FCC RADIO TEST REPORT-BT

FCC ID: 2AFGA-KSP-ONE

Product	Bluetooth Earphone
Trade Name	KSP
Model No	KSP-ONE
Serial Model	N/A

Applicant's name	Shanghai Jiangxu trade Co., Ltd.
Address	Section B,4F,Block1,No.158,Xuxiang Rd,Xujing Town,Qingpu District ,Shanghai

Prepared By	Nowd Testing Services Co.,Ltd. No. 606, FuerYuanjian Business Centre, 25 Zone, Bao'an District, Shenzhen, Guandong
Tel	(86) 755-27830065
Fax	(86) 755-27830095

Report No.	NTS-150624060R
Date of Test	Jun.26, 2015
Date of Rep.	Jul.17, 2015

TEST RESULT CERTIFICATION

Applicant's name	:	Shanghai Jiangxu trade Co., Ltd.
Address	:	Section B,4F,Block1,No.158,Xuxiang Rd,Xujing Town,Qingpu District ,Shanghai
Manufacture's Name	:	OBO PRO.2 INC
Address	:	5 th industry zone, Xie-gang town, Dongguan city

Product description

Product name	:	Bluetooth Earphone
Model and/or type reference	:	KSP-ONE
Standards	:	FCC Part15.247
Test procedure		ANSI C63.4-2003 and KDB 558074: June 5, 2014

This device described above has been tested by Nowd Testing Services Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of Nowd Testing Services Co., Ltd., this document may be altered or revised by ShenZhen Nowd Testing Services Co., Ltd., personal only, and shall be noted in the revision of the document.

Date of Test	:	
Date (s) of performance of tests	:	24 Jun. 2015 ~17 Jul. 2015
Date of Issue	:	17 Jul. 2015
Test Result	:	**Pass**

Prepared by: jack

Jack Wu
Testing Engineer

Reviewed by: Andy

Andy Xie
Technical Manager

Approved by: somnus

somnus
Authorized Signatory

Table of Contents

Page

Table of Contents

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)” N/A” denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Nowd Testing Services Co.,Ltd.
Add. : No. 606, FuerYuanjian Business Centre, 25 Zone, Bao'an District,
Shenzhen, Guandong
FCC Registration No.:230614;

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Bluetooth Earphone
Trade Name	KSP
Model Name	KSP-ONE
Serial Model	N/A
Model Difference	N/A
Product Description	The EUT is a Bluetooth Earphone BLE Operation Frequency: 2402~2480 MHz Modulation Type: BLE: GFSK Bluetooth version BT4.1 Number Of Channel 40 CH Antenna Designation: Please see Note 3.
Channel List	Please refer to the Note 2.
Adapter	N/A
Battery	Rated Voltage:3.7V Charge Limit:4.2V
Connecting I/O Port(s)	Please refer to the User's Manual
Hardware version	V1.0
Software version	V1.91

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel	Frequency (MHz)
00	2402
01	2404
……	……
……	…….
…	…
……	……
38	2478
39	2480

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	PCB Antenna	N/A	2.5	BT Antenna

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39
Mode 4	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39
Mode 4	Link Mode

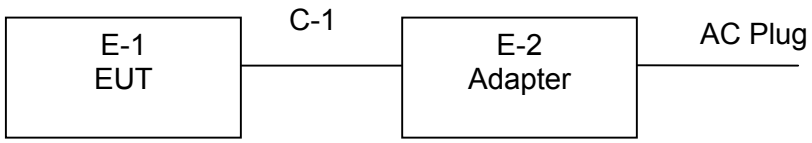
Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

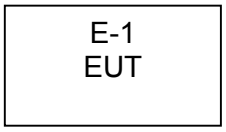
(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	Tablet PC	Filla	KSP-ONE	N/A	EUT
E-2	Adapter	OLe!	GT-001	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0m	USB Cable

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Equipment list Radiation test & other conducted test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	160400005	2015.05.14	2016.05.13	1 year
2	Test Receiver	R&S	ESPI7	101318	2015.05.14	2016.05.13	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.05.14	2016.05.13	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.05.14	2016.05.13	1 year
5	Spectrum Analyzer	ADVANTEST	R3182	150900201	2015.05.14	2016.05.13	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.05.14	2016.05.13	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.05.14	2016.05.13	1 year
8	Amplifier	EM	EM-30180	060538	2014.12.22	2015.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.05.14	2016.05.13	1 year
10	Test Cable 10MHz-1GHz	NTEK	R-01	01	2015.05.14	2016.05.13	1 year
11	Test Cable 1-25GHz	NTEK	R-02	02	2015.05.14	2016.05.13	1 year
12	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:
We will use the temporary antenna connector (soldered on the PCB board) When conducted test
And this temporary antenna connector is listed within the instrument list

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2014.06.06	2015.06.05	1 year
2	LISN	R&S	ENV216	101313	2014.08.24	2015.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2014.08.24	2015.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2014.06.07	2015.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2014.06.07	2015.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2014.06.08	2015.06.07	1 year
7	Test Cable 150KHz-30MHz	NTS	C01	01	2015.05.14	2016.05.13	1 year

1	Attenuation	MCE	24-10-34	BN9258	2014.06.08	2015.06.07	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

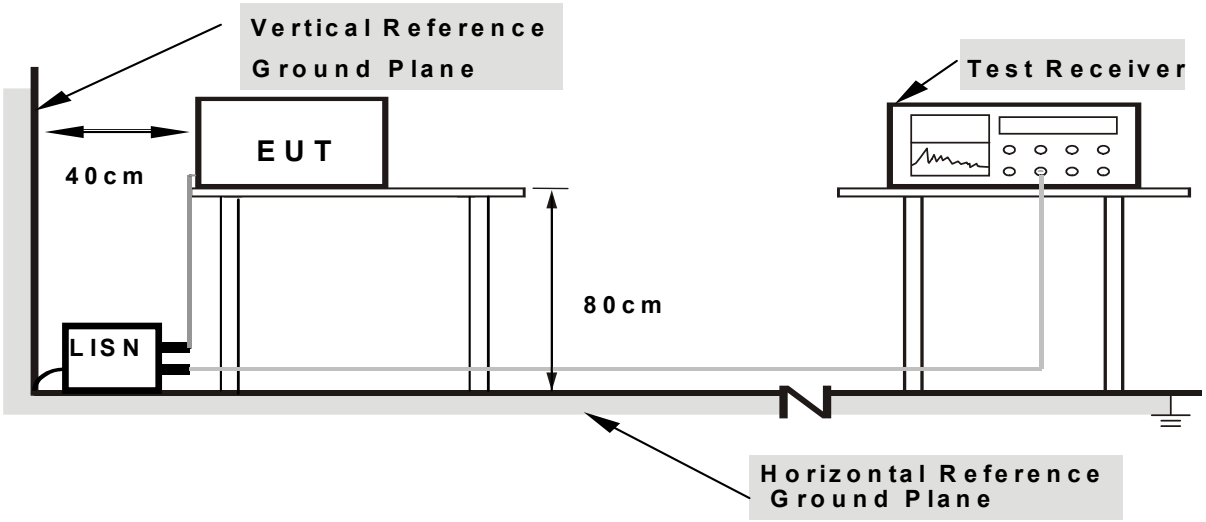
3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

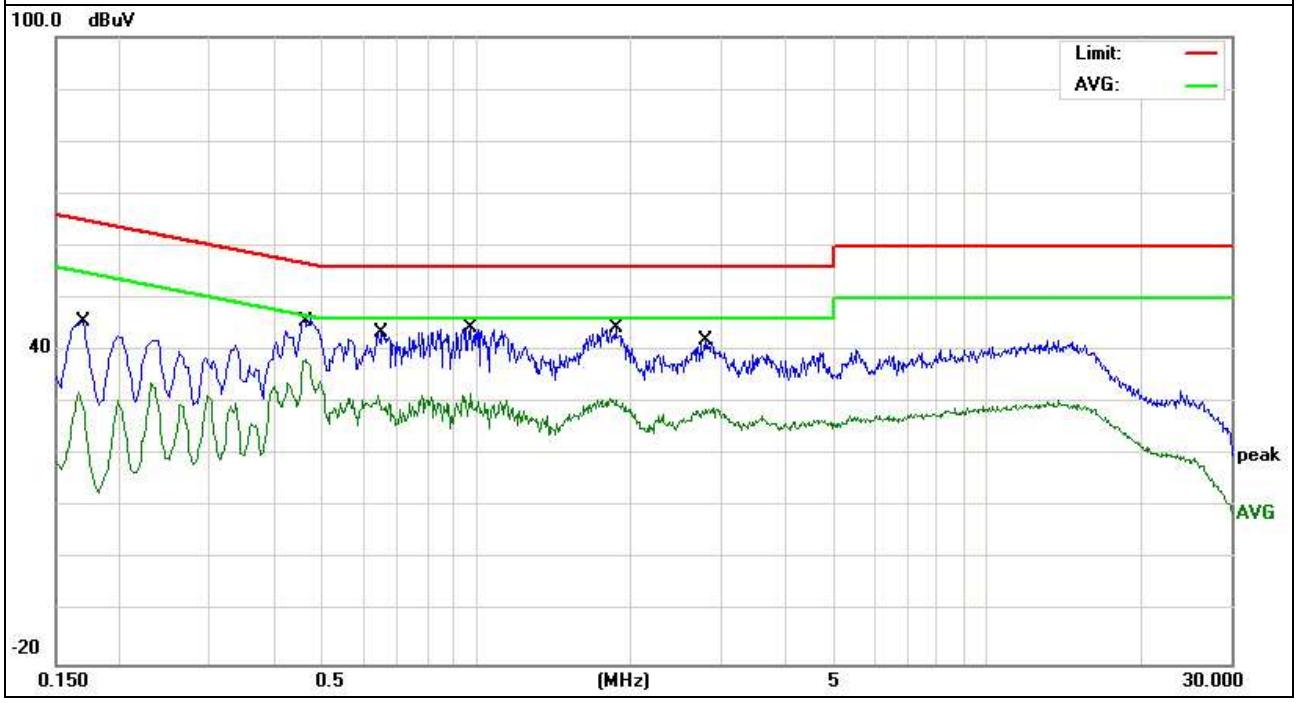
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

EUT：	Bluetooth Earphone	Model Name. ：	KSP-ONE
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5.0V form Adapter AC 120V/60Hz	Test Mode：	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1700	35.89	9.58	45.47	64.96	-19.49	QP
0.1700	22.42	9.58	32.00	54.96	-22.96	AVG
0.4620	36.64	9.41	46.05	56.66	-10.61	QP
0.4620	28.92	9.41	38.33	46.66	-8.33	AVG
0.6540	33.83	9.59	43.42	56.00	-12.58	QP
0.6540	21.79	9.59	31.38	46.00	-14.62	AVG
0.9780	34.68	9.58	44.26	56.00	-11.74	QP
0.9780	22.26	9.58	31.84	46.00	-14.16	AVG
1.8740	34.92	9.57	44.49	56.00	-11.51	QP
1.8740	21.18	9.57	30.75	46.00	-15.25	AVG
2.8100	32.47	9.60	42.07	56.00	-13.93	QP
2.8100	19.56	9.60	29.16	46.00	-16.84	AVG

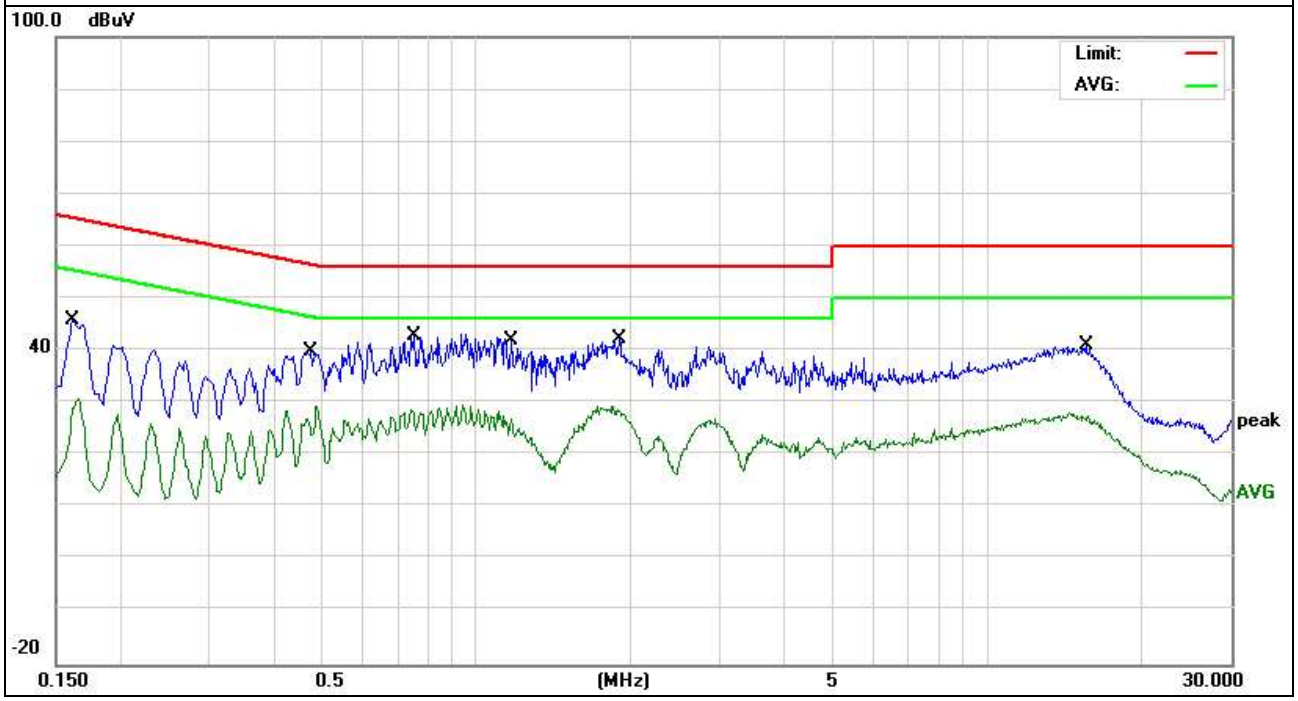
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	Bluetooth Earphone	Model Name. ：	KSP-ONE
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5.0V form Adapter AC 120V/60Hz	Test Mode：	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1620	36.14	9.60	45.74	65.36	-19.62	QP
0.1620	21.38	9.60	30.98	55.36	-24.38	AVG
0.4740	30.44	9.46	39.90	56.44	-16.54	QP
0.4740	19.84	9.46	29.30	46.44	-17.14	AVG
0.7580	33.29	9.45	42.74	56.00	-13.26	QP
0.7580	19.49	9.45	28.94	46.00	-17.06	AVG
1.1660	32.61	9.46	42.07	56.00	-13.93	QP
1.1660	18.88	9.46	28.34	46.00	-17.66	AVG
1.9060	32.89	9.46	42.35	56.00	-13.65	QP
1.9060	20.01	9.46	29.47	46.00	-16.53	AVG
15.5820	31.42	9.72	41.14	60.00	-18.86	QP
15.5820	18.33	9.72	28.05	50.00	-21.95	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

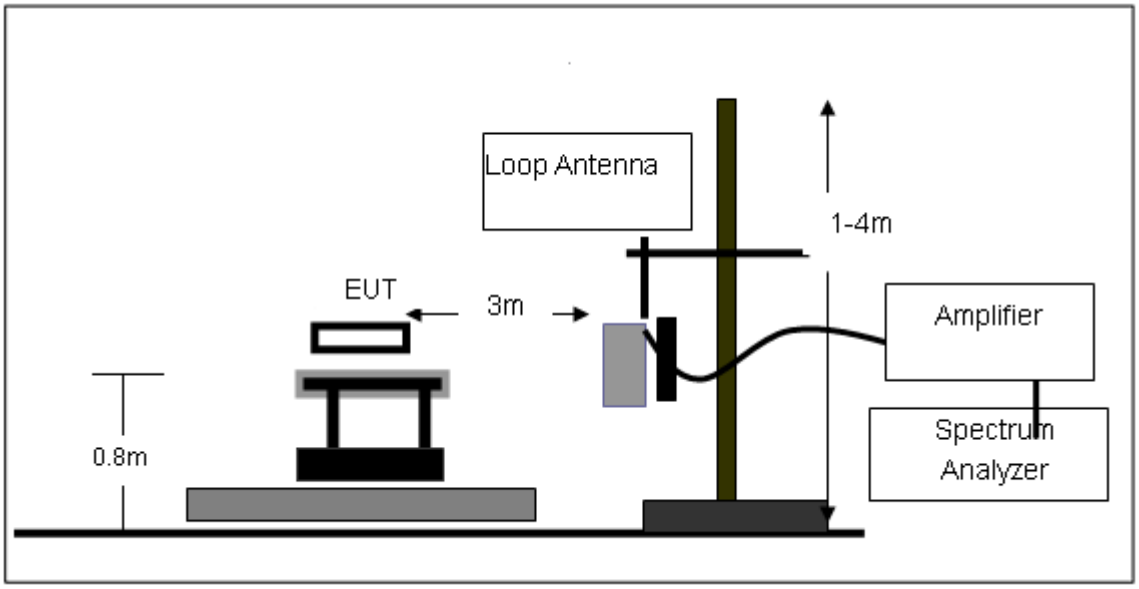
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Peak	1 MHz	10 Hz

3.2.3 DEVIATION FROM TEST STANDARD

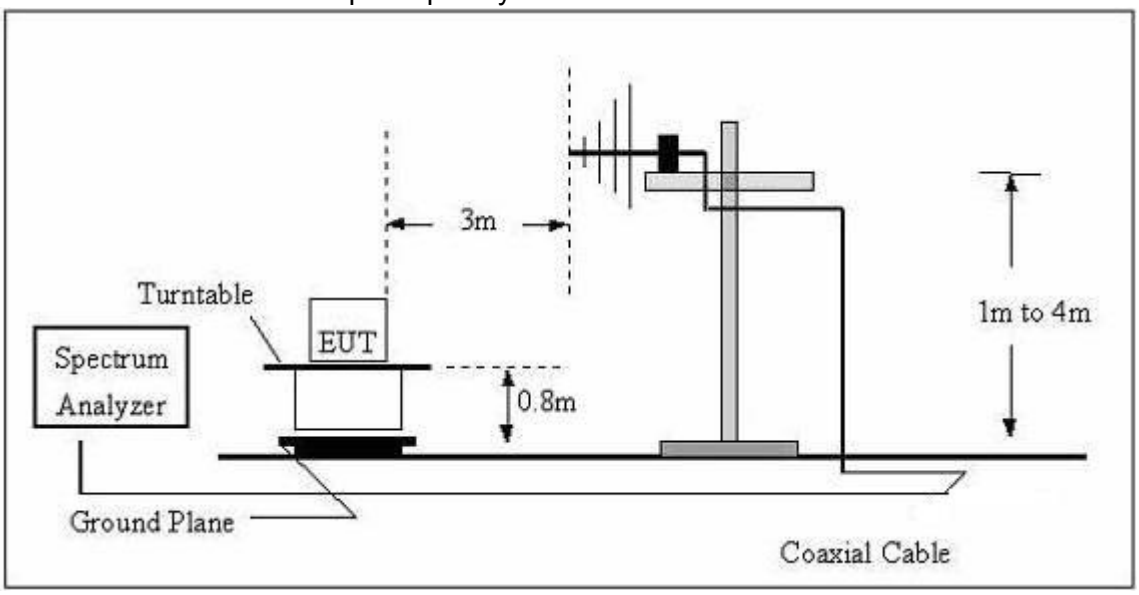
No deviation

3.2.4 TEST SETUP

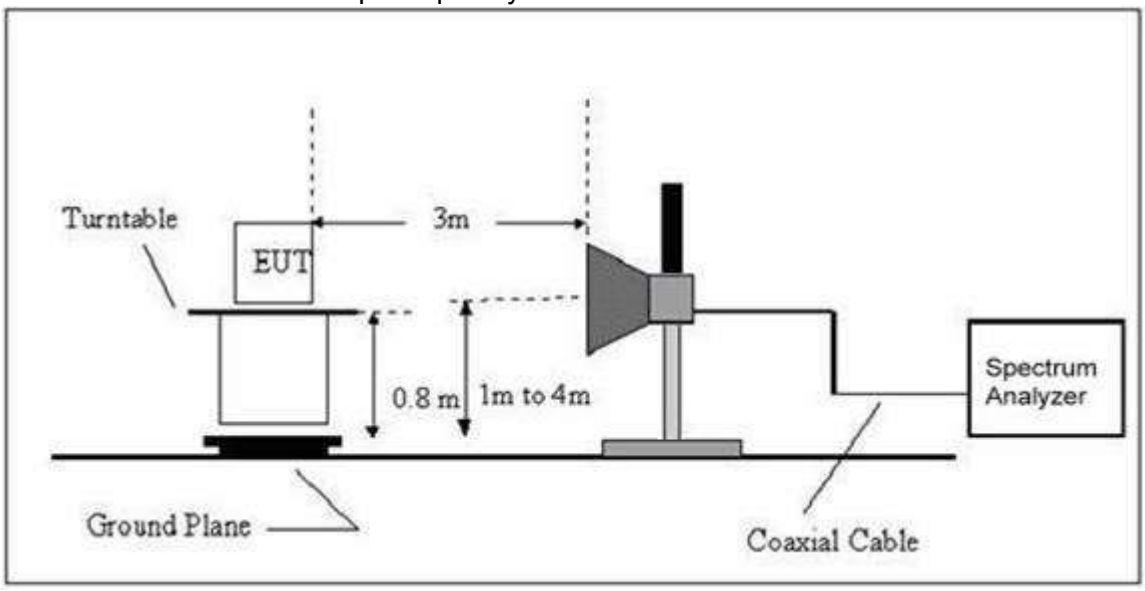
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT：	Bluetooth Earphone	Model Name. ：	KSP-ONE
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

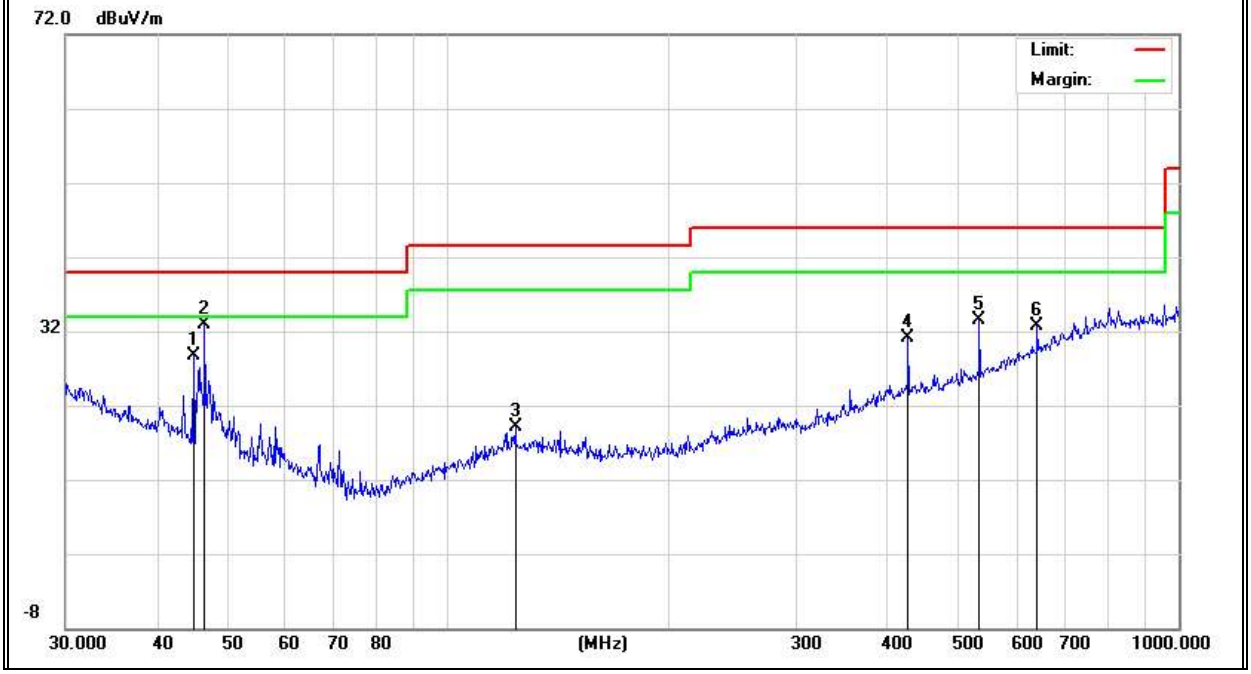
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT：	Bluetooth Earphone	Model Name ：	KSP-ONE
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	44.9004	16.85	11.95	28.80	40.00	-11.20	peak
V	46.5030	21.37	11.56	32.93	40.00	-7.07	peak
V	123.6985	7.09	12.02	19.11	43.50	-24.39	peak
V	426.5210	12.36	18.84	31.20	46.00	-14.80	peak
V	533.8321	12.51	21.00	33.51	46.00	-12.49	peak
V	640.6109	9.54	23.22	32.76	46.00	-13.24	peak

Remark:

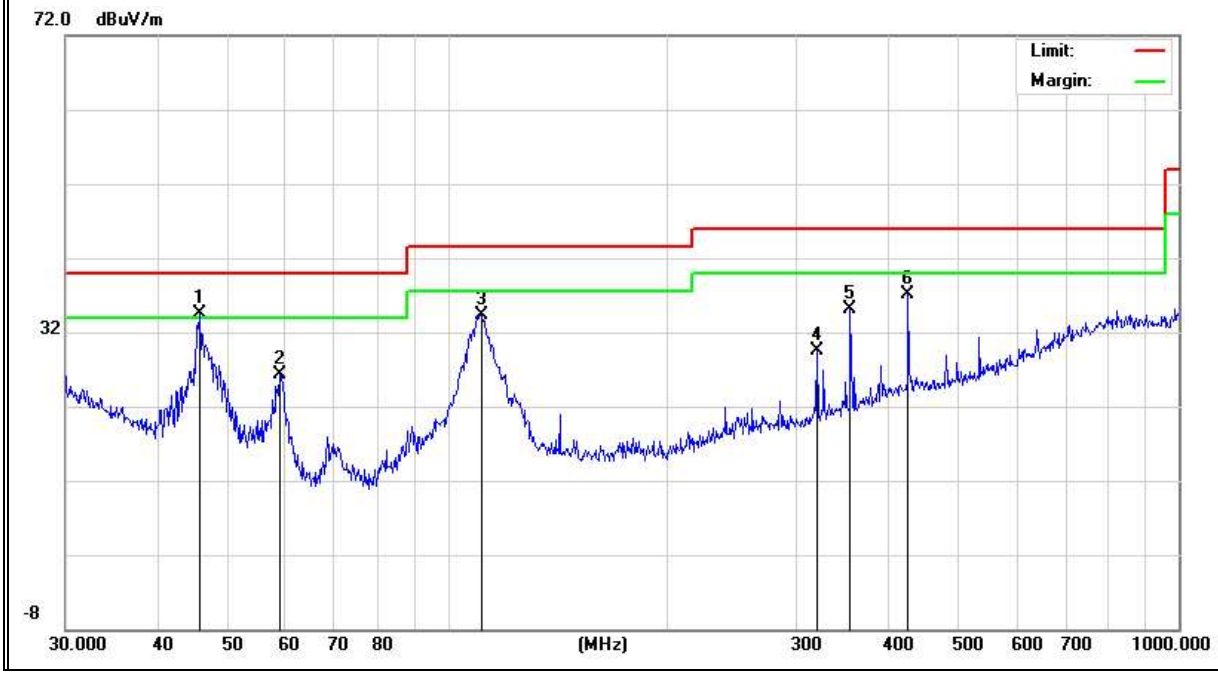
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	45.8551	22.84	11.72	34.56	40.00	-5.44	peak
H	58.8185	18.11	8.16	26.27	40.00	-13.73	peak
H	111.3468	24.13	10.24	34.37	43.50	-9.13	peak
H	319.9370	14.43	14.98	29.41	46.00	-16.59	peak
H	355.4273	18.63	16.47	35.10	46.00	-10.90	peak
H	426.5210	18.24	18.84	37.08	46.00	-8.92	peak

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	Bluetooth Earphone	Model Name ：	KSP-ONE
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX		

Frequency (MHz)	Reading (dBμV)	Factor (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Polar (H/V)
Low Channel (2402 MHz)-Above 1G							
4804.149	60.26	-3.64	63.90	74.00	-10.10	Pk	Vertical
4804.149	39.15	-3.64	42.79	54.00	-11.21	AV	Vertical
7206.354	62.88	-0.95	63.83	74.00	-10.17	Pk	Vertical
7206.354	39.06	-0.95	40.01	54.00	-13.99	AV	Vertical
4804.177	58.31	-3.64	61.95	74.00	-12.05	Pk	Horizontal
4804.177	38.64	-3.64	42.28	54.00	-11.72	AV	Horizontal
7206.228	57.64	-0.95	58.59	74.00	-15.41	Pk	Horizontal
7206.228	39.18	-0.95	40.13	54.00	-13.87	AV	Horizontal
Mid Channel (2440 MHz)-Above 1G							
4880.103	58.69	-3.68	62.37	74.00	-11.63	Pk	Vertical
4880.103	37.87	-3.68	41.55	54.00	-12.45	AV	Vertical
7320.261	58.97	-0.82	59.79	74.00	-14.21	Pk	Vertical
7320.261	39.34	-0.82	40.16	54.00	-13.84	AV	Vertical
4880.199	58.87	-3.68	62.55	74.00	-11.45	Pk	Horizontal
4880.199	38.02	-3.68	41.70	54.00	-12.30	AV	Horizontal
7320.204	59.39	-0.82	60.21	74.00	-13.79	Pk	Horizontal
7320.204	38.44	-0.82	39.26	54.00	-14.74	AV	Horizontal
High Channel (2480MHz)- Above 1G							
4960.126	59.23	-3.59	62.82	74.00	-11.18	Pk	Vertical
4960.126	39.66	-3.59	43.25	54.00	-10.75	AV	Vertical
7440.259	59.07	-0.68	59.75	74.00	-14.25	Pk	Vertical
7440.259	40.11	-0.68	40.79	54.00	-13.21	AV	Vertical
4960.278	57.84	-3.59	61.43	74.00	-12.57	Pk	Horizontal
4960.278	38.88	-3.59	42.47	54.00	-11.53	AV	Horizontal
7440.316	59.25	-0.68	59.93	74.00	-14.07	Pk	Horizontal
7440.316	37.48	-0.68	38.16	54.00	-15.84	AV	Horizontal
Remark: Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit							

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

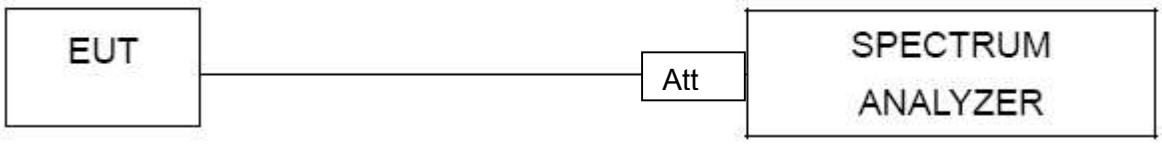
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. 3 kHz ≤Set the RBW≤100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

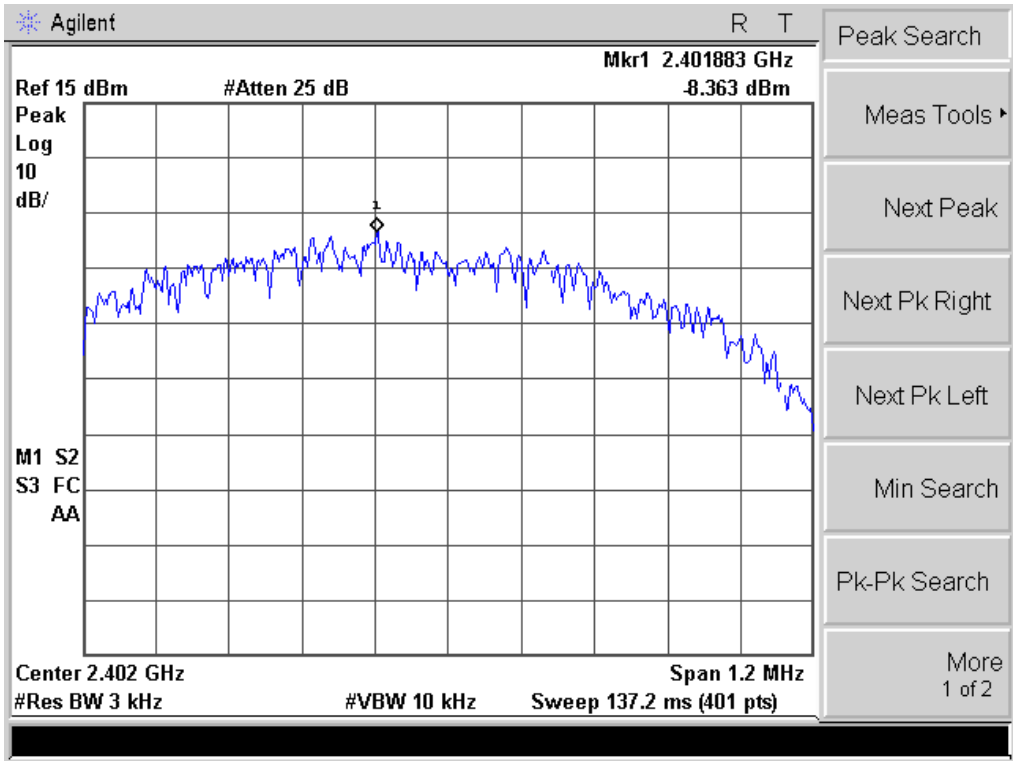
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

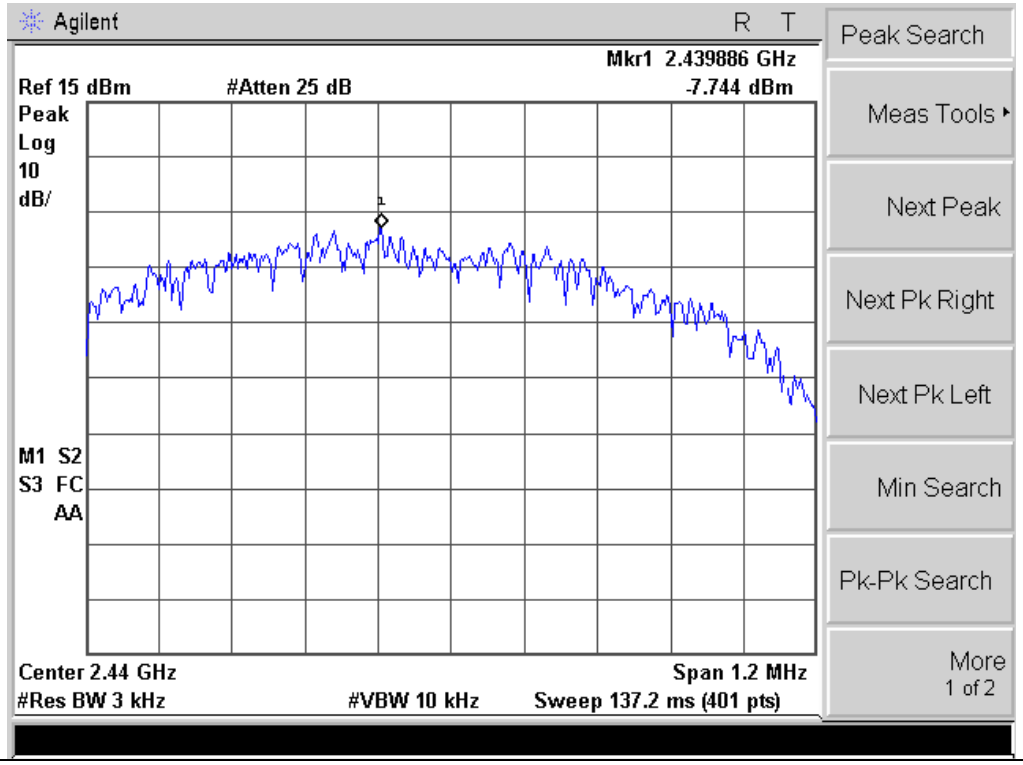
EUT：	Bluetooth Earphone	Model Name ：	KSP-ONE
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX Mode /CH00, CH19, CH39		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2402 MHz	-8.363	8	PASS
2440 MHz	-7.744	8	PASS
2480 MHz	-8.290	8	PASS

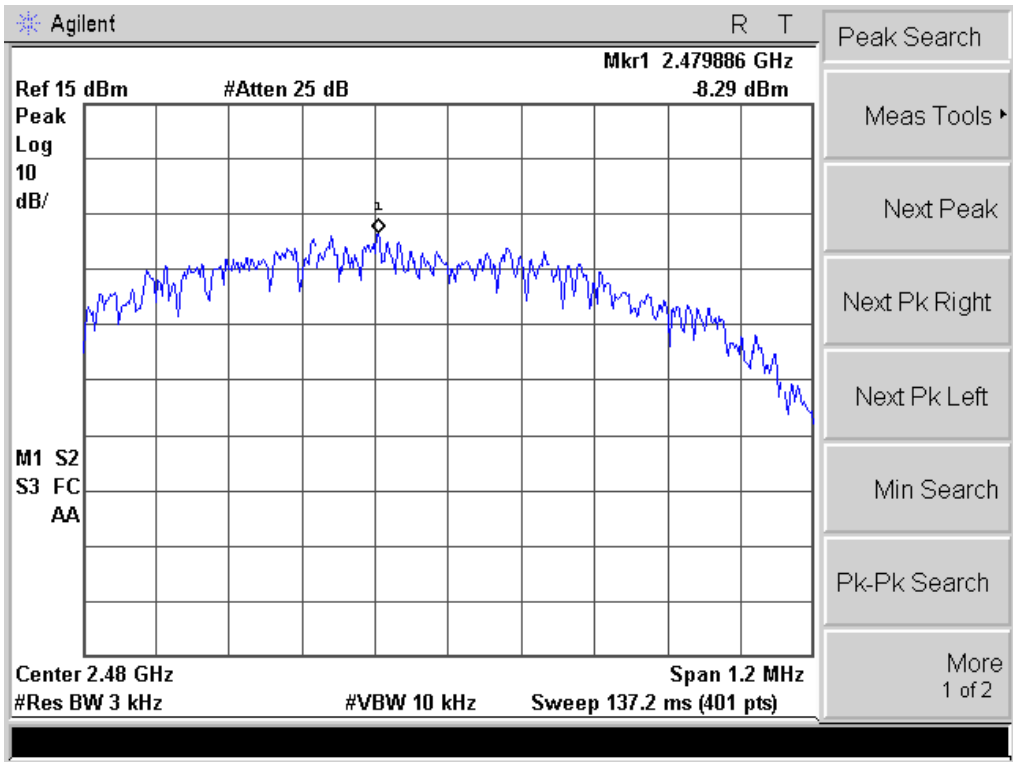
TX CH00



TX CH19



TX CH39



5. BANDWIDTH TEST

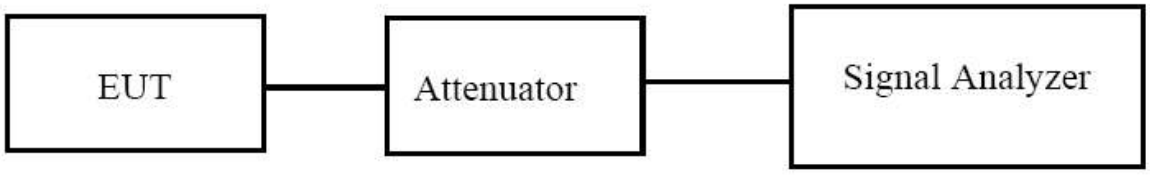
5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



5.1.2 EUT OPERATION CONDITIONS

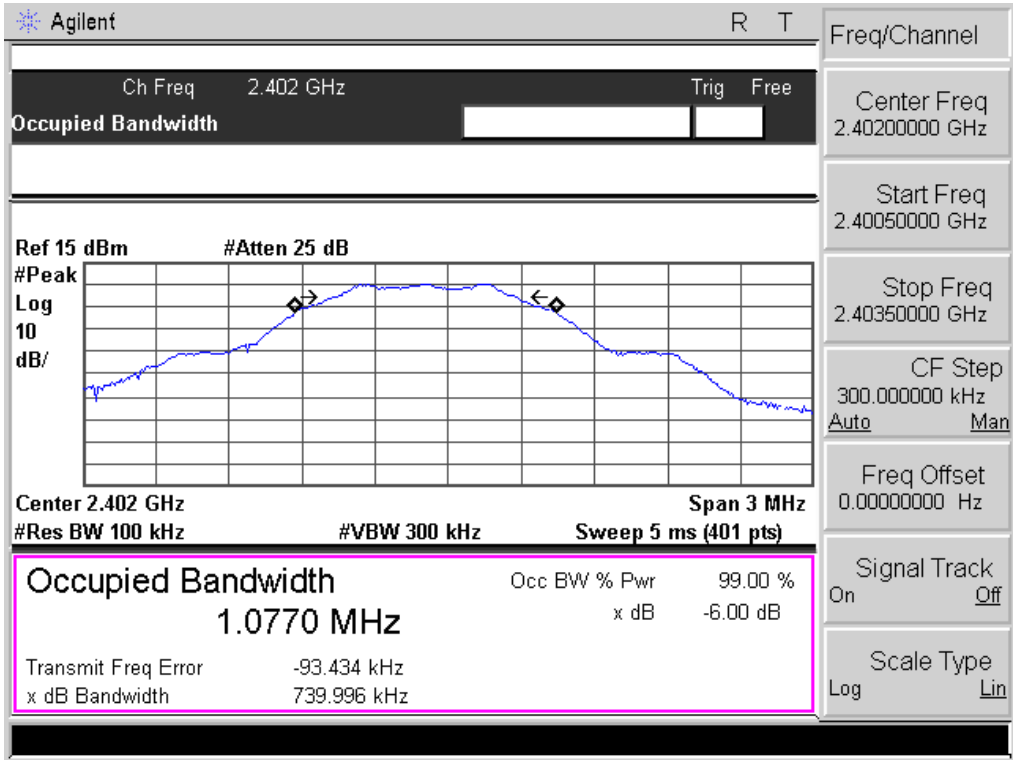
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.3 TEST RESULTS

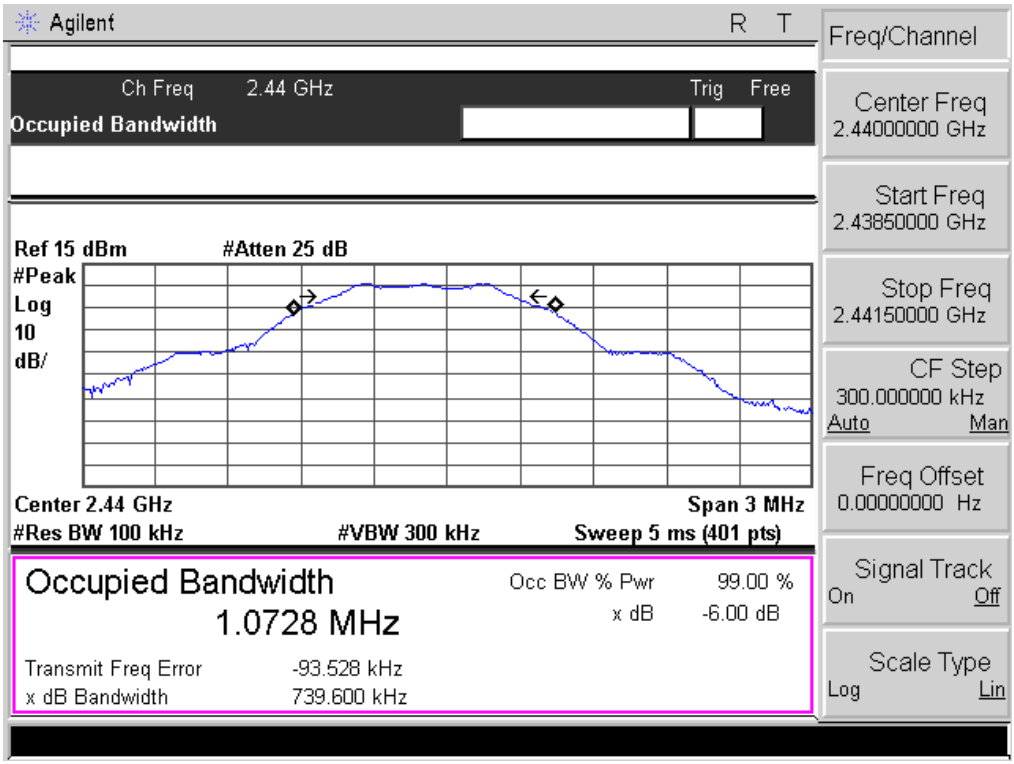
EUT：	Bluetooth Earphone	Model Name ：	KSP-ONE
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX Mode /CH00, CH19, CH39		

Channel	Frequency (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
Low	2402	739.996	500	Pass
Middle	2440	739.600	500	Pass
High	2480	751.569	500	Pass

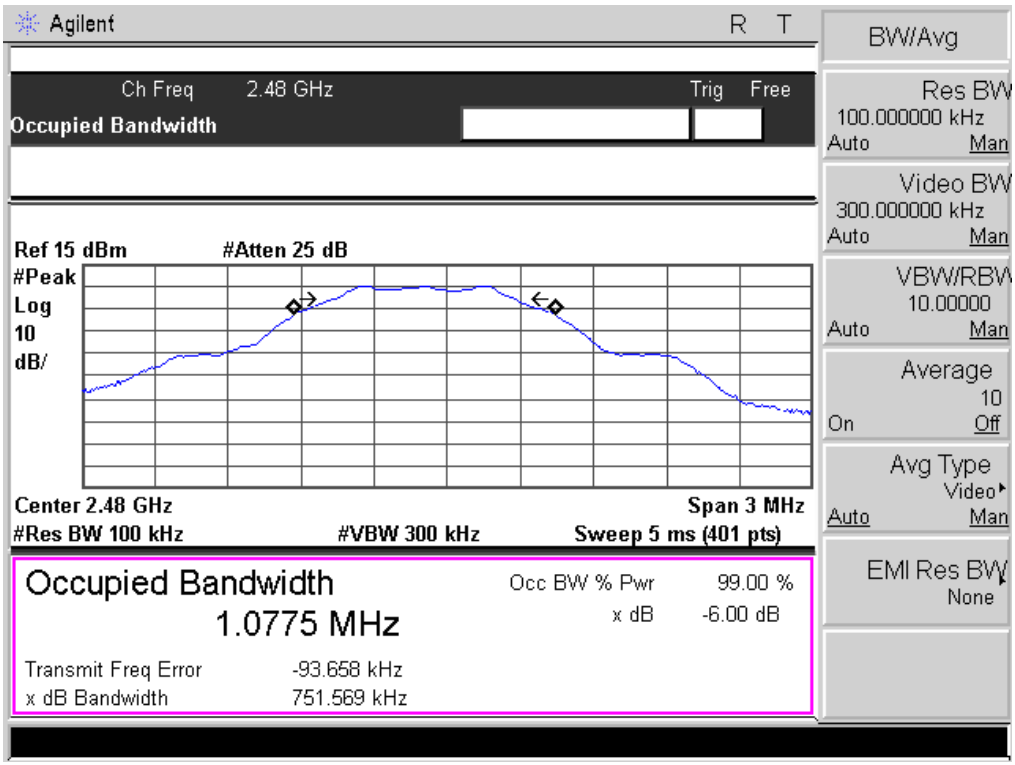
TX CH 00



TX CH 19



TX CH 39



6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP

6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT：	Bluetooth Earphone	Model Name ：	KSP-ONE
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	TX Mode		

Test Channe	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	dBm
CH00	2402	2.026	30
CH19	2440	2.586	30
CH39	2480	2.270	30

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

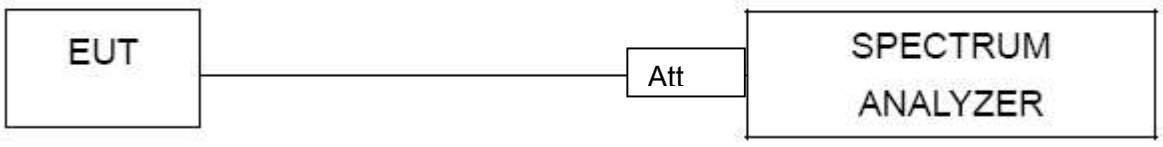
TEST PROCEDURE

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 EUT OPERATION CONDITIONS

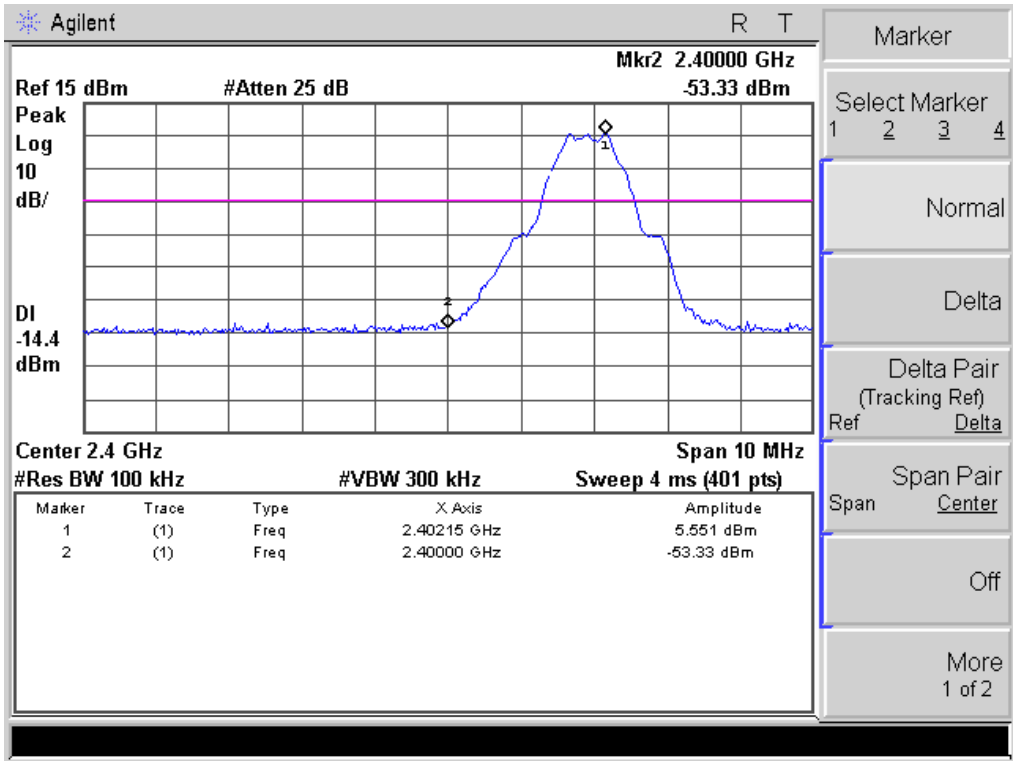
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.4 TEST RESULTS

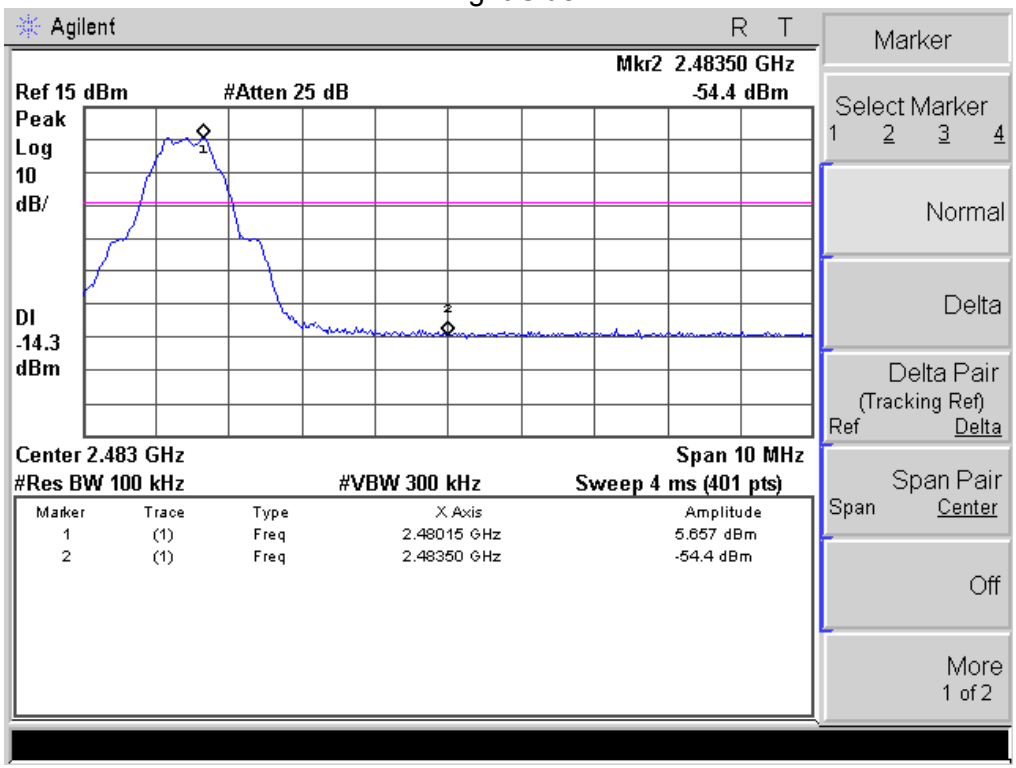
EUT：	Bluetooth Earphone	Model Name ：	KSP-ONE
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V

Frequency Band	Delta Peak to band emission (dBc)	＞Limit (dBc)	Result
Left-band	58.88	20	Pass
Right-band	60.06	20	Pass

Left Side



Right Side



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos

CONDUCTED EMISSION Photos