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Reply to an OET Inquiry Response

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Inquiry Details:

First Inquiry Category: **Radio Service Rules**
Second Inquiry Category: **Part 15 Intentional Radiators**
Third Inquiry Category: **Antennas - Part 15.203**

Hello,

The product FCC ID: ACJ9TAWX-C3010 from Panasonic, our customer, was certified two years ago. Panasonic informed us that they would like to perform a modification to extend the communication range of the equipment to outside buildings by fixing two additional antennas linked by an RF cable: the first new antenna would be attached directly to one of the already existing (and approved) antennas and the second new antenna would be placed outside the building.

The two new antennas would not be physically connected to the RF connector of the main unit. RF signals would propagate by coupling from the fixed old (approved) antenna to the new attached antenna. Please refer to the attached PDF file for a clear image.

Could you please kindly let me know if such a system is acceptable on the FCC point of view (i.e. does such a system meet 15.203) ? If yes, is a permissive change II needed, or can the customer just go for permissive change I, since the antenna which is physically connected to the transmitter is anyway not changed ?

Thank you in advance for your reply.

Best regards,

Thimo Sauter

---Reply from Customer on 01/10/2011---

Regarding (i): The antenna to be placed outside buildings has a gain of 8 dBi (i.e. higher than the gain of the certified antenna permanently attached to the main unit). We understand that radiated measurements and some conducted measurements must be repeated and a permissive change II applied for.

Regarding (ii): Verification of access protocols was done in a conducted way. Therefore validity of the test results are not affected by the antenna modification and, in our opinion, the tests do not need to be repeated.

Regarding (iii):

The two new antennas are passive. The new antenna to be placed outside building would provide extended space coverage, but the total radiated power would not be increased (as part of the power emitted by one of the antennas fixed to the main unit would couple with the new antenna fastened to it and then be transferred to the outdoor new antenna).

For radiated measurements, we are considering two possible configurations:

A. The main unit would be placed on the turntable in the same position as for testing for the initial FCC approval and the new antenna which is normally to be located outside buildings would be placed at the middle of the turntable, with the interconnecting antenna cable (about 30m long) rolled and placed on the table.

B. The main unit and the new antenna would be placed in a 30m open test site and placed in a position representative of actual use (i.e. the main unit and the outdoor antenna would be separated by about 10 to 30m). Precheck measurements would be made to determine the worst case antenna cable layout. Measurements would be then made by moving the measuring antenna around the EUT and making measurements at several reference positions.

In addition, we would repeat conducted output power measurements on the cable linking the two new antennas. But no other conducted measurements would be repeated because the signal propagates by passive coupling from the old antenna (already shown to be compliant) to the new antennas.

Could you let us know if it would be acceptable for the FCC to run the radiated tests in one of the above mentioned configurations (A or B) ?

Thank you and best regards,

Thimo Sauter

---Reply from Customer on 02/13/2011---

Based on the comments from the previous messages, we are considering performing the following tests:

- Peak transmit power: FCC 15.319(c) and 15.319(e)
- Power density: FCC 15.319(d)
- In-band and out-of-band emission: FCC 15.323(d)
- Threshold measurement: FCC 15.323(c)(2)
- LIC selection: FCC 15.323(c)(5).1
- Monitoring bandwidth: FCC 15.323(c)(7).1
- Monitoring reaction time: FCC 15.323(c)(7).2

All those tests would be performed in a radiated way in the test configuration B of my previous message and using the method described in ANSI C63.17-2006, clause 4.8, at the three following locations:

1. at the reference antenna position showing the highest EIRP for the whole structure;
2. at the reference antenna position showing the highest EIRP of the main unit (i.e. the reference antenna is facing the main unit);
3. at the reference antenna position showing the highest EIRP of the newly added external antenna (i.e. the reference antenna is facing the new external antenna to be placed outside buildings).

(Note: it is possible that location 1 shows to be identical to location 2 or 3).

Would you accept the test method and the test items described in this message for the permissive change II ? Is it alright not to repeat the other applicable access protocol tests (in sections 7 and 8 of ANSI C63.17-2006), as their result seems to be independent from the antenna system used ?

Thank you and best regards,

Thimo Sauter

---Reply from Customer on 02/28/2011---

Response to your last message:

"15.323 (8) The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location. Thus the C2PC would not be considered the same antenna tested."

-> All the antennas of the system are at the same time monitoring antennas and transmission antennas.

"Sections 7 and 8 of ANSI C63.17-2006 would need to be included."

-> Alright, we will also retest the other items of sections 7 and 8 of ANSI C63.17.

"You also need to confirm that the effective radiated power from both antennas are within the limits in any location between them. "

-> This will be done by making precheck measurements around the whole structure to identify the position where the highest effective radiated power is observed (using method of section 4.8 of ANSI C63.17). This includes locations between the two antennas.

Would all those tests be acceptable for Permissive Change II ?

Best regards,

Thimo Sauter

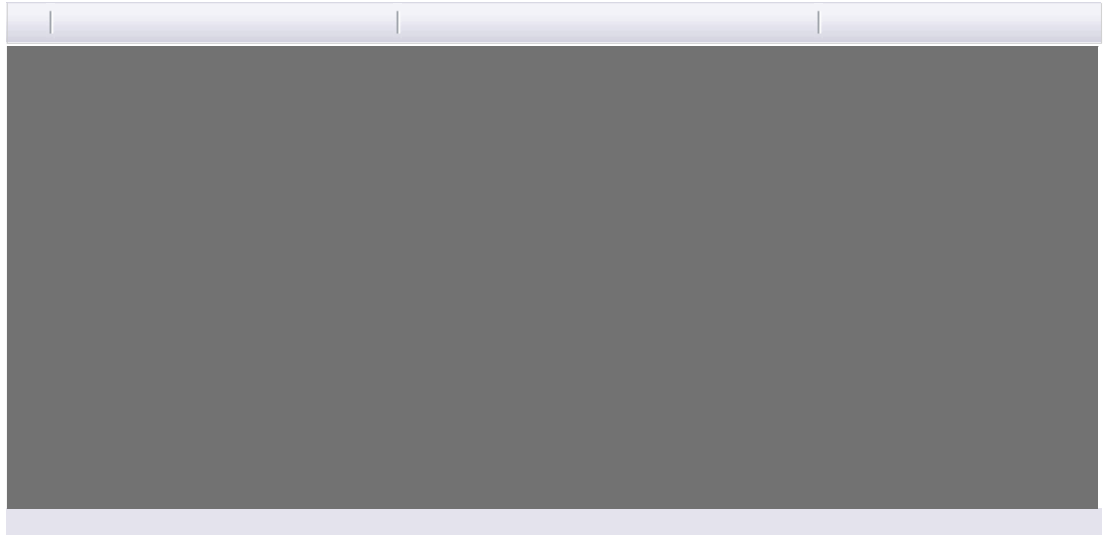
---Reply from Customer on 03/24/2011---

Thank you for your response. We prepared a test plan for permissive change II. It describes the tests to perform and the test method to apply, taking into account all your replies to this OET inquiry.

Before we start the tests, could you please confirm that you accept this test plan ? Especially, could you check page 10 ?

Thank you in advance and best regards,

Thimo Sauter



Proceed **Clear** Response to your last message:

"15.323 (8) The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location. Thus the C2PC would not be considered the same antenna tested."
-> All the antennas of the system are at the same time monitoring antennas and transmission antennas.

"Sections 7 and 8 of ANSI C63.17-2006 would need to be included."
-> Alright, we will also retest the other items of sections 7 and 8 of ANSI C63.17.

"You also need to confirm that the effective radiated power from both antennas are within the limits in any location between them. "

-> This will be done by making precheck measurements around the whole structure to identify the position where the highest effective radiated power is observed (using method of section 4.8 of ANSI C63.17). This includes locations between the two antennas.

Would all those tests be acceptable for Permissive Change II ?

Best regards,

Thimo Sauter
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Last Reviewed/Updated on 06/19/2009

Please send any comments or suggestions for this site to [OET Systems Support](#)

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