

TEST REPORT



DT&C Co., Ltd.

42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC1812-0280(1)

2. Customer

• Name : COMMAX Co., Ltd.

• Address : 494 Dunchon-Daero, Jungwon-Gu, Seongnam-si, Gyeonggi-do, South Korea 13229

3. Use of Report : FCC Original Grant

4. Product Name / Model Name : Microwave Sensor / EZ-HS301

FCC ID : CCEEZ-HS301

5. Test Method Used : ANSI C63.10-2013

Test Specification : FCC Part 15.245

6. Date of Test : 2019.03.18 ~ 2019.04.03

7. Testing Environment : Refer to appended test report.

8. Test Result : Refer to the attached test result.

Affirmation	Tested by	Reviewed by
	Name: SunGeun Lee (Signature)	Name: GeunKi Son (Signature)

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

2019 . 04 . 04 .

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description
DRTFCC1812-0280	Dec. 18, 2018	Initial issue
DRTFCC1812-0280(1)	Apr. 04, 2019	Retest for host product

CONTENTS

1. General Information.....	4
1.1. Testing Laboratory.....	4
1.2. Testing Environment.....	4
1.3. Measurement Uncertainty	4
1.4. Details of Applicant.....	5
1.5. Description of EUT	5
1.6. EUT CAPABILITIES	5
2. Information about test items.....	6
2.1 Test mode	6
2.2 Tested frequency	6
2.3 EMI Suppression Device(s)/Modifications	6
3. Antenna requirements.....	6
4. Test report	7
4.1 Summary of tests	7
4.2 Transmitter requirements	8
4.2.1 20dB bandwidth	8
4.2.2 Radiated Emissions	9
4.2.3 AC Line Conducted Emissions.....	14
4.3 List of Test Equipment	19
APPENDIX I.....	20
APPENDIX II.....	21

1. General Information

1.1. Testing Laboratory

DT&C Co., Ltd.

The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042.

The test site complies with the requirements of § 2.948 according to ANSI C63.4-2014.

- FCC MRA Accredited Test Firm No. : KR0034

www.dtnet.net

Telephone : + 82-31-321-2664

FAX : + 82-31-321-1664

1.2. Testing Environment

Ambient Condition

▪ Temperature +20 °C ~ +24 °C

▪ Relative Humidity 38 % ~ 45 %

1.3. Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence.

Parameter	Measurement uncertainty
AC conducted emission	2.4 dB (The confidence level is about 95 %, $k = 2$)
Radiated spurious emission (1 GHz Below)	5.1 dB (The confidence level is about 95 %, $k = 2$)
Radiated spurious emission (1 GHz ~ 18 GHz)	5.4 dB (The confidence level is about 95 %, $k = 2$)
Radiated spurious emission (18 GHz Above)	5.3 dB (The confidence level is about 95 %, $k = 2$)

1.4. Details of Applicant

Applicant : COMMAX Co., Ltd.
Address : 494 Dunchon-Daero, Jungwon-Gu, Seongnam-si, Gyeonggi-do, South Korea 13229
Contact person : Ji-Soo KIM

1.5. Description of EUT

FCC Equipment Class	Field Disturbance Sensor(FDS)
EUT	Microwave Sensor
Model Name	EZ-HS301
Model name for host device - 1	CIOT-L7FM
Model name for host device - 2	CIOT-L20M
Serial Number	Identical prototype
Power Supply(Host device)	DC 14V
Frequency Band	10.525 GHz
Modulation Type	CW signal
Channel(s)	1
Antenna type	PCB Pattern Antenna

1.6. EUT CAPABILITIES

This module contains the following capabilities:
10.525 GHz Motion Sensor.

2. Information about test items

2.1 Test mode

Test Mode	Model name for host device	Description
TM 1	CIOT-L7FM	Continuous transmitting mode
TM 2	CIOT-L20M	Continuous transmitting mode
-	-	-

Note: The module was installed into host product during test.

2.2 Tested frequency

Channel	TX Frequency(GHz)
Lowest	10.525
Middle	-
Highest	-

2.3 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing
→ None

3. Antenna requirements

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

The antenna is permanently attached on the PCB.
Therefore this E.U.T Complies with the requirement of §15.203

4. Test report

4.1 Summary of tests

FCC Part	Parameter	Limit	Test Condition	Status Note 1
15.215(c)	20 dB Bandwidth	NA	Radiated	C
15.245 15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	FCC 15.245 limits, FCC 15.209 limits		C
15.207	AC Line Conducted Emissions	FCC 15.207 limits	AC Line Conducted	C
15.203	Antenna Requirements	FCC 15.203	-	C
Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable Note 2: For radiated emission tests below 30 MHz were performed on semi-anechoic chamber which is correlated with OATS.				

4.2 Transmitter requirements

4.2.1 20dB bandwidth

- Limit:

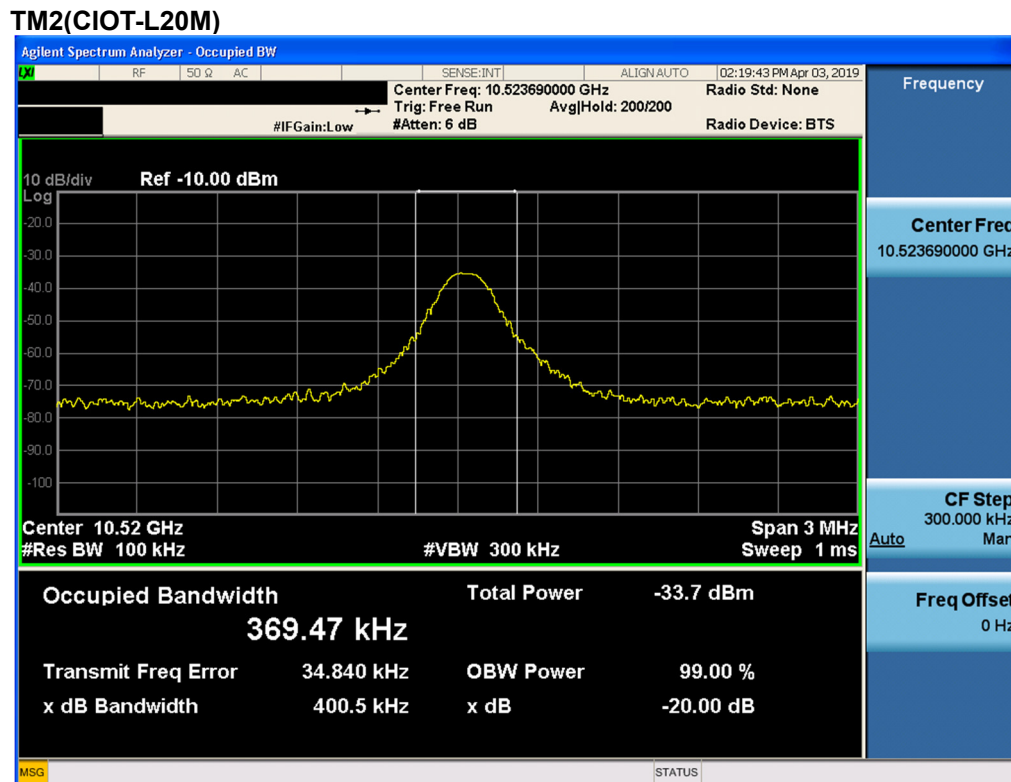
According to 15.215(c), the requirement is to ensure the 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified, is contained within the frequency band designated in the rule section under which the equipment is operated.

- Procedure:

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 300 kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

Set both RBW and VBW of spectrum analyzer to 100 kHz and 300 kHz with suitable frequency span from band

- Measurement Data: Comply



4.2.2 Radiated Emissions

Requirements, §15.245, §15.205, §15.209

- Part 15.245

(b) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency (MHz)	Limit @ 3m	
	Field strength of fundamental(mV/m)	Field strength of harmonics(mV/m)
902 ~ 908	500	1.6
2435 ~ 2465	500	1.6
5785 ~ 5815	500	1.6
10500 ~ 10550	2500	25.0
24075 ~ 24175	2500	25.0

(1) Regardless of the limits shown in the above table, harmonic emissions in the restricted bands below 17.7 GHz, as specified in §15.205, shall not exceed the field strength limits shown in §15.209. Harmonic emissions in the restricted bands at and above 17.7 GHz shall not exceed the following field strength limits:

- (i) For the second and third harmonics of field disturbance sensors operating in the 24075-24175 MHz band and for other field disturbance sensors designed for use only within a building or to open building doors, 25.0 mV/m.
 - (ii) For all other field disturbance sensors, 7.5 mV/m.
 - (iii) Field disturbance sensors designed to be used in motor vehicles or aircraft must include features to prevent continuous operation unless their emissions in the restricted bands, other than the second and third harmonics from devices operating in the 24075-24175 MHz band, fully comply with the limits given in §15.209. Continuous operation of field disturbance sensors designed to be used in farm equipment, vehicles such as fork lifts that are intended primarily for use indoors or for very specialized operations, or railroad locomotives, railroad cars and other equipment which travels on fixed tracks is permitted. A field disturbance sensor will be considered not to be operating in a continuous mode if its operation is limited to specific activities of limited duration (e.g., putting a vehicle into reverse gear, activating a turn signal, etc.).
- (2) Field strength limits are specified at a distance of 3 meters.
- (3) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

- Part 15.209

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
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

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges.

- Part 15.205

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.009 ~ 0.110	16.42 ~ 16.423	399.90 ~ 410	4.5 ~ 5.15
0.495 ~ 0.505	16.69475 ~ 16.69525	608 ~ 614	5.35 ~ 5.46
2.1735 ~ 2.1905	16.80425 ~ 16.80475	960 ~ 1240	7.25 ~ 7.75
4.125 ~ 4.128	25.5 ~ 25.67	1300 ~ 1427	8.025 ~ 8.5
4.17725 ~ 4.17775	37.5 ~ 38.25	1435 ~ 1626.5	9.0 ~ 9.2
4.20725 ~ 4.20775	73 ~ 74.6	1645.5 ~ 1646.5	9.3 ~ 9.5
6.215 ~ 6.218	74.8 ~ 75.2	1660 ~ 1710	10.6 ~ 12.7
6.26775 ~ 6.26825	108 ~ 121.94	1718.8 ~ 1722.2	13.25 ~ 13.4
6.31175 ~ 6.31225	123 ~ 138	2200 ~ 2300	14.47 ~ 14.5
8.291 ~ 8.294	149.9 ~ 150.05	2310 ~ 2390	15.35 ~ 16.2
8.362 ~ 8.366	156.52475 ~ 156.52525	2483.5 ~ 2500	17.7 ~ 21.4
8.37625 ~ 8.38675	156.7 ~ 156.9	2690 ~ 2900	22.01 ~ 23.12
8.41425 ~ 8.41475	162.0125 ~ 167.17	3260 ~ 3267	23.6 ~ 24.0
12.29 ~ 12.293	167.72 ~ 173.2	3332 ~ 3339	31.2 ~ 31.8
12.51975 ~ 12.52025	240 ~ 285	3345.8 ~ 3358	36.43 ~ 36.5
12.57675 ~ 12.57725	322 ~ 335.4	3600 ~ 4400	Above 38.6
13.36 ~ 13.41			

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

Test Configuration

Refer to the APENDIX I

Test Procedure

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m.
2. The table was rotated 360 degrees to determine the position of the highest radiation.
3. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 1 or 3 meter away from the interference-receiving antenna.
4. For measurements above 1GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.
5. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
6. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
7. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
8. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Note: Measurement Instrument Setting for Radiated Emission Measurements.

1. Frequency Range Below 1GHz
RBW = 100 or 120 kHz, VBW = 3 x RBW, Detector = Peak or Quasi Peak
2. Frequency Range Range > 1 GHz
Peak Measurement
RBW = 1 MHz, VBW = 3 MHz, Detector = Peak, Sweep time = Auto, Trace mode = Max Hold until the trace stabilizes
Average Measurement> 1GHz
RBW = 1MHz, VBW $\geq 1/T$, Detector = Peak, Sweep Time = Auto, Trace Mode = Max Hold until the trace stabilizes

Test Results: TM1 (CIOT-L7FM)

Tested Frequency : 10.525 GHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
34.85	V	Y	QP	37.81	-9.30	N/A	N/A	28.51	40.00	11.49
242.43	V	Y	QP	45.20	-7.30	N/A	N/A	37.90	46.00	8.10
296.75	V	Y	QP	44.30	-5.30	N/A	N/A	39.00	46.00	7.00
351.07	H	Y	QP	43.10	-4.10	N/A	N/A	39.00	46.00	7.00
405.39	V	Y	QP	42.04	-2.80	N/A	N/A	39.24	46.00	6.76
513.06	V	Y	QP	37.00	-0.90	N/A	N/A	36.10	46.00	9.90
10496.08	H	Y	PK	44.62	10.74	N/A	N/A	55.36	74.00	18.64
10495.67	H	Y	AV	33.91	10.74	N/A	N/A	44.65	54.00	9.35
*10523.38	H	Y	PK	74.09	10.78	N/A	N/A	84.87	147.95	63.08
*10523.39	H	Y	AV	74.02	10.78	N/A	N/A	84.80	127.95	43.15
10558.72	H	Y	PK	44.98	10.83	N/A	N/A	55.81	74.00	18.19
10558.20	H	Y	AV	33.94	10.83	N/A	N/A	44.77	54.00	9.23
21046.57	H	Y	PK	55.68	6.93	N/A	-9.54	53.07	97.50	44.43
21046.51	H	Y	AV	55.06	6.93	N/A	-9.54	52.45	77.50	25.05
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-

Note.

- * is fundamental frequency.
- The radiated emissions were investigated 9 kHz to 5th harmonic of highest fundamental frequency. And no other spurious and harmonic emissions were found above listed frequencies.

3. Information of Distance Factor

For finding emissions, above 18GHz measurements were performed at a distance closer than the specified distance.

In this case, the distance factor is applied to the result. Calculation of distance factor = $20 \log(d_{\text{test}} / d_{\text{limit}})$
 $20 \log(1 \text{ m} / 3 \text{ m}) = -9.54 \text{ dB}$, $20 \log(0.35 \text{ m} / 3 \text{ m}) = -18.66 \text{ dB}$

When distance factor is "N/A", the distance is 3 m and distance factor is not applied.

4. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F + DCCF + DCF / T.F = AF + CL – AG

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor

Test Results: TM2 (CIOT-L20M)

Tested Frequency : 10.525 GHz

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
35.82	V	Y	QP	36.60	-9.20	N/A	N/A	27.40	40.00	12.60
189.08	V	Y	QP	44.94	-8.80	N/A	N/A	36.14	43.50	7.36
296.75	H	Y	QP	46.10	-5.30	N/A	N/A	40.80	46.00	5.20
351.07	H	Y	QP	44.80	-4.10	N/A	N/A	40.70	46.00	5.30
405.03	H	Y	QP	46.70	-2.80	N/A	N/A	43.90	46.00	2.10
458.74	H	Y	QP	37.23	-1.60	N/A	N/A	35.63	46.00	10.37
10486.31	H	Y	PK	44.24	10.74	N/A	N/A	54.98	74.00	19.02
10486.43	H	Y	AV	33.69	10.74	N/A	N/A	44.43	54.00	9.57
*10522.66	H	Y	PK	70.23	10.78	N/A	N/A	81.01	147.95	66.94
*10522.73	H	Y	AV	69.86	10.78	N/A	N/A	80.64	127.95	47.31
10563.71	H	Y	PK	44.63	10.83	N/A	N/A	55.46	74.00	18.54
10563.11	H	Y	AV	33.63	10.83	N/A	N/A	44.46	54.00	9.54
21046.26	H	Y	PK	55.46	6.93	N/A	-9.54	52.85	97.50	44.65
21046.27	H	Y	AV	54.98	6.93	N/A	-9.54	52.37	77.50	25.13
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-

Note.

- * is fundamental frequency.
- The radiated emissions were investigated 9 kHz to 5th harmonic of highest fundamental frequency. And no other spurious and harmonic emissions were found above listed frequencies.

3. Information of Distance Factor

For finding emissions, above 18GHz measurements were performed at a distance closer than the specified distance.

In this case, the distance factor is applied to the result. Calculation of distance factor = $20 \log(d_{\text{test}} / d_{\text{limit}})$
 $20 \log(1 \text{ m} / 3 \text{ m}) = -9.54 \text{ dB}$, $20 \log(0.35 \text{ m} / 3 \text{ m}) = -18.66 \text{ dB}$

When distance factor is "N/A", the distance is 3 m and distance factor is not applied.

4. Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor

4.2.3 AC Line Conducted Emissions

Requirements, §15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Test Configuration

See test photographs for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

Test Results: **Comply** (refer to the next page)

Measurement Data: TM1 (CIOT-L7FM)

DTNC

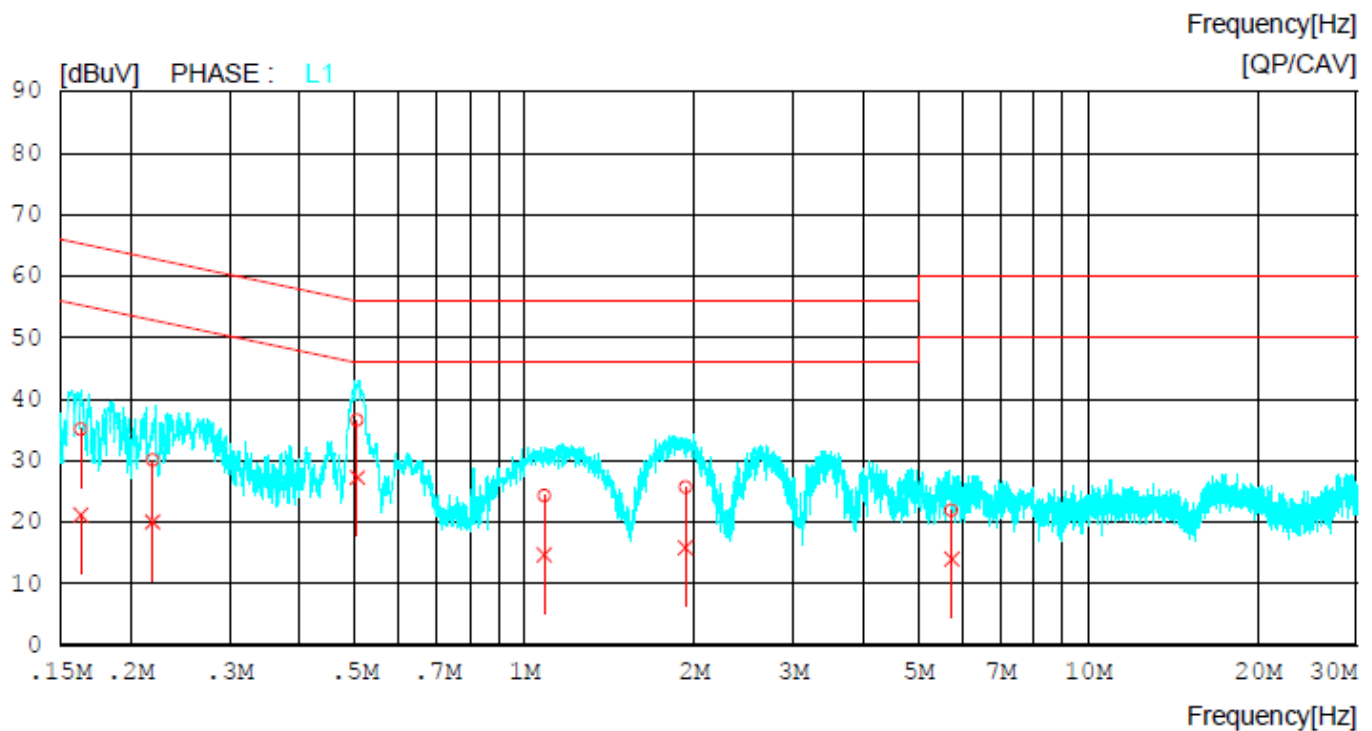
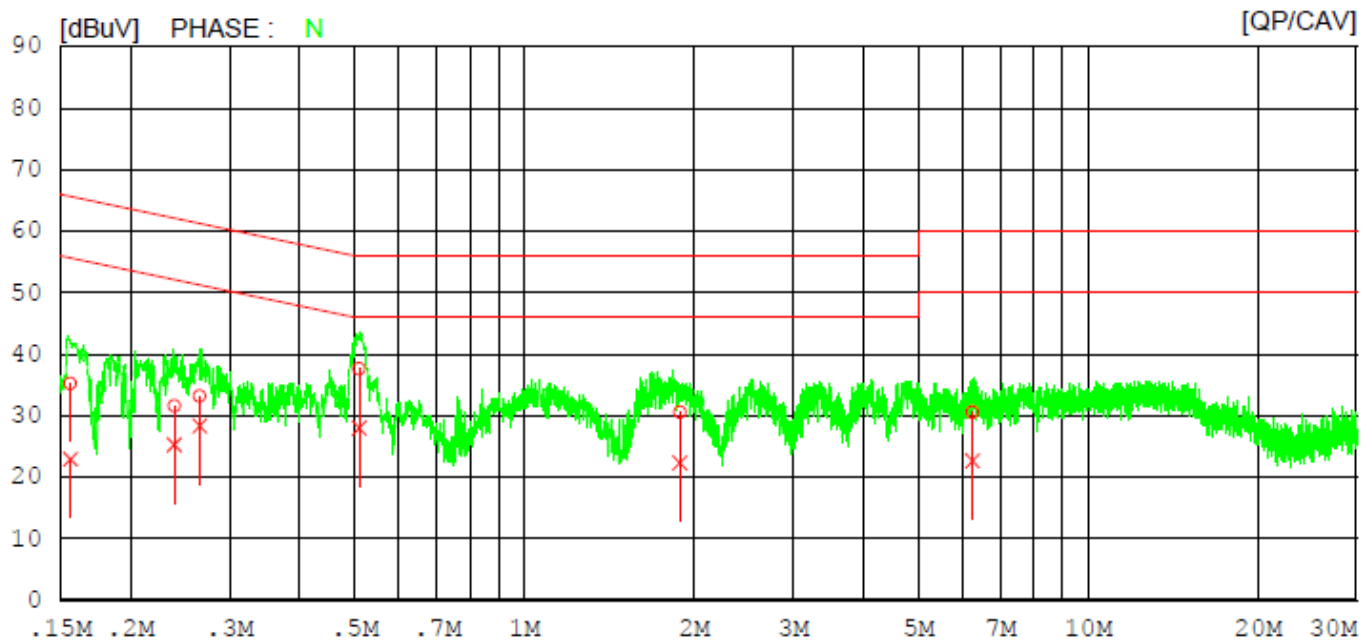
Date 2019-04-03

Order No.
Model No. CIOT-L7FM
Serial No.
Test Condition Sensor

Reference No.
Power Supply 120 V, 60 Hz
Temp/Humi. 23 'C / 45 %
Operator SunGeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV



Measurement Data: TM1 (CIOT-L7FM)

Results of Conducted Emission

DTNC

Date 2019-04-03

Order No.		Reference No.	
Model No.	CIOT-L7FM	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 'C / 45 %
Test Condition	Sensor	Operator	SunGeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.15657	25.34	13.00	9.94	35.28	22.94	65.64	55.64	30.36	32.70	N
2	0.23951	21.65	15.38	9.94	31.59	25.32	62.11	52.11	30.52	26.79	N
3	0.26556	23.20	18.40	9.94	33.14	28.34	61.26	51.26	28.12	22.92	N
4	0.50918	27.63	18.10	9.95	37.58	28.05	56.00	46.00	18.42	17.95	N
5	1.88840	20.58	12.33	10.03	30.61	22.36	56.00	46.00	25.39	23.64	N
6	6.23460	20.41	12.45	10.20	30.61	22.65	60.00	50.00	29.39	27.35	N
7	0.16342	25.13	11.21	9.94	35.07	21.15	65.29	55.29	30.22	34.14	L1
8	0.21897	20.17	10.07	9.94	30.11	20.01	62.86	52.86	32.75	32.85	L1
9	0.50556	26.61	17.29	9.95	36.56	27.24	56.00	46.00	19.44	18.76	L1
10	1.08480	14.27	4.71	9.97	24.24	14.68	56.00	46.00	31.76	31.32	L1
11	1.93160	15.58	5.79	10.03	25.61	15.82	56.00	46.00	30.39	30.18	L1
12	5.72700	11.66	3.80	10.18	21.84	13.98	60.00	50.00	38.16	36.02	L1

Measurement Data: TM2 (CIOT-L20M)

Results of Conducted Emission

DTNC

Date 2019-04-03

Order No.

CIOT-L20M

Reference No.

Model No.

Power Supply

120 V, 60 Hz

Serial No.

Temp/Humi.

23 'C / 45 %

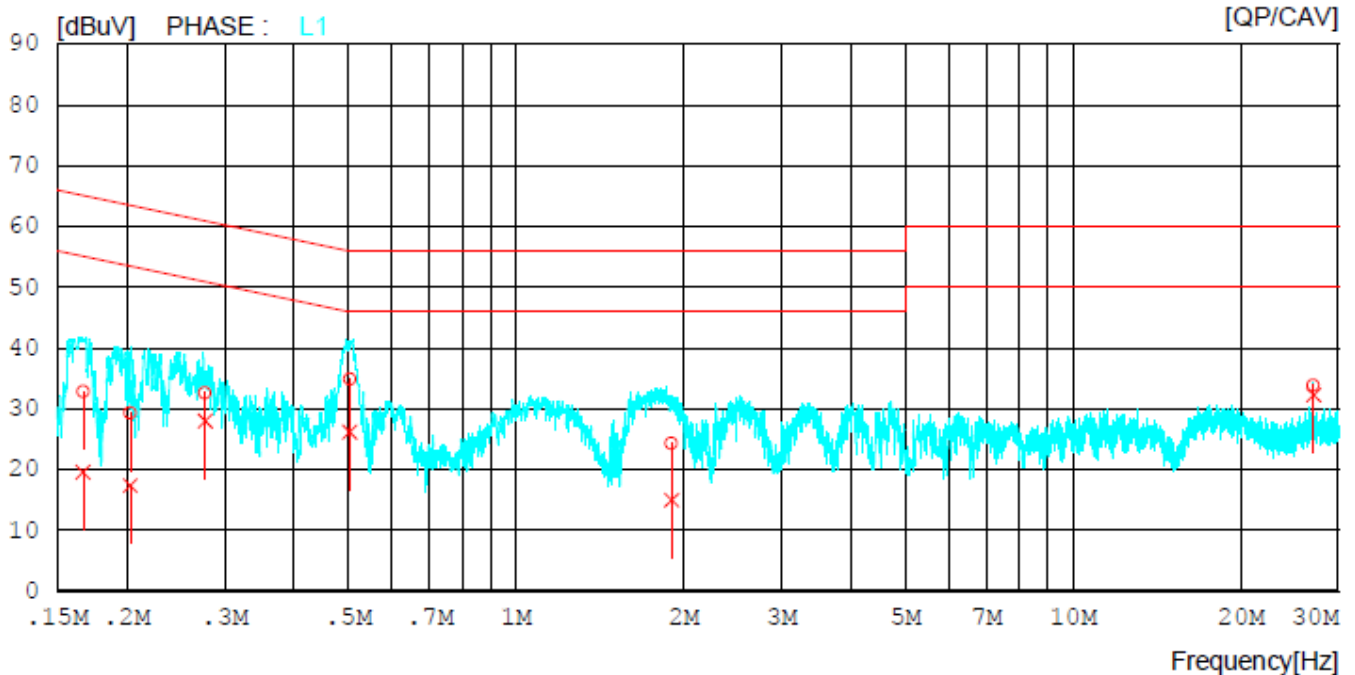
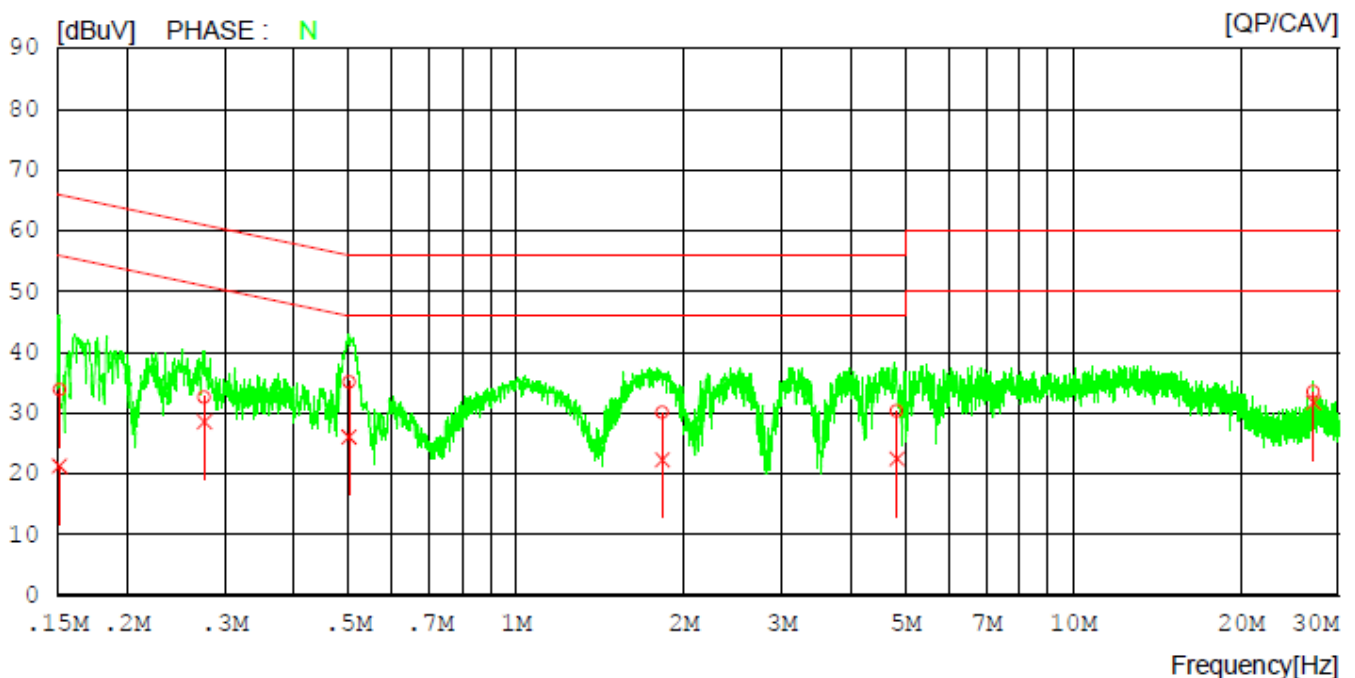
Test Condition

Sensor

Operator

SunGeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV


Measurement Data: TM2 (CIOT-L20M)

Results of Conducted Emission

DTNC

Date 2019-04-03

Order No.		Reference No.	
Model No.	CIOT-L20M	Power Supply	120 V, 60 Hz
Serial No.		Temp/Humi.	23 'C / 45 %
Test Condition	Sensor	Operator	SunGeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ [MHz]	READING		C.FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.15154	23.87	11.38	9.94	33.81	21.32	65.92	55.92	32.11	34.60	N
2	0.27596	22.69	18.60	9.94	32.63	28.54	60.94	50.94	28.31	22.40	N
3	0.50146	25.22	16.18	9.95	35.17	26.13	56.00	46.00	20.83	19.87	N
4	1.83120	20.12	12.26	10.02	30.14	22.28	56.00	46.00	25.86	23.72	N
5	4.82700	20.16	12.34	10.16	30.32	22.50	56.00	46.00	25.68	23.50	N
6	27.00120	22.90	21.05	10.70	33.60	31.75	60.00	50.00	26.40	18.25	N
7	0.16702	22.87	9.64	9.94	32.81	19.58	65.11	55.11	32.30	35.53	L1
8	0.20312	19.28	7.40	9.94	29.22	17.34	63.48	53.48	34.26	36.14	L1
9	0.27657	22.65	18.03	9.94	32.59	27.97	60.92	50.92	28.33	22.95	L1
10	0.50293	24.94	16.19	9.95	34.89	26.14	56.00	46.00	21.11	19.86	L1
11	1.90120	14.26	4.91	10.03	24.29	14.94	56.00	46.00	31.71	31.06	L1
12	27.00160	23.10	21.57	10.67	33.77	32.24	60.00	50.00	26.23	17.76	L1

4.3 List of Test Equipment

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	18/07/09	19/07/09	MY46471251
Spectrum Analyzer	Agilent Technologies	N9030A	18/07/09	19/07/09	MY53310140
Spectrum Analyzer	Rohde Schwarz	FSW67	18/08/16	19/08/16	104037
EMI Test Receiver	Rohde Schwarz	ESR7	19/01/30	20/01/30	101061
Multimeter	FLUKE	17B	18/12/18	19/12/18	26030065WS
Signal Generator	Rohde Schwarz	SMBV100A	18/12/19	19/12/19	255571
Signal Generator	ANRITSU	MG3695C	18/12/20	19/12/20	173501
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-1
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-2
HYGROMETER	TESTO	608-H1	19/01/31	20/01/31	34862883
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
HORN ANT	ETS	3117	18/05/10	20/05/10	00140394
HORN ANT	A.H.Systems Inc.	SAS-574	17/07/31	19/07/31	155
HORN ANT	MI Wave	RX ANT-5 261U + 410U	17/08/31	19/08/31	4
PreAmplifier	H.P	8447D	18/12/18	19/12/18	2944A07774
PreAmplifier	Agilent	8449B	18/07/05	19/07/05	3008A02108
PreAmplifier	tsj	MLA-1840-J02-45	18/07/06	19/07/06	16966-10728
PreAmplifier	Norden Millimeter Inc	NA4060G50N8P12	18/12/21	19/12/21	1003
EMI Test Receiver	Rohde Schwarz	ESCI7	19/01/30	20/01/30	100910
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	18/09/27	19/09/27	101333
LISN	SCHWARZBECK	NNLK 8121	19/03/19	20/03/19	06183
Cable	DT&C	CABLE	18/07/05	19/07/05	RF-82
Cable	Radiall	TESTPRO3	18/07/06	19/07/06	M-01
Cable	HUBER+SUHNER	SUCOFLEX 104	18/07/06	19/07/06	M-03
Cable	Junkosha	MWX315	18/11/19	19/11/19	M-05
Cable	Junkosha	MWX221	18/11/19	19/11/19	M-06
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-4
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-7
Cable	DT&C	CABLE	18/07/06	19/07/06	G-13
Cable	DT&C	CABLE	18/07/06	19/07/06	G-14
Cable	HUBER+SUHNER	SUCOFLEX104	18/07/06	19/07/06	G-15
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-8
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-10

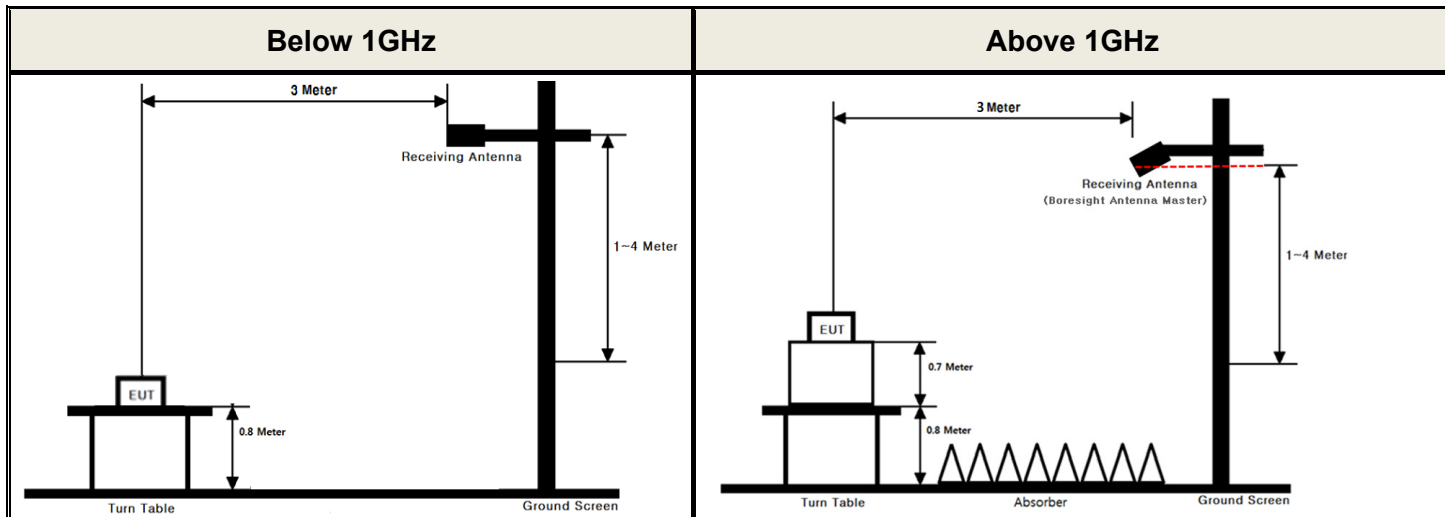
Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017

Note2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

APPENDIX I

Test set up diagrams

▪ Radiated Measurement

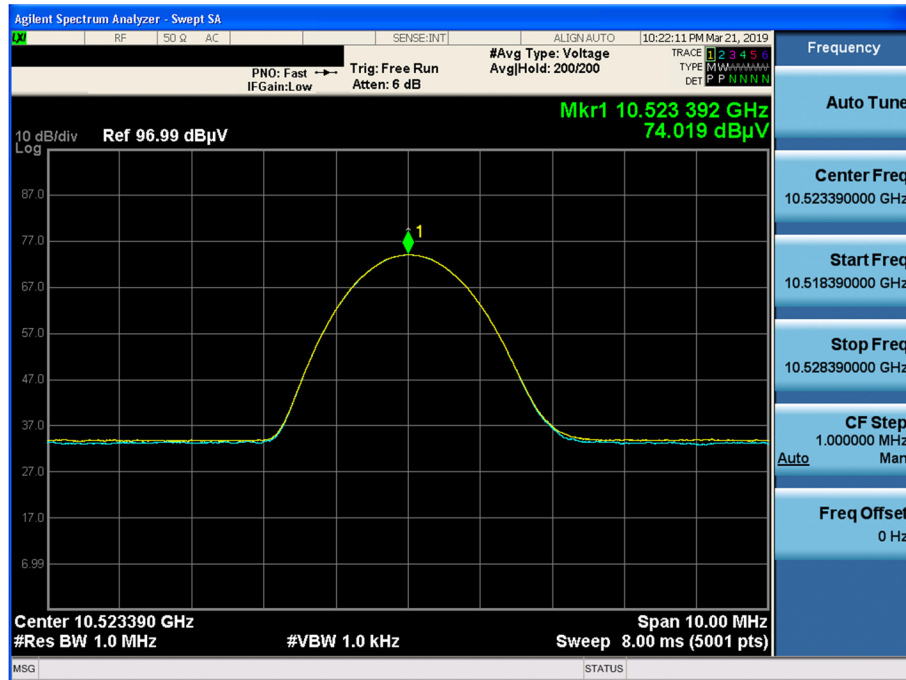


APPENDIX II

Worst-case plots(Reading Value)

Fundamental & TM 1(CIOT-L7FM) & Y axis & Hor

Detector Mode : AV



Unwanted emission & TM 1(CIOT-L7FM) & Y axis & Hor

Detector Mode : QP

