MHz	34.44	L1	-21.55
1	Quasi Peak	2.787 MHz	37.15	N	-18.84
1	Quasi Peak	3.48 MHz	36.96	N	-19.03
1	Quasi Peak	4.9965 MHz	33.30	L1	-22.69
1	Quasi Peak	7.503 MHz	37.34	L1	-22.65
1	Quasi Peak	9.879 MHz	39.67	L1	-20.32
1	Quasi Peak	11.589 MHz	35.39	N	-24.60

TEST REPORT

Worst Case: Bluetooth On (PoE)



TEST REPORT

Worst Case: Bluetooth On (PoE)

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CF15MQP			
Trace2:	CF15MAV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1 Quasi Peak	154.5 kHz	43.24	L1	-22.51
1 Quasi Peak	262.5 kHz	36.73	N	-24.61
1 Quasi Peak	402 kHz	40.21	L1	-17.59
1 Quasi Peak	411 kHz	41.82	N	-15.80
1 Quasi Peak	618 kHz	37.02	N	-18.97
1 Quasi Peak	1.077 MHz	38.01	L1	-17.98
1 Quasi Peak	1.1355 MHz	38.75	N	-17.24
1 Quasi Peak	1.9545 MHz	32.52	N	-23.47
1 Quasi Peak	2.8185 MHz	33.33	N	-22.66
1 Quasi Peak	3.4395 MHz	33.80	N	-22.19
1 Quasi Peak	4.8705 MHz	34.98	N	-21.01
1 Quasi Peak	6.0315 MHz	39.49	N	-20.50
1 Quasi Peak	9.915 MHz	41.23	N	-18.76
1 Quasi Peak	11.31 MHz	33.75	L1	-26.24

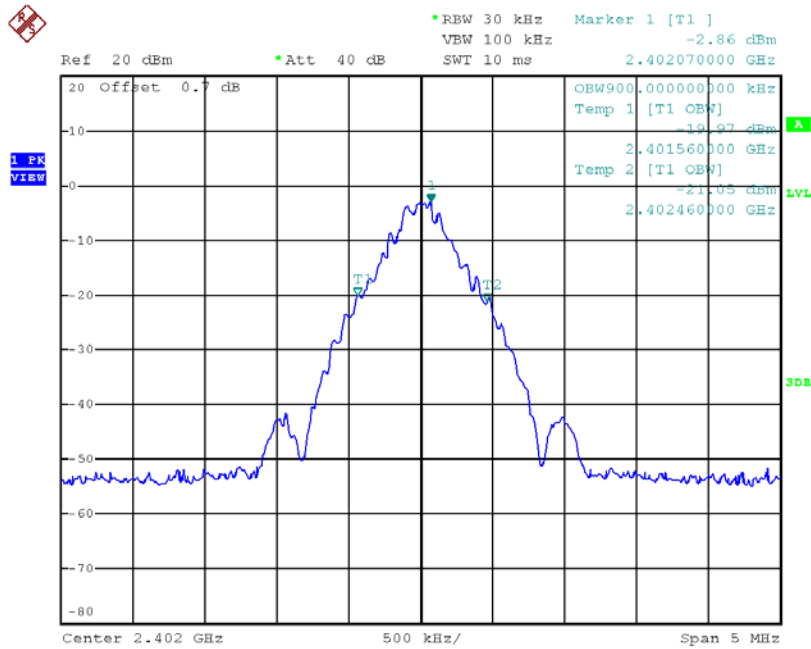
TEST REPORT

4.5 Occupied Bandwidth

Occupied Bandwidth Results:

Bluetooth (MHz)	Occupied Bandwidth (kHz)
Low Channel: 2402	900
Middle Channel: 2441	900
High Channel: 2480	900

The worst case is shown as below



TEST REPORT

EXHIBIT 5 EQUIPMENT LIST

5.0 Equipment List

1) Radiated Emissions Test

Equipment	Biconical Antenna	EMI Test Receiver (9kHz to 26.5GHz)	Double Ridged Guide Antenna
Registration No.	EW-2512	EW-3156	EW-0194
Manufacturer	EMCO	ROHDESCHWARZ	EMCO
Model No.	3104C	ESR26	3115
Calibration Date	Nov 16, 2016	Nov 10, 2017	Aug. 10, 2016
Calibration Due Date	May 16, 2018	Nov 10, 2018	Feb. 10, 2018

Equipment	Log Periodic Antenna	Pyramidal Horn Antenna	Spectrum Analyzer
Registration No.	EW-0447	EW-0905	EW-2466
Manufacturer	EMCO	EMCO	R&S
Model No.	3146	3160-09	FSP30
Calibration Date	Jan 17, 2018	Aug 18, 2017	Sep 4, 2017
Calibration Due Date	Jul 17, 2019	Feb 18, 2019	Jul 16, 2018

Equipment	Active Loop H-field (9kHz to 30MHz)	RF Cable 9kHz to 1000MHz	RF Cable (up to 40GHz)
Registration No.	EW-2313	EW-3170	EW-3155
Manufacturer	ELECTROMETRI	N/A	N/A
Model No.	EM-6876	9kHz to 1000MHz	1-40 GHz
Calibration Date	May 18, 2016	Mar 20, 2017	Jan 29, 2018
Calibration Due Date	Nov 18, 2017	Mar 20, 2018	Jan 29, 2019

Equipment	RF Pre-amplifier 3 pcs (9kHz to 40GHz)	RF Pre-amplifier 3 pcs (9kHz to 40GHz)	Notch Filter (cutoff frequency 2.4GHz to 2.5GHz)
Registration No.	EW-3006	EW-3006	EW-3155
Manufacturer	SCHWARZBECK	SCHWARZBECK	MICROTRONICS
Model No.	BBV 9718	BBV 9744	BRM50701-02
Calibration Date	Mar 23, 2017	Mar 23, 2017	May 26, 2017
Calibration Due Date	Mar 23, 2018	Mar 23, 2018	May 26, 2018

2) Conducted Emissions Test

Equipment	EMI Test Receiver	RF Cable 9kHz to 1000MHz	LISN
Registration No.	EW-3156	EW-3170	EW-2874
Manufacturer	ROHDESCHWARZ	N/A	R&S
Model No.	ESR26	9kHz to 1000MHz	ENV-216
Calibration Date	Nov 10, 2017	Mar 20, 2017	Mar 16, 2017
Calibration Due Date	Nov 10, 2018	Mar 20, 2018	Mar 16, 2018

TEST REPORT

3) Conductive Measurement Test

Equipment	Spectrum Analyzer	RF Cable (up to 40GHz) 1.5m length	RF Power Meter with Power Sensor (N1921A)
Registration No.	EW-2466	<u>EW-3104</u>	<u>EW-2270</u>
Manufacturer	R&S	<u>N/A</u>	<u>AGILENTECH</u>
Model No.	FSP30	<u>SMA-M to SMA-M</u>	<u>N1911A</u>
Calibration Date	Sep 4, 2017	<u>Feb. 28, 2017</u>	<u>Jan 15, 2018</u>
Calibration Due Date	Jul 16, 2018	<u>Feb. 28, 2018</u>	<u>Jan 15, 2019</u>

- End of Report -